EMBEDDED SMARC 2.0

conga-SA5

- Low Power Intel® Atom™, Intel® Celeron® and Intel® Pentium® processor
- High performance Intel® Gen. 9 graphics
- Industrial Temperature
- Time Coordinated Computing
- Enhanced Security Execution

SMARC

Formfactor	SMARC Specification 2.0 | 82x50 mm
CPU	Intel® Atom™ x7-E3950 2.00 GHz (Burst) | 1.6 GHz Clock Quad Core L2 cache 2MB 12W TDP Intel® Atom™ x5-E3940 1.80 GHz (Burst) | 1.6 GHz Clock Quad Core L2 cache 2MB 9W TDP Intel® Atom™ x5-E3930 1.80 GHz (Burst) | 1.3 GHz Clock Dual Core L2 cache 2MB 6.5W TDP Intel® Pentium® N4200 2.50 GHz (Burst) | 1.1 GHz Clock Quad Core L2 cache 2MB 6W TDP Intel® Celeron® N3350 2.40 GHz (Burst) | 1.1 GHz Clock Dual Core L2 cache 2MB 6W TDP Intel® Celeron® J3455 2.30 GHz (Burst) | 1.5 GHz Clock Quad Core L2 cache 2MB 10W TDP
DRAM	up to 8GB onboard LPDDR4 with 2400MT/s
Chipset	Integrated in SoC
Ethernet	2x Intel® I210 (Industrial) /I211 (Commercial) Gigabit Ethernet Controller with SDP support | 2x Real Time Trigger
I/O Interfaces	2x USB3.0 | 4x USB2.0 | 1x SATA3 | 1x SDIO | up to 4x PCIe Gen2 | 2x I²C Bus | 2x SPI I 4x UART | optional M.2 1216 WiFi module (soldered down)
Mass Storage	eMMC 5.0 onboard flash up to 64 GByte
Sound	Intel® High Definition Audio (Intel® HD Audio) Integrated Audio DSP with Intel® Smart Sound Technology
Graphics	Intel® HD Graphics 500 with support for 4k Ultra HD displays | DirectX 12 | OpenGL 4.4 | OpenCL 2.0 | OpenGL ES 3.0 | HDCP 1.4 (wired), HDCP 2.0 (wireless) | Video decode hardware acceleration including support for 4kp60 HEVC (H.265), H.264, MVC, VP8, VP9, VC-1, WMV9, JPEG/MJPEG | Video encode hardware acceleration including support for 4kp30 HEVC (H.265), H.264, MVC, VP8, JPEG/MJPEG.
LVDS	Dual channel LVDS transmitter | support for flat panels with 2x24 bit data mapping up to a resolution of 1920x1200 @60Hz | shared with eDP or 2x MIPI-DSI x4 (option)
DisplayPort Interface (DDI)	DisplayPort 1.2 up to 4096x2160px or HDMI 1.4b up to 3840x2160px
MIPI-CSI	1x MIPI-CSI x4 and 1x MIPI-CSI x2
congatec Board controller	Multistage watchdog | non-volatile user data storage | manufacturing and board Information | board statistics I²C bus (fast mode | 400 kHz | multi master) | power loss control
Embedded BIOS Features	AMI Aptio® UEFI 2.x firmware | 8 MByte serial SPI with congatec Embedded BIOS features OEM Logo | OEM CMOS Defaults | LCD Control Display Auto Detection | Backlight Control | Flash Update
Power Management	ACPI 5 .0 compliant | Smart Battery Management
Operating Systems	Microsoft® Windows 10 |Microsoft® Windows 10 IoT Enterprise | Microsoft® Windows IoT 10 Core | Linux | Yocto
Power Consumption	Typ. application: tbd. | see manual for full details
Temperature	Commercial : Operating: 0 to +60°C Storage: -20 to +80°C Industrial: Operating: -40 to +85°C Storage: -40 to +85°C
Humidity	Operating: 10 to 90% r. H. non cond. Storage: 50 to 95% r. H. non cond.
Size	82 x 50 mm (3,23" x 1,97")

conga-SA5 | Block diagram

Note:

*1 Not available by default on standard variants (assembly option)

*2 Available by default only on product variant with PN:050030

conga-SA5 | Order Information

Article	PN	Description
conga-SA5/E3950-8G eMMC32	050000	SMARC 2.0 module with Intel® Atom™ x7-E3950 quad core processor with 1.6GHz core frequency up to 2.0GHz, 2MB L2 cache, 8GB 2400MT/s LPDDR4 onboard memory and 32GB eMMC onboard flash.
conga-SA5/E3940-4G eMMC32	050001	SMARC 2.0 module with Intel® Atom™ x5-E3940 quad core processor with 1.6GHz core frequency up to 1.8GHz, 2MB L2 cache, 4GB 2133MT/s LPDDR4 onboard memory and 32GB eMMC onboard flash.
conga-SA5/E3930-2G eMMC16	050002	SMARC 2.0 module with Intel® Atom™ x5-E3930 dual core processor with 1.3GHz core frequency up to 1.8GHz, 2MB L2 cache, 2GB 2133MT/s LPDDR4 onboard memory and 16GB eMMC onboard flash.
conga-SA5/E3930-2G eMMC16 1xGBE	050003	SMARC 2.0 module with Intel® Atom™ x5-E3930 dual core processor with 1.3GHz core frequency up to 1.8GHz, 2MB L2 cache, 2GB 2133MT/s LPDDR4 onboard memory and 16GB eMMC onboard flash. Only one GBE.
conga-SA5/i-E3950-4G eMMC32	050010	SMARC 2.0 module with Intel® Atom™ x7-E3950 quad core processor with 1.6GHz core frequency up to 2.0GHz, 2MB L2 cache, 4GB 2400MT/s LPDDR4 onboard memory and 32GB eMMC onboard flash. Industrial grade temperature range from -40°C to 85°C.
conga-SA5/i-E3940-4G eMMC16	050011	SMARC 2.0 module with Intel® Atom™ x5-E3940 quad core processor with 1.6GHz core frequency up to 1.8GHz, 2MB L2 cache, 4GB 2133MT/s LPDDR4 onboard memory and 16GB eMMC onboard flash. Industrial grade temperature range from -40°C to 85°C.
conga-SA5/i-E3930-2G eMMC16	050012	SMARC 2.0 module with Intel® Atom™ x5-E3930 dual core processor with 1.3GHz core frequency up to 1.8GHz, 2MB L2 cache, 2GB 2133MT/s LPDDR4 onboard memory and 16GB eMMC onboard flash. Industrial grade temperature range from -40°C to 85°C.
conga-SA5/i-E3950-8G eMMC32	050013	SMARC 2.0 module with Intel® Atom™ x7-E3930 quad core processor with 1.6GHz core frequency up to 2.0GHz, 2MB L2 cache, 8GB 2400MT/s LPDDR4 onboard memory and 32GB eMMC onboard flash. Industrial grade temperature range from -40°C to 85°C.
conga-SA5/N3350-4G eMMC32	050022	SMARC 2.0 module with Intel® Celeron™ N3350 dual core processor with 1.1GHz core frequency up to 2.3GHz, 2MB L2 cache, 4GB 2400MT/s LPDDR4 onboard memory and 32GB eMMC onboard flash.
conga-SA5/N4200-8G eMMC32	050023	SMARC 2.0 module with Intel® Pentium® N4200 quad core processor with 1.1GHz core frequency up to 2.50GHz, 2MB L2 cache, 8GB 2400MT/s LPDDR4 onboard memory and 32GB eMMC onboard flash
conga-SA5/J3455-4G eMMC16	050024	SMARC 2.0 module with Intel® Celeron® J3455 quad core processor with 1.5GHz core frequency up to 2.30GHz, 2MB L2 cache, 4GB 2400MT/s LPDDR4 onboard memory and 16GB eMMC onboard flash.
conga-SA5/E3950-8G eMMC32 SPKL-AC	050031	SMARC 2.0 module with Intel® Atom™ x7-E3950 quad core processor with 1.6GHz core frequency up to 2.0GHz, 2MB L2 cache, 8GB 2400MT/s LPDDR4 onboard memory, 32GB eMMC onboard flash and onboard Sparklan WNSQ-261ACN(BT) Wifi/BT module.
conga-SA5/i-CSP-B	050051	Passive cooling solution for SMARC 2.0 module conga-SA5 with lidded Intel Atom processor. All standoffs are with 2.7mm bore hole.
conga-SA5/i-HSP-B	050053	Standard heatspreader for SMARC 2.0 module conga-SA5 with lidded Intel Atom processor. All standoffs are with 2.7mm bore hole.
conga-SA5/CSP-B	050055	Passive cooling solution for SMARC 2.0 module conga-SA5 with open silicon Intel Pentium and Celeron processor. All standoffs are with 2.7mm bore hole.
conga-SA5/HSP-B	050057	Standard heatspreader for SMARC 2.0 module conga-SA5 with open silicon Intel Pentium and Celeron processor. All standoffs are with 2.7mm bore hole.

Accessories		
conga-SEVAL	007010	Evaluation Carrier Board for SMARC 2.0 modules.
conga-ACA2	016154	MIPI CSI 2.0 dual camera module for evaluation with SGET standard flat foil interface.
conga-MITX/eDP to DP Adapter	052231	eDP to standard DisplayPort evaluation adapter for congatec Mini-ITX and SMARC 2.0.
cab-MITX-eDP 1-1	14000129	eDP 1-1 cable for congatec Mini-ITX and SMARC 2.0. Both sides are with 40pin ACES eDP connector plug.

This Datasheet should be read in conjunction with "Errata sheet - congatec xA5 designs", available in the document section of congatec's webportal.

Gefördert durch:

ZIM Zentrales Innovationsprogramm Mittelstand

Bundesministerium für Wirtschaft und Energie

aufgrund eines Beschlusses des Deutschen Bundestages

© 2019 congatec AG. All rights reserved.

All data is for information purposes only. Although all the information contained within this document is carefully checked, no guarantee of correctness is implied or expressed. Product names, logos, brands, and other trademarks featured or referred are the property of their respective trademark holders. Qseven is a registered trademark of SGET. These trademark holders are not affiliated with congatec AG.
Rev. July 04, 2019 MR