



FRIGOMAR

MARINE REFRIGERATION & AIR CONDITIONING SYSTEMS

Designed and
Manufactured
in Italy

NEW GENERATION

INVERTER BLDC HIGH PERFORMANCE CHILLER UNIT THREE-PHASE



ADVANTAGE OF USE

- Compact design and low weight
- 50% higher energy efficiency compared to ON/OFF
- High comfort on board: low noise and stable temperature
- User friendly touch display
- Elimination of peak current at start-up (only 2 A max)
- Suitable for severe-duty conditions (military applications)

EASY INSTALLATION

The compact overall dimensions and low weight make the installation easier. More chiller units can be installed in parallel reaching the desired cooling/heating capacity, suitable for large vessels and super yachts.

MAX COOLING CAPACITY

180.000 BTU/h (15 ton) per unit

SEAWATER HEAT EXCHANGER



Special Cu-Ni 70/30 seawater condenser offering the highest resistance to erosion and corrosion.

NEW BLDC INVERTER GENERATION

SMALLER, LIGHTER AND MORE POWERFUL



THE FIRST MARINE AIR CONDITIONING SYSTEM WITH THE BLDC INVERTER TECHNOLOGY



ULTIMATE INVERTER BLDC TECHNOLOGY

VFD technology "sensor less" is used to accurately control the compressor speed in order to deliver the needed capacity at all times, following the environmental conditions; by contrast traditional air conditioners use on/off type compressors that either work at maximum speed or stop.

The Frigomar chiller unit is equipped with a BLDC motor compressor (98% energy efficient) controlled by an electrical inverter varying the speed from 20-100 Hz.

Thanks to the elimination of start-stop cycles the energy efficiency is considerably increased without sharp fluctuations of water temperature and power supply, thus increasing the lifespan of the unit and the comfort on board.

ENERGY SAVING (~50% ON AVERAGE ELECTRICAL ENERGY CONSUMPTION)

Compressor starts at low speed (20 Hz) with no peak current and then accelerates smoothly up to the max frequency (100 Hz) in order to cool or heat quickly. As water temperature approaches the set point value, the compressor slows down, keeping a constant temperature in silent operation and saving energy.

In term of Seasonal Energy Efficiency Ratio, the average reduction in electrical energy consumption is 50%, compared to the equivalent traditional air conditioner.

SMOOTH STARTING (NO PEAK CURRENT AT START)

Starting ramp is set at low frequency (20 Hz) allowing very low starting torque and starting current, far below the nominal value.

The max starting current is 2 A, while for the equivalent traditional air conditioner the max peak starting current is 100-140 A, despite employing soft starting devices.

POWERFUL (SHORT PULL-DOWN PERIOD)

Inverter air conditioning operates at maximum capacity after start up, therefore the set temperature is reached more quickly.

COMFORTABLE

Inverter air conditioner finely adjusts its capacity according to the thermal loads variation in order to maintain the desired ambient temperature without fluctuations, thus allowing higher comfort than with non-inverter air conditioners.

Thanks to PMSM motor and sound shields design the operation is silent in every working condition. Scroll compressor allows to reduce vibrations by 75% compared to traditional units.

VARIABLE CAPACITY OPERATION (ECO MODE)

ECO function can be activated from the controller limiting the max compressor frequency, thus reducing further the power consumption.

RELIABLE

BLDC motor together with accurate control of superheating allow a much longer compressor lifespan than non-inverter models, where start / stop cycles stress considerably the motor windings. Thanks to VFD exclusive technology the unit withstands engine room temperature up to 70 °C (158 °F), low seawater temperature (5°C/41°F) in winter and high seawater temperature (45°C/113°F) in summer.

EASY INSTALLATION

Very compact dimensions with possibility to install more units in parallel. The touch display can be detached from the unit and located at a distance up to 50 m (164 feet) through a Belden cable.

DESIGNED AND MANUFACTURED IN ITALY

In ISO 9001:2015 certified factory.

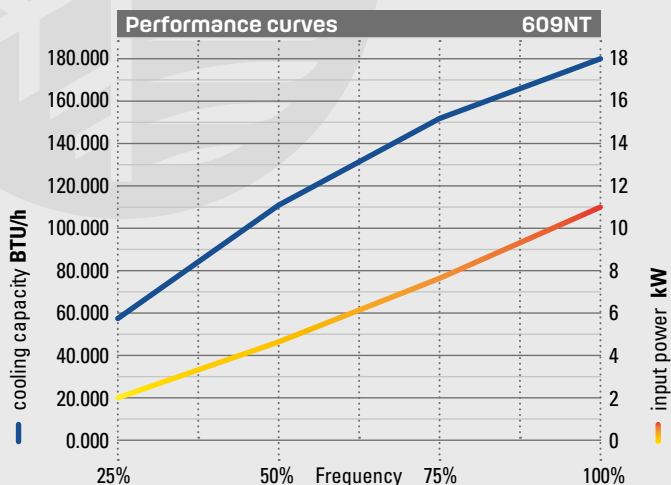
609NT

Max Cooling/Heating capacity

180.000 BTU/h

Dimensions

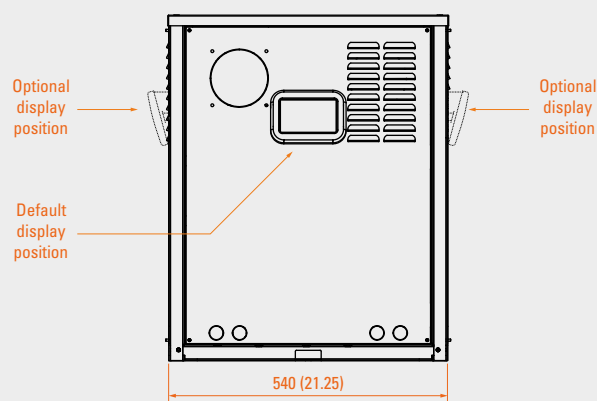
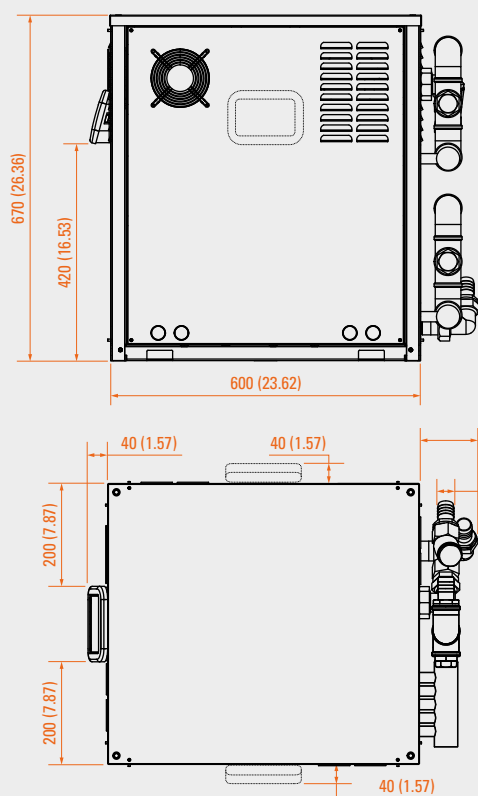
540 x 670 x 600 mm



MODEL

609NT

Width	540 mm - 21.25 in
Height	670 mm - 26.37 in
Depth	600 mm (+115 mm pipe) - 23.62 in (+4.52 in pipe)
Weight	155 kg - 342 lbs
Voltage/phase/ cycle	400 VAC / 3ph / 50-60 Hz
Max Cooling/Heating capacity	180.000 BTU/h - 15 ton
Max input power	12 kW
Max Current	17,3 A
Max input power (ECO function)	5,5 KW
Max Current (ECO function)	8 A
Refrigerant R410A	2,8 kg - 6.2 lb
Working limits	Seawater temperature in winter mode
	> 5°C / 41° F
	Seawater temperature in summer mode
	< 40°C / 104° F
	Engine room temperature
	< 70°C / 158° F



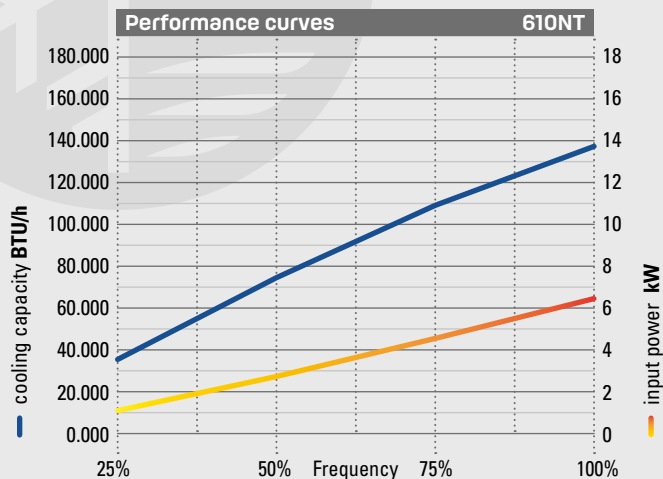
Hydraulic connections 1"1/4

Dimensions in mm (inch)

610NT

Max Cooling/Heating capacity
130.000 BTU/h

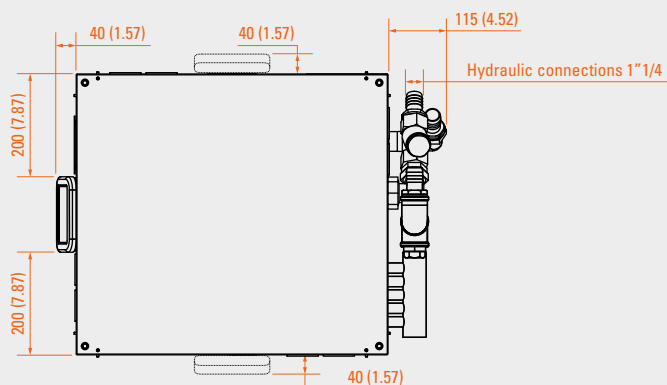
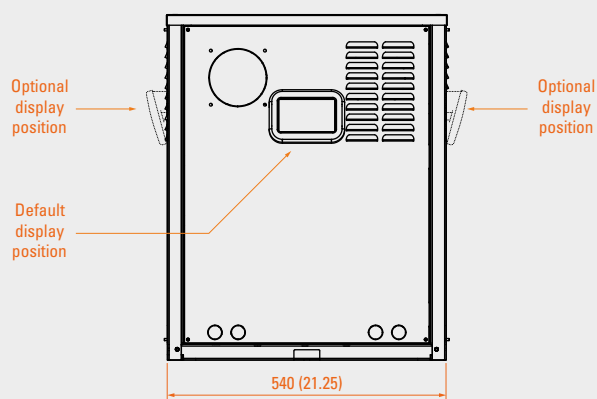
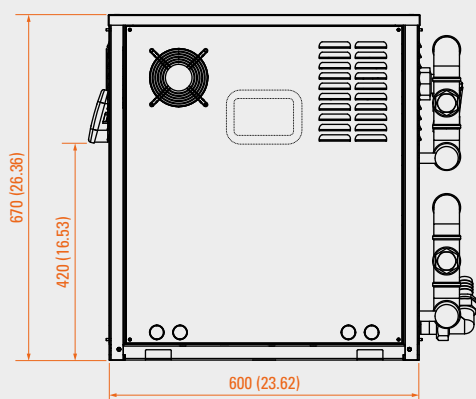
Dimensions
540 x 670 x 600 mm



MODEL

610NT

Width	540 mm - 21.25 in
Height	670 mm - 26.37 in
Depth	600 mm (+115 mm pipe) - 23.62 in (+4.52 in pipe)
Weight	155 kg - 342 lbs
Voltage/phase/ cycle	400 VAC / 3ph / 50-60 Hz
Max Cooling/Heating capacity	130.000 BTU/h - 11 ton
Max input power	9 kW
Max Current	14 A
Max input power (ECO function)	3,5 KW
Max Current (ECO function)	5,2 A
Refrigerant R410A	2,8 kg - 6.2 lb
Working limits	Seawater temperature in winter mode
	> 5°C / 41° F
	Seawater temperature in summer mode
	< 40°C / 104° F
	Engine room temperature
	< 70°C / 158° F



Dimensions in mm (inch)

