

TK Accessories

ThermoKey®
Heat Exchange Solutions

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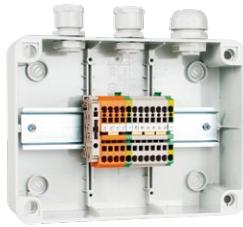
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Electrical accessories

Wiring

E – WIRING IN JUNCTION BOX



In compliance with EC regulations

Junction box in plastic UV resistant material with protection class IP54

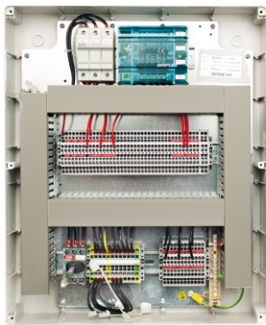
Working temperature $-20^{\circ}\text{C} \div 40^{\circ}\text{C}$

Power terminals of the fan motors connected

Thermocontacts of the fans connected to junction box

Electrical cables suitable for outdoor installation, resistant to UV

Q - WIRING WITH ELECTRICAL EC PANEL



In compliance with EC regulations

Electrical panel mounted and wired

Box in plastic UV resistant material with protection class IP56

Door lock with key

Cables suitable for outdoor use, resistant to UV

TECHNICAL DATA

AC fans

Power supply: 3~ 400V / 50Hz. (optional 60 Hz)

Current sizes: 16A, 40A, 63A

Main switch

Led white light indicating voltage presence

General protection with fuses

Connection for speed control

Connection for slave electrical panel

Thermocontacts connection for 8 fans

Power connection for 8 fans

N°1 input for ON/OFF control of the fans

N°1 contact for general alarm

EC fans

Power supply: 3~ 400V / 50Hz. (optional 60 Hz)

Current sizes: 16A, 40A, 63A

Main switch

General protection with fuses

Connection for EC speed controller

Wiring of 8 fans signals on independent clamps:

- RSA – RSB (Modbus)
- 0 – 10V
- Alarms
- Programmable digital signals (ON/OFF for each fan, etc...)

Power connection for 8 fans

RTS ELECTRICAL PANEL 8 STEPS ON OFF CONTROLLER

This control system has been specifically developed to provide an ON-OFF control of fans in steps by means of a temperature or pressure sensor or external signal.

System features:

ALL in One regulation system

Plug & Play installation

11 regulation programs on MASTER&SLAVE mode, programmed BY DEFAULT

Specific software for WET-Power Control (UR%) system

Selection, set-up and working parameters changeable with keyboard

Hardware Key (Service key) access and modify work parameters

2 displays to visualize working parameters changeable with keyboard

LED for system functioning state – fans alarm

IP65 protection

EC norms compliance



W - WIRING WITH SPECIAL ELECTRICAL PANEL

Voltage and frequency upon request

Main switch

General protection with fuses for fans and speed controller

Contactors for each fans or groups of fans

Switches for each fan upon request

Box in plastic or metallic material

Protection class IP6X (upon request)

Door lock with key

Suitable for corrosive environments, ATEX, etc.

Wider working temperature (-50°C, +80°C, etc.)

Variable number of fans following the installation field

Cables suitable for outdoor use, UV resistant

In compliance with EC regulations

Repair switch

I – REPAIR SWITCH



In compliance with EC regulations

690V 20A – 3 poles

Switch mounted and wired near to the fan or integrated at wiring “E” (general switch)

Working temperatures $-25^{\circ}\text{C} \div 40^{\circ}\text{C}$

Locked in the open position with optional padlock

Colour white/black with red handle on yellow background

Protection class IP65

N°4 inlets Ø M20

Red colour for general safety switch, black colour for on/off each fan

I – STDT-16 MOTOR PROTECTION



The STDT-16 motor devices are used for the functioning and protection of tri-phase motors by means of thermostatic switches.

They are connected to a thermal overload relay and to a magnetic overload relay.

Speed controller with probe

R - PHASE CUT SPEED CONTROLLER



It is a regulator of tension which uses the partialisation principle (cut phase) which is totally controlled on 3 phases for the partialisation of rms tension on asynchronous triphase motors mounted on heat exchangers.

TECHNICAL DATA

Three-phases power supply:

- 230Vac $\pm 10\%$ - 50 / 60Hz
- 400Vac $\pm 20\%$ (Range extended std) - 50 / 60Hz
- 480Vac $\pm 10\%$ - 50 / 60Hz

Other voltages on demand

Available controller sizes: 12A, 20A, 26A, 40A, 60A

Operating temperatures $-20^{\circ}\text{C} \div 50^{\circ}\text{C}$

Junction box in thermoplastic UV protected material with protection class IP55

Input by external signal or transducer: 0-20mA, 4-20mA, 0-5V, 0-10V

RS485 Interface for MODBUS networking optional

Possibility of connection for temperature probes (default) or pressure probes

Auxiliary contacts available:

- S1: mode direct (default with contact NO) – reverse (contact NC)
- SP: Selection setpoint 1 or 2 (default SP1 with contact NO, SP2 with contact NC)
- S5: Night speed limitation (default OFF with contact NO, ON with contact NC)
- S2: ON - OFF speed control (default ON with contact NO, OFF with contact NC)
- TK: contact for the connection of the thermal motor protection (default FANS ON with contact NC, FANS OFF with contact NO)

RL1 programmable contact relay of general alarm

Principle of PID regulation. Optional Proportional mode

Setting Min and Max fan-velocity

Possibility to exclude 3 different fan speed fields, excluding areas with high acoustic disturb

Display for main working parameters

Led for power supply fault

Led for motor anomalies

Led for controller faults

Led for indicating special functions

SINGLE-PHASE

R – PHASE CUT SPEED CONTROLLER



It is a tension speed controller used with asynchronous single-phase motors mounted on heat exchangers.

TECHNICAL DATA

Single-phase power supply: 110V / 230V $\pm$ 20% 50 – 60Hz

Available controller sizes: 12A, 20A, 28A

Working temperatures: -10°C $\div$ 50°C

Junction box in thermoplastic UV protected material with protection class IP55

Input by external signal or transducer:

- 0-20mA
- 4-20mA
- 0-5V
- 0-10V
- NTC 10KOhm 25°C
- PWM 3-30V not polarized; max frequency 120Hz

RS485 Interface for MODBUS SLAVE networking optional

Possibility of connection for temperature probes (default) or pressure probes

Auxiliary contacts available:

- S1: mode direct (default with contact NO) – reverse (contact NC)
- SP: Selection setpoint 1 or 2 (default SP1 with contact NO, SP2 with contact NC)
- S5: Night speed limitation (default OFF with contact NO, ON with contact NC)
- S2: ON - OFF speed controller (default ON with contact NO, OFF with contact NC)
- S6: Enabling max velocity spray
- TK: contact for the thermal motor protection (default FANS ON with contact NC, FANS OFF with contact NO)

N°3 logic inputs ON/OFF

N°1 output for relay

N°1 programmable output for relay

N°1 output PWM for slave unit

N°1 programmable output for analogic signal

Principle of PID regulation. Optional Proportional mode

Setting Min and Max fan speed

Display for main working parameters

Led for power supply fault

Led for motor anomalies

Led for controller faults

Outputs for auxiliary supply:

- 5,0 Volt (Vrr) stable
- 10,0 Volt (Vrr) stable
- 20-24 Volt $\pm$ 10%

G – STEP FAN SPEED CONTROLLER



This regulator is a thermocontrolling unit dedicated to the regulation of triphase tension through tension “steps” and is used to change the speed of fans.

This regulator allows a substantial energy saving using up to 60% of the fan air flow (mc/h) only with 30% of power consumption of the motor.

The exchange power of the unit can be increased by using the control of the external unit WET-POWER (UR%) available on the regulation software. Thanks to this feature there is a humidification of the coil at the set working point.

TECHNICAL DATA

Three-phases power supply $400V \pm 10\%$ 50 – 60Hz

Available controller-sizes: 8A, 16A, 20A, 30A

Working temperatures $-10^{\circ}C \div 50^{\circ}C$

Junction box in thermoplastic UV protected material with protection class IP55

No sound level increase while regulator is working

4 or 6 default steps with external transformer

Input by external signal or transducer: 0-20mA, 4-20mA, 0-5V, 0-10V

RS485 Interface for MODBUS networking

Possibility of connection for temperature probes (default) or pressure probes

Auxiliary contacts available:

- S1: direct function (default with contact NO) – reverse (contact NC)
- SP: Selection set point 1 o 2 (default SP1 with contact NO, SP2 with contact NC)
- S5: Night speed limitation (default OFF with contact NO, ON with contact NC)
- S2: ON - OFF speed control (default ON with contact NO, OFF with contact NC)
- TK: contact for the connection of the thermal motor protection (default FANS ON with contact NC, FANS OFF with contact NO)

RL1 relay contact of general alarm programmable

Principle of PID regulation. Optional Proportional mode

Setting Min and Max fan-speed

Display for main working parameters

Led for power supply fault

Led for motor anomalies

Led for controller faults

Led for indicating special functions

Z - INVERTER SPEED CONTROLLER WITH SINUSOIDAL FILTERS INSTALLED



The device is a regulator of tension which uses an inverter for the partialisation of rms tension on asynchronous triphase motors mounted on heat exchangers for climatization and refrigeration plants.

The inverter guarantees substantial energy savings and allows the reduction on sound level when the fans are regulated.

Suitable when low sound levels are required.

TECHNICAL DATA

Three-phases power supply 208 - 480V (-15%/+10%), 50 – 60Hz

Sinusoidal integrated filter between phase and phase and phase and ground

Shielded cable not required

Working temperature -20°C ÷ 40°C

Junction box in thermoplastic UV protected material with protection class IP54

Remote control: 0-20mA, 4-20mA, 0-5V, 0-10V

Connection MODBUS RS485

Possibility to add card plug-in for connection LON

Possibility to connect temperature probe and pressure probe

2 programmable digital inputs (Setpoint 1 o Setpoint 2, mode direct/reverse, ON/OFF speed controller)

2 programmable relays for general alarms

1 programmable analogic output 0 – 10V

PID regulation mode

Setting Max and Min fan velocity

Display for main working parameters

P - SPECIAL CUT PHASE FAN SPEED CONTROLLER



The device is a tension speed controller which uses the partialisation principle (phase cut), totally controlled on 3 phases. It is used for the partialisation of the rms tension in asynchronous triphase motors mounted on heat exchangers.

TECHNICAL DATA

Three-phases power supply $400V \pm 20\%$ 50 – 60Hz

Available controller sizes: 6A, 10A, 12A, 15A, 20A, 25A, 35A, 50AQ, 80AQ

Working temperature $-20^{\circ}C \div 40^{\circ}C$

Junction box in thermoplastic UV protected material with protection class IP54

Remote control: 0-20mA, 4-20mA, 0-5V, 0-10V(default)

Connection MODBUS RS485

Possibility to add card plug-in for connection LON

Possibility to connect temperature probe and pressure probe

2 programmable digital inputs D1-D1 / D2-D2 (Setpoint 1 o Setpoint 2, mode direct/reverse, ON/OFF speed controller, ON/OFF motor heating)

2 programmable relays for general allarms

1 programmable analogic output 0 – 10V

PID regulation mode

Setting Max and Min fan velocity

Display for main working parameters

SINGLE-PHASE

P – SPECIAL CUT PHASE FAN SPEED CONTROLLER



The device is a tension speed controller used with asynchronous single-phase motors mounted on heat exchangers.

TECHNICAL DATA

Single-phase power supply $230V -15\% / +10\%$ 50 – 60Hz

Available controller sizes: 9A

Working temperature up to $40^{\circ}C$

Junction box in thermoplastic UV protected material with protection class IP54

Input from external signal or transducer: 4-20mA, 0-10V

Connection MODBUS RS485

Possibility to connect temperature probe and pressure probe

1 analogic output 0–10V programmable

Display for main working parameters

J – EC CONTROLLER



The EC Controller is a multifunction digital unit with a microprocessor, which can simultaneously and coordinately control different EC type motors, using the signals coming from the programmable analogue inputs, apt to read the signals produced by temperature (C°), Pressure (bar) flow rate (mc) transducers etc.

TECHNICAL DATA

Single-phase power supply 230 - 400V $\pm$ 10% 50 – 60Hz

Working temperature 0°C ÷ 60°C

Junction box in thermoplastic UV protected material with protection class IP54

Setting Min and Max fan speed

Input by external signal or transducer: 4-20mA, 0-10V

Connection MODBUS RS485 Fan-side (RSA – RSB); MASTER regulation mode

Without connection MODBUS RS485 Pc-side; without SLAVE regulation mode

Possibility to connect temperature probes (default) and pressure probes

N° 4 programmable digital inputs (D1, D2, D3, D4)

N° 2 analogic outputs 0–10V

N° 2 digital relays (Relay 1, Relay 2)

Display for main working parameters

EN - EC NANO SPEED CONTROLLER



The EC NANO speed controller is a digital multifunction unit with a microprocessor, which can simultaneously and coordinately control different EC fans, using signals coming from the programmable analog inputs, which are suitable to read the signals produced by temperature (°C), pressure (bar) and flow rate (mc) transducers.

TECHNICAL DATA

Power supply 24Vdc $\pm 10\%$

Operating temperatures $-10^{\circ}\text{C} \div 50^{\circ}\text{C}$

Junction box in thermoplastic material resistant to UV rays and with protection class IP55

Regulation mode MASTER

Principle of PID regulation. Optional Proportional mode

Regulation by 13 grades detents and dip-switch

Input by external signal or transducer: 4-20mA, NTC 10KOhm 25°C

Possibility of connection for temperature probes (default) or pressure probes

N° 1 analogic output 0-10V (fan speed regulation)

N° 1 auxiliary output 24Vdc $\pm 10\%$

Led for signalling faults

EB - EC BASIC SPEED CONTROLLER



The EC BASIC is a multifunction digital unit with a microprocessor, which can simultaneously and coordinately control different motorized actuators, using the signals coming from the programmable analogue inputs, apt to read the signals produced by temperature (C°), Pressure (bar) flow rate (mc) transducers etc.

TECHNICAL DATA

Three-phases power supply: 400Vac $\pm 10\%$ 50 – 60Hz

Working temperatures: $-10^{\circ}\text{C} \div 50^{\circ}\text{C}$

Junction box in thermoplastic UV protected material with protection class IP55

Regulation mode MASTER or SLAVE

Principle of PID regulation. Optional Proportional mode

Regulation by 13 grades detents and dip-switch

Setting Min and Max fan velocity

Setting Max fan velocity at night mode

External or transducer Input: 0-20mA, 4-20mA, 0-5V, 0-10V, NTC 10KOhm 25°C

Possibility of connection for temperature probes (default) or pressure probes

Auxiliary contacts available:

- S1: mode direct (default with contact NO) – reverse (contact NC)
- SP: Selection setpoint 1 or 2 (default SP1 with contact NO, SP2 with contact NC)
- S3: Night speed limitation (default OFF with contact NO, ON with contact NC)
- S2: ON - OFF speed control (default ON with contact NO, OFF with contact NC)

N° 1 programmable relay output:

- RL1 contact relay of general alarm

N° 1 analogic output 0-10V (fan speed regulation)

N° 1 auxiliary output

Led for signalling faults

EP - EC PLUS SPEED CONTROLLER



The EC PLUS speed controller is a digital multifunction unit with a microprocessor, which can simultaneously and coordinately control different motorized actuators, using signals coming from the three programmable analog inputs, which are suitable to read the signals produced by temperature(° C), pressure (bar) and flow rate (mc) transducers.

TECHNICAL DATA

Three-phases power supply: 400V $\pm$ 20% 50 – 60Hz

Operating temperatures: -20°C ÷ 50°C

Junction box in thermoplastic material resistant to UV rays and with protection class IP55

Regulation mode MASTER or SLAVE

Principle of PID regulation. Optional Proportional mode

Setting Min and Max fan speed

Possibility to exclude different fan speed fields, excluding areas with high acoustic disturb

Input by external signal or transducer: 0-20mA, 4-20mA, 0-5V, 0-10V

RS485 Interface for MODBUS networking optional

Possibility of connection for temperature probes (default) or pressure probes

Auxiliary contacts available:

- S1: mode direct(default with contact NO) – reverse (contact NC)
- SP: Selection setpoint 1 or 2 (default SP1 with contact NO, SP2 with contact NC)
- S5: Night speed limitation (default OFF with contact NO, ON with contact NC)
- S2: ON - OFF speed control (default ON with contact NO, OFF with contact NC)
- TK: contact for the connection of the thermal motor protection (default FANS ON with contact NC, FANS OFF with contact NO)

N° 1 programmable relay output:

- RL1: contact relay of general alarm

N° 1 analogic output 0-10V (fan speed regulation)

Display for main working parameters

Led for power supply fault

Led for motor anomalies

Outputs for external supply

- 5,0 Volt (Vrr) stable
- 10,0 Volt (Vrr) stable
- 20 Volt $\pm$ 10%

EM - EC MANAGER



The ECM speed controller is a digital multifunction unit with a microprocessor, which can simultaneously and coordinately control different motorized actuators, using the signals coming from the three programmable analog inputs, which are suitable to read the signals produced by temperature (°C), pressure (bar), flow rate (mc) transducers.

The Wet & Dry mode is also integrated into the fans control system. It allows to adjust the heat exchanger capacity to the needs of the installation with the adiabatic- system activation.

TECHNICAL DATA

Power supply:

- 24Vac $\pm 10\%$ - 50 / 60Hz
- 480Vac $\pm 10\%$ - 50 / 60Hz
- 230Vac - 460Vac $\pm 10\%$ - 50 / 60Hz
- Other voltages on demand

Operating temperatures -20°C ÷ 50°C

Junction box in plastic material resistant to UV rays and with protection class IP55

Regulation mode MASTER or SLAVE

Principle of PID regulation. Optional Proportional mode

Setting Min and Max fan velocity

Input by external signal or transducer: 0-20mA, 4-20mA, 0-5V, 0-10V

N°2 MODBUS RS485 connections (COM 0 pc-side & COM 1 fan-side)

Possibility of connection for temperature probes (default) or pressure probes

Auxiliary contacts available:

- S1: mode direct (default with contact NO) – reverse (contact NC)
- SP: Selection setpoint 1 or 2 (default SP1 with contact NO, SP2 with contact NC)
- S5: Night speed limitation (default OFF with contact NO, ON with contact NC)
- S2: ON - OFF speed control (default ON with contact NO, OFF with contact NC)
- S6: Enabling max velocity spray
- TK: contact for the connection of the thermal motor protection (default FANS ON with contact NC, FANS OFF with contact NO)

N°3 programmable output relays:

- RL1: General Alarm
- RL2: "Warning" indication
- RL3: Auxiliary for heat exchanger cleaning

N° 2 programmable analogic outputs (for fan regulation or spray input)

Display for main working parameters

Led for power supply

Led for anomalies

Led for indication of special functions

Auxiliary supply output:

- 5,0 Volt (Vrr) stable
- 10,0 Volt (Vrr) stable
- 20 Volt $\pm 10\%$

Mechanical accessories

SHOCK ABSORBERS



Vibrations are generated by the rotation of the fan motors or due to the plant, from industrial or natural phenomena. The vibrations are harmful waves and may cause problems. They can also be very dangerous in the case of resonance phenomena.

The shock absorber can considerably reduce the vibratory disturbance, as well as the noise, since it is installed between the source of vibration and the mechanical anchoring.

It is possible to select this standardized accessory or require special dampers for high-seismicity environments.

FLANGES



It is possible to select slip-on aluminium or stainless steel flanges.

The unit is supplied with a nitrogen pre-charge of about 3 bars displayed on the pre-installed manometer.

Adiabatic systems

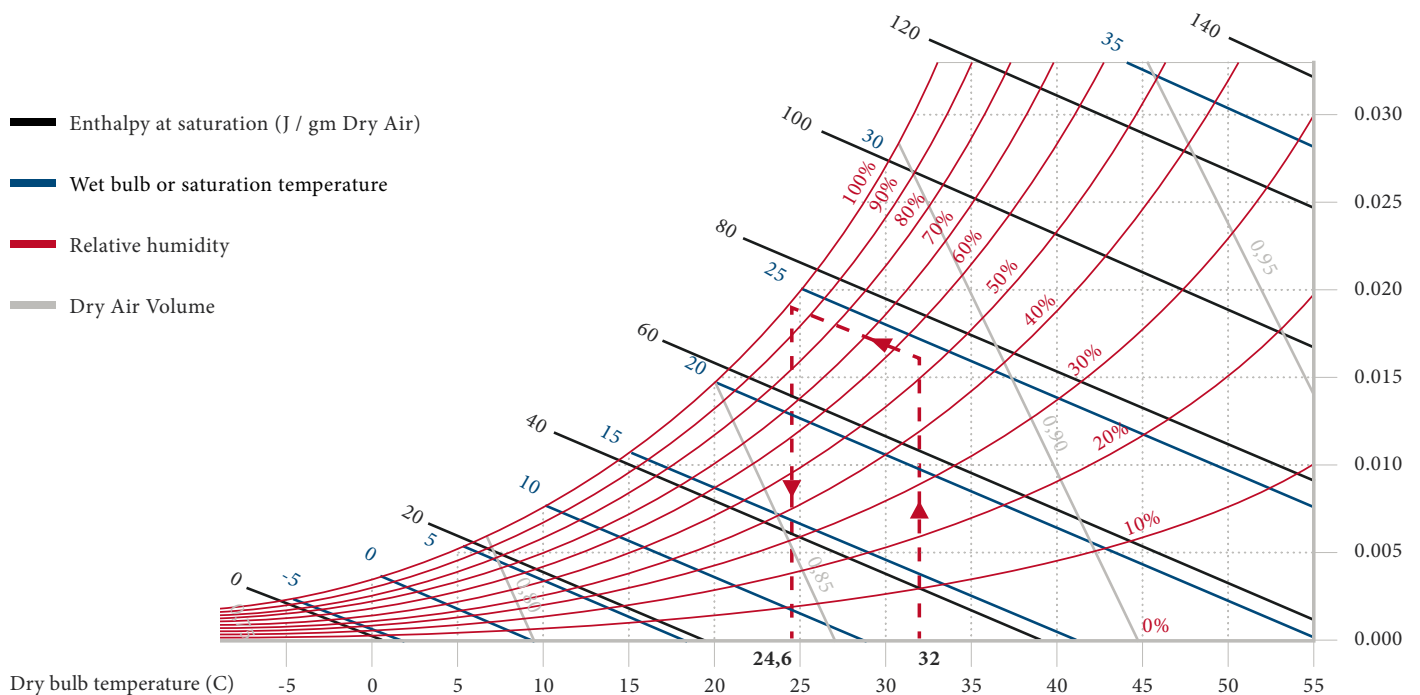


Theory

The physical phenomenon of adiabatic cooling system consists in creating a uniform diffusion of micro-drops of water (MISTING effect). The air which blows through these drops is cooled thanks to the evaporation of the water. The air cooling (effectiveness) will be as greater as the difference between the dry bulb temperature and the wet bulb temperature increases (the user can also use the value of the corresponding relative humidity).

Therefore, the volume of air absorbs from the evaporated water the required energy (evaporating latent heat), reducing the dry-bulb temperature and increasing the relative humidity up to the maximum value of air saturation. This adiabatic cooling happens without any energy input (excluding pump consumption) and can be seen on a psychrometric chart of air on the constant temperature line of the wet bulb.

The humidification efficiency will never be 100% due to the wind and to the external environmental factors of dispersion. Therefore it will reach 80% for the AFS and 95% for the WFS.

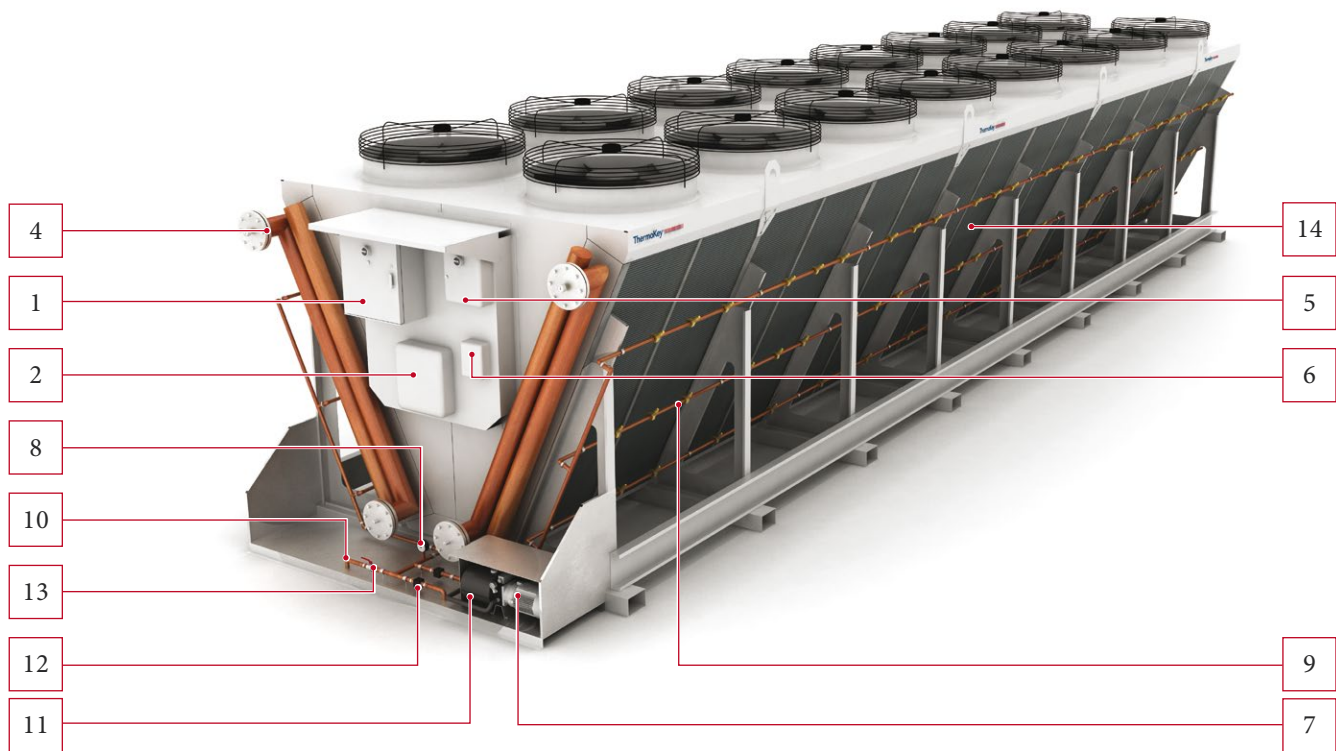


AFS – AIR FRESH SYSTEM

ThermoKey adiabatic cooling system equipped with special high-pressure nozzles, which allows to compensate for the peaks of power to be dissipated, with minimum water consumption for a maximum of 150 hours per year.

The combination of high pressure water, the nebulization effect of nozzles (MISTING effect) and a specially designed electronic control system represent the innovative principle of AFS system. It uses only the quantity of water necessary to obtain the desired adiabatic effect.

The AFS has been approved by TUV laboratories in Munich also obtaining the declaration which grants that AFS is a Legionella-free system.



COMPONENTS:

- | | |
|---|---|
| <p>1 - Power panel.</p> <p>2 - Speed controller (cut phase, step or inverter).</p> <p>3 - Electrical panel On/Off (Alternative to point 1).</p> <p>4 - Detection probes.</p> <p>5 - AFS power panel.</p> <p>6 - Electronic control card, specially designed for the AFS management.</p> <p>7 - High pressure water pump (10/20 bars), powered by 230V - 1 - 50Hz, complete with the manual setting of operating pressure.</p> <p>8 - Manometer.</p> | <p>9 - 4 sets of nozzles for single-fan row units and 6 sets of nozzles for a double-fan row units.</p> <p>10 - Copper connection pipe for the complete discharge of the ramps while the AFS is not activated.</p> <p>11 - Solenoid valve to control water charge.</p> <p>12 - Solenoid valve to control water discharge.</p> <p>13 - Emergency manual valve.</p> <p>14 - Finned pack heat exchanger with hydrophilic fins (Blue-fins).</p> |
|---|---|

WFS – WET FIN SYSTEM

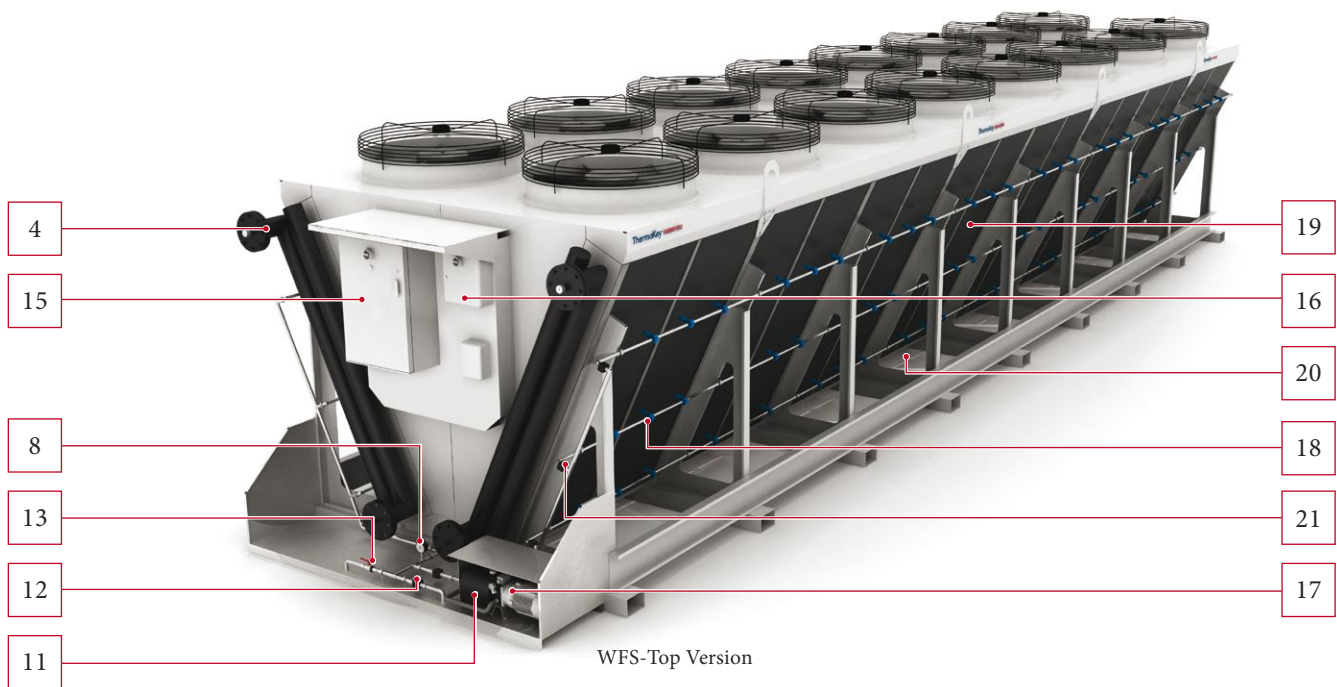
It is ThermoKey hybrid cooling system which allows a complete flexibility of operation, working at low pressure (2-3 bars) and for a very high number of hours per year (up to 900). The user can choose whether to privilege the consumption of water or electricity.

Thanks to the misting effect and to the increased exchange efficiency, the WFS system allows to reach higher saturation levels.

Upon request electrical panel with PH and conductivity information (uS/cm) available.

Upon request drip trays and/or low noise pump available.

Since WFS systems use water for a high number of hours per year, a black double-layer fin is provided in order to improve the protection of the finned pack.



THE WFS ADIABATIC SYSTEM INSTALLED ON THERMOKEY DRY COOLERS IS AVAILABLE IN THREE DIFFERENT CONFIGURATIONS TO MEET SPECIFIC NEEDS:

15 - Power panel + speed control system.

16 - WFS power panel.

17 - Low pressure water pump.

18 - Sets of nozzles (to be defined in relation with the water consumption).

19 - Finned pack heat exchanger with black double-layer fins.

20 - Drip-trays for collecting nebulization water.

21 - Solenoid valve to control each single ramp.

WFS B

Wet Fin System Basic

Adiabatic nozzles and tubes / Drip tray / Protection fins

WFS H

Wet Fin System High

Basic + Pump / Electrical panel / Speed control / WFS control system / Electrovalves

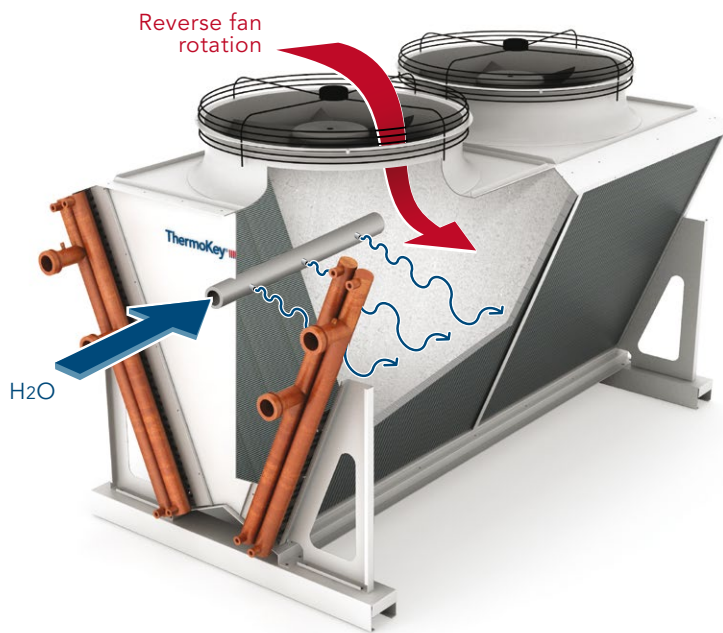
WFS T

Wet Fin System Top

High + EC fans / Multifunction electrical panel / Kit for UV water sterilization.

Other options

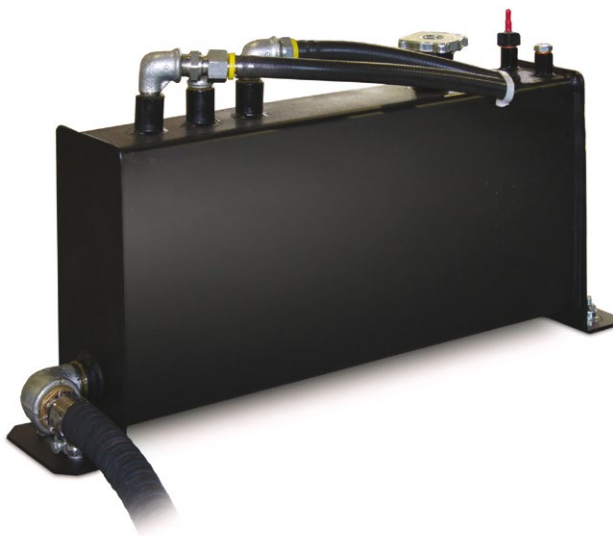
SPRAY J CLEANING SYSTEM



Cleaning system with pipes placed on the front of the unit and internal nozzles, which sprays water from inside to outside, in order to clean the heat exchanger.

Through the electronics integrated in our electrical panels, it is also possible to provide and schedule the timing of the cleaning system and reversing the rotation of the fans.

EXPANSION TANK



It is possible to provide the expansion tank (for ThermoKey drycoolers) properly sized for the circuit.

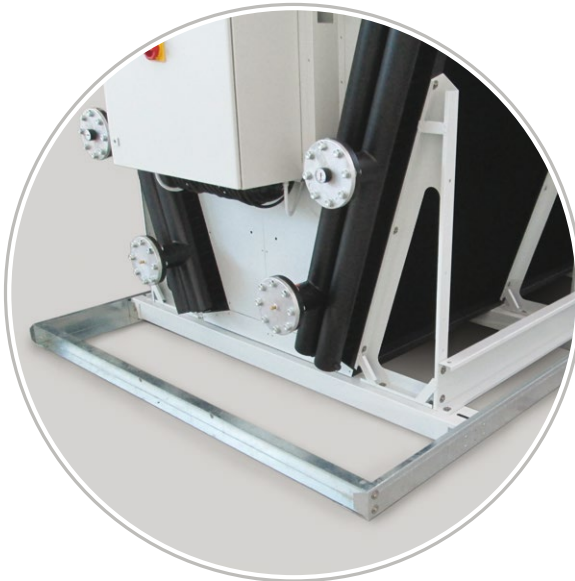
INSPECTIONABLE FANS

To improve the inspection and to facilitate the heat-exchanger cleaning on fans side.



CONTAINERIZABLE VERSION

Rails for loading into container are available for V-Type containerizable models.



Casing painting

CASING PAINTING WITH C5M PROTECTION-CLASS



ThermoKey is able to offer the casing painted with a thickness of 240µm to ensure greater durability in very aggressive environments. It means that the highest degree of protection (C5M coastal areas and offshore) according to ISO 12944 is available.

SPECIAL COATINGS

Upon request units can be painted with a specific RAL (different RAL colours available).

Type of fins

ALUMINIUM

HYDROPHILIC

Coating

Colour: Blue Hydrophilic (without SiO₂)
Acrylic Emulsion

Lacquer code: VAE706 +1% antibacteric

Corrosion resistance

500 Hours Salt fog (ASTM B 117) 5% NaCl :

Blistering size 8 frequency Few

(according to ASTM D 714 - 87)

PREPAINTED

Coating

Colour: Grey

Corrosion resistance

1000 Hours Salt fog (ASTM B 117) 5% NaCl :

Blistering size 8 frequency Few (according to ASTM D 714 - 87)

DOUBLE-LAYER

Coating

Colour: Black

Corrosion resistance

1500 Hours Salt fog (ASTM B 117) 5% NaCl :

Blistering size 8 frequency Few (according to ASTM D 714 - 87)w

COPPER

AISI 304 STAINLESS STEEL

AISI 316L STAINLESS STEEL

Additional treatments and coatings for finned pack heat exchanger

CATAPHORESIS



BLYGOLD



THERMOGUARD



HERESITE



TINNING TREATMENT



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AC0914EN

ThermoKey®
Heat Exchange Solutions

ThermoKey Spa
via dell'Industria, 1 - 33050
Rivarotta di Rivignano Teor (UD) - Italy

T. +39 0432 772300
F. +39 0432 779734
info@thermokey.it
www.thermokey.it

