



ACCESSORIES





Accessories

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C

Wiring and junction box

- Execution in compliance with CE regulations
- The power terminals of the fan motors are connected
- The thermo-contacts for the fan motors are connected (with 1-phase fans the thermic protection for the motor can be already integrated into the power line and not available for external signal)
- Junction box in plastic material resistant to UV rays and with protection class IP55
- Limit ambient temperatures: -25°C / +60°C
- Cables suitable for outdoor use
- Factory fitted and wired

S

Repair switches

- Power ON/OFF switch per each fan (black handle).
- The selector switch can be locked in the OFF position.
- Protection class IP55.
- Factory fitted and wired.





M

Motor protection units with thermocontacts

GENERALITIES

The motor protection units type STDT16(E) are specifically designed for the start-up and the protection of 3-phase motors with integral thermocontacts. The integral line protection is assured by a thermal over-current sensor and a magnetic short circuit releasing element. The thermocontact switches automatically OFF in case of motor overheating.

TECHNICAL FEATURES

- Line voltage 60 .. 500 V (+6%), 50/60 Hz. Applicable from 60 V when voltage control is in use.
- Max. line fuse: 80 A (Ue 415 V + 5 %) / 63 A (Ue 440 V .. 500 V + 6 %).
- Max. rated current of motors: 16A.
- Setting range over-temperature sensor: 10 .. 16 A.
- Rated Short Circuit Breaking Capacity (IEC 60947-2, EN 60947-2, VDE 0660-101): 6 kA (Ue < 400 V + 5 %) / 3.5 kA (Ue = 415 V .. 440 V) / 2.5 kA (Ue 500 V + 6 %).
- Max. adjustable line cross section: 6 mm² (auxiliary contact: 2,5 mm²).
- Limit ambient temperatures: -25°C / +55°C.
- Protection class IP55 or version IP20 for built in.



Mm

Motor protection units with thermocontacts (single-phase fan motors)

GENERALITIES

The motor protection units type S-ET10(E) are specifically designed for the start-up and the protection of single-phase motors with integral thermocontacts. The thermocontact switches automatically OFF in case of motor overheating.

WARNING!: thermal bi-metal relays cannot be adjusted to the nominal current of the motors.

TECHNICAL FEATURES

- Power supply: 1+N~ 230V (from 60V when voltage control is in use).
- Max. fuse: 10A.
- Min. rated current of motors: 0,4A.
- Max. rated current of motors: 10A.
- Max. adjustable line cross section: 6 mm² (auxiliary contact: 2,5 mm²).
- Admitted ambient temperatures: -25°C / +55°C.
- Protection class IP55 or version IP20 for built in.





K

Multifunction digital controller for 1~ motors

FUNCTION

Multifunction digital thermoregulator designed for proportional voltage-based speed control (phase cut control) on single-phase asynchronous motors.

GENERALITIES

- Execution in compliance with CE regulations.
- Housing in plastic material resistant to UV rays, max admitted temperature of 120°C, protection class IP55.
- Factory fitted, wired and pre-programmed ready for use.
- Pressure sensor factory fitted and connected.

TECHNICAL FEATURES

- Power supply: 1~ 230V / 50Hz.
- Mains switch (lockable).
- Power fuse.
- Overtension protection according to EN 61000-4-5, category II (4 kV).
- EMC filter according to EN 61800-3.



Q



Wiring and switchboard

GENERALITIES

- Execution in compliance with CE regulations.
- Housing in plastic material resistant to UV rays; protection class IP55.
- Cables suitable for outdoor use.
- Factory fitted and wired.
- Key-lockable door.

TECHNICAL FEATURES

- Power supply: 3~ 400V / 50Hz.
- Mains Switch.
- Fan malfunction red indicator lamp.
- Power supply green indicator lamp.
- Fused protection for fans and controllers.
- Connector for fan speed controller (phase-cut or inverter).
- Contact for ON/OFF remote control.
- Contact for additional thermostat.
- Free contact for fan malfunction alarm.

NOTE: The switchboard and the electrical protections are designed for the total absorbed fan current. For the AC fans this value strictly depends on the motor windings (Delta or Star).



Qm

Wiring and switchboard for single-phase fan motors

GENERALITIES

- Execution in compliance with CE regulations.
- Housing in plastic material resistant to UV rays; protection class IP55.
- Cables suitable for outdoor use.
- Factory fitted and wired.
- Key-lockable door.

TECHNICAL FEATURES

- Power supply: 1+N~ 230V / 50Hz.
- Magnetothermic switch.
- Power supply green indicator lamp.
- Fused protection for fans and controllers.
- Connector for fan speed controller.
- Contact for ON/OFF remote control.



T

Wiring and switchboard with motor protection units (1 EACH FAN)

GENERALITIES

- Execution in compliance with CE regulations.
- Housing in plastic material resistant to UV rays; protection class IP55.
- Cables suitable for outdoor use.
- Factory fitted and wired.
- Key-lockable door.

TECHNICAL FEATURES

- Power supply: 3~ 400V / 50Hz.
- Mains switch.
- Motor-protection units designed for 3-phase motors (1 each fan).
- Connector for fan speed controller (phase-cut or inverter).
- Single fan thermal protection by means of thermocontact.

NOTE: The switchboard and the electrical protections are designed for the total absorbed fan current. For the AC fans this value strictly depends on the motor windings (Delta or Star).





E

Wiring and switchboard with repair switches (1 EACH FAN)

GENERALITIES

- Execution in compliance with CE regulations.
- Housing in plastic material resistant to UV rays; protection class IP55.
- Cables suitable for outdoor use.
- Factory fitted and wired.
- Key-lockable door.

TECHNICAL FEATURES

- Power supply: 3~ 400V / 50Hz.
- Mains switch.
- Safety locking key for maintenance.
- Power supply green indicator lamp.
- Button switches with green indicator lamp (1 each fan).
- Fan alarm red indicator lamp.
- By-pass circuit for speed controller malfunction.
- Fused protection for the fans (magnetohermic protection and auxiliary N.O. contact for signal with EC fansets).
- Single fan thermal protection by means of thermocontact.
- Fused protection for the fan speed controller.
- Connector for fan speed controller (phase-cut or inverter).
- Free contacts for by-pass cut off.
- Free contacts for ON/OFF remote control.
- Free contacts for fans malfunction alarm signal.
- Free contacts for controller malfunction signal.
- Free contacts for operating remote signal.
- Free contacts for remote reset.

OPTIONAL

- ON/OFF step controller with external display (accessory "G").

NOTE: The switchboard and the electrical protections are designed for the total absorbed fan current. For the AC fans this value strictly depends on the motor windings (Delta or Star).



E2

Wiring and switchboard with repair switches (1 EACH 2 FANS)

GENERALITIES

- Execution in compliance with CE regulations.
- Housing in plastic material resistant to UV rays; protection class IP55.
- Cables suitable for outdoor use.
- Factory fitted and wired.
- Key-lockable door.

TECHNICAL FEATURES

- Power supply: 3~ 400V / 50Hz.
- Mains switch.
- Safety locking key for maintenance.
- Power supply green indicator lamp.
- Button switches with green indicator lamp (1 each fan).
- Fan alarm red indicator lamp.
- By-pass circuit for speed controller malfunction.
- Fused protection for the fans (magnetohermic protection and auxiliary N.O. contact for signal with EC fansets).
- Single fan thermal protection by means of thermocontact.
- Fused protection for the fan speed controller.
- Connector for fan speed controller (phase-cut or inverter).
- Free contacts for by-pass cut off.
- Free contacts for ON/OFF remote control.
- Free contacts for fans malfunction alarm signal.
- Free contacts for controller malfunction signal.
- Free contacts for operating remote signal.
- Free contacts for remote reset.

OPTIONAL

- ON/OFF step controller with external display (accessory "G").

NOTE: The switchboard and the electrical protections are designed for the total absorbed fan current. For the AC fans this value strictly depends on the motor windings (Delta or Star).





D

Digital Intelliboard

FUNCTION

Conceived for the homogeneous and continuous speed control of EC motors and for the monitoring and diagnosing of on-board systems via MODBUS networking.

Grants the best and most versatile use of the EC motors, thus allowing for energy saving and control of the noise emissions.

GENERALITIES

- Programmable Logic Controller (PLC).
- Touchscreen electronic visual display .
- Execution in compliance with CE regulations.
- Housing in plastic material resistant to UV rays; protection class IP55.
- Cables suitable for outdoor use.
- Multi-pin cable connectors (FLEXI).
- Factory fitted, wired and pre-programmed ready for use.
- Temperature or pressure sensor factory fitted and connected.
- Key-lockable door.

TECHNICAL FEATURES

- Power supply: 3~ 400V+N / 50 Hz.
- Mains switch.
- Safety locking key for maintenance.
- Alarm red indicator lamp.
- Magnetothermic protection for the fans (groups of fans).
- MODBUS communication protocol for monitoring and diagnosing fan parameters, controller parameters, temperature or pressure sensor status and control panel alarms.
- Allows control from a host device via MODBUS communication protocol (standard: Modbus RS485/ Optional (on request): LON, BACnet, SNMP).
- Allows control from a host device via 0-10 V signal (datum: speed or setpoint).
- Provides output 0- 10V depending on the fans speed.
- Cleaning function of coils by means of a counterclockwise operation of the fans.
- PROPORTIONAL-INTEGRAL Temperature control.
- Software update via USB, with no need of a PC.
- Optional (on request): Allows Ethernet connection (eg: monitoring of parameters on a web-page, remote assistance from factory, software updates, etc).
- Optional (on request): Sends detailed alarm messages to up to 10 email addresses (if they are stored in the PLC and if the connection to the Ethernet network is active).
- With two temperature or pressure sensors installed (on request), allows for separate and independent control of two banks of fans (eg: different fan speeds).
- Allows for multifunctional control of kit(s) for adiabatic cooling system.
- Allows for fan-speed limitation (eg. to limit the sound level during night operation).
- Free contacts for remote control of the regulator.
- Free contacts for fans malfunction alarm signal.
- Free contacts for programmable functions.





R

Electronic 3~ voltage controller (phase-cut)



FUNCTION

Programmable voltage-based speed control for continuous speed adjustment on variable voltage three-phase motors.

GENERALITIES

- LCD-Multifunctional display with plain language text.
- 2 analog inputs (0-10V, 0-20mA, 4-20mA, temperature/pressure sensor).
- 1 output 0-10V, function programmable.
- 2 digital inputs, function programmable.
- 2 relay outputs, function programmable: fault indication/alarm signal, external group control.
- Total protection of the motors by means of thermocontact / thermistor connections.
- RS485 Interface for MODBUS networking.
- Factory fitted, wired and pre-programmed ready for use.
- Temperature or pressure sensor factory fitted and connected.

OPTIONAL (ON REQUEST)

- LON expansion module.

TECHNICAL FEATURES

- Power supply: 3~ 208-480V (-15% / +10%), 50/60Hz.
- Voltage supply for sensors: +24V +20% (Imax 120mA).
- EMC emission EN 61000-6-3; EN 61000-3-2.
- EMC immunity EN 61000-6-2.
- Max. admitted ambient temperature +40°C (up to +55°C with derating).
- Max. admitted relative humidity to avoid condensation: 85%.
- Protection class IP54.

SETTING MODES AVAILABLE

- Set point 1: fluid out temperature or refrigerant pressure.
- Set point 2: fluid out temperature or refrigerant pressure.
- Controller alarm.
- Min. and max. output voltage, speed limitation (e.g. for night operation).
- External group control (adiabatic cooling system).
- Cut-off of fans in low usage (minimum air volume).
- Other programming modes available on request (e.g. frost protection, heat activation, stalled motor heating, etc.).

WARNING! Electromagnetic motor noises may arise and become dominant in part load due to resonances. This could cause the final sound pressure and power levels of the fans to be higher than those declared in the technical data sheet of the unit.

NOTE: The controller is designed for the total absorbed fan current, which value depends on the motor windings (Delta or Star).



Rm

Electronic 1~ voltage controller (phase-cut)

FUNCTION

Continuous regulation of the asynchronous fans speed. The speed controller works on the fans supply voltage and varies their speed according to the input signal and to the settings.

MODELS: PKE 2,5 (MAX 2,5) , PKE 6 (MAX 6A), PKE 10 (MAX 10A), PKE 14 (MAX 14A), PKE 16 (MAX 16A), PKE 20 (MAX 20A)

- Valid for both functionings: drycoolers and condensers.
- TFT temperature probe or pressure (4 - 20mA) probe mounted and wired; in alternative speed control referred to an external 0-10V tension.
- IP54 degree of protection.

TECHNICAL DATA

- Power supply: 1 phase ~ 230V / 50/60Hz (-15% / +10%)
- IP54 degree of protection.

STANDARD SETTINGS

- Single set point.

WARNING: using this type of speed controller, noises of electromagnetic origin could be generated due to the technology necessary for the control. In this case, a pressure and sound power increase would occur and the relevant values could be higher than those shown in the technical data sheet of the unit.





Frequency inverter with sine filters

FUNCTION

Designed for a stepless control of fans, generates a 3~ output with variable voltage and frequency from the three-phase mains on the input and therefore assures an absolute parallel control of the fans without risk of damage for the motors. Screened motor cables are not required. Allows for energy saving and for a considerable reduction of the peaks of noise in part load. This controller is highly recommended in case of low or very low noise limitations (residential areas, hospitals, etc.).

WARNING! An IT special version is required for use within IT Nets.

GENERALITIES

- Integrated Sine filters between phase-to-phase and phase-to-ground.
- LCD-Multifunctional display with plain language text.
- 2 analog inputs (0-10V, 0-20mA, PTC temperature sensor, pressure sensor).
- 1 output 0-10V, function programmable.
- 2 digital inputs, function programmable.
- 2 relay outputs, function programmable: fault indication/alarm signal, external group control.
- Total protection of the motors by means of thermocontact / thermistor connections.
- RS485 Interface for MODBUS networking.
- No need of shielded cables between controller and fan motors.
- Factory fitted, wired and pre-programmed ready for use.
- Temperature or pressure sensor factory fitted and connected.

OPTIONAL (ON REQUEST)

- LON expansion module

TECHNICAL FEATURES

- Power supply: 3~ 208-480V (-15% / +10%), 50/60Hz.
- Voltage supply for sensors: +24V +20% (Imax 120mA).
- EMC emission EN 61000-6-3; EN 61000-3-2.
- EMC immunity EN 61000-6-2.
- Max. admitted ambient temperature +40°C (up to +55°C with derating).
- Max. admitted relative humidity to avoid condensation: 85%.
- Protection class IP54.

SETTING MODES AVAILABLE

- Set point 1: fluid out temperature or refrigerant pressure.
- Set point 2: fluid out temperature or refrigerant pressure.
- Controller alarm.
- Min. and max. output voltage, speed limitation (e.g. for night operation).
- External group control (adiabatic cooling system).
- Cut-off of fans in low usage (minimum air volume).
- Other programming modes available on request (e.g. frost protection, heat activation, stalled motor heating, etc.).

NOTE: The controller is designed for the total absorbed fan current, which value depends on the motor windings (Delta or Star)





U

EC controller

FUNCTION

Actuates the electronic commutation and continuous speed control of EC motors by deriving the switching commands from the rotor's position indicators. The speed control is obtained by modulating and sending a 0-10V signal to the integrated electronics of control of the EC motors. The EC technology allows for energy saving and for low and very low noise emission.

GENERALITIES

- LCD-Multifunctional / multilingual display with plain language text for easy programming.
- 2 analog inputs (0-10V, 0-20mA, PTC temperature sensor, pressure sensor).
- 1 output 0-10V, function programmable.
- 5 programmable digital inputs.
- 2 relay outputs, function programmable: fault indication/alarm signal, external group control.
- RS485 interface for MODBUS networking.
- No need of shielded cables between controller and fan motors.
- Factory fitted, wired and pre-programmed ready for use.
- Temperature or pressure sensor factory fitted and connected.



TECHNICAL FEATURES

- Power supply: 3~ 208-480V (-15% / +10%), 50/60Hz.
- Voltage supply for sensors: +24V +20% (Imax 120mA).
- EMC emission EN 61000-6-3; EN 61000-3-2.
- EMC immunity EN 61000-6-2.
- Max. admitted ambient temperature +40°C (up to +55°C with derating).
- Max. admitted relative humidity to avoid condensation: 85%.
- Protection class IP54.

SETTING MODES AVAILABLE

- Set point 1: fluid out temperature or refrigerant pressure.
- Set point 2: fluid out temperature or refrigerant pressure.
- Controller alarm.
- Min. and max. output voltage, speed limitation (e.g. for night operation).
- External group control (adiabatic cooling system).
- Cut-off of fans in low usage (minimum air volume).
- Other programming modes available on request (e.g. frost protection, heat activation, stalled motor heating, etc.).



B

Spray adiabatic cooling system - Hydrophilic fin block included

FUNCTION

An atomising system on board of the unit creates a very thin water particle mist which by adiabatic evaporating brings the suction air to a homogeneous and almost complete adiabatic saturation. The effect is a reduction of the suction air temperature (respect to the ambient air) and therefore an increased efficiency of the heat exchanger.

THE KIT INCLUDES

- Hydrophilic coating of the aluminium fins: weakens the surface tension of water and expedites the formation of a thin film of water on the fins. Prevents oxidation of the aluminium fins.
- Control box (protection class IP65) factory fitted on the unit and fitted with electronic controls, mains inlet and drain solenoid valves, pressure regulator and gauge, pressure switch, thermostat to command the drainage of the system in the cold season, water strainer.
- SOFTWATER device: induces an electro-magnetic field that favours the precipitation of aragonite, a polymorph of calcite with the same chemistry but a different structure, and more importantly, different symmetry and crystal shapes. The crystals of aragonite tend to remain separate and not to form clusters. THIS DEVICE IS NOT A WATER SOFTENER: its function is to help preventing scale - therefore occlusions and incrustations, in the tubes, on the sprayers and on the fins - by reducing the need for chemically treated water.
- Sparge system factory fitted to the unit and made of 25mm UV resistant multilayer tubes with atomising nozzles.

TECHNICAL FEATURES

- Power supply: 1+N~ 230V / 50Hz.
- Protection class IP54.

RECOMMENDED WATER QUALITY

- Hardness: 8-12 °f = 4,5-6,7 °dH = CaCO₃ content between 80 and 120 ppm.
- 6 < pH < 8.
- Chlorides << 100 ppm.
- Conductivity <1600 µS/cm.
- The temperature of the water shall be at least 5°C lower than the expected fluid out temperature.

NOZZLES

- Recommended water pressure: 2,5 bar.
- Depending on the type of nozzle, the water consumption varies between 1,15 dm³/min and 1,9 dm³/min (at a pressure of 2,5 bar).





Z

Industrial adiabatic coolin system (PADS)

FUNCTION

Device for humidifying the intake air through adiabatic panels increasing the unit performance.

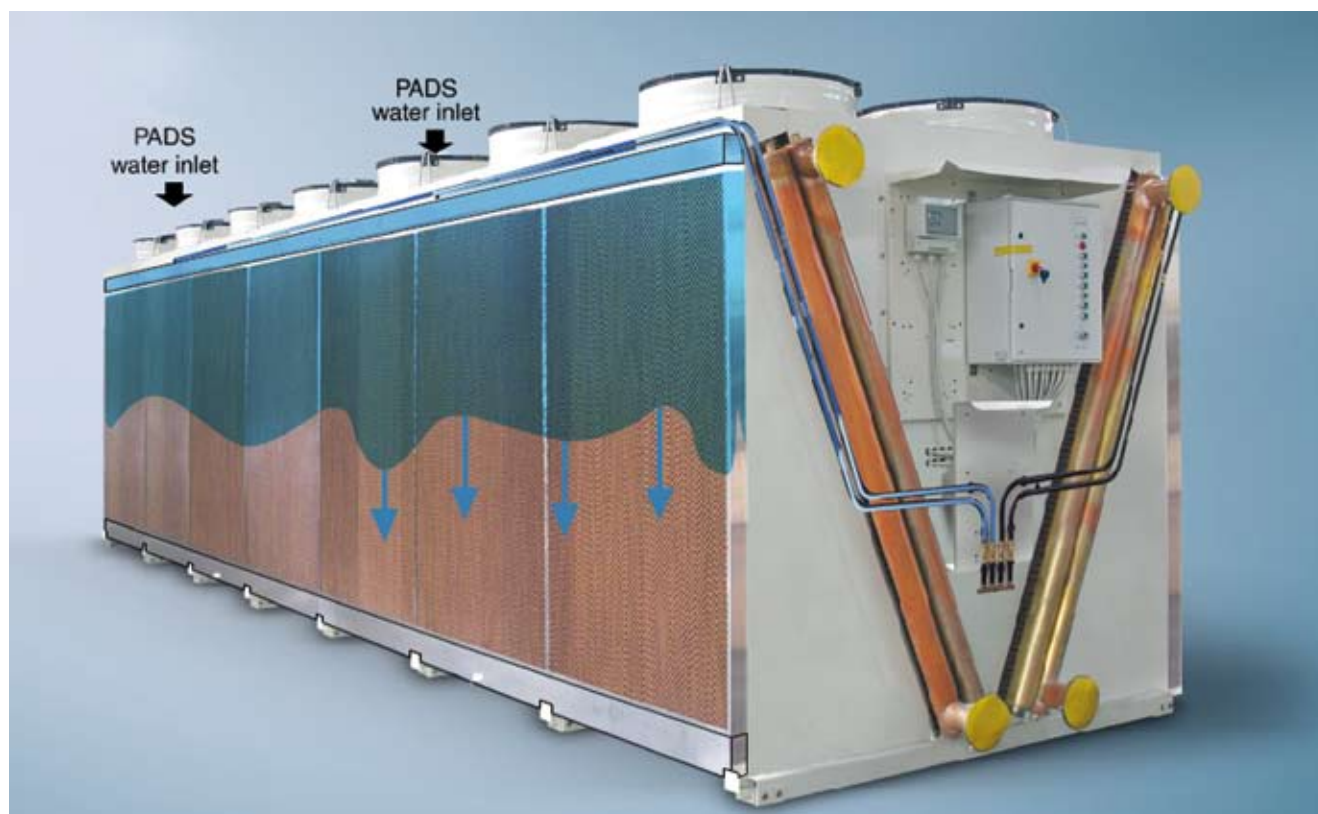
DESCRIPTION

- “PADS” panel used to distribute water over the unit air intake.
- Mounted and wired electrical switchboard; a speed controller installed inside the unit (R, I, U, D) regulates the adiabatic system.
- System drainage electrovalves.
- Safety thermostat for the system drainage during cold months.
- Pressure reducer to regulate the necessary pressure and valves for exhaust air regulation.
- Multilayer UV-resistant tubes.
- Humidity probe for ambient humidity control.



RECOMMENDED WATER QUALITY

- Use drinking water complying with the provisions of the directive 98/83/EC.
- Hardness: $<25 \text{ }^\circ\text{f}$ (= CaCO_3 content $< 250\text{ppm}$). Higher concentrations, although allowed for drinking water, drastically reduce the life of PADS.
- $6 < \text{pH} < 8$ (pH must not under any circumstances reach an acid value below 5 or an alkaline value above 9).
- The temperature of the water shall be at least 5°C lower than the expected fluid out temperature.





V

Ultraviolet lamp for adiabatic cooling system

FUNCTION

Emits doses of UV radiations that are lethal to pathogens (including the Legionella bacteria).

GENERALITIES

- Factory fitted, wired and ready for use.

TECHNICAL FEATURES

- Power supply: 230V.



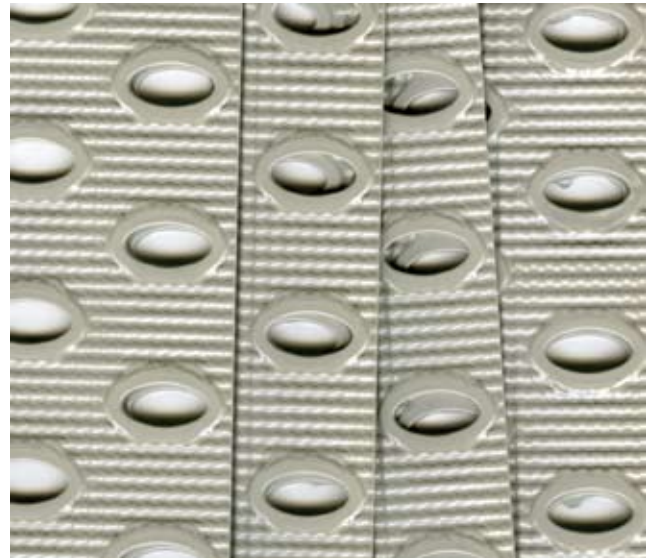
P

Heat exchanger with pre-painted aluminium fins

The aluminium fins of the heat exchanger are protected by a layer of epoxy or polyurethane coating

GENERALITIES

- High class of resistance to chemicals, acids, salt fog and heat.
- Prevents growth and spread of bacteria.



A

Anti vibration mounts



