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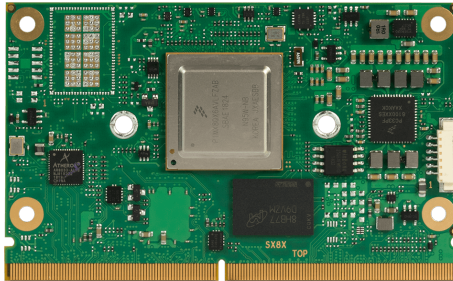


# Datasheet

## congatec

### conga-SMX8X

SMARC 2.1 module based on Ultra Low Power NXP i.MX8-X series



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# ULTRA LOW POWER NXP i.MX 8X SERIES

## conga-SMX8-X



- NXP i.MX 8X processor series with ARM Cortex-A35 / M4F core complex
- Ultra low power architecture with 2-5W
- Highest reliability and improved virtualization
- Support for up to 2 independent HD displays
- Extended longevity up to 15 years
- Temperature range up to -40°C .. +85°C



<b>Form factor</b>	SMARC Specification 2.1			
<b>CPU</b>	<b>NXP i.MX 8X ARM Processor Cores</b>			
		<b>ARM Cortex-A35</b>	<b>ARM Cortex-M4F</b>	<b>GPU</b>
	i.MX 8QuadXPlus i.MX 8DualXPlus	4x Cortex-A35 @ 1.2GHz 2x Cortex-A35 @ 1.2GHz	1x Cortex-M4F @ 264MHz 1x Cortex-M4F @ 264MHz	1x GC7000Lite 1x GC7000Lite
<b>DRAM</b>	Up to 4 GByte onboard LPDDR4 memory   2400 MT/s			
<b>Ethernet</b>	Up to 2x Gbit Ethernet with IEEE 1588 support			
<b>I/O Interfaces</b>	Up to 5x USB 2.0 (1x shared with USB OTG client)   up to 2x USB 3.0   1x SDIO 3.0   1x PCIe 3.0   I <sup>2</sup> C Bus   1x SPI   1x QSPI up to 4x UART (2x with Handshake (1x shared with FlexCAN))   2x FlexCAN   GPIOs   optional soldered M.2 1216 WiFi/BT			
<b>Mass Storage</b>	eMMC 5.1 up to 128 GByte			
<b>Sound</b>	Up to 2x I <sup>2</sup> S   optional processor with Tensilica® HiFi 4 DSP			
<b>Graphics</b>	Integrated in NXP i.MX 8X Series GT7000Lite multimedia GPU VPU up to 4K h.265 dec / 1080p h.264 enc/dec   3D Graphics with up to 4 high performance vec4 shaders and 16 execution units   up to 2 independent displays   OpenGL ES 3.1   Vulkan VX extensions   OpenCL 1.2 EP   OpenVG 1.1			
<b>Video Interfaces</b>	1x dual channel or 2x single channel LVDS 24 bit   2x MIPI-DSI with 4-lanes shared with LVDS   1x MIPI-CSI 4-lanes			
<b>Features</b>	Watchdog Timer   I <sup>2</sup> C bus 400 kHz   Cortex-A35 Console   optional JTAG debug interface   High Precision Real Time Clock			
<b>Virtualization</b>	Hardware Virtualization with Domain Separation   Multiple Operating System Support			
<b>Security</b>	High Assurance Boot support, SHE   Inline Encryption Engine (AES-128)   TRNG, AES-128, AES-256, 3DES, ARC4, RSA4096, SHA-1, SHA-2, SHA-256, MD-5   RSA-1024, 2048, 3072, 4096 and secure key storage			
<b>Boot Loader</b>	U-Boot boot loader			
<b>Operating Systems</b>	Linux   Yocto Linux   Android			
<b>Power Consumption</b>	Ultra low power Cortex-A35   typ. application 2-5W @ 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 condensing	
<b>Size</b>	82 x 50 mm (3,23" x 1,97")			

# conga-SMX8-X | Block Diagram



\* Assembly Option

# conga-SMX8-X | Order Information

Article	PN	Description
conga-SMX8-X/QXP-4G eMMC16	051100	SMARC 2.0 module with ultra low power NXP i.MX 8QuadXPlus processor with 4x ARM Cortex-A35 and 1x ARM Cortex-M4F, 4GB onboard LPDDR4 memory and 16GB onboard eMMC. Commercial temperature range.
conga-SMX8-X/DXP-2G eMMC16	051101	SMARC 2.0 module with ultra low power NXP i.MX 8DualXPlus processor with 2x ARM Cortex-A35 and 1x ARM Cortex-M4F, 2GB onboard LPDDR4 memory and 16GB onboard eMMC. Commercial temperature range.
conga-SMX8-X/QXP-2G eMMC16	051103	SMARC 2.0 module with ultra low power NXP i.MX 8QuadXPlus processor with 4x ARM Cortex-A35 and 1x ARM Cortex-M4F, 2GB onboard LPDDR4 memory and 16GB onboard eMMC. Commercial temperature range.
conga-SMX8-X/QXP-4G eMMC16 SPB228	051104	SMARC 2.0 module with ultra low power NXP i.MX 8QuadXPlus processor with 4x ARM Cortex-A35 and 1x ARM Cortex-M4F, 4GB onboard LPDDR4 memory and 16GB onboard eMMC. Commercial temperature range. With onboard Wifi/BT module.
conga-SMX8-X/i-QXP-4G eMMC16	051110	SMARC 2.0 module ultra low power NXP i.MX 8QuadXPlus processor with 4x ARM Cortex-A35 and 1x ARM Cortex-M4F, 4GB onboard LPDDR4 memory and 16GB onboard eMMC. Industrial temperature range.
conga-SMX8-X/i-DXP-2G eMMC16	051111	SMARC 2.0 module with ultra low power NXP i.MX 8DualXPlus processor with 2x ARM Cortex-A35 and 1x ARM Cortex-M4F, 2GB onboard LPDDR4 memory and 16GB onboard eMMC. Industrial temperature range.
conga-SMX8-X/i-QXP-2G eMMC16	051113	SMARC 2.0 module with ultra low-power NXP i.MX 8QuadXPlus processor with 4x ARM Cortex-A35 and 1x ARM Cortex-M4F, 2GB onboard LPDDR4 memory and 16GB onboard eMMC. Industrial temperature range.
conga-SMX8-X/i-CSP-B	051150	Passive cooling solution for SMARC module conga-SMX8-X with lidded NXP i.MX 8X ARM processor. All standoffs are with 2.7mm bore hole.
conga-SMX8-X/i-HSP-B	051151	Heat spreader solution for SMARC module conga-SMX8-X with lidded NXP i.MX 8X ARM processor. All standoffs are with 2.7mm bore hole.
SMARC/CSA-Adapter	051060	Active cooling solution adapter for SMARC modules used in combination with module heat spreader.
conga-SEVAL	007010	Evaluation carrier board for SMARC 2.0 modules.
conga-SMC1/SMARC-ARM	020750	3.5" carrier board for congatec SMARC 2.0 modules based on NXP i.MX ARM architecture.

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