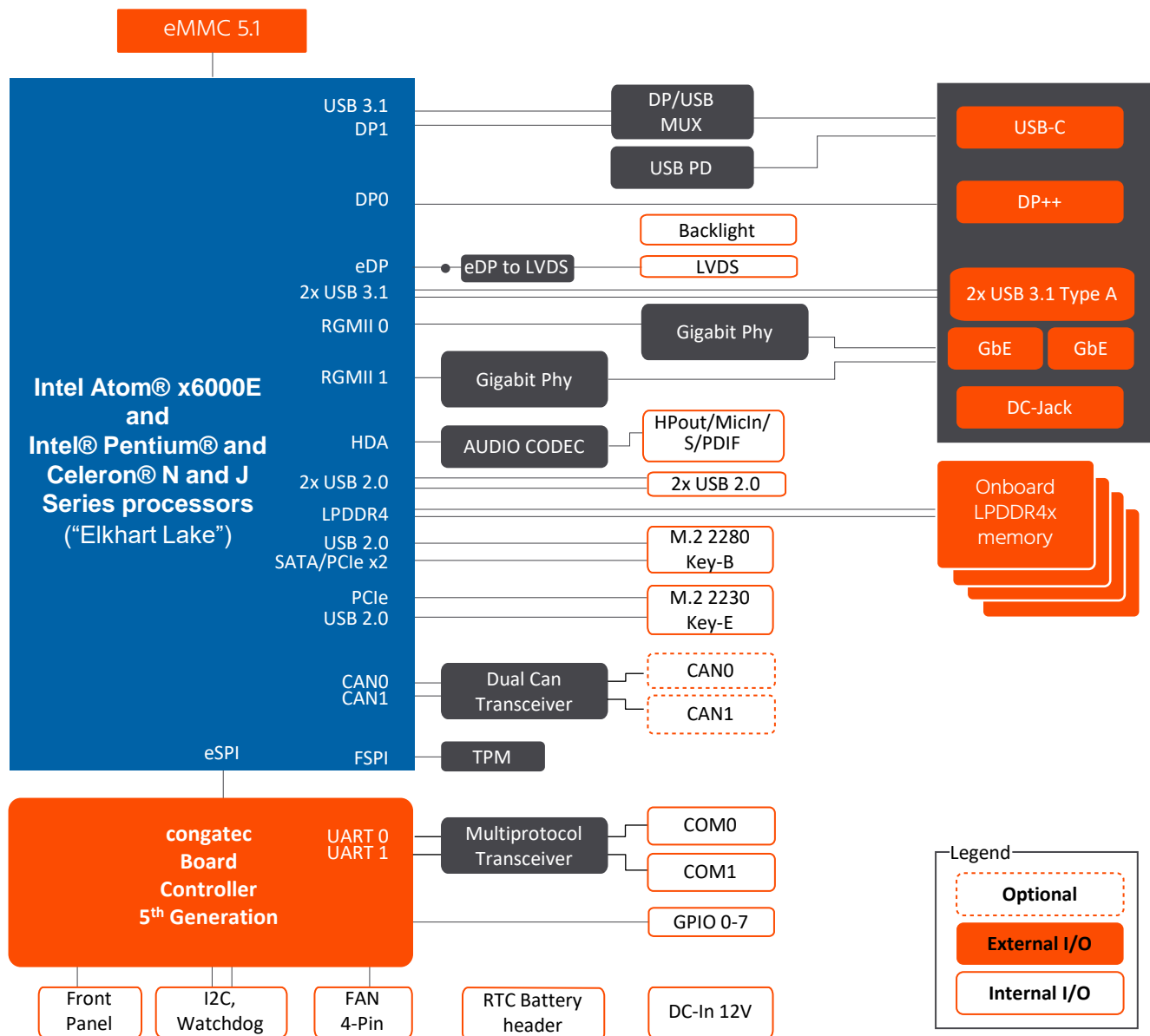# INDUSTRIAL PICO-ITX

conga-PA7

⬡ Pico-ITX SBC based on Intel Atom® x6000E Series and Intel® Pentium® and Celeron® J and N Series processors

⬡ High performance Intel® UHD Graphics for 10th Gen Intel® Processors

⬡ LPDDR4x with up to 4.267 MT/s Memory Support

⬡ Options for Time Sensitive Networking and Time Coordinated Computing for improved Realtime Capability

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

Form Factor	Pico-ITX Single Board Computer					
CPU	Processor	TDP	Cores / Threads	Base/max. Turbo Frequency	Gfx EUs	Intel Use Condition
	J6413	10W	4 / 4	1.8 GHz / 3.0 GHz	16 EU	PC/Client
	J6426	10W	4 / 4	2.0 GHz / 3.0 GHz	32 EU	PC/Client
	x6211E	6W	2 / 2	1.3 GHz / 3.0 GHz	16 EU	Embedded
	x6413E	9W	4 / 4	1.5 GHz / 3.0 GHz	16 EU	Embedded
	x6425E	12W	4 / 4	2.0 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 | 2x real-time trigger
Mass Storage	eMMC 5.1 onboard flash up to 64 GB (optional up to 128 GB)
Audio	Intel® High Definition Audio
Graphics	High performance Intel® UHD Graphics for 10th Gen Intel® Processors
Internal Connectors	2x USB 2.0 | LVDS 18/24bit | Backlight power connector (5V, 12V) | Audio Connector (HP/Line Out, MIC In, S/PDIF) | Power In (+12V) | 2x COM (RS232/422/485) | Fan Connector with PWM | Feature Connectors | M.2 key ID B type 2280 (2 PCIe lanes/SATA, USB 2.0) | M.2 key ID E (1 PCIe lane, USB 2.0) | 2x CAN (opt.)
External Connectors	DisplayPort DP++ | 2x LAN RJ45 | USB Type C (with Power Delivery and DP) | 2x USB Type A | 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 11 IoT Enterprise | Microsoft® Windows 10 | Microsoft® Windows 10 IoT Enterprise | Linux | Yocto
Hypervisor	RTS Real-Time Hypervisor
Power Consumption	See manual for full details
Temperature	Commercial variants Operation 0° to +60°C Storage -20° to +80°C Industrial variants Operation -40° to +85°C Storage -40° to +85°C
Humidity	Operating: 10% to 85% r. H. non cond. Storage: 5% to 85% r. H. non cond.
Size	100 x 72 mm

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conga-PA7 | Block Diagram

eMMC 5.1

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

USB 3.1
DP1
DP0
eDP
2x USB 3.1
RGMII 0
RGMII 1
HDA
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
eDP to LVDS
LVDS
Gigabit Phy
Gigabit Phy
AUDIO CODEC
HPout/MicIn/S/PDIF
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

Multiprotocol Transceiver
COM0
COM1
GPIO 0-7

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.

conga-PA7 | Order Information

Article	PN	Description
conga-PA7/x6425E-8G eMMC64	048900	Pico-ITX board with Intel Atom® x6425E quad core processor with 2.0GHz core frequency up to 3.0GHz, 8GB 3733MT/s LPDDR4x onboard memory and 64GB eMMC 5.1 onboard flash.
conga-PA7/x6413E-4G eMMC32	048901	Pico-ITX board with Intel Atom® x6413E quad core processor with 1.5GHz core frequency up to 3.0GHz, 4GB 3200MT/s LPDDR4x onboard memory and 32GB eMMC 5.1 onboard flash.
conga-PA7/x6211E-4G eMMC32	048902	Pico-ITX board with Intel Atom® x6211E dual core processor with 1.3GHz core frequency up to 3.0GHz, 4GB 3200MT/s LPDDR4x onboard memory and 32GB eMMC 5.1 onboard flash.
conga-PA7/i-x6425RE-8G eMMC64	048910	Pico-ITX board with Intel Atom® x6425RE quad core processor with 1.9GHz core frequency, 8GB 4267MT/s LPDDR4x onboard memory and 64GB eMMC 5.1 onboard flash. Industrial grade temperature range from -40°C to 85°C.
conga-PA7/i-x6414RE-4G eMMC32	048911	Pico-ITX board with Intel Atom® x6414RE quad core processor with 1.5GHz core frequency, 4GB 3200MT/s LPDDR4x onboard memory and 32GB eMMC 5.1 onboard flash. Industrial grade temperature range from -40°C to 85°C.
conga-PA7/i-x6212RE-4G eMMC32	048912	Pico-ITX board with Intel Atom® x6212RE dual core processor with 1.2GHz core frequency, 4GB 3200MT/s LPDDR4x onboard memory and 32GB eMMC 5.1 onboard flash. Industrial grade temperature range from -40°C to 85°C
conga-PA7/J6426-8G eMMC64	048920	Pico-ITX board with Intel® Pentium® J6426 quad core processor with 2.0GHz core frequency up to 3.0GHz, 8GB 3733MT/s LPDDR4x onboard memory and 64GB eMMC 5.1 onboard flash.
conga-PA7/J6413-4G eMMC32	048921	Pico-ITX board with Intel® Celeron® J6413 quad core processor with 1.8GHz core frequency up to 3.0GHz, 4GB 3200MT/s LPDDR4x onboard memory and 32GB eMMC 5.1 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 threaded.
conga-PA7/i-HSP-T	048951	Heatspreader solution for conga-PA7 based on lidded silicon Intel Atom® x6000E processor series. All standoffs are M2.5 threaded.
conga-PA7/CSP-T	048952	Passive cooling solution for conga-PA7 based on open silicon Intel® Pentium® and Celeron® J and N processors. All standoffs are M2.5 threaded.
conga-PA7/i-CSP-T	048953	Passive cooling solution for conga-PA7 based on lidded silicon Intel Atom® X6000E processor series. All standoffs are M2.5 threaded.
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 series. All standoffs are with 2.7mm borehole.

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