

# Compact–Light–Rugged Cooling Systems for Extreme Applications



## ECU-CHILL<sup>®</sup> 550

A New and Improved Compact Air Conditioner for Transit Cases and Electronics Enclosures

- Enhanced Performance
- New Features
- Low-Cost Design

### Features and Benefits

ECU-CHILL 550 Environmental control units use vapor compression air conditioning technology to cool electronics below ambient temperature.

- Enables COTS Electronics
- Seals Electronic enclosures from Contaminants
- 550 Watts of Below Ambient-Cooling
- Maintains a Humidity Controlled Environment
- Ruggedized
- MIL-Qualified \*
- SWaP-C Effective
- Light and Efficient
- Aspen Part No. FP00027

### Application

ECU-CHILL 550 is a ruggedized air conditioning system for cooling electronics in mobile and stationary applications. ECU-CHILL 550 maintains sealed electronics enclosures at or below ambient temperatures and provides a humidity controlled environment. Tight environmental control enables Commercial-Off-The-Shelf (COTS) electronics to be safely and effectively used for computing and communications in extremely hot or cold environments. The system has been fully ruggedized for military use to MIL-STD-810.

ECU-CHILL 550 will continuously maintain a temperature of  $\leq 125^{\circ}\text{F}$  ( $52^{\circ}\text{C}$ ) inside an electronics enclosure in a  $125^{\circ}\text{F}$  ambient environment while dissipating 550 Watts of waste heat. The electronics remain sealed against all environmental contamination, improving reliability.

### Description

ECU-CHILL 550 is an efficient vapor compression refrigeration system that consists of Aspen's miniature rotary compressor, condenser, evaporator, fans,

control system, expansion valve, and refrigeration lines. It has a heating capability to warm enclosures to meet cold start requirements. As a complete environmental control unit, ECU-CHILL 550 can be used to manage both temperature and humidity for rack mounted electronics in transit cases, for legacy systems in their current configuration, or placed in new custom enclosures. The system runs on 28V DC Power.

### Operation

ECU-CHILL 550 is a complete environmental control unit that provides cooling, heating and humidity control, determined by the internal temperature of the enclosure. The ECU internal fans continuously circulate air within the enclosure and through the ECU to maintain temperature and relative humidity. If the relative humidity goes above 70% RH the ECU condenses moisture from the air and drains it externally. Below  $40^{\circ}\text{F}$  the internal heater is activated to warm the internal air. The automated control system modulates compressor speed in response to operating conditions to minimize power consumption at all times.

# ECU-CHILL 550

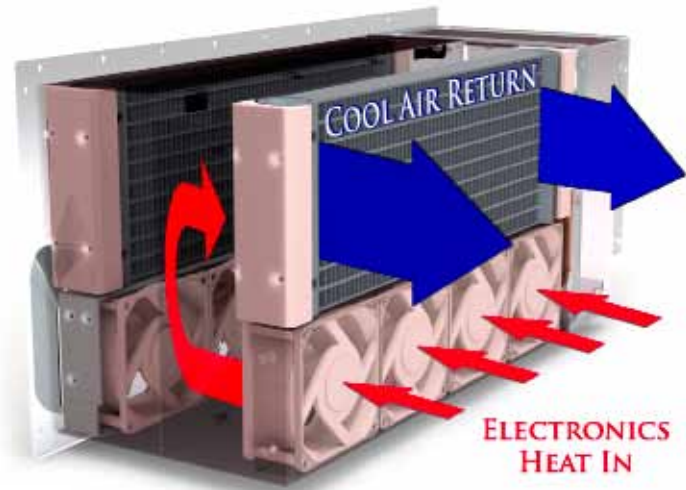
## Technical Data (Aspen Part No. FP00027)

Feature	Product Rating	Comments
<b>Cooling Capacity (W)</b>	550	At rated operating conditions
<b>Heating Capacity (W)</b>	300	At 40°F or below
<b>Environmental</b>		
Ambient Temperature		
Operating - °F (°C)	-34 (-37) to 140 (60)	
Rated Conditions - °F(°C)	125 (52) internal @ 125 (52) Ambient	
Storage - °F (°C)	-40 (-40) to 160 (70)	See Installation Manual for Condensate Drain Instructions
Humidity Control - %RH	70 (between 50 to 140°F)	
Altitude - above sea level	15,000 ft.	
Orientation - from vertical	+/- 15°	
Military Standards	MIL-STD-810*	
<b>Electrical</b>		
<b>Max.</b> Power Draw - W	420	
Voltage - Vd.c.	28 +/- 4	
Max Current - A	15	
Military Standards	MIL-STD-461* MIL-STD-1275*	EMI protected Power Supply
<b>Sound Level</b>	<75 dBA	At one meter
<b>Weight and Volume -</b>		
Weight - lbs. (kg)	20 (9.1)	
Volume - in.	9 H x 18.5 W x 6.7 D	
- (cm)	(22.8 H x 47 W x 17 D)	

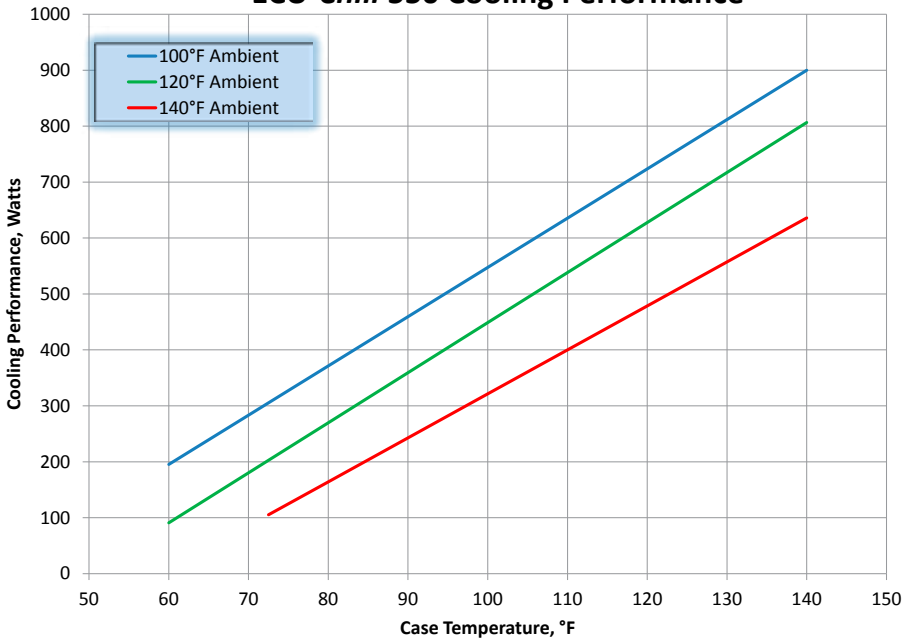
\* When installed in a qualified military transit case



Electronics Remain Sealed in Cooled Environment



## ECU-Chill 550 Cooling Performance



### Expected Performance

ECU-CHILL 550 is a ruggedized air conditioning system for cooling electronics in mobile applications. The ECU has been installed in transit cases and rigorously tested for qualifications to military standards including 810, 461, and 1275. The effectiveness of this system, however, is dependent upon other factors. These factors include adequate clearance for ambient air supply on the outside of the system, and sufficient airflow inside the enclosure passing over the heat generating electronics.

For more information please contact:  
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