

3U VPX Fire Control and Vehicle Computer

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DEFENSE SOLUTIONS

Challenge

- Rugged solution assisting a weapon system in extreme environmental conditions
- Accurate gathering of environmental information that is critical to weapons fired over long distances
- Latest technology required within a SWaP constrained system incorporating the emerging VICTORY standard

Solution

- VICTORY-compliant Gigabit Ethernet Switch with host Freescale P2020 processor
- Designed to support 2-Level Maintenance with a Line Replaceable Module architecture
- Modular system design supporting the vehicle databus in legacy MIL-STD-1553, and also the emerging VICTORY databus

Results

- High performance and extremely reliable solution
- Reduced development time
- Fully qualified system solution with rigorous and stringent environmental testing, radiation tolerance and full EMI/EMC validation

Challenge

Fire Control and Vehicle Computer applications are more demanding than ever, performing tasks faster with extreme accuracy required as standard. As more and more equipment is installed on existing platforms, the available space for any new solution will be smaller and confined. This in turn requires the solution to provide latest technology within a reduced size, weight and power (SWaP) optimized system.

To make this possible, Curtiss-Wright provided a cost-effective, fully integrated 3U OpenVPX™ COTS processor and Gigabit Ethernet switch subsystem specifically designed for fire control, turret control, weapons control and vehicle control.



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MPMC-9331
Multi-Platform Mission
Computer, 3U VPX System

Solution

To provide the required combination of components, the 3U VPX™ form factor was leveraged for this Fire Control and Vehicle Computer Platform. The MPMC-9331 system provides the required performance and packaging that can withstand the vibration and shock on the most unforgiving platforms while reducing the overall SWaP.

Designed to meet the harshest environments, the MPMC-9331 provides a single board computer and a VICTORY-compliant network switch that is designed and tested to meet requirements for nuclear survivability.

The MPMC-9331 features two key Curtiss-Wright products:

- Fire control single board computer (SBC) which is based on the powerful and deterministic Freescale™ MPC8610
- VICTORY-compliant network switch

The VICTORY-compliant network switch provides a 12-port L2 Gigabit Ethernet Switch with host, Freescale P2020 processor which provides not only VICTORY-compliant switching, but also a VICTORY-compliant services manager.

To facilitate system functionality, the MPMC-9331 system is equipped with 12 ports of switched Gigabit Ethernet, five RS-232 serial ports, one dual redundant 1553 bus, six TTL DIO, two fully programmable Controller Area Network (CAN) bus controllers, and one fault reporting and logging/USB port.

Results

The MPMC-9331 system satisfies the most demanding field applications, and is a fully qualified and packaged system solution with a range of flexible and rugged processing systems. The MPMC-9331 incorporates rugged computing and networking component packages that have been rigorously tested both functionally and environmentally allowing integrators to focus on software and algorithm development, while meeting I/O, performance and environmental program requirements.

Overall, Curtiss-Wright develops systems that can be quickly configured to meet the needs of any military or aerospace requirements, including harsh avionics and vehicular environments.

Platform images courtesy of Department of Defense and Defenseimagery.mil