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Find the *Aitech Defense Systems E193* at our website: ***Click HERE***

E193

Rugged 4 Slot, 3U Compact PCI Enclosure



- ***Rugged 4 slot, 3U CompactPCI Powered Enclosure for Mobile Military Applications***
- ***Designed for Harsh Mechanical, Climatic and Electrical Stresses***
- ***Environmentally Sealed Enclosure for Conduction-Cooled modules***
- ***Compact and Lightweight for 4 Standard ANSI/VITA 30.1-2002 Conduction cooled, 3U CompactPCI Modules***
- ***Natural Convection Cooled***
- ***28VDC Power Input per MIL-STD-704 with environmentally sealed, EMI/EMC compliant Power Input Filter***
- ***Standard Output, High Performance, Modular and Removable Power Supply***
- ***Customized Front Panel – Circular MIL-DTL-38999 Connectors***

Aitech Defense Systems Inc.
A member of the Aitech Rugged Group
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Overview

Aitech's E193 natural air, convection-cooled powered enclosure is built to be rugged and reliable as well as lightweight and compact. EMI/RFI protected and environmentally sealed, the E193 is capable of withstanding extreme environmental conditions of altitude, temperature, moisture, shock, vibration, EMI and chemical exposure, making it ideal for use in military and aerospace environments.

Mechanical Design

The E193 is constructed of durable CNC machined 6061-T6 aluminum. Fasteners are stainless steel and removable cover screw threads have self-locking stainless steel helicoils to withstand severe vibration and shock. All I/O connectors are located on the front panel of the enclosure for easy access. The E193 is also equipped with two front mounting J hooks and two rear dagger pin hold-down receptacles to facilitate installation in ARINC 404 1/2-ATR mounting trays.

Board Capacity

The E193 accommodates 4 conduction-cooled 3U CompactPCI board per VITA 30.1-2002 with 0.8 inch pitch, and a 3U conduction-cooled power supply.

Compact PCI Backplane

The backplane is 3U CompactPCI compliant with J1 and J2 connectors in all slots. DC input power is routed to the power supply via a separate screened harness so as to prevent radiated or conducted EMI.
All I/O signals from the CompactPCI slots are routed via the backplane to wire-wrap posts that can be easily customized for specific applications.

Front Panels

A removable front access panel features a flexible configuration of user-defined circular connectors, one for input power and all others for I/O. All connectors are located on the front access panel.

Front Panel and Backplane Wiring

The front panel can accept a number of wiring options to facilitate easy I/O customization during prototyping, or support lower cost options for production.
For prototyping, the I/O connectors can be wired directly to wire wrap pins to each of the 3U module slots on the backplane. This flexibility allows low cost wiring additions or changes to be made during the initial program development phase. Once finalized and released to production, an I/O transition module or Flex circuit can be utilized to connect the I/O to the backplane to reduce overall production and labor costs.

Thermally Efficient

The conduction-cooled, VITA30.1-2002 compliant boards are environmentally sealed within the Chassis. The CompactPCI boards and power supply are positively clamped to the side walls of the chassis providing a direct thermal path to the mounting brackets.

Electro-Magnetic Compatibility

Aitech's E193 minimizes radiated emissions and susceptibility interference with these features:

- Bolted corners with conductive surfaces provide 2.5 milliohms or less of DC resistance
- 2 inch max screw spacing on all covers and side panels to control EMI aperatures
- Conductive O-ring gaskets provide environmental and electro-magnetic sealing
- Separately shielded input power assembly
- Line filter capacitors on the input power assembly eliminate conducted emissions

Environmental Sealing

The E193 is sealed against intrusion of external environment contaminants found in military applications, including: humidity, sand and dust, and contaminant splash. Enclosure mating surfaces are sealed with aluminum filled fluorosilicon gaskets. Connectors and other accessories are protected also in the same manner.

Corrosion Resistant Finish

External surfaces of the E193 are finished with black hard anodize which offers excellent corrosion resistance. A painted finish is available in standard military colors, or CARC and nonstandard colors available upon request. Internal surfaces are chemical conversion coated for corrosion resistance and electrical conductivity. All finishes and components are fungus resistant.

High Performance Power Supply

The modular and removable power supply unit provides continuous high current, high efficiency operation under the most adverse conditions. The power supply may be easily replaced by the user to avoid enclosure maintenance downtime.

Major PSU features include:

- The DC-DC converter modules to provide four isolated outputs
- Minimum of 500V isolation from input to output, eliminating any possibility of ground loops
- Outputs are protected against short-circuit and overvoltage
- Input protected against reverse polarity high voltages, ripple and spikes
- Thermal shutdown capability
- For memory retention capabilities, the power supply holds up the output power rails for an additional 4ms after the input drops below 18VDC
- Options for additional output hold-up times are available and dependent on output loading.
- For corrosion resistance and electrical conductivity, all PSU module finishes and components are fungus resistant.

Power Supply Specifications

- **Thermal Characteristics**

  Thermal Shutdown 100°C to 110 °C

- **Input Power**

  Voltage Range (DC) 18V - 36 VDC

  Nominal Input Voltage 24V to 28V

  Reverse Polarity 0 to 50VDC

- **Transient Suppression**

  Meets requirements of:

  – MIL-STD-1275AT except ignition, cranking, and single fault conditions.

  – MIL-STD-704D

- **Isolation Resistance**

  >1MΩ at 250 V input to output or chassis.

- **Output Power**

	Outputs			
	1	**2**	**3**	**4**
Voltage (Vdc)	+5	+3.3	+12	-12
Current (A)	20	10	9	1
Ripple/Noise (mV_{p-p})	<50	<50	<50	<50

- **Total Output Power** 150 W

- **Holdup Circuit**

  Enables all outputs for at least 4 ms at full load after input drops under 18 VDC. An optional capacitor hold-up module is available to provide >50ms hold-up time at full load.

- **General Parameters**

  Power Fail Warning >4 ms

  Efficiency >85%

General Specifications

- **Dimensions**

  4.88” x 7.61” x 7.62” (W x D x H)

  Maximum external dimensions:
  5.88” x 8.24” x 7.62” (W x D x H), includes connectors and handle

- **Power Dissipation Capability**

  More than 50 W at 55 °C ambient free air temperature at sea level, internal temperature is 85°C (max) at card edge.

Environmental Specifications

- **Operating Temp.**

  Series 200 level Enclosure: -40 °C to +55 °C
  Series 400 level Enclosure: -55 °C to +55 °C

- **Non-operating Temp.**

  Series 200 level Enclosure: -50 °C to +85 °C*
  Series 400 level Enclosure: -62 °C to +100 °C*

- **Humidity**

  5% - 95% relative humidity with condensation

- **Vibration**

  Sine: Cycling of 10 g (max) at 5 to 500 Hz
  Random: $0.1g^2$/Hz at 20 to 2000 Hz
  Transportation: Loose cargo vibration

- **Shock** - Single half-sine shocks:

  40g peak, 3 axes, 11ms duration

- **Transit Drop** * 1 ft. drop on concrete

- **Bench Handling**

  4-in unpackaged drop at a 45° angle to simulate conditions during servicing

- **Low Pressure**

  Operating: Up to 70,000 ft
  Storage: Up to 70,000 ft

- **Salt Fog** 5% salt spray

- **Fine Dust** Wind and fine dust particles

- **EMI/RFI**

  Per MIL-STD-461D, part IV with line filter:
  - CS101 (20 Hz – 50 KHz)
  - CE102 (10 KHz – 10 MHz)
  - CS114 (10 KHz – 400 MHz)
  - RE102 (10 KHz – 50 GHz)

- **Weight**

  Less than 9 lbs
  (Conduction-cooled boards not included)

* Packed in suitable shipping/cargo container

For more information about the E193 or other Aitech products, please contact Aitech Defense Systems sales department at 888-248-3248.

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