

INDUSTRIAL GRADE 8-CORE INTEL ATOM®

conga-SA8



VIRTUALIZATION READY

- Increase in parallelism and performance
- AI Acceleration (VNNI)
- Intel Gen 12 UHD Graphics with up to 32EU's
- LPDDR5 with up to 4.800 MT/s memory support
- Extended temperature options available

Form Factor

SMARC Specification 2.2

CPU

Processor	Cores / Threads	Base Frequency / max. Turbo	TDP	Gfx EUs	Intel Use Condition
Core3-N355	8C / 8T	1.0/1.9GHz / 3.9GHz	9/15W	32EU	PC Client / Embedded*
x7835RE	8C / 8T	1.3GHz / 3.6GHz**	12W	32EU	Industrial**
x7433RE	4C / 4T	1.5GHz / 3.4GHz**	9W	32EU	Industrial**
x7211RE	2C / 2T	1.0GHz / 3.2GHz**	6W	16EU	Industrial**
x7425E	4C / 4T	1.5GHz / 3.4GHz	12W	24EU	Embedded

*Apply Intel PTR

**Industrial Use Condition only without turbo

DRAM

Up to 32GB onboard LPDDR5 | up to 4.800 MT/s | In-Band ECC

Ethernet

2x 2.5 GbE via Intel® i226 Ethernet controller series | TSN - Time Sensitive Networking (only on selected PNs) | 2 Software Definable Pins (SDPs) to be used for IEEE 1588

I/O Interfaces

2x USB 3.2 Gen 2 | 6x USB 2.0 | SATA Gen 3.2 | up to 4x PCIe Gen3 | SPI | eSPI | 4x UART | 12x GPIO | 1x I2C GP | 1x SMBus | 2x I2C CSI | Intel® Wi-Fi 6E AX210, BT 5.3 (optional)

Mass Storage

eMMC 5.1 onboard flash up to 64GB (optional up to 256GB)

Audio

1x HDA

Graphics

Integrated Intel Gen 12 UHD Graphics with up to 32EU's

LVDS

Dual channel LVDS transmitter (support for flat panels with 2x24 bit data mapping up to a resolution of 1920x1200 @60Hz) | shared with eDP (option)

Digital Display Interface

HDMI 2.0b: 4Kx2K @ 60Hz
eDP 1.4b: 4096x2304 @ 60Hz HBR3
DP 1.4: 4096x2304 @ 60Hz
Up to 3 independent displays

congatec Board controller

Multistage watchdog | non-volatile user data storage | manufacturing and board Information | board statistics | fast mode and multi-master I2C bus | power loss control

Embedded BIOS Feature

AMI Aptio® UEFI firmware | 32 Mbyte serial SPI with congatec Embedded BIOS feature | OEM Logo | OEM CMOS Defaults | LCD Control | Display Auto Detection | Backlight Control | Flash Update

Security

TPM 2.0 | Intel®Platform Trust Technology | Intel®Boot Guard | Intel® OS Guard |

Power Management

ACPI 5.0 compliant | Smart Battery Management

Operating Systems

Microsoft® Windows 11 | Microsoft® Windows 11 IoT Enterprise | Microsoft® Windows 10 | Microsoft® Windows 10 IoT Enterprise | Linux

Hypervisor

RTS Real-Time Hypervisor

Power Consumption

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

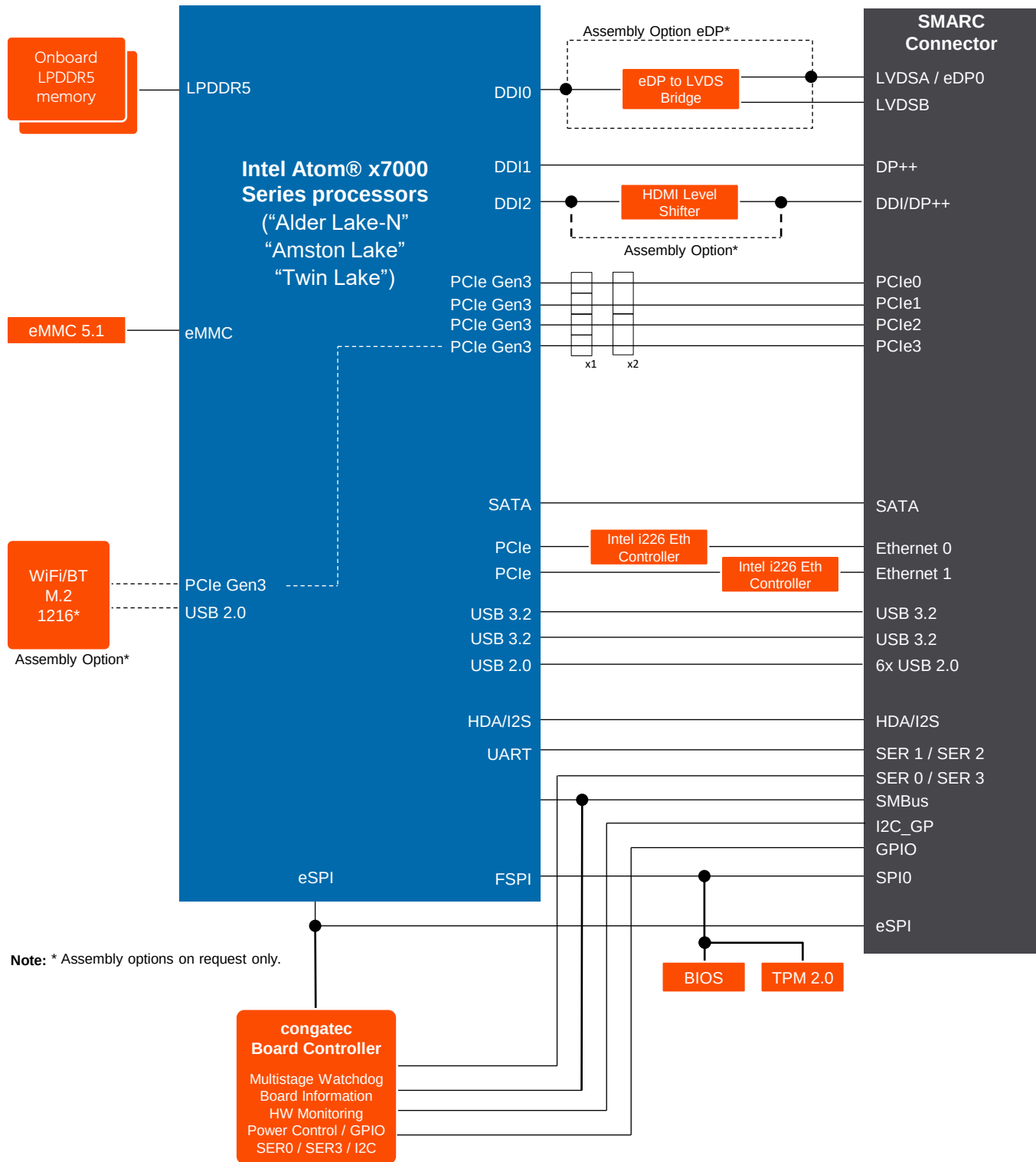
Humidity

Operating:	10 to 85% r. H. non cond.
Storage:	5 to 85% r. H. non cond.

Size

82 x 50 mm

conga-SA8 | Block Diagram



conga-SA8 | Order Information (1/2)

Article	PN	Description
conga-SA8/i-x7835RE-16G-eMMC64	051410	SMARC 2.2 module with Intel Atom® x7835RE 8-core processor with 1.3GHz core frequency up to 3.6GHz (turbo), 16GB 4800MT/s LPDDR5 onboard memory and 64GB eMMC 5.1 onboard flash. Supports TSN. Industrial grade temperature range from -40°C to 85°C.
conga-SA8/i-x7835RE-8G-eMMC32	051411	SMARC 2.2 module with Intel Atom® x7835RE 8-core processor with 1.3GHz core frequency up to 3.6GHz (turbo), 8GB 4800MT/s LPDDR5 onboard memory and 32GB eMMC 5.1 onboard flash. Supports TSN. Industrial grade temperature range from -40°C to 85°C.
conga-SA8/i-x7433RE-16G-eMMC64	051418	SMARC 2.2 module with Intel Atom® x7433RE 4-core processor with 1.5GHz core frequency up to 3.4GHz (turbo), 16GB 4800MT/s LPDDR5 onboard memory and 64GB eMMC 5.1 onboard flash. Supports TSN. Industrial grade temperature range from -40°C to 85°C.
conga-SA8/i-x7433RE-8G-eMMC32	051412	SMARC 2.2 module with Intel Atom® x7433RE 4-core processor with 1.5GHz core frequency up to 3.4GHz (turbo), 8GB 4800MT/s LPDDR5 onboard memory and 32GB eMMC 5.1 onboard flash. Supports TSN. Industrial grade temperature range from -40°C to 85°C.
conga-SA8/i-x7433RE-4G-eMMC32	051413	SMARC 2.2 module with Intel Atom® x7433RE 4-core processor with 1.5GHz core frequency up to 3.4GHz (turbo), 4GB 4800MT/s LPDDR5 onboard memory and 32GB eMMC 5.1 onboard flash. Supports TSN. Industrial grade temperature range from -40°C to 85°C.
conga-SA8/i-x7211RE-4G-eMMC32	051417	SMARC 2.2 module with Intel Atom® x7211RE 2-core processor with 1.0GHz core frequency up to 3.2GHz (turbo), 4GB 4800MT/s LPDDR5 onboard memory and 32GB eMMC 5.1 onboard flash. Supports TSN. Industrial grade temperature range from -40°C to 85°C.
conga-SA8/x7425E-16G-eMMC64	051419	SMARC 2.2 module with Intel Atom® x7425E 4-core processor with 1.5GHz core frequency up to 3.4GHz (turbo), 16GB 4800MT/s LPDDR5 onboard memory and 64GB eMMC 5.1 onboard flash. Commercial grade temperature range from 0°C to 60°C.
conga-SA8/x7425E-8G-eMMC32	051415	SMARC 2.2 module with Intel Atom® x7425E 4-core processor with 1.5GHz core frequency up to 3.4GHz (turbo), 8GB 4800MT/s LPDDR5 onboard memory and 32GB eMMC 5.1 onboard flash. Commercial grade temperature range from 0°C to 60°C.
conga-SA8/core3-N355-16G-eMMC64	051416	SMARC 2.2 module with Intel Core™ 3 N355 8-core processor with 1.9GHz core frequency up to 3.9GHz (turbo), 16GB 4800MT/s LPDDR5 onboard memory and 64GB eMMC 5.1 onboard flash. Commercial grade temperature range from 0°C to 60°C.
conga-SA8/i-x7835RE-8G-eMMC32 AX210	051420	SMARC 2.2 module with Intel Atom® x7835RE 8-core processor with 1.3GHz core frequency up to 3.6GHz (turbo), 8GB 4800MT/s LPDDR5 onboard memory and 32GB eMMC 5.1 onboard flash. Supports TSN. Industrial grade temperature range from -40°C to 85°C. Intel AX210 Wifi6E .

conga-SA8 | Order Information (2/2)

Article	PN	Description
conga-SA8/CSP-B	051450	Passive cooling solution for SMARC 2.1 module conga-SA8.
conga-SA8/HSP-B	051451	Standard heatspreader for SMARC 2.1 module conga-SA8.
conga-SEVAL	007010	Evaluation Carrier Board compatible with SMARC modules
conga-SMC1/SMARC-x86	020751	Compact sized 3.5" Carrier Board for x86 based SMARC 2.1 modules

conga-SA8 top view



conga-SA8 bottom view



conga-SA8/CSP-B



conga-SA8/HSP-B



conga-SEVAL



conga-SMC1/SMARC-x86

