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Ruggedized ATR Military Chassis and ZIF III Board Retainers

Air Transport Rack (ATR) military enclosures serve a critical role in safeguarding vital systems across a diverse array of military applications. From fighter jets and transport aircraft to nuclear submarines and advanced battle tanks, these enclosures—available in 1/2 ATR, 3/4 ATR, and Full ATR sizes—are tailored to meet stringent reliability requirements.

Versatile Applications

ATR enclosures are meticulously configured to suit specific applications, systems, and vehicles, ensuring optimal performance under harsh environmental conditions. They are indispensable in environments where reliability is paramount, including simulators, ground test systems, and various military vehicles.

Protective Design

Designed to shield internal VMEbus boards and backplanes, ATR chassis are engineered to withstand extreme conditions such as intense vibrations and varying temperatures. They adhere to stringent EMI/EMC standards, offering robust protection against electromagnetic interference and noise, essential for mission-critical operations.

Complex Thermal Management

One of the foremost challenges in ATR enclosure design is thermal management. Given the high power consumption of multiple circuit boards within the chassis, effective cooling solutions are imperative. The design often incorporates sophisticated cooling mechanisms to regulate temperatures and maintain optimal operational conditions.

ZIF III Board Retainers

Central to efficient thermal management is the ZIF III board retainer. Renowned for its innovative design, including zero insertion force and a quarter-turn lock/unlock mechanism, it ensures uniform clamping pressure across the chassis sidewall. This feature maximizes thermal conductivity, crucial for the close VMEbus board spacing typical in ATR enclosures (0.8" pitch). With an impressively low thermal resistance of 1.2°C-In/W, the ZIF III retainer facilitates superior heat dissipation to the cold plate, enhancing overall system reliability.

Conclusion

In conclusion, ATR military enclosures and the advanced ZIF III board retainers play pivotal roles in protecting and optimizing the performance of critical military systems. By addressing challenges such as thermal management and electromagnetic compatibility, these ruggedized solutions uphold the stringent requirements of modern military applications. Their reliability and adaptability make them indispensable components across various defense platforms, ensuring operational effectiveness in even the most demanding environments.

For more information on ATR military chassis and ZIF III board retainers, visit ; www.etsalliance.com

Table 1: ZIF III Board Retainer Features


Parameter	Features
Insertion and Extraction	Zero insertion force
Cold Plate	Excellent heat transfer
Clamping Pressure	Uniform pressure along the PCB edge
Locking/Unlocking	1/4 turn lock/unlock
Operation Repeatability	Consistent and easy to operate
Over-torque Sensitivity	Not susceptible to over-torque
PC board operational damage	Does not damage PC boards
Retainer Mounting Options	Screw mounting
Thermal Performance	 2°C-inch/Watt

Table 2: ZIF III Board Retainer Common Sizes

VMEbus Card Size	ZIF III Retainer Size	CTS Standard Part
9U Size D	12" (2 Required)	Z3A12SBSBNL/R
6U Size C	12" (2 Required)	Z3A12SBSBNU/R
6U Size B	6" (2 Required)	Z3A60SBSBNU/R

Table 3: ZIF III Thermal Resistance

Thermal Resistance (°C/W/IN)	10 Watts	25 Watts	50 Watts
1" Length	1.17	0.84	0.69
2" Length	1.17	0.97	0.89
6" Length	1.16	0.93	0.84

Environmental Qualification Tests

- Qualified to MIL-Std-810:
 - High Temperature: Method 501, 71°C, after 48 hours exposure to 150°C
 - Low Temperature: Method 502, -55°C.
 - Vibration: Method 514, Category B.1, 5Hz to 2 KHz.
 - Salt Fog: Method 509.
 - Shock: Method 516.
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These summaries provide a clear overview of the tables' content, which can now be presented in a visual graphic format such as a designed infographic or as part of a technical document. This approach ensures that key information is visually appealing and easy to comprehend.

ZIF III CIRCUIT BOARD RETAINERS

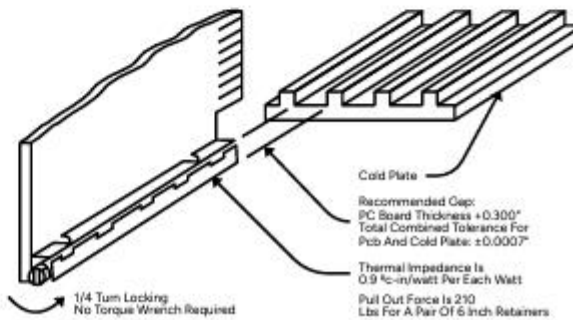
GENERAL DESCRIPTION

ZIF III retainers are the latest in the state-of-the-art PC board mountable retainers. Unlike other designs on the market, CTS's ZIF III features a quick, quarter-turn locking mechanism that provides for a positive and fast assembly. Its unique locking design produces a uniform pressure distribution along the PCB edge for the absolute best heat transfer and resistance to extreme shock and vibration. It will not warp your circuit boards unlike some others available in the market. If you have high density PC board mounting applications for military, space, medical, industrial controls, computers and communications, you need ZIF III Circuit Board Retainers.

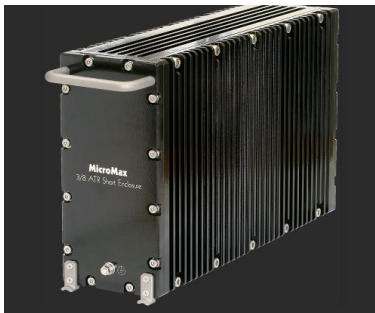


DESIGN FEATURE

- Pc Board Mountable
- Positive 1/4 Turn Locking
- Field Maintainable
- Quick And Easy Installation
- Superior Mechanical Retention
- Thermally Efficient,
0.9° c-inch/watt



PC BOARD WITH ZIF III RETAINER





Ruggedized ATR Chassis

ATR computing and avionics enclosures need to be designed to withstand the harsh conditions faced by military aircraft and vehicles. They are typically constructed from robust and lightweight materials such as aluminium, stainless steel and composites, and ruggedized against environmental factors such as shock, vibration, moisture and dust ingress, electromagnetic interference (EMI), extremes of temperature, and changes in pressure due to altitude.