

CLION-MARINE

HVAC SYSTEMS



COMMERCIAL VESSELS

A team of technical climate control experts with over twenty five years' experience in the specialist mobile markets, (marine, automotive, military, and offshore) have designed a complete range of Heating, Ventilation and Air Conditioning (HVAC) systems for yachts.

The goal is to develop reliable, high quality, easy-to-install, user-friendly air conditioning systems with great performance and optimal comfort levels. All the Clion-Marine systems are engineered, developed, and produced within the Netherlands and Germany. Our systems are tested under the most extreme conditions and are designed for continued use under the most extreme conditions.

Engineering, commissioning, installation and servicing

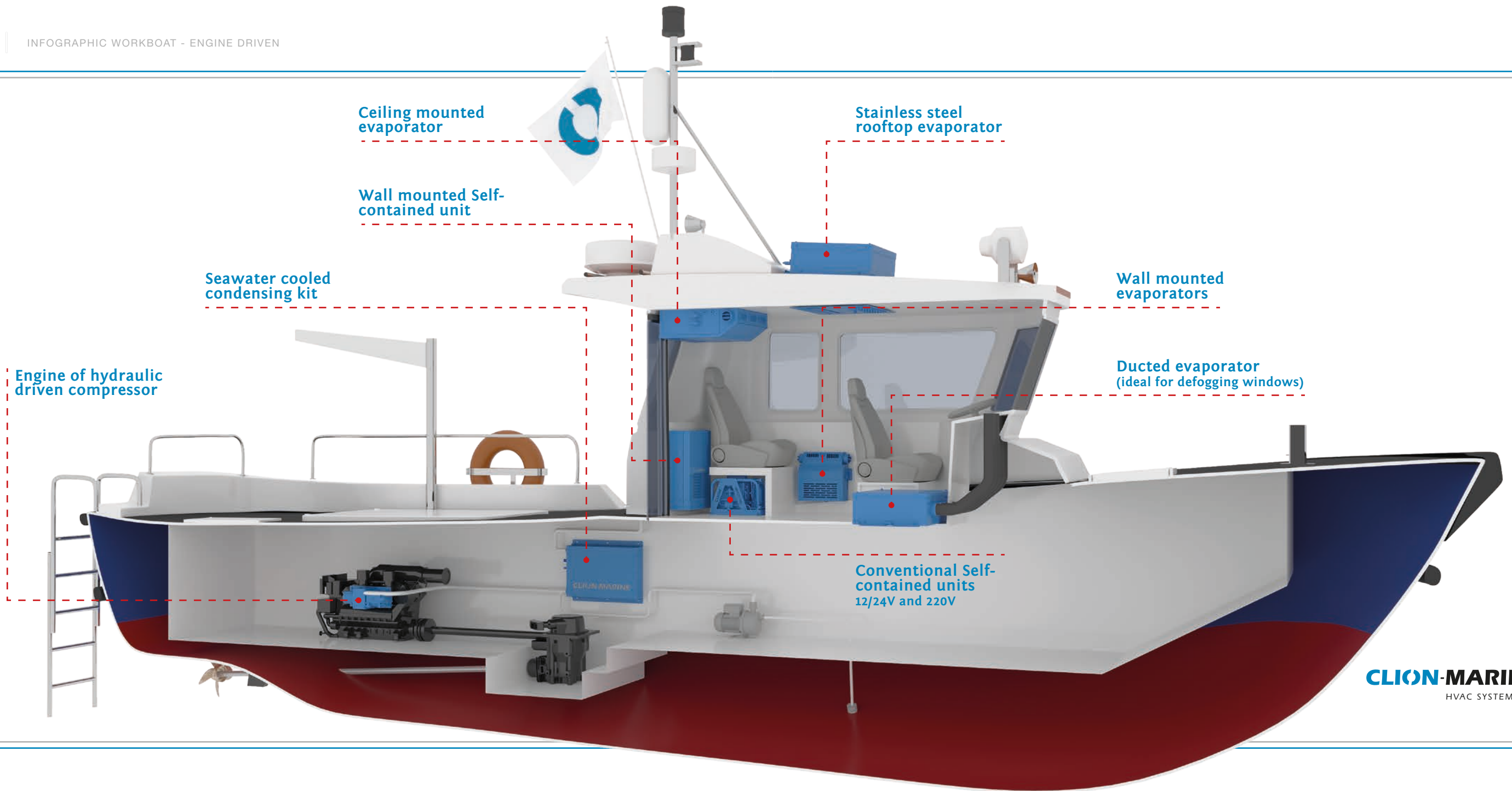
Clion-Marine can provide additional engineering services such as, heat load calculations, duct plans, chilled water plans, pressure tests, etc.

Our service engineers can also visit your project site during the build so that you can be assured of the very best installation. Following the completion of the installation, the system will be commissioned and inspected by our service engineers. If required, Clion-Marine can install a complete (Turn Key) system.

The Clion-Marine headquarters is based in the Netherlands and is supported by our own service workshops across the Benelux countries. Our worldwide network of dealers and distributors ensures global support throughout the world.



Clion-Marine has more **25** years of experience.





Smaller commercial vessels with no 220V power supply available can still be air conditioned with Clion Marine. Clion Marine has designed a complete range of systems for this market. Parasitic load (like the car compressor) or hydraulic-driven compressors can be fitted to the existing engine or hydraulic pump.

With the provision of 12V and 24V rooftop and Self-contained units we complete our program for commercial vessels. We provide a complete range of evaporators with integrated heating coils for rooftop, ceiling, or wall mounting.

We provide complete kits which include refrigerant hoses, pre-wired cable looms, and controls. And if it is not a standard feature, we are happy to find a solution for all of your HVAC requests for any vessel. If needed, we can build a custom model for your project. Our own certified technical engineers can provide a full service for installations, filling the refrigerant, and commissioning.





In a chiller system, a water and glycol mix is circulated around the boat in a sealed, insulated pipe called the loop. The loop has individual Air handlers controlling the temperature and humidity in every room. Heat is absorbed from each area of the boat and passes through a chiller where the heat is dissipated into the seawater and pumped overboard.

The Clion-Marine chiller system is ideally suited to yachts with multiple areas. Instead of many Self-contained units with staggered start up loads, the central chiller system allows better electrical management on the boat. The chillers have no start up loads, and as the required temperatures are achieved, the chillers automatically slow-down and draw less power. If you are working on a low shore supply, pressing the ECO icon on the full colour touchscreen will limit the electrical load by +/- 40%.

Clion-Marine manufacture reverse cycle, inverter-driven chillers producing both cooling and heating from one machine. Having **no peak load during start-up**, the chillers have a very low power consumption level and automatic capacity modulation minimises the amount of energy used without any compromises. Furthermore an extremely silent operation is assured because Clion-Marine chillers are encased in solid stainless-steel panels.

The control box has full EMC-protection, a pre-wired cable loom and a mounting bracket for easy installation near the chiller. The chillers are fully CE marked.

Unique status screen

Pressing the status icon on the touchscreen will provide you with any information you need on water temperatures (seawater in/out, chilled water in/out), status, and running modes. Even the refrigerant pressure is displayed. This status screen is a simple and unique tool allowing engineers to check the system status as well as diagnosing any problems. If required, you can always send a photograph of the status screen to Clion-Marine and it will provide any information needed for servicing and support.



Chiller status display



Chiller unit

Integrated heating system

An external diesel heater or electrical heater can easily be integrated into the system. The controls for an external heater are provided as standard in our control box.

Central monitoring

All our components can easily be integrated into your central monitoring system.

Multiple chiller configuration

We provide complete kits with multiple chillers that are on frames, including manifold kits.

Technical specifications Chillers				
	CH-IN 51.0	CH-IN 87.0	CH-IN 135.0	CH-IN 270.0
Capacity (BTU/h)	16.300-51.500	27.500-87.000	39.000-135.000	78.000-270.000
Nominal Capacity (kW)	4.7-15.1	8.0-25.5	11.5-39.5	22.75-79.0
Maximum Capacity (BTU/h)	67.000	95.000	149.000	298.000
Maximum Capacity (kW)	19.5	27.5	43.5	87.5
Voltage ± 10%	200-240V/50/60Hz/1F	380-480V/50/60Hz/3F	380-480V/50/60Hz/3F	380-480V/50/60Hz/3F
Power consumption (A)	4.18-13.95	3.17-9.57	12.0-17.5	24.0-35.0
Power consumption (start) (A)	<2	<2	<2	<2
Weight (kg)	56.00	71.00	201.00	-
Dimensions (mm)	564*360*455	564*360*518	830*380*675	890*836*730
Dimensions CB (mm)	340*245*250	400*245*273	340*245*250	INTEGRATED





The Clion-Marine Air handlers are designed with reverse inclined impellers giving high velocity air flow at slow rotation speeds. This produces a very strong but quiet airflow which can overcome static pressure in ducts and grills. The speed of the fan is controlled by a 0-10V DC speed controller which eliminates the hum generated at low speeds by conventional fans. Each Air handler has nine speeds which can be operated manually or in automatic mode.

The Air handlers have a unique controlling system which guarantees an extremely short cool-down time. In auto mode the fans will gradually slow down or speed up to reach the pre-set temperature. The Air handlers are equipped with three-way valves controlling the flow of water through the coils. On reaching the desired temperature in the room, the valve will close diverting the water back to the loop. This saves energy and allows the cooling to be used in other areas. The Clion-Marine coils are coated to avoid corrosion and fitted with deep stainless-steel condensation drain pans and anti-slop foam. Each Air handler can accommodate up to three ducts without the use of bulky splitters (Y or T-pieces).

Pre-wired cable loom with connectors and sensors

The control boxes contains automatic fuses for protection. Pre-wired cable looms and sensors with polarised male plugs match the female sockets on the units allowing extremely fast installation without the risk of an incorrect installation.

Control of the system through a full colour display complete with Vimar-compatible bezels is standard. A unique status icon will give you all the information you need on the chilled water temperature, the set point, air temperature, valve status, etc. This is an ideal feature for engineers enabling them to easily check the system.

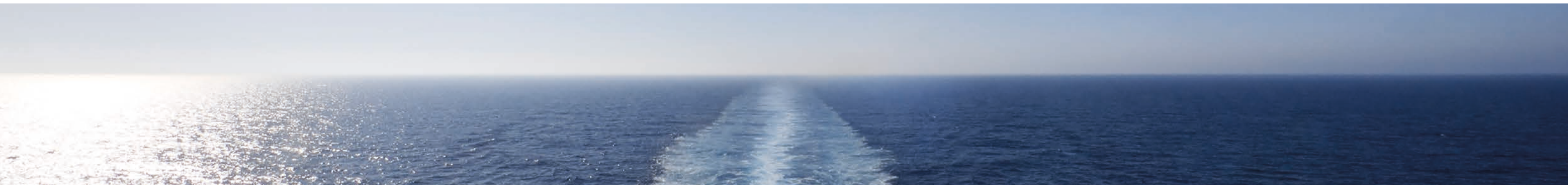
Three models for nine different capacities

Three basic Air handler modules cover the range of nine capacities (4,000-26,000BTU/h). When more air capacity is required to overcome restrictive ducting or small grills, the units can easily be upgraded by simply select a larger capacity unit in the display to achieve more air flow. This feature is a great advantage for interior designers when an existing boat design is going to be used in different climates as the capacity can easily be upgraded without changing the interior layout.



Air handlers

Plug and play connection



Technical specifications - Air handlers			
	AH-N 4.0	AH-N 6.0	AH-N 9.0
Capacity (BTU/h)	4.000	6.000	9.000
Capacity (kW)	1.2	1.8	2.6
Voltage ± 10%	220V/50/60Hz	220V/50/60Hz	220V/50/60Hz
Power consumption (A)	0.75	0.75	0.75
Dimensions (mm)	400*208*289	400*208*289	400*208*289
Weight (kg)	8.90	8.90	8.90

Technical specifications - Air handlers			
	AH-N 12.0	AH-N 14.0	AH-N 16.0
Capacity (BTU/h)	12.000	14.000	16.000
Capacity (kW)	3.5	4.1	4.7
Voltage ± 10%	220V/50/60Hz	220V/50/60Hz	220V/50/60Hz
Power consumption (A)	0.75	0.75	0.75
Dimensions (mm)	501*230*391	501*230*391	501*230*391
Weight (kg)	14.60	14.60	14.60

Technical specifications - Air handlers			
	AH-N 18.0	AH-N 24.0	AH-N 26.0
Capacity (BTU/h)	18.000	24.000	26.000
Capacity (kW)	5.3	7.0	7.6
Voltage ± 10%	220V/50/60Hz	220V/50/60Hz	220V/50/60Hz
Power consumption (A)	0.75	0.75	0.75
Dimensions (mm)	614*235*340	614*235*340	614*235*340
Weight (kg)	16.70	16.70	16.70

Technical specifications - Air handlers Slim Line			
	AH-S 4.0	AH-S 6.0	AH-S 9.0
Capacity (BTU/h)	4.000	6.000	9.000
Capacity (kW)	1.2	1.8	2.6
Voltage ± 10%	220V/50/60Hz	220V/50/60Hz	220V/50/60Hz
Power consumption (A)	0.75	0.75	0.75
Dimensions (mm)	426*343*249	426*343*249	426*343*249
Weight (kg)	10.0	10.0	10.0



The Clion-Marine Self-contained units are stand-alone operational units, providing the best solution for cooling up to approximately four areas on board. The units are reverse cycled for both cooling and heating mode (if the seawater temperature is above six degrees). All of the main components are fitted into a deep stainless steel drain pan.

The Clion-Marine Self-contained units are designed with reverse inclined impellers giving high velocity air flow at slow rotation speeds. This produces a very strong but quiet airflow, which can overcome static pressure in the ducts and grills.

The speed of the fan is controlled by a 0-10V DC speed control which eliminates the hum generated at low speeds by conventional fans. Each unit has nine speeds which can be operated manually or in automatic mode. Each unit can accommodate up to three ducts without the use of bulky splitters (Y or T-pieces). The coils are coated to protect them from corrosion, something which also allows the opportunity to extract a percentage of outside air to ventilate the areas during operation. After reaching the pre-set point, the fans will modulate to an extremely silent operating mode whilst maintaining the proper airflow.

All the Self-contained control boxes have automatic fuses and a pre-wired cable loom with connectors and pre-wired sensors for extremely fast installation. Full colour displays with Vimar-compatible bezels are standard for controlling the system. A unique status icon gives you all the information you need on the temperatures, set point, status, etc.

Central monitoring

As standard, all Clion-Marine units are equipped with a connection for easy integration into the central monitoring system on board.

12V and 24V units

For boats on which no 220V supply is available, we have designed a 12V DC and 24V DC unit which operates directly from your battery bank. The DC compressors eliminate any high start-up loads.

Self-contained wall-mounted unit

The unique Self-contained, wall-mounted unit is an ideal solution for air conditioning any size wheelhouse on commercial vessels, tenders, etc. The solid, slim, stainless steel housing is designed for easy installation in the wheelhouse and has an integrated display. A double box blower fan guarantees extremely high velocity air flow to distribute cooling throughout the entire wheelhouse.



Display Self-contained

Technical Specifications - Self-contained

	SC-N 11.0	SC-N 18.0	SC-N 28.0
Capacity (BTU/h)	11.000	18.000	28.000
Capacity (kW)	3.2	5.2	8.2
Voltage \pm 10%	200-240V/50/1Ph	200-240V/50/1Ph	200-240V/50/1Ph
Power consumption (A)	2.89	4.53	7.34
Dimensions (mm)	490*262*329	570*318*381	570*318*381
Weight (kg)	28.50	37.60	40.70

Technical Specifications - Self-contained

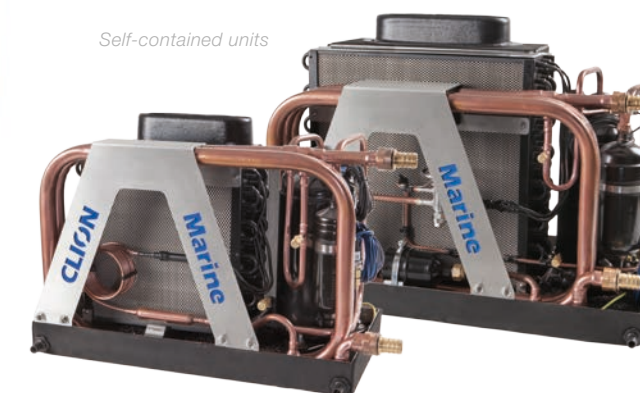
	SC-IN 5.0 DC	SC-IN 8.0 DC
Capacity (BTU/h)	5.000	8.000
Capacity (kW)	1.5	2.35
Voltage \pm 10%	9.5-16 VDC	21.5-31 VDC
Power consumption (A)	37	25
Dimensions (mm)	510*290*329	510*290*329
Weight (kg)	35	35

Technical Specifications - Self-contained

	SC-W 28.0
Capacity (BTU/h)	28.000
Capacity (kW)	8.2
Voltage \pm 10%	220V/50/1Ph
Power consumption (A)	1.5
Dimensions (mm)	800*275*851



Self-contained wall-mounted unit



Self-contained units



Clion-Marine provides a range of fresh air make up units to complement our systems and ensure an optimal climate on board. These units are designed to draw air from outside of the boat. The air is then warmed or cooled to the desired internal temperature. Humidity levels are stabilised and the air is divided around the various areas on board the vessel. This creates a calculated over pressure in the living areas allowing for proper extraction and reduced ingress of untreated air.

As standard, our units are equipped with humidity control and electrical heating, and can easily be integrated into the central monitoring system. Where a specific design is required to fit in a restricted space, Clion-Marine can design and build customised units. These are designed to fit into designated areas and provide a certain airflow.

Engineering

Clion-Marine can provide additional services such as heat load and fresh air calculations, duct plans, adjusting the system, and full commissioning.

Fresh air unit





Infographic Helpdesk Clion-Marine



Clion-Marine systems are pre-equipped to integrate into any central monitoring system. The hardware provides an interface to allow the connection of a basic NMEA communication system. If required, the boards can be prepared for full integration into a customised central monitoring system.

Clion-Marine also provides central monitoring systems for your air conditioning system, allowing remote control from your desktop, smartphone, or tablet.

With the appropriate authorisation, our technical specialists are then able to interrogate the system anywhere in the world and check and diagnose the status of your equipment. With the use of this service, we can supply live remote support to yacht owners, distributors, and engineers anywhere around the world.

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