Military EMBEDDED SYSTEMS

MIL TECH TRENDS

GPU and FPGA go head-to-head

MIKE SOUTHWORTH, CURTISS-WRIGHT

Today's embedded-system designers have a great variety of processor types to select from, with FPGAs [field-programmable gate arrays] and GPUs [graphics processing units] adding their own various advantages and disadvantages for consideration in contrast to the more familiar CPUs [central processing units]. Understanding these characteristics and how FPGAs and GPUs stack up can help system integrators make the right choice when choosing and installing a processor, to be used either individually or in combination with other types of processors.

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SPECIAL REPORT

The case for distributed and remote management of open standards-based tactical networks for vehicles

DAVID GREGORY AND JEFF NELSON, PACSTAR

To exploit the potential benefits of new technologies such as artificial intelligence (AI), robotics, video analysis, Internet of Things (IoT), augmented reality and virtual

reality, and other innovative technologies on mobile platforms at the tactical edge, Department of Defense (DoD) communications programs must effectively deploy advanced IT infrastructure, connectivity, and compute resources. The Army understands this need: It is investing in research, standardization, and demonstration to ensure that future vehicle networks deliver these benefits while minimizing cost, enabling rapid fielding, and facilitating ongoing modernization. These moves also leverage modular, open standards-based COTS [commercial off-the-shelf] technologies.

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TECHNOLOGY UPDATE

VME: No time to die, again

ROBERT PERSONS, SMART GLOBAL HOLDINGS

The death of VMEbus – a technology used so heavily in military and aerospace applications – has, like the death of Agent 007, been predicted many times for many years, but all those premature death reports have never come to pass. Why?

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SBG Systems

New Ellipse: Miniature RTK AHRS, INS & INS/GNSS

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JMR-ICS

JMR Rugged, Reliable Military Chassis

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Memkor

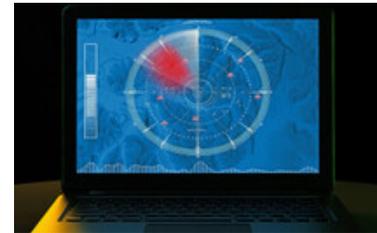FIPS 140-2 Validated SATA / PCIe Military Grade SSDs

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SPECIAL REPORT

Accelerate open standard adoption to drive warfighter and weapon-system effectiveness
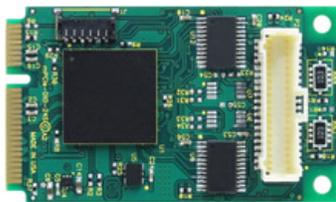
DAVID JEDYNAK, CURTISS-WRIGHT

An optimized investment on a leading program for the greater good of the warfighting enterprise will enable the technology breakout and multidomain convergence essential to increasing warfighter and weapon-system effectiveness for the collective national defense.

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mPCIe-DIO Series: PCI Express Mini Cards for Easy and Flexible Digital I/O Expansion

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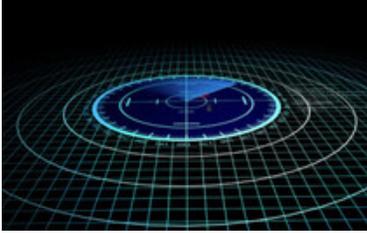## Pico Electronics

Miniature Power Components

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Pico Electronics
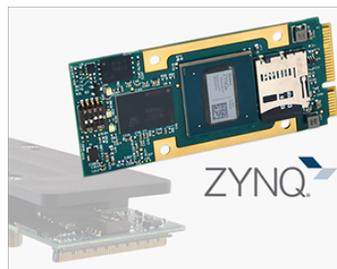
Miniature High Input DC-DC Converters

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Driving MDO to enable data as a weapon system

CHIP DOWNING, RTI

The integration of real-time data from all of the U.S. armed services and coalition partners will drive greater operational intelligence and more timely and accurate responses for all military operations. This approach is now a formal U.S. Department of Defense (DoD) directive to become a datacentric enterprise integrating information across all sea, land, air, space, and cyberspace domains for operational dominance. A standards-based connectivity framework that enables a global data space can provide a highly adaptable foundation for optimizing this real-time information for Multi-Domain Operations (MDO).

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Acromag

New Mezzanine Module with a Zynq® UltraScale+™ MPSoC

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Elma Electronic

3U OpenVPX Ethernet Switch Aligned with SOSA™

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VME forever? Could be – it's lasted 40 years

JOHN MCHALE, EDITORIAL DIRECTOR

Ah … VME. I first wrote about the VMEbus specification in late 1996; now, in just under a year it will celebrate its 40th anniversary. Not much rust has grown on the open standard in its four decades, as VME-based products are still being designed into military programs today.

BLOG

GUEST BLOG: Protecting unmanned systems with flexible key management for FPGAs

NATHALIE BIJNENS, INTRINSIC ID

Aerospace and government defense program users have unique needs when it comes to FPGA [field-programmable gate array] devices, both in terms of security and in terms of long-term deployments. Increasing use of unmanned systems and other autonomous assets has created new security challenges. Physical unclonable function (PUF)-based security technologies for FPGAs have been created with these unique needs in mind. These solutions are instantiated through the user configuration file, so they are easy to implement and can be applied to the entire range of Xilinx FPGAs – even those already in the field.

Annapolis Micro Systems

3U VPX Chassis is SOSA-Aligned & 100GbE Capable

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Analog Devices

ADL8150 Ultra-Low Phase Noise Amplifier from Analog Devices

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AI for Embedded Defense is Here

ABACO SYSTEMS

Imagine an armed Humvee is moving at night thru a smoke-filled, urban battlefield. Using multiple displays, the crew has a 360° view that is daylight clear, delivered by an imaging system fusing data from optical, infrared, lidar, and radar sensors. Learn how Abaco's GVC1001 Ultra-High Performance Graphics, Vision and AI Evaluation Platform made this possible.

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Optimizing Cybersecurity on Today's Connected Military and Commercial Aircraft

CURTISS-WRIGHT

The number of data communication links and interactions between an aircraft and the ground systems supporting it are ever increasing. If not properly protected, every system, sensor, and module on the aircraft can create a potential vulnerability that can be exploited by unauthorized users to obtain confidential, sensitive data or – worse – disrupt the safe operation of an aircraft.

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How to Deploy AI Datacenters in Planes, Trains, Ships and Automobiles

ONE STOP SYSTEMS and PUREB2B

John Cox at PureB2B discusses bringing the power of AI to the field with no performance compromises. Technologies such as advanced high-performance computing, storage, and connectivity can be packaged in compact, ruggedized enclosures that fit into planes, trains, ships, tracked vehicles, cars, trucks, and utility trailers.

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