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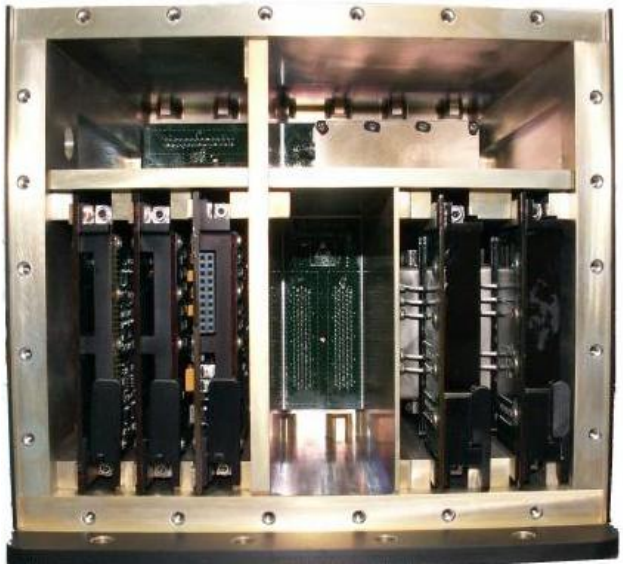
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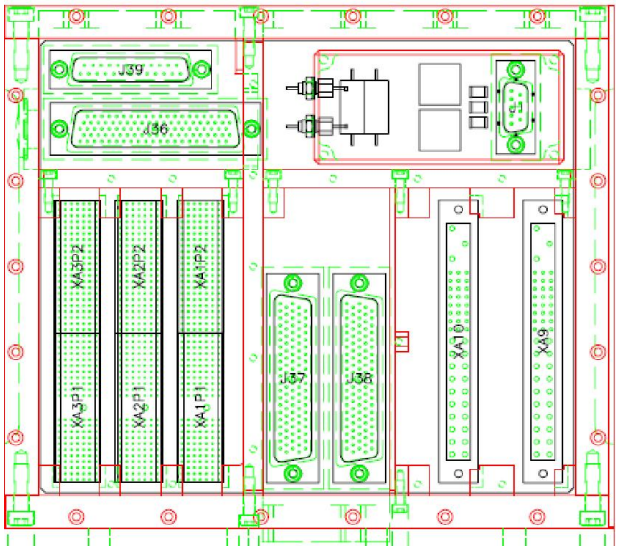
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Find the *Aitech Defense Systems E903* at our website: ***Click HERE***

# E903

## Rugged 3U CompactPCI Enclosure






- ***Rugged 3-Slot, 3U CompactPCI Powered Enclosure***
- ***Designed for Harsh Mechanical, Climatic, Chemical and Electrical Stresses***
- ***Environmentally and EMI Sealed Enclosure for Conduction-Cooled modules***
- ***Compact for Three Standard ANSI/VITA 30.1-2002 Conduction cooled, 3U CompactPCI Modules***
- ***Conduction-cooled via Chassis Baseplate***
- ***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 – D-Sub Connectors***
- ***Designed for Harsh Mechanical, Climatic, Chemical and Electrical Stresses***

**Aitech Defense Systems Inc.**
**A member of the Aitech Rugged Group**
19756 Prairie Street, Chatsworth, CA 91311
Tel: (818) 700-2000 Fax: (818) 407-1502 e-mail: sales@rugged.com web: www.rugged.com

## Overview

Aitech's E903 cold plate cooled enclosure is built to be rugged and reliable as well as lightweight and compact. EMI/RFI protected and environmentally sealed, the E903 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 E903 chassis utilizes a bonded and fastened construction technique and is made of durable CNC machined 6061-T6 aluminum. Stepped corner joints enhance the structural and EMI integrity. All fasteners are stainless steel and removable panel threaded holes have self-locking stainless steel helicoils to withstand severe vibration and shock.

## Board Capacity

The E903 accommodates 3 conduction-cooled 3U CompactPCI boards per VITA 30.1-2002 with 0.8 inch pitch, and a 3U conduction-cooled power supply.

## CompactPCI 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.

## Transition Module

Some I/O signals from both CompactPCI slots are routed via the transition module to the front panel connectors. Any change of cards may require the change of transition module to accommodate different Dsub connectors.

## Access Panels

Removable front and rear access panels features a flexible configuration of user-defined Dsub connectors, one for input power and the other two connectors are for I/O. All connectors are located on the rear access panel.

## Thermally Efficient

The conduction-cooled, VITA30.1-2002 compliant boards are environmentally sealed within the chassis. The CompactPCI boards are positively clamped to the side walls of the chassis providing a direct thermal path to the base plate. The power supply's DC to DC converters come in direct contact with the base plate.

## Electro-Magnetic Compatibility

Aitech's E903 minimizes conducted and radiated EMI/RFI emissions and susceptibility with these features:

- Metal-to-metal clamping with conductive surfaces and fasteners provide 2.5 milliohms or less of DC resistance
- Conductive O-ring gaskets provide environmental and electro-magnetic sealing
- Shielded power supply boards and internal power cabling
- Ferrite suppression on the input power assembly eliminate conducted emissions
- Metallic partition between the power supply and VME sections
- Faraday cage input power line filter mounted to the backplane
- Isolated chassis ground and optional connection between chassis GND and signal GND

## Environmental Sealing

The E903 is sealed against intrusion of external environment contaminants found in military applications, including: humidity, sand and dust, and contaminant splash. Conductive EMI gaskets are installed around each of the front panel connector. Enclosure mating surfaces are sealed with silicone rubber O-ring seals.

## Corrosion Resistant Finish

External surfaces of the E903 are finished with either epoxy paint or chemical conversion coated for excellent corrosion resistance. The finish is available in standard military colors with 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 removable power supply module 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 features include:

- Two 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 4 msec (min) after input drops under 18VDC
- Options for additional output hold-up times are available and dependent on output loading for corrosion resistance and electrical conductivity. All finishes and components are fungus resistant.

## Power Supply Specifications

- **Thermal Characteristics**

  Thermal Shutdown 100 to +110 °C

- **Input Power**

  Voltage Range (DC) 18 to 36 Vdc

  Nominal Input Voltage 24V

  Reverse Polarity Protected 0 to 40Vdc

- **Transient Suppression**

  Meets requirements of:

  – MIL-STD-1275AT (with minor exceptions)

  – MIL-STD-704D

- **Isolation Resistance**

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

- **Output Power**

| | Outputs | | | |
|---|---|---|---|---|
| | **1** | **2** | **3** | **4** |
| Voltage [Vdc] | +5 | +3.3 | +12 | -12 |
| Current [A] | 18 | 11 | 1 | 1 |
| Ripple/Noise [$mV_{p-p}$] | <50 | <50 | <100 | <100 |

- **Total Output Power** 140 W

- **General Parameters**

  Power Fail Warning <4 ms

  Efficiency * >75%

## General Specifications

- **Dimensions**

  8.0” x 7.7” x 7.1” (W x D x H)

  Maximum external dimensions:
  8.0” x 9.2” x 7.1” (W x D x H), includes connectors and mounting flanges

- **Power Dissipation Capability**

  More than 28 W at 71°C ambient free air temperature at sea level
  With cold plate temperature of 55°C, the internal temperature is at a maximum 85°C at card edge.

## Environmental Specifications

- **Operating Cold Plate Temp.** -40 °C to +71 °C
- **Non-operating Temp.** -55 °C to +125 °C
- **Humidity**

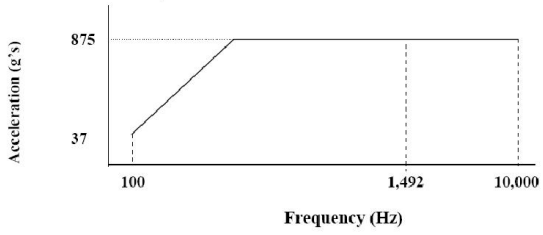
  5% - 95% relative humidity with condensation

- **Vibration**

  Sine: Cycling of 10 g (max) at 5 to 500 Hz
  Random: 17.197 $g_{RMS}$ at 20 to 2000 Hz
  Transportation: Loose cargo vibration

- **Shock** – see below for details:

| Frequency | SRS (G’s) |
|---|---|
| 100 Hz | 37 |
| 1,492 Hz | 875 |
| 10,000 Hz | 875 |




- **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

- **Acceleration** Up to 38g on all 3 axes and sustain operation at a velocity of over Mach 3

- **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)
  - RE101 (30 Hz – 1 MHz)
  - RE102 (10 kHz – 50 GHz)
  - RS101 (30 Hz – 1 MHz)
  - RS103 (10 kHz – 100 GHz)

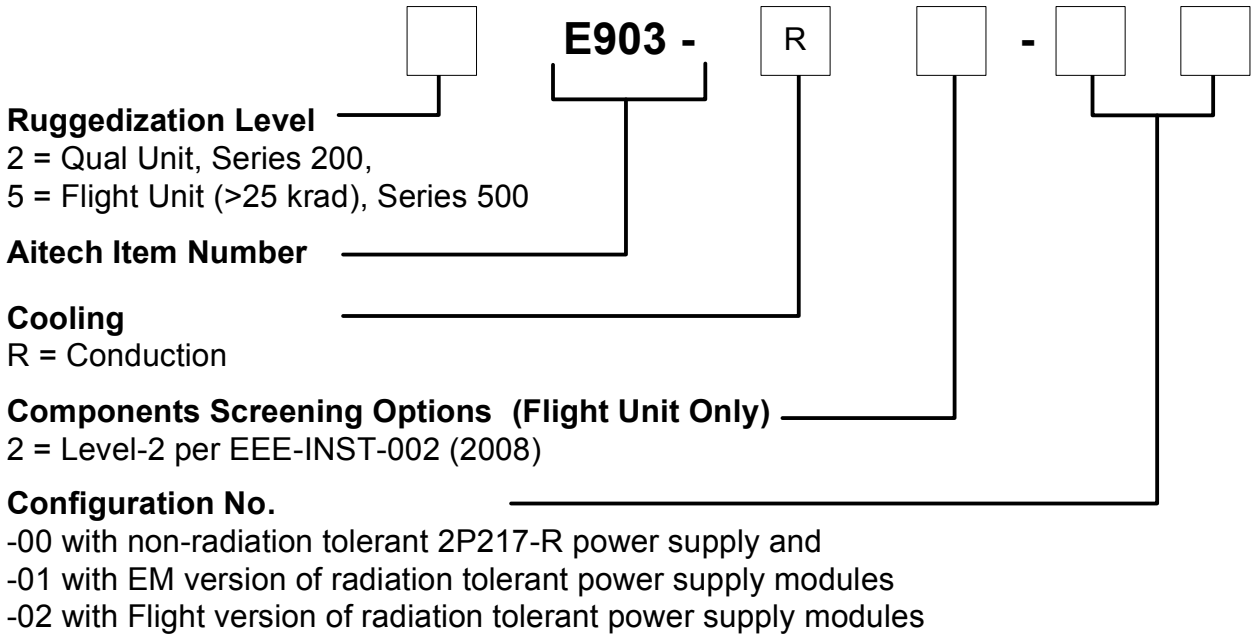
- **MTBF**
  - $S_F$ > 693,088 hours @ 50° C
  - $M_L$ > 113,892 hours @ 50° C

- **Weight**

  Less than 18 lbs
  (Conduction-cooled boards included)

* Packed in suitable shipping/cargo container

# Ordering Information for the E903




**Ruggedization Level**
2 = Qual Unit, Series 200,
5 = Flight Unit (>25 krad), Series 500

**Aitech Item Number**

**Cooling**
R = Conduction

**Components Screening Options (Flight Unit Only)**
2 = Level-2 per EEE-INST-002 (2008)

**Configuration No.**
-00 with non-radiation tolerant 2P217-R power supply and
-01 with EM version of radiation tolerant power supply modules
-02 with Flight version of radiation tolerant power supply modules

**Available Configurations are: 2**E903-R-00, 2E903-R-01, 5E903-R2-02

For more information about the E903 or any Aitech product, please contact
Aitech Defense Systems sales department at (888) AITECH-8 (888-248-3248).

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