



THERMOELECTRIC COOLING UNITS FOR OUTDOOR ENCLOSURES AND KIOSKS

The AA-480 Outdoor Thermoelectric Cooler is an Air-to-Air thermoelectric assembly (TEA) that uses impingement flow to transfer heat. It offers dependable, compact performance by cooling objects via convection. The AA-480 has whopping 480 Watts of cooling power and a COP = 1 at $\Delta T=0^{\circ}\text{C}$. Heat is absorbed and dissipated thru custom designed heat exchangers with high aspect ratio, air ducted shrouds and high performance fans. The heat pumping action occurs from custom designed thermoelectric modules that achieve a high coefficient of performance (COP) to minimize power consumption.

This product series has been designed to pass rigorous Telcordia test requirements for outdoor environments. This is due to the selection of world class components such as brand name fans with the highest degree of environmental protection and lifetime guaranteed waterproof connectors, heavy duty anodization on the high-density heat exchangers, overheat protection, and double environmental seals for the thermoelectric modules.

FEATURES AND BENEFITS

- 480W capacity rated at $\Delta T = 0^{\circ}\text{C}$, $T_{\text{ambient}} = 35^{\circ}\text{C}$
- Wide operating temperature range of -40°C to $+55^{\circ}\text{C}$
- Power cycle tested up to 100K cycles
- Gaskets, connectors, and fans provide a NEMA 4 seal for the enclosure
- Environmentally friendly solid state operation – no compressor or CFC refrigerants
- Cooling and heating in the same unit; optional temperature controller reverses the polarity of current to generate heating

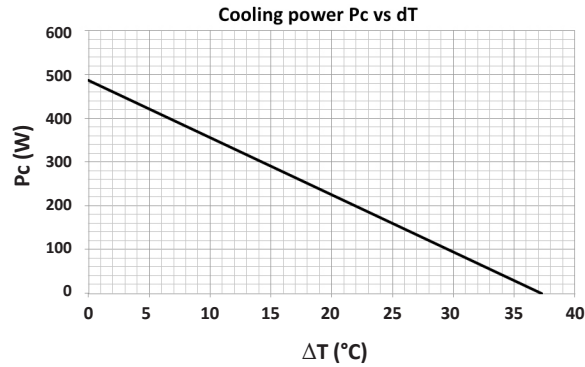
APPLICATIONS

- Outdoor telecom enclosures
- Outdoor kiosks and displays
- Harsh condition electronic cabinets

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PERFORMANCE P_c VS ΔT



SPECIFICATIONS	AA-480-24-44-00-XX
Technical	
Technology	Thermoelectric modules, forced air, closed loop (non-mixing), filterless, non-refrigerant
Cooling at $\Delta T = 0^\circ\text{C}$, and nominal / float voltage ¹	480/529W (1638/1805 Btu/h)
Heating (calculated) ²	450W (1535 Btu/h)
Voltage (nominal / maximum) ⁶	24/28 VDC
COP (Coefficient of Performance)	105%
Grounding (all voltages)	Positive or negative
Current draw, $\pm 10\%$ (nominal / startup)	19.3/26.1 A
Weight	13.2 kg (29.1 lbs)
Panel mounting	Through (from external side)
Fan life (L10 at $+40^\circ\text{C}$)	Cold side 57,500 hours Hot side 75,000 hours
Number of connectors	1
Connector type (on unit / mating side)	Terminal block with cage clamps (AWG 28-12)
Hi-pot testing	707 VDC
Environmental	
Temperature range ³ (external ambient)	-40°C to $+55^\circ\text{C}$ $(-40^\circ\text{F}$ to $+131^\circ\text{F})$
Temperature range (internal enclosure)	-20°C to $+55^\circ\text{C}$ $(-4^\circ\text{F}$ to $+131^\circ\text{F})$
Degree of protection, enclosure ⁴	NEMA 4 (IP55)
Degree of protection, unit int. side	IP54
Degree of protection, unit ext. side ⁵	IP68
Sound level (1m distance)	65 dB(A)
Over temp Thermostat	(optional)

¹ Cooling capacities at nominal / float voltage are rated at external temperatures of $+35^\circ\text{C}$ and $+50^\circ\text{C}$ respectively. Float voltage is defined at 27VDC and 54VDC.

² Calculated heating capacity is rated at external temperature of -40°C , nominal voltage, and $\Delta T = -45^\circ\text{C}$.

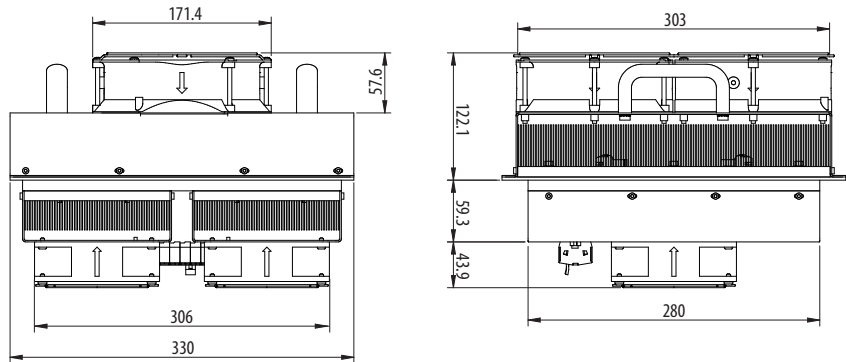
³ Controller function shall not operate the external fan during heating mode.

⁴ The highest environmental protection level requires an external shroud and is defined as the protection level for the enclosure.

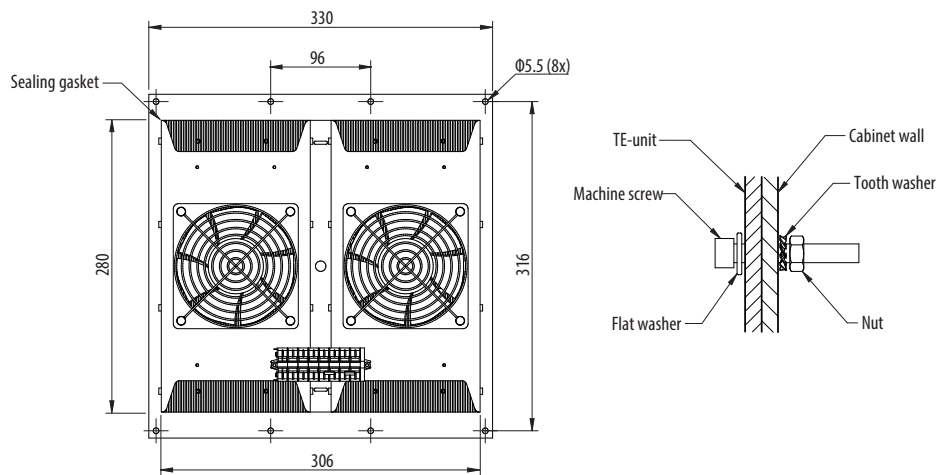
⁵ Rating for unit without protective shroud.

⁶ Max ripple 5%

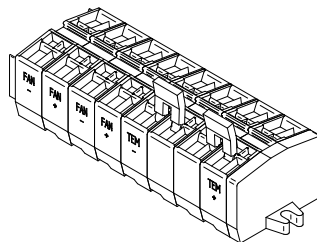
MECHANICAL DRAWINGS



MOUNTING HOLE LOCATION & HARDWARE



ELECTRICAL CONNECTION 24VDC (CAGE CLAMP)



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