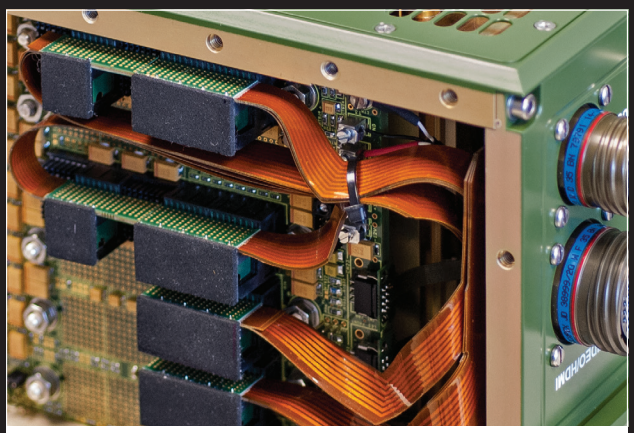
CM Computer
True Military COTS Products

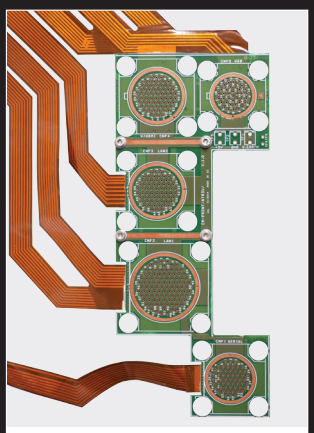
APPLICATION NOTES
REF: AN004/RFC/15

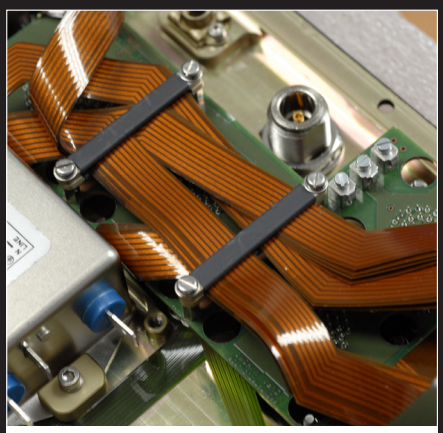
CM COMPUTER MILITARY ATR CHASSIS ADVANCED WIRING TECHNIQUES

VPX ATR I/O WIRING SOLUTIONS USING RIGID-FLEX CIRCUITS

CM Computers Flex and Rigid-Flex circuits are capable of carrying hundreds of signals within a small space, constituting an advanced wiring solution for high density I/O CM ATR enclosures. This cutting edge solution provides greater freedom of signal density and packaging geometry. In large productions CM flex circuits ensure repeatability and deliver significant system integration cost savings with no reduction in performance. Track routing is predetermined and human wiring errors are eliminated.


CM ATR 3U VPX Flex & Rigid-Flex Circuit Bottom I/O Wiring


Flex to Rigid Circuit Interface


CM ATR 3U VPX Front Panel Wiring Assembly

EXAMPLE OF PROPRIETARY CM 3U VPX CHASSIS WIRING SOLUTION CARRYING 300 I/O SIGNALS

CM Computer military COTS technologies offers our customers a complete custom I/O wiring harness solution for our ATR range based on the latest Rigid-Flex circuit technologies. Integration of the latest VPX modules and high density I/O flexi-circuits into CM chassis opens a new door to improved hi-tech alternatives to conventional I/O wiring techniques.

"...ADVANCED ATR SYSTEM INTEGRATION MADE EASY"

ADVANTAGES

- High track density (up to 500 I/O signals in 3U systems).
- Does not require custom backplane I/O signal routing.
- Shaped to fit where other solutions cannot.
- Provides superior signal integrity and electrical performance.
- Built-in signal track ground shielding.
- Greater standardization and repeatability.
- Greatly reduced installation time and cost.
- Signal impedance & cross-talk are consistent batch-to-batch.
- Occupies minimum space and volume.
- Minimizes I/O harness weight.
- Customized to provide optimum trace characteristics.
- Superior reliability with respect to conventional techniques.
- Not prone to human signal wiring errors.
- Straight forward disassembly from the backplane.
- Allows easy ATR front panel removal and maintenance.
- Reduced internal chassis airflow restriction.
- High tech professional approach.

DISADVANTAGES

- Requires careful design engineering and planning.
- Requires detailed chassis and backplane electrical knowledge.
- Initial development time and cost.
- Hard to modify/repair once established (due to rigidity of printed circuits, no signal changes or system upgrades are possible).
- May be susceptible to damage if not properly handled.
- Only suitable for low and medium power signals.

DESIGN STEPS

- Customer must define to CM Computer chassis Front Panel.
- Customer must provide CM Computer with chassis I/O wiring harness drawings (VPX slot-to-panel pin-out assignment).
- CM computer provides customer with a 3D modeled solution.
- CM Computer provides customer with Flex and Rigid-Flex complete I/O harness solution (production units).
- Optionally, CM Computer can provide custom designed hardware tools for Flex and Rigid-Flex circuit automatic testing.

OVER 25 YEARS AS THE LEADING HIGH PERFORMANCE ATR CHASSIS SUPPLIER