

Environmental Control Unit ECU Series

Compact air conditioners for transit case/electronics enclosures

The ECU Series are ruggedized air conditioning systems for cooling electronics in austere and mobile applications. They maintain sealed electronics enclosures at or below ambient temperatures, enabling Commercial-Off-The-Shelf (COTS) electronics to be safely and effectively used for computing and communications in extremely hot or cold environments. These systems have been fully ruggedized for military use to MIL-STD-810.

ECU Series will continuously maintain a temperature of $\leq 125^{\circ}\text{F}$ (51.6°C) inside an electronics enclosure in a 125°F ambient environment removing several hundred to kilowatts of heat. The electronics remain sealed against all environmental contamination, improving reliability.



ECU-1800

ECU-550



Application Example: WIN-T Program



The ECU-550 was developed for the US DOD (Warfighter Information Network-Tactical) WIN-T communications program. More than 3,000 ECU units have served with great success in Afghanistan and Iraqi operations logging millions of hours of operation since 2010. The ECU Series offers the benefits of being five times lighter, three times smaller, and uses 25% of the input power of competing thermoelectric based coolers.

The ECU series was developed to meet all applicable Military Standards, with an MTBF of 90,000 hours per MIL HNBK 217. It has been deployed on WIN-T, MATV among others and recently adopted by new programs, including the JLTV.

System Highlights

- » Enables COTS electronics
- » Ruggedized for use in-theater
- » Below ambient cooling
- » **4-6 X** the efficiency of thermoelectrics
- » Ultra compact
- » Extremely lightweight
- » MIL-qualified/SWaP-C effective
- » >90,000 hour MTBF



World's Smallest Rotary Compressor

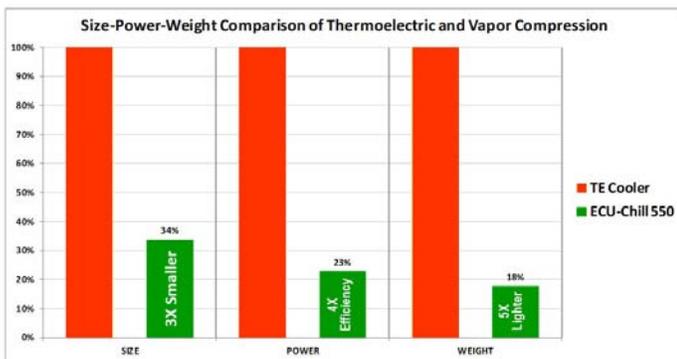
Environmental Control ECU Series

for high performance cooling/heating and humidity management

In cooling applications, the vapor compression based ECU Series provides the highest efficiency and capacity, smaller size, low weight, minimal maintenance and low cost when compared to Thermo-Electric Coolers (TEC).

ECU Advantages

- » 3 times smaller
- » 4 times more efficient
- » 5 times lighter
- » >90,000 hour MTBF, Maintenance free



The ECU Series are efficient vapor compression refrigerant systems based on Aspen's miniature rotary compressors. It is a complete, ruggedized, environmental control unit designed to manage both temperature and humidity for rack-mounted electronics. The ECU circulates chilled or heated air inside the enclosure and rejects any heat generated to the atmosphere without direct exposure to ambient air. The ECU will remove substantial heat from COTS electronics to maintain an internal temperature of 125°F when the ambient temperature is 125°F.

Optionally, it can provide heat to maintain operability in very cold environments and will maintain the relative humidity of the internal air at or below 70% RH, in warm humid environments. The ECU-550 has completed qualification testing and meets or exceeds the requirements of MIL-STD-810 Environment, -461 EMI, and 1275 Power Supply.

Specifications

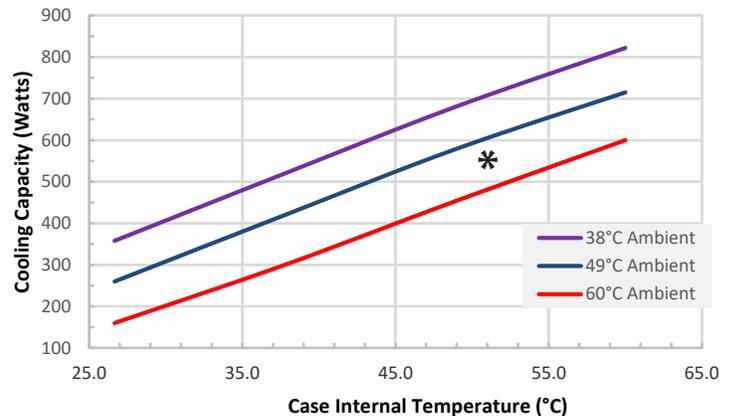
Model	Cooling Capacity (W)	Weight (Pounds)	Dimensions (Inches)
ECU-550	550	20	9 x 18.5 x 6.7
ECU-1800	1800	36	15.5 x 18.5 x 11.5
Operating Ambient Temperature Range	-40°F to 140°F (-40°C to 60°C)		
Storage	-40°F to 160°F (-40°C to 71°C)		
Altitude	15,000 ft. (4.6 km)		
Humidity Control	70% RH		

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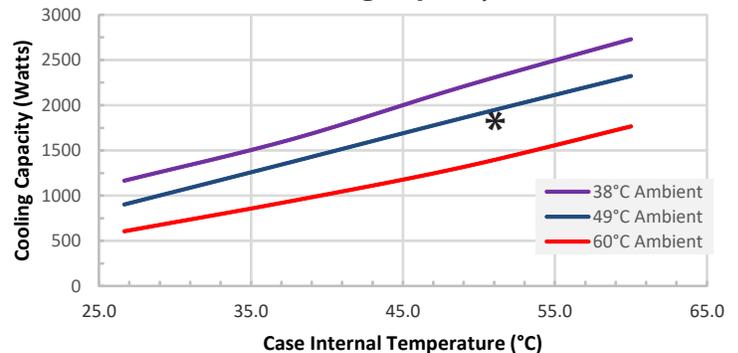
Cooling Capacity Graphs

ECU-550 Cooling Capacity Performance



* Rated Operating Condition:
52°C Ambient, 52°C Case, 550W Capacity

ECU-1800 Cooling Capacity Performance¹



¹ Preliminary data

* Rated Operating Condition:
52°C Ambient, 52°C Case, 1800W Capacity

Contact us today for a free evaluation of your application:
508-281-5322 or e-mail info@aspensystems.com

Aspen Background

Aspen Systems is the world leader in miniature refrigeration systems. We have created refrigeration systems to meet specifications for dozens of customers with thousands of installations in personal cooling, manufacturing, mobile electronics, airborne electronics, lasers, military, and medical.

