



Patent No.: US 9,360,240 B2

The Outdoor Cooler Series 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-230 has 230 Watts of cooling capacity and can be mounted in a horizontal direction to save space. 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 conducted by our customers, such as earthquake resistance, salt fog, wind-driven rain, high temperature exposure and dust contaminants. This is due to the selection of world class components such as brand fans with the highest degree of environmental protection and lifetime guaranteed waterproof connectors, heavy duty anodization on the high-density heat sinks, overheat protection, and double environmental seals for the thermoelectric modules.

#### FEATURES

- Horizontal mount configuration
- 230W capacity rated at  $\Delta T = 0^{\circ}\text{C}$ ,  $T_{\text{ambient}} = 35^{\circ}\text{C}$
- Wide operating temperature range of  $-40^{\circ}\text{C}$  to  $+55^{\circ}\text{C}$
- 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
- Battery cabinets

#### TECHNICAL SPECIFICATIONS

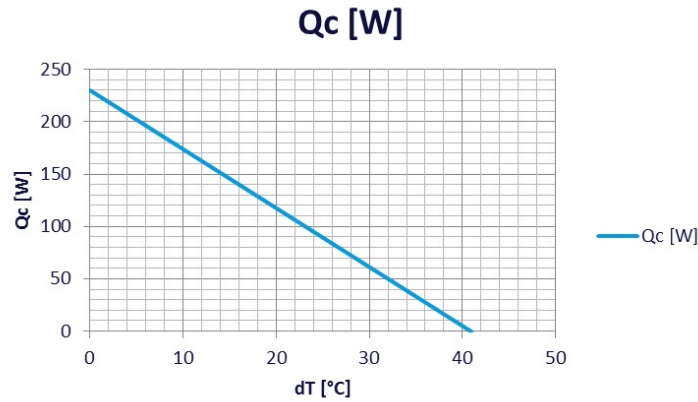
Technology	Thermoelectric modules, forced air, closed loop (non-mixing), filter less, non-refrigerant
Cooling at $dT = 0^{\circ}\text{C}$ , and nominal / float voltage <sup>1</sup> - W	230/246 (785/840 Btu/h)
Heating (calculated) <sup>2</sup> - W	250 (853 Btu/h)
Voltage, nominal / maximum <sup>4</sup> - VDC	48/56
COP (Coefficient of Performance) - %	80
Grounding (all voltages)	Positive or negative
Current draw, nominal / start-up $\pm 10\%$ - A	6.1/7.8
Weight - kg (lbs)	6.5 (14.3)
Panel mounting	Through (from external side)
Fan life ( $L_{10}$ at $+40^{\circ}\text{C}$ ) - hours	$\geq 70,000$
Connector type (on unit / mating side)	Terminal block with cage clamps (AWG 28-12)
Hi-pot testing, - VDC	707

### ENVIRONMENTAL

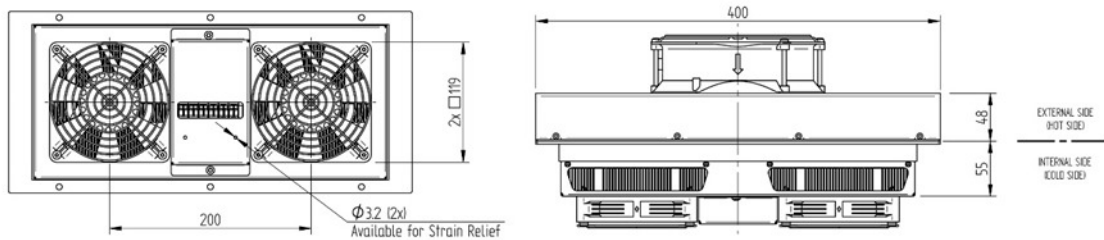
Temperature range <sup>3</sup> , external ambient - °C (°F)	-40 to +55 (-40 to +131)
Temperature range, internal enclosure - °C (°F)	-20 to +55 (-4 to +131)
Degree of protection, unit <sup>5</sup>	IP54
Degree of protection, unit ext. side <sup>5</sup>	IP54
Sound level, 1 m distance - dB(A)	65
Over-Temp Thermostat	optional

- 1) Cooling capacities at nominal / float voltage are rated at external temperatures of +35°C and +50°C respectively. Float voltage is defined at 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) Max ripple 5%
- 5) Rating for unit without protective shroud. A higher degree of protection can be obtained with external shroud.

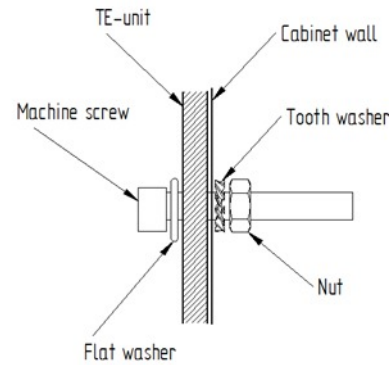
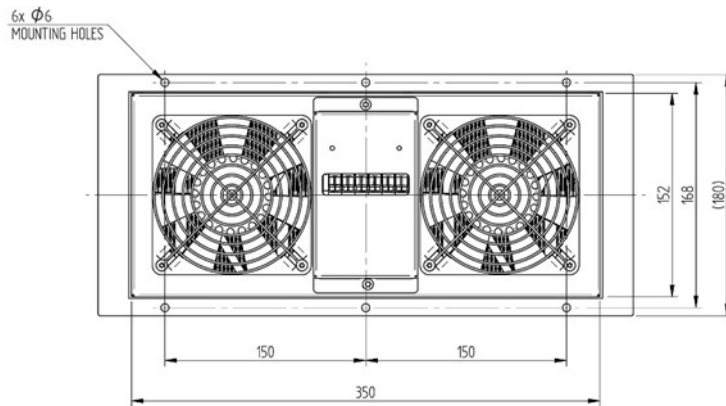
### PERFORMANCE Qc VS $\Delta T$



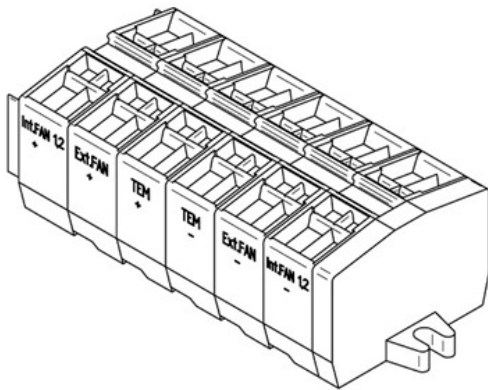
### MECHANICAL DRAWINGS



### MOUNTING HOLE LOCATION & HANDWARE



### ELECTRICAL CONNECTIONS 48VDC (CAGE CLAMP)



#### Electrical connections cold side:

- Ext. FAN +
- Int. FAN +
- TEM +
- TEM -
- Int. FAN -
- Ext. Fan -

#### Warning:

Do not reverse current or use PWM- regulation on fan supply.

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