



## » Military Rugged Boards & Systems «

### COTS Products

#### and Solutions for:

- » Land
- » Sea
- » Air





## Military Applications

### LAND

#### Network Centric Communication



Network-centric architectures across command and control, distributed computing, netted sensors and mobile wireless communications dramatically improve situational awareness and decision making. MicroTCA provides an ideal and cost-effective platform in these applications such as a Rapidly Deployable Radio Network. Civilian and defense agencies can leverage this standards-based COTS technology in Kontron's extensive technology portfolio for hardware components and rugged deployable platforms.



### SEA

#### Naval Vessels



Kontron is becoming the eyes and ears of modern Navy ships. Every subsystem in a newer family of stealth frigate uses Kontron embedded computing technology. Radar, variable depth and bow sonar, infrared surveillance, electronic warfare, and missile launcher subsystems leverage Kontron VME and CompactPCI® single board computers. Years of military industry experience, industry leading products and technology, and life-cycle management demonstrate to our customers that Kontron is the partner of choice.



### AIR

#### Unmanned Systems



UAVs must combine high computing power, data collection and communications within a very small space, weight and power (SWaP) constraints, while assuring ruggedized capabilities to survive and perform in demanding operational environments. Extended flight times, higher altitudes and multi-sensor data collection require continual advances in embedded airborne systems. Kontron offers a wide range of rugged VPX, cPCI, MicroTCA and COM Express solutions along with the systems design expertise to adapt them to meet ever-evolving UAV requirements. Rugged platforms from Kontron have been deployed in front-line UAV applications for years and have continually evolved to meet multiple generations of application requirements.





# System Designs & Capabilities

## From Development to System Deployment

Kontron is at the forefront of embedded technology for military applications and brings together a strong set of in-house engineering and manufacturing capabilities, plus an array of specialized product and system designs that can be readily adapted to meet the demands of new programs, applications and emerging technologies. This allows us to engage with our customers and partners at any level that works best for them.

With decades of experience supporting military projects adherence to standards and an extensive product portfolio, military customers know that Kontron products will fit their most stringent requirements, regardless of architecture choice.

### Engineering Capabilities

All of Kontron's advanced chassis designs are optimized for both flexible configurability and rugged performance, with a range of choices in each design: from cooling methods to bus/backplane architectures to processors, I/O and power supplies. Whether the specific requirement is for a standalone chassis, rack-mount, portable or custom platform, Kontron can provide a solid foundational design with the flexibility for tailoring the features, performance and cost to any specification.

### Systems Design Practices

Our system engineers are experts in thermal management and can use our proven designs as adaptable building blocks to optimize thermal efficiency, power and performance for the most exacting demands. Depending on the specific requirements, we can draw from a range of different design approaches for shock/vibration, noise insulation, security and hot-swap capabilities to tailor all operational parameters and survivability to meet unique program needs.



## WE HAVE THE RIGHT SOLUTION FOR YOU





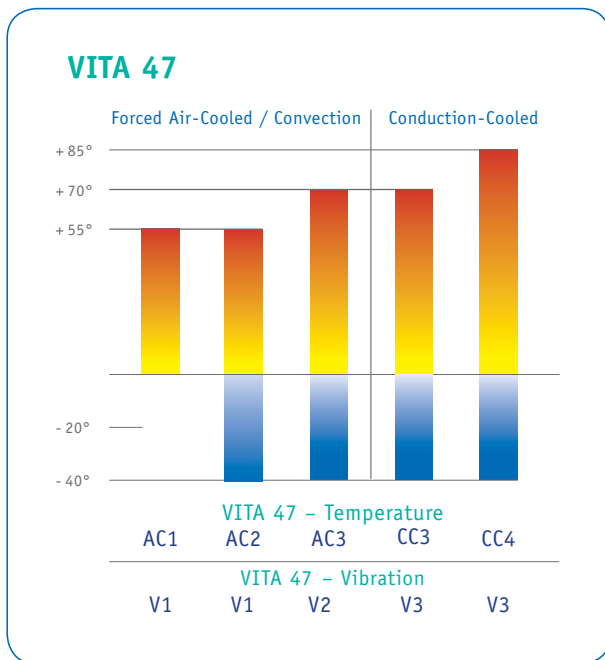


# Harsh Environment

## From Ruggedization to Certification

### Ruggedization

To fulfill the demanding environmental requirements of the defense and military market, many of Kontron's products are manufactured in accordance with VITA 47 or even better. See product section and web for details.



### Certification and Qualification

- » STANAG
- » GAM EG13
- » RTCA/DO-160
- » Accelerated aging (Halt & Hass)
- » Environmental Stress Screening (ESS)
- » VITA 47
- » MIL-STD-810
- » MIL-STD 461
- » MIL - E-5400 / MIL-STD - 704
- » MIL-STD-167
- » MIL-S-901D

Standard & custom integrated systems are designed to meet customer specifications and their operating environment. Kontron has the skills, knowledge and experience that go beyond MIL-SPECs and DO-160 requirements to provide best-in-class system solutions.

### Support Services

Kontron offers standard Support Services such as hotline, repairs, on-site technical assistance, training, long-term support (over 15 years), Pre-planned Program Technology Insertion (P3I), and dedicated support (e.g., frozen configurations). Our team of experienced engineers are located in both US and Europe.

## LIFE CYCLE & OBSOLESCENCE MANAGEMENT

Kontron products take into consideration the lifecycle constraints of military programs which span beyond the availability of consumer electronics. Kontron's long term supply and repair policy begins at the design stage through the selection

of components from embedded products catalogs. For selected products and on project base there are three different levels of long-term delivery possible.

	Product Availability	Delivery Time	Cash Flow	Warranty	Maximum End of Warranty
<b>Standard Purchase</b>	General Availability (GA)	Standard delivery	Standard invoice	Standard 2 years	2 years after GA
<b>LTS-PROTECT</b>	5 more years after GA	On demand delivery	Yearly fee and invoice if delivery	Standard 2 years after delivery	7 years after GA
<b>LTS-SCHEDULE</b>	10 more years after GA	Planned delivery	Invoice at delivery	Standard 2 years after delivery	12 years after GA



# COTS Technology

## Boards & Modules



VMP3



VM6250



PENTXM2 / PENTXM4

### VME

VME is the most widely deployed standard in the military. Its reliability and ruggedness has been deployed in the field for more than 25 years. VME's reliability makes it ideal for missile control systems and naval applications.



VX3020



VX3230



VX6060

### VPX

VPX is the latest VITA backplane standard supporting high speed switched fabric and mesh networking interconnects, higher density I/O and more power. Kontron VPX products are offered across all the VITA 47 build grades from air- to rugged conduction cooled.



CP6002-R2



CP6923-R3



CP3002-RC

### cPCI

CompactPCI supports high bandwidth and provides tons of rear I/O and the latest software offerings. Available in rugged air and conduction cooled designs for extended temperature, CompactPCI's versatility makes it ideal for performance demanding applications.



AM4020



AM4211



AT8050

### MicroTCA / AMC / ATCA

High computing power, high communication bandwidth & high availability are all factors driving military applications towards the use of MicroTCA/AMC/ATCA. And with rugged implementations for MicroTCA according the recently released MTCA1 & MTCA3 from the PICMG standards body MicroTCA & ATCA have quickly moved to the forefront as the leading choice for military communication applications.



MSM945P



MSM8C104EX

### PCI/104-Express

With a small and compact design, Kontron PCI/104-Express boards offer Intel® Core™ 2 Duo processing power. Ideal for space constrained environments, these boards include all of the standard PC interfaces plus Ethernet LAN, optional DVI and LVDS (dual screen) and a sound controller. Several expansion cards are also available with up to eight serial interfaces.



ETXexpress®-PC-XT



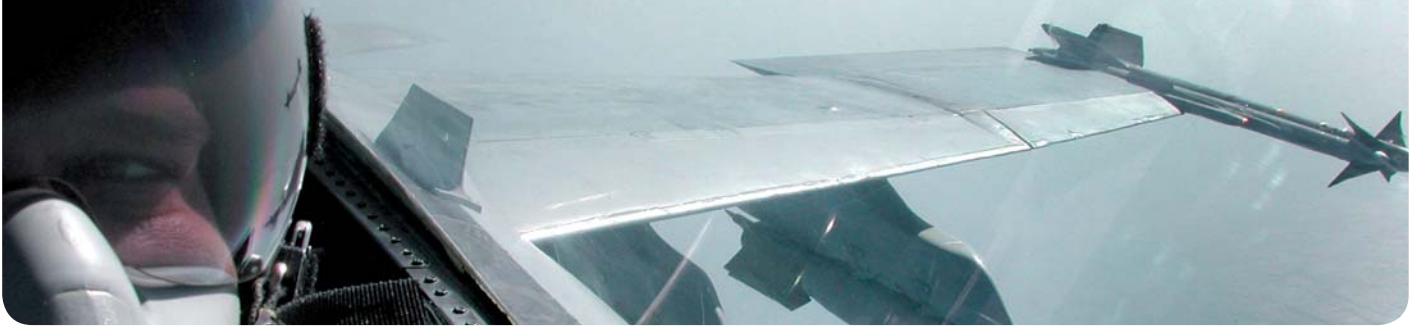
microETXexpress®-XL



nanoETXexpress-TT

### Computer-on-Modules

Using Computer-on-Modules allows customers to focus on the development of their application-specific solution while Kontron handles the computing core. The Kontron microETXexpress®-XL and nanoETXexpress-TT offers a "by design" modular solution and the ETXexpress-PC-XT offers a 100% screened modular solution, all fully ready for mission-critical applications under E2 industrial temperature range (-40°C to +85°C) conditions.



# Standard & Custom Solutions

## Enclosures & Systems



FS-5975



FS-5985

### ATR Rugged Systems & Enclosures

The Kontron ATR family of chassis offers a range of custom and standard sizes along with cooling methods. Convection, conduction, liquid-cooled or thermo-electric – Kontron has designs for all forms of thermal management solutions and operating environments.



FS-1209



FS-1203

### 19" Rugged Rackmount Systems & Enclosures

Kontron has a wide range of rugged enclosures for a variety of applications and cooling methods. Kontron's enclosures are built to withstand shock and vibration in harsh environments such as MIL-S-901D, MIL-STD-167, MIL-STD-461, and MIL-STD-810, along with D016 requirements.



FS-8704



KISS 4U

### Rack Mount Servers & Box PCs

Kontron offers a wide-range of rugged, configurable industrial PCs, servers and box PC systems that offer military customers long life cycles, advanced server management options and excellent thermal design, all within shallow depth chassis ideal for space constrained designs. Kontron can shorten deployment time frames for your next custom system by modifying Kontron COTS system products.



EZ3-VPX



EZ2-VXP

### Development Tools

Kontron Evaluation and Development systems designed to make the first contact with the VPX standard as easy as possible. EZ3-VPX is the quickest route to the VPX technology. It comes ready a PowerPC or Intel SBC running Linux or VxWorks. It can accommodate 3U VPX I/O Cards in 4 3U VPX slots (full mesh). Also available in 3U CompactPCI and 6U VME/VPX.

## PARTNERS/MEMBERSHIPS



WIND RIVER



LYNXWORKS



Microsoft





## LAND

### Mobile PCs & Systems



Small form factor computing products from Kontron support advanced battle-field solutions with low SWaP, high performance capabilities in mobile PCs and rugged platforms. Mobile PCs leverage Kontron's broad family of board-level and Computer-on-Module solutions. Kontron's fully ruggedized platforms, combine a selection of processor, storage, power and interface options, within a compact footprint that is optimized for low power and thermally efficient fanless operation. In addition, Kontron's fully self-contained Computer Brick Alternative (COBALT) modular systems provide small form factor options to expand deployment flexibility to fit every computing need



## SEA

### Submarines



Undersea systems have unique embedded and infrastructure computing requirements. Kontron designed and developed a rugged HMI solution using industrial motherboard technology to meet these unique requirements including ultra low radiated emissions, low noise and a display that adjusts to the extreme light conditions aboard a submarine. The customer uses the HMI for system visualization and frame grabbing applications. The solution also meets Navy requirements for temperature, shock, salt spray and salt fog.



## AIR

### Airborne Radar



Airborne radar applications constantly demand more performance with lower size, weight and power (SWaP) along with the requirement for survivability in harsh temperature, altitude and shock environments. Kontron systems provide computing and signal processing for major tactical airborne radar programs, such as the series of COTS-derivative customized enclosures being used in high-performance communications and recorder systems. These systems support rugged, magnetic disk storage platforms and are designed for deployment in the next-generation maritime surveillance aircraft.



## About Kontron

Kontron, the global leader of embedded computing technology, designs and manufactures standards-based and custom embedded and communications solutions for OEMs, systems integrators, and application providers in a variety of markets. Kontron engineering and manufacturing facilities, located throughout Europe, Americas, and Asia-Pacific, work together with streamlined global sales and support services to help customers reduce their time-to-market and gain a competitive advantage. Kontron's diverse product portfolio includes: boards and mezzanines, Computer-on-Modules, HMIs and displays, systems, and custom capabilities.

Kontron is a Premier member of the Intel® Embedded Alliance.

For half-a-decade now, Kontron has been named a VDC *Platinum Embedded Board Vendor*. Based entirely on user feedback, industry professionals evaluate vendors on over 45 non-product related criteria. Kontron is only one of two companies to receive the Platinum award 5-years running.

Kontron is listed on the German TecDAX stock exchange under the symbol "KBC".

For more information, please visit: [www.kontron.com](http://www.kontron.com)

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