

FC₄TAE FC₄ALL

Air-cooled liquid coolers



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Models

Combinable
chillers

7

TAEevoTECH
ARIES Tech**

MAIN FEATURES:

- 7 models (5 FC₄TAE + 2 FC₄ALL);
- Cooling capacity 13 ÷ 450kW*;
- Cooling water coil with copper tubes and aluminium fins;
- Water valve for free-cooling control fitted;
- Microprocessor electronic control IC208CX;
- Dual-frequency electrical supply 400/3/50-460/3/60;
- Electrical supply 460/3/60 UL (option only for FC₄TAE);
- Electrical supply 400/3/50 (option only for FC₄ALL).

*IN/OUT water temperature 20/15°C, ethylene glycol 30% , ambient temperature 0°C;

**The free-cooling modules are combinable also with other chillers with the same performances.

APPLICATION

The free-cooling modules are suitable for all the applications where cold water is needed during all over the year, even if there is not a water chiller in the system.

FOOD



BEVERAGE



DATA CENTER



CHEMICAL AND
PHARMACEUTICAL



AUTOMOTIVE



MACHINE
TOOLS



ADVANTAGES

ENERGY SAVING: it is possible a large reduction of the energy consumption;

SHORT PAYBACK TIME: the impressive energy saving allows to quickly return the capital invested for the purchase of the module;

ENHANCED CHILLER'S LIFETIME: substituting completely or partially to the chiller , the module reduces the unit's wear and consequently increases its operating life;

ENHANCED SYSTEM EFFICIENCY: the module is able to produce the needed cooling power using less energy,

APPLICABLE EVERYWHERE: close to the chiller or positioned in the place which better meets the system needs, for new or existing circuits with or without a water chiller.

THE FC4ALL/FC4TAE RANGE

FC4TAE402-602

FC4TAE081-161



FC4TAE201-351

FC4TAE031-051

FC4TAE702-802

FC4ALL300

FC4ALL450

PERFORMANCE

	FC4TAE					FC4ALL	
MODEL	051	161	351	602	802	300	450
Cooling power [kW]*	18,3	44,4	75,2	133	184,2	265,8	406,7
Total free-cooling temperature [°C]*	1,7	-1	-1,1	-0,8	-1,25	0,4	0,7
Water pressure drop [bar]*	0,2	0,56	0,49	0,5	0,29	0,52	0,67
Energy saving [%]**	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.

*IN/OUT water temperature 15/10° C, 30% ethylene glycol, ambient temperature TFC;

**Installation in Milan, working for 45 weeks per year, 5 days per week, 16 hours per day.

DIMENSIONS AND WEIGHT

	FC4TAE					FC4ALL	
MODEL	051	161	351	602	802	300	450
Height [mm]	1360	1360	1460	2190	2190	2190	2190
Lenght [mm]	760	760	866	1410	1410	1410	2190
Widht [mm]	983	1517	2225	2926	2926	3660	3660
Weight [Kg]	160	220	355	695	890	1020	1325
Combinable chiller	TAEevoTECH 031-051	TAEevoTECH 081-161	TAEevoTECH 201-351	TAEevoTECH 402-602	TAEevoTECH 702-802	Aries Tech 070-100	Aries Tech 110-140

STRUCTURE AND PANELS

FC₄TAE and FC₄ALL structure is made on galvanized carbon steel with a powder coating suitable for outdoor installation.

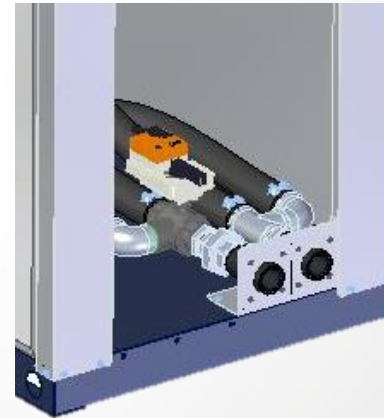
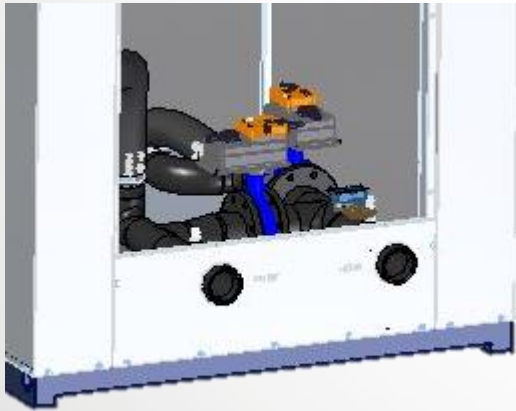
The base color is RAL5013P while the rest of panels are RAL7035P.

The structure design allows to reach easily all the internal components.



HYDRAULIC CIRCUIT

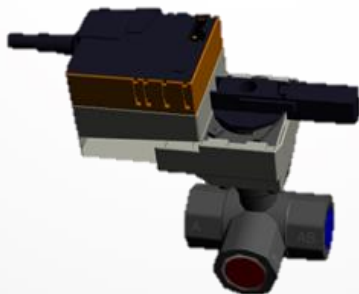
The hydraulic circuit includes the air/water exchanger coil, the valve for free-cooling managing, the EPDM internal connection pipes and brass or galvanized cast iron fittings.



ON/OFF THREE WAY VALVE

FC4TAE 051-161

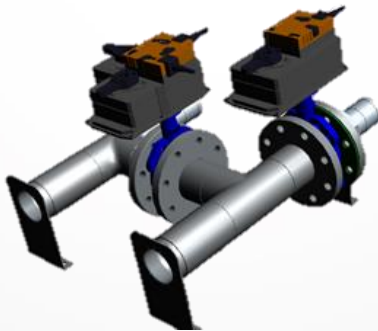
Models FC₄TAE 051 e 161 are fitted with one on/off three way valve as standard. This valve allows the free-cooling operating mode when the ambient temperature is favorable and excludes the air to water coils when the free-cooling operating mode is not possible.



ON/OFF BUTTERFLY VALVES

FC4TAE 351-602-802 e FC4ALL 300-450

Models FC₄TAE 351, 602, 802, FC₄ALL 300 and 450, are fitted with two on/off butterfly valves as standard. These valves allow the free-cooling operating mode when the ambient temperature is favorable and excludes the air to water coils when the free-cooling operating mode is not possible.



AIR/WATER EXCHANGER COIL

The free-cooling coils are made with copper pipes, aluminium fins and galvanized carbon steel or aluminium shoulders.

The water circuit is designed to allow the drainage of the whole circuit, when needed.

On the higher part of water manifolds are fitted two air vent valves. These valves are useful during the water filling of the free-cooling circuit. On the lower part of water manifolds is fitted a drain valve with a threaded connection. This valve is useful to drain the unit and for collect the drained fluid.



ELECTRICAL CABINET

All the FC4TAE and FC4ALL models are complete with the electrical panel. It includes all the components for the electrical supply and for the auxiliaries connection. The protection rating is IP54, suitable for external installation without any further protection (according to unit's working limits).



SYSTEM INTERFACE

The free-cooling module has some contacts and signals for the system interface and for the module control:

- Free potential control for remote ON/OFF;
- Module general alarm signal;
- Signal for external pump management (on/off and alarm);
- Contact for an external water flow switch (FC4TAE);
- Module working signal (running/alarm);

MICROPROCESSOR ELECTRONIC CONTROL IC208CX

GENERAL

- Parametric microprocessor electronic control;
- Dual display;
- Alarms management;
- 3 levels password.

FUNCTIONS

- Fans and free-cooling valve control;
- IN/OUT water temperature measurement;
- Ambient temperature measurement;
- Regulation based on inlet water temperature;
- Modularity (only combination with Aries Tech);
- Alarms history.



OPTIONS

AVAILABLE OPTIONS:

- ELECTRICAL SUPPLY DUAL FREQUENCY 450/3/50-460/3/60;
- ELECTRICAL SUPPLY 400/3/50, ONLY FOR FC4ALL;
- ELECTRICAL SUPPLY 460/3/60 UL508A ONLY FOR FC4TAE;
- EC BRUSHLESS FANS;
- PROTECTIVE PAINTING FOR COOLING COILS;
- AMBIENT TEMPERATURE -20°C.

ELECTRICAL SUPPLY

To meet the demand of the markets, the FC units have the following power supplies:

FC4TAE: dual frequency 400/3 / 50-460 / 3/60. Optional power supply 460/3 /60UL with electric board certified in accordance with UL 508A;

FC4ALL: dual frequency 400/3 / 50-460 / 3/60. Optional power supply 400/3/50.

EC BRUSHLESS FANS

Features

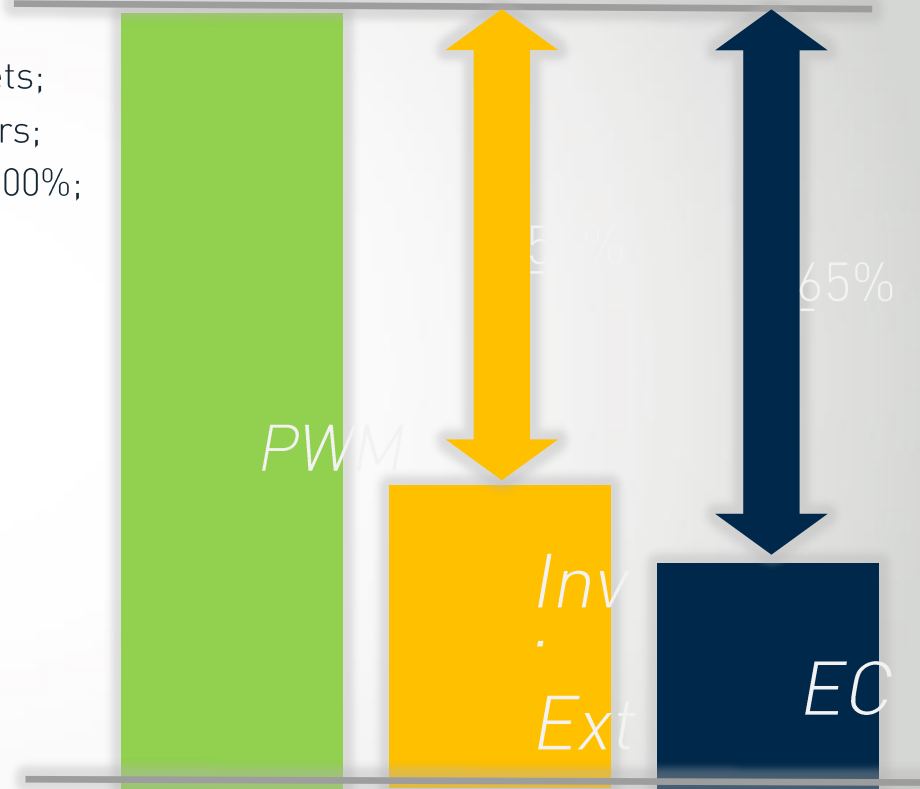
- Synchronous electric motors with permanent magnets;
- **EC** motors means: **E**lectronically **C**ommutated motors;
- Wide operating range: stepless rotation from 5% to 100%;
- High precision in condensation pressure control;
- Fast installation;

Advantages

- Seasonal energy saving 20%;
- Pays off in few months;



20%
Seasonal
energy saving



PAINTED COILS

Coils with protective paint treatment (optional)

- Suitable for use in marine environments or in the presence of aluminium-aggressive agents
- The fins are made from pre-painted strip (epoxy-acrylic resin coating);
- Once assembled, the entire coil is painted;
- Thermosetting powder coating (reticulated polyester resins) – colour grey;
- Oven baking.



MINIMUM AMBIENT TEMPERATURE -20°C

To guarantee the module functioning down to -20°C ambient temperature and the water outlet temperature setting is compulsory to select the -20°C ambient temperature option.

This option includes the EC brushless fans and allows the functioning of the module down to -20°C ambient temperature.

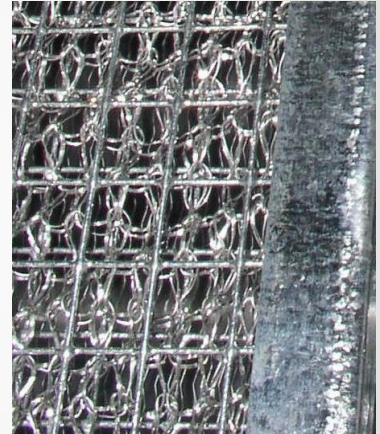
It is mandatory the hydraulic circuit protection by antifreeze additives.

KIT

- METALLIC MESH FILTERS FOR COOLING COILS;
- ANTIVIBRATION MOUNTINGS KIT;
- HYDRAULIC CONNECTION KIT CHILLER-FREE-COOLING MODULE (2M)
- VICTAULIC KIT (ONLY FOR FC4ALL);
- RS485-MODBUS KIT SUPERVISION KIT;
- WOODEN CRATE OR WOODEN PALLET FOR COINTAINER SHIPMENT KIT
- REMOTE CONTROL KIT;

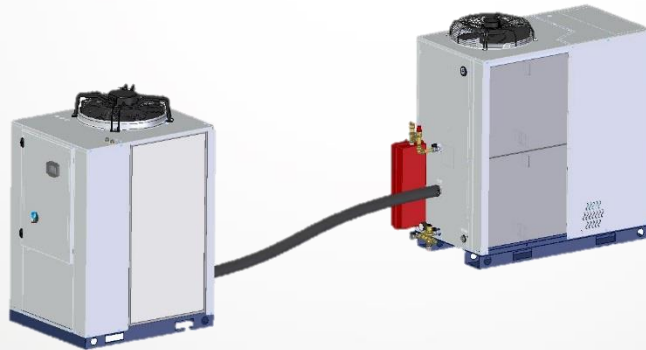
METALLIC MESH FILTERS KIT

Metallic mesh filters are always fitted for all the free-cooling modules. They are metal mesh type, easily removable and reusable. This kit is available if a replacement is needed.



HYDRAULIC CONNECTION KIT

These kits are available to make easy the hydraulic connection between the FC module and the chiller. They connect the FC's outlet connection to the chiller's inlet connection. They have a 2 meter length and are complete with all the fittings, EPDM pipe and insulation. Connection kits are available for all FC4TAE models and for FC4ALL300 combined with AST070-080 chillers. For the FC4ALL450 model is available the victaulic kit with soldering connection.



PACKAGING KIT

The FC4TAE051 and 161 models have a wooden pallet and a cardboard box. Container shipment is always allowed.

The FC4TAE351-602-802 and FC4ALL300 have a wooden pallet or beams and a protection plastic film. The container shipment is always allowed, only with High Cube type. As an option is available a protection wooden crate.

The FC4ALL450 model has wooden beams and protection plastic film. For container shipment, only with High Cube type, is compulsory to use the dedicated wooden pallet.

REMOTE CONTROL KIT

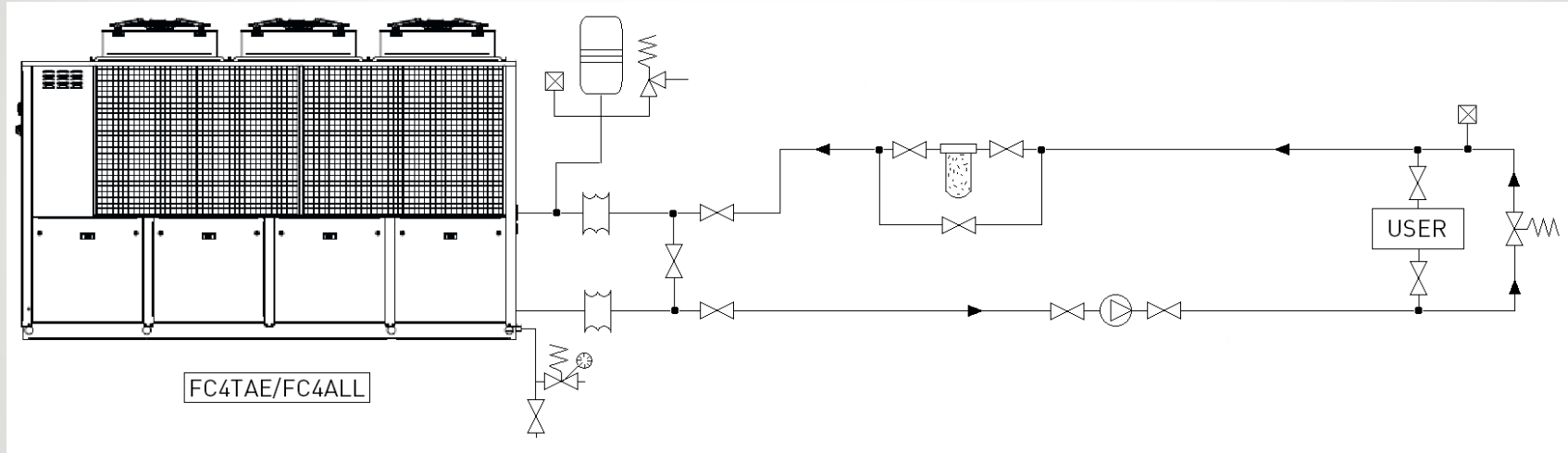
It is a led display with the same information of the onboard control. It can be installed with all the FC models and allows the complete setting and control of the unit.



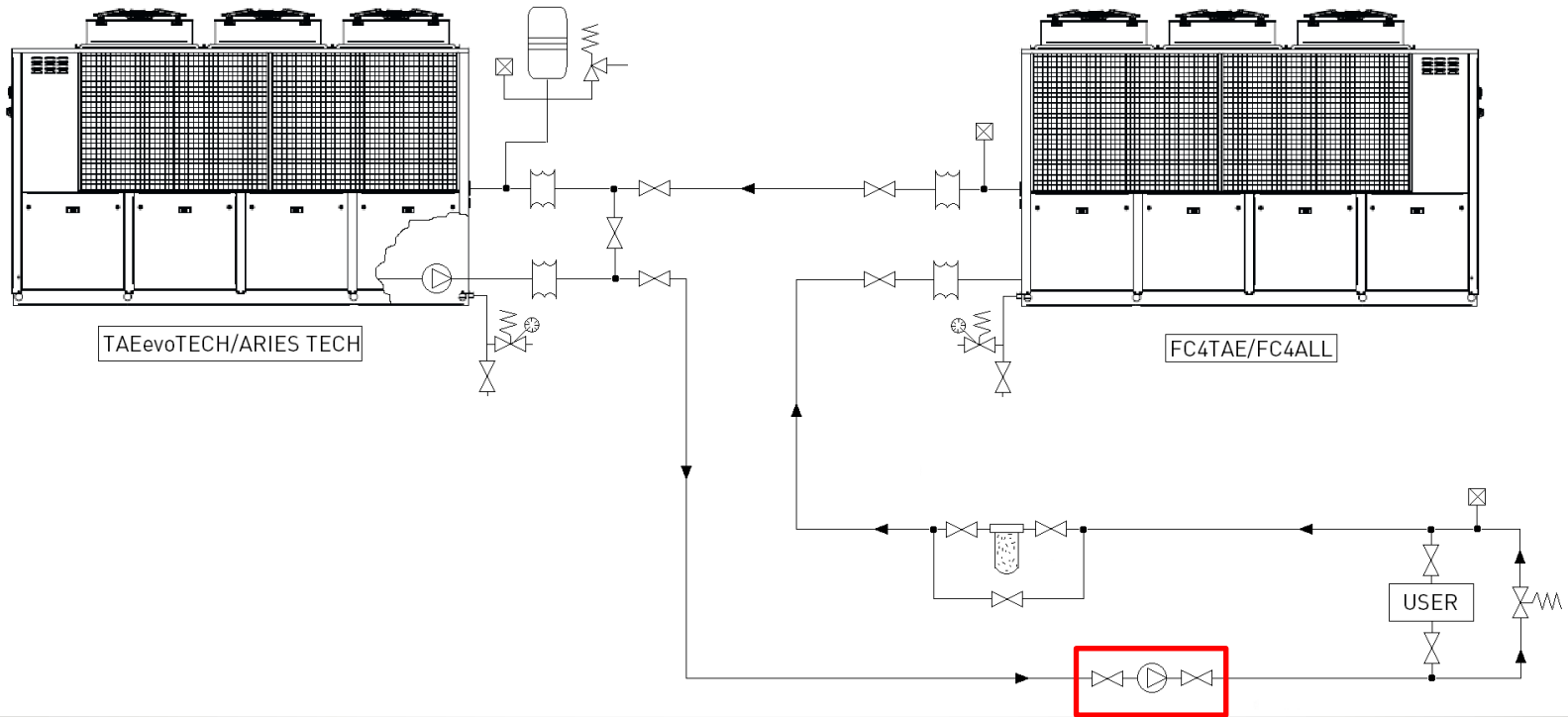
VICX620

FC4TAE-FC4ALL INSTALLATION

FREE-COOLING MODULE INSTALLATION



FREE-COOLING MODULE + WATER CHILLER INSTALLATION



FITTED ONLY IF CHILLER IS WITHOUT PUMP

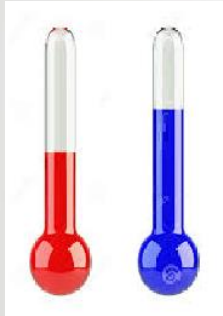
FREE-COOLING MODULE WORKING MODE

FC4TAE 051-161

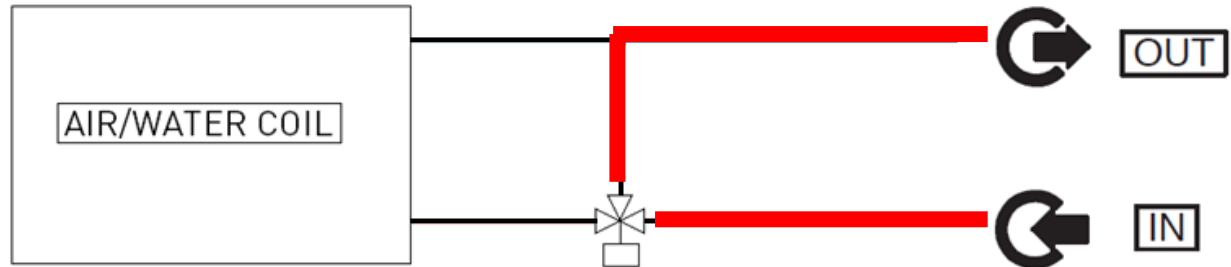
FREE-COOLING OFF

Inlet water
temperature

Ambient
temperature



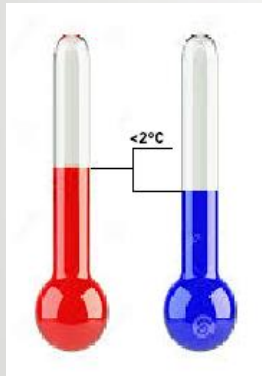
AMBIENT TEMPERATURE > INLET WATER TEMPERATURE -2°C



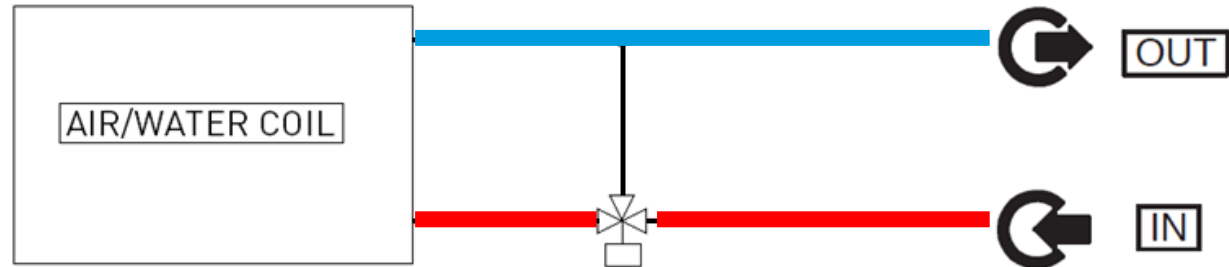
PARTIAL FREE-COOLING

Inlet water
temperature

Ambient
temperature

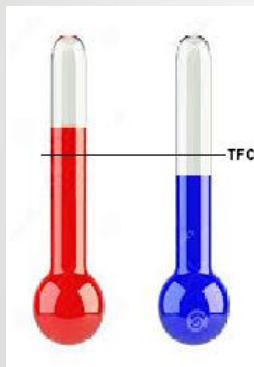


TFC < AMBIENT TEMPERATURE < INLET WATER TEMPERATURE -2°C

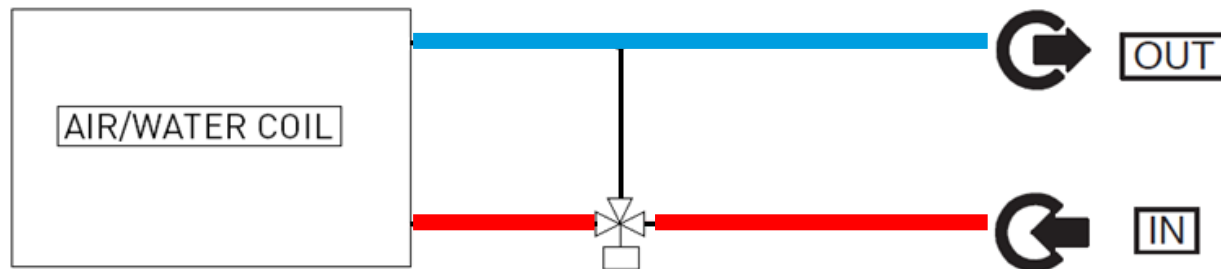


TOTAL FREE-COOLING

Inlet water temperature Ambient temperature



INLET WATER TEMPERATURE -2°C > AMBIENT TEMPERATURE < TFC



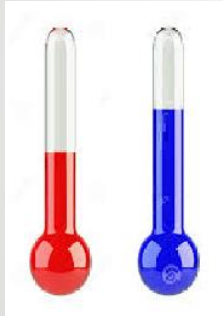
FREE-COOLING MODULE WORKING MODE

FC4TAE 351-802 AND FC4ALL 300-450

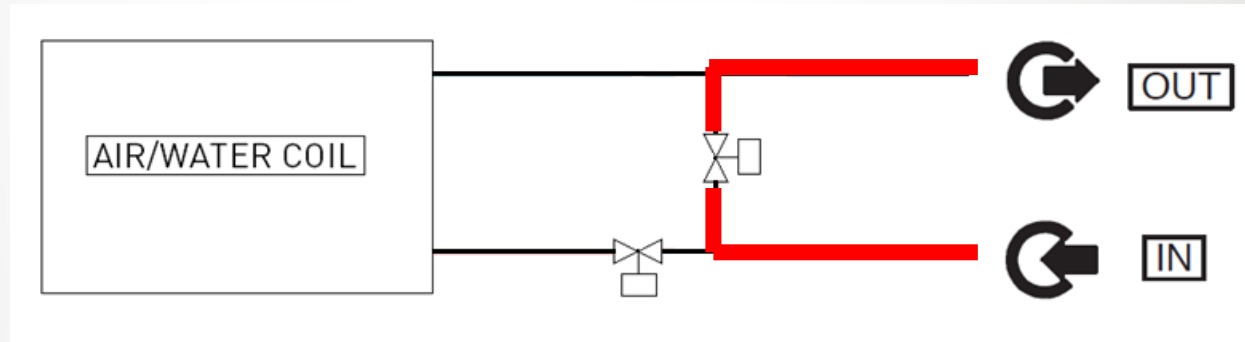
FREE-COOLING OFF

Inlet water
temperature

Ambient
temperature



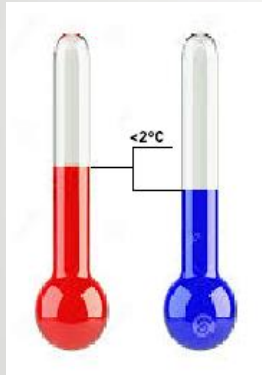
AMBIENT TEMPERATURE > INLET WATER TEMPERATURE -2°C



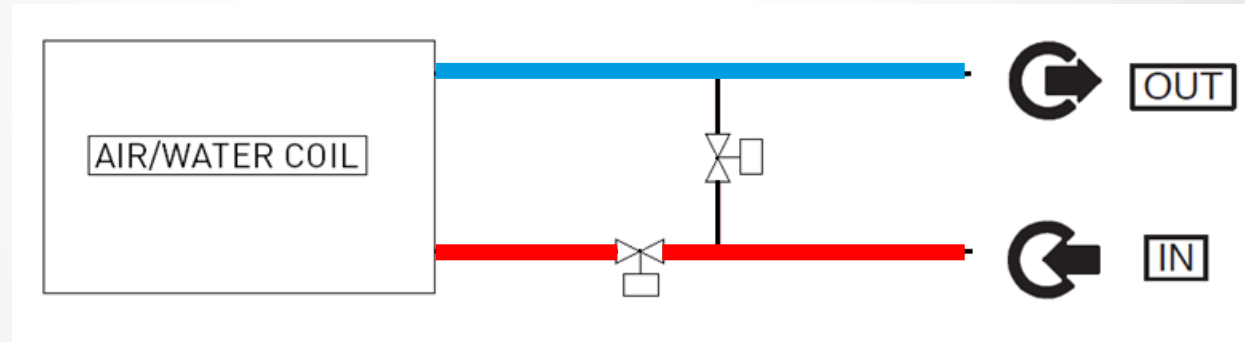
PARTIAL FREE-COOLING

Inlet water
temperature

Ambient
temperature

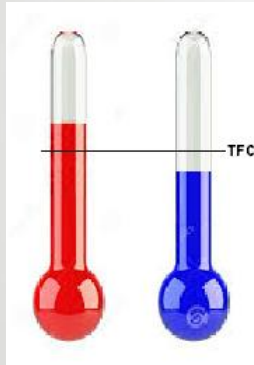


TFC < AMBIENT TEMPERATURE < INLET WATER TEMPERATURE -2°C

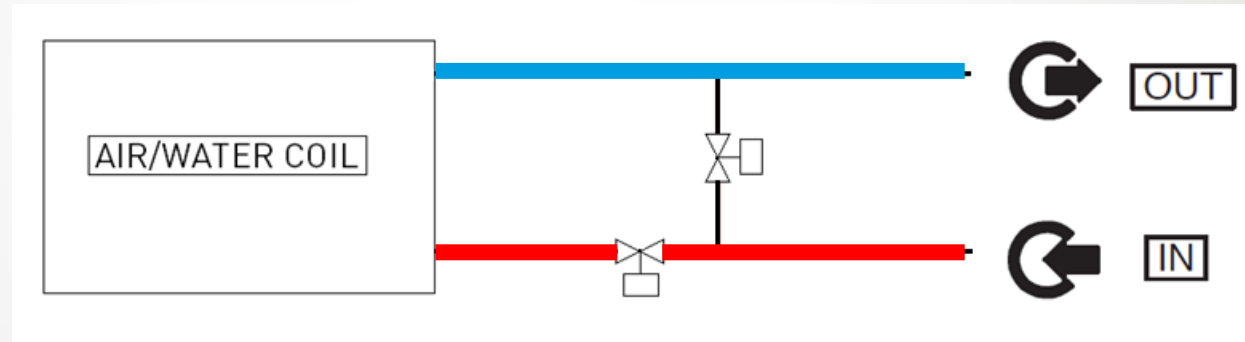


TOTAL FREE-COOLING

Inlet water temperature Ambient temperature



INLET WATER TEMPERATURE -2°C > AMBIENT TEMPERATURE < TFC



SELECTION SOFTWARE AND SAVING EVALUATION

A stand alone selection software will be available within the end of the project.

For TAEvoTECH e ARIES TECH, the chiller selection software will be completed with a section for the free-cooling evaluation. This update allows to calculate the chiller, the combinable FC module and the energy saving referred to the installation data.

