

# NXP i.MX 8M Plus for Industry 4.0 & Beyond

## conga-SMX8-Plus



- NXP i.MX 8M Plus 14nm FinFET processor series  
4-core ARM Cortex-A53 / Cortex-M7 + NPU
- Enhanced AI, Machine Learning and Vision capabilities  
featuring NPU and integrated camera ISP's
- Ultra low power architecture with 2-5W
- Extended longevity up to 15 years
- Temperature range up to -40°C .. +85°C



<b>Form factor</b>	SMARC Specification 2.1				
<b>CPU SoC</b>	<b>NXP i.MX 8M Plus Processor Cores</b>				
		<b>ARM Cortex-A53</b>	<b>ARM Cortex-M7</b>	<b>NPU</b>	<b>GPU</b>
	i.MX 8M Plus Quad (consumer) i.MX 8M Plus Quad (industrial)	4x @ 1.8 GHz 64bit 4x @ 1.6 GHz 64bit	1x @ 800MHz 1x @ 800MHz	up to 2.3 TOPS up to 2.3 TOPS	GC7000UL/GC520L GC7000UL/GC520L
<b>DRAM</b>	Up to 6 GByte onboard LPDDR4 memory   4000 MT/s   inline ECC				
<b>Ethernet</b>	2x Gbit Ethernet with IEEE 1588 Support (1x with TSN support)				
<b>I/O Interfaces</b>	1x dual-role USB 2.0   2x USB 2.0   2x USB 3.0   1x SDIO 3.0   1x PCIe 3.0   2x I <sup>2</sup> C   1x SPI 4x UART (2x with Handshake)   2x CAN FD   14x GPIO   optional soldered M.2 1216 WiFi/BT				
<b>Mass Storage</b>	eMMC 5.1 up to 128 GByte				
<b>Sound</b>	2x I <sup>2</sup> S   HiFi 4 DSP				
<b>Graphics</b>	Integrated in SoC   GC7000UL 3D graphics with 2 high performance vec4 shaders   GC520L 2D graphic   supports up to 2x1080p60 or 1x4kp30 display resolution   Up to 3 independent displays VPU up to 1080p60 H.265/H.264 decoding and encoding   OpenGL ES 3.1   Vulkan VX extensions   OpenCL 1.2 FP   OpenVG 1.1				
<b>Video Interfaces</b>	1x dual channel 24-bit LVDS   1x HDMI 2.0a   1x MIPI-DSI 4-lane shared with second LVDS channel 2x MIPI-CSI 4-lanes   2x integrated Image Signal Processor (ISP) for cameras with up to 12 MP resolution				
<b>Features</b>	Watchdog Timer   Cortex-A53 Console   optional JTAG debug interface   High Precision Real Time Clock				
<b>AI &amp; Machine Learning</b>	Neural Processing Unit (NPU) with up to 2.3 TOPS   NXP eIQ ML SW tools and libraries				
<b>Security</b>	Cryptographic Acceleration and Assurance Module   Resource Domain Controller   ARM®TrustZone® High Assurance Boot support   SHE, Encryption Engine AES-128, AES-256, 3DES, RC4, RSA4096, TRNG SHA-1, SHA-2, SHA-256, MD-5   RSA-1024, 2048, 3072, 4096 and secure key storage   side channel attack resistance				
<b>Boot Loader</b>	U-Boot boot loader				
<b>Operating Systems</b>	Linux, Yocto Project   Android				
<b>Power Consumption</b>	Low power Cortex-A53 / Cortex-M7   typ. application 2-6W @ 5V				
<b>Temperature Range</b>	Operating Temperature Range:		0 to +60°C commercial grade -40 to +85°C industrial grade		
	Storage Temperature Range:		-40 to +85°C		
<b>Humidity</b>	Operating: 10 - 90% r. H. non cond.		Storage: 5 - 95% r. H. non cond.		
<b>Size</b>	82 x 50 mm (3,23" x 1,97")				

# conga-SMX8-Plus | Block Diagram



\* Assembly Option  
 \*\* Shared with Console

# conga-SMX8-Plus | Order Information

Article	PN	Description
conga-SMX8-Plus/QC-4G eMMC16	051300	SMARC module with low-power 14nm NXP i.MX 8M Plus Quad processor. Features 4x ARM Cortex-A53 @ 1.8GHz +1x ARM Cortex-M7 + NPU, 4GB onboard LPDDR4 memory and 16GB onboard eMMC. Commercial grade temperature range from 0°C to 60°C.
conga-SMX8-Plus/QC-2G eMMC16	051301	SMARC module with low-power 14nm NXP i.MX 8M Plus Quad processor. Features 4x ARM Cortex-A53 @ 1.8GHz +1x ARM Cortex-M7 + NPU, 2GB onboard LPDDR4 memory and 16GB onboard eMMC. Commercial grade temperature range from 0°C to 60°C.
conga-SMX8-Plus/i-QC-4G eMMC16	051320	SMARC module with low-power 14nm NXP i.MX 8M Plus Quad processor. Features 4x ARM Cortex-A53 @ 1.6GHz +1x ARM Cortex-M7 + NPU, 4GB onboard LPDDR4 memory and 16GB onboard eMMC. Industrial grade temperature range from -40°C to 85°C.
conga-SMX8-Plus/i-QC-2G eMMC16	051321	SMARC module with low-power 14nm NXP i.MX 8M Plus Quad processor. Features 4x ARM Cortex-A53 @ 1.6GHz +1x ARM Cortex-M7 + NPU, 2GB onboard LPDDR4 memory and 16GB onboard eMMC. Industrial grade temperature range from -40°C to 85°C.
conga-SMX8-Plus/CSP-B	051350	Passive cooling solution for SMARC module conga-SMX8-Plus with NXP i.MX 8M Plus ARM processor. All standoffs are with 2.7mm bore hole.
conga-SMX8-Plus/HSP-B	051351	Heat spreader solution for SMARC module conga-SMX8-Plus with NXP i.MX 8M Plus ARM processor. All standoffs are with 2.7mm bore hole.
SMARC/CSA Adapter	050060	Active cooling solution adapter for SMARC modules used in combination with module heat spreader.
conga-SEVAL	007010	Evaluation carrier board for SMARC modules.
conga-SMC1/SMARC-ARM	020750	3.5" carrier board for congatec SMARC modules based on NXP i.MX ARM architecture.

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