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
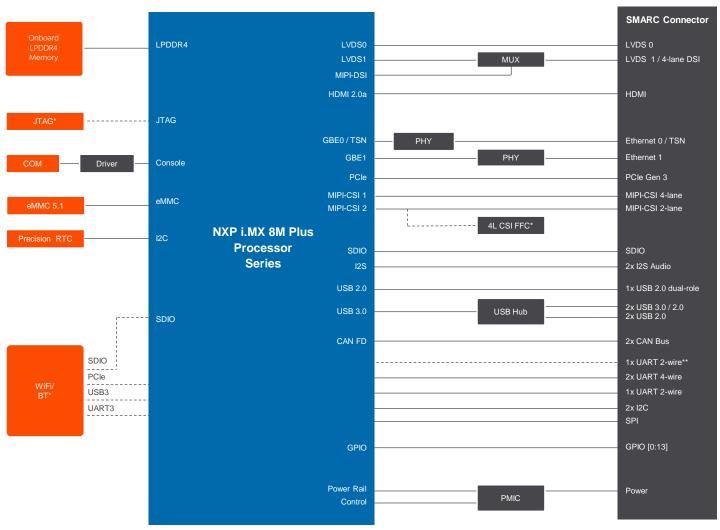
- Temperature range up to -40°C .. +85°C

Form factor	SMARC Specification 2.1				
CPU SoC	**NXP i.MX 8M Plus Processor Cores**				
		ARM Cortex-A53	**ARM Cortex-M7**	**NPU**	**GPU**
	i.MX 8M Plus Quad (consumer)	4x @ 1.8 GHz 64bit	1x @ 800MHz	up to 2.3 TOPS	GC7000UL/GC520L
	i.MX 8M Plus Quad (industrial)	4x @ 1.6 GHz 64bit	1x @ 800MHz	up to 2.3 TOPS	GC7000UL/GC520L
DRAM	Up to 6 GByte onboard LPDDR4 memory | 4000 MT/s | inline ECC				
Ethernet	2x Gbit Ethernet with IEEE 1588 Support (1x with TSN support)				
I/O Interfaces	1x dual-role USB 2.0 | 2x USB 2.0 | 2x USB 3.0 | 1x SDIO 3.0 | 1x PCIe 3.0 | 2x I²C | 1x SPI 4x UART (2x with Handshake) | 2x CAN FD | 14x GPIO | optional soldered M.2 1216 WiFi/BT				
Mass Storage	eMMC 5.1 up to 128 GByte				
Sound	2x I²S | HiFi 4 DSP				
Graphics	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 | Vulcan VX extensions | OpenCL 1.2 FP |OpenVG 1.1				
Video Interfaces	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				
Features	Watchdog Timer | Cortex-A53 Console | optional JTAG debug interface | High Precision Real Time Clock				
AI & Machine Learning	Neural Processing Unit (NPU) with up to 2.3 TOPS | NXP eIQ ML SW tools and libraries				
Security	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				
Boot Loader	U-Boot boot loader				
Operating Systems	Linux, Yocto Project | Android				
Power Consumption	Low power Cortex-A53 / Cortex-M7 | typ. application 2-6W @ 5V				
Temperature Range	Operating Temperature Range:	0 to +60°C commercial grade -40 to +85°C industrial grade			
	Storage Temperature Range:	-40 to +85°C			
Humidity	Operating: 10 - 90% r. H. non cond.	Storage: 5 - 95% r. H. non cond.			
Size	82 x 50 mm (3,23" x 1,97")				

conga-SMX8-Plus | Block Diagram

Onboard LPDDR4 Memory — LPDDR4

JTAG* — JTAG

COM — Driver — Console

eMMC 5.1 — eMMC

Precision RTC — I2C

SDIO

WiFi/BT*
SDIO
PCIe
USB3
UART3

NXP i.MX 8M Plus Processor Series

LVDS0
LVDS1
MIPI-DSI
HDMI 2.0a
GBE0 / TSN
GBE1
PCIe
MIPI-CSI 1
MIPI-CSI 2
SDIO
I2S
USB 2.0
USB 3.0
CAN FD
GPIO
Power Rail Control

MUX
PHY
PHY
4L CSI FFC*
USB Hub
PMIC

SMARC Connector

LVDS 0
LVDS 1 / 4-lane DSI
HDMI
Ethernet 0 / TSN
Ethernet 1
PCIe Gen 3
MIPI-CSI 4-lane
MIPI-CSI 2-lane
SDIO
2x I2S Audio
1x USB 2.0 dual-role
2x USB 3.0 / 2.0
2x USB 2.0
2x CAN Bus
1x UART 2-wire**
2x UART 4-wire
1x UART 2-wire
2x I2C
SPI
GPIO [0:13]
Power

* Assembly Option
** Shared with Console

congatec

www.congatec.com

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.