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Find the *Aitech Defense Systems E105* at our website: ***Click HERE***

E105

1/2-ATR Short Fan cooled VME Enclosure



- **Rugged Chassis for Mobile Military Applications**
- **Designed for Harsh Mechanical, Climatic, Chemical and Electrical Stresses**
- **Environmentally Sealed**
- **Compact and Lightweight with 5 Standard VME Slots**
- **Internally Conduction-Cooled; Externally Forced Air-Cooled with Integral Temperature Controlled Fan Unit**
- **Fully Sealed Faraday Cage and Complete EMI/RFI Power Line Filtering**
- **Multi-Output Integral 28 Vdc Input VME Power Supply**
- **Backplane I^2C Temperature Sensors, Voltage Monitors, and Electronic ETR**
- **Customization Options: Front Panel, I/O connectors, I/O Harnessing, Mounting and Finish**

Aitech Defense Systems, Inc.
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Overview

Aitech's E105 Fan-cooled VME computer enclosure is built to be rugged and reliable as well as lightweight and compact. EMI/RFI protected and environmentally sealed, the E105 is capable of withstanding extreme environmental conditions of altitude, temperature, humidity, shock, vibration, EMI and chemical exposure. This makes it ideal for use in all military environments.

Sturdy Mechanical Design

The E105 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 internally finned (to create air tunnels), for cooling by the forced air from the integral fan.

Designed with a built-in handle, the E105 is also equipped with hooks and mounting holes to facilitate installation in standard 1/2-ATR short mounting trays.

The enclosure is also available with optional mounting brackets for base plate hard mounting.

Board Capacity

The E105 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 and automatic Daisy Chain.

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.

The backplane also contains two I^2C devices with integral temperature sensors and voltage monitors. An additional I^2C device is an Elapsed Time Recorder (ETR) that stores cumulative operating time of the enclosure. System temperature, backplane voltages, and total elapsed operating time of the enclosure can be read by the system SBC via its I^2C bus, if available.

Front Panel

The front panel of the enclosure is equipped with a D38999 Ser III input power connector and grounding screw. The remainder of the front panel is blank, enabling customers to create their own custom front panel configurations. The front panel may also be fully customized in accordance with specific customer requirements, with a combination of military connectors and any of the following options: LED indicators, On/Off switch, ETM and more

Thermally Efficient

The E105 does not require external forced air or base plate cooling. Thermal design of the enclosure is based on internal heat conduction and external forced convection. The boards and power supply in the enclosure are cooled by conducting their heat to the enclosure interior sidewalls. External cooling is accomplished by means of the system fan blowing cooling air through shrouded heat exchangers on the exterior sidewalls of the enclosure. Heat conducted from the boards and power supply inside the chassis is conducted through the aluminum sidewalls from which it is carried away by the cooling air.

The fan is temperature controlled and operates when enclosure temperature exceeds the point of self- sustained heat dissipation.

Electro-Magnetic Compatibility

Aitech's E105 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 E105 is sealed against humidity and splash. Enclosure mating surfaces are sealed with hollow fluorosilicone rubber seals. Connectors and other accessories are protected in the same manner.

Corrosion Resistant Finish

External surfaces of the E105 are hard anodizing coated for excellent corrosion resistance. As an option, epoxy paint in standard military colors 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 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

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 of 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

  Efficiency >75%

Enclosure Environmental Specifications

- **Operating Temperature**

  Ser 200 level Enclosure: -40 °C to +71 °C*

  Ser 400 level Enclosure: -55 °C to +71 °C*

- **Non-operating Temperature**

  Ser 200 level Enclosure: -50 °C to +85 °C

  Ser 400 level Enclosure: -62 °C to +100 °C

- **Low Pressure**

Operating:	Up to 22,000 ft
Storage:	Up to 60,000 ft

  *Maximum operating temperature is a function of total power dissipation and altitude. The 71°C temperature is for power dissipation of100 Watts with card edge of 85 °C @ sea level.

- **Humidity**

  5%-95% relative humidity with condensation

- **Vibration**

Sine	Cycling of 5*/8** g (max) at 5 to 500 Hz
Random	10*/16** G_{rms} at 20 to 2000 Hz
Transportation	Loose cargo vibration

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

  40*/65** g peak

  3 axes

  11 ms duration

  * Hard mounted
  ** Mounted on isolators

- **Transit Drop*** ** 3 ft. drop on concrete

  *** Packed in its cargo box

- **Bench Handling**

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

- **Salt Fog** 5% salt spray

- **Dust** Wind and fine dust

- **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**

  Standard 1/2-ATR short mounting footprint:
  4.88 x 12.62 in (W x D)

  Maximum external dimensions with fan housing and handle:
  4.88 x 17.75 x 7.7 in (W x D x H)

  Note: For proper air intake of the fan, the back of the enclosure should be at least 2” away from any adjacent wall.

- **Weight**

  Less than 14.5 lbs. (without boards)

- **Power Dissipation Capability**

  More than 100 W at 71 °C ambient air temperature, with maximum 85 °C at card edge, at sea level.

Optional Accessories

- External brackets for hard mounting to base plate
- Complete set of front panel mating connectors

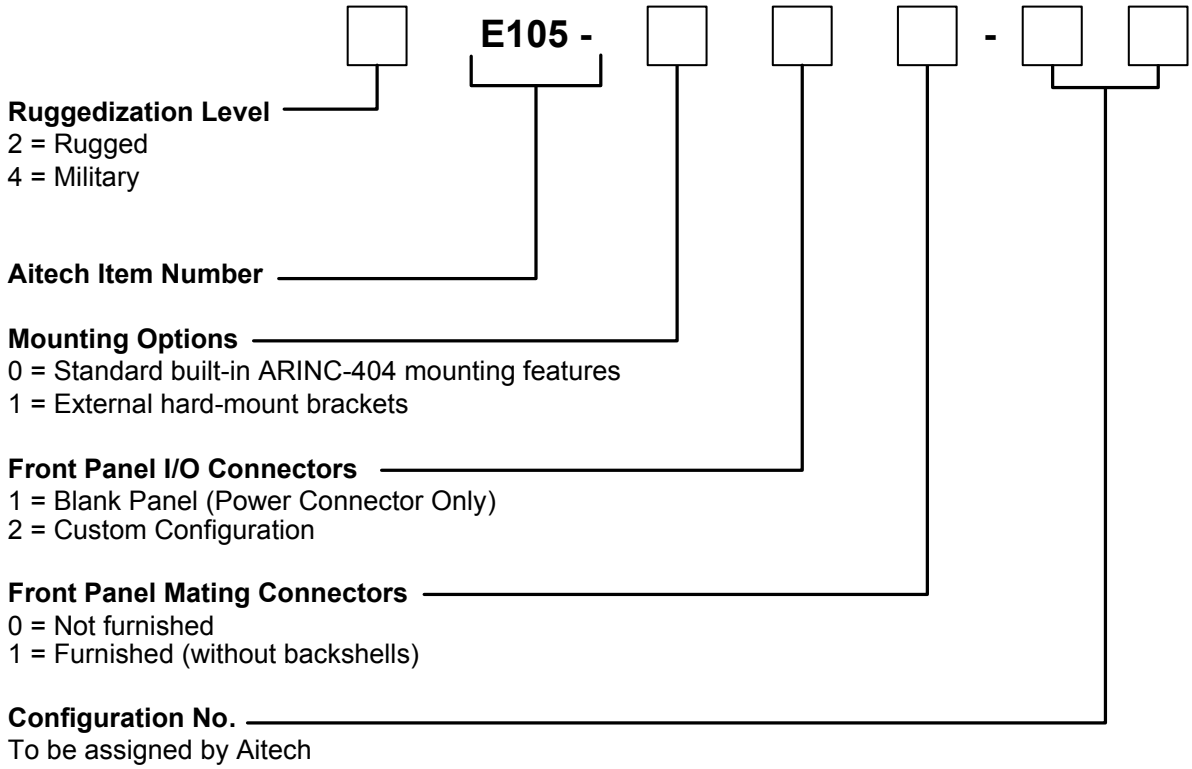
Customization Options (per customer requirements)

- Front panel with the power connector and line filter and openings designed and machined to fit the customer’s required connectors and other accessories
- Fully configured front panel with customer defined I/O harness and front panel connectors and other accessories, already wired, integrated and tested.
- Customer defined external color, other than black hard anodize finish.

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.

Ordering Information for the E105



Example: 4E105-010-00

For more information about the E105 or any Aitech product, please contact Aitech Defense Systems sales department at (888) Aitech-8 (248-3248).

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