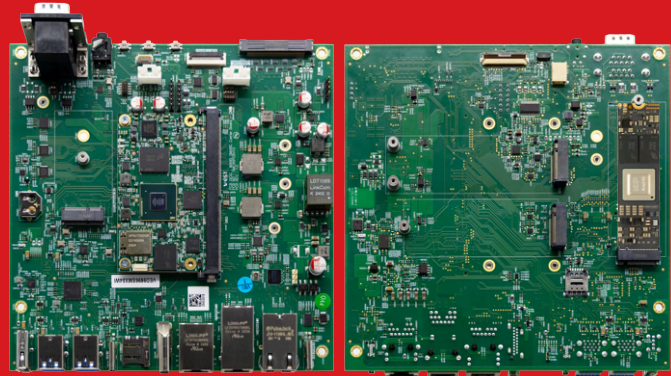


VEST SMTX i.MX95-A Generative AI Kit

Empower your Edge devices with advanced intelligence. Powered by the NXP i.MX95 processor and Ara240 DNPU AI Accelerator, this compact Mini-ITX platform delivers advanced AI computing for Edge LLMs, Generative AI, and Multimodal AI applications, accelerating development and securing a decisive competitive advantage.



**High Performance
CPU**



**Edge Neural
Processing**



**Rich
Multimedia**



Industrial 4.0

ABOUT OUR PRODUCT

Introducing the VEST SMTX i.MX95-A Generative AI Kit, a high-performance edge platform built for transformer-based Generative AI and Agentic AI, powering the next generation of Robotics, Smart Industrial Automation, and Telemetry Analytics. Combining an i.MX95 SMARC 2.2 SoM featuring the NXP eIQ® Neutron NPU delivering up to 8.0 eTOPS and a 16GB Ara240 DNPU AI accelerator on a feature-rich Mini-ITX carrier board, it delivers an advanced heterogeneous architecture with up to 40 TOPS of AI performance.

High-Performance Processing and 3D Graphics

The VEST SMTX i.MX95-A Generative AI Kit integrates the NXP i.MX95 application processor and features:

- 6x Arm® Cortex®-A55 cores for advanced Edge computing
- Dual Real-Time Subsystems (Cortex®-M7/M33) for low-latency control
- Arm® Mali™ GPU delivering smooth 3D graphics for advanced Human-Machine Interfaces (HMI)
- High-Efficiency VPU supporting simultaneous 4K H.264/H.265 video encoding and decoding for advanced Edge Vision and multimedia applications

Edge and Generative AI Capabilities

Dual-NPU architecture for low-latency and high-performance AI inference:

- NXP eIQ® Neutron NPU (8.0 eTOPS at 1 GHz) for efficient, sensor-level inference
- Ara240 DNPU (M.2 Key M 2280) delivering up to 40 TOPS
- Supports advanced AI models, including CNNs, transformer-based architectures, LLMs, MMLMs, VLMs, and Vision-Language-Action (VLA) models
- Enables Agentic AI systems that can perceive, reason, and act autonomously
- Compatible with Llama 2, LLava, TensorFlow, and PyTorch

Secure, Connected and Scalable

- Connectivity: Dual GbE with TSN support (one 25W PoE port) and a 10 GbE for high-bandwidth data transmission
- Security: Integrated NXP EdgeLock® Secure Enclave and Safety: SIL 2 (Optional)
- Expansion: M.2 slots (Key E, Key B) with support for LTE/5G, and custom I/O

This Generative AI Kit is versatile and suitable for a wide range of applications, such as:

- Industrial AI: Industrial Automation, Machine Vision, Industrial Robotics, Smart Factory Inspection
- Edge Vision Systems: Surveillance Cameras, Smart Retail, Smart City Analytics, Video Analytics
- Autonomous Systems: Mobile Robots, Drones, Autonomous Home Devices, Driver Monitoring
- Advanced AI Computing: Edge Servers, Multimodal AI, VLM/LLM Inference, Agentic AI
- Human-Machine Interface: Advanced HMI, AR/VR Headsets, Voice/Vision Interaction

Support



Specifications (VEST SMTX i.MX95-A Generative AI Kit)

CPU Details			
CPU	Up to 6x Cortex®-A55 @ 1.8 GHz (Ind)/2 Ghz (Com), 1x Cortex®-M7, 1x Cortex®-M33		
GPU	Arm® Mali-G310, OpenGL® ES 3.2, Vulkan® 1.2, OpenCL 3.0		
NPU	NXP eIQ® Neutron NPU up to 8.0 eTOPS at 1 GHz (eTOPS: equivalent TOPS)		
Package	NXP VZ (19mm x 19mm, 0.7mm pitch)		
Memory			
Memory	Up to 16GB, 6.4 GT/s × 32 LPDDR5 (with inline ECC)		
Storage	Up to 256GB eMMC 5.1		
External Storage	MircoSD Slot		
Operating System			
BSP	Yocto Linux, Debian, FreeRTOS, Zephyr, NXP Real Time Edge, NXP eIQ®, Matter		
Security			
SOC	EdgeLock® Secure Enclave		
External Safety	SE050 (Optional), SIL-2 (IEC61508) (Optional)		
Multimedia			
VPU	Decoder: H.264, H.265, 4Kp60 Encoder: H.264, H.265, 4Kp60		
Display	Dual Channel LVDS interface up to 1080p60 1x MIPI DSI (4-Lane) up to 3840x1440p60 (Optional) 7" or 10" LCD with I2C touch 1x HDMI Type-A (Optional)		
Audio	Audio Codec SGT5000, 3.5mm Audio Jack (Line In, Mic) 10W Max Speaker Header		
Expansion Slot		Ara2-M2-16G (Ara240 DNPU) M.2 Key M 2280 Features	
Display	M.2 Key B for Display Signal Expansion (LVDS0/DSI0, LVDS1, PWM, I2C, GPIO)	AI Performance	40 TOPS
Camera	2x 4-lane MIPI CSI, Cam CLK, I2C, SPI, GPIO	Host Interface	PCIe Gen3 x1
M.2 Key E 2230	1x 1-lane PCIe Gen 3.0, SDIO, USB 2.0, UART (TX,RX,CTS,RTS), I2S, I2C	Memory Interface	16GB LPDDR4
M.2 Key B 2280 (USB 3.0, Nano SIM Card)	LTE/5G	Power Consumption	3W (Typical), 12W (TDP)
Audio	FFC (2x I2S,I2C, 4x GPIO)	Operating Temperature	0 ~ 70°C
		OS Support	Yocto Linux
		AI Frameworks	Llama 2, LLava, TensorFlow, PyTorch
Connectivity			
Wireless	Wi-Fi 6/7, Bluetooth 5.3 (Optional)		
Networking	2x 1 GbE with PHY, TSN & IEEE 1588 support (1× 25W PoE) 1x 10 GbE		
USB	4x Type-A USB 3.0, Type-A USB 2.0, USB 2.0 OTG Type-C		
Stacked D-SUB	Upper Stack: RS-232/422/485 (Software selectable)		
	Lower Stack: 2x CAN		
Real Time Clock	12mm Diameter Coin Battery holder (Optional)		
Debugging	2x UART, JTAG		
Power	5V DC +/-5%, USB Type-C with PD (65W, 20V Maximum) or PoE (25W)		
Physical			
Form Factor	Carrier Board - 170mm x 170mm (Mini ITX) SMARC SOM - 82mm x 50mm		
Buttons	Power, Reset, Force Recovery		
Operating Temperature	Commercial/Industrial (Optional)		
Ordering Information and Enquiries			
Please contact sales@apc-vest.com			

