TK Accessories

ThermoKey®
Heat Exchange Solutions

Index

Electrical accessories for AC fan

Wiring

E – WIRING IN JUNCTION BOX

In compliance with EC regulations
Junction box in plastic UV resistant material with protection class IP54
Working temperature -25°C ÷ 40°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 AC PANEL

Box in plastic UV resistant material with protection class IP55
Working temperature -25°C ÷ 40°C
In compliance with EC regulations

TECHNICAL DATA

Power supply: 3~ 400V / 50Hz + PE. (optional 60 Hz)
Current sizes: 16A, 40A, 63A
Main switch
Green warning light to signal system is powered.
Fuse protector for main power line
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
Terminal block for connection of controllers R + P + Z + G.
Execution in compliance with CE regulations.

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

220-690V 20A – 3 poles

Switch mounted and wired near to the fan

Working temperatures -25°C ÷ 40°C

Locked in the open position with padlock(OPTIONAL)

Red handle (black only in presence of mainswitch)

Protection class IP65

N°4 inlets Ø M20

Execution in compliance with CE regulations.

Speed controller with probe

R - PHASE CUT SPEED CONTROLLER

It is a regulator that works as a voltage controller according to the cut phase principle (control over the three phases) in order to continuously increase and reduce the value of voltage supplied to three-phase AC motors mounted on heat exchangers.

TECHNICAL DATA

Three-phases power supply: 3ph+PE 400Vac ± 20 % - 50/60Hz
(other voltages upon request)

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

Operating temperatures -20°C ÷ 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

RS485 Interface for MODBUS networking optional (Plug-in on demand)

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:1ph+N+PE 230V ± 20 % - 50/60Hz

Available controller sizes: 8A

Working temperatures: -10°C ÷ 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: Enabiling 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 ±10%

G – STEP FAN SPEED CONTROLLER

Controller G is an electronic three-phase control unit designed according to the voltage step technology for accurate regulation, totally free of sound, electrical and electromagnetic disturbance.

Thanks to this type of controller, effective voltage fed to the motor fitted in the fan varies according to fixed values that are determined by the steps featured in the auto-transformer and in the asynchronous motor.

In this way, regulation is perfectly sinusoidal (constant frequency) and can be applied to motors without requiring shielded cables and EMC or LHC filters for motor protection against microwaves.

There are 6 voltage steps (400-265-190-140-95-65 VAC to the 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.

TECHNICAL DATA

Three-phases power supply: 3ph+PE 400Vac ± 10 % - 50 / 60Hz normalized

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

Working temperatures -10°C ÷ 50°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

Inverter Z guarantees a remarkable energy saving and reduces the noise produced by the fans during the regulation phase.

This is why it is ideal in environments with very limitating noise level restrictions.It is designed for the regulation of three-phase asynchronous motors mounted on heat exchangers.

Suitable when low sound levels are required.

TECHNICAL DATA

Three-phases power supply: 3ph+PE 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 (Plug-in on demand)

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 (ON DEMAND)

Controller P is a multifunction and multiple-input unit for the regulation of speed of asynchronous three-phase motors installed on axial fans.

This device works as a voltage controller according to the cut phase principle (control over the three phases) in order to continuously increase and reduce the value of voltage supplied to three-phase AC motors mounted on the fan units.

TECHNICAL DATA

Three-phases power supply: 3ph+PE 280-415V (-10%/+6%), 50/60Hz

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

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(default)

Connection MODBUS RS485

Possibility to add card plug-in for connection LON (Plug-in on demand)

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

Electrical accessories for EC Fan

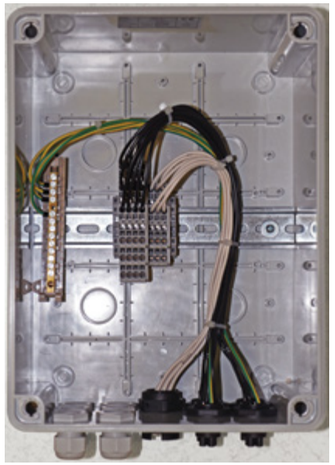
	EC BASIC	EC PLUS	REP SWITCHES	AFS - WFS
W1E			■	
W3E	■	■	■	
Q1E	■	■	■	
Q2E			■	■
Q3E				
Q4E(*)				■

■ Available on Archimede

(*) Available only on double fan-rows

Wiring

W1E – ELECTRIC BOX FOR EC FANS WITH PLASTIC CASING



Plastic UV-resistant box,
Protection class IP55.
Working temperatures: -25°C/40°C.
Power supply: 3~ 400V / 50Hz +PE.
Fan speed regulation control with 0-10V signal.
Free fan alarm contact.
MODBUS communication RS485 (fans-side).
Quick power connectors for fans directly on panel.
Quick signal connector for fans directly on panel.
Execution in compliance with CE regulations.

W2E – ELECTRIC BOX FOR EC FANS WITH PLASTIC CASING AND FAN SWITCHES (1X2)

Plastic UV-resistant box,
Protection class IP65.
Box-mounted switches (1 switch every 2 fans).
Contacts for switch status indication.
Working temperatures: -20°C/40°C.
Power supply: 3~ 400V / 50Hz +PE.
Fan speed regulation control with 0-10V signal.
Free fan alarm contact.
MODBUS communication RS485 (fans-side).
Quick power connectors for fans directly on panel
Quick signal connector for fans directly on panel
Execution in compliance with CE regulations

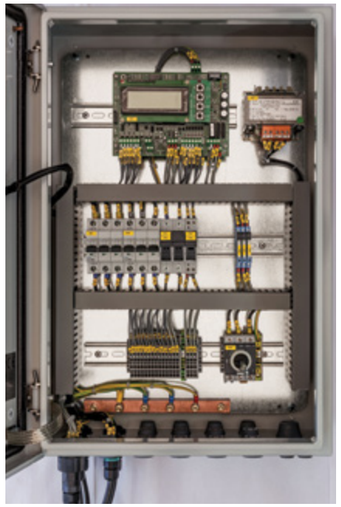
W3E – ELECTRICAL PANEL FOR EC FANS WITH PLASTIC CASING, FUSE PROTECTION FOR GROUPS OF FANS AND EXTERNAL CONTROL 0-10V

Plastic UV-resistant box
Protection class IP55.
Working temperatures: -20°C/40°C.
Power supply: 3~ 400V / 50Hz +PE.
Main switch.
Fuse protection for groups of fans.
Suitable to connect J + EN + EB + EP + EM controllers (to be mounted outside this panel)
Fan speed regulation control with 0-10V signal.
Free contact on main switch for ON/OFF indicator.
Free fan alarm contact.
MODBUS communication RS485 (fans-side).
Quick power connectors for fans directly on panel
Quick signal connector for fans directly on panel
Execution in compliance with CE regulations.

Q1E – ELECTRICAL PANEL FOR EC FANS WITH PAINT COATED METAL CASING. PROTECTED BY AUTOMATIC SWITCHES (CIRCUIT BREAKERS) CONNECTED TO GROUPS OF FANS, EXTERNAL CONTROL 0-10V.

Metal casing painted RAL7035, 120 micron thickness, suitable for outdoor installation.
Protection class IP65.
Working temperatures: -20°C/40°C.
Power supply: 3~ 400V / 50Hz +PE.
Main switch.
Protected by automatic switches (circuit breakers) connected to groups of fans.
Suitable to connect J + EN + EB + EP + EM controllers (to be mounted outside this panel)
Fan speed regulation control with 0-10V signal.
Free contact for unit live indicator.
Free general fan alarm contact.
MODBUS communication RS485 (fans-side).
Warning light to signal system is powered.
General alarm warning light.
Quick power connectors for fans directly on panel.
Quick signal connector for fans directly on panel.
Execution in compliance with CE regulations

Q2E – ELECTRICAL PANEL FOR EC FANS WITH PAINT COATED METAL CASING, CONTROLLER MOUNTED INSIDE THE BOX, PROTECTED BY AUTOMATIC SWITCHES (CIRCUIT BREAKERS) CONNECTED TO GROUPS OF FANS, FAN REGULATION CONTROL MODBUS RS485



Metal casing painted RAL7035, 120 micron thickness, suitable for outdoor installation.
Protection class IP65.
Working temperatures: -20°C/40°C.
Power supply: 3~ 400V / 50Hz +PE.
Main switch.
Protected by automatic switches (circuit breakers) connected to groups of fans.
Controller mounted inside the box.
Fan speed regulation controlled by MODBUS.
Free contact for unit powered indicator.
Free general fan alarm contact.
Warning light to signal system is powered.
General alarm warning light
Quick power connectors for fans directly on panel.
Quick signal connector for fans directly on panel.
Execution in compliance with CE regulations.
CONTROLLER Em - EC-MANAGER:

- 2 MODBUS RS485 connections (COM 0 on PC side & COM 1 on fan side).
- Possibility to connect temperature probes (by default) or pressure probes.
- Min. and Max. fan speed setting.

Auxiliary contacts - available contacts:

- S1 - direct mode (by default with NO contact) - reverse (with NC contact);
- SP - selection of setpoints 1 or 2 (SP1 by default with NO contact; SP2 with NC contact);
- S5 - night speed limitation (by default OFF with NO contact; ON with NC contact);
- S2 - controller ON-OFF (by default ON with NO contact; OFF with NC contact);
- S6 - max. spray speed enable;
- TK - contact for connection of the thermal motor protection (by default FANS ON with NC contact; FANS OFF with NO contact).

3 programmable relays: RL1 - general controller alarm; RL2 - fan alarm; RL3 - relay for heat exchanger cleaning start.2 programmable analog outputs (for fan regulation or spray activation).

Advanced functions:

- Emergency fan speed - fan rotation speed in the case of a control system fault;
- Overspeed - possibility to increase the speed setpoint above the max. fan speed value (by-pass MAX RPM limit);
- Speed-off - possibility to reduce the speed setpoint below the min. fan speed value (by-pass MIN RPM limit); Low capacity - is used to switch off groups of fans in the case of low temperatures, high temperature variations between day and night;
- Anti-lock - is used to start the fans if they are supposed not to operate for a long time;
- Washing - is used to program a washing cycle of the heat exchanger (start, frequency, duration), including reverse fan rotation and activation of the RL3 relay for washing system start-up;
- Cleaning - is used to program a washing cycle of the heat exchanger (start, frequency, duration, rotation speed), including reverse fan rotation;
- Separate regulation of 2 fan groups - possibility to manage two different rows of fans having different setup/regulation parameters; reverse fan rotation - possibility to operate the fans in reverse rotation.

Q3E – ELECTRICAL PANEL FOR EC FANS WITH PAINT COATED METAL CASING,CONTROLLER MOUNTED INSIDE THE BOX, PROTECTED BY AUTOMATIC SWITCHES (CIRCUIT BREAKERS) CONNECTED TO GROUPS OF FANS, FAN REGULATION CONTROL MODBUS RS485, INTERNAL ANTI CONDENSATE HEATING ELEMENT

Metal casing painted with RAL7035, 120 micron thickness, suitable for outdoors installation.
Protection class IP65.
Working temperatures: -40°C/40°C.
Power supply: 3~ 400V / 50Hz +PE.
Master switch.
Protected by automatic switches (circuit breakers) connected to groups of fans.
Controller mounted inside the box.
Fan speed regulation controlled by MODBUS.
Free contact for unit powered indicator.
Free general fan alarm contact.
Warning light to signal system is powered.
General alarm warning light
Quick power connectors for fans directly on panel.
Quick signal connector for fans directly on panel.
Execution in compliance with CE regulations.
Internal heating element suitably sized for ambient temperatures up to -40°C.
Execution in compliance with CE regulations.
CONTROLLER Em - EC-MANAGER:

- 2 MODBUS RS485 connections (COM 0 on PC side & COM 1 on fan side).
- Possibility to connect temperature probes (by default) or pressure probes.
- Min. and Max. fan speed setting.

Auxiliary contacts - available contacts:

- S1 - direct mode (by default with NO contact) - reverse (with NC contact);
- SP - selection of setpoints 1 or 2 (SP1 by default with NO contact; SP2 with NC contact);
- S5 - night speed limitation (by default OFF with NO contact; ON with NC contact);
- S2 - controller ON-OFF (by default ON with NO contact; OFF with NC contact);
- S6: max. spray speed enable;
- TK - contact for connection of the thermal motor protection (by default FANS ON with NC contact; FANS OFF with NO contact).

3 programmable relays: RL1 - general controller alarm; RL2 - fan alarm; RL3 - relay for heat exchanger cleaning start.2 programmable analog outputs (for fan regulation or spray activation).

Advanced functions:

- Emergency fan speed - fan rotation speed in the case of a control system fault;
- Overspeed - possibility to increase the speed setpoint above the max. fan speed value (by-pass MAX RPM limit);
- Speed-off - possibility to reduce the speed setpoint below the min. fan speed value (by-pass MIN RPM limit); Low capacity - is used to switch off groups of fans in the case of low temperatures, high temperature variations between day and night;
- Anti-lock - is used to start the fans if they are supposed not to operate for a long time;
- Washing - is used to program a washing cycle of the heat exchanger (start, frequency, duration), including reverse fan rotation and activation of the RL3 relay for washing system start-up;
- Cleaning - is used to program a washing cycle of the heat exchanger (start, frequency, duration, rotation speed), including reverse fan rotation
- Separate regulation of 2 fan groups - possibility to manage two different rows of fans having different setup/regulation parameters; reverse fan rotation - possibility to operate the fans in reverse rotation.

Q4E – ELECTRICAL PANEL FOR EC FANS WITH PAINT COATED METAL CASING, INTERNALLY MOUNTED CONTROLLER, PROTECTED BY AUTOMATIC SWITCHES (CIRCUIT BREAKERS) CONNECTED TO GROUPS OF FANS, FAN REGULATION CONTROL MODBUS RS485. PANEL-MOUNTED SWITCHES (1 SWITCH EVERY 2 FANS) (1X2).

Metal casing painted RAL7035, 120 micron thickness, suitable for outdoor installation.
Protection class IP65.
Working temperatures: -20°C/40°C.
Power supply: 3~ 400V / 50Hz +PE.
Main switch.
Box-mounted switches (1 switch every 2 fans).
Contacts for switch status indication
Protected by automatic switches (circuit breakers) connected to groups of fans.
Controller mounted inside the box.
Fan speed regulation controlled by MODBUS.
Free contact for unit powered indicator.
Free general fan alarm contact.
Warning light to signal system is powered.
General alarm warning light.
Quick power connectors for fans directly on panel.
Quick signal connector for fans directly on panel.
Execution in compliance with CE regulations.
CONTROLLER Em - EC-MANAGER:

- 2 MODBUS RS485 connections (COM 0 on PC side & COM 1 on fan side).
- Possibility to connect temperature probes (by default) or pressure probes.
- Min. and Max. fan speed setting.

Auxiliary contacts - available contacts:

- S1 - direct mode (by default with NO contact) - reverse (with NC contact);
- SP - selection of setpoints 1 or 2 (SP1 by default with NO contact; SP2 with NC contact);
- S5 - night speed limitation (by default OFF with NO contact; ON with NC contact);
- S2 - controller ON-OFF (by default ON with NO contact; OFF with NC contact);
- S6: max. spray speed enable;
- TK - contact for connection of the thermal motor protection (by default FANS ON with NC contact; FANS OFF with NO contact).

3 programmable relays: RL1 - general controller alarm; RL2 - fan alarm; RL3 - relay for heat exchanger cleaning start.2 programmable analog outputs (for fan regulation or spray activation).

Advanced functions:

- Emergency fan speed - fan rotation speed in the case of a control system fault;
- Overspeed - possibility to increase the speed setpoint above the max. fan speed value (by-pass MAX RPM limit);
- Speed-off - possibility to reduce the speed setpoint below the min. fan speed value (by-pass MIN RPM limit); Low capacity - is used to switch off groups of fans in the case of low temperatures, high temperature variations between day and night;
- Anti-lock - is used to start the fans if they are supposed not to operate for a long time;
- Washing - is used to program a washing cycle of the heat exchanger (start, frequency, duration), including reverse fan rotation and activation of the RL3 relay for washing system start-up;
- Cleaning - is used to program a washing cycle of the heat exchanger (start, frequency, duration, rotation speed), including reverse fan rotation;
- Separate regulation of 2 fan groups - possibility to manage two different rows of fans having different setup/regulation parameters; reverse fan rotation - possibility to operate the fans in reverse rotation.

Repair switch

I – REPAIR SWITCH

220-690V 20A – 3 poles

Switch mounted and wired near to the fan

Working temperatures -25°C ÷ 40°C

Locked in the open position with padlock(OPTIONAL)

Red handle (black only in presence of mainswitch)

Protection class IP65

N°4 inlets Ø M20

Execution in compliance with CE regulations.

Speed controller with probe

EB - EC BASIC SPEED CONTROLLER

The EC BASIC Eb is a multifunction and multiple-input unit for the regulation of speed of three-phase electronically commutated motors installed on axial fans, which is designed to regulate different EC motors, in a simultaneous and coordinated way, using programmable input signals..

TECHNICAL DATA

Power supply: 2ph+PE 400Vac ±10% (other voltages upon request)

Working temperatures: -20°C ÷ 50°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 Ep is a multifunction and multiple-input unit for the regulation of speed of three-phase electronically commutated motors installed on axial fans, which is designed to regulate different EC motors, in a simultaneous and coordinated way, using programmable input signals.
Power supply: IP55: 2ph+PE 400Vac ±20% (other voltages upon request)

TECHNICAL DATA

Power supply: 2ph+PE 400Vac ±20% (other voltages upon request).

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 ±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 schock 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

AFS Air Fresh System

WFS Wet Fin System

EPS Evaporative Panel System

Theory

The adiabatic system applied to Dry Coolers and large remote condensers are activated in order to increase the air relative humidity that passes through the heat exchanger so as to reduce the temperature and increase the heat exchange.

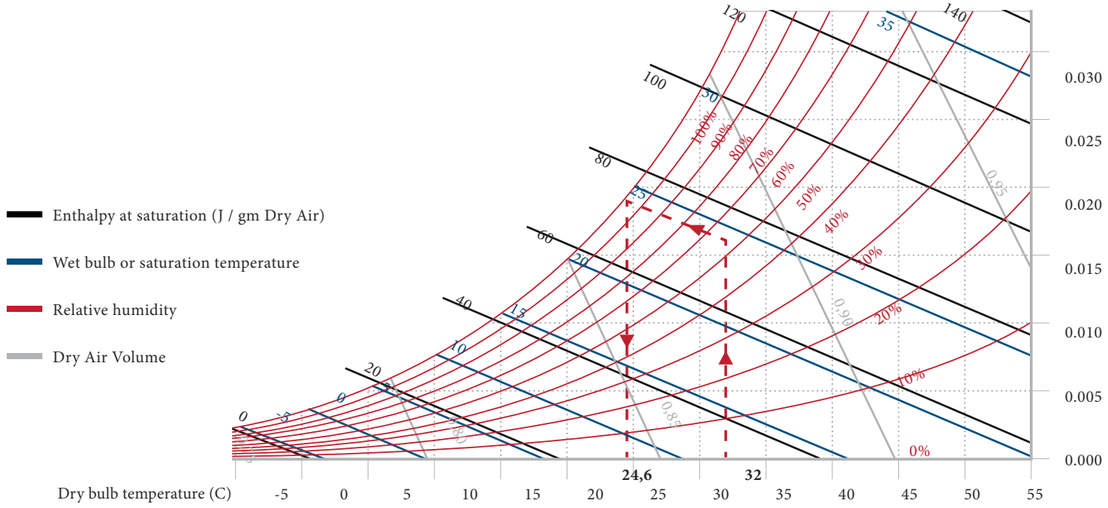
The physical principle is that of the latent heat of evaporation: by evaporating the water absorbs heat from the air entering in the heat exchanger and lowers its temperature.

ThermoKey has developed different adiabatic system to be effective and efficient under certain environmental conditions.

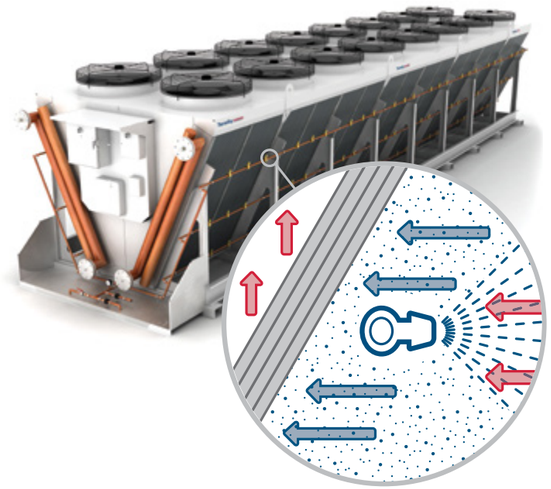
It is therefore essetial to use the most correct system in relation to the installation needs.

The most important parameters to be considered in the choice of the correct adiabatic systems are:

- Possible working hours per year.
- Obtainable relative humidity gap (efficiency).
- Obtainable saturation.
- Maximum difference of dry bulb temperature between ambient air temperature and suction air temperature after the adiabatic cooling.



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 500 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.

Tüv Certificated: "No danger in correlation with the risk of legionnaires' disease".

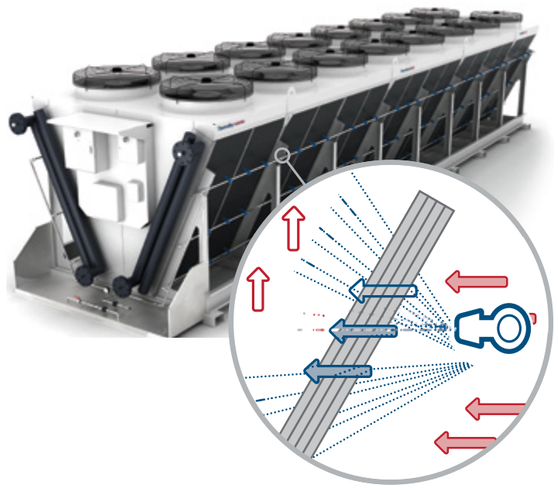
WFS WET FIN SYSTEM

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 1000).

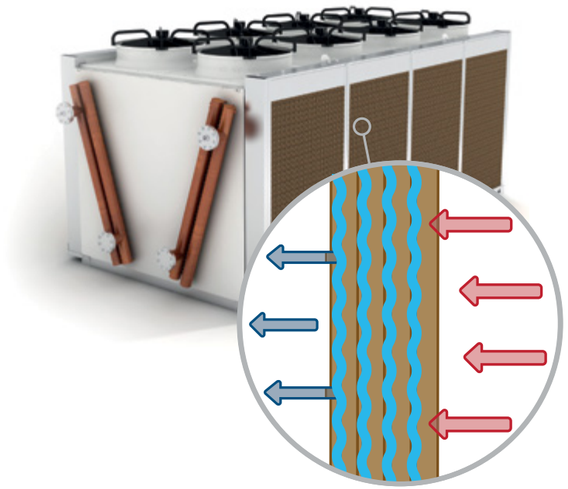
The user can choose whether to prioritize the consumption of water or electricity. Thanks to the misting effect and to the increased exchange efficiency, the WFS system allows to reach higher saturation levels.

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.

Mainz Universitätsmedizin Laboratory certifies that the WFS meets the standard VDI 2047 part 2 securing hygenically sound operation.



EPS EVAPORATIVE PANEL SYSTEM



The evaporative panel system completes ThermoKey's offer for adiabatic cooling. Thanks to a homogeneous and adjustable distribution of water on the panels this system allows to reach a high saturation level and therefore an efficient capacity increase with low water consumption (hours per year unlimited).

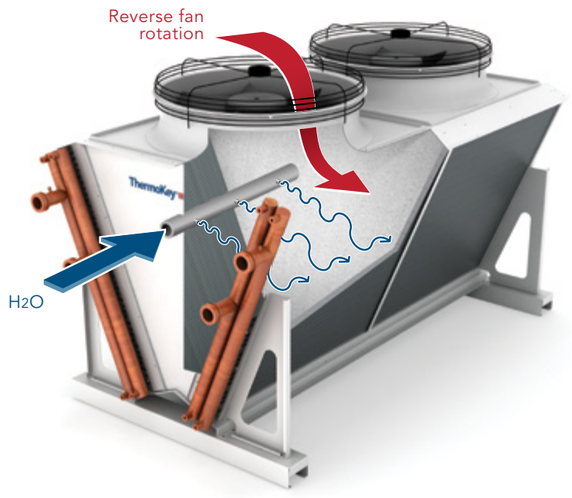
EPS has been designed for seasonal working cycles without any specific time limitation and can be completely disassembled for cleaning and maintenance operations.

Thanks to the evaporation contained in the panel there is no need of any protective treatment for the heat exchanger. It is possible to use the water distributed by the common water supply network.

COMPARISON CHART	AFS	WFS	EPS	COOLING TOWER
MOIST AIR SATURATION	80%	100%	90%	100%
STANDARD AIR TEMPERATURE REDUCTION	7K	10K	8K	10K
WATER CONSUMPTION	LOW	MEDIUM	LOW	HIGH
WATER TREATMENT	NECESSARY	NECESSARY	NOT NECESSARY	NECESSARY
DIRECT ENERGY CONSUMPTION	HIGH	LOW	LOW	LOW
ENVIRONMENTAL INFLUENCE	HIGH	LOW	LOW	HIGH
COIL PROTECTION	HYDROPHOBIC	DOUBLE-LAYER	NOT NECESSARY	/
FUNCTIONING HOUR	500/Y	1000/Y	CONTINUOUS	CONTINUOUS
MAINTENANCE COSTS	LOW	LOW	LOW	HIGH

Other options

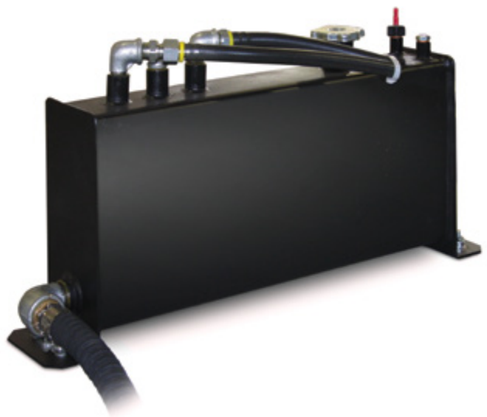
SCS SPRAY J CLEANING SYSTEM



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

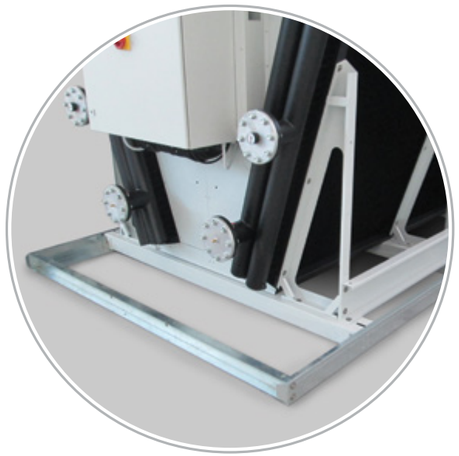


It is possible to provide the expansion tank (for ThermoKey drycoolers) properly sized for the circuit.

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

HYDROPHOBIC

Coating

Colour: Blue Hydrophobic
Acrylic Emulsion

Lacquer code: VAE225

Corrosion resistance

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

PREPAINTED BLUE

Coating

Colour: Blue

Corrosion resistance

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

DOUBLE-LAYER

Coating

Colour: Black

Corrosion resistance

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

COPPER

AISI 304 STAINLESS STEEL

AISI 316L STAINLESS STEEL

Additional treatments and coatings for finned pack heat exchanger

CATAPHORESIS

BLYGOLD

THERMOGUARD

HERESITE

TINNING TREATMENT

Direction
Acrobatik
—
AC0717EN

ThermoKey®

Heat Exchange Solutions

ThermoKey Spa
via dell'Industria, 1 - 33061
Rivarotta di Rivignano Teor (UD) - Italy

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