

# TD24V1

## DATASHEET



Cooling capacity KW	16.000 Btu/h
Cooling power source KW	800 watts
Heating capacity KW	16.000 Btu/h
Heating power source KW	800 watts

<b>Power supply:</b>	24 V DC
<b>Sea water pump:</b>	50 watt - (3 amps)
<b>Water pipe size:</b>	1" IN + OUT
<b>Size W x D x H:</b>	420 x 420 x 346 mm
<b>Weight:</b>	20kg (45lb)
<b>Dehumidification:</b>	0,60 gal/h
<b>Min voltage input:</b>	20 V DC
<b>Max voltage input:</b>	28 V DC
<b>Power consumption:</b>	800 watts (750 watt + 50 watt pump)
<b>Breaker:</b>	40 Amps

<b>Average working temperature:</b>	Cabin temp: 90F	Air output: 58F	Air flow: 450m3/h
<b>Suction air grid:</b>	Minimum size 8 x 5" Maximum 12 x 12"		
<b>Fresh air intake:</b>	30m3/h max		

Compressor box use VRV inverter architecture with refrigerant circulation inside air handler

Databus rs485 modbus on board

System based on Toshiba VFD and twin rotary compressor



### CONDENSER:

Titanium Grade 2. No fouling, no corrosion. 3 times lighter than copper nickel



### COMPRESSOR:

Twin rotary COP > 4,5

Rotation speed: 200 to 300 rpm



### FRAME:

Stainless Steel 316. Completely rust proof



### SOFTWARE MANAGEMENT:

Compressor high temperature and low temperature. High pressure with compressor torque. High temperature condenser. Sea water flow switch. Condensation control and evaporation control



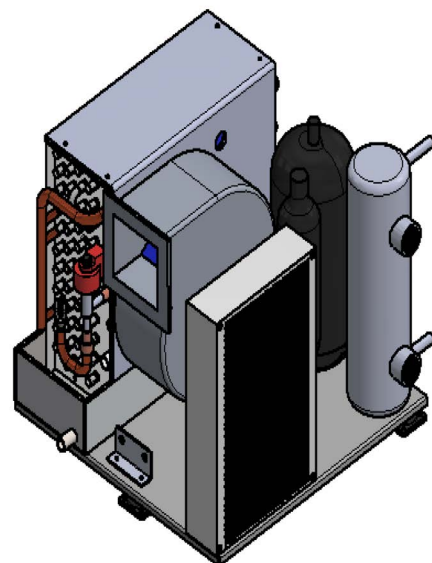
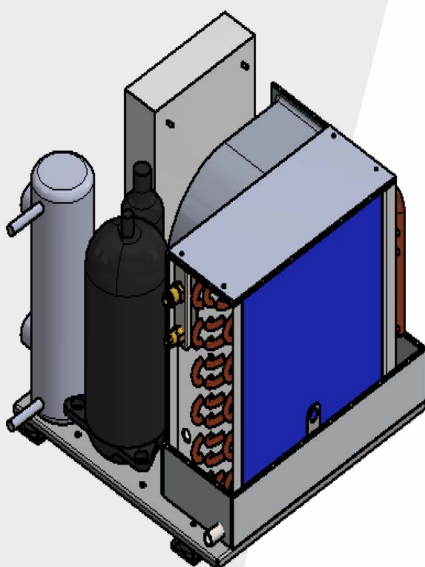
### COMPRESSOR PROTECTION:

Over/undervoltage, overcurrent, torque, winding temperature, stepout (bad lubrication)



### ELECTRONIC:

Microprocessor board with rs485 modbus rtu communication. Interface to Termodinamica air handling unit or fresh air unit





TD24V1 is a self contained unit with built in condensing unit. Unit is based on a variable speed compressor powered directly at 24 Volts DC capable of 16.000 btu/h in cooling mode.

Unit uses an eco-friendly refrigerant R134A that work at the maximum pressure of 145 psi, allowing safe operation with peoples on board.

Variable speed compressor is able to manage capacity on demand and satisfy heat load of the cabin according to the needs. It offers powerful cooling with smooth and energy savings operation when the cabin is in temperature.

Power consumption is extremely low with a minimum of 250 watts and a maximum of 900 watts (11Amps to 38Amps).

Sea water condenser is made in Titanium grade 2 that offer incredible resistance against fouling from salt and do not suffer corrosion.

Base and main frame of the product is made in stainless steel 316L that is completely rust proof.

An advanced microprocessor system control the unit and prevent damages and faults. (high pressure, high temperature etc)

A touch screen human interface offer an user friendly experience and allows the user to control the working condition of the system and offer an easy troubleshooting interface that explain the possible origin of the issues.

System uses a power manager system that user can set to achieve a specific maximum power consumption. It helps to save energy from battery or reduce maximum capacity when it's not needed.



**MAIN AC**

**Fan** **Power** **Temperature**

Night 100.0 % 20 °C

120.0 °C

100.0 %

120.0 °C

20 °C

Set max power for air conditioning system

Limit (%): 20

Max Power (W): 15 Box Absorption (W): 15

Eco Mode (W): 15 Eco

**POWER MANAGER**

Compressor output temp:	200.00 °F	20.00 °C
Compressor suction temp:	200.00 °F	21.00 °C
Condenser temp:	200.00 °F	22.00 °C
Liquid temp:	200.00 °F	22.00 °C
Gas temp:	200.00 °F	22.00 °C
Delta In/Out temp:	200.00 °F	22.00 °C
Delta In/Out request:	200.00 °F	22.00 °C
Compressor speed:	100.0 %	Sea Water P. speed: 100.0 %
Engine mode:	22	Compressor status: 22

**DETAILS ENGINE BOX**

Version: HW: 83 FW: 5.6.131

Gas temperature:	200.00 °F	21.00 °C
Air inlet temperature:	200.00 °F	22.00 °C
Air outlet temperature:	200.00 °F	22.00 °C
Delta In/Out temp:	200.00 °F	22.00 °C
Delta In/Out request:	200.00 °F	22.00 °C
Fan speed:	100.0 %	
Engine box mode:	22	

**DETAILS AIR HANDLER**

● High temp. comp.	● Sea water flow P.
● High temp. cond.	● Refrigerant charge P.
● Inverter Fault	● Filter Fouled P.
● Super Heat	● Overtemp Comp. P.
● Fan Stuck	● Sea water flow test

**CLEAR ERROR**

P. = Permanent error

**FAULTS ENGINE BOX**

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## TITANIUM HEAT EXCHANGER



Hand made in pure titanium grade 2.

All TIG welded in argon protective atmosphere. Shell and tube type.

Refrigerant flows in the pipes, water flows in the shell. Architecture allows better condensation performance reducing mechanical job of compressor.

Tube where gas flows are twisted and not straight to increase exchange performance and reduce condenser size. This is a special patented Termodinamica's feature.

Titanium weight is 3 times less than copper/nickel exchanger and is totally corrosion proof.

Titanium don't suffer fouling from salt and resist better to marine growth.

Titanium is elastic and accept pressure stress and high condensation temperature related to the use of refrigerant gases.



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PERFORMANCE CURVE  
DC INVERTER 70 rps/100

