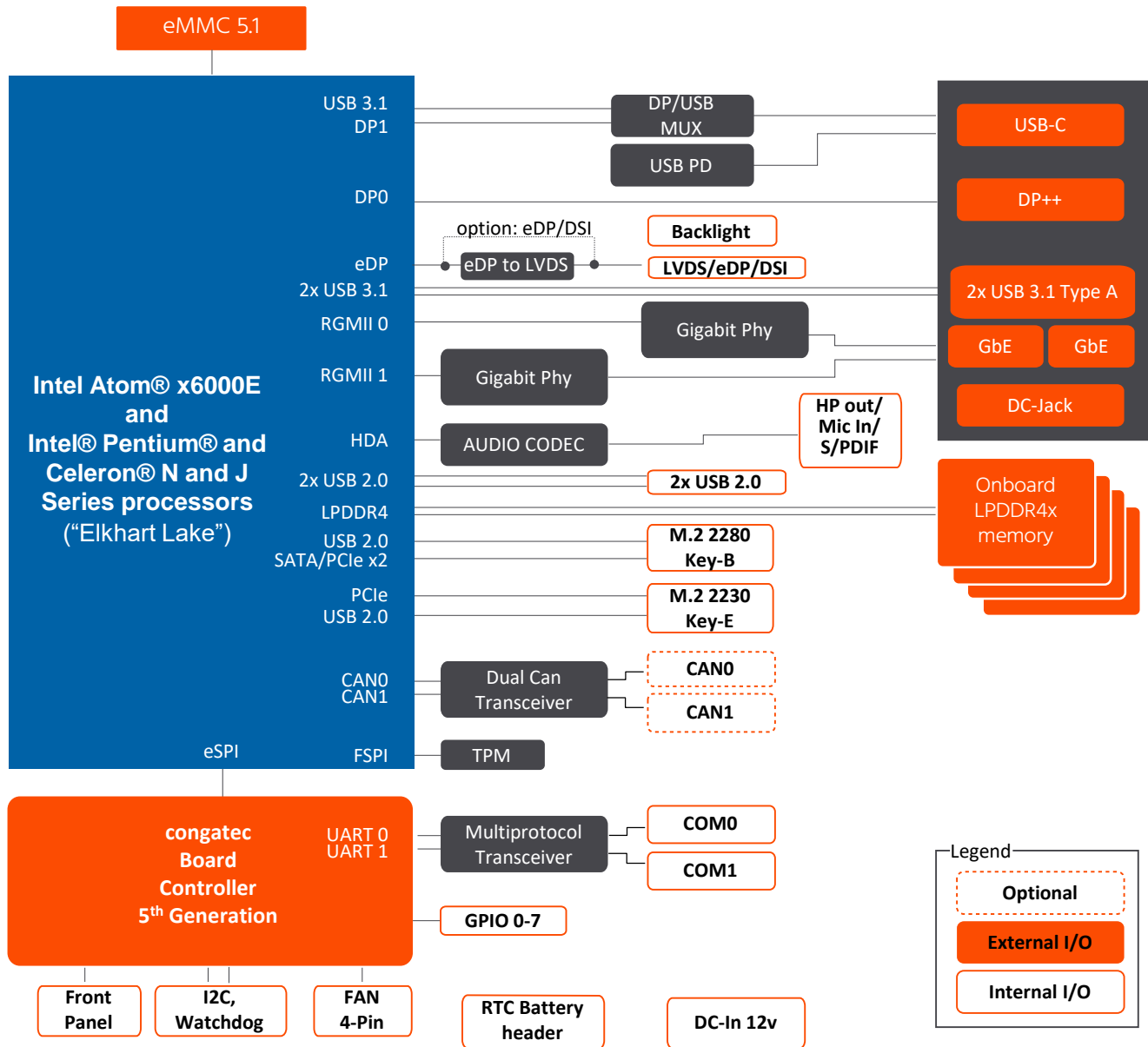# INDUSTRIAL PICO-ITX

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 (Gen11)

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

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

- Up to 4.267 MT/s Memory Support

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	
	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 and Out-Of-Band Management | 2x real-time trigger
Mass Storage	eMMC 5.1 onboard flash up to 64 GB (optional up to 128 GB)
Audio	Intel® HD Audio
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, S/PDIF, 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: Industrial:	Operating Temperature: 0 to +60°C Operating Temperature: -40 to +85°C	Storage Temperature: -20 to +85°C Storage Temperature: -40 to +85°C
Humidity	Operating: Storage:	10 to 90% r. H. non cond. 5 to 95% r. H. non cond.	
Size	100 x 72 mm (approx. 3.9 x 2.8")		

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intel partner Titanium

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

option: eDP/DSI

eDP to LVDS

Backlight

LVDS/eDP/DSI

Gigabit Phy

Gigabit Phy

AUDIO CODEC

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

**HP out/
Mic In/
S/PDIF**

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

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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, 1.5MB cache, 8GB 4267MT/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, 1.5MB cache, 4GB 4267MT/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, 1.5MB cache, 4GB 4267MT/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, 1.5MB cache, 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, 1.5MB cache, 4GB 4267MT/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, 1.5MB cache, 4GB 4267MT/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, 1.5MB cache, 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, 1.5MB cache, 4GB 4267 MT/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 processors. All standoffs are M2.5 threaded.
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 threaded.
conga-PA7/i-CSP-T	048953	Passive cooling solution for conga-PA7 based on lidded silicon Atom X6000E processors. 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. All standoffs are with 2.7mm borehole.

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