SprayCool® MPE Series Multi-Platform Enclosure

Description

The SprayCool MPE series of enclosures are available in 3U and 6U models. The series offers a new standard of scalable thermal performance, environmental isolation, and flexible design that simplifies integration while meeting today's and tomorrow's customer needs in harsh environments.

The SprayCool MPE series features small, lightweight, rugged, high-performance, direct-spray enclosures. Designed to provide unparalleled flexibility, the MPE can enable survivability for both commercial grade and rugged electronics in harsh military environment applications. Both are capable of protecting commercial grade or rugged electronics.

The SprayCool MPE enclosures are truly versatile, in small, light, and cost-effective formats. Using patented direct-spray evaporative technology, electronics are protected in the MPE's sealed, closed-loop environment, ensuring electronics survivability in extreme operating environments, encompassing both temperature and vibration. Architected to reduce non-recurring engineering expenses for custom products, the MPE can be delivered in any payload configuration without mission-specific development.

The MPE series was developed to meet the requirements of ground and airborne platforms. Further, the SprayCool MPE assures broad flexibility in that it can be scaled to customer's exact specifications at an affordable cost. Designed to provide from four to 21 user slots, these rugged enclosures can accommodate a range of proprietary, commercial, and rugged electronics.

The MPE series is designed to operate in a harsh environment over extended temperature of -55°C to 71°C (-65°C optional) and altitude ranges of up to 55,000 feet (75,000 feet optional). To accomplish this, electronics are housed in an evaporative, cooled, sealed enclosure creating a safe environment for the electronics within.

Leveraging open industry standards and common commercial-grade electronics, the MPE enclosure can allow customers to quickly field common applications without redesign or requalification across a broad range of vehicle types and applications.

Platforms
- Ground vehicles
- Unmanned aerial vehicles
- Rotor-wing aircraft
- Airborne platforms

Applications
- Sensor processing
- Electronic warfare
- Mission computing
- Command and control

Product Highlights

- Meets demanding environmental requirements of MIL-STD-810F
- EMI per MIL-STD-461,462
- Sealed construction prevents moisture and dust contamination
- Open system architecture for 3U and 6U VPX, VXS, cPCI/CPCIe, and VME/VME-64X
- Configurable I/O, backplane, and power supply
- Supports MIL-STD-704, 1275B power input
- No air filters or other frequent maintenance items
- Flexible heat exchanger up to 2kW
- Scalable from seven to 11 3U slots, four to 21 6U slots
- Supports self-diagnostics and BIT
- Optional mounting features including shock isolation
- Compatible with ½ ATR short-mounting MPE

Contact Information

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Parker Aerospace

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Specifications

	MPE-3U	MPE-6U
Configurations	Up to 11 user slots	4 to 21 user slots, 6U x 160mm x 0.8”
Dimensions:	12.62”L x 6.38”W x 10.625”H	12.45”L x 12”W x 12”H (8 user slot unit)
Cooling capacity:	up to 2kW (with heat exchanger)	up to 2kW (with heat exchanger)
Storage temperature:	-65° to 85°C	-65° to 85°C
Operating temperature:	-55° to 71°C (optional: -65°C)	-55° to 71°C (optional: -65°C)
Reliability:	14,000 hours MTBF	14,000 hours MTBF
Power consumption:	80W maximum (for cooling system)	80W maximum (for cooling system)
MIL-STD:	MIL-STD-704 and 1275B	MIL-STD-704 and 1275B
Weight: (8-slot)	150 lbs.	28 lbs.
Backplanes:	VPX, cPCI/cPCIe, VME/VME-64X	VME/VME-64X, cPCI/CPCIe, VPX, VXS
Environmental:	Exceeds humidity, salt fog, fungus, thermal shock, sand, and dust requirements of VITA 47	Exceeds humidity, salt fog, fungus, thermal shock, sand, and dust requirements of VITA 47

SprayCool MPE-3U & -6U with heat exchanger

Capabilities

- Ability to mix commercial cards and custom/rugged electronics, significantly reducing integration risk, time, and costs
- Lowest system cost compared to conduction or other liquid alternatives
- Enables highest electronics density available at extreme environments
- Enables highest electronics reliability available today
- Capable of operating in tactical environments
- Sealed to provide maximum protection against contamination
- Does not require additional ECS capacity
- Scalable: meets various electronics payload requirements
- Minimize size, weight, and power consumption
- Altitudes up to 55,000 ft. (75,000 ft. optional)

Heat Exchanger Options

Capacity	0 to 500 W	500 to 1000 W
Dimensions	9.7” x 9.4” x 5”	11”x 7.5” x 6.5”
Weight*	6.5 lbs.	9.9 lbs.

*Weight includes heat exchanger core, fans, and fluid.

Optional Accessories

- Custom backplane can accommodate any configuration of power supply or system slots
- Attitude independent valves adhere to mobility requirements of platform (the need for inverted operation)
- Custom I/O panel
- Fluid fill and drain system
- Fluid handling tool
- System integration cart
- Fluid heaters (extreme cold operation)
- Operational redundancy (n+1) electronics

SprayCool Technology

SprayCool is Parker’s patented two-phase “direct spray” liquid-cooling technology. It consist of deploying a fine mist of non-corrosive, non-toxic, non-conductive liquid (Fluorinert™ by 3M) sprayed in a thin layer, which evaporates and cools electronics. The process continuously cycles within a sealed, closed-loop system. In doing so, SprayCool-enabled products isolate the electronics from dirty, corrosive environments found in military and industrial applications, resulting in temperature-optimized, higher performance, and more durable electronic devices, often without the need of dedicated environmental control systems.

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