JetSys-5320 Rugged AI Platform
NVIDIA-BASED SMALL FORM FACTOR

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DESCRIPTION

Elma's JetSys-5320 SFF is a small form factor, rugged embedded computing system based on the NVIDIA® Jetson™ TX2i. Housed in a rugged compact enclosure, the system features NVIDIA Pascal™ architecture with 256 CUDA cores delivering 1.3 teraflops (or TFLOP) of performance, along with a dual-core Denver 2 64-bit CPU and quad-core ARM A57 complex making it an ideal platform for AI computation at the edge.

This rugged system also provides HD-SDI, Gigabit Ethernet (with Power-over-Ethernet), and USB3.0 interfaces for video capture with IP67 rated ingress protection. This small form factor product is qualified to meet MIL-STD-810G for operation in harsh environments.

The JetSys-5320 SFF embedded system supports defense applications that require very high levels of computation, such as video and image processing, signal processing and deep learning in next generation autonomous vehicles, surveillance, targeting and electronic warfare (EW) systems.

Features

- Memory: 8GB LPDDR4 + 32GB eMMC
- Video Encoder/Decoder: 4K 60Hz
- 4x miniPCIe slots for I/O expansion, one doubles as mSATA for additional storage
- Extended temperature range -40°C to +71°C
- +16.5V to +50V power input compliant to MIL-STD-704 and MIL-STD-1275D
- HD-SDI video capture support
- Compliant with MIL-STD-461 for EMI
- Compliant with MIL-STD-810 for shock and vibration
- 2x Ethernet camera support with power over Ethernet (PoE)

Benefits

- Provides mission-critical rugged SFF autonomy with server-class AI processing in remote locations with challenging connectivity.
- Offers real-time responsiveness, minimal latency, and low-power consumption.
- Redefines the possibilities for extending advanced AI from the cloud to the edge.
- Supports more than a TFLOP/s of performance.

RELATED PRODUCTS

ComSys Family

- › Modular computing platforms with GbE, miniPCIe expansion
- › High performance, modular SFF computers for edge processing

ComSys 5300 Family

NetSys Family

- › Compact mobile, IP router
- › Cisco router/Ethernet switch combination
- › Railway compliant mobile router (ESR-5915)

NetSys 5300 Family

CISCO Technology

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SOFTWARE APPLICATIONS

- Intelligent video analytics (IVA)
- Artificial intelligence (AI)
- Augmented or virtual reality (AR and VR)
- Autonomous & unmanned vehicles
- Edge Computing
- Computer Vision
- Deep learning
- Robotic localization / mapping

The JetSys-5320 is a small form factor embedded system capable of running high performance intelligent video analytics (IVA), virtual reality (VR), augmented reality (AR) and artificial intelligence applications at the edge as well as applications on unmanned vehicles and robots. Multiple camera interfaces make the JetSys-5320 an ideal platform for vison intelligence applications (e.g. object detection and tracking, semantic segmentation, scene understanding and video surveillance).

The JetSys-5320 has the power to run high performance deep learning-based inference engines to perform tasks such as object detection & image segmentation of multiple video image streams captured through HD-SDI, Ethernet and USB3.0 cameras interfaced through high-speed circular connectors. Developers can utilize NVIDIA's CUDA and deep learning SDK's to develop numerous applications in traffic control, human-computer interaction, augmented reality and visual surveillance based on object recognition and inference and enable rapid deployment of AI-based perception processing. JetSys-5320 supports running robotic operating systems which provide optimized visualization capabilities to combine video and other vision sensors into one unified viewer application which can subsequently be utilized for simultaneous localization and mapping of robots for autonomous navigation applications.

Facial feature extraction can be implemented on the JetSys-5320. This can be used in automated visual interpretation, human face recognition and tracking. Human pose estimation can be implanted on the JetSys-5320 and can be used for tasks such as activity recognition to enhance security and surveillance, motion capture and augmented realty. Pose estimation can also be used for training robots to follow trajectories which eventually can be used in autonomous navigation systems.

Ask your sales representative for application videos.

SPECIFICATIONS

Interface	Video Capture
Networking: 3x GbE	HD-SDI input – 2 channels available simultaneously
Display: 2x DisplayPorts (DP)	Dual Gigabit Ethernet – with PoE support
Video: HD-SDI	USB 3.0 video input
USB: 1x USB 3.0, 3 x USB 2.0	Total 5x video capture interface available for multiple camera application
Serial : 1x RS-232, 2 x RS422, 2 x CAN	
Audio : Audio Out, MIC IN, LINE IN	
Discrete : 5x GPIO	

Software and Sample Applications

Elma BSP (includes latest Linux for Tegra (L4T) with Linux operating system)	
Sample applications (available upon request):	
a. Object recognition	d. Facial feature detection
b. Semantic segmentation	e. Simultaneous localization for autonomous navigation.
c. Human pose estimation	

Environments

Temperature:	-40°C to 71°C operational, -40°C to 85°C storage
Operating shock:	40 g; 11ms
Random vibration:	10Hz to 2000Hz
Humidity:	Up to 95% RH non-condensing
Ingress protection:	IP67 rated

JetSys-5320 Rugged AI Platform
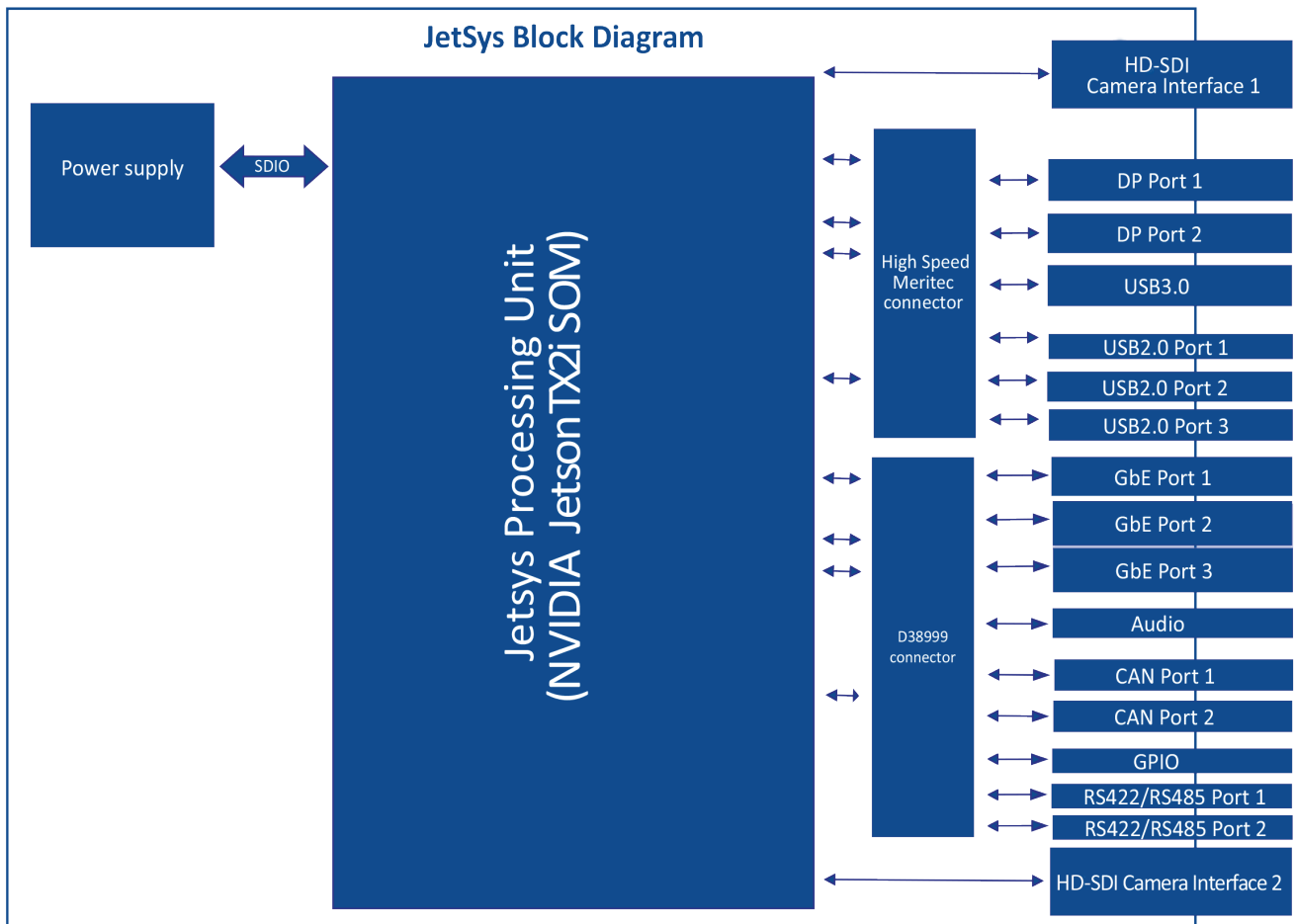## NVIDIA-BASED SMALL FORM FACTOR

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Power

Input:	16.5V to 50V
Max power consumption:	<40W

Physical

Height:	76.61mm (3.02 in)
Width:	233.3mm (9.19 in)
Depth:	213.2mm (8.4 in)
Estimated Weight:	3.2 Kg (7 lbs) appr.
Cooling:	Passive, no fans

BLOCK DIAGRAM

JetSys Block Diagram

Power supply — SDIO — Jetsys Processing Unit (NVIDIA Jetson TX2i SOM)

High Speed Meritec connector

D38999 connector

HD-SDI Camera Interface 1
DP Port 1
DP Port 2
USB3.0
USB2.0 Port 1
USB2.0 Port 2
USB2.0 Port 3
GbE Port 1
GbE Port 2
GbE Port 3
Audio
CAN Port 1
CAN Port 2
GPIO
RS422/RS485 Port 1
RS422/RS485 Port 2
HD-SDI Camera Interface 2

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ORDER INFORMATION

JetSys-5320 Description	Model Number (Part Number)
8GB LPDDR4 + 32GB eMMC 4x Mini-PCIe slots for video capture 1x mPCIe: configurable as mSATA drive HD-SDI video capture support 2x Ethernet camera support 3x 10/100/1000Mbps GbE Ports Linux	AIS-53ZDUZ1022NVCL (CAI000313) Support for customization of Front I/O and interfaces is available. Contact Factory
I/O Cable Kit	CAE056293

Please contact our sales team for more details.

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