phyVIP-i.MX 95 FPSC

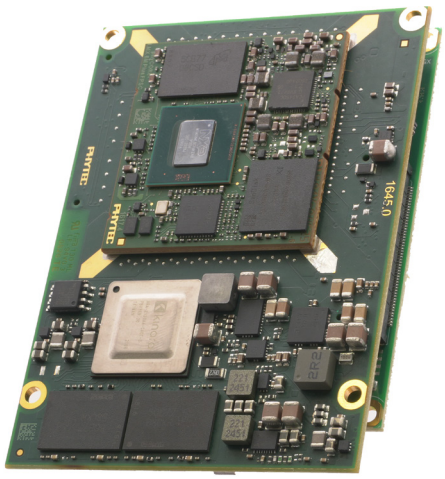
Vision Intergration Platform

phyVIP with i.MX 95: Powerful platform for scalable vision systems

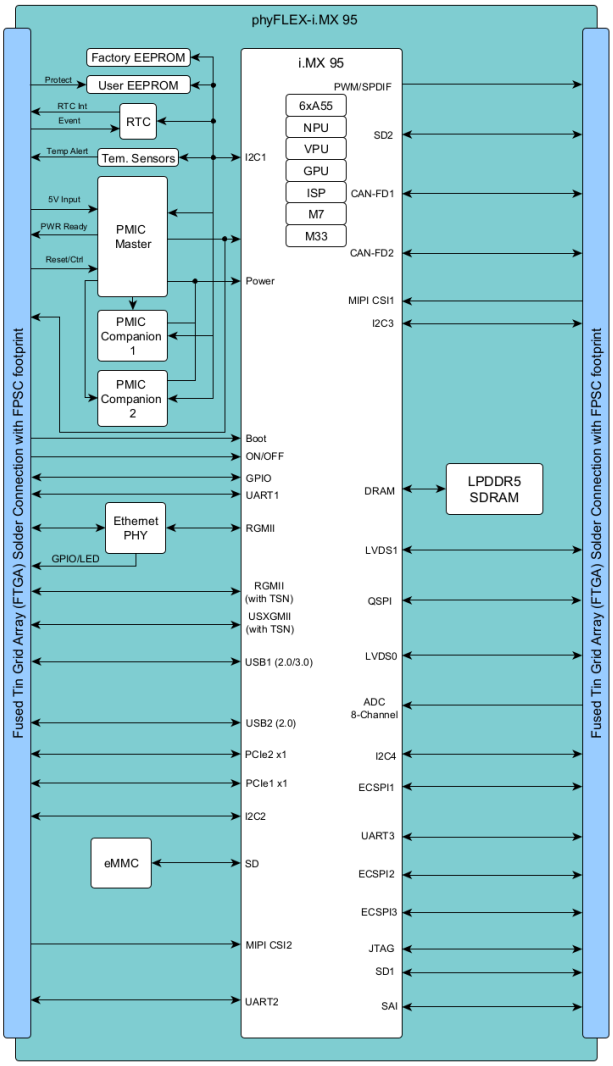
phyVIP is a modular vision integration platform for customized embedded vision systems. The platform combines a production-ready base board with a project-specific connector board, thus separating the standardized vision base from the application-specific adaptation. The validated base board integrates 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 particularly high-performance vision applications, phyVIP is available based on the phyFLEX-i.MX 95; alternatively, the platform is also available with the phyFLEX-i.MX 8M Plus for more compact vision systems. Depending on the configuration, phyVIP supports AI performance from 2,3 TOPS to 40 TOPS.

Depending on the AI configuration, the compact base board is available in 60 mm × 73 mm or 60 mm × 83 mm formats, passively cooled, and designed for industrial series production. It integrates the 12 to 36 V wide-range power supply, camera connection, and industrial interfaces on a validated hardware platform. Onboard industrial I/O such as GbE, CAN FD, USB, and RS485, as well as WLAN, Bluetooth, and TPM, enable its use in networked industrial vision systems.

phyVIP with NXP i.MX 95 is designed for vision systems with higher demands for computing power, AI acceleration, and scalability. For demanding edge AI workloads, the platform can be combined with an externally connected NXP ARA240 DNPU, achieving AI performance of up to 40 TOPS. Scaling is achieved through the appropriate processor and AI configuration, while the basic principle of base board and connector board remains unchanged.



FPSC



Highlights

- Modular platform concept with i.MX 95
- Passively coolable & suitable for series production
- Hexa Core Arm® Cortex®-A55 with 2 GHz
- Arm® Cortex®-M33 (333 MHz) + -M7 (800 MHz)
- Integrated eIQ Neutron NPU with 2 TOPS
- Additional Mali-G310 V2 GPU
- 2x phyCAM-M MIPI-CSI-2 camera inputs
- Integrated 12-36 V wide range power supply
- Industrial I/O: GbE, CAN FD, USB, RS485 and much more
- Wi-Fi, Bluetooth, TPM on board

https://www.phytec.eu/en/produkte/embedded-vision/phyvip-vision-integration-platform-imx-95/

Technical Data

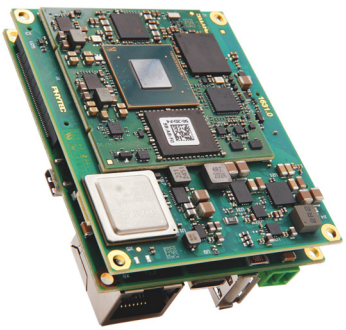
Module Configuration

	Core (Intergrated NPU)	Edge (Hailo-8)	Max (Ara240)
Processor	NXP i.MX 95	NXP i.MX 95	NXP i.MX 95
Core	Hexa-core Arm Cortex-A55	Hexa-core Arm Cortex-A55	Hexa-core Arm Cortex-A55
Bit width	64-bit	64-bit	64-bit
Additional Core	Single-Core Arm Cortex-M33, Single Core Arm Cortex-M7	Single-Core Arm Cortex-M33, Single Core Arm Cortex-M7	Single-Core Arm Cortex-M33, Single Core Arm Cortex-M7
Clock frequency	6x 1.8 GHz (A55), 333 MHz (M33), 800 MHz (M7)	6x 1.8 GHz (A55), 333 MHz (M33), 800 MHz (M7)	6x 1.8 GHz (A55), 333 MHz (M33), 800 MHz (M7)
Graphics	Mali-G310 V2 GPU (51 GFLOPs)	Mali-G310 V2 GPU (51 GFLOPs)	Mali-G310 V2 GPU (51 GFLOPs)
Video Processing	4kp60 H.265/4 decode and encode	4kp60 H.265/4 decode and encode	4kp60 H.265/4 decode and encode
ISP	deBayering, AEC, AGC, HDR, AWB, AF, CCM, DRC, Dewarping, 1x 4kp60, 2x4kp30, 4x 1080p60 or 8x 1080p30	deBayering, AEC, AGC, HDR, AWB, AF, CCM, DRC, Dewarping, 1x 4kp60, 2x4kp30, 4x 1080p60 or 8x 1080p30	deBayering, AEC, AGC, HDR, AWB, AF, CCM, DRC, Dewarping, 1x 4kp60, 2x4kp30, 4x 1080p60 or 8x 1080p30
AI/ML	eIQ Neutron NPU mit 2 TOP/s	eIQ Neutron NPU mit 2 TOP/s + Hailo 8 NPU (26 TOPS)	eIQ Neutron NPU mit 2 TOP/s + Ara240 NPU (40 TOPS)
HW Security	Secure boot, TrustZone, SNVS, SRTC, EdgeLock secure enclave, TPM	Secure boot, TrustZone, SNVS, SRTC, EdgeLock secure enclave, TPM	Secure boot, TrustZone, SNVS, SRTC, EdgeLock secure enclave, TPM
EXT. MEMORY			
eMMC	64 GB	64 GB	64 GB
RAM	8 GB	8 GB	8 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 RGMII) 1x 10 GbE USXGMII (all with TSN)	2x 10/100/1000 Mbit/s (1x RGMII) 1x 10 GbE USXGMII (all with TSN)	2x 10/100/1000 Mbit/s (1x RGMII) 1x 10 GbE USXGMII (all with TSN)
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 LVDS	1x LVDS
Camera	2x phyCAM-M (MIPI CSI-2 4 lanes), up to 2x 4kp60 virtual channels	2x phyCAM-M (MIPI CSI-2 4 lanes), up to 2x 4kp60 virtual channels	2x phyCAM-M (MIPI CSI-2 4 lanes), up to 2x 4kp60 virtual channels
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 95 internal on-chip 1 on-board	i.MX 95 internal on-chip 1 on-board	i.MX 95 internal on-chip 1 on-board

With Edge (Hailo-8)





With Max (Ara240)