ThermoKey®

Heat Exchange Solutions

TK Accessories

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Electrical accessories for AC fans

Wiring

E – JUNCTION BOX

Junction box in plastic UV resistant material with protection class IP56.

Working temperature -25°C ÷ 40°C.

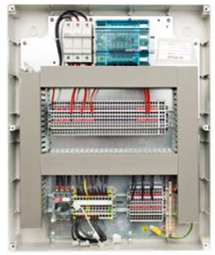
Power terminals and thermocontacts separately connected to junction box for each fan.

Power supplies to be made by customer for each fan.

Electrical cables suitable for outdoor installation, resistant to UV.

Execution in compliance with CE regulations.

Q – WIRING WITH ELECTRICAL AC PANEL



Box in plastic UV resistant material with protection class IP55.

Working temperature -25°C ÷ 40°C.

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.

Execution in compliance with CE regulations.

W1A – JUNCTION BOX WITH CONTROLLER (VALID UP TO MAX 20A)

Junction box in plastic UV resistant material with protection class IP56.

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.

Power supply to be made by customer with singular cable.

Available only with controller.

Execution in compliance with CE regulations.

W2A – JUNCTION BOX FOR CRITICAL TEMPERATURES (-40°C ÷ 75°C)

Junction box in plastic UV resistant material with protection class IP65.

Working temperature -40°C ÷ +75°C.

Power supplies to be made by customer for each fan.

Power terminals and thermocontacts separately connected to junction box for each fan.

Electrical cables suitable for outdoor installation, resistant to UV.

Execution in compliance with CE regulations.

WATKS – JUNCTION BOX WITH MAIN SWITCH (UP TO 13A)

Plastic UV-resistant box.

Protection class IP56.

Working temperatures: -20°C ÷ 40°C.

Power supply: 3~ 400V / 50Hz +PE.

Current sizes: up to 13A (Maximum 20A on request).

Main switch.

Installation stand alone or connected with R + P + Z (mounted outside of the panel).

Free contact on main switch for ON/OFF indicator.

Fans thermocontacts connected in series on terminal block (needs external control).

Execution in compliance with CE regulations.

Q SPECIAL – 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).

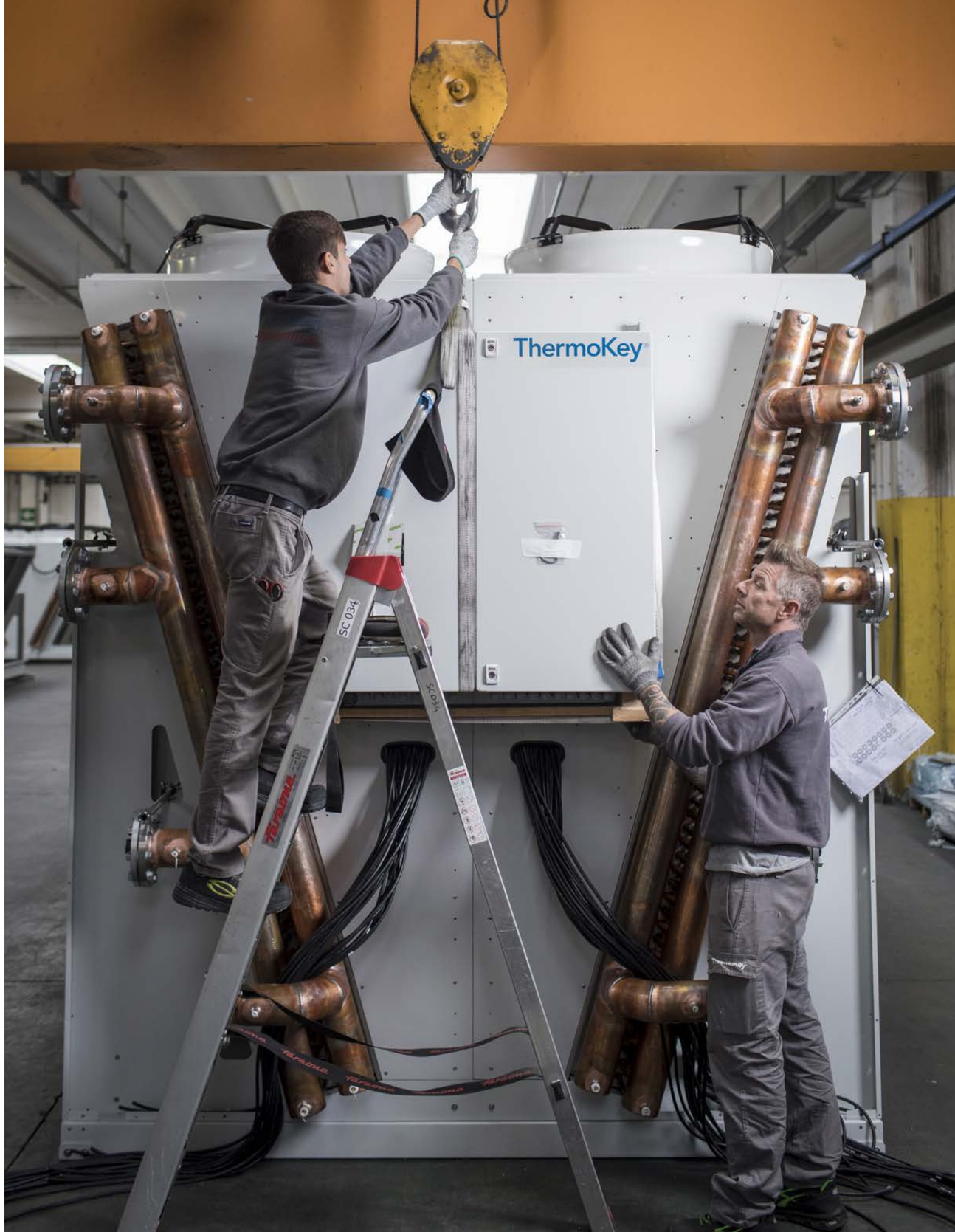
Door lock with key.

Suitable for corrosive environments, etc.

Variable number of fans following the installation field.

Cables suitable for outdoor use, UV resistant.

Execution in compliance with CE regulations.



Repair switch

I – REPAIR SWITCH

220-480V 20A - 3 poles (6 poles on request).

Switch mounted and wired near the fan.

Working temperatures -25°C ÷ 40°C.

Locked in the open position with padlock (on request).

Black Handle (red handle on request).

Protection class IP65.

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).

Operating temperatures -20°C ÷ 50°C.

Junction box in thermoplastic UV protected material with protection class IP55.

Regulation mode MASTER (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-5V, 0-10V).

RS485 Interface for Modbus Slave networking.

Auxiliary contacts available:

- S1: mode direct – reverse;
- SP: Selection setpoint 1 or 2;
- S5: Night speed limitation;
- S2: ON - OFF speed control;
- TK: contact for the connection of the thermal motor protection.

RL1 programmable contact relay of general alarm.

PID or Proportional mode regulation.

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.

R – SINGLE PHASE CUT SPEED CONTROLLER

Esy 1 is a voltage 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.

Working temperatures: -10°C ÷ 50°C.

Box in thermoplastic UV protected material with protection class IP56.

Input by external signal or transducer: 4-20mA; 0-5V; 0-10V; NTC 10KOhm 25°C;

Regulation mode MASTER "P" (temperature or pressure probes) or SLAVE (0-10V)

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

Working parameters selectables with trimmers:

- Max Out : Max output limit RPM
- Min Out : Max output limit RPM
- SP : Main Set-Point 1
- SP adj. : Set-Point 1 fine adjustment

Special Functions selectables with trimmers:

- J1: Direct (DEFAULT) /Inverse;
- J2: Speed at set-point Max (Default) / Min;
- J3: Start regulation Mode Start Vac (Default) / Min speed;
- J4: Output for Extra Slave Power 0-10V (Default) / PWM 4.20mA.

N°1 output 0-10Vdc/PWM for slave unit.

Led for power supply.

Led for Setpoint higher than input signal.

Z – INVERTER SPEED CONTROLLER WITH SINUSOIDAL FILTERS INSTALLED (ON DEMAND)

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.

Regulation mode MASTER (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-5V, 0-10V).

Connection Modbus RS485.

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

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 or Proportional mode regulation.

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 280-415 V (-15/+10 %), 50/60 Hz.

Working temperature -20°C ÷ 40°C.

Junction box in thermoplastic UV protected material with protection class IP54.

Regulation mode MASTER (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-10V).

Connection Modbus RS485.

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

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.

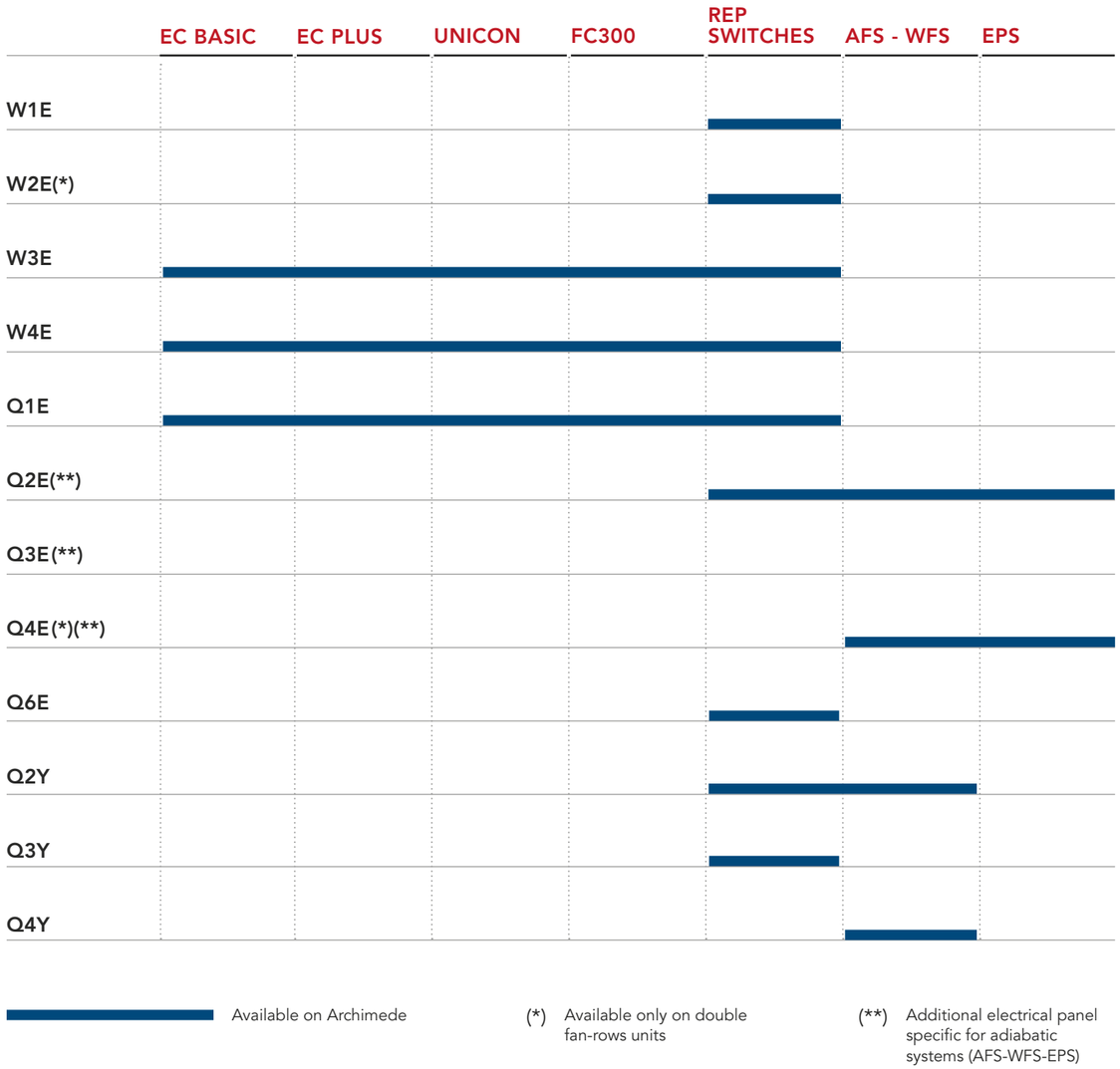
1 programmable analogic output 0 – 10V.

PID or Proportional mode regulation.

Setting Max and Min fan velocity.

Display for main working parameters.

Electrical accessories for EC fans



Wiring

W1E – JUNCTION 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 contact for fans alarm.

Fan side Modbus RTU RS485 communication (only on request).

Quick fans power connectors and signals connector 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).

Free contact for switch status indication.

Working temperatures: -25°C ÷ 40°C.

Power supply: 3~ 400V / 50Hz +PE.

Fan speed regulation control with 0-10V signal.

Free contact for fans alarm.

Fan side Modbus RTU RS485 communication (only on request).

Quick fans power connectors and signals connector directly on panel

Execution in compliance with CE regulations.

W3E – ELECTRICAL PANEL FOR EC FANS WITH PLASTIC CASING, PROTECTED BY FUSES CONNECTED TO GROUPS OF FANS AND CONTROLLED BY 0-10V

Plastic UV-resistant box.

Protection class IP55.

Working temperatures: -20°C ÷ 40°C.

Power supply: 3~ 400V / 50Hz +PE.

Main switch.

Protected by fuses connected to groups of fans.

Suitable to connect EB + EP + UN + FC300 controllers (mounted outside of the electrical panel).

Fan speed regulation control with 0-10V signal external or by available controllers.

Free contacts for main switch ON-OFF / fans alarm / controller alarm (if installed)

Fan side Modbus RTU RS485 communication (only on request).

Quick fans power connectors and signals connector directly on panel.

Execution in compliance with CE regulations.

W4E – ELECTRICAL PANEL FOR EC FANS WITH PLASTIC CASING, PROTECTED BY AUTOMATIC SWITCHES (CIRCUIT BREAKERS) CONNECTED TO GROUPS OF FANS AND CONTROLLED BY 0-10V

Plastic UV-resistant box.

Protection class IP55.

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 EB + EP + UN + FC300 controllers (mounted outside of the electrical panel)

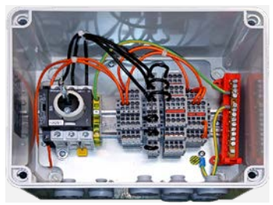
Fan speed regulation control with 0-10V signal external or by available controllers

Fan side Modbus RTU RS485 communication (only on request).

Quick fans power connectors and signals connector directly on panel

Execution in compliance with CE regulations.

WETKS – JUNCTION BOX WITH MAIN SWITCH (UP TO 13A)



Plastic UV-resistant box.

Protection class IP56.

Working temperatures: --20°C ÷ 40°C.

Power supply: 3~ 400V / 50Hz +PE.

Main switch.

Installation stand alone or with EB + EP + UN + FC300 controllers (mounted outside of the electrical panel)

Fan speed regulation control with 0-10V signal external or by available controllers

Free contacts for main switch ON-OFF indication / fans alarm / controller alarm (if installed)

Fan side Modbus RTU RS485 communication (only on request).

Execution in compliance with CE regulations.

W5E – JUNCTION BOX FOR CRITICAL TEMPERATURES (-40°C ÷ 75°C)

Plastic UV-resistant box.

Protection class IP66.

Working temperatures: -40°C ÷ 75°C

Power supply: 3~ 400V / 50Hz +PE.

Fan speed regulation control with 0-10V signal.

Free contact for fans alarm.

Fan side Modbus RTU RS485 communication (only on request).

Quick fans power connectors and signals connector 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 AND CONTROLLED BY 0-10V

Metal casing painted RAL7035, 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 EB + EP + UN + FC300 controllers (mounted outside of the electrical panel)

Fan speed regulation control with 0-10V signal external or by available controllers

Free contact for unit powered / General fan alarm contact.

Fan side Modbus RTU RS485 communication (only on request).

Light indicator for unit warning and unit alarm mounted on panel door

Quick fans power connectors and signals connector 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 CONTROLLED BY MODBUS RS485

Metal casing painted with RAL7035, suitable for outdoors 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.

ECM controller mounted inside the box.

Fan speed regulation controlled by Modbus RTU.

Monitoring from BMS via Modbus RTU.

Free contact for unit powered / general alarms / general warnings

Selection of Direct mode or Reverse mode / Setpoints 1 or 2 / Night speed limitation / On-Off Operation.

Light indicator for unit warning and unit alarm mounted on panel door

Quick fans power connectors and signals connector directly on panel

Execution in compliance with CE regulations.

AVAILABLE FEATURES

Regulation mode MASTER (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-5V, 0-10V).

PID or Proportional mode regulation.

Min. and Max. fan speed setting.

ADVANCED FUNCTIONS

Emergency fan speed – Shedding function – Speed jump – Over speed – Speed off – Eco mode – Floating SP – Setpoint adjust – Slave safety – Cleaning – Washing - Reverse fan rotation.

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

Metal casing painted with RAL7035, suitable for outdoors installation

Protection class IP65.

Working temperatures: -40°C ÷ 40°C.

Power supply: 3~ 400V / 50Hz +PE.

Main switch.

Protected by automatic switches (circuit breakers) connected to groups of fans.

ECM controller mounted inside the box.

Fan speed regulation controlled by Modbus RTU.

Monitoring from BMS via Modbus RTU.

Free contact for unit powered / General alarms / General warnings

Selection of Direct mode or Reverse mode / Setpoints 1 or 2 / Night speed limitation / On-Off Operation.

Light indicator for unit warning and unit alarm mounted on panel door

Quick fans power connectors and signals connector directly on panel

Internal heating element suitably sized for ambient temperatures up to -40°C.

Execution in compliance with CE regulations.

AVAILABLE FEATURES

Regulation mode MASTER (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-5V, 0-10V).

PID or Proportional mode regulation.

Min. and Max. fan speed setting.

ADVANCED FUNCTIONS

Emergency fan speed – Shedding function – Speed jump – Over speed – Speed off – Eco mode – Floating SP – Setpoint adjust – Slave safety – Cleaning – Washing - Reverse fan rotation.

Q4E – ELECTRICAL PANEL FOR EC FANS WITH PAINT COATED METAL CASING, CONTROLLER MOUNTED INSIDE THE BOX, DOOR PANEL MOUNTED SWITCHES (1X2FANS), PROTECTED BY AUTOMATIC SWITCHES (CIRCUIT BREAKERS) CONNECTED TO GROUPS OF FANS CONTROLLED BY MODBUS RS485

Metal casing painted with RAL7035, suitable for outdoors 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).

Protected by automatic switches (circuit breakers) connected to groups of fans.

ECM controller mounted inside the box.

Fan speed regulation controlled by Modbus RTU.

Monitoring from BMS via Modbus RTU.

Free contact for unit powered / General alarms / General warnings / Fan switch status.

Selection of Direct mode or Reverse mode / Setpoints 1 or 2 / Night speed limitation / On-Off Operation.

Light indicator for unit warning and unit alarm mounted on the panel door.

Quick fans power connectors and signals connector directly on panel

Execution in compliance with CE regulations.

AVAILABLE FEATURES

Regulation mode MASTER (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-5V, 0-10V).

PID or Proportional mode regulation.

Min. and Max. fan speed setting.

ADVANCED FUNCTIONS

Emergency fan speed – Shedding function – Speed jump – Over speed – Speed off – Eco mode – Floating SP – Setpoint adjust – Slave safety – Cleaning – Washing - Reverse fan rotation.

Q6E – ELECTRICAL PANEL FOR EC FANS WITH PAINT COATED METAL CASING AND ANTI CONDENSATE HEATING ELEMENT CONTROLLER MOUNTED INSIDE THE BOX, PROTECTED BY FUSE CONNECTED TO GROUPS OF FANS CONTROLLED BY 0-10V

Metal casing painted with RAL7035, suitable for outdoors installation

Protection class IP65.

Working temperatures: -40°C ÷ 40°C.

Power supply: 3~ 400V / 50Hz +PE.

Main switch.

Protected by circuit breakers connected to groups of fans.

EB controller mounted inside the box.

Fan speed regulation controlled by 0-10Vdc.

Free contact for Unit powered indicator / Controller alarm / Fans alarm

Selection of Direct mode or Reverse mode / Setpoints 1 or 2 / Night speed limitation / ON-OFF Operation.

Light indicator for unit warning and unit alarm mounted on the panel door.

Quick fans power connectors and signals connector directly on panel

Internal heating element suitably sized for ambient temperatures up to -40°C.

Execution in compliance with CE regulations.

AVAILABLE FEATURES

Regulation mode MASTER (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-5V, 0-10V);

PID or Proportional mode regulation; Min. and Max. fan speed setting

Min. and Max. fan speed setting.

Q2Y – 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, FANS REGULATION CONTROL BY MODBUS RS485

Metal casing painted with RAL7035, suitable for outdoors installation

Protection class IP65.

Working temperatures: -25°C ÷ 45°C.

Power supply: 3~ 400V / 50Hz +PE.

Main switch.

FC400 Controller mounted inside the box.

RB100 display mounted on the panel door.

Protected by automatic switches (circuit breakers) connected to groups of fans.

Quick fans power connectors and signals connector directly on the panel.

Fan speed regulation controlled by Modbus RTU.

Free contact for unit powered indicator / General alarms / General warnings / Unit Operation feedback.

Selection of Direct mode or Reverse mode / Setpoints 1 or 2 / Night speed limitation / On-Off Operation.

Monitoring from BMS via Modbus RTU or Modbus TCP-IP (on request Bacnet IP–Bacnet MSTP–Lonwork-Profinet-Profibus).

Execution in compliance with CE regulations.

AVAILABLE FEATURES

Regulation mode MASTER (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-5V, 0-10V, Modbus Slave).

PID or Proportional mode regulation.

Min. and Max. fan speed setting.

Inlet temperature probes monitoring (on request).

Ambient temperature probe (on request).

Possibility to manage the adiabatic systems AFS-WFS and the water saving consumption with its expansion SC400.

Connectable with mobile devices on TK Control app via Bluethoot (IOS – Android).

ADVANCED FUNCTIONS

Emergency fan speed – Shedding function – Speed jump – Unlock – Eco mode – Floating SP – Setpoint adjust – Slave safety – Cleaning – Washing.

Q3Y – ELECTRICAL PANEL FOR EC FANS WITH PAINT COATED METAL CASING AND ANTI CONDENSATE HEATING ELEMENT, CONTROLLER MOUNTED INSIDE THE BOX, PROTECTED BY AUTOMATIC SWITCHES (CIRCUIT BREAKERS) CONNECTED TO GROUPS OF FANS CONTROLLED BY MODBUS RS485

Metal casing painted with RAL7035, suitable for outdoors installation

Protection class IP65.

Working temperatures: -40°C ÷ 45°C.

Power supply: 3~ 400V / 50Hz +PE.

Main switch.

FC400 Controller with display on board mounted inside the box

Protected by automatic switches (circuit breakers) connected to groups of fans.

Quick fans power connectors and signals connector directly on the panel.

Light indicator for unit powered, unit warning and unit alarm mounted on panel door.

Internal heating element suitably sized for ambient temperatures up to -40°C.

Fan speed regulation controlled by Modbus RTU.

Free contact for Unit powered indicator / General alarms / General warnings / Unit Operation feedback.

Selection of Direct mode or Reverse mode / Setpoints 1 or 2 / Night speed limitation / On-Off Operation.

Monitoring from BMS via Modbus RTU or Modbus TCP-IP (on request Bacnet IP–Bacnet MSTP–Lonwork-Profinet-Profibus).

Execution in compliance with CE regulations.

AVAILABLE FEATURES

Regulation mode MASTER (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-5V, 0-10V, Modbus Slave).

PID or Proportional mode regulation.

Min. and Max. fan speed setting.

Inlet temperature probes monitoring (on request).

Ambient temperature probe (on request).

Possibility to manage the adiabatic systems AFS-WFS and the water saving consumption with its expansion SC400.

Connectable with mobile devices on TK Control app via Bluethoot (IOS – Android).

ADVANCED FUNCTIONS

Emergency fan speed – Shedding function – Speed jump – Unlock – Eco mode – Floating SP – Setpoint – Slave safety – Cleaning – Washing.

Q4Y – ELECTRICAL PANEL FOR EC FANS WITH PAINT COATED METAL CASING, CONTROLLER MOUNTED INSIDE THE BOX, DOOR PANEL MOUNTED SWITCHES (1X2FANS), PROTECTED BY AUTOMATIC SWITCHES (CIRCUIT BREAKERS) CONNECTED TO GROUPS OF FANS CONTROLLED BY MODBUS RS485

Metal casing painted with RAL7035, suitable for outdoors installation.

Protection class IP65.

Working temperatures: -25°C ÷ 45°C.

Power supply: 3~ 400V / 50Hz +PE.

Main switch.

Repair switch mounted on the panel door (1x2 fans).

FC400 Controller mounted inside the box.

RB100 display mounted on the panel door.

Protected by automatic switches (circuit breakers) connected to groups of fans.

Quick fans power connectors and signals connector directly on panel.

Fan speed regulation controlled by Modbus RTU.

Free contact for Unit powered indicator / General alarms / General warnings / Unit Operation feedback.

Selection of Direct mode or Reverse mode / Setpoints 1 or 2 / Night speed limitation /
On-Off Operation.

Monitoring from BMS via Modbus RTU or Modbus TCP-IP (on request Bacnet IP–Bacnet MSTP–Lonwork-Profinet-Profibus).

Execution in compliance with CE regulations.

AVAILABLE FEATURES

Regulation mode MASTER (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-5V, 0-10V, Modbus Slave).

PID or Proportional mode regulation.

Min. and Max. fan speed setting.

Inlet temperature probes monitoring (on request).

Ambient temperature probe (on request).

Possibility to manage the adiabatic systems AFS-WFS and the water saving consumption with its expansion SC400.

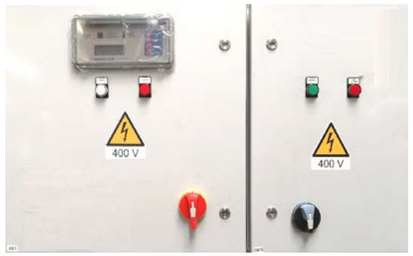
Connectable with mobile devices on TK Control app via Bluethoot (IOS – Android)

ADVANCED FUNCTIONS

Emergency fan speed – Shedding function – Speed jump – Unlock – Eco mode – Floating SP – Setpoint – Slave safety – Cleaning – Washing.

Additional electrical panel specific for adiabatic systems suitable for panels Q2E-Q3E-Q4E series

MAIN ELECTRICAL PANEL AND ADIABATIC ELECTRICAL PANEL



MAIN ELECTRICAL PANEL AND ADIABATIC ELECTRICAL PANEL

The adiabatic systems require an additional electrical panel specific for the AFS/WFS/EPS systems management which is integrated with the main electrical panel Q2E/Q3E/Q4E.

QAFS – ELECTRICAL PANEL FOR AFS/WFS ADIABATIC SYSTEMS WITH PAINT COATED METAL CASING, CONTROLLER MOUNTED INSIDE THE BOX, IN ADDITION TO THE Q2E/Q3E/Q4E SERIE

Metal casing painted with RAL7035 suitable for outdoors installation

Protection class IP65.

Working temperatures: -25°C ÷ 40°C with Q2E/Q4E and -40°C ÷ 40°C with Q3E.

Power supply 2~ 400V / 50Hz +PE from main electrical panel Q2E Q3E/Q4E.

Local switch for maintanance.

AFS controller mounted inside the box.

Free contact for pump activation (AFS) and Ice temperature indicator cabled to the main electrical panel Q2E/Q3E/Q4E.

Selection of Adiabatic system enabling / Water discharging / Forced spray cabled to the main electrical panel Q2E/Q3E/Q4E.

Light indicator for adiabatic enable and Ice alarm mounted on the panel door.

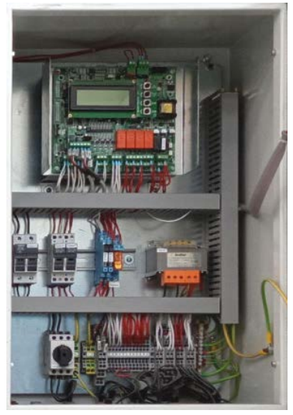
Quick solenoid valves connectors directly on panel.

Execution in compliance with CE regulations.

AVAILABLE FEATURES

Spray and drain remoted forced command.

QEPS – ELECTRICAL PANEL FOR EPS ADIABATIC SYSTEM WITH PAINT COATED METAL CASING, CONTROLLER MOUNTED INSIDE THE BOX, ASSOCIATED TO THE Q2E/Q3E/Q4E SERIES



Metal casing painted with RAL7035 suitable for outdoors installation

Protection class IP65.

Working temperatures: -25°C ÷ 40°C with Q2E/Q4E and -40°C ÷ 40°C with Q3E.

Power supply 2~ 400V / 50Hz +PE from main electrical panel Q2E Q3E/Q4E.

Local switch for maintanance.

EPS controller mounted inside the box

Free contact for pump activation / EPS system alarm indicator cabled to the main electrical panel Q2E/Q3E/Q4E.

Selection of Adiabatic system enabling / Water discharging cabled to the main electrical panel Q2E/Q3E/Q4E.

Light indicator for adiabatic enable and EPS system alarm mounted on the panel door.

Quick solenoid valves connectors directly on panel.

Execution in compliance with CE regulations.

AVAILABLE FEATURES

Spray and drain remoted forced command.

Panels clean up function.

Pump system management.

Repair switch

I – REPAIR SWITCH

220-480V 20A – 3 poles (6 poles on request)

Switch mounted and wired near to the fan.

Working temperatures -25°C ÷ 40°C and -40° ÷ 40°C (on request, or associate at low temperature electrical panels Q3E-Q6E-Q3Y series

Locked in the open position with padlock (on request)

Black Handle (red handle on request).

Protection class IP65.

Execution in compliance with CE regulations.

Speed controller with probe

Speed controllers connectable to the electrical panels W3E-W4E-WETKS-Q1E (installation from external panel)

EB – EC BASIC SPEED CONTROLLER

IP55 TYPE

IP00 DIN RAIL TYPE

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.

Box in UV protected thermoplastic material with IP55 protection class associated with the W3E-W4E-WETKS-Q1E electrical panels, IP00 for din rail integrated on Q6E electrical panel.

Regulation mode MASTER (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-5V, 0-10V).

PID or Proportional mode regulation.

Setting Max fan velocity at night mode.

Led for faults signal.

Auxiliary contacts available:

- S1: Mode direct-reverse;
- SP: Selection setpoint 1 or 2;
- S3: Night speed limitation;
- S2: ON-OFF speed control.

N° 1 programmable relay output:

- RL1 contact relay of general alarm

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

N° 1 auxiliary output.

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 (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-5V, 0-10V).

PID or Proportional mode regulation.

Setting Min and Max fan speed.

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

RS485 Interface for Modbus networking optional.

Auxiliary contacts available:

- S1: mode direct – reverse;
- SP: Selection setpoint 1 or 2;
- S5: Night speed limitation;
- S2: ON - OFF speed control;
- TK: contact for the connection of the thermal motor protection.

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%.

UN – UNICON EC SPEED CONTROLLER

Controller Un 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

Supply 2-400V(-10%/+10%) - 50 / 60Hz.

Operating temperature 0°C ÷ 55°C (down to -20 °C as long as equipment is connected to power source).

Plastic UV-resistant junction box with IP54 degree of protection (EN 60529).

Multilingual LC-Display for simple, fast programming.

Regulation mode MASTER (temp. or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-10V).

Interface Modbus RS485.

Min. and Max. fan speed setting. 2 programmable analog outputs (0-10V).

2 Programmable digital inputs (D1/D2) (default switch setpoint 1-2 e ON/OFF by remote).

2 programmable digital outputs (K1/K2) alarm signal, external unit control.

Speed controller integrated in the electrical panels

FC – FC300 EC SPEED CONTROLLER

Controller FC300 is a multifunction and multiple-input unit for the regulation of 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-400V(-10%/+10%) - 50 / 60Hz (Other power supplies on request).

Working temperature: -20°C ÷ 50°C.

Box in thermoplastic UV protected material with protection class IP56

TFT Display + n.6 buttons for a user frendly programming.

Autosave System.

Regulation mode MASTER "P" (temperature or pressure probes) or SLAVE (0-20mA, 4-20mA, 0-5V, 0-10V).

N.5 Programmable digital inputs:

- On/Off : controller On-Off .
- Direct/Inverse: Direct mode (Cooling) or Inverse Mode (Heating).
- Setpoint 1/2: Selection of setpoints 1 or 2.
- Night limit: Night Speed limitation On / Off.
- Unlock On/Off: Unlock fans On / Off.

N.2 Programmable digital outputs:

- Alarm: Unit alarm signal (default).
- Feedback: Unit working signal (default).
- Threshold: Fans Speed Higher than Threshold set.

N.1 reading analogue input (Temperature – 0-10V – 0-20mA - 4-20mA.

Special Functions : Night limit – Jump speed – Unlock – Boost - Cutoff.

Configurable Mesurement unit °C/°F for Temperaure and BAR/PSI for Pressure.

Service Menu: Firmware Upgrade w USB port– Factory restore – Start up Wizard - Diagnostic.

N.3 Access Levels protected by password.

Bluetooth for remoting display with smart device by TK Controll App (IOS - Android).

BMS Modbus RTU data communication (only on request).

ECM – EC MANAGER CONTROLLER

ECM controller is a multifunction and multiple-input unit device designed for the regulation of EC fans used on the Q2E-Q3E-Q4E electrical panels, which is designed to regulate different EC motors in a simultaneous and coordinated way.

TECHNICAL DATA

Modbus RTU Master port for the communication with the fans.

Modbus RTU Slave for the communication with the supervisor system.

N. 2 0-10Vdc MASTER programmable.

N.12 pre-parameterized HVAC&R Software.

N.2 working inputs (mA-Vdc-NTC) always programmable.

N.1 reading Input inputs (mA-Vdc-NTC) always programmable.

N. 2 benches of pre-parameterized parameters.

N. 80 always programmable.

N. 6 On-Off auxiliary.

N. 1 Alarm relay (NO/NC) programmable.

N. 2 Relay programmable.

FEATURES

Digital regulation Modbus (RTU)

Connection PID or Proportional regulation

Direct and Reverse regulation

Set-point position selection (Min – Middle – Max of the proportional band)

Bypass driving Resonances

Adiabatic system management

Display with keys regulating functions and and alarm messages

Led to indicate functional conditions

SPECIAL FUNCTIONS

Night Limit - Speed jump - Unlock - Feedback - Threshold – Boost – Cutoff - Emergency speed - Eco modality - Slave safety - Floating setpoint - Setpoint adjust

AFS – AFS/WFS CONTROLLER

The AFS controller is the device used on the QAFS electrical panel, it is designed for the control of the solenoid valves and counter of the water pump for a system water cooling “AIR FRESH SYSTEM (AFS)” or “WET FIN SYSTEM (WFS)” applied to the heat exchangers.

It receives a 1-10Vdc control signal from a ECM controller and consequently manages the AFS and WFS adiabiatic system.

TECHNICAL DATA

N.2 analog inputs (1-10V, NTC)

N.3 digital outputs (Spray, Drain, Pump)

FEATURES

AFS/WFS regulation

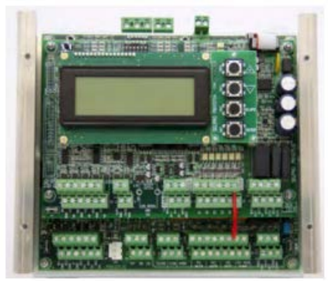
Water system drain

Parameter settings by trimmers

LED to indicate functional conditions

Hour meter

EPS – EPS CONTROLLER



The EPS controller is the device used on the QEPS electrical panel, It is designed for the control and the measure to the amount of water supplied to the adiabatic panels on the “EVAPORATIVE PANEL SYSTEM (EPS)” applied to the heat exchangers.

It receives a 1-10Vdc control signal from a ECM controller and consequently manages the EPS adiabiatic system.

TECHNICAL DATA

Intregrated LCD display

Keyboard with n.4 push buttons

N.1 RS485 port for the communication with BMS

N.5 analogue inputs.

N.3 digital inputs

N.2 digital outputs

N.4 static digital outputs

Led indications

FEATURES

Adiabatic panel supply regulation

Water system drain

Clean up adiabatic panels

System pump management

Energy saving function or Energy and Water saving function selection

Ambient and plenum temperature reading

Hour meter

Maintenance menu

Dip switch selection for advaced settings

FC400 – ADVANCE EC SPEED CONTROLLER

FC400 is an advanced controller designed for the speed regulation of electronic fans used on the Q2Y-Q3Y-Q4Y electrical panels.

FC400 extends free-cooling operation and maximized efficiency ensured by our expanding module SC400, designed for the control of all types of adiabatic systems (AFS-WFS-EPS).

TECHNICAL DATA

RJ45 plug for Modbus TCP/IP communication with a Supervisor

Modbus RTU Master port for the communication with the fans.

Modbus RTU Slave for the communication with the supervisor system

Serial port for the communication with the remote control system

Serial port for the communication with the expansion module SC400

N.6 configurable analogue inputs (NTC, 0- 20mA,4- 20mA, 0-10 V, 0-5 V).

N.7 configurable digital inputs.

N.2 analogue outputs 0- 10V.

N.4 digital outputs configurable NO or NC

Bluetooth connectivity

N.1 USB port for firmware updating

N.1 Micro SD slot for data storage

User interface with 6 keys and TFT graphic display

Removable connectors

FEATURES

Digital regulation Modbus (RTU).

Connection PID or Proportional regulation.

Direct and Reverse regulation.

Set-point position selection (Min – Middle – Max of the proportional band)

Set-up and programming of analog and digital I/O by the operator panel.

User-friendly menu navigation.

Remote access via Bluetooth for tablets and smartphones with the associated TK Control app (iOS and Android).

Service menu

Factory restore function and System reboot

SPECIAL FUNCTIONS

Night limit - Speed jump - Unlock - Feedback - Threshold – Boost – Cutoff - Emergency speed - Eco modality - Slave safety - Floating setpoint - Setpoint adjust – Thermostat.

SC400 – FC400 EXPANSION FOR ADIABATIC SYSTEMS

SC400 is the expansion of the FC400 controller used on the Q2Y/Q3Y/Q4Y electrical panels, designed for the control and regulation of the adiabatic systems mounted on finned pack heat exchangers.

It is connected directly at FC400 controller with a dedicated serial line, and use the same interface of the FC400 through a menu page dedicated to the adiabatic system.

TECHNICAL DATA

Serial port for the communication with the main controller FC400

N.7 configurable digital inputs.

N.2 analogue outputs 0- 10V.

N.7 digital outputs configurable NO or NC

Removable connectors

FEATURES

Humidity ambient reading

Adiabatic system Water pressure reading

Pump management

Energy saving function or Water saving function selection

Maintenance menu

Reboot system

FEATURES

Water antilock – Humidity check – Water pressure check

RB100 – USER INTERFACE FOR THE FC400 CONTROLLER

RB100 is a remote display connected to FC400 controller used on the Q2Y/Q4Y electrical panels series.

TECHNICAL DATA

24Vac ±10% 50/60Hz power supply

RAL 7035 PC UV resistent enclosure

Protection class IP65

Working temperature -20°C / 50°C

FEATURES

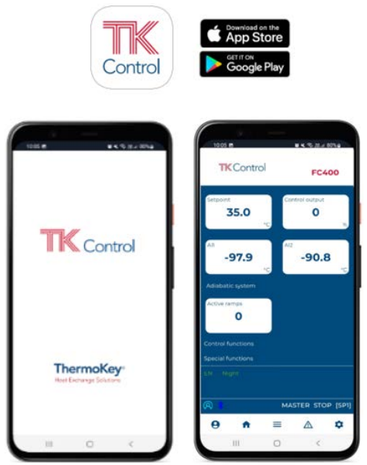
TFT graphic, led-backlight display with 320x340 pixel resolution.

Connect to FC400 via specific serial line.

Mounting on the electrical panel door

User friendly interaction

TK CONTROL – FC CONTROLLERS APP

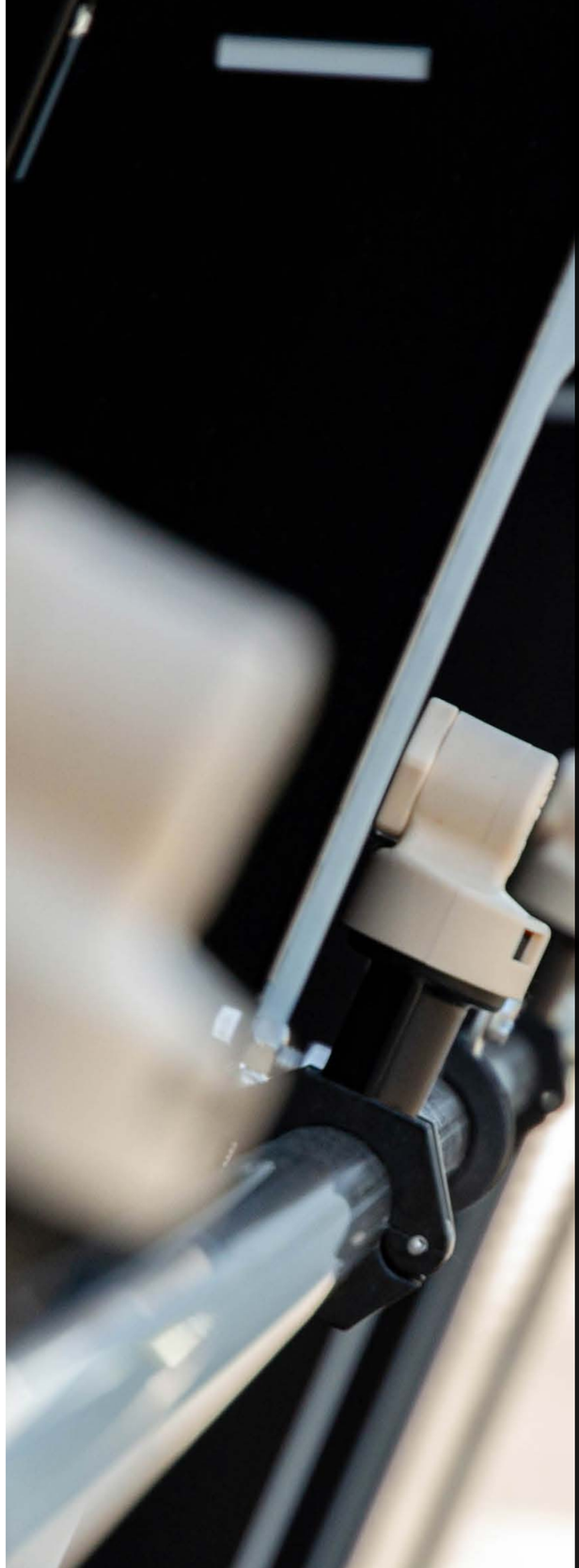


TK Control is the app suitable for FC400 controller (Q2Y-Q3Y-Q4Y electrical panels) and FC300 controller, it ensures the remote control of the unit through mobile device (manage and monitor).

It allows to read the data on the device, to set the operating parameters and to check the diagnostics in a simple and intuitive way.

The connection with the FC400 main controller occurs via Bluetooth technology after logging.

It is available for Android and IOS devices and it can be downloaded directly from the app stores.



Adiabatic systems

AFS AIR FRESH SYSTEM

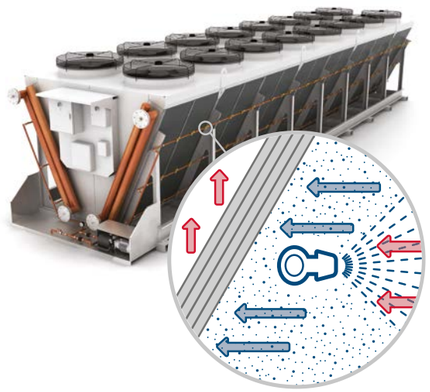
WFS WET FIN SYSTEM

EPS EVAPORATIVE PANEL SYSTEM

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 namely the latent heat evaporation: by evaporating water absorbs heat from the air enters in the heat exchanger and lowers its temperature.

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



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 innovation of AFS system. It uses only the quantity of water necessary to obtain the desired adiabatic effect.

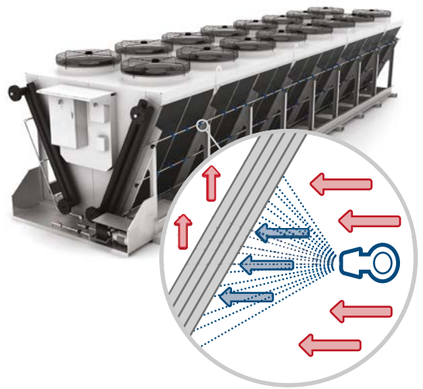
Tüv Certificated: "No danger in correlation with the risk of legionnaires' disease".

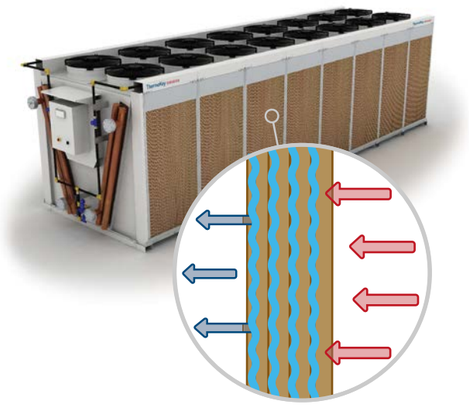
WFS WET FIN SYSTEM

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 100 0).

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 8000).

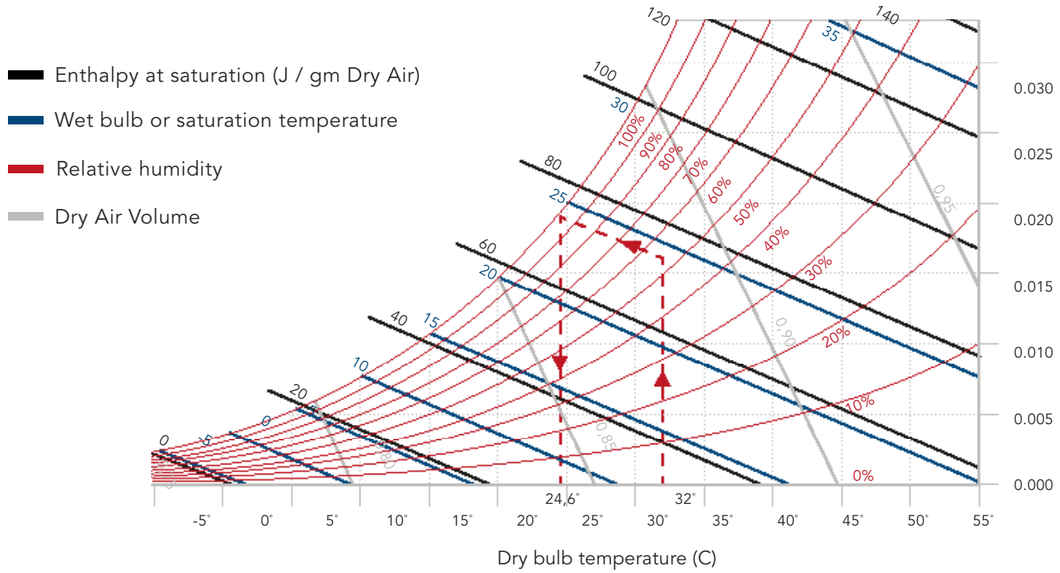
EPS has been designed for seasonal working cycles without any specific time limitation and can be easily disassembled for cleaning and maintenance operations.

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

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

Adiabatic systems comparison

Psichrometric diagram



Comparison chart

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

Operating modes of the adiabatic systems

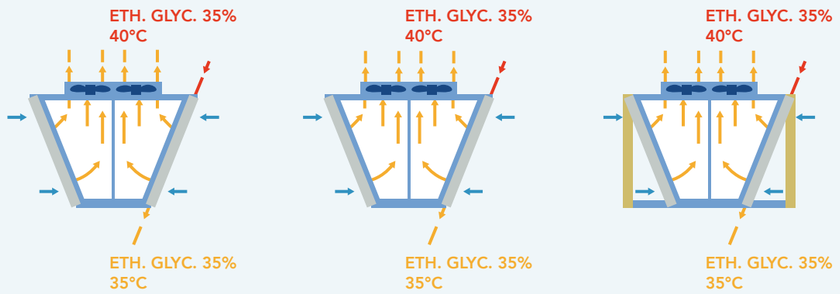
AFS AIR FRESH SYSTEM

WFS WET FIN SYSTEM

EPS EVAPORTIVE PANEL SYSTEM

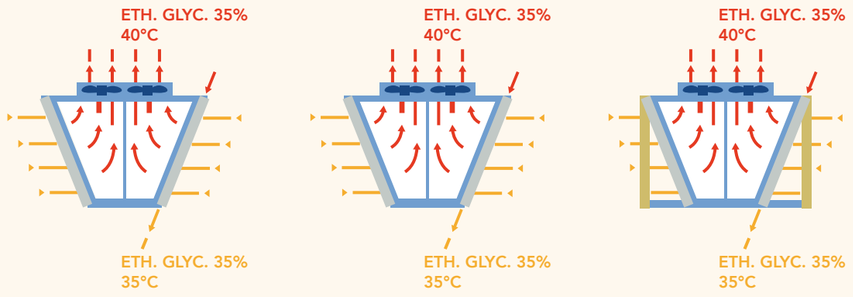
AMBIENT TEMPERATURE 8°C - 40%RH

DRY CONDITION
with low ambient temperature, below the switch-point temperature, with fans at minimum.



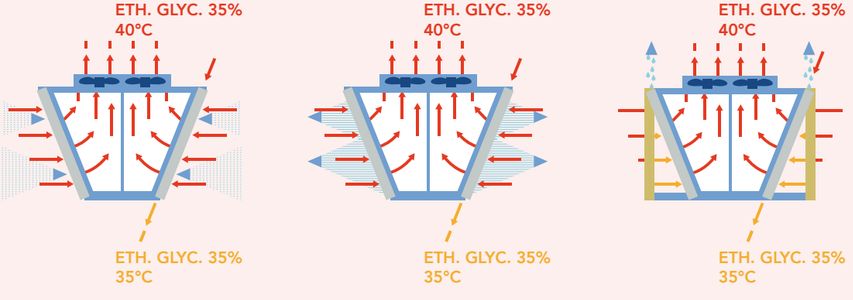
AMBIENT TEMPERATURE 20°C - 40%RH

DRY CONDITION
with high ambient temperature, below the switch-point temperature, with fans at maximum.



AMBIENT TEMPERATURE 37°C - 40%RH

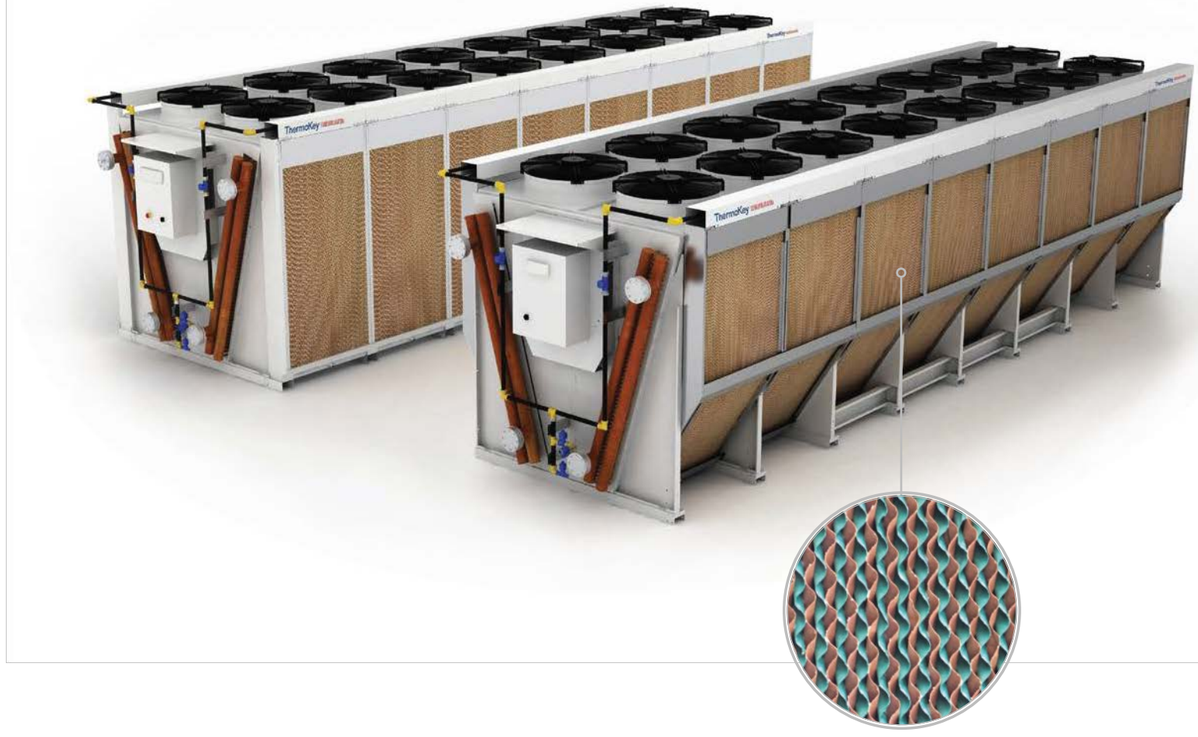
WET CONDITION
with ambient temperature above the switch-point temperature. Fans at maximum to save water or fans in regulation to save energy.



SWITCH POINT* 28,2°C | SWITCH POINT* 25°C | SWITCH POINT* 27,2°C

(*) Fans at 1.100 RPM (Jumbo for fans 910 mm)

EPS EVAPORATIVE PANEL SYSTEM



Exceptional design increases savings while minimizing operational costs

No continuous water usage

No bacterial growth (Legionella-free)

BENEFITS

- No corrosion
- No continuous chemical treatment
- No sludge accumulations in piping
- No organic gases
- No fouling nor contamination
- No acids for pH control
- No shut-downs to clean heat exchangers
- No constant maintenance
- No ice formation
- No sewage
- No evaporation of process water
- No process temperature variations
- No fan motor maintenance
- No pulleys & no belts
- No drift eliminator panels

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 absorbers can considerably reduce the vibratory disturbance, as well as the noise, since they are installed between the source of vibration and the mechanical anchoring.

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

FLANGES

ThermoKey units are supplied pre-charged with nitrogen at 1.7 bars, displayed on the pre-installed pressure manometer.

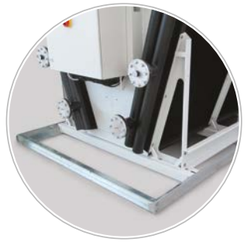
This added feature — not standard in the industry — reflects our commitment to quality, reliability, and full transparency, helping ensure maximum customer satisfaction.

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.



CONTAINER VERSION

ThermoKey is able to supply units with dimensions suitable for container loading, with rails for the handling and protection during transport.

UNITS WITH HIGH PROTECTION-CLASS

ThermoKey is able to offer units with high protecion class for aggressive environments comparable with C4,C5M coastal areas and offshore according to ISO 12944.

SPECIAL COLORS

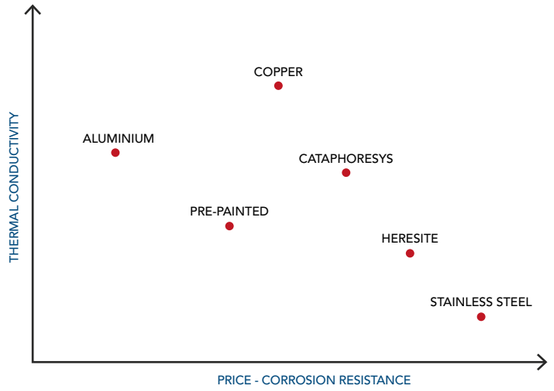
Upon request the units casing can be painted with a specific RAL colors.

How to choose the right material

ThermoKey offers multiple finned pack configurations tailored to deliver optimal performance for each application.

The choice of materials has a direct impact on both the thermal performance and the cost of a unit cooler.

ThermoKey offers to its customers a wide range of treatments in order to protect the fins from corrosion (when needed) and to maintain the constant energetic efficiency.



Selecting the right combination of materials and protective treatments is essential to guarantee durability, efficiency, and long-term system reliability.

ThermoKey's expertise supports customers in identifying the most suitable solution for their application, balancing performance, sustainability, and cost-effectiveness.

FINS MATERIALS

TREATMENTS AND COATINGS

Stainless steel production

Stainless steel solutions are particularly recommended in applications where corrosion resistance, hygiene, and extreme conditions are critical, or where aggressive cleaning and sanitizing procedures are necessary. Stainless steel is also the preferred choice for systems operating at very low air temperatures (below –40 °C), continuous water exposure, hydrocooling or ammonia systems.

ThermoKey heat exchangers can be built with certified AISI 304 or AISI 316L tubes and casing, ensuring maximum durability and compliance with the strictest industrial and food safety standards.

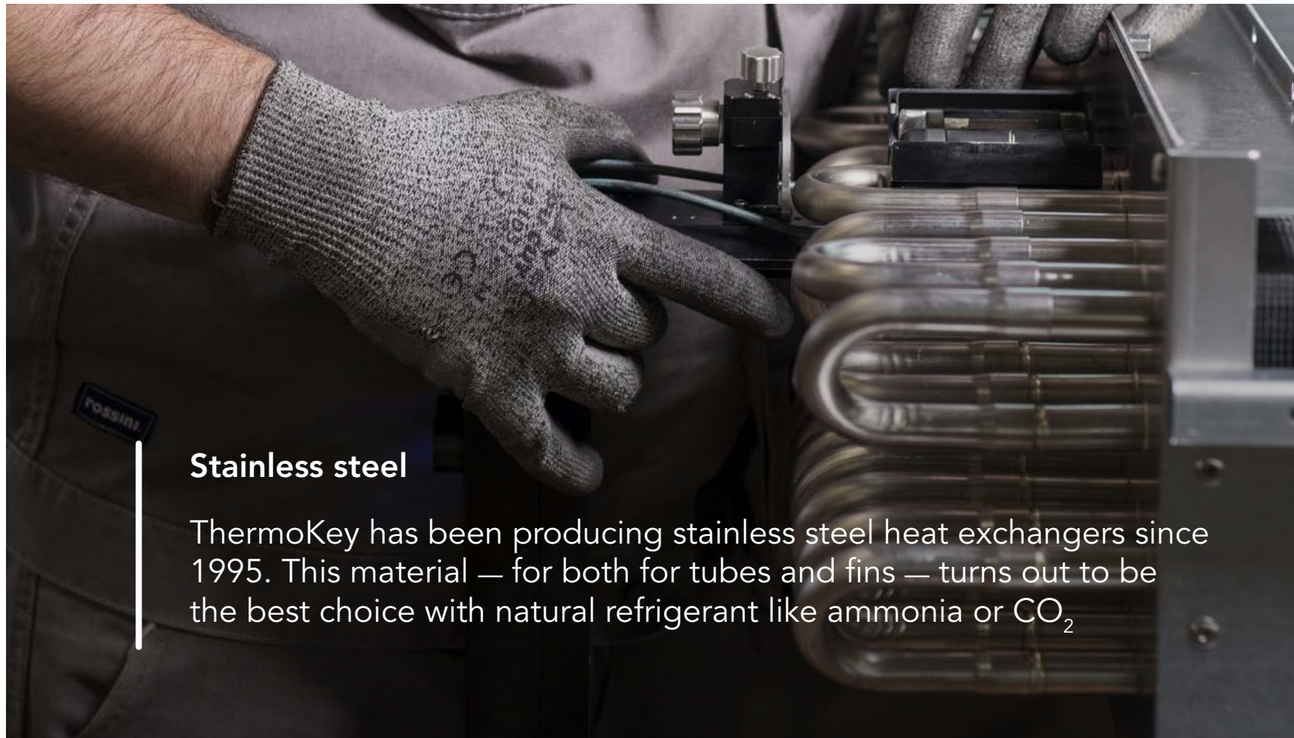
Advanced production techniques such as orbital TIG welding with argon-controlled atmosphere guarantee superior quality, repeatability, and long-term reliability.

CORROSION RESISTANCE

HYGIENE STANDARDS

LONG-TERM RELIABILITY

The use of butt-welding — without return bends — prevents dirt and ice formation while reducing leakage risks, delivering minimized operating losses and extended product lifespan.



Stainless steel

ThermoKey has been producing stainless steel heat exchangers since 1995. This material — for both for tubes and fins — turns out to be the best choice with natural refrigerant like ammonia or CO_2

We design customized products to meet every need

We at ThermoKey know that specific environments require specific solutions, we are happy to help you to identify the best solution to your needs.

Our technicians assist the customer in the choice

Our technical staff is at your complete disposal to identify the best heat exchanger for you. We individually analyze your specific needs and the environment in which the heat exchanger will be installed for your needs.

After sales

ThermoKey stays at your side throughout the product life cycle for spare parts replacement and technical assistance

ThermoKey
—
AC0126EN

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