DATA SHEET

JetSys-5330 Rugged AI Platform

NVIDIA-BASED SMALL FORM FACTOR (SFF)

ELMA
Your Solution Partner

DESCRIPTION

Elma's JetSys-5330 is a small form factor (SFF), rugged embedded computing system based on the NVIDIA® Jetson AGX Orin™ system-on-module (SoM). Housed in a rugged compact enclosure, the JetSys-5330 can deliver up to 275 TOPS of AI performance with the ability to tune the power consumption to match deployment requirements. The JetSys-5330 also offers numerous expansion sites, allowing it to be customized for I/O and storage needs.

The Jetson AGX Orin is a powerful AI inference engine system-on-module (SoM), featuring an NVIDIA® Ampere architecture GPU, an array of Arm® Cortex®A78AE CPUs, deep learning and vision accelerators, a video encoder/decoder, high-speed I/O, impressive 204 GB/s of memory bandwidth and 32GB or 64GB of DRAM, enabling these modules to feed multiple concurrent AI application pipelines.

This rugged system also provides a number of I/O options including HD-SDI, Gigabit Ethernet (with Power-over-Ethernet), or GMSL1/2 cameras, and LTE/5G, along with built-in USB3.2, CAN Bus, and other industry standard interfaces. The JetSys-5330 is IP67 rated for ingress protection and is qualified to MIL-STD-810G for operation in harsh environments.

The JetSys-5330 SFF embedded system is ideal for 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

- Jetson AGX ORIN SoM (32GB or 64GB variant available)
- Expandable through two M.2 and three mPCI sites (one doubles as mSATA)
- 6-channel GMSL1/GMSL2 camera input
- HD-SDI and Gigabit Ethernet cameras supported
- Support for two removable solid-state drives
- Wireless connectivity via WiFi+BT or LTE/5G
- Door-accessible drive bay with support for up to two removable 2.5" solid state drives
- Fan kit available, if needed
- Rugged design; qualified to military standards, MIL-STD-810, MIL-STD-461, MIL-STD-704, MIL-STD-1257 and D0-160 section 25 ESD

Benefits

- Powerful AI processing in a rugged, edge computing package
- Easily configurable and expandable to meet mission requirements
- 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
- Provides 275 TOPS and more than 5 TFLOP/s of AI processing performance

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RELATED PRODUCTS

JetSys and JetKit Family

- High Performance GPU Based Computing Products
- Rugged, Industrial, and Plug-in packages available

JetSys and JetKit Family

NetSys Family

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

NetSys 5300 Family

APPLICATIONS

- Defense 360-degree situational awareness, automatic target recognition/tracking, etc
- Robotics in rugged environments
- Rugged autonomous vehicle applications: mining, agriculture, construction, etc
- Intelligent video analytics in remote/challenging environments
- Ideal for wireless multi access edge computing applications (MEC)
- Artificial intelligence (AI)
- Augmented or virtual reality (AR and VR)
- Computer vision
- Deep learning
- Robotic localization / mapping

The JetSys-5330 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-5330 an ideal platform for vision intelligence applications (e.g. object detection and tracking, semantic segmentation, scene understanding and video surveillance).

The JetSys-5330 uses the NVIDIA® Jetson AGX Orin system-on-module (SoM), and features a Deep Learning Accelerator (DLA) optimized for deep learning operations. The GPU is based on NVIDIA®'s Ampere architecture and is divided into two Graphic Processing Clusters (GPCs), up to 8 Texture Processing Clusters (TPCs), and up to 16 Streaming Multiprocessors (SMs). There are 128 CUDA cores per SM, providing up to 2048 NVIDIA® CUDA® cores and up to 64 (64GB) Tensor Cores depending on the AGX Orin™ model (32GB or 64GB). The GPU can run up to 1.3 GHz on the 64GB model. This provides up to 275 TOPS and 5.3 FP32 TFLOPs of CUDA computing power.

This processor is designed to do full hardware acceleration of convolutional neural network inferencing. The built-in video encoder / decoder, and Programmable Vision Accelerator give the AGX Orin unprecedented video and image processing power. This provides the power to run high performance deep learning-based inference engines to perform tasks such as object detection and image segmentation of multiple video image streams captured through GMSL 1/2, HD-SDI, Ethernet, or USB3.2 cameras interfaced using high- speed circular connectors. Developers can utilize NVIDIA®'s CUDA and deep learning SDKs 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.

Optional enclosure for fan support

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SPECIFICATIONS

Processor
Jetson AGX Orin, 32GB or 64GB

Interface	Video Capture
High-speed Networking: 10GBASE-T	GMSL2/GMSL1 – Supports up to six cameras in x2 mode or four in x4 mode
Networking: 1000BASE-T	Up to two additional 1000BASE-T with PoE for Ethernet cameras
Audio • Mic In (mono) • Stereo Line In • Stereo Line Out • Stereo Headphone Out	HD-SDI Input – up to three cameras
Display: DisplayPort 2.0, 1.4 with MST support	Other camera inputs available. Consult factory for details
USB: • USB 3.2 Gen2 Type A (3x) • USB 3.2 Type C (2x) • USB 2.0 Type A (4x)	
CAN Bus (2x)	
Serial: • RS-422 FD (2x) • RS-232 (1x)	
GPIO (9x)	
Support for two removable solid-state drives	
Support for WiFi+BT or LTE/5G	
Fan kit available	

Expansion

Support for up to three mPCIe modules (one doubles as mSATA)	
Two M.2 sites • One B-key, with USB3, one-lane of PCIe and SIM card support • One M-key, with SATA and four-lanes of PCIe (NVMe)	

Environmental

Temperature:	-40°C to 55°C or 71°C operational, depending on the configuration -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

Power

Input	16.5VDC to 50VDC, 28VDC Nominal
Power consumption	52W to 130W depending on the configuration

Physical

Height:	112.5mm (4.43"), 117mm (4.6") with the fan kit
Width:	343.5mm (13.52)
Depth	222.4mm (8.75"), 249mm (9.8") with the fan kit
Weight	6.35kg to 7.6kg (14 to 16.72 lbs) depending on the configuration

Contact factory for additional environmental qualification details

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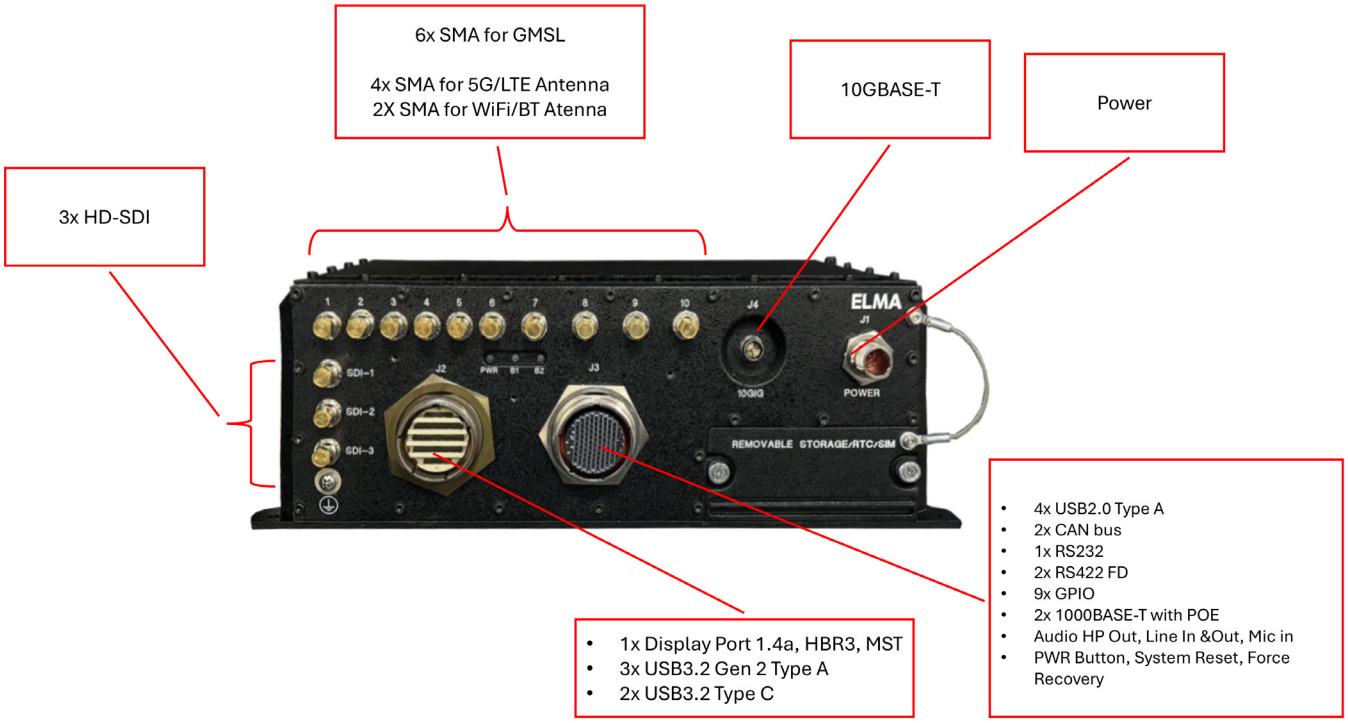
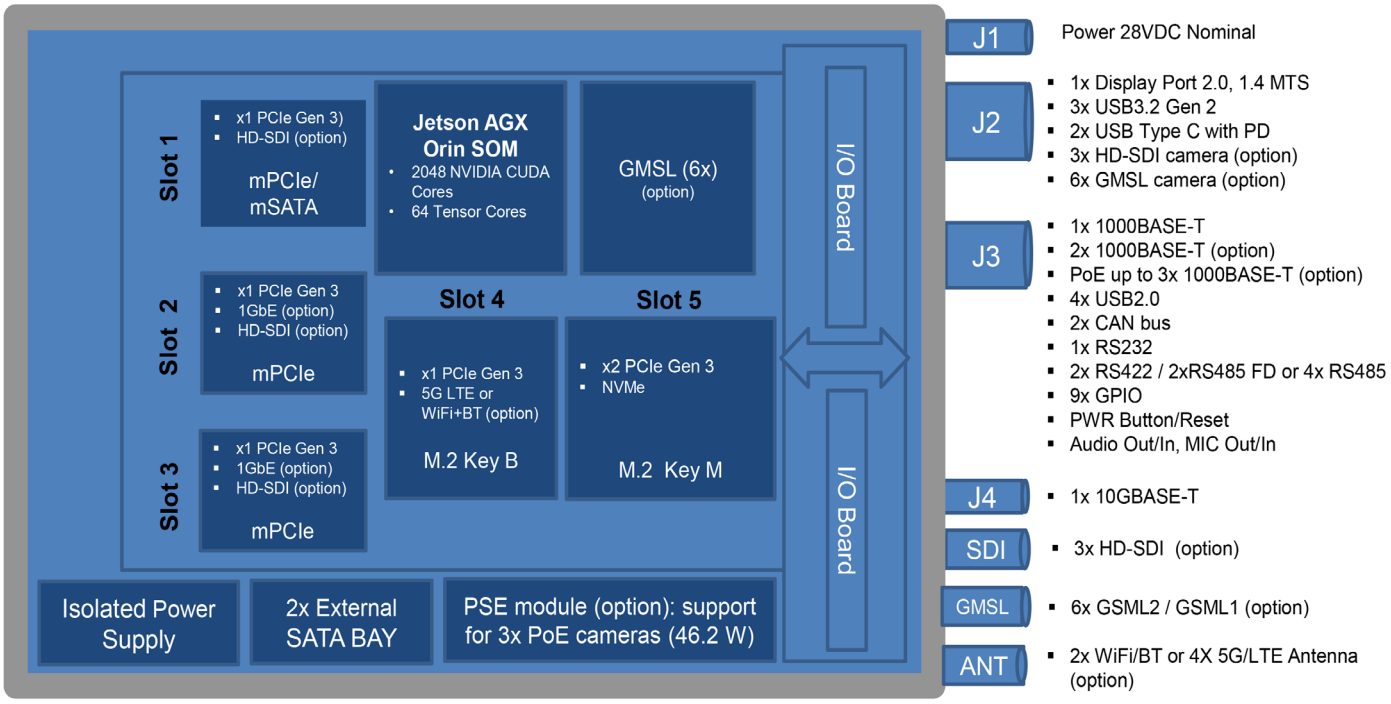
CONNECTOR CALLOUTS



CONNECTION AND BLOCK DIAGRAM



JetSys-5330 Options

Base Unit - Not Selectable:

Basic JetSys-533x	Included Features	Connection	Model Number
Base JetSys-5330 Model (64GB)	Power 28VDC Nominal	J1	JetSys-5330-2S.L.B.PX.PX.PX.BX.MX.1
	1x Display Port 1.4a, HBR3, MST	J2	
	3x USB3.2 GEN 2 Type A	J2	
	2x USB3.2 Type C	J2	
	4x USB2.0 Type A	J3	
	2x CAN bus	J3	
	1x RS232	J3	
	2x RS422 FD	J3	
Add Options Listed Below	9x GPIO	J3	
	PWR Button, System Reset, Force Recovery	J3	
	Audio HP Out, Line In & Out, Mic in	J3	
	1x 1000BASE-T	J3	
	1x 10GBASE-T	J4	

Add-in Options - These options are selectable but can only be configured at the Factory (contact Sales/Factory for specific configurations):

Options	Included Features	Model Number
GMSL	Up to 6 GMSL Cameras	Custom Configuration Contact Factory for more Details
mPCIe Slot1	1x mSATA or 1x HD-SDI	
mPCIe Slot 2	1x 1000BASE-T with POE or 1x HD-SDI	
mPCIe Slot 3	1x 1000BASE-T with POE or 1x HD-SDI	
M.2 (Key M) (Slot4)	1x NVMe/SATA	
M.2 (Key B) (Slot5)	5G/LTE or WiFi + Bluetooth	

ACCESSORY ORDER INFORMATION

I/O Cable Kit (s)	CAE059026 Lab Cable Kit - consisting of: • CAE059147 Input Power • CAE059148 High Speed Signals • CAE059149 Misc.Signals • CAE059147 10GBASE-T
NVMe/ SATA SSD Options:	• 1 TByte, 2 TByte, 4 TByte

Please contact our sales team for more details.

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