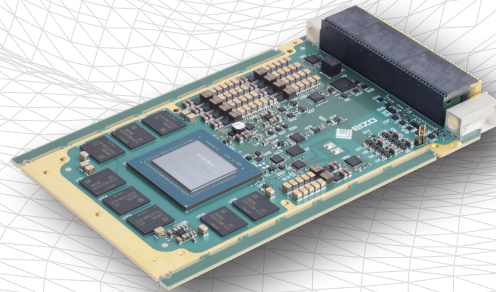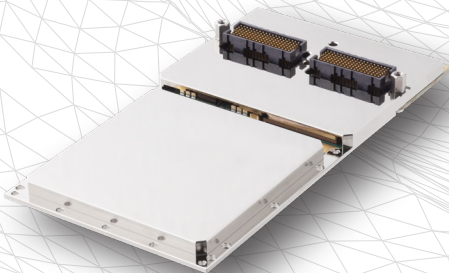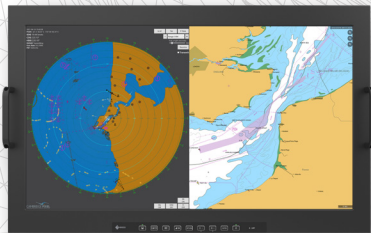# EIZO Rugged Solutions
Product Catalog

RUGGED VISUAL TECHNOLOGY FOR EVERY
MISSION

Experts in Rugged Graphics, Monitors, Video, and Computing Solutions

Contents

Company Overview

EIZO Rugged Solutions is a leading manufacturer of high-performance visual technology for Command, Control, Communications, Computers, Cyber, Intelligence, Surveillance, and Reconnaissance (C5ISR) applications. Having been in the video electronics market since 1987, EIZO has a broad product range including rugged LCD monitors, open architecture embedded GPGPU hardware, H.264/265 video encoders, and other stand-alone video splitter and adapter accessories. Our commercial off-the-shelf (COTS) electronic hardware solutions are used in a variety of applications including video capture and display, GPGPU computing, video encoding, streaming, video conversion, Artificial Intelligence (AI), Machine Learning (ML), multi-sensor processing and video stitching for 360° situational awareness.

Our goal is to develop SWaP-C optimized cutting-edge technology that exceeds customers performance expectations and deliver robust solutions that support the continuous operation of mission-critical applications. From designing board level graphics processing units (GPUs) and high compression encoders to FPGA targeted special graphics/imaging algorithms, EIZO Rugged Solutions offers industry knowledge and product customizations designed to meet the needs of your project.

Engineering Expertise

EIZO's engineering expertise has been developed through decades of in-house electrical PCB design and rigorous lab testing. Our engineering capabilities expand from thermal management and mechanical knowledge, to advanced software FPGA needs.

Our in-house engineering team works closely with industry partners and customers to develop SWaP-C cost-effective and power-efficient solutions for system integrators across all military forces.

Strengths: MIL-STD Designs, Long Product Life Cycles, Low SWaP, SOSA-Aligned, Embedded GPGPU
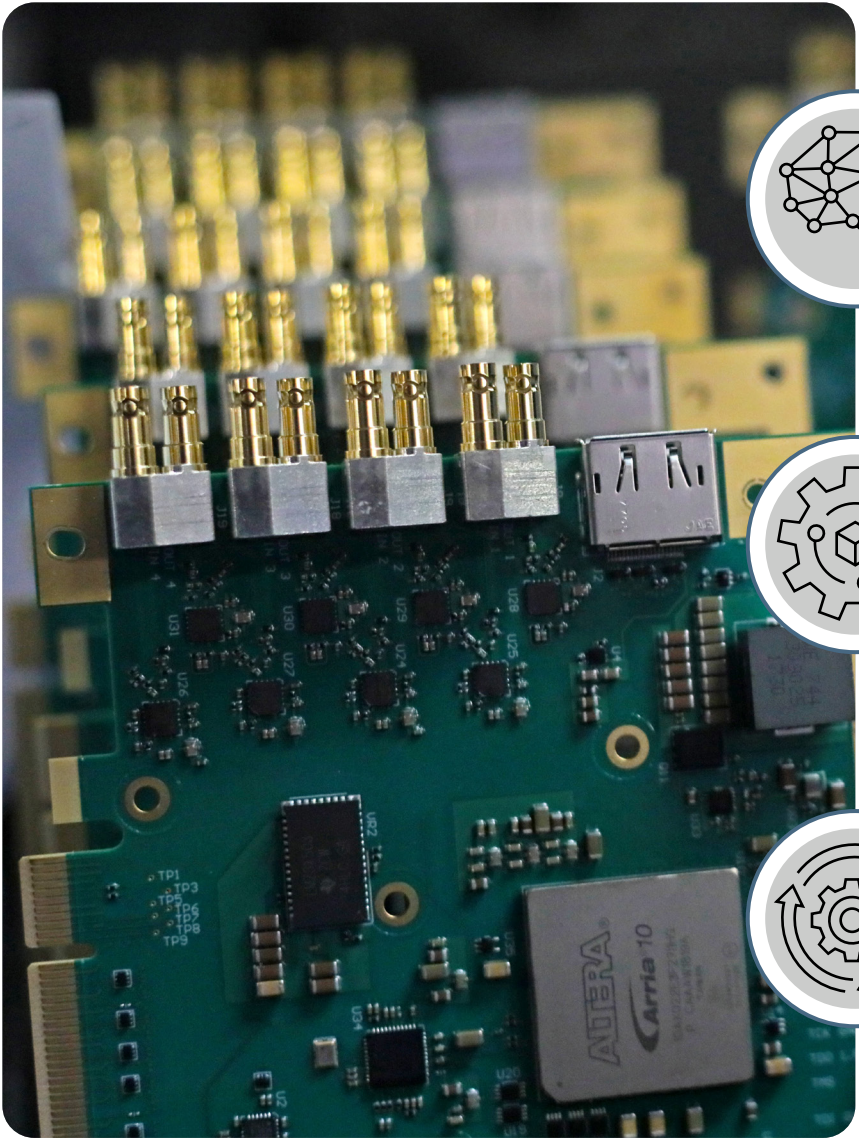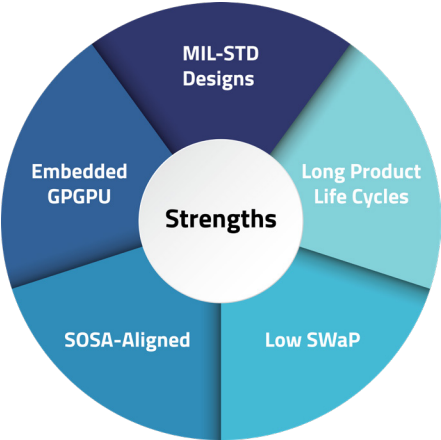
Seamless System Integration

Our products are designed in accordance with industry open architecture standards such as VITA, SOSA™ and CMOSS allowing an easier path for technical refresh of legacy systems and ease of integration for new systems.
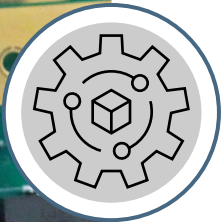
Modular Product Designs

Every product is designed with marketing leading technology and highly efficient thermal designs such as Air Flow Through (AFT) and Conduction Cooled (CC). Our products are designed and qualified to MIL-STD-810 to withstand extreme environmental conditions such as temperatures, shock, and vibration for product reliability.
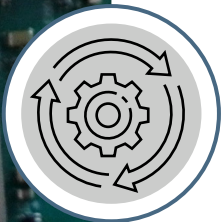
Product Lifecycle Management

EIZO supports long product life cycles by working closely with both customers and vendors to manage component obsolescence for multi-year program deployments. Our obsolescence management plan coupled together with our continuous new product development provides our customers with a seamless transition plan to increase the life cycle of deployed and sustained systems.
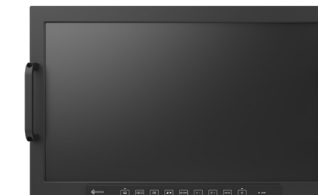
Rugged Monitors
Military-Grade LCD Monitors

The Talon series of COTS (commercial off-the-shelf) rugged LCD monitors offers a range of sizes, screen resolutions, and feature sets for displaying highly detailed C5ISR applications such as those used in naval command and control, target tracking, mission/ground control centers, and airborne ISR operations.

Product Capabilities

Every Talon monitor is developed, manufactured, and tested in-house by expert engineers at EIZO's own facilities, including the main controller boards, auxiliary PCBs, LCD optical bonding, mechanical housing, and more. EIZO is able to conduct EMI, vibration, humidity, rapid decompression, and extreme temperature testing at its own in-house durability test center to meet MIL-STD-810 and MIL-STD-461 standards. Be it the latest systems or retrofitting legacy systems, EIZO works closely with you to tailor each Talon monitor to suit your rugged environment. EIZO's rugged LCD monitors are available in resolution range from FHD 1920 x 1080 to UHD 3840 x 2160 and can be customized with the various options and added value features listed below.

- I/O support for 3G-SDI, DVI-D, RGB, USB, and more
- Panel, rack or VESA mount
- Resistive and PCAP Touchscreen technologies
- Optical Bonding
- NVIS Support
- EMI mesh filter
- PCB conformal coating for protecting circuitry in harsh environments

- High brightness variation
- Heater for operating in sub-zero temperature conditions
- LCD Flicker Compensation (E-LFC)
- Resolution range FHD to UHD
- Image enhancement technology
- Picture-in-Picture and Picture-by-Picture
- SwitchLink internal switching management for up to 4 disparate inputs and on-screen windows.

Talon RGD2101W
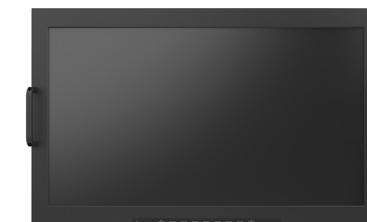21.5" Rugged Monitor
1920 x 1080 resolution

Talon RGD2102W
21.5" Rugged Monitor
1920 x 1080 resolution
Gen 3 NVIS Support

Talon RGD2401W
24" Rugged Monitor
1920 x 1200 resolution

Talon RGD2802
28" Rugged Monitor
2048 x 2048 resolution

Talon RGD3202W
32" Rugged Monitor
3840 x 2160 resolution

Graphics, GPGPU & Video Capture Solutions

Product Capabilities

Using the latest GPUs available from NVIDIA, our COTS video graphics, capture, and GPGPU processing cards are designed to support edge processing in high-performance embedded (HPE) systems. The Condor line of 3U and 6U OpenVPX, XMC, and PCI Express form factor graphics cards are designed with high-speed memory, high bandwidth interconnects, and can be configured to meet various video formats.

Our GPGPU solutions are available in several GPU compute levels, supporting NVIDIA® Ampere, Turing™, or Pascal™ GPU based architectures. NVIDIA GPUs are packed with advanced capabilities including CUDA™ Cores, Ray Tracing Core, Tensor Cores, and CUDA®/OpenCL™ for increased performance in data-intensive workflows.

Product Applications

- Video Capture & Display
- GPGPU (CUDA®/OpenCL™)
- Video Encoding / Decoding
- Metadata Insertion/Extraction
- Image Analysis
- Image Enhancement
- 360° Video Stitching
- Sensor Fusion
- AI Inferencing
- Target Detection

Video Formats

- Up to 12G-SDI
- DisplayPort™
- DVI/HDMI
- RGB (RS-343/RS-170/STANAG 3350)
- VGA
- CVBS (NTSC/PAL/SECAM)
- ARINC 818
- CoaXPress
- Ethernet

For the most demanding applications in SWaP-constrained platforms, we work closely with NVIDIA to provide the most innovative GPU technology for mission-critical applications. As an NVIDIA preferred partner we have unique access to the highest levels of technical support to help meet the demanding design, production, and product lifecycle requirements of embedded systems.

VPX Solutions
NVIDIA-Based VPX Solutions

NVIDIA Ampere A4500 GPU

16 GB GDDR6 Graphics Memory with ECC memory
256-bit Memory Interface; 512 GB/s Memory Bandwidth
5888 CUDA Cores
184 Tensor Cores
46 RT Cores
CUDA 10, CUDA-X, OpenCL 1.2, OpenGL 4.5, DirectX 12

NVIDIA Ampere A2000 GPU

8 GB GDDR6 Graphics Memory with ECC memory
128-bit Memory Interface; 192 GB/s Memory Bandwidth
2560 CUDA Cores
80 Tensor Cores
20 RT Cores
CUDA 10, CUDA-X, OpenCL 1.2, OpenGL 4.5, DirectX 12

NVIDIA Turing RTX 5000 GPU

16 GB GDDR6 Graphics memory
256-bit Memory Interface; 448 GB/s Memory Bandwidth
3072 CUDA Cores
384 Tensor Cores
48 RT Cores
CUDA 10, CUDA-X, OpenCL 1.2, OpenGL 4.5, DirectX 12
H.265 & H.264 Hardware Encoder/Decoder
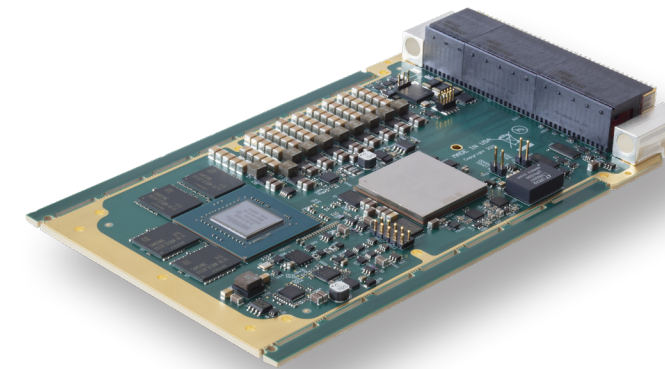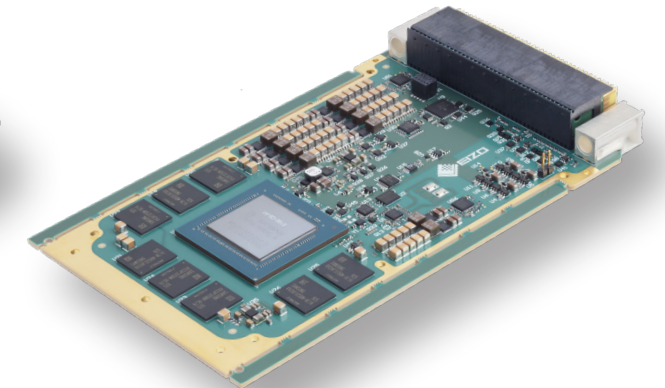NVIDIA GPUDirect™ RDMA, NVENC, NVDEC

NVIDIA Turing RTX 3000 GPU

6 GB GDDR6 Graphics memory
192-bit Memory Interface; 336 GB/s Memory Bandwidth
1920 CUDA Cores
240 Tensor Cores
30 RT Cores
CUDA 10, OpenCL 1.2, OpenGL 4.5, DirectX 12
H.265 & H.264 Hardware Encoder/Decoder
NVIDIA GPUDirect™ RDMA, NVENC, NVDEC

Condor GR5-A2000

Condor GR5-RTX5000

Condor GR5 3U VPX Series
Rugged 3U VPX Graphics & GPGPU Cards

The Condor GR5 3U VPX series support 3G-SDI, DisplayPort™ and Single-Link DVI-D video outputs. This series of cards support multiple variants of NVIDIA-based GPUs: NVIDIA Ampere A2000, NVIDIA Quadro RTX 5000, and NVIDIA Quadro RTX 3000. The Condor GR5 3U VPX series support DisplayPort and Single-Link DVI video outputs, and feature a rugged chip-down design with thermally efficient heatsink technology.

VPX Solutions

Condor GR4 3U VPX Series
Rugged 3U VPX GPGPU & Video Capture Cards

The Condor GR4 3U VPX series of graphics, GPGPU, and video capture cards support four 3G-SDI video inputs/output and one DisplayPort™ output using the NVIDIA Turing RTX3000. Along with built-in H.265 (HEVC) / H.264 (MPEG4 AVC) hardware based encode and decode, the card also supports SDI VANC KLV metadata insertion and extraction. The Condor GR4 3U VPX products serve as an all-in-one solution for video capture, process, encode, decode, stream, and display.

Condor GR2 3U VPX
Rugged 3U VPX Graphics & GPGPU Cards

The Condor GR2 3U VPX series of graphics and GPGPU processing cards support three customizable video outputs of DisplayPort++ and Single-Link DVI-D formats. This series of 3U VPX cards support multiple variants of NVIDIA-based GPUs: NVIDIA Quadro RTX 5000 GPU or NVIDIA® Quadro RTX 3000 GPU (TU106 Turing Architecture).

SOSA-Aligned Solutions

Condor GR2S 3U VPX
SOSA-Aligned 3U VPX Series

The Condor GR2S 3U VPX series of graphics and GPGPU processing cards are designed in line with the Sensor Open Systems Architecture (SOSA) standard and support SOSA slots profiles. This series of 3U VPX cards support multiple variants of NVIDIA-based GPUs: NVIDIA Ampere A4500 or NVIDIA Quadro RTX 5000. These solutions feature a configurable PCIe Gen 4 switch, Ethernet support, IPMI controller, ECC memory, and dedicated H.265/H.264 encode and decode engines. The Condor GR2S series supports SOSA slot profiles SLT3-PAY-1F1U1S1S1U1U2F1H-14.6.11 and SLT3-PAY-1F1U1S1S1U1U4F1J-14.6.13 .
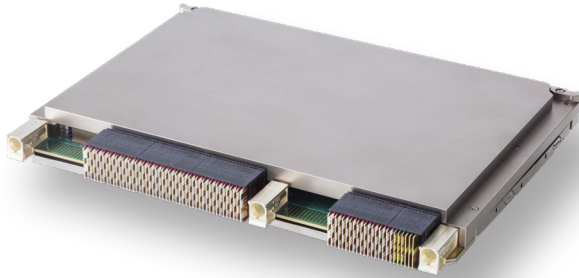
Condor XR1S 6U VPX Series
SOSA-Aligned 6U VPX Graphics & GPGPU Card

The Condor XR1S 6U VPX is a SOSA-aligned high-performance graphics & GPGPU OpenVPX card that hosts dual GPUs based on the NVIDIA Quadro RTX architecture. The Condor XR1S 6U VPX support multiple variants of NVIDIA-based GPUs either NVIDIA Ampere A4500 or NVIDIA Quadro RTX 5000. The dual-processing 6U VPX module offers exceptional graphics and GPGPU compute capability with CUDA® support, AI, and deep learning. The Condor XR1S offers four front I/O DisplayPort++ video outputs and is designed to the SOSA-aligned profile: SLT6-PAY 4F2Q1H4U1T1S1S1TU2U2T1H-10.6.4.

3U VPX SBC

Rugged System On-Module (SOM)

GPU: NVIDIA® Jetson AGX Orin™
2048 CUDA Cores
64 Tensor Cores

CPU: 12-core Arm® Cortex®-A78AE v8.2 64-bit CPU
3MB L2 + 6MB L3

Memory: 64 GB LPDDR5
256-bit Memory Interface
up to 205 GB/s Memory Bandwidth

Storage: 64GB eMMC 5.1 Internal Storage
Optional NVMe Storage (up to 2TB)

Networking: 1x 10GbE Control Plane (10GBASE-KR)
1x 1GbE Control Plane (1GBASE-T)
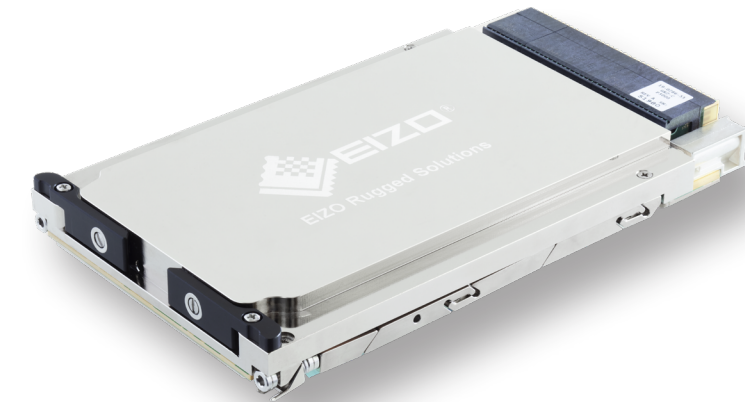
Condor AGX-IOX

The Condor AGX-IOX is a rugged 3U VPX high-performance single board computer (SBC) designed for embedded edge computing systems that require multi-sensor processing and instantaneous data analysis and transfer. This solution offers GPU + CPU high-performance processing, video encode/decode, and supports machine learning and AI. This system on-module (SOM) features the NVIDIA® Jetson AGX Orin™ SoC with an Arm® Cortex®-A78AE CPU. The Condor AGX-IOX 3U VPX supports PCI Express Gen 4 and features compute-intensive capabilities such as Deep Learning and vision accelerators. This card supports DisplayPort™ 1.4, USB3.2, USB2.0, and RS-323 video outputs and can be integrated into SOSA-aligned systems following the 14.2.16 Slot Profile.

Other GPGPU Solutions
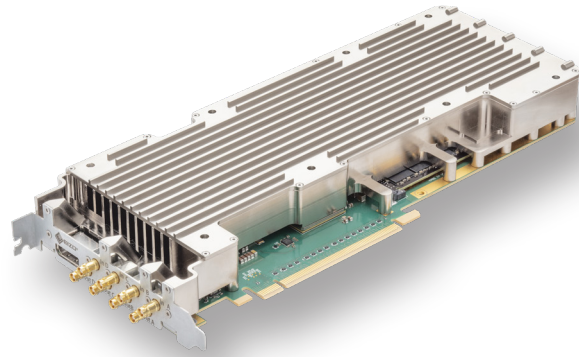
Condor GR4 PCIe
Rugged PCIe Video Capture & GPGPU Card

The Condor GR4 PCIe is a graphics & GPGPU card with four 3G-SDI inputs/outputs and metadata insertion/extraction. This Condor GR4 PCIe card supports multiple variants of NVIDIA-based GPUs: NVIDIA® Quadro RTX® 5000 GPU or NVIDIA® Quadro RTX® 3000 GPU. This product serves as an all-in-one solution for video capture, process, encode, decode, stream, and display.
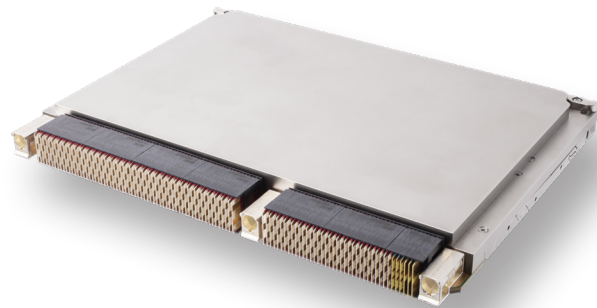
Condor XR1 6U VPX Series
Rugged 6U VPX Graphics & GPGPU Card

The Condor XR1 6U VPX series of high-performance graphics & GPGPU OpenVPX cards host dual GPUs based on the NVIDIA Quadro RTX architecture. The Condor XR1 series supports NVIDIA Quadro RTX 5000. The dual-processing 6U VPX module features eight rear DisplayPort ++ video outputs and offers exceptional graphics and GPGPU compute capability with CUDA® support, AI, and deep learning.

High-Performance Embedded Computing for C5ISR Applications

XMC Solutions

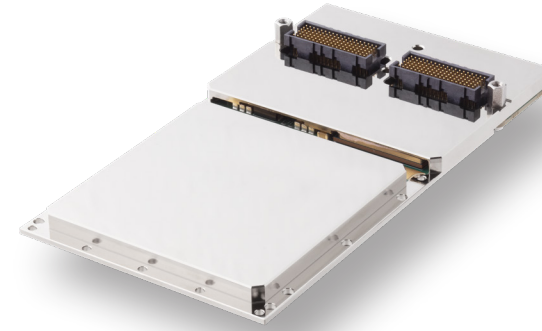## NVIDIA-Based XMC Solutions

NVIDIA Ampere A2000 GPU

8 GB GDDR6 Graphics Memory with ECC memory

128-bit Memory Interface; 192 GB/s Memory Bandwidth

2560 CUDA Cores

80 Tensor Cores

20 RT Cores

CUDA 10, CUDA-X, OpenCL 1.2, OpenGL 4.5, DirectX 12

NVIDIA Quadro P2000 GPU (Chip-down GP107)

4GB GDDR5 Graphics Memory

128-bit Memory Interface

96 GB/s Memory Bandwidth

768 CUDA Cores

CUDA 10, OpenCL 1.2, OpenGL 4.5, DirectX 12

H.265 & H.264 Hardware Encoder/Decoder

NVIDIA GPUDirect™ RDMA, NVENC, NVDEC

Condor NVA2100 XMC Series
Rugged XMC Graphics & Video Capture Cards

The Condor NVA2104AxX is high-performance XMC video capture and GPGPU card designed using the NVIDIA Ampere A2000 GPU. The Ampere architecture accelerate graphics and compute workflows with up to 2X single-precision floating point (FP32) performance compared to the previous generations. This product serves as an all-in-one solution for video capture, process, encode, decode, stream, and display.
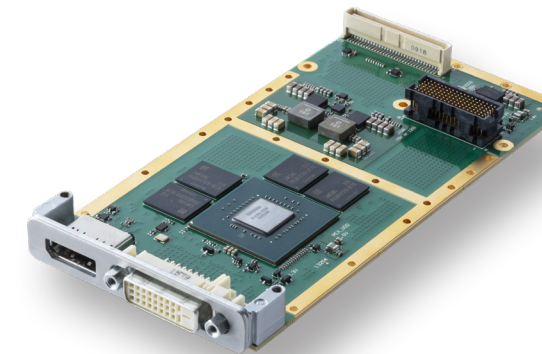
Condor NVP2000 XMC Series
Rugged XMC Graphics & GPGPU Cards

The Condor NVP2000 XMC series are rugged graphics and GPGPU processing cards based on the NVIDIA Quadro Pascal P2000 GPU (GP107). These cards have a chip-down design and support multiple simultaneous video outputs, Front I/O, Rear XMC or Rear PMC.

COTS Video Hardware

Rugged Video Encoder & Splitter

Tyton VS2X

The Tyton VS2X is a powerful stand-alone rugged H.265 (HEVC) / H.264 video/audio encoding and streaming solution, with CoT/KLV metadata support. The Tyton VS2X is capable of encoding four 3G-SDI, HD-SDI or SD-SDI video inputs simultaneously with low latency using the highly versatile and widely used video encoding standards H.265 (HEVC) and H.264 (MPEG-4 AVC). With low power consumption, Tyton VS2X is non-intrusive and feature rich. Tyton's 8 dynamic encoding engines can create multiple individually configured encoded video streams per input. This hardware is fully ruggedized to MIL-STD-810, MIL-STD-461, and IP67 standards.

Hydra 1004R

The Hydra 1004R is a military-grade 1x4 video splitter designed to operate in harsh environments. This product supports up to 12G-SDI, HD-SDI or SD-SDI video inputs which is split into four outputs for viewing or distribution. Signal regeneration (Re-clocked) ensures that the video quality is not compromised. All connectors including power are front-facing for ease of mounting. This device requires low power and is SWaP optimized, resulting in longer product life cycles. This hardware is fully ruggedized to MIL-STD-810, MIL-STD-461, and IP67 standards.

Rugged Video Converters

The Adapt Series

Customers often need to support several legacy monitors with various input formats. Support of such monitors may require special graphics/video boards, incurring NRE, long lead-times, etc. Alleviating the need for board re-designs, the Adapt video format converters enable the use of the newer off-the-shelf rugged graphics cards with DisplayPort™ outputs to support DVI or VGA.

The Adapt Series of video format converters enable conversion of DisplayPort™ into traditional DVI or VGA video formats. Two versions of products are available – rugged and industrial grade. The rugged product meets military level shock and vibration (MIL-STD-810) requirements and can operate in extended temperature environments (-40°C to 85°C). The industrial-grade product only supports extended temperature of -40°C to 85°C. Power to the active device is available on the DisplayPort cable, no external power is required.

Adapt Converters allow you to equip modern, off-the-shelf graphics cards with the connectors needed to support legacy monitors without incurring additional NRE and long lead times for board re-designs. The Adapt products can also be customized to support other connector types, such as male or female gender or circular connectors such as MIL-DTL-38999.

Adapt DVI

Adapt VGA

Product Variants

Adapt DVI   **Adapt VGA**   **Adapt R-DVI**   **Adapt R-VGA**

# Rugged Video Hardware for Sea, Air, and Land

Radar &
Camera
Acquisition,
Processing,
Tracking,
and Display
# Solutions

Radar Processing

Cambridge Pixel is an award-winning developer of radar and camera acquisition, processing, tracking and display solutions for naval, ATC, security and maritime applications.

EIZO Rugged Solutions is the sole distributor in North America (USA & Canada) of Cambridge Pixel's hardware and software solutions for sensor processing and display. Flexible and modular product design allows system integrators to select the components they need and build them into their solution or in many cases choose a ready-made application.
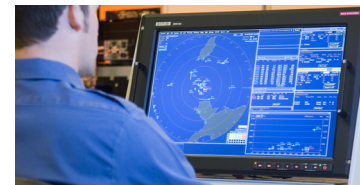

Custom configurable modular software solutions for radar and video acquisition, processing and display for system integrators and developers to build into their own solution.

- Radar scan conversion
- Tracking (from primary or IFF)
- Sensor fusion
- Radar video distribution
- Recording and replay
- Simulation
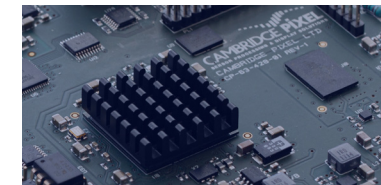
Radar interface hardware for use with many different types of radar, from small marine radars to large air surveillance and from legacy military radars to modern solid state radars.

- PCI, PCIe, PMC radar input cards
- Analog to network radar converters
- Synchro to parallel or ACP/ARP
- Analog radar video output cards
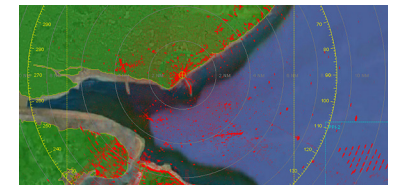
Radar and video display solutions available as complete applications for Windows.

- Radar Display
- Maritime Surveillance
- Air Situation Display
- Video Surveillance Display
- Unmanned surface Vessel Display
- Maritime Display Framework
- Custom Applications

Industry Involvement

EIZO Rugged Solutions has partnered with NVIDIA® since 2016, developing high-performance embedded computing solutions designed with NVIDIA® GPU modules, including NVIDIA Pascal™, Turing™, and Ampere architectures. In addition, EIZO designs 3U VPX hardware supporting the NVIDIA® Jetson AGX™ platform. EIZO's NVIDIA-based GPGPU solutions target compute-intensive edge processing applications such as Signal Intelligence (SIGINT), Electronic Warfare (EW), Mission Computing, and other embedded edge C5ISR applications. Capabilities include multi-sensor data capture and processing (via Ethernet, PCIe, or frame grabber), H.264/H.265 encode/decode, AI inferencing, and GPGPU computing. EIZO also collaborates with NVIDIA to implement the latest cutting-edge processing and networking components, such as the NVIDIA® ConnectX-7® SmartNIC. NVIDIA works very closely with EIZO during the design phase and provides design reviews to ensure that the products

The Open Group Sensor Open Systems Architecture™ (SOSA) Consortium aims to create a common framework for transitioning sensor systems to an open systems architecture, based on key interfaces and open standards established by industry-government consensus. Originally an initiative under The Open Group Future Airborne Capabilities Environment™ (FACE) Consortium, the SOSA Consortium enables government and industry to collaboratively develop open standards and best practices to enable, enhance, and accelerate the deployment of affordable, capable, interoperable sensor systems.

With over 33 years of experience in developing graphics and video solutions, EIZO Rugged Solutions brings a wealth of technical expertise to the SOSA Consortium with the aim to help drive and contribute to the standards. EIZO's SOSA-aligned GPGPU solutions are designed to support various SOSA slot profiles, enabling them to easily integrate into various OpenVPX systems. With in-house engineering, EIZO is capable of designing to any SOSA-defined VPX profile or backplane and is responsive to the existing and emerging open modular technical standards.

Contact Us

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