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Find the *Aitech Defense Systems E905* at our website: ***Click HERE***

E905

3U CompactPCI Space-Rated Enclosure



- ***Rugged Chassis Specially Designed for High Reliability Space Applications***
- ***28 Vdc Input, 140 W Radiation Tolerant and Latch-up Immune Power Supplies***
    - ***Optional 28Vdc/150W Aitech Mil & Aero P230 Power Supply***
- ***3-Slot 3U CompactPCI Compliant Backplane***
- ***Cold Plate Conduction Cooling***
- ***Faraday Cage Design for Enhanced EMI/RFI Performance***
    - ***EMI power input filter and wire mesh gasket on all mating surfaces***
- ***Complete EMI/RFI Power Line Filtering***
- ***Front panel is customizable to meet customer I/O connector requirements***
- ***Front Panel I/O is a PWB-base Transition Module eliminating wire harnesses***

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

The Aitech E905 is a cold plate cooled 3-Slot 3U CompactPCI compliant rugged computer enclosure, specially designed for space applications. The power supplies provide standard CompactPCI bus voltages and additional outputs in +15VDC, -15VDC and a dedicated +12VDC to power external equipment.

Sturdy Mechanical Design

The design of the E905 has been optimized to provide maximum strength with minimum weight. Constructed of durable CNC machined 6061-T6 aluminum, the chassis is assembled using stainless steel fasteners to prevent corrosion. 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. All external surfaces, with the exception of the cold plate interface, are hard anodized coated for excellent corrosion resistance. The cold plate-mating surface is precision machined to ensure excellent heat transfer to the cold plate, and it is configurable to meet any customer-mounting requirements.

Board Capacity

The E905 accommodates up to 3 standard 3U CompactPCI boards with up to 1.0 inch pitch (supports standard 0.8 inch pitch CompactPCI cards per VITA 30.1-2002).

CompactPCI Backplane

The backplane is 3U CompactPCI compliant with J1 and J2 connectors in all slots. By eliminating an intermediate wire harness, all the signals are routed within the backplane to the corresponding front panel I/O connectors.

Front Panel

The chassis front panel is fully customizable to meet customer I/O connector requirements utilizing a PWB-based I/O transition module to eliminate the I/O-to-backplane intermediate wire harnesses.

Thermally Efficient

The E905 is conduction cooled through the specially designed sidewalls. Heat is channeled from the power supplies and CompactPCI boards to the cold plate, resulting in a balance of overall chassis size and weight and an efficient thermal design. The chassis can dissipate more than 65W of heat to a 45°C cold plate with 35°C ΔT to card's heat management interface edges.

Electro-Magnetic Compatibility

Aitech's E905 minimizes EMI/RFI emissions and susceptibility with these features:

- Metal-to-metal clamping with conductive surfaces and fasteners and wire mesh gaskets
- Shielded power supply boards
- Shielded internal power cabling
- Faraday cage input power line filter mounted to the front panel (behind input connector)
- Isolated chassis ground and optional single point connection between chassis GND and signal GND

Corrosion Resistant Finish

External surfaces of the E905 are hard anodize coated for excellent corrosion resistance. As an option, epoxy paint is available with nonstandard colors upon request.

Internal surfaces are chemical conversion coated for corrosion resistance and electrical conductivity. All finishes and components are fungus resistant.

High Performance Power Supplies

The removable power supplies provide continuous high current, high efficiency operation, under the most adverse conditions. The power supplies are designed to meet Low Earth Orbit radiation requirements using radiation tolerant, latch-up immune DC-DC converters.

Major power supply features include:

- Radiation tolerant, latch-up immune, envir. screened DC-DC converters
- Extensive input filtering
- Under-voltage input lockout circuit
- Fully isolated inputs and outputs, eliminating the possibility of ground loops
- Monolithic heatsink for efficient power supply cooling and EMI shielding

- Outputs protected against
  - Short circuits
  - Thermal breakdown
  - Over-voltage transients
  - Overshoot
- Input protected against
  - Reverse polarity (provided by Chassis)
  - Over-voltage transients

Power Supply Specifications

- **Input Power**
  Voltage Range (DC) 20 V to 36 V (28 V nominal)
- **Isolation Resistance**
  500 V to output or enclosure
- **Total Output Power** 140 W
- **Efficiency** > 80%
- **Total Ionization Dose** > 25 krad (Si)
- **Latch-up Immune** LET > 37 MeV▪cm²/mg
- **Output Power**

Power Supply Output Voltages and Currents				
Nominal (V)	**Minimum (V)**	**Maximum (V)**	**Current (Amp)**	**Noise (mVp-p)**
+3.30V	3.23	3.37	9.1	50mVp-p to 10MHz
+5.00V	4.80	5.20	8.0	50mVp-p to 10MHz
+12.00V	11.40	12.60	3.3	External Device Dependent
+15.00V	14.25	15.75	0.75	50mVp-p to 10MHz
-15.00V	-14.25	-15.75	0.75	50mVp-p to 10MHz
+12.00V	11.52	12.48	0.25	50mVp-p to 10MHz
-12.00V	-11.52	-12.48	0.25	50mVp-p to 10MHz

Environmental Specifications

- **Operating Cold Plate Temp.**
  -55 °C to +45 °C at 65W power dissipation
- **Non-operating Temp.** -55 °C to +125 °C
- **Humidity**
  0%-95% non- condensing
- **Vibration** 16 G_{rms} at 20-2000Hz
- **Shock** 40 g terminal sawtooth/11 ms half Sine
- **Bench Handling**
  4-in unpackaged drop at a 45° angle to simulate conditions during servicing
- **Pressure** Ground to space vacuum
- **EMI/RFI**
  Meets emanation and susceptibility limits

MTBF

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



P900 Space PSUs



P230 M&A PSU

General Specifications

- **Dimensions**

  Maximum external dimensions with four mounting flanges and less ground stud

  7.60 x 6.65 x 7.70 in (L x W x H)

  Width is 4.88 without mounting flanges

- **Mass**

  Less than 9 lbs with PSUs, blank front panel and without 3U boards

- **Power Dissipation Capability**

  Exceeds 65 W with CompactPCI boards using a 45°C cold plate (maximum ΔT of 35 °C at the card's heat management edges).

Accessories

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

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

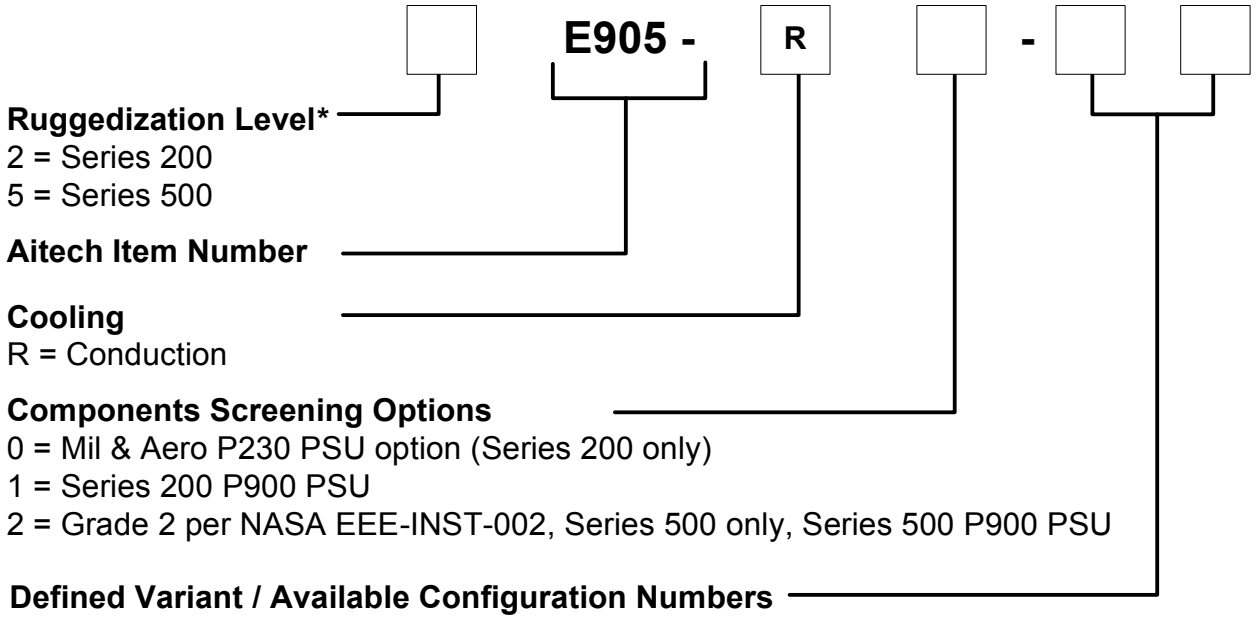
Note: for 2E905-R0-00 configuration, 2P230-R-00 power supply provides the following outputs:

	Outputs			
	1	**2**	**3**	**4**
Voltage [Vdc]	+5	+3.3	+12	-12
Current [A]	20	10	8	1
Ripple/Noise [mV_{p-p}]	<50	<50	<100	<100

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Ordering Information for the E905



Ruggedization Level*
2 = Series 200
5 = Series 500

Aitech Item Number

Cooling
R = Conduction

Components Screening Options
0 = Mil & Aero P230 PSU option (Series 200 only)
1 = Series 200 P900 PSU
2 = Grade 2 per NASA EEE-INST-002, Series 500 only, Series 500 P900 PSU

Defined Variant / Available Configuration Numbers
00 = Standard Product (no customization)
01 = Series 500, TID >25Krad(Si), SEE LET >37 MeV-cm^2/mg
02 = Series 500, TID >100krad(Si), SEE LET >82 MeV-cm^2/mg
11-99 = Modified per customer specification

*** Ruggedization Level**
Series 200 = S200 P900 Power Supplies or non-radiation tolerant P230 PSU
Series 500 = Flight version with P900 radiation tolerant power supply modules

Available Configurations are: 2E905-R0-xx, 2E905-R1-xx, 5E905-R2-xx

For more information about the E905 or any Aitech product, please contact
Aitech Defense Systems sales department at (888) AITECH-8 (888-248-3248).

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