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Datasheet

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**SMARC™ 2.0 Computer-on-Module with Intel® Apollo Lake Pentium® N4200, Celeron® N3350/J3455,
Atom™ E3930/E3940/E3950 Processor**



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EMBEDDED SMARC 2.0

conga-SA5

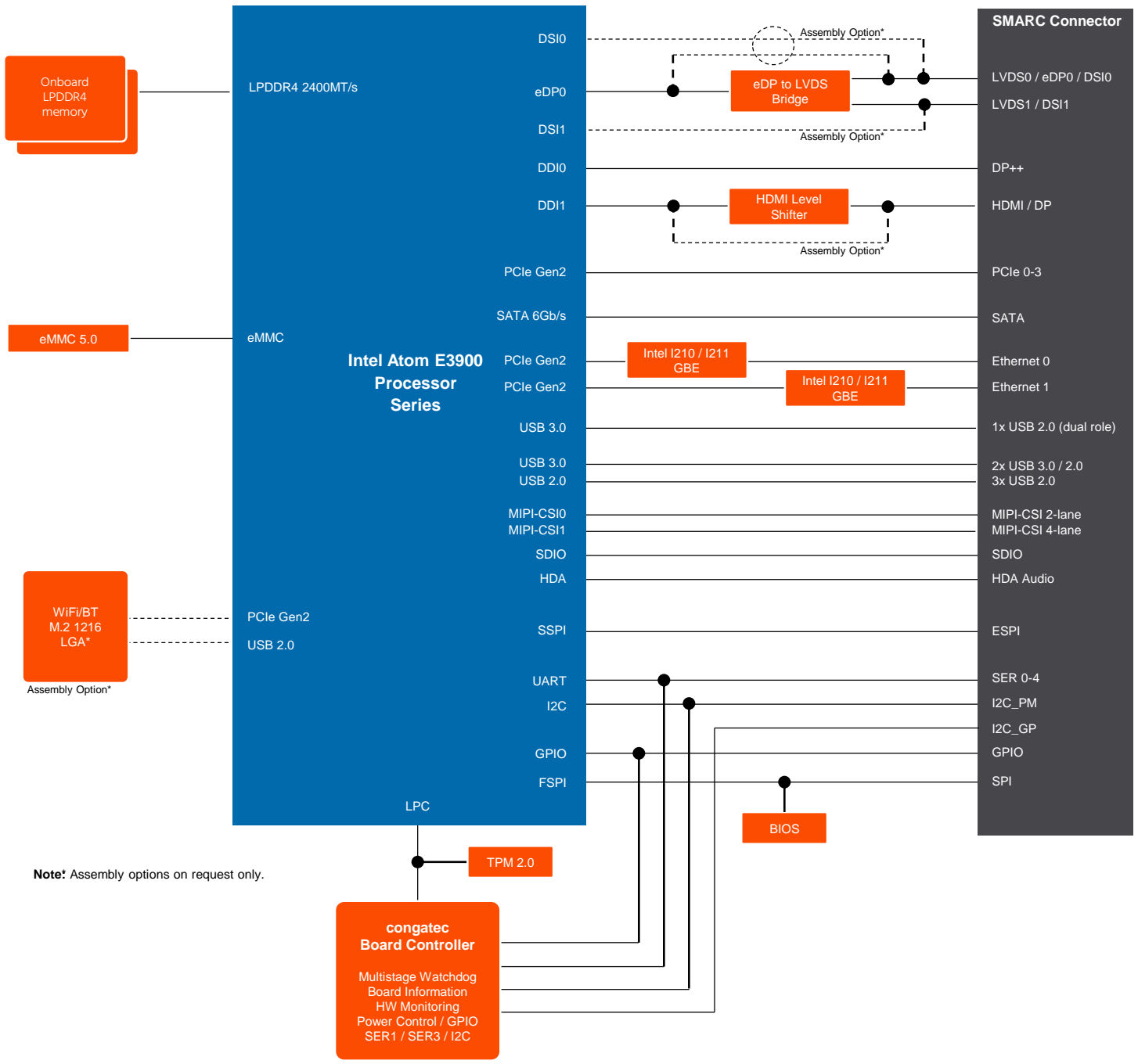


- Low power Intel® Atom™ E3900 Series, Celeron® and Pentium® N-Series processors
- High performance Intel® HD Graphics 500
- Industrial Temperature Range -40°C to 85°C
- Time Coordinated Computing
- Enhanced Security Execution



Form Factor	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				
Ethernet	2x Intel® I210 (Industrial) / I211 (Commercial) Gigabit Ethernet Controller with SDP support 2x real-time trigger				
I/O Interfaces	2x USB 3.0 4x USB 2.0 1x SATA3 1x SDIO up to 4x PCIe Gen2 2x I ² C Bus 2x SPI 4x UART optional onboard M.2 1216 WiFi/BT module				
Mass Storage	eMMC 5.0 onboard flash up to 128 GByte				
Sound	Intel® High Definition 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 / 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 fast mode and multi-master I ² C bus power loss control				
Embedded BIOS Feature	AMI Aptio® UEFI 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: 8-12W see manual for full details				
Temperature Range	Commercial:	Operating Temperature: 0 to +60°C	Storage Temperature: -20 to +80°C		
	Industrial:	Operating Temperature: -40 to +85°C	Storage Temperature: -40 to +85°C		
Humidity	Operating:	10 to 90% r. H. non cond.			
	Storage:	5 to 95% r. H. non cond.			
Size	82 x 50 mm (3,23" x 1,97")				

conga-SA5 | Block Diagram



Note: Assembly options on request only.

congatec Board Controller

- Multistage Watchdog
- Board Information
- HW Monitoring
- Power Control / GPIO
- SER1 / SER3 / I2C

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 temperature range -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 temperature range -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 temperature range -40°C to 85°C.
conga-SA5/i-E3950-8G eMMC32	050013	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. Industrial temperature range -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-SMCI/SMARC-x86	020750	3.5" carrier board for congatec SMARC 2.1 modules based on x86 architecture.

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