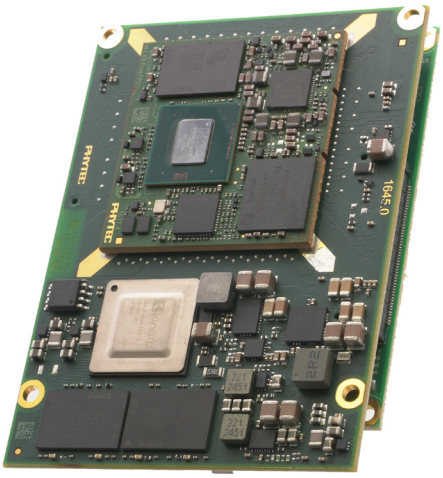
phyVIP-i.MX 8M Plus FPSC

Vision Intergration Platform

phyVIP with i.MX 8M Plus: Compact platform for series-production-ready vision systems

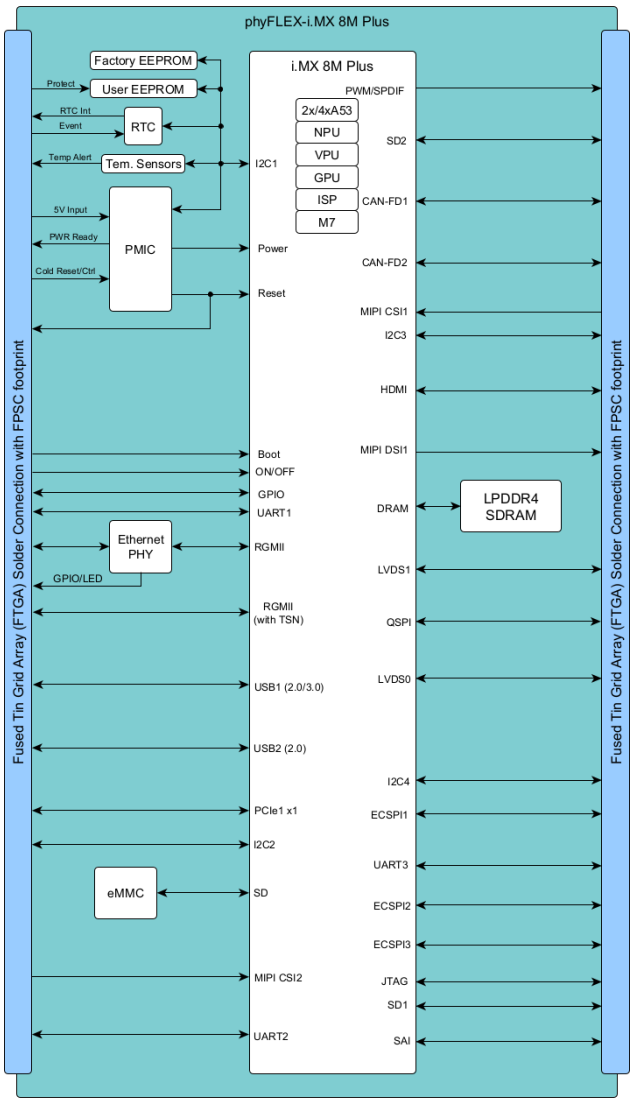
phyVIP is a modular vision integration platform for customized embedded vision systems. The platform combines a production-ready base board with a project-specific connector board, thus separating the standardized vision base from the application-specific adaptation. The validated base board integrates key hardware functions such as the processor platform, power supply, camera connectivity, industrial interfaces, and scalable AI acceleration. This eliminates the need to develop a new carrier design for each new vision project. For compact, production-ready vision systems, phyVIP is available based on the phyFLEX-i.MX 8M Plus; for higher computing power and scalability requirements, the platform is also available with the phyFLEX-i.MX 95. Depending on the configuration, phyVIP supports AI performance from 2,3 TOPS to 40 TOPS.



FPSC

The compact base board, measuring 60 mm × 73 mm, is designed for industrial series production and features passive cooling. It integrates the 12 to 36 V wide-range power supply, industrial interfaces, and camera connectivity onto a validated hardware platform. This eliminates a significant portion of the traditional carrier board design. Onboard industrial I/O interfaces such as GbE, CAN FD, USB, and RS485, as well as WLAN, Bluetooth, and TPM, enable its use in networked industrial vision systems.

The base configuration utilizes the integrated NPU of the phyFLEX-i.MX 8M Plus with up to 2,3 TOPS. For higher AI workloads, the system can be expanded with an on-board Hailo-8 NPU with 26 TOPS. Alternatively, an external NXP ARA240 DNPU with up to 40 TOPS is available, which connects via the base board. This scalable concept enables different AI performance levels without changing the platform architecture.



Highlights

- Modular platform concept with i.MX 8 M Plus
- Passively cooled, suitable for series production
- Quad-Core Arm® Cortex®-A53 with 1,8 GHz
- Integrated arm® Cortex®-M7 (800 MHz)
- Scalable AI expansion levels: From 2,3, through 26 up to 40 TOPS
- 2x phyCAM-M MIPI-CSI-2 camera inputs
- Integrated 12-36 V wide range power supply
- Industrial I/O: including GbE, CAN FD, USB, RS485
- WLAN, Bluetooth, TPM on-board

https://www.phytec.de/produkte/system-on-modules/phyflex-imx-8m-plus-fpsc/

Technical Data

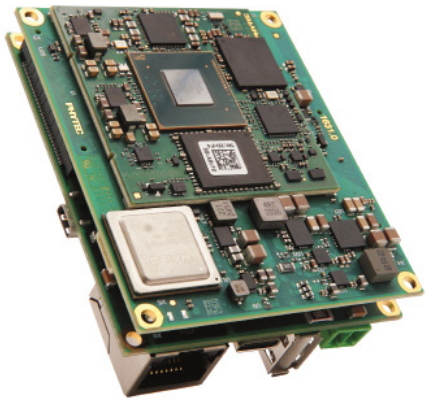
Module Configuration

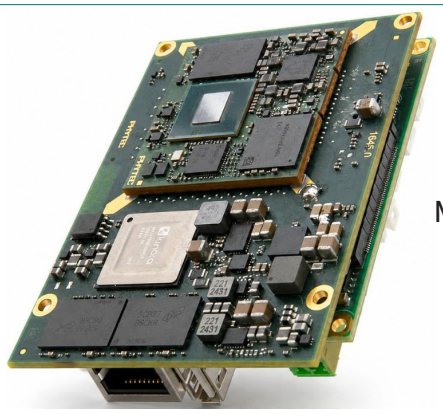
	Core (Intergrated NPU)	Edge (Hailo-8)	Max (Ara240)
Processor	NXP i.MX 8M Plus	NXP i.MX 8M Plus	NXP i.MX 8M Plus
Core	Quad-core Arm® Cortex®-A53	Quad-core Arm® Cortex®-A53	Quad-core Arm® Cortex®-A53
Bit width	64-bit	64-bit	64-bit
Additional Core	Arm® Cortex®-M7	Arm® Cortex®-M7	Arm® Cortex®-M7
Clock frequency	4x 1.6 GHz (A53), 800 MHz (M7)	4x 1.6 GHz (A53), 800 MHz (M7)	4x 1.6 GHz (A53), 800 MHz (M7)
Graphics	GC7000, 3D GPU (2 shader, 16 GFLOPs GC7000UL OpenCL/GL/Vulkan), 2D GPU (GC520)	GC7000, 3D GPU (2 shader, 16 GFLOPs GC7000UL OpenCL/GL/Vulkan), 2D GPU (GC520)	GC7000, 3D GPU (2 shader, 16 GFLOPs GC7000UL OpenCL/GL/Vulkan), 2D GPU (GC520)
Video Processing	1080p60 H.265/4 Decode and Encode	1080p60 H.265/4 decode and encode	1080p60 H.265/4 decode and encode
ISP	deBayering, AEC, AGC, HDR, AWB, AF,Dewarping, 1x 4kp30 or 2x 1080p60	deBayering, AEC, AGC, HDR, AWB, AF,Dewarping, 1x 4kp30 or 2x 1080p60	deBayering, AEC, AGC, HDR, AWB, AF,Dewarping, 1x 4kp30 or 2x 1080p60
AI/ML	On-chip NPU with 2.3 TOPS	On-chip NPU with 2.3 TOPS + Hailo 8 NPU (26 TOPS)	On-chip NPU with 2.3 TOPS + Ara240 NPU (40 TOPS)
HW Security	Secure boot, TrustZone, SNVS, SRTC, SJC, TPM	Secure boot, TrustZone, SNVS, SRTC, SJC, TPM	Secure boot, TrustZone, SNVS, SRTC, SJC, TPM
EXT. MEMORY			
eMMC	8 GB	8 GB	8 GB
RAM	2 GB	2 GB	2 GB
EEPROM	8 kB	8 kB	
PHYSICAL PROPERTIES			
Dimensions	60 mm x 73 mm	60 mm x 73 mm	60 mm x 83 mm
Operating temperature	-40 °C to +85 °C	-40 °C to +85 °C	-40 °C to +85 °C
PCB connection	2x Samtec BTH-050-01-L-D-A-TR	2x Samtec BTH-050-01-L-D-A-TR	2x Samtec BTH-050-01-L-D-A-TR
SOFTWARE			
Operating system	Linux (Yocto based)	Linux (Yocto based)	Linux (Yocto based)

Module Interfaces

FPSC feature set	Gamma 1.1	Gamma 1.1	Gamma 1.1
FPSC subclasses	1, 2, 3	1, 2, 3	1, 2, 3
Ethernet	2x 10/100/1000 Mbit/s (1x TSN Support, 1x RGMII)	2x 10/100/1000 Mbit/s (1x TSN Support, 1x RGMII)	2x 10/100/1000 Mbit/s (1x TSN Support, 1x RGMII)
USB	1x USB 3.0, 1x USB 2.0 (all Host/Devices)	1x USB 3.0, 1x USB 2.0 (all Host/Devices)	1x USB 3.0, 1x USB 2.0 (all Host/Devices)
UART	1x	1x	
CAN	2x CAN FD	2x (CAN FD)	2x (CAN FD)
PCIe	1x 1-lane (Gen3)	1x 1-lane (Gen3)	1x 1-lane (Gen3)
I²C	2x	2x	2x
SPI	1x SPI, 1x SPI 3	1x SPI, 1x SPI 3	1x SPI, 1x SPI 3
MMC/SD/SDIO	1x micro SD Card Slot	1x micro SD Card Slot	1x micro SD Card Slot
Display	1x LVDS, 1x HDMI	1x LVDS, 1x HDMI	1x LVDS, 1x HDMI
Camera	2x phyCAM-M (MIPI CSI-2 4 lanes), up to 1x 12 MP or 2x 2 MP	2x phyCAM-M (MIPI CSI-2 4 lanes), up to 1x 12 MP or 2x 2 MP	2x phyCAM-M (MIPI CSI-2 4 lanes), up to 1x 12 MP or 2x 2 MP
Audio	1x SAI	1x SAI	1x SAI
WLAN / Bluetooth	Wi-Fi 6 2.4 + 5 GHz, Bluetooth BLE 5.4 ext. Antenna	Wi-Fi 6 2.4 + 5 GHz, Bluetooth BLE 5.4 ext. Antenna	Wi-Fi 6 2.4 + 5 GHz, Bluetooth BLE 5.4 ext. Antenna
Debugging	UART	UART	UART
GPIO	2	2	2
RTC	i.MX 8 MP internal and onboard on-chip 1 on-board	i.MX 8 MP internal and onboard on-chip 1 on-board	1x i.MX 8 MP on-chip 1 on-board

With Edge (Hailo-8)





With Max (Ara240)