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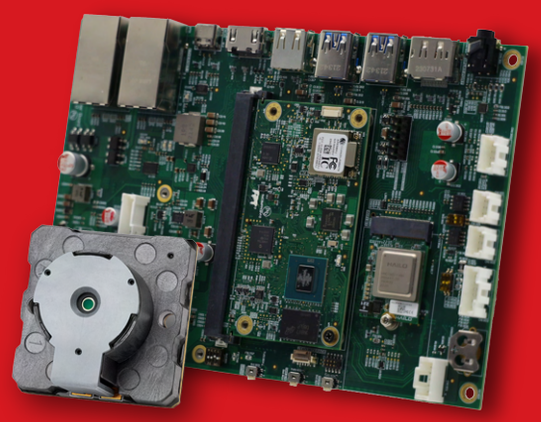
VEST Embedded Vision Kit

VEST and Teledyne e2v have collaborated to launch an embedded vision kit for scanning, detection, and identification purposes, relevant for a diverse range of applications. The kit features Teledyne e2v's Topaz global shutter FSI CMOS image sensor technology, integrated with NXP's iMX8M Plus processor. This combination enables excellent high-speed image capture with low noise performance and multi-focus capability for sharp images.



Edge Computing

Embedded Vision

Rich Multimedia

Industrial 4.0

ABOUT OUR **PRODUCT**

The VEST Embedded Vision kit utilizes Teledyne e2v's state-of-the-art Topaz front-side illuminated (FSI) CMOS image sensor, featuring a 2.5µm x 2.5µm pixel size and available in either 2 Megapixel (1920 x 1080) or 1.5 Megapixel (1920 x 800) resolutions. The sensor offers an F/4 aperture with a 45° horizontal field of view (HFOV), and comes in monochrome or colour versions. It achieves frame rates of 100fps at 8-bit or 65fps at 10-bit for the 2 Megapixel resolution. Equipped with multi-focus and autofocus algorithms, the system easily optimizes for sharp images.

The NXP iMX8M Plus is a powerful processor capable of handling two MIPI CSI inputs, enabling exploration of stereo vision applications. Its integrated ISP (Image Signal Processor) allows for further fine-tuning of images. The processor also boasts a 2.3 TOPS NPU (Neural Processing Unit) for AI/ML development, utilizing the NXP eIQ ML framework. The Embedded Vision kit provides all necessary industrial bus connectivity, including Ethernet ports with TSN (Time-Sensitive Networking).

The vision kit can display images or information on dual displays. When connected to a touchscreen display, the system can process input instructions, providing a human-machine interface (HMI) for the system.

This application kit is suitable for diverse range of applications, such as

- Barcode and OCR Scanning
- Industrial Automation: Scanning for Tracking, Inspection, Industry 4.0
- Robotics, Drones and UAV
- Logistics
- Embedded Vision Systems
- IoT Edge Devices
- Auto ID Systems

Key Features

- Low noise global shutter image sensor providing sharp image of moving objects
- Multi-focus for sharp images over wide distances
- 2 x MIPI CSI ports for stereo vision applications
- Video processing for encoding and decoding
- Option for Hailo AI Accelerator card via PCIe M.2 key connector

Support

debian Qt TELEDYNE Teledyne e2v HAILO Empowering Intelligence SMARC module Viziotix

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VEST Teledyne e2v Vision Kit (NXP iMX8M Plus)

CPU Details	
CPU	Up to 4x Cortex-A53 @ 1.8GHz, Cortex-M7 @ 400 MHz
GPU	16 GLOPS (high precision) OpenGL ES 3.1/3.0, Vulkan, Open CLTM 1.2FP, Open VGTM 1.1
NPU	NPU operating at up to 2.3 TOPS

Memory	
Memory	2GB 32-bit LPDDR4-3000
Storage	16GB eMMC 5.1
External Storage	Micro SD 3.0 Socket Push-Push

Operating System/Driver	
BSP	Yocto Linux, Ubuntu, and Android
Driver	NXP Real time Edge Software, NXP eIQ, Optimom2.0, Optimom 1.5, HailoRT

Multimedia	
Video Encoder	1080p60, H.264, VP8
Video Decoder	1080p60, H.264 / H.265, VP9, VP8
Camera	2x MIPI CSI (4 lane each), 2x ISP
Audio	Headphone Jack with microphone input, header for Speaker L&R up to 10W / channel into 8 ohm load
Display and Touch	LVDS connector with backlight for LCD Panel, I2C Touch Connector, HDMI 2.0a TX

CMOS Image Sensor	Optimom 2.0 (Multi Focus)	Optimom 1.5 (Multi Focus)
Active Pixels	1920 (H) x 1080 (V)	1920 (H) x 800 (V)
Pixel Pitch	2.5µm	2.5µm
Shutter Type	Global	Global
F# (aperture)	F/4.0	F/4.0
Chromaticity	Mono / Color	Mono / Color
Minimum Working Distance	10 cm	10 cm
Frame Rate at Full Resolution	100fps @ 8bit, 65fps @ 10 bit	130fps @ 8bit, 80fps @ 10 bit
Temporal Noise	3.5e-	3.5e-
Maximum S/N Ratio	37.4 dB	37.4 dB

Connectivity	
Wireless	Dual Band WiFi 802.11a/b/g/n/ac 2x2 MIMO + Bluetooth 5.2
Networking	1x 10/100/1000 BaseT RJ45 Ethernet with PoE, 1x 10/100/1000 BaseT RJ45 Ethernet with PoE and TSN Support
USB	1x USB2.0/3.0 Type C with PD, 2x USB 2.0/3.0 Type A, 1x USB 2.0 Type A
Serial Communication	RS485 with 120 ohm Termination (default) or RS232, 2x CAN FD, 3x UART
I/O Expansion	M.2 KeyB (4-lane 2x MIPI CSI < 2x I2C, 2x UART, 2x SPI, GPIO) M.2 KeyB (LVDS 4/8 Lane default or MIPI DSI (4 lane), 2x I2C, 2x UART) PCIe M.2 Key E 2230 (1 Lane PCIe Gen3.0, USB, SDIO, I2S, UART, GPIO)
Debugging & Programming	2x Debug-UART Header, 2.54mm Pitch 5pin header, JTAG-1.27mm Pitch 2x5 Pin Header
Buttons And Indicators	1x Power Button, 1x Force Recovery, 1x System Reset, LEDs for PoE operation, LEDs for USB Operation
Power	PoE (25W/channel), USB-C (60W)

Physical	
Form Factor	180mm x 120mm (including SMARC SOM)
Operating Temperature	Commercial / Industrial (optional)

Ordering Information		
Part No	VEV8MPSMXTOB20	VEV8MPSMXTOB15
	VEV8MPSMXTOC20	

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