RuggedCONNECT NVPU-8A2D

Scalable, flexible approach for real-time video sensor networking in LSA and C4ISR systems

Overview

The RuggedCONNECT NVPU-8A2D Network Video Processing Unit is a highly integrated standalone device that acquires, processes, and displays real-time video sensor data for vehicle-based local situational awareness (LSA) and driver vision enhancer (DVE) applications.

The RuggedCONNECT NVPU-8A2D networked video switcher includes eight analog composite inputs supporting RS-170/NTSC/PAL and two independent DVI-D single link displays. Support for GigE Vision and Def Stan 00-082 streaming protocols on dual 1 Gbps Ethernet channels make it the perfect solution to implement networked, open standard, interoperable video management systems as demanded by GVA, NGVA, and VICTORY standards.

Powerful Processing

Combining the high-performance networking capabilities of RuggedCONNECT with the powerful GPU resources of the NVIDIA Jetson TX2i, designers can easily add application-specific image processing and graphics overlay decision-support capabilities to reduce cognitive burden and increase mission effectiveness. The compute power of the TX2i supports applications such as image fusion, 360 degree stitching, map/ terrain overlay, and image enhancement to more demanding convolutional-neural-network based threat detection and classification.

Modular, Scalable Platform

The NVPU-8A2D is built on RuggedCONNECT's highly configurable architecture that can host multiple mini-PCIe and M2 daughter cards, enabling fast development of products to address various sensor and display interfaces, such as HD-SDI, CameraLink, VGA, STANAG-3350, or custom sensor/display requirements. This same architecture enables Pleora to add more interfaces, support a different mix of interfaces, additional network interfaces, and general communications ports. For situations with extreme SWaP-C requirements, Pleora can reduce the number of interfaces and overall enclosure size. Contact Pleora to discuss how to tailor the NVPU to meet your system needs.

Features and Benefits

All-in-one rugged Network Video Processing Unit for video capture, processing, streaming, and display

- 8 video inputs (RS-170/NTSC/PAL)
- 2 fully independent DVI-D displays
- RS-232/422/485, CANbus, USB2.0, GPIO
- Dual Ethernet capability enables system level redundancy and more effective communications capabilities
- Bypass channels for select inputs provides additional redundancy during degraded operating situations
- Scalable technology platform to support multiple sensor and display configurations, including basic sensor, display, or network-only processing units

**Eases design of standards-compliant vetronics imaging platforms**

- GigE Vision and Def Stan 00-082 compliant
- GVA, NGVA and VICTORY ready
- MIL-STD-1275E Power supply
- MIL-STD-810G and MIL-STD-461F conformance for shock, vibration and EMI.

Powerful GPU resources of NVIDIA Jetson TX2i system-on-module enables application-specific image process and graphic overlay capabilities

- 256 Core Pascal GPU
- Quad-Core ARM Cortex-A57 CPU System
- Dual-Core Denver CPU System
- 8GB LPDDR4
- Multichannel Hardware Compression — H.264/H.265/JPEG Encode/Decode
- Dual independent displays
- OpenCV, OpenGL, CUDA, Video4Linux

Pleora Technologies

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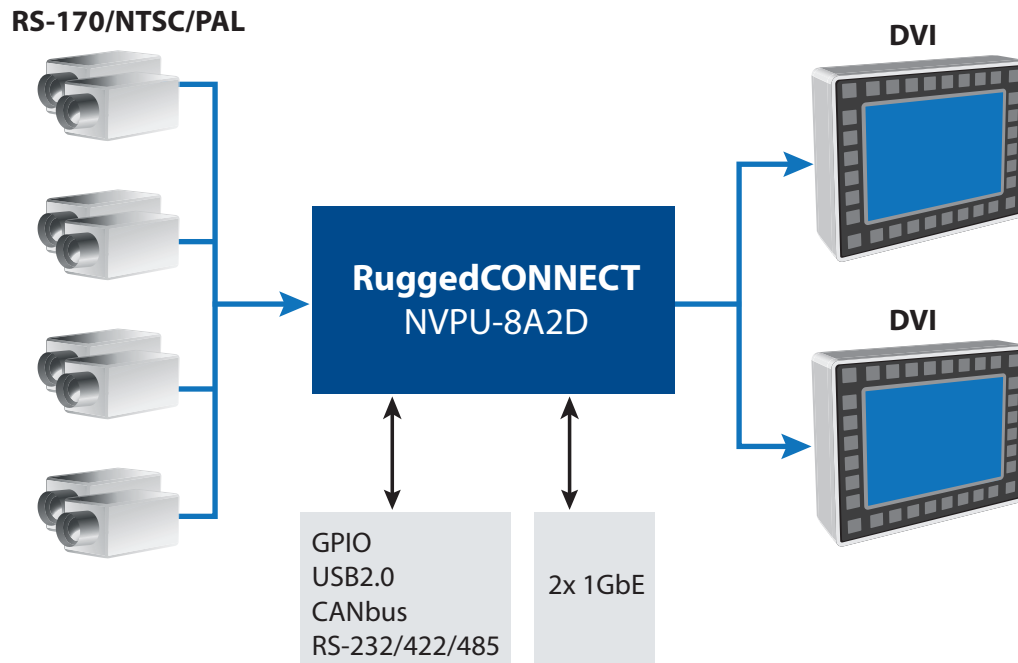
Functional Specifications

Video Input	8 channels of RS-170/NTSC/PAL
Network I/F	2 channels of 1 Gbps Ethernet
Video Streaming Protocol	GigE Vision 2.0 and Def Stan 00-082
Communications	• 1 x RS-232/422/485 • 1 x channel CANbus • 1 x channel USB2.0 • 2 GPIO
Compression	• TX2i HW codec for multi-channel H.264/H.265/JPEG2000
Display Interfaces	• 2 fully independent channels of DVI-D Single Link • Support for up to 1920x1080p60

Mechanical, Environmental, Power

Conformal Coating	Applied to all PCBs
Power Connector	MIL-DTL-38999 Series III
Sensor I/O Connector	MIL-DTL-38999 Series III
Ethernet Connector	MIL-DTL-38999 Series III
Enclosure	Aluminum Alloy
Shock and Vibration	MIL-STD-810G
EMI	MIL-STD-461F
Power Supply	MIL-STD-1275E
Power Consumption	<35 W