MBC Marine

Marine air conditioning solutions

INSTALLATION AND USER MANUAL FOR SDC UNTS

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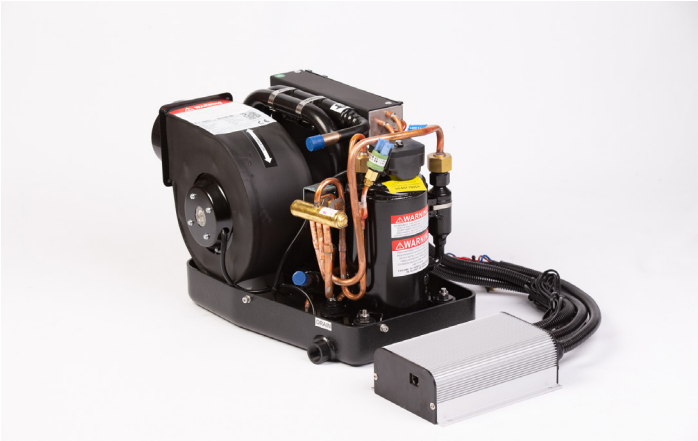

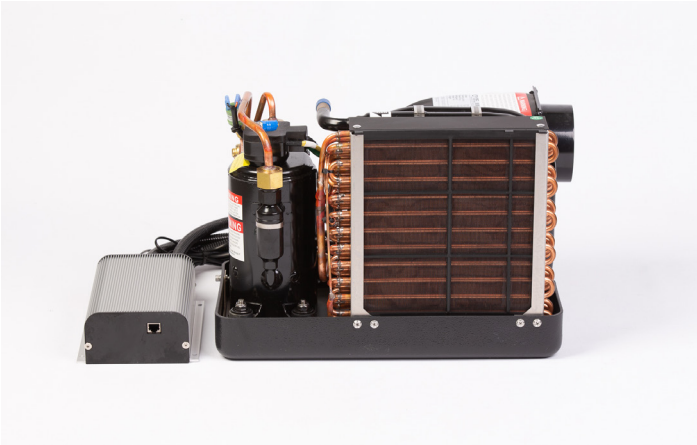

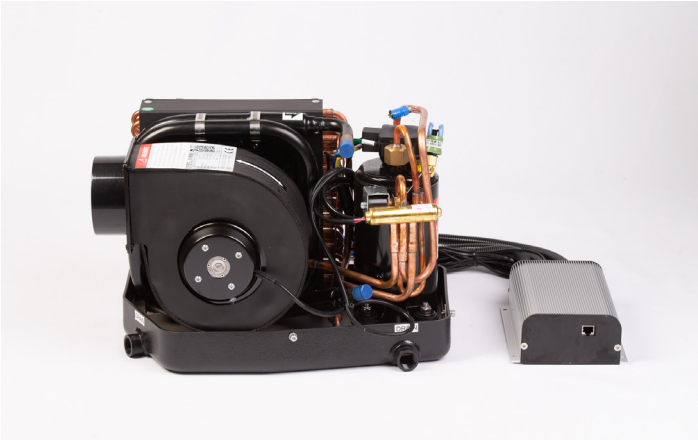

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THANK YOU FOR CHOOSING OUR MBC MARINE PRODUCT!

Professional installation is the key to efficient and safe operation of the equipment so please read the following installation and operating instructions carefully before installing the unit.
Before starting the installation, make sure that the shipping box and the air conditioner are intact. DO NOT use a broken or damaged product.
If the product is damaged, return the product to the place of purchase.

Before the installation please check all parts are in the box and not injured:
- A/C unit
- Display
- 5m LAN cable
- Temperature sensor
- 4 pcs. mounting bracket

EXPLANATION OF SYMBOLS:

ATTENTION!!

Ignoring this information may cause material damage and may have adverse impact to the operation of this product.

WARNING!

Safety information: Ignoring these instructions could result in death or serious injury.

CAUTION!

Safety information: Ignoring this instruction can cause serious injury.

WARNING:

Installation of the system should only be carried out by qualified personnel with appropriate knowledge. The following information is intended for technicians who are familiar with applicable guidelines and relevant safety regulations and precautions. For warranty professional and proper installation specifications are essential. If you do not have the necessary knowledge, entrust the installation to a specialist! It is important to use the appliance only for its intended purpose and in compliance with the relevant regulations.

PART 1. **SAFETY AND FIRE PROTECTION WARNINGS**

1.1 SAFETY INFORMATION:

The manufacturer assumes no liability for damage to the device in the following cases:

- Installation or connection failure
- Damage to the product due to mechanical impact and over voltage
- Modification of the product without the express written permission of the manufacturer
- Unusual use, differing from standards

1.2 FIRE PROTECTION WARNING:

Installation and maintenance of the unit may be dangerous due to pressurized copper pipes and electrical equipment. When working on the unit, always take the safety precautions into account and wear protective goggles during installation, use work gloves and place a fire extinguisher near the work area!

1.3 SAFETY WARNING:

It is strictly forbidden to install the air conditioning unit in a place where it is possible for the equipment to deliver carbon monoxide, harmful gas of the engine or any other toxic substance inside the boat.

1.4 ELECTRICAL SCHOCK WARNING:

To minimise the risk of electric shock and personal injury, ground the equipment properly! The equipment meets the relevant fire protection requirements. The device must not be installed in premises where petrol engines, tanks, LPG / CPG cylinders, regulators, valves, fuel lines or connectors can be found!

PART 2. **PREPARING FOR INSTALLATION**

Before starting the installation it is important to plan the location of all the components of the system in advance, including:

- marine a/c units and electric box,
- air ducts and water pipes,
- location of the sea water pump,
- the drainage of drop water and its removal from the boat,
- sea water intakes/outlets,
- electrical connections,
- and the display location.

WARNING!

Start the installation only if the location of each unit complies with the relevant regulations. At planning, make sure that there is enough space for subsequent installation and maintenance work.

WARNING!

The unit generates heat during operation and must be installed in a location with constant airflow to ensure safe and reliable performance.!

2.1 ELECTRICAL BOX PLACEMENT

To prevent overheating and potential failure, the electrical box of MBC Marine SDC units must be installed in a well-ventilated area.

This is especially critical for 12V models due to their higher current draw.

Install the box near the evaporator, within the airflow path, without obstructing the air intake.

WARNING!

MBC Marine reserves the right to deny warranty claims if the electrical box is installed in an unventilated or enclosed space. Proper ventilation is essential for safe and reliable operation.

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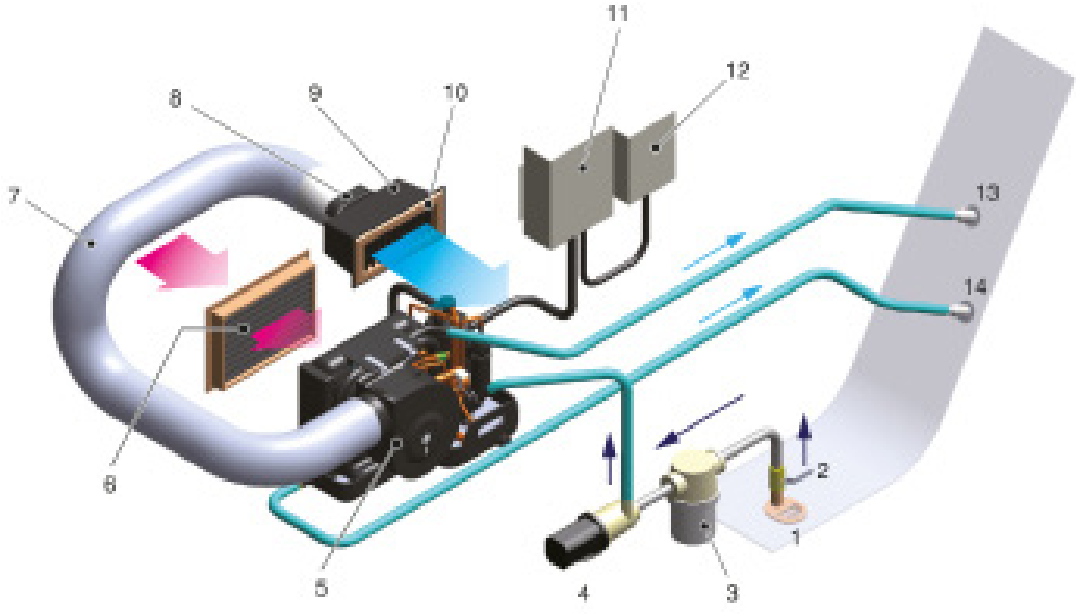
2.2 PLACEMENT OF THE AIR-CONDITIONING UNIT

TYPICAL INSTALLATION:

See the picture below for the installation of a self-contained air conditioner unit.



1. Scoop Type Thru-Hull
2. Ball Valve
3. Sea Water Strainer
4. Sea Wtaer pump
5. A/C unit
6. Return Air Grille
7. Flexible Duct
8. Duct Ring
9. Transistion Box
10. Supply Air Grille
11. Control Box
12. Starting Booster Outlet
13. Sea Water Outlet
14. Drain Outlet

2.3 INSTALLATION GUIDE

SAFETY WARNING!

Do not install the air conditioner in the bilge or engine compartment of the boat and make sure that the selected place is properly blocked from gases and vapours coming from these spaces.

The air conditioner unit should be placed on a horizontal surface (e.g. at the bottom of a cabinet or seat) and if possible it should be raised by 1-2 cm on one side to facilitate drainage of condensed water from the drain pan. The device can be installed to the selected place crosswise or lengthwise but it is important to ensure the continuous air supply of the device and within the condenser unit. Place the device so that you can have access for future service and maintenance.

2.4 ELECTRICAL BOX

Ensure proper ventilation for the electrical box, **especially on 12V models.** The unit generates heat during operation, so adequate airflow is essential. Mount the box near the evaporator, in the airflow path, without blocking the intake. Proper ventilation prevents overheating and ensures safe, reliable performance..

WARNING! Do not route the drain pipe to an area of the boat without a water outlet. The method of condensate discharge varies by vessel type; therefore, removing condensate from the boat is not part of the standard marine air conditioning system.

2.5 DISPLAY INSTALLATION

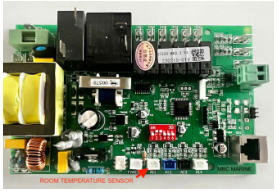
Before installing the display, observe the following guidelines: Install the control panel only on a surface that is located above the cabin's midpoint and is protected from both external and internal sources of heat and light. Only under these conditions can the built-in temperature sensor provide accurate readings.

Do not install the display in the following locations:

- In direct sunlight
- Near heat-generating equipment
- In a partition wall with possible heat flow behind the panel
- Directly under or above air intake or outlet vents

2.6 ROOM TEMPERATURE SENSOR

To operate correctly, the unit must measure the temperature of the room to be cooled. For accurate measurement, the external temperature sensor (black cable with copper tip), included in the package, must be connected to the AI1 socket on the control board.



2.7 DROP WATER

The unit generates condensate during COOLING mode, which is collected in its integrated drain pan. The installation location must allow for reliable drainage of this condensate at all times. The collected water should be routed through a drain line directly to the bilge—ideally near the vessel's automatic bilge pump.

If the air conditioning unit is installed in a location where gravity drainage to the bilge is not possible, the condensate must be collected and pumped out using a dedicated drain pump. When installing a drain pump, do not connect its outlet to the discharge lines of other systems.

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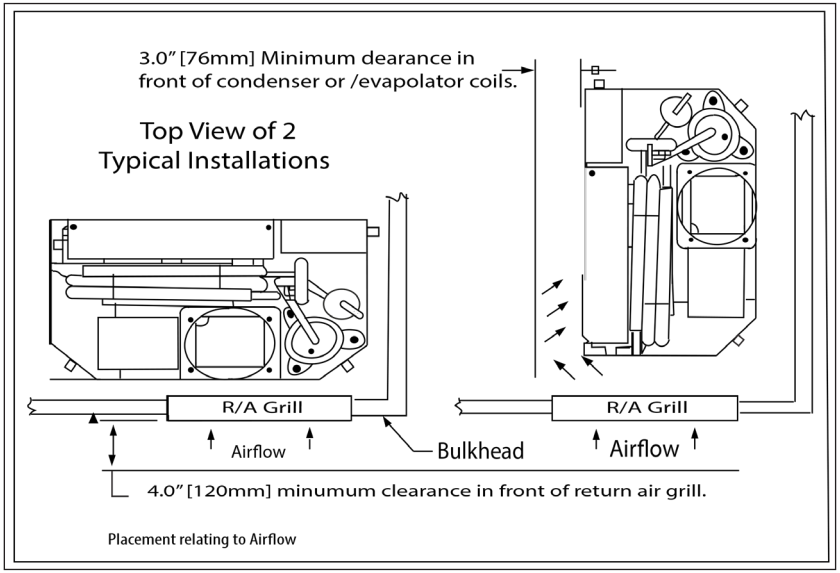
2.8 SUPPLY AIR SYSTEM

The proper air supply of the unit is essential for the operation of the appliance so when installing the air inlet consider the air volume demand of the certain type and choose the size of the air inlet according to the unit's specifications!

During installation keep a minimum distance of 60mm between the unit and the boat's furniture.

When positioning the unit pay attention to keep the compressor unit as far from the air inlet as possible to minimise noise level. The air conditioning unit may also be placed so that the built-in air inlet is not in the same air chamber with the unit but in this case free air flow must be ensured.



WARNING!

Lack of air supply leads to malfunction or even failure of the unit!

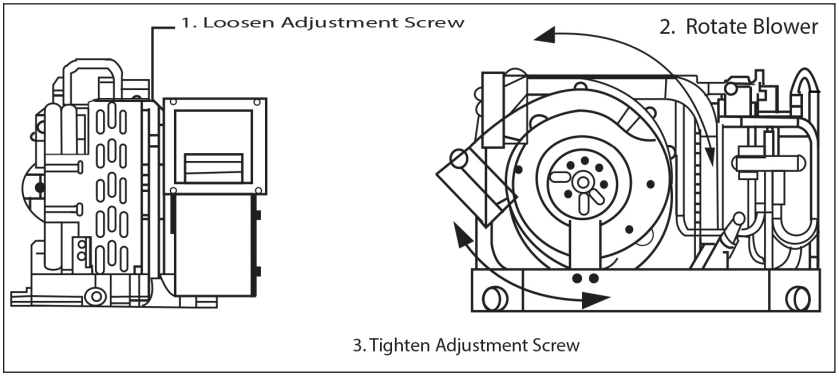
2.9 SETTINGS OF BLOWER

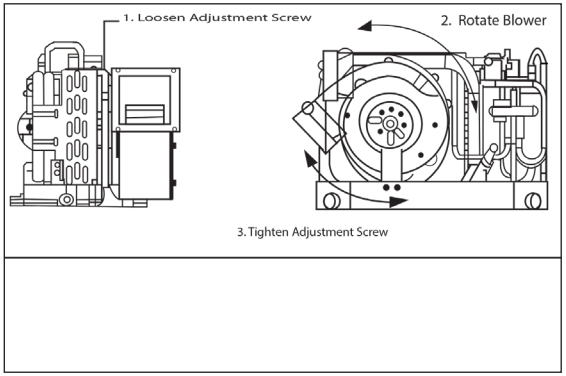
Before installation (if necessary), adjust the fan direction to ensure the most direct airflow through the ducting. The fan's air outlet can be positioned either horizontally or vertically. To adjust, loosen the fixing screw, position the fan to the desired direction, and then securely tighten the screw.

See Figure 3.

2.10 MOUNTING THE MARINE A/C UNIT

The unit's basic package includes four mounting brackets. During installation, these should be positioned—if possible—equally spaced along the edges of the drain pan. If space allows, mount the unit with a 2 cm tilt on one side to assist with proper condensate drainage.





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2.11 INSTALLING THE AIR DUCT

Unimpeded airflow is of paramount importance for the system to achieve proper performance. Always use the correct size and quality of air ducting with heat and sound insulation designed for air conditioning. During installation, the air duct must be protected from damage and, as far as possible, installed with minimal branching and bends, keeping the layout straight.

The total length of the air duct must not exceed 4 meters. The system is sensitive to reductions in duct size (e.g., from 150 mm to 100 mm), which may significantly reduce airflow efficiency.

Damaged or clogged air ducts obstruct airflow and reduce system performance. If the air duct is damaged during installation or during subsequent use, it must be repaired or replaced.

WARNING!

Systems are sensitive to air reductions, (e.g. from 150mm to 100mm) which result reduction of air flow efficiency.

During installation, avoid 90°-180° curves on the air duct because the bends are reduce the airflow by 25%)

2.12 INSTALLING THE AIR OUTLET

For better efficiency place the unit's air outlets as high as possible in the boat and also set the air vents slats up. By connecting a branched profile it is also possible to connect more air outlets to the unit. When using the branching piece the air distribution must be adjusted beforehand even before the pipes are installed by using the air deflector blade in the section.

WARNING!

The air outlet must not be directed towards the air intake as short circulating cycles can lead to a loss of performance!

2.13 THE WATER SYSTEM OF THE UNIT

SAFETY NOTICE!

If you do not have sufficient training to install the water system of the unit consult a qualified boat technician.. In saltwater environment - in case of longer stops - it is recommended to remove seawater from the system. Frost protection should be applied during fresh water use below -5C!

IMPORTANT WARNING!

The pump output on the PCB is not designed to drive high-current seawater pumps directly. The maximum allowable load is 3A. Please use a seawater pump with a maximum current draw of 3A, or install an external switch relay to control pumps with higher current consumption.

WARNING! Do not operate the system if seawater temperature drops below 7 °C.

The unit cannot extract sufficient heating energy from seawater below 7 °C, which may result in a system error.The unit cannot extract sufficient heating energy from seawater below 7 °C, which may result in a system error.!

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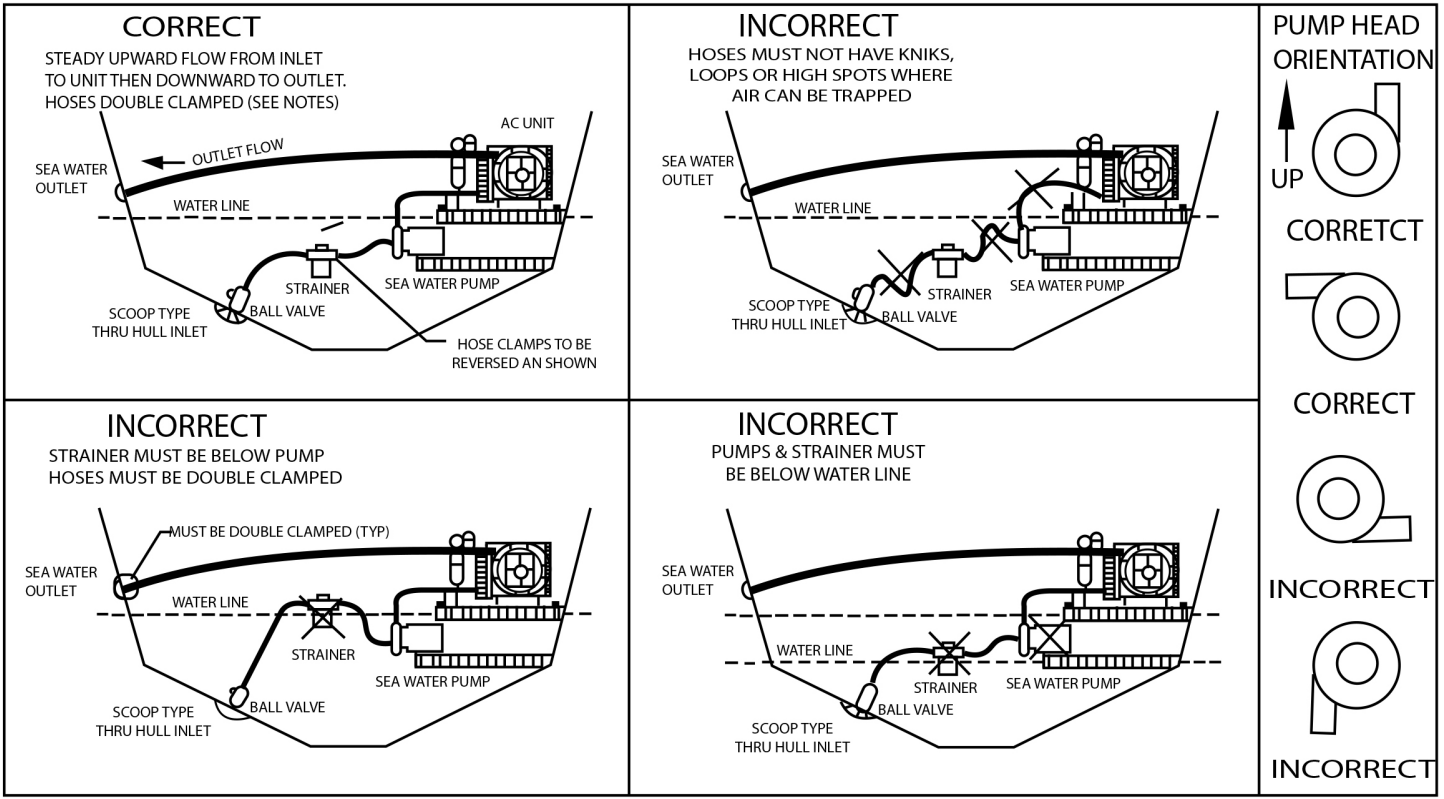
2.14 INSTALLATION GUIDE OF SEA WATER PUMP

Follow the guidelines below to properly install the water system of the marine air conditioner unit. See pictures below:



2.15 SEA WATER PUMP PLACEMENT

The place of the centrifugal pump and the water strainer should be chosen to be at least 30 cm below the waterline. The water pump can be installed horizontally or vertically. The centrifugal pump must be filled with water before first use.

If a self-priming pump is used, the circulation pump and the water strainer can be placed above the waterline but due to higher noise level preferably in a place where it does not disturb the living space of the boat. (Engine – room, compartments under seating surfaces, etc.)

WARNING!

Do not install the seawater discharge outlet within 150 cm of the seawater inlet, as short-circuiting of the flow may lead to decreased system performance.

SAFETY WARNING!

- The water system must have a direct shut off after the water inlet profile for the event of a malfunction or maintenance. Without a shut-off valve the system is life-threatening!
- Do not share the water supply and water flow of the air conditioning system with other systems (eg toilet, motor)!

The water-inlet must be positioned as deep as possible on the bottom of the boat. For better efficiency it is important to make sure to have the coldest water possible in the condenser. Install the water outlet over the waterline by maximum 150mm. The water drain should not be installed underneath the waterline as then the water circulation cannot be controlled.

2.16 SEA WATER PIPES AND WATER STRAINER

IMPORTANT WARNING:

Do not operate the system without a water strainer! Operation of the system without a water strainer will cause failure of the water pump and later the entire system failure. Replace the plastic case water strainer every 2 years! The water system must be able to be shut down during malfunction or maintenance so without installing a ball valve the system is life-threatening!

For the water piping use a plastic water hose with high-grade steel spiral reinforcement that is resistant to cross-sectional reduction during bending and twisting.

2.17 INSTALLATION GUIDE FOR SEA WATER SYSTEM

- Install the water intake fitting as deeply as possible and as low and close to the keel as possible. It is important to place the water-intake fitting so it can be easily accessible . When drilling the hull, ensure that the drill is of the correct size.
- Seal the inlet with sealant suitable for boats and underwater use. (Follow the instructions of the manufacturer of the sealant!)
- Attach a ball valve to the water inlet fitting and install the bronze hose end on the ball valve. The water system must be able to be

shut down therefore without installing a ball valve the system is life-threatening!

- Cleaning and making sure to take note of the flow direction arrow on the water strainer.
- Connect the water pipe from the water inlet fitting to the water strainer, from the water strainer to the pump and then to the lower condenser input - marked with an arrow - of the marine a/c unit.
- Connect the water pipe from the condenser outlet to the water outlet fitting.
- Seal the outlet with sealant suitable for boats and underwater use. (Follow the instructions of the manufacturer of the sealant!)
- During the installation of the water piping all kinds of bends, loops and use of 90 ° profiles should be avoided.
- Use thread sealing cord for all metal threaded connections. (Loctite 55)
- Connect a ground wire to the metal parts that come in contact with seawater including the seawater inlet and the air conditioner.
- When putting the boat in water check the sealing of the built-in fittings, connectors and connections.

All metal parts that come into contact with seawater should be connected to the boat's grounding. These include:

- the water inlet access,
- the pump (ground wiring harness)

WARNING! All metal components that come into contact with seawater including the water inlet fitting, the seawater pump, and the air conditioning unit's tray (if made by inox) must be connected to the boat's grounding system.

It is reccommend to install a sacrificial anode (zinc or aluminum) upstream of the seawater pump to protect the system — particularly the condenser — from corrosion. MBC Marine assumes no liability for any damage caused by electrolysis or corrosion if no sacrificial anode or grounding protection is installed in the system.

PART 3. OPERATION - CONTROL

Before starting to operate the device check the entire system as follows:

3.1 GENERAL CONTROL:

Check that there are no leaks in the water system.

- Check that the condensate can flow into the bilge; Fill water into the drain pan and check for unhindered water flow to the bilge and water basin. There should not be more than 2-3 cm of water left in the pan.
- Make sure that the air ducts and their insulation are properly aligned.
- Make sure that the air duct is clean to avoid damaging of the device.
- Before starting the machine for the first time check that the ball valves on the water system are open.
- Make sure that the unit's compressor does not emit any metallic or vibrating sound when it is switched on. It is important to maintain that the compressor moves free on the rubber beds as these rubber bucks are responsible for absorbing the vibration of the compressor.

3.2 ELECTRIC CONTROL:

- Check that the power source meets the rating instructions and the power requirements of the device.
- Check that the current and fuse are properly connected, properly grounded, and that all connections are secure.
- Check the power supply comes to the unit.

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PART 4 DISPLAY

The control panel of the MBC marine air conditioning systems is equipped with an intuitive display that provides real- time information about various operational parameters of the system. The data displayed allows users to easily monitor the system's status and performance, as well as quickly make any necessary adjustments.

MBC Marine SDC units are available with two types of displays.
The DC-3 standard display is included as part of the basic package.
Below are the functions of the CD-3 LCD display.

The unit is in sleep mode.

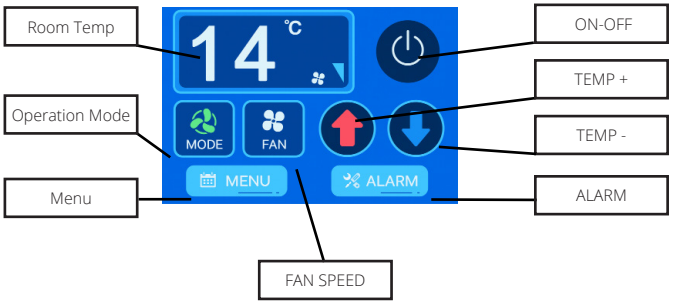
Tap the screen to access the main display.

This screen appears immediately after the unit is powered on.

4.1 DISPLAY FUNCTIONS AND SETTINGS

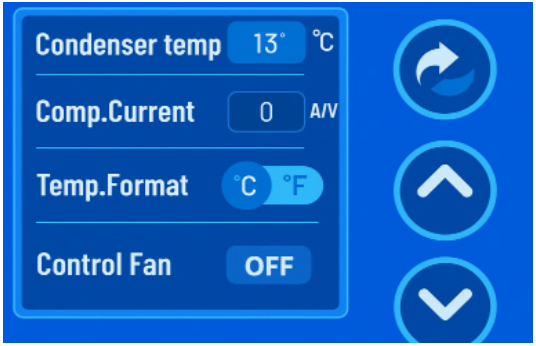
This screen is the default control interface of the MBC Marine air conditioning system. It allows the user to set the temperature, select the operating mode, adjust the fan speed, and access both the menu and alarm functions.

By pressing the temperature buttons, the display will show the desired temperature settings.



WARNING!

Wait at least 10 seconds to switch between each mode because the coolant flowing in the system needs time to return to the normal pressure volume.



PARAMETER	EXPLANTATION
COMPRESSOR	Indicates the current operational status of the compressor. OFF: The compressor is not running; no active cooling or heating is taking place ON: The compressor is running, and the refrigerant is circulating in the system.
PUMP	Indicates seawater pump status. OFF: No seawater flow – system cannot cool or heat. ON: Seawater is circulating. Note: Continuous pump operation is required for safe performance.
HEAT	This function applies only to units equipped with electric heating. Electric heating is not available on SDC models.
VALVE	Indicates the status of the 3-way valve. OFF in cooling mode, ON in heating mode.
Return temp.	Temperature of air returning from the cabin.
Evaporator temp.	Temperature at the evaporator coil, approximately equal to the air temperature of the fan air.

PARAMETER	EXPLANTATION
Condenser	Condenser temp.: Temperature of the condenser
Comp. Current	Real-time compressor current draw (A/V) Not availeable on SDC units.
Temp. Format.	Select between °C and °F display.
Control Fan	Determines whether the fan operation follows the compressor status automatically. OFF: The fan runs continuously, regardless of whether the compressor is active. ON: The fan only runs when the compressor is operating – this allows for more energy-efficient and quieter operation.

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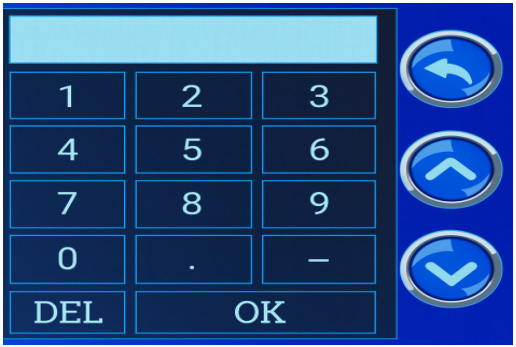
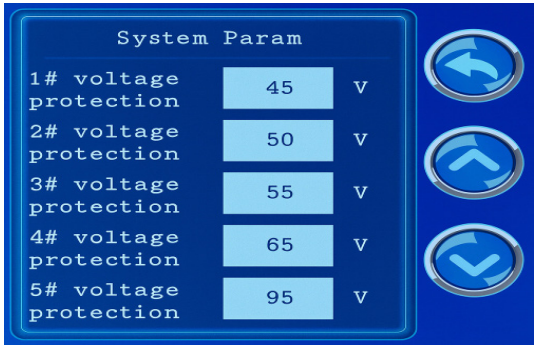


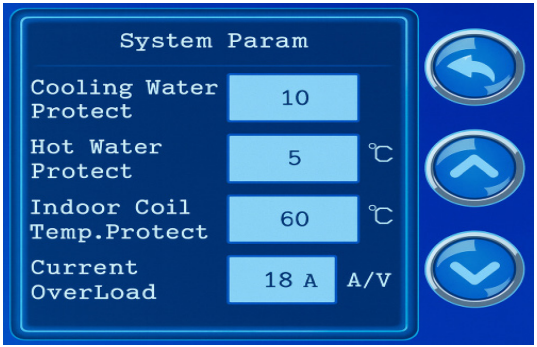
PARAMETER	EXPLANTATION
Pram. Settings	Technician-only menu, protected by PIN code.
Bright Adj.	Adjusts screen brightness.

IMPORTANT WARNING:

The PIN-protected menu provides access to fine settings and advanced configuration options of the unit.

We recommend that only qualified personnel make adjustments to factory settings, as improper changes may affect system performance.





PARAMETER	EXPLANTATION
Prameter Settings	The screen displays the fan speed settings in 5 steps. Each level can be individually adjusted between 35V and 99V, corresponding to the fan's power output. The screen shows the default factory settings.

PARAMETER	EXPLANTATION
Cooling Water Protect	This function defines the lower temperature limit for seawater cooling during cooling mode. If the incoming seawater temperature drops below the set value, the unit will automatically stops the compressor to prevent freezing or excessive cooling
Hot Water Protect	This setting is used in heating mode and defines the minimum allowable seawater temperature (used as the heat source). If the seawater temperature in the condenser approaches the set limit, the system will shut down the heating mode to protect the condenser from freezing. This function also provides protection against potential damage to the condenser caused by excessively cold conditions.
Indoor Coil Protect	Sets the maximum allowed temperature for the evaporator. if this limit is exceeded, the system will shut down and display Error 4 to prevent overheating.
Current Overload	This function is not available on SDC units

NOTE:

Adjusting the factory fan speed levels may be necessary in the following cases:

- To reduce airflow noise in compact or quiet cabin spaces
- To improve comfort in areas with unique ventilation characteristics.

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PART 5. **POWER REQUIREMENTS FOR ALL DC-TYPE AIR CONDITIONERS**

5.1 POWER REQUIREMENTS FOR ALL DC-TYPE AIR CONDITIONERS

Install a proper fuse (see the pic.)

A separate fuse or circuit breaker must be installed between the AC unit and the power source, so that the unit and cabling will be protected against overload. A “slow blow” ANL type fuse must be used to withstand the starting-up current of the compressor (see the table for fuse sizing). The fuse must be included in the ‘positive cable’, as close to the battery as possible.

Measure the total length of power cable The total length of the power cable determines the recommended cross section. Please check the correct cable size in the table.

Start by measuring the positive cable from the battery terminal to the fuse holder, then from the fuse holder to the ring terminal on the AC unit. Add these two - this is the total length of the positive cable.

Then measure the lengt

h of the negative cable, starting from the ring terminal on the AC unit to the negative batter terminal. Add this length to the total length of the positive cable. The result is the total cable length.

If you use a power rail (either negative or both) then the rail length must be included in the total cable length. Also, the rail cross section must be equal or larger than the selected cable cross section.

Improper power supply cables can lead to malfunction and permanent damage to the PCB.

MBC Marine does not provide warranty coverage for failures caused by undersized power supply wiring.

WARNING!

The total cable length is defined as the distance from the positive battery terminal, via fuse, AC unit and all the way back to the negative battery terminal.

5.2 SELECT CORRECT CABLE SIZE

Find the recommended power cable cross section by using the measured total cable length and the table shown below, rounding up to the next larger cable size.

Batteries are to be placed as close as possible to the AC unit. It is preferable for the AC unit to have its own battery (bank), independent from the starting and the domestic batteries.

All cables must be properly crimped with a matching terminal. It is acceptable to run multiple parallel cables on both the positive and negative terminal. The cross section is then calculated as the sum of individual cables.

SDC 12-7000,

Total cable length		Cable size required	
Meters	feet	mm2	AWG
0-3	0-10	16	6
3-6	10-20	25	4
6-12	20-40	35	2
12-24	40-80	70	2/0

SDC 24-7000 - SDC 48-16000

Total cable length		Cable size required	
Meters	feet	mm2	AWG
0-3	0-10	6	10
3-6	10-20	16	6
6-12	20-40	25	4
12-24	40-80	35	2

SDC 24-12000

Total cable length		Cable size required	
Meters	feet	mm2	AWG
0-3	0-10	10	8
3-6	10-20	16	6
6-12	20-40	35	2
12-24	40-80	50	0

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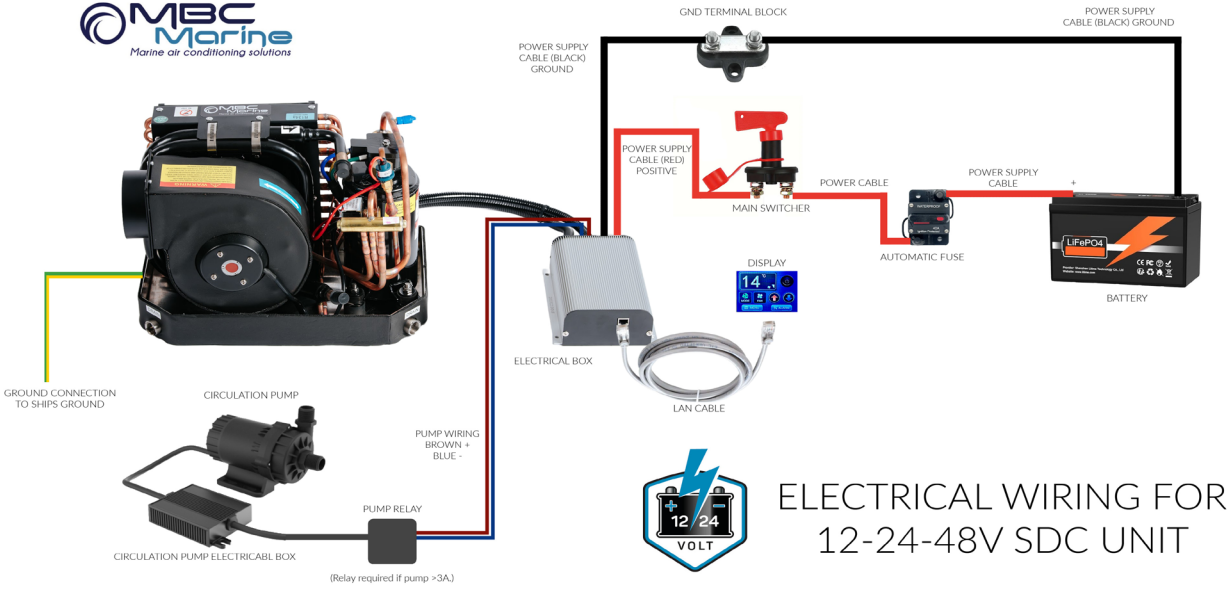
5.3 WIRING SHEME (SDC 12-24-48 V DC UNIT)



WARNING!
Check cable size according to AWG diagram if extended!

PART 6. **TROUBLESHOOTING**

Categorises then as follows:

6.1 UNDERSTANDING ERROR CODES

The MBC SDC units are equipped with intelligent control systems that automatically shut down the operation in case of a fault, displaying a specific error code on the controller screen. These error codes help identify the type of malfunction and guide users toward a quick resolution.

Using the table below and the corresponding detailed explanations, the user or installer can determine the cause of the issue and take the appropriate steps to restore normal system operation. Some faults are temporary, while others may require professional intervention.

Please read the descriptions in the table carefully, and only attempt corrective actions if you are confident in the procedure. The current draw values referenced in this documentation in relation to error messages are for informational purposes only. Actual measured values may vary depending on on-site conditions. Current draw is influenced by several factors, including:

- seawater temperature,
- air temperature and humidity, and the quality of the system's installation (e.g., air ducting, supply power cable sizing, connection quality, etc.).

ERROR CODE	ERROR DESCRIPTIONS	ISSUE	THREATHMENTS	RESUMES
1	Return air temperature sensor error	The temperature sensor is broken	Turn off the system	The device will restart automatically after the sensor has been replaced.
2	Evaporator temperature sensor error	The temperature sensor is broken	Turn off the system	The device will restart automatically after the sensor has been replaced.
3	Condenser temperature sensor error	The temperature sensor is broken	Turn off the system	The device will restart automatically after the sensor has been replaced.
4	Overheated evaporator protection	Compressor stops due to high temperature of evaporator in heating mode		After resolving the system restarts automatically
5	Coolant leak malfunction	Breakage of gas piping	Turn off the system	Do not use the system, contact a technician
6	Error message from main board (based on red light flashing)	All this malfunction are electrical issues	Check the red LED blinking.	Check the red lights flashes
A	2 short 2 long	Overcurrent protection		Check the correct current on the unit
B	3 short 2 long	Undervoltage protection		Check the correct voltage on the unit
C	4 short 2 long	Overvoltage protection		Check the correct voltage on the unit
D	5 short 2 long	Fail to start compressor		Do not use the system, contact a technician
E	2 short 3 long	Low voltage protection		Check the battery supply
F	3 short 3 long	Overload protection		Check the correct voltage on the unit
G	4 short 3 long	Main board overheating protection		After resolving the temp. on main board the unit restarts automatically
8	GAS pressure malfunction	Refrigerant high-pressure protection	The compressor turns off	Check the cooling water flow Check the air flow volume Check the gas in the unit"
9	Evaporator temperature protection	The evaporator is icing	The compressor turns off	After resolving the defrosting, the compressor restarts automatically
10	Sea water temperature protection	"- High water temp. in cooling mode - Low water temp. in heating mode"	The compressor turns off	Increase the cooling water flow Do not use the unit in 7c sea water degree below"
12	Compressor overcurrent error	The compressor's current draw exeeds max. limit	The compressor turns off	Check the battery voltage The power cable is too thin Check the connections Check the fuse"
15	Communication failture			"Check the LAN cable Replace the main board Replace the display"

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ERROR1 - Room Temperature Sensor Error

This sensor is responsible for measuring the room temperature. The white connector on the cable end + white slot on the PCB error indicates an issue with the room temperature sensor connected to the white connector and white slot.

Troubleshooting Steps:

- Check the connection between the white connector and the white slot:
- Ensure that the connection is secure and stable.
- Inspect the cables for any damage or disconnection.
- If the cable is damaged or the sensor is faulty, replace it with a new, compatible room temperature sensor.

ERROR2 - Evaporator Temperature Sensor Error

This sensor is responsible for measuring the evaporator temperature. The blue connector on the cable end + blue slot on the PCB error indicates an issue with the evaporator temperature sensor connected to the blue connector and blue slot.

Most Common Causes:

- Broken wire: If the wire is disconnected, the system detects an infinite OHM value, indicating a malfunction.
- Incorrect connection: The sensor is not properly connected to the main PCB (Printed Circuit Board).

Troubleshooting Steps:

- Inspect the wiring for any damage or disconnection.
- Ensure that the connector is securely attached to the PCB.
- Sensor Replacement:
- If the wire is damaged or the sensor is faulty, replace the sensor with a new one.
- Make sure the new sensor is compatible with the system.

ERROR3 - Condenser Temperature Sensor Error

This sensor is responsible for measuring the condenser temperature. The black connector on the cable end + black slot on the PCB error indicates an issue with the condenser temperature sensor connected to the black connector and black slot.

Most Common Causes:

- Broken wire: If the wire is disconnected, the system detects an infinite OHM value, leading to incorrect readings.
- Incorrect connection: The sensor is not properly connected to the main PCB (Printed Circuit Board), preventing the system from detecting the temperature.

Troubleshooting Steps:

- Check the black connector is securely and correctly connected to the black slot.
- Inspect the wires for any breaks or damage.

Sensor Replacement:

If the wire is broken or the sensor is malfunctioning, replace it with a compatible sensor.

ERROR 4 – Overheated Evaporator Protection

ERROR 4 occurs in HEAT mode when the evaporator temperature reaches the default 70°C (or a user-defined limit between 50–70°C). To prevent overheating, the system automatically shuts down.

Most Common Causes:

- The compressor will restart automatically once the evaporator cools.
- If this error occurs only once every 20–30 minutes, it is not considered critical.

Recommended Actions:

- Check the air system (intake/supply grilles and ducting) for proper sizing and unobstructed airflow.
- Ensure that air duct length does not exceed 4 meters.
- Avoid undersized supply grilles, which restrict airflow and cause excess heat buildup at the evaporator.
- Follow the installation manual's airflow guidelines.

Solution:

- Perform an air ducting check and adjust grilles or ducts as needed. Proper airflow ensures effective heat dissipation from the evaporator.

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ERROR5 - Refrigerant Leak Malfunction

ERROR 5 appears when a pressure drop occurs due to a refrigerant leak in the system.

Symptoms and Diagnosis:

- Pressure drop detected in the system.
- Oil in the base tray (typically in cases of severe pressure loss).

Solution:

A qualified technician is required for troubleshooting and repairs.

Pressure test with nitrogen: If the leak is significant, the escaping nitrogen will help locate the exact point of leakage.

Leak Detection:

- If the leak is not visible to the naked eye, use a leak detector tool while the system is pressurized with nitrogen to identify the issue.

Repair Process:

- The leak must be sealed by brazing (soldering) the hole to restore system integrity.

System Restoration:

- Repeat nitrogen pressure test to confirm the repair.
- Vacuum the system to remove moisture and air.
- Recharge the system with the specified type and amount of refrigerant.

ERROR6 – Further Diagnostics Required

When Error Code 6 appears on the display, it indicates a communication failure between the main controller and the inverter module. However, the appearance of ERROR6 on the display alone is not sufficient to identify the exact problem.

To determine the root cause of the issue, you must observe the red LED located on the side of the electrical box. This LED blinks in a repeating pattern with a specific number of flashes (e.g., 2 blinks – pause – 2 blinks).

Each blink - on the electical box - count corresponds to a specific internal fault code — for example, 2 SHORT 2 LONG blinks = Phase Current Overcurrent Protection

The number of blinks must be compared with the detailed fault code table provided in this documentation. This will help you identify the true source of the problem and apply the appropriate troubleshooting steps.

Tip: Always wait for the complete blink sequence, count carefully, and refer to the blink-to-error reference table for accurate fault identification.

ERROR6 – 2 SHORT 2 LONG - Overcurrent Protection

2 Short 2 Long blinking mean an overcurrent protection event in the DC power circuit.

This typically occurs when the system detects a gradual increase in current during normal operation, even though the supply voltage remains stable.

The protection is activated to prevent damage to the inverter electronics and other components. In most cases, this error appears 8–15 minutes after start-up, not immediately, which is a strong indicator of connection quality or insufficient ventilation around the control box.

Possible Causes

- Loose or oxidized cable connections at the unit's eye terminals - increased contact resistance - rising current draw.
- Degraded capacitor or cracked solder joint on the control board.
- Internal inverter fault resulting in unstable DC bus current.
- Poor ventilation or heat buildup around the control box.
- Control box mounted in a closed compartment without airflow, creating a heat trap effect.

Solutions

- Check all power cable connections at the eye terminals. Re-crimp or clean any loose or oxidized connections.
- Measure voltage at the unit's eye terminals and compare with battery voltage under load. Voltage drop should not exceed 0.3 V.
- Monitor current draw over time. If current steadily increases while voltage remains stable - internal inverter fault, control box replacement recommended.
- Improve ventilation - Relocate the control box to a well-ventilated area.
- Ideally mount the box near the evaporator suction side, where incoming air can cool the electronics. - Maintain at least 5 cm clearance around the box for air circulation.
- If the error persists after checking all external causes replace the control box (inverter module).

ERROR6 – 3 SHORT 2 LONG - Undervoltage Protection

3 Short 2 Long indicates the activation of the unit's undervoltage protection. This occurs when the voltage measured at the unit's eye terminals drops below the minimum operating threshold during start-up or operation. In DC systems, even a voltage drop of a few tenths of a volt can be enough to trigger this protection. Its purpose is to prevent inverter instability and compressor malfunction caused by insufficient supply voltage.

Possible Causes

- Undersized power cable cross-section - voltage drop under load.
- Loose or oxidized terminals and connections - increased contact resistance.
- Voltage drop at compressor start-up with long cable runs.
- Weak or undersized battery that cannot maintain stable voltage under load.
- BMS (Battery Management System) limitation in LiFePO4 batteries due to high temperature or low state of charge.
- Heating at terminal connections - increasing voltage drop during operation.

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Solutions:

Measure the voltage at the unit's eye terminals during start-up and continuous operation.

- Voltage drop between the battery and the unit should not exceed 0.3 V.
- Check and re-crimp all terminals, clean oxidized connections.
- Inspect cable length and cross-section:
- Shorten cable runs where possible.
- Increase cable size if necessary.
- Check battery health and verify that it can maintain stable voltage under load.
- For LiFePO4 batteries, verify that the BMS is not limiting voltage or current.
- Check terminal temperature — hot terminals usually indicate poor contact.

Tips:

- Use cables with larger cross-sections for longer cable runs.
- Keep all connections clean, corrosion-free, and properly crimped.
- Avoid unnecessary connectors or fuse holders that may increase resistance.
- Ensure the total voltage drop between the battery and the unit is below 0.3 V.
- Stable DC power supply is essential for reliable inverter operation.

Note:

- Undervoltage errors are most often caused by external electrical issues, not by the inverter electronics itself.
- For LiFePO4 batteries, BMS behavior can also trigger this fault therefore, a thorough check of the power supply side is essential.

ERROR6 – 4 SHORT 2 LONG - Overvoltage Protection

indicates the activation of the unit's overvoltage protection.

This occurs when the voltage measured at the unit's eye terminals rises above the maximum allowable operating level.

Overvoltage can cause inverter instability or even permanent damage, so the system automatically shuts down to protect its internal components.

Possible Causes:

- The charger or DC system output voltage is too high (e.g. above 14.4 V).
- BMS feedback spikes from LiFePO batteries during shutdown.
- Rapid voltage fluctuations that the inverter cannot follow.
- Oversized or poorly regulated charger (e.g. boost mode).
- Sudden load disconnection voltage spike in the DC bus.
- Poor voltage regulation or missing DC/DC stabilizer.

Solutions:

- Measure the voltage at the unit's eye terminals during operation and at the moment of the fault.
- Voltage must not exceed 14.4 V.
- Check charger settings and lower the output voltage if necessary.
- For LiFePO4 batteries, check whether BMS feedback spikes are causing the overvoltage.
- Install a DC/DC voltage stabilizer if required.
- If the error occurs shortly after start-up, check for inrush or voltage spikes at power-on.
- Inspect the DC power system layout — remove unnecessary elements that may cause unstable voltage behavior.

Tips:

- Keep the system voltage below 14.4 V at all times.
- Use a reliable, well-regulated charger.
- For LiFePO4 batteries, ensure the BMS does not generate voltage spikes during shutdown.
- If overvoltage occurs frequently, installing a DC/DC stabilizer is strongly recommended.
- Avoid poor-quality connectors, fuses, or extra junctions that can contribute to unstable voltage.

Note:

Overvoltage protection is activated automatically to protect the system. The root cause of this error is almost always on the power supply side, not within the inverter electronics. Properly regulated charging or using a DC/DC stabilizer can prevent this error completely.

ERROR6 – 5 SHORT 2 LONG - Compressor Start Failure

5 Short 2 Long indicates that the compressor failed to start. This protection prevents excessive inrush current or deep voltage sag on the inverter's DC power input. The fault typically occurs immediately after start-up and is most often caused by power supply or mechanical issues.

Possible Causes

- Significant voltage drop at compressor start-up (undersized or long cables, loose eye terminals).
- Weak battery that cannot maintain voltage during inrush current.
- BMS limitation in LiFePO4 batteries due to high inrush current.
- Mechanically stuck or failing compressor.
- Faulty relay or inverter driver circuit on the control board.
- Wiring issues or poor connection in the main power supply path.

Solutions

- Measure voltage at the unit's eye terminals at the moment of start-up.
- If voltage drops significantly (e.g. from 12 V down to 10–11 V), the problem is on the power supply side.
- Check and improve cable sizing (shorter and/or larger gauge, properly crimped terminals).
- Check the battery condition and capacity.
- For LiFePO4 batteries, verify that the BMS is not limiting current at start-up.
- If voltage remains stable but the error persists, inspect the compressor for mechanical blockage or failure.
- Check the relay and driver circuits on the control board; replace the panel if necessary.

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Tips

- During compressor start, the voltage should not drop below 11.8 V.
- Use cables with the proper cross-section and minimal length for the unit's rated power.
- All electrical connections must be tight, corrosion-free, and well crimped.
- For LiFePO4 batteries, ensure the BMS can handle the inrush current.
- If the compressor is mechanically stuck or blocked, repair or replacement is required.

Note:

This error is most often caused by power supply or compressor-side issues, not by the inverter electronics itself. If the voltage is stable but the compressor still fails to start, the control board or compressor is likely defective.

ERROR6 – 2 SHORT 3 LONG - Low Voltage Protection

2 Short 3 Long indicates that the supply voltage has dropped below the minimum operating level during operation. This protection is triggered when the unit no longer receives sufficient voltage for stable operation under load. The fault is similar to 3 short 2 long, but here the voltage drop occurs during operation, not at start-up.

Possible Causes

- Undersized or excessively long power cables - voltage drop under load.
- Oxidized, loose, or poorly crimped terminals.
- BMS limitation in LiFePO4 batteries due to high temperature or low SOC (state of charge)
- Weak or discharged battery / insufficient charger power - voltage drops under load.

Too many devices drawing power on the same DC line.

The charger's output power is not sufficient to maintain stable operation over time - gradual voltage drop.

Solutions:

- Measure the voltage at the unit's eye terminals during operation under load. - If the voltage drops below 11.5 V, this indicates a power supply issue.
- Check cable length and cross-section - upsize if needed.
- Check all terminals, clean and re-crimp as required.
- Check the battery / charger capacity and performance.
- For LiFePO4- batteries, verify that the BMS is not limiting the current.
- If operating from a charger, confirm that it can provide stable voltage and sufficient current.

Tips:

- Use appropriately sized power cables, especially for higher-capacity units.
- Keep all terminals clean, corrosion-free, and properly crimped.
- Ensure the battery / charger has enough capacity for continuous operation.
- The voltage should not drop below 11.5 V during operation.
- For LiFePO4 batteries, check BMS settings and temperature limits.

Note:

This fault is almost always related to power supply issues. With proper cabling, solid connections, sufficient battery / charger capacity, and correct BMS settings, can be fully prevented.

ERROR6 – 3 SHORT 3 LONG - Overload Protection

3 short 3 long indicates the activation of the unit's overload protection. This occurs when the system's current draw gradually increases or suddenly exceeds the allowable limit. The protection prevents overheating of the control board and inverter module.The fault typically appears after 5–15 minutes of continuous operation, not at start-up.

Possible Causes

- Oxidized, loose, or weak connections - gradual voltage drop - rising current draw.
- Inadequate ventilation - control box overheats - inverter compensates - load increases.
- Undersized or excessively long power cables.
- Weak battery / insufficient charger capacity, unable to maintain stable voltage under load.
- BMS behavior in LiFePO4 batteries causing voltage fluctuation.
- Voltage instability from the DC power source.

Solutions:

- Measure current and voltage at the unit's eye terminals throughout the full operating cycle.
- If current rises steadily while voltage remains stable - likely inverter/control board overheating.
- If current fluctuates together with voltage - power supply issue (wiring, connections, battery / charger).
- Check and improve cable connections and cross-sections.
- Check the battery / charger performance and capacity.
- Ensure proper ventilation: ideally mount the control box close to the evaporator suction side to benefit from airflow.
- If the issue persists, likely inverter/control board overheating or electronic failure.

Tips:

- Use adequately sized power cables and keep cable runs as short as possible.
- Keep all terminals tight, corrosion-free, and well crimped.
- Ensure sufficient battery / charger capacity to handle continuous loads.
- Maintain at least 10 cm of free airflow space around the control box; placing it near the evaporator suction side is recommended.

Note:

This error is almost always related to power supply quality or ventilation, not a compressor failure. With proper power delivery, cable sizing, and good ventilation, this error is fully preventable. If it persists, an inverter or control board fault is the most likely cause.

ERROR6 – 4 SHORT 3 LONG - Overheat Protection

4 Short 3 Long indicates that the control box temperature has exceeded the maximum operating limit. This protection is designed to automatically shut down the inverter electronics in order to prevent permanent damage. This fault typically appears gradually after longer periods of operation and is usually caused not by inverter failure, but by insufficient ventilation or heat buildup.

Possible Causes

- Control box installed inside a closed compartment with no ventilation.
- Insufficient airflow around the control box heat accumulation overheating.
- High ambient temperature, especially during summer operation.
- Blocked airflow paths or clogged filters.

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- Extended operation at low fan speed - inadequate air exchange.
- Heat generation from electronic components (inverter module, relays).

Solutions

- Verify that the control box is not installed in a closed, unventilated space.
- Ensure adequate airflow around the control box.
- Ideally, mount the control box near the evaporator suction side, so the intake air naturally cools the electronics.
- Maintain at least 5 cm of free air space on all sides.
- Clean blocked filters or obstructed airflow paths.
- If the fan runs at low speed for long periods, increase the fan speed or provide stronger airflow.
- In high ambient temperature conditions, consider adding extra ventilation or a small auxiliary fan.

Tips

- Do not install the control box behind panels or inside closed compartments.
- Always provide steady airflow around the electronics.
- Positioning on the suction side of the evaporator ensures natural cooling.
- Maintain a minimum 5 cm clearance on all sides of the control box.
- Regularly check ventilation paths, filters, and fan operation.

Note:

4 Short 3 Long is not an inverter failure, but almost always a ventilation or installation issue. Providing adequate airflow and proper positioning can fully prevent this fault.

Continuous overheating can significantly shorten the lifetime of the control board and inverter module

GENERAL TROUBLESHOOTING GUIDELINES

Most error codes do not indicate an internal failure, but rather installation or operating issues. DC inverter systems are sensitive to voltage stability, cable quality, and ventilation — most faults can be traced back to these factors.

Recommended Check Sequence

- Power Supply – Measure voltage at the unit's eye terminals at start-up and during operation. Max voltage drop: 0.3 V.
- Wiring – Check cable cross-section, length, and connection quality (tight, clean, corrosion-free).
- Ventilation – Ensure proper airflow around the control box with at least 5 cm clearance.
- Battery / Charger & BMS – Check capacity and stability. For LiFePO batteries, verify BMS behavior.
- If the fault persists – Inspect or replace the control board if a panel failure is suspected.

Key Point:

Proper power supply, correct wiring, and good ventilation prevent most errors and allow for quick and efficient troubleshooting.

ERROR 8 - High Gas Temperature Error

ERROR 8 occurs due to high gas pressure and temperature, indicating a disruption in the condensation process. As a result, refrigerant pressure rises to critical levels, leading to compressor overload and a safety shutdown.

Possible Causes:

- Seawater Flow Issues: If seawater flow decreases or stops, the condenser cannot dissipate heat properly. This leads to inadequate refrigerant condensation and increasing sea water flow.

Potential Causes of Seawater Flow Issues:

- Malfunctioning or air-locked seawater pump.
- Clogged seawater filter.
- Blocked water intake or piping system.

Insufficient Air Circulation:

If the fan cannot generate sufficient airflow, the heat exchanger fails to dissipate heat effectively, leading to excessive refrigerant pressure.

Possible Causes of Insufficient Air Circulation:

- Overly long air ducts (>4 m)
- Increased airflow resistance leads to pressure drops and reduced efficiency.
- Undersized intake and exhaust grilles - If the grilles are too small, the fan cannot circulate enough air, causing the condenser to overheat.

Faulty high pressure sensor (Green pressure sensor) In rare cases, the high-pressure sensor may fail, causing a false alarm.

Testing the Sensor:

- Short-Circuit Test: Temporarily short the two sensor wires—if the system restarts, the sensor is faulty.
- Mechanical Sticking: Gently tap the sensor with a screwdriver handle to see if it resets.

WARNING! Shorting the sensor is for testing purposes only! Operating the system without a functional pressure sensor is not recommended.

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ERROR 9 - Evaporator Temperature Protection: DEFROSTING

ERROR 9 indicates the beginning of evaporator icing.

To prevent damage, the system automatically activates the Defrosting process, temporarily stopping the compressor. Once defrosting is complete, the system will restart within a few minutes.

Possible Causes:

- Cold sea water temperature:
- When seawater is still cold (13–16 °C in early summer) while the cabin temperature is high, ice may form on the evaporator. This phenomenon disappears later in summer as seawater temperatures and air humidity increase.

Low Refrigerant Level:

- If the issue persists even in hot summer conditions, a refrigerant leak or insufficient refrigerant charge is likely the cause.

Inadequate Airflow:

- Low fan speed, insufficient intake air, or restricted airflow prevents proper heat dissipation from the evaporator, leading to icing.

Undersized Supply Air Grilles:

- If the grilles at the end of the air duct system are too small, cold air cannot escape efficiently, causing frost buildup on the evaporator surface.

Solutions:

- Ensure properly sized intake and supply grilles for optimal airflow.
- Check fan operation and speed to ensure proper heat exchange.
- Check seawater temperature at 12-14°C, icing is a normal phenomenon.

System Cleaning:

- Remove any obstructions restricting airflow.
- Check and clean the evaporator air dust filter if necessary.

Air Duct Inspection:

- Ensure the air ducting system, including intake and supply grilles, is correctly sized and free from blockages.

Refrigerant Level Check:

- If refrigerant is low, recharge the system with the correct amount according to specifications.

NOTE! The most common consequence of insufficient airflow is evaporator coil freezing

ERROR 10 - Sea Water Temperature Protection

ERROR 10 is triggered when the seawater temperature is too cold (in heating mode) or too hot (in cooling mode). To protect the condenser, the system automatically shuts down if seawater temperature falls below 2-3°C in heating mode or exceeds 35°C in cooling mode.

Sudden mode switching (Heating to Cooling):

- The refrigeration cycle reverses, causing the condenser to act as an evaporator, which the system cannot properly handle.
- This issue is often temporary and may resolve after a restart.

Extreme seawater temperatures:

- Too cold seawater in heating mode (2-3°C).
- Too warm seawater in cooling mode (35°C or above).

Solutions:

- Check seawater conditions: Ensure that the seawater temperature is within the specified operating range.
- Restart the system: A simple restart often resolves the issue.
- Proper mode switching: Always wait 5 seconds before the transition between heating and cooling is complete on the display.

ERROR 11 - Incorrect Connection

ERROR 11 appears due to a faulty connection between the control unit (PCB) and connectors.

Possible Causes:

- COM1 and DI3 connector issues: The connectors are not properly attached to the PCB.
- Damaged LAN cable: A faulty or damaged LAN cable may cause data transmission errors.

Solutions:

- Check all connections: Ensure that the COM1 and DI3 connectors are securely attached to the PCB.
- Inspect the LAN cable: Check for any damage or faults and replace the cable if necessary.
- Restart the system: After confirming that all connections are correct, restart the system to clear the error.

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ERROR 12 - Compressor Overcurrent Error

ERROR 12 appears when the compressor's current draw exceeds the specified maximum limit.

Most Common Causes:

- Insufficient Water Circulation: If the condenser does not receive proper cooling, the compressor has to work harder, increasing current draw. Possible reasons include:
- Faulty water pump
- Clogged seawater filter
- Blocked water system
- Air in sea water pump

Low Supply Power Voltage

- If the power supply is unstable or too low, the compressor may draw excessive current to compensate. (see PART 5 16-17 pages)

Other Possible Causes

- Refrigerant shortage, leading to excessive compressor load.
- Loose electrical connections or contact issues in power wiring.
- Dirty condenser, which reduces heat dissipation and increases compressor strain.

Solutions:

Check Water Circulation:

- Ensure the water pump is functioning properly.
- Clean the seawater filter and check for blockages in the water system.

Check Power Supply

- Measure the current draw on the output wire at the end of the electrical box before starting the unit, and compare it with the factory specifications.
- Verify that the cable sizing complies with the recommended dimensions provided in the technical specification. (See page 17.)
-

ERROR 15 - Communication Failure

This error indicates a communication failure between the PCB and the display.

Solutions:

- Replace the LAN cable
- Replace the display
- Replace the PCB if the issue persists

Improper power supply cables can lead to malfunction and permanent damage to the PCB. MBC Marine does not provide warranty coverage for failures caused by undersized power supply wiring.

PART 7. **WARRANTY**

7.1 MBC Marine – Limited Warranty

MBC Marine provides a limited warranty for its marine air conditioning systems, covering defects in materials and workmanship.

The purpose of this warranty is to ensure the reliable and proper operation of the unit for the original end-user within the defined warranty period.

If a product is found to have a verified defect in material or workmanship during the warranty period, MBC Marine, at its sole discretion, may repair or replace the defective component(s), or refund the purchase price partially or in full.

In the case of a refund, the contractual relationship is considered terminated and no further claims may be made by the owner

7.2 Warranty Period

The warranty duration is as follows: For registered units installed by an official MBC partner: 2 years full warranty.

For unregistered units or those not installed by an MBC partner: 1 year (first 6 months include parts and labor; last 6 months cover parts only).

The warranty period begins on the date of purchase, the date of installation, or - if part of an OEM installation - the date the vessel is delivered to the end-user. However, under no circumstances shall the warranty period exceed 3 years from the manufacturing date.

The manufacturing date can be verified via the serial number through MBC Marine's customer service.

7.3 Product Registration

To fully benefit from the 2-year warranty, we recommend registering the product. Registration can be completed online at www.mbc-marine.com.

If the product is not registered, a valid proof of purchase must be provided to initiate any warranty claim.

NOTE!

Failure to properly ground and connect the unit to the water system or the electrical system and improper installation work will void the warranty.

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7.4 WARRANTY EXCLUSIONS

This warranty does not apply in the following cases:

- Normal wear and tear (e.g., filters, fuses).
- Additional labor costs for the removal or reinstallation of the system.
- Damage occurring during transportation or improper storage.
- Improper installation that does not follow official MBC Marine installation guidelines.
- Corrosion, improper maintenance, misuse, or external damage.
- The warranty will be void if the unit is not properly grounded against electro-corrosion.
- Unauthorized modifications, use of non-genuine parts, or repairs by non-authorized personnel.
- Water damage to electrical components such as control boards or displays.
- Failures due to insufficient winterization.
- Use of unauthorized refrigerant types.
- Any indirect, incidental, or consequential damages (including travel costs, lost time, financial loss, or personal injury).

7.5 Final Provisions

MBC Marine reserves the right to amend this warranty policy at any time without prior notice, especially to comply with national or EU legislation governing warranty rights.

UNIT PARAMETERS		SDC12-7000	SDC24-7000	SDC24-12000	SDC48-16000
Power supply	Voltage	DC12V	DC24V	DC24V	DC48V
COOLING					
Capacity	BTU/hr	7.000	7.000	12.000	16.000
Rated power	kW	0.45	0.56	0.72	0.96
Rated current A	Normal	20-33	9-11	18-20	16-18
Rated current A	ECO	12-18	7-9	10-12	11-12
HEATING					
Capacity	BTU/hr	8.000	8.500	13.000	17.000
Rated power	kW	0.54	0.60	0.8	1.2
Rated current A	Normal	22-38	18-20	40-42	23-25
Rated current A	ECO	14-23	10-12	24	15-17
Seawater flow	m3/h	0.55	0.6	0.9	1.2
Air flow	m3/h	350	350	450	600
Noise level	dB(A)	50	less 50	less 50	55
Width	mm	380	380	490	500
Height	mm	298	298	300	330
Depth	mm	200	200	285	490
Weight	kg	18	18	22	24
Refrigerant type		R134A	R134A	R134A	R134A
Air duct diameter	mm	100	100	125	150
Sea water pipe diameter	mm	16	16	16	16

PART 8. KEY INSTALLATION NOTES

- Fuse first! Always install the fuse close to the battery to protect the circuit.
- Use correct cable size based on system voltage and cable length. See: page 21
- PCB pump output is limited to 3A – use a switch relay for larger pumps.
- Use high-quality, properly sized cable terminals to ensure safe and secure electrical connections.
- Mount the electrical box in a ventilated area, not in a sealed compartment. See: page 6
- Free airflow – Ensure unobstructed airflow in and out of the unit during installation. See: page 11
- Seawater system – Follow all seawater system installation guidelines to avoid errors caused by insufficient water flow. See page 12-15
- Always raise one side of the indoor unit by at least 1–2 cm to ensure proper condensate drainage from the drain pan.
- Install the seawater strainer in an easily accessible location, at least 30 cm below the waterline. This helps reduce the risk of airlock and prevents the pump from running dry.
- Do not share the seawater circuit with other systems (e.g. toilet or engine cooling). Doing so can cause serious flow issues and system error codes. See page 14
- Install a zinc or aluminum sacrificial anode upstream of the pump to protect the condenser and other metal components from electrolysis and corrosion. See page 15
- Connect all metal parts in contact with seawater to the boat's grounding system, including the seawater inlet fitting, the pump, and the chassis of the air conditioning unit.
- Avoid 90° or 180° bends in the air ducting, as these can reduce airflow by up to 25%. See page 11
- Do not install the display in direct sunlight, near heat sources, or in walls with heat behind them. Improper placement can cause inaccurate temperature readings.
- Errors related to refrigerant pressure and temperature (e.g. ERROR 8, ERROR 10) are often caused by insufficient seawater flow or pump failure — always check the seawater system first.

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PART 9.LEGAL DISCLAIMERS AND LIABILITY

MBC Marine has prepared this installation and user guide based on the most current information available.

However, due to the nature of its use, the guide does not cover all possible user needs or questions.

We recommend contacting our experts for any specific inquiries or unique requirements.

While every precaution has been taken to ensure the accuracy of this guide, MBC Marine is not liable for any errors or omissions, nor for any damages arising from the proper or improper use of the product or the information provided herein.

CE MANUFACTURER'S DECLARATION OF CONFORMITY

Name and address of manufacturer:
MBC Marine Ltd., 2049 Diósd, Petőfi Sándor 39/A
08 November 2019.

We hereby certify that the designing and manufacturing of

Marine air conditioning units

were performed in accordance with the following specifications of the following standards:

EN 55014-1 2011/65/EC (RoHS), EN 55022, EN 55024,, EN 61000, EN 60950-1, EN 301 489-1, EN 301 489-18.

According to the above, the product :
Marine air conditioner: **SDC12/07 - SDC24/07 - SDC24/12 - SDC48/16**
CONFORMS

to the specifications of standards and directives and to the conditions of healthy and safe use indicated below:

NUMBER, ABBREVIATED NAME OF DIRECTIVE	TITLE
EN 55014-1	Electromagnetic compatibility. Requirements for household appliances, electric tools and similar apparatus. Part 1: Emission
EN 61000-3-2	Electromagnetic compatibility (EMC). Part 3-2: Limits. Limits for harmonic current emissions (equipment input current ≤16 A per phase).
EN 61000-3-3	Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current ≤16 A per phase and not subject to conditional connection
IEC 61000-4/2/3/4/5/6/11	Electrostatic discharge, radiated electromagnetic field, electrical fast transients, surge immunity, conducted disturbances, voltage dips immunity.
2011/65/EC (RoHS)	Use of certain hazardous substances in electrical and electronic equipment

Manufactured and marketed fixture conform to the specifications indicated above as the following:

PRODUCT FEATURES	RESULT	TESTING/EVALUATION METHOD
Disturbance power emission	Pass	EN 55014-1
Harmonic current emission	Pass	EN 61000-3-2:2006 + A1: 2009 +A2:2009
Voltage fluctuations and flicker	Pass	EN 61000-3-3:2008
Electrostatic discharge, radiated electromagnetic field, electrical fast transients, surge immunity, conducted disturbances, voltage dips immunity.	Pass	IEC 61000-4-2/3/4/5/6/11
Hazardous substances contents	Pass	Chemical quantitative analysis

These directives apply to full compliance with the installation and operating instructions issued by MBC Marine.

The data here in above are verified by:
MBC Marine Ltd., 2049 Diósd, Petőfi Sándor 39/A

Last two digits of the year of CE marking: **19**

MBC MARINE KFT.
1028 Budapest,
Vízesés u. 8/A

Executive Director

CE