Cooling solutions

Thermoelectric technology is applied to air conditioning units to cool and dehumidify small electrical panels, keeping the internal and external environments separate from each other.

bordos
heat pumps

Most of our products are available in the industrial engineering software:

What is a thermoelectric unit?

A thermoelectric unit is a device for the transfer of heat. Such units come ready for fitting and cool using electrical energy only.
Thermoelectric units achieve the same results as traditional compressor systems without the use of gas or moving components (except fans, if applicable).

HOW DO THERMOELECTRIC UNITS WORK?

Thermoelectric units are simply small static heat pumps, which use the so-called “Peltier” effect.
Heat is transferred as a result of a flow of electrical current through thermoelectric modules, which are the main components in the system.
Heat is absorbed by one side of the unit (the cold side) and as a result the temperature drops. The other side dissipates the heat into the surrounding environment (hot side). The process can be reversed by simply inverting the direction of the current flow.

WHAT ARE THE ADVANTAGES COMPARED TO A COMPRESSOR SYSTEM?

Thermoelectric units have no moving mechanical parts (except fans, if applicable) and are therefore extremely reliable, have an almost unlimited life span and require no maintenance.
The fact that they are “static” makes them immune to vibration meaning they can be used in any position, which makes them particularly suitable for applications where they are mounted on systems in motion.
They contain no pollutants such as CFC or other gases, which can harm the environment ambient and have simpler and more compact structure than compressor systems.

Thermoelectric cooling units are used to cool and dehumidify the air inside electrical cabinets and to separate the internal and exterior environments.
Air conditioners are usually used when outside temperatures are unfavorable i.e. over 35°C and the atmosphere is contaminated by oil or dust.

AC - DC | THERMOELECTRIC UNITS

Thermoelectric units are based on the Peltier effect heat pump principle and are used for air-conditioning small panels and electrical equipment. They do not use a compressor or other moving parts (except for the fan). They do not use gases, such as CFC or others, and are insensitive to vibrations. DC and AC versions available.

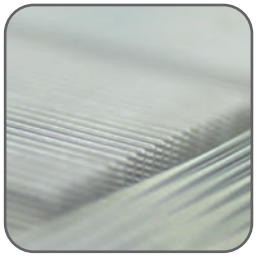
DUAL EFFECT
Heating and cooling conversion by reversing polarity

QUIET OPERATION
Compressor-free and no moving parts, except for the fan

REFRIGERANT-FREE
No dangerous fluids exploiting the Peltier effect cooling system

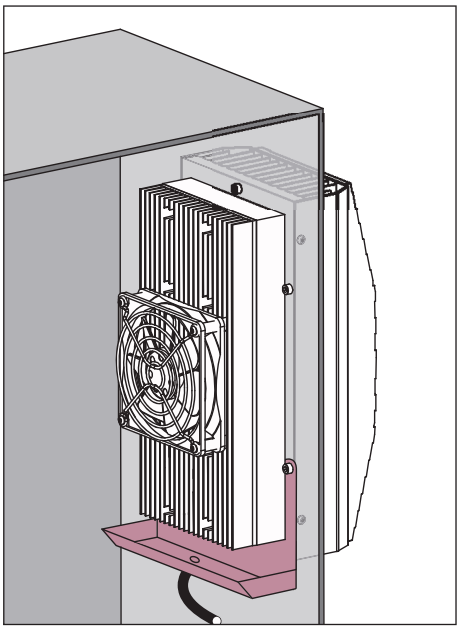
IP55
High protection from moisture and dust

Details that make the difference

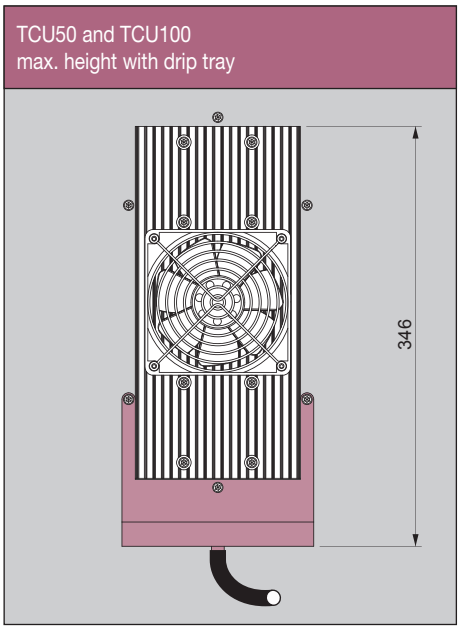

Efficient heat sink

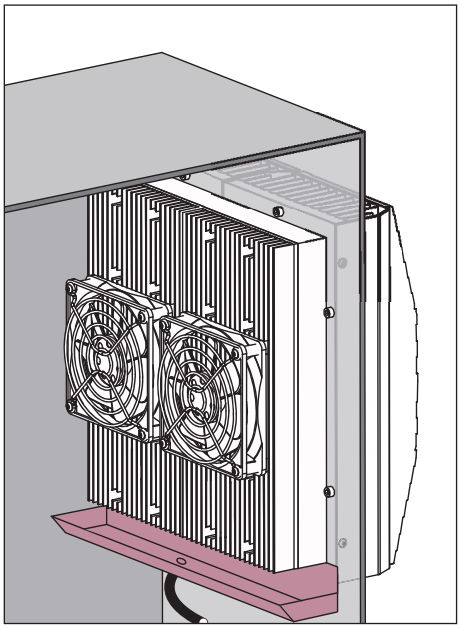

Peltier module


Custom design

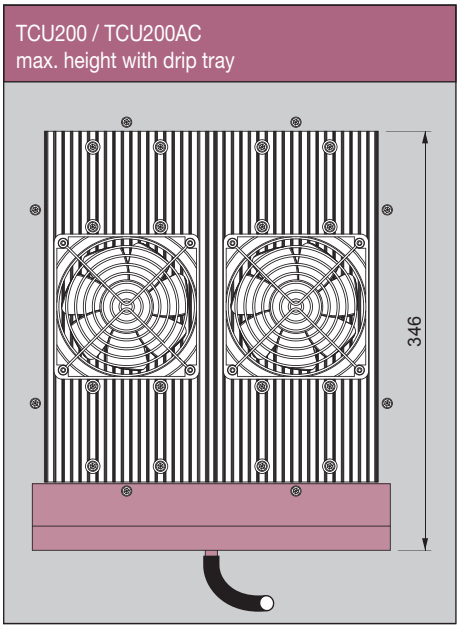


TCU50 and TCU100
max. height with drip tray





TCU200 / TCU200AC
max. height with drip tray



Model numbering system for DC THERMOELECTRIC UNITS

description	TCU	100	24	40	IP55	-	7035	description
FAMILY **TCU**								**COLOUR** **7035** = grey RAL 7035
COOLING POWER **50** = 50 W **100** = 100 W **200** = 200 W								IP protection degree of the external side
VOLTAGE **12** = 12 Vd.c. **24** = 24 Vd.c. **48** = 48 Vd.c.								**SERIES** **40** = standard

Model numbering system for AC THERMOELECTRIC UNITS

description	TCU	200	AC	40	-	SIP	description
FAMILY **TCU**							**CUSTON SERIES** **S**** = custom version
COOLING POWER **200** = 200 W							
VOLTAGE **AC** = Va.c.							**SERIES** **40** = standard

DC thermoelectric units

- Solid-state device with Peltier technology
- Suitable for any plate thickness
- No chlorofluorocarbons (CFC) and compressor
- Reversible process heat/cool
- Operation in any orientation
- Not sensitive to vibration
- Virtually free maintenance - no moving parts (except for the fans)

Model	Rated Voltage	Operating Voltage	Rated Current	Max Current	Rated Cooling Power
	V	V	A	A	W
TCU1002440IP55-7035	24 V d.c.	17-27 V d.c.	4,7	5,7	101
TCU1004840IP55-7035	48 V d.c.	34-54 V d.c.	2,4	3,0	101
TCU2002440IP55-7035	24 V d.c.	17-27 V d.c.	9,5	11,5	201
TCU2004840IP55-7035	48 V d.c.	34-54 V d.c.	4,8	6,0	201
TCU501240IP55-7035	12 V d.c.	7-13 V d.c.	5,0	5,8	57
TCU502440IP55-7035	24 V d.c.	10-27,6 V d.c.	2,4	2,8	57

AC thermoelectric units

- Solid-state device with Peltier technology
- Suitable for any plate thickness
- Stainless steel external cover
- Integrated AC/DC power supply on the other cover
- No chlorofluorocarbons (CFC) and compressor
- Operation in any orientation
- Not sensitive to vibration
- Virtually free maintenance - no moving parts (except for the fans)

Model	Operating Voltage	Rated Power	Max Power	Rated Cooling Power
	V	W	W	W
TCU200AC40-SIP	88-264 V a.c.	245	306	201

Thermoelectric modules

- Semiconductor-based electronic components
- Core system of the thermoelectric units
- No chlorofluorocarbons (CFC)
- Reversible process heat/cool
- Not sensitive to vibrations

Model	Dimensions	Max Current	Max Voltage	Max Cooling Power
	mm	A	V	W
TM1-1274060-HXHP	40x40x4	6,0	15,3 V d.c.	60

Accessories - Drip trays

- Stainless steel accessories used to collect the condensate generated on the cold heat sink inside the enclosure
- Suitable for vertical installation of the thermoelectric units

Model	Suitable for TE units
RC-TCU100-1001	TCU100
RC-TCU200-1001	TCU200
RC-TCU50-1001	TCU50