

Military and Aero Applications benefit from COM Express

Military and Aeronautical applications have traditionally used a custom design to meet the demands of the application and the environment. In recent years with the improvements in available technology and cost constraints imposed on projects COTS (Commercial Off The Shelf) products have seen increasing use in deployable equipment.

Typical demands made on systems are performance, low power, environmental (usually temperature extremes), shock & vibration and overall resistance to the rigours of use and abuse.

Technologies such as PC104 have been used to provide a building block approach which although providing some flexibility has the attendant issues of the over stacked connector (a 'tower'); which drives cost up and MTBF down whilst becoming unwieldy mechanically.

The Top 5 Reasons to design with COM Express for Mil / Aero applications:

1. Higher / Scalable performance in small spaces. Using a COM Express stack of two boards.

The basic size of a COM Express module is 95mm x 125mm and can provide significantly better processing and graphics performance than multiple PC/104 legacy board based systems. Combining a COM Express module with either a COTS or custom carrier board for I/O (Input / Output) can deliver a simpler more robust design and opens the system up to scalable performance from the range of COM Express processor options.



2. Integrated video processing and display for Mil/Aero applications is a common requirement. COM Express has video as standard.

Long life video support is now a frequent requirement and is native to the current chipsets. Embedded Chipset graphics provide significant performance gains compared to previous implementations and have the benefit of 7 year availability. COM Express planned for this video explosion and provides standard connector access for VGA, LVDS, SDVO and now Displayport, DVI and HDMI. When PC/104 was defined, long life video components and add-in cards were common, this however has changed in recent years. A significant constraint for PC/104 implementations is that PC/104 does not support video in its board to board connect so it must find a way out on the size constrained CPU card, consuming space required for processor, chipset, and memory.

3. Comprehensive and flexible I/O is a common requirement for Mil / Aero Systems. COM Express delivers access to a broad range of I/O.

COM Express uses high density connectors to deliver all of the chipset I/O to the carrier board, providing for an I/O rich carrier environment. Which makes possible the two board solution stack and a very flexible, I/O centric design. By comparison PC/104 has a legacy approach adding functionality on a board by board basis



4. Mil / Aero application lifetime demands a modular and preferably upgradable architecture. Inherent in COM Express based designs

The PICMG COM Express standard is tightly defined and lays the foundation for future proof applications, where a product can embrace plug in upgrades and consequently remain current on the technology treadmill if this is appropriate. With the limited I/O support PC/104 is constrained in utilising new technology and it's support for upgrades to the board tower.

5. A two board solution drives rugged low cost solutions. Pair a COM Express module with a carrier board and you have a solution.

COM Express reaps the benefits of a modular solution while limiting the cost via a two-board, two-connector solution. PC/104 provides modularity - but the board and connector cost grows too. The two board solution reduces complexity, keeps signal integrity intact, improves ruggedness, and reduces thermal challenges.

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