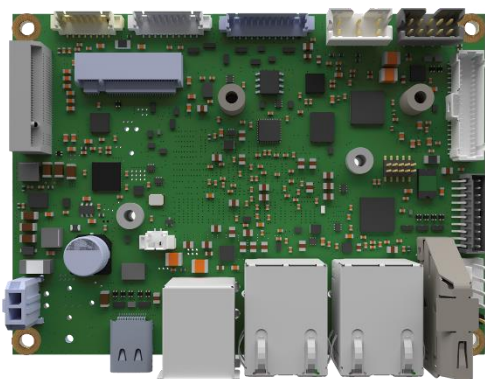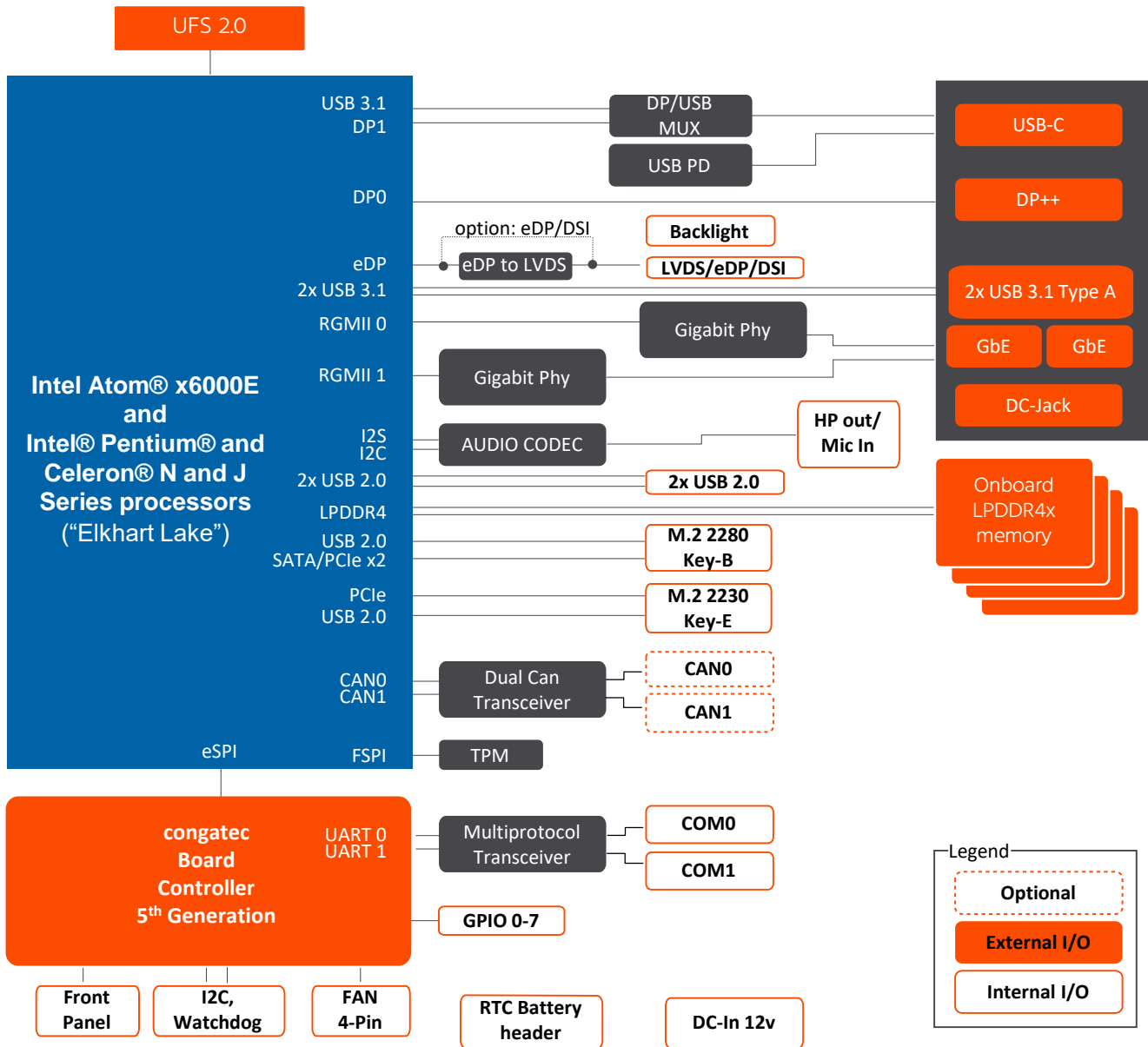# INDUSTRIAL PICO-ITX

conga-PA7

- Pico-ITX SBC based on Intel® Atom® x6000E Series and Intel® Pentium® and Celeron® J Series processors (code-named Elkhart Lake)

- High performance Intel® UHD Graphics (Gen11)

- Options for Industrial Temperature Range -40°C to 85°C

- Time Sensitive Networking and Time Coordinated Computing enable improved Realtime Capability

- Up to 4.267 MT/s Memory Support with Inband ECC

- UFS 2.0 for higher bandwidth and data processing

Form Factor	Pico-ITX Single Board Computer	100 x 72 mm					
CPU	Processor	TDP	Cores/Threads	Base Frequence/max. Turbo	Gfx Gen11	Intel Use Condition	
	J6413	10W	4 / 4	1.8 GHz / 3.0 GHz	16 EU	PC Client	
	J6425	10W	4 / 4	1.8 GHz / 3.0 GHz	32 EU	PC Client	
	x6211E	6W	2 / 2	1.2 GHz / 3.0 GHz	16 EU	Embedded	
	x6413E	9W	4 / 4	1.5 GHz / 3.0 GHz	16 EU	Embedded	
	x6425E	12W	4 / 4	1.8 GHz / 3.0 GHz	32 EU	Embedded	
	x6212RE	6W	2 / 2	1.2 GHz / ---	16 EU	Industrial	
	x6414RE	9W	4 / 4	1.5 GHz / ---	16 EU	Industrial	
	x6425RE	12W	4 / 4	1.9 GHz / ---	32 EU	Industrial	

DRAM	up to 4 Channels onboard LPDDR4x with up to 4,267 MT/s | max. system capacity 16 GB
Chipset	Integrated in SoC
Ethernet	2x LAN Gbit / 100 Mbit / 10 Mbit with TSN support and Out-Of-Band Management | 2x real-time trigger
Mass Storage	UFS 2.0 onboard flash up to 64 GB (optional up to 512 GB)
Sound	Intel® LPE Audio via I2S
Graphics	Intel® UHD Graphics (Gen11)
Internal Connectors	2x USB 2.0 | 1x LVDS 18/24bit or eDP (opt) or MIPI-DSI (opt) | 1x Backlight power connector (5V, 12V) | 1x Audio Connector (HP/Line Out, MIC In, opt. DMIC) | 1x Power In (+12V) | 2x COM (RS232/422/485) | 1x Fan Connector with PWM | 3x Feature Connector | 1x M.2 key ID B type 2280 (2 PCIe lanes/SATA, USB 2.0) | 1x M.2 key ID E (1 PCIe lane, USB 2.0) | 2x CAN (opt.)
External Connectors	1x DisplayPort DP++ | 2x LAN RJ45 | 1x USB 3.1 Gen2 Type C (with Power Delivery and DP) | 2x USB 3.1 Gen2 Type A | 1x DC-In
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 features | OEM Logo | OEM CMOS Defaults LCD Control | Display Auto Detection | Backlight Control | Flash Update
Security	TPM 2.0
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 | Android | Yocto | RTS Hypervisor
Power Consumption	tbd. | see manual for full details

Temperature Range	Commercial:	Operating Temperature: 0 to +60°C	Storage Temperature: -20 to +85°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	100 x 72 mm (approx. 3.9 x 2.8")

conga-PA7 | Block Diagram

UFS 2.0

Intel Atom® x6000E and Intel® Pentium® and Celeron® N and J Series processors ("Elkhart Lake")

USB 3.1
DP1
DP0
option: eDP/DSI
eDP
eDP to LVDS
2x USB 3.1
RGMII 0
RGMII 1
I2S
I2C
2x USB 2.0
LPDDR4
USB 2.0
SATA/PCIe x2
PCIe
USB 2.0
CAN0
CAN1
eSPI
FSPI

DP/USB MUX
USB PD
Backlight
LVDS/eDP/DSI
Gigabit Phy
Gigabit Phy
AUDIO CODEC
HP out/ Mic In
2x USB 2.0
M.2 2280 Key-B
M.2 2230 Key-E
Dual Can Transceiver
CAN0
CAN1
TPM

USB-C
DP++
2x USB 3.1 Type A
GbE
GbE
DC-Jack

Onboard LPDDR4x memory

congatec Board Controller 5th Generation
UART 0
UART 1
GPIO 0-7

Multiprotocol Transceiver
COM0
COM1

Front Panel
I2C, Watchdog
FAN 4-Pin
RTC Battery header
DC-In 12v

Legend
Optional
External I/O
Internal I/O

Note: * Assembly options on request only

congatec

Article	PN	Description
conga-PA7/x6425E-8G-UFS64	048900	Pico-ITX board with Intel® Atom® x6425E quad core processor with 1.8GHz core frequency up to 3.0GHz, 1.5MB cache, 8GB 4267MT/s LPDDR4x onboard memory and 64GB UFS 2.0 onboard flash
conga-PA7/x6413E-4G-UFS32	048901	Pico-ITX board with Intel® Atom® x6413E quad core processor with 1.5GHz core frequency up to 3.0GHz, 1.5MB cache, 4GB 4267MT/s LPDDR4x onboard memory and 32GB UFS 2.0 onboard flash
conga-PA7/x6211E-4G-UFS32	048902	Pico-ITX board with Intel® Atom® x6211E dual core processor with 1.2GHz core frequency up to 3.0GHz, 1.5MB cache, 4GB 4267MT/s LPDDR4x onboard memory and 32GB UFS 2.0 onboard flash
conga-PA7/i-x6425RE-8G-UFS64	048910	Pico-ITX board with Intel® Atom® x6425RE quad core processor with 1.9GHz core frequency, 1.5MB cache, 8GB 4267MT/s LPDDR4x onboard memory and 64GB UFS 2.0 onboard flash. Industrial grade temperature range from -40°C to 85°C
conga-PA7/i-x6414RE-4G-UFS32	048911	Pico-ITX board with Intel® Atom® x6414RE quad core processor with 1.5GHz core frequency, 1.5MB cache, 4GB 4267MT/s LPDDR4x onboard memory and 32GB UFS 2.0 onboard flash. Industrial grade temperature range from -40°C to 85°C
conga-PA7/i-x6212RE-4G-UFS32	048912	Pico-ITX board with Intel® Atom® x6212RE dual core processor with 1.2GHz core frequency, 1.5MB cache, 4GB 4267MT/s LPDDR4x onboard memory and 32GB UFS 2.0 onboard flash. Industrial grade temperature range from -40°C to 85°C
conga-PA7/J6425-8G-UFS64	048920	Pico-ITX board with Intel® Pentium® J6425 quad core processor with 1.8GHz core frequency up to 3.0GHz, 1.5MB cache, 8GB 3733MT/s LPDDR4x onboard memory and 64GB UFS 2.0 onboard flash
conga-PA7/J6413-4G-UFS32	048921	Pico-ITX board with Intel® Celeron® J6413 quad core processor with 1.8GHz core frequency up to 3.0GHz, 1.5MB cache, 4GB 4267 MT/s LPDDR4x onboard memory and 32GB UFS 2.0 onboard flash
conga-PA7/HSP-T	048950	Heatspreader solution for conga-PA7 based on open silicon Intel Pentium and Celeron J and N processors . All standoffs are M2.5 thread
conga-PA7/i-HSP-T	048951	Heatspreader solution for conga-PA7 based on lidded silicon Intel Atom x6000E processors. All standoffs are M2.5 thread
conga-PA7/CSP-T	048952	Passive cooling solution for conga-PA7 based on open silicon Pentium and Celeron J and N processors. All standoffs are M2.5 thread
conga-PA7/i-CSP-T	048953	Passive cooling solution for conga-PA7 based on lidded silicon Atom X6000E processors. All standoffs are M2.5 thread
conga-PA7/HSP-B	048954	Heatspreader solution for conga-PA7 based on open silicon Intel Pentium and Celeron J and N processors. All standoffs are with 2.7mm borehole
conga-PA7/i-HSP-B	048955	Heatspreader solution for conga-PA7 based on lidded silicon Intel Atom x6000E processors. All standoffs are with 2.7mm borehole

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