> TAU MAX
Water chiller

> TAU MAX /HP
Reversible heat pump

> TAU MAX /ST
Unit with tank and pumps

> TAU MAX /DS
Unit with desuperheater

> TAU MAX /LN
Low noise unit


BLUE BOX

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TECHNICAL FEATURES

TAU MAX Highly efficient air-water reversible heat pumps
Compact condensed air water chiller unit with hermetic scroll compressors, axial fan and plate evaporator. R410A refrigeration fluid.

STRUCTURE
In galvanised sheet steel and painted with polyester powders RAL 7035 at 180 °C, which confer high resistance to atmospheric agents.
The panels can be removed easily to allow total access to the internal components. The structure is composed on two levels. In the lower level find the components of the refrigerant and hydronic circuit and in the upper part the evaporator/condenser coil with the fan part.

COMPRESSORS
Hermetic scroll compressors in tandem configuration, complete with circuit breaker protection included in the electric motor windings, sump heater and rubber anti-vibration mounts. The tandem configuration allows to have great energy advantages at partialised loads as well as the capacity to follow the user's request better.

SOURCE SIDE EXCHANGER
Made up from a coil with copper pipes and aluminium fins with large exchange surface. The coil has been realised with differentiated circuits (the circuits do not all have the same length, but depend on the heat exchange coefficient) in order to maximise the heat exchange depending on the distance from the fan.
There is an additional circuit at the base of the coil: the sub-cooler. This additional component as well as complete defrosting of the coil, also ensures the impossibility that the lower part of the coil freezes.
The evaporation coil, rests on a stainless steel condensate drip tray with conveyor for collection of the condensate water. The tray is mirror polished in the centre in order to reduce the noise present inside the evaporating compartment.
An anti-freeze resistance ensures the flow of condensate water towards the drain.
A metal mesh protects the finned core (accessory).

FANS
Helicoid fans directly coupled to the 6-pole electric motor with external rotor, IP 54 protection rating. The new conception fan is made up from an aluminium body and blades in polymeric material. This "hybrid" selection allows to greatly reduce noise and vibrations.
The fan is housed in a shaped nozzle and includes the accident-prevention grill in compliance with UNI EN 294. The ventilating section has a rev. regulator as per standard in order to further reduce noise emissions and to allow the unit to function in heat pump mode even for high external temperatures.

USER SIDE EXCHANGER
With AISI 316 stainless steel braze-welded plate, insulated with a closed cell expanded material coating.
The heat exchanger has a temperature probe for anti-freeze protection and a blade flow meter as per standard.

REFRIGERANT CIRCUIT
Includes: load inlet in the liquid and suction line, liquid indicator, dehydrator filter, double thermostatic valve, 4-way inversion valve, liquid accumulator, intake separator, non-return valve, liquid line solenoid valve, pressure transducer, high and low pressure pressure switches and safety valve.

ELECTRIC CONTROL BOARD
With general isolating devices, protection of the power and auxiliary circuits, compressors remote control switch. Microprocessor management of the unit with main functions shown on display.
The electric control board is made up from:

- Automatic switch for protection of the auxiliary and power circuits;
- Main isolating switches and fuses to protect the auxiliary and power circuits;
- Compressor remote control switches;
- Pump relay or motor-protector and remote control switch (in ST1P version);
- General alarm potential free contacts:
- Microprocessor for control of the following functions:
  - Water temperature regulation with inlet control
  - Anti-freeze protection;
  - Compressor timing;
  - High pressure pre-alarm management (to prevent unit block in many cases);
  - Enabling for summer/winter switch-over;
  - Automatic defrosting;
  - Alarms signal;
  - Alarms reset;
  - Digital input for outdoor ON-OFF;
  - Digital input for remote summer/winter switch-over.
- Display of:
  - Temperature of the outlet water;
  - Temperature of the inlet water
  - Condensation temperature;
  - Set temperature and differentials set-point;
  - Description of the alarms;
  - Compressor and pump timer functioning

- 400V/3N~/50Hz electric power supply for all sizes.

CHECKS AND SAFETY DEVICES

- Utility water temperature control probe (situated at inlet of the heat exchanger);
- Anti-freeze probe that activates the anti-freeze alarm (with limited intervention automatic re-arm);
- High pressure pressure switch (with manual re-arm);
- Low pressure pressure switch (with automatic re-arm at limited intervals);
- Blade mechanical flow meter supplied as per standard;
- High pressure safety valve;
- Compressor over-heating protection**.**

INSPECTION

The units are inspected in the factory and supplied complete with oil and refrigerant fluid. The inspection envisions the following activities:

- Check sealing: by pressurising the circuit, sealing of the welding
- Check functioning in Chiller mode (cooling capacity, absorbed power, load loss etc.).
- Check functioning in Heat Pump mode (heating capacity, power absorbed... etc)
- Check intervention of the safety devices

VERSIONS

Consult the configuration table to check if one option interferes with others.

HYDRAULIC MOTOR OPTIONS

TAU MAX /ST 1P:
unit with pump
The unit includes a pump.

MAIN ACCESSORIES

- Filling system with manometer (ST version only)
- Electronic thermostatic valve
- Anti-freeze resistance
- RS485 serial interface
- Remote control user terminal (in addition to that on the machine)
- Rubber anti-vibration mounts

ACCESSORY VERSIONS

TAU MAX /DS:
unit with desuperheaters
As well as the components of the basic version, on every refrigerant circuit the unit has a condenser for the recovery of 20% condensation heat placed in series with the condensing coil. The accessory is available for all models without hydraulic module.
This version is also available in the HP set-up. In this case the interception of the recovery water circuit must be envisioned in installation during functioning in HP mode, as indicated in the manual.

TAU MAX /LN:
Low noise unit
As well as the components of the basic version, the unit has a completely sound insulated compressors compartment. Sound-absorbing material is used along with sound impeding material.

ACCESSORIES

REFRIGERANT CIRCUIT ACCESSORIES

- Liquid line cock;
- Compressors intake and flow cocks;
- Self-adaptable regulation to allow optimal functioning if there is a low water content in the plant;
- Electronic thermostatic valve

HYDRAULIC CIRCUIT ACCESSORIES

- Filling system with manometer (ST version only)
- Anti-freeze resistance

  Includes:

  Basic version: Electric resistance in the evaporator;

  ST1P version: Electric resistance in the evaporator + heating cable on the pipes

ELECTRIC ACCESSORIES

- Phase monitors;
- RS485 serial interface
- Remote control user terminal (in addition to that on the machine)
- User interface;
- Compensation of the set-point depending on the external air temperature;
- Unit shutdown due to temperatures lower than functioning limits;

VARIOUS ACCESSORIES

- Protection meshes in painted galvanised sheet steel;
- Rubber anti-vibration mounts;
- Wooden cage packaging;

basic version technical data

UNIT SIZE			50	60	70
Heating					
Nominal heat power	(1)	kW	46,9	55,3	62,5
Heating absorbed power	(1), (2)	kW	11,3	12,3	14,2
COP	(1)		4,17	4,49	4,42
Nominal heat power	(3)	kW	45,8	54,0	61,1
Heating absorbed power	(3), (2)	kW	13,9	15,1	17,6
COP	(3)		3,29	3,57	3,47
Cooling					
Nominal cooling power	(4)	kW	50,4	59,6	65,3
Cooling absorbed power	(4), (2)	kW	16,6	17,9	21,9
EER	(4)		3,05	3,32	2,98
Nominal cooling power	(5)	kW	37,8	44,9	49,4
Cooling absorbed power	(5), (2)	kW	15,1	16,2	19,9
EER	(5)		2,50	2,77	2,48
ESEER					
Compressors					
Type				Scroll	
Quantity/Cooling circuits		n° / n°	2/1	2/1	2/1
Partialisation steps		%	0-50-100	0-50-100	0-50-100
Total oil load		kg	5,02	6,50	6,50
Total cooling load		kg	13,80	16,10	19,00
Radiant panels					
Cooling absorbed power	(4)	kW	15,28	16,66	20,66
Heating absorbed power	(1)	kW	9,98	11,04	12,89
Terminal units					
Cooling absorbed power	(5)	kW	13,85	14,96	18,64
Heating absorbed power	(3)	kW	12,65	13,83	16,35
Fans					
Type				Axials	
Quantity		n°	1	1	1
Air flow rate		m^3/h	18.000	17.000	17.000
Evaporators					
Type				Piastre	
Quantity		n°	1	1	1
Water capacity	(1)	l/h	8.062	9.506	10.755
Load loss	(1)	kPa	36	39	44
Hydraulic module					
Useful static pressure		kPa	144	131	116
Noise					
Noise power level	(6)	dB(A)	70	71	71
Noise pressure level	(7)	dB(A)	38	39	39
Dimensions and base unit weights					
Length		mm	1.078	1.078	1.078
Depth		mm	1.078	1.078	1.078
Height		mm	2.263	2.263	2.263
Weight when functioning		kg	550	578	589

(1) External air temperature 7°C BS, 6°C BU; input water-condenser output temperature 30-35 °C
(2) The total power is given by the sum of the power absorbed by the compressors and by the fans
(3) External air temperature 7°C BS, 6°C BU; input water-condenser output temperature 40-45 °C
(4) External air temperature 35°C; input water-evaporator output temperature 23-18°C
(5) External air temperature 35°C; input water-evaporator output temperature 12-7°C
(6) sound power levels calculated compliant to ISO 3744; nominal working conditions.
(7) Sound pressure levels refer to 10 meters from unit in free field at nominal working conditions, compliant to ISO 3744

This board reports the feature data of the base and standard versions; for details, refer to the specific documentation.