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Find the *Aitech Defense Systems E104* at our website: ***Click HERE***

# E104

## 1/2-ATR Short Cold Plate VME Enclosure




- ***Rugged Chassis for Mobile Military/Aerospace Applications***
- ***Designed for Harsh Mechanical, Climatic, Chemical and Electrical Stresses***
- ***Environmentally Sealed***
- ***Compact and Lightweight with 5 Standard VME Slots***
- ***Internally Conduction-Cooled; Externally Cold Plate Cooled***
- ***Fully Sealed Faraday Cage and Complete EMI/RFI Power Line Filtering***
- ***Customized Front Panel***
- ***Multi-Output Removable Power Supply***

**Aitech Defense Systems, Inc.**
**A member of the Ai-Rugged Group**
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## Overview

The Aitech E104 cold plate conduction-cooled VME computer enclosure is built to be rugged and reliable as well as lightweight and compact. EMI/RFI protected and environmentally sealed, the E104 is capable of withstanding extreme environmental conditions of high altitude, temperature, humidity, shock, vibration, EMI and chemical exposure. This makes it ideal for use in all military and aerospace environments.

## Sturdy Mechanical Design

The E104 is constructed of durable CNC machined 6061-T6 aluminum. Fasteners are stainless steel and often-used threads have self-locking stainless steel helicoils to withstand severe vibration and shock. All connectors are located on the front panel of the enclosure for easy access. Side and back walls are equipped with heat conducting mounting bars to the bottom side of the enclosure for cold-plate direct mounting. The E104 is also equipped with a built-in handle for carrying purposes.

## Board Capacity

The E104 accommodates 5 standard VME boards with 0.8 inch pitch, including:

- IEEE 1101.2 conduction-cooled VME cards
- Commercial VME boards without front panels

## VME Backplane

The backplane is VME64x compliant with 160-pin, 5-row J1/J2 connectors and 95-pin PO connectors in all slots.

Any of the pins in rows A and C, and user defined pins in rows Z and D of the J2 connectors, as well as the 95 I/O pins from each of the P0 connectors (up to a maximum of 512), can be routed to front panel I/O connectors.

## Front Panel

The front panel features a flexible configuration of connectors that conform to military standards, one for input power and all others for I/O.

It may also be equipped with any of the following options: LED indicators to track system operation, On/Off switch and external grounding screw.

## Thermally Efficient

The E104 requires cold plate cooling. Heat is conducted through the aluminum sidewalls, back panel and mounting bars to the bottom side of the enclosure and to the cold plate.

## Electro-Magnetic Compatibility

Aitech's E104 minimizes emission and susceptibility interference with these features:

- Metal-to-metal clamping with conductive surfaces and fasteners
- Conductive O-ring seals
- Shielded power supply board
- Metallic partition between I/O and board sections of the backplane and enclosure
- Line feed through filters on the inner surface of the front panel for reduced EMI/RFI noise to/from power cable, additional line filter module on the power supply board.
- Isolated chassis ground with optional external grounding screw

## Environmental Sealing

The E104 is sealed against humidity and splash. Enclosure mating surfaces are sealed with hollow silicone rubber O-ring seals. Connectors and other accessories are protected in the same manner.

## Corrosion Resistant Finish

External surfaces of the E104 are finished with black hard anodize coating for excellent corrosion resistance. As an option, an epoxy paint exterior finish is available in standard military colors with nonstandard colors upon request

Electrically and thermally conductive mating surfaces are chemically conversion coated for corrosion resistance. All finishes and components are fungus resistant.

## *High Performance Power Supply*

The removable power supply provides continuous high current, high efficiency operation, under the most adverse conditions. It is easily replaced by the user to avoid enclosure maintenance downtime.

Major features include:

- DC-DC converters, designed to operate even with irregular or noisy power sources
- MOSFET output switching technology
- Fully isolated inputs and outputs, eliminating the possibility of ground loops
- Outputs are protected against short-circuits, thermal breakdown, overvoltage and overshoot.
- Input protected against reverse polarity high voltages, ripple and spikes

For memory retention capabilities, the power supply is available with optional battery backup.

## *Power Supply Specifications*

- **Thermal Characteristics**

  Thermal Shutdown 100 °C to +110 °C

- **Input Power**

  Voltage Range (DC) 18 V to 36 V
  Nominal Input Voltage 24 V to 28V

- **Transient Suppression**

  Meets requirements of:
  - MIL-STD-1275AT (except ignition, cranking and single fault conditions)
  - MIL-STD-704D

- **Isolation Resistance**

  500 V to output or enclosure

- **Output Power**

| | Outputs | | | |
|---|---|---|---|---|
| | **1** | **2** | **3** | **4** |
| Voltage (VDC) | +5 | +12 | -12 | +3.3 |
| Current (A) | 20 | 1 | 1 | 11 |
| Line/Load Regulate (%) | 0.5 | 0.5 | 0.5 | 0.5 |
| Ripple/Noise (P-P mV) | 50 | 100 | 100 | 50 |

- **Total Output Power** 160 W
- **General Parameters**

  Power Fail Warning >4 mS
  Battery Backup (option) 0.25 Ah
  Efficiency >75%

## *Environmental Specifications*

- **Operating Temp.**

  -46 °C to +71 °C

- **Operating Humidity**

  5%-95% relative humidity with condensation

- **Vibration**

  Sine Cycling of 10 G (max) at 5 to 500 Hz
  Random 16 Grms at 20 to 2000 Hz
  Transportation* Loose cargo vibration

- **Shock**

  Single half-sine shocks:
  - 40 G peak
  - 11 ms duration
  - 3 axes

- **Transit Drop (Packaged)**

  1 ft. drop on concrete

- **Bench Handling**

  4-in unpackaged rotational drop to simulate conditions during servicing

- **Low Pressure/Altitude**

  Operating and storage: Up to 70,000 ft

- **Salt Fog**

  5% salt spray

- **Fine Dust**

  Sand and fine dust particles

- **EMI/RFI**

  Designed to meet the emanation and susceptibility limits of MIL-STD-461, as per MIL-STD-462 requirements, CE102, CS101, CS114, & RE102.

## General Specifications

- **Dimensions**

  Maximum external dimensions with mounting bars and handle:

  6.535" (w) x 14.25" (d) x 7.62" (h)

- **Weight**

  Less than 18.5 lbs. (without boards)

- **Power Dissipation Capability**

  More than 100 W at 71 °C cold plate temperature (maximum $\Delta$T of 15 °C at card edge).

## Development System Compatibility

To provide for a smooth transition between development and deployment, Aitech offers an equivalent, low-cost commercial integrated system with standard VME boards and an AC-operated, fan-cooled enclosure.

## Accessories

Aitech offers a wide range of custom mounting options and cable sets.

For more information about Aitech's rugged and military VME enclosures or any Aitech product, please contact your local sales representative or our sales office.

For more information about the E104 or any Aitech product, please contact Aitech Defense Systems sales department at (888) Aitech-8 (248-3248).

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