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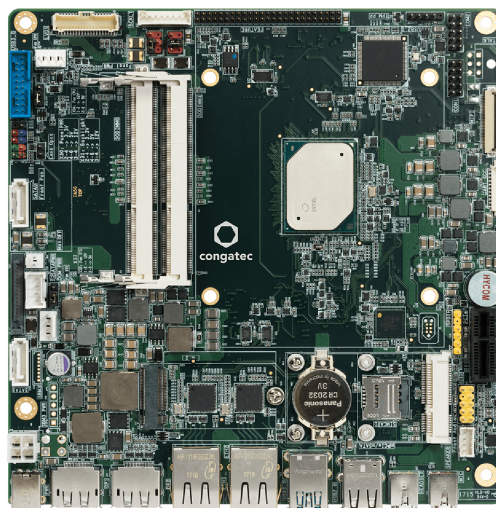


# Datasheet

## Congatec

### conga-IA5

Mini-ITX Embedded Motherboard with Intel® Apollo Lake  
Intel® Pentium®, Intel Celeron® Processors



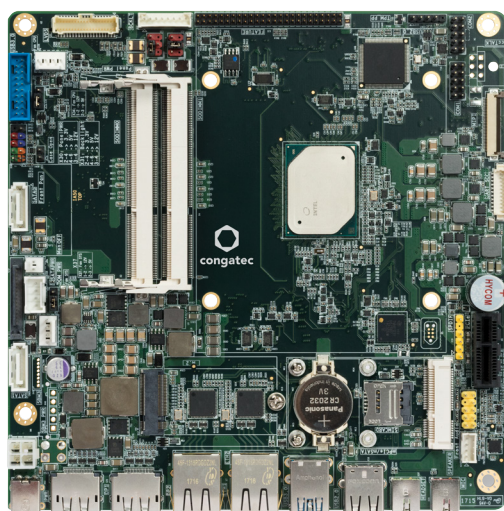
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# INDUSTRIAL THIN MINI-ITX

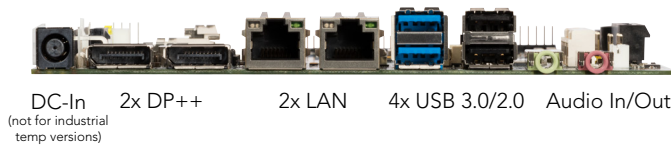
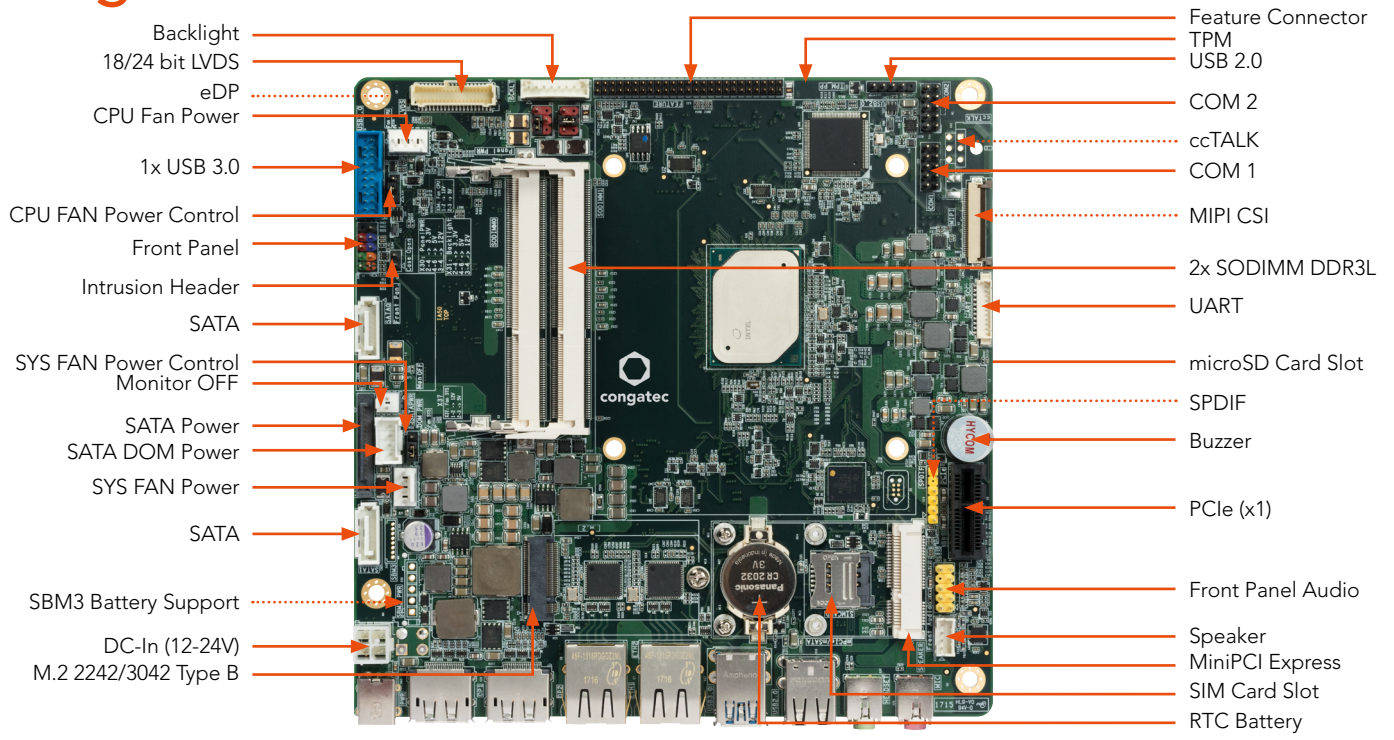
## conga-IA5



- Industrial Intel® Atom™ E3900 processor series
- Intel® Pentium® and Celeron® processors
- Low Power CPUs 6 to 12 Watt TDP
- Enhanced Intel® HD Graphics generation 9
- Long life components for 24/7 embedded use
- Extended temperature variants
- On board TPM for enhanced security

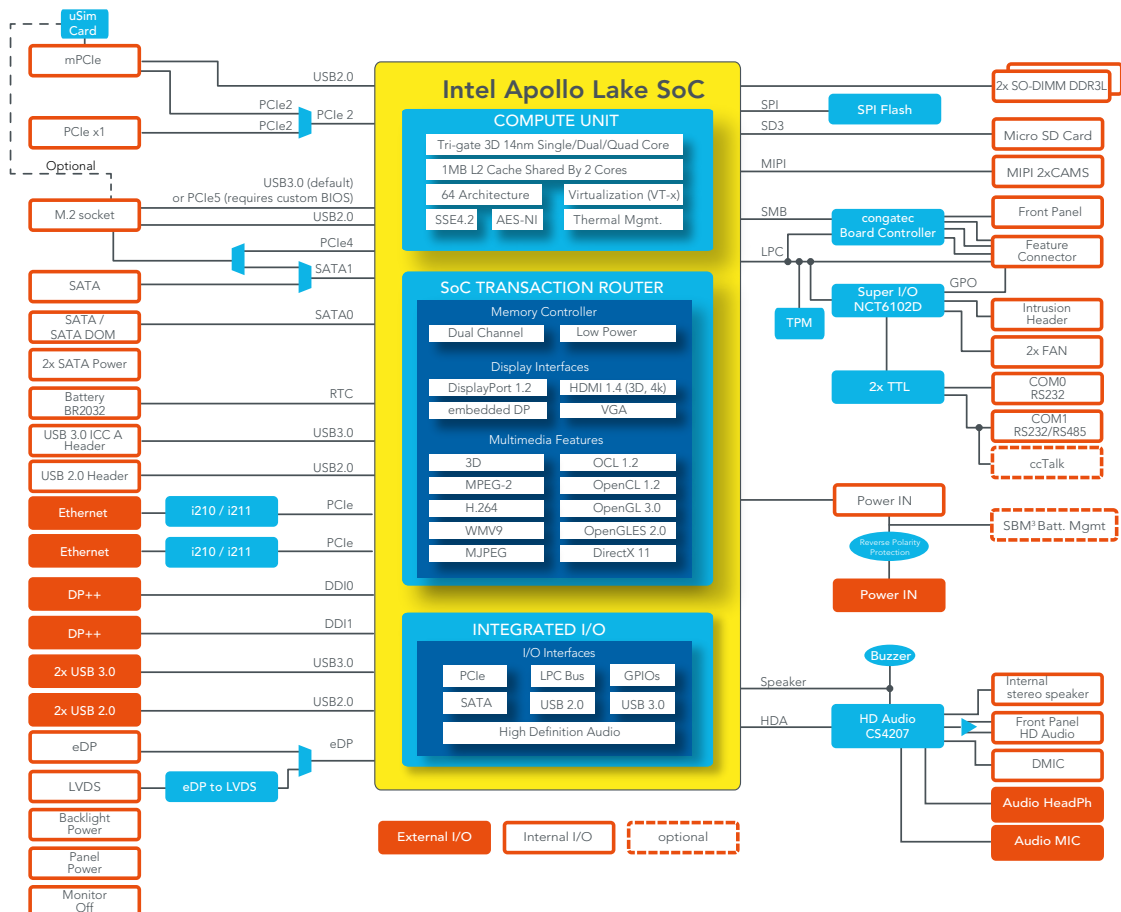
Formfactor	Industrial Thin-Mini-ITX   170 x 170 mm					
CPU	Intel® Atom™ x7-E3950	2.00 GHz (Burst)	1.6 GHz Clock	Quad Core	L2 cache 2MB	12W TDP
	Intel® Atom™ x5-E3940	1.80 GHz (Burst)	1.6 GHz Clock	Quad Core	L2 cache 2MB	9.5W TDP
	Intel® Atom™ x5-E3930	1.80 GHz (Burst)	1.3 GHz Clock	Dual Core	L2 cache 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
DRAM Memory	2x SO-DIMM sockets (dual channel DDR3L up to 1866 MT/s) to support a max. memory size of 8GB					
Ethernet	2x Intel® I211 Gigabit Ethernet controller (commercial)   2x Intel® I210 Gigabit Ethernet controller (Industrial)					
Sound	High Definition Audio Interface with Cirrus CS4207					
Graphics	Intel® Gen 9 HD Graphics with support for DirectX12   OpenGL 4.3   OpenCL 2.0   OpenGLES 3.x   MPEG2 full HW acceleration with H.265/HEVC decoding and H.264 encoding   VP9   PAVP 3.x   HDCP 1.4   MVC and 2x independent display support in 4K (3840 x 2160 px) @30 Hz or WQXGA (2560 x 1600 px) @60 Hz					
Graphic Interfaces	18/24-bit Dual Channel LVDS Interface or eDP 1.3 and 2x DisplayPort 1.2					
Internal Connectors	1x PCIe x1 Slot shared with mPCIe   1x mPCIe Half Size shared with PCIe slot   1x M.2 2242/3042 Type B   2x SATA (one shared with M2)   1x SATA Power connector (header)   1x SATA Power   1x USB 3.0/2.0 Header   1x USB 3.0 (on M.2 slot)   1x USB 2.0 (on miniPCIe slot)   1x Micro SD Card   1x SIM Card slot   18/24 bit LVDS or 1x eDP 1.3   1x Backlight (power & control)   1x Front Panel HD Audio   2x Serial Port COM1 (opt. as ccTALK)   1x Frontpanel (Power Switch, LEDs, Reset)   1x FAN CPU   1x FAN System   1x internal power header (12-24V)   1x opt. battery header signal + power (SBM3)					
Feature Connector	congatec custom (8 Bit General Purpose I/O)   SPI(for external BIOS)   SMB   LPC   ACPI S3/S4					
External Connectors (Frontpanel)	2x DisplayPort DP++   1x LVDS 2x24 bit/shared with eDP 1.3   3.5mm Audio In and 3.5mm Line Out   2x LAN RJ45   2x USB 3.0   2x USB 2.0   1x DC-In (12-24V, only for commercial variants)					
congatec embedded Controller	Multi-Stage Watchdog   non-volatile User Data Storage   Manufacturing and Board Information   Board Statistics   BIOS Setup Data Backup   I <sup>2</sup> C bus (fast mode   400 kHz   multi-master)   Power Loss Control					
Embedded BIOS	AMI Aptio® 2.X (UEFI) SM-BIOS   BIOS Update   Logo Boot   Quiet Boot   HDD Password					
Security	Discrete "Trusted Platform Module" (TPM 2.0) on board					
Power Specification	Power Management   ACPI S3/S4/DeepSx   Wake on time from S5   Power Supply 12V - 24V   2x FAN (CPU, system) monitored & controlled					
Operating Systems	Microsoft® Windows 10   Microsoft® Windows 10 IoT   Linux   Yocto					
Power Consumption	See manual for full details					
Temperature	Commercial Variants:	Operating Temperature: 0 to +60°C		Storage Temperature: -20 to +70°C		
	Industrial Variants:	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	170 x 170 mm (~6.7 x 6.7")					

# conga-IA5 | Connectors



Optional Feature .....  
Standard Feature \_\_\_\_\_

# conga-IA5 | Block diagram



# conga-IA5 | Order Information

conga-IA5 SBC	PN	Description
conga-IA5/E3950	052801	Thin Mini-ITX board based on Intel® Atom™ x7-E3950 quad core processor with 1.6/2.0 GHz, 1866 MT/s dual channel DDR3L SODIMM memory interface
conga-IA5/i-E3950	052811	Thin Mini-ITX board based on Intel® Atom™ x7-E3950 quad core processor with 1.6/2.0 GHz, 1866 MT/s dual channel DDR3L SODIMM memory interface. Extended temperature version -40°C to 85°C
conga-IA5/E3940	052802	Thin Mini-ITX board based on Intel® Atom™ x5-E3940 quad core processor with 1.6/1.8 GHz, 1866 MT/s dual channel DDR3L SODIMM memory interface
conga-IA5/i-E3940	052812	Thin Mini-ITX board based on Intel® Atom™ x5-E3940 quad core processor with 1.6/1.8 GHz, 1866 MT/s dual channel DDR3L SODIMM memory interface. Extended temperature version -40°C to 85°C
conga-IA5/E3930	052803	Thin Mini-ITX board based on Intel® Atom™ x5-E3930 dual core processor with 1.3/1.8 GHz, 1866 MT/s dual channel DDR3L SODIMM memory interface
conga-IA5/i-E3930	052813	Thin Mini-ITX board based on Intel® Atom™ x5-E3930 dual core processor with 1.3/1.8 GHz, 1866 MT/s dual channel DDR3L SODIMM memory interface. Extended temperature version -40°C to 85°C
conga-IA5/N4200	052820	Thin Mini-ITX board based on Intel® Pentium® N4200 quad core processor with 1.5/2.5 GHz, 1866 MT/s dual channel DDR3L SODIMM memory interface
conga-IA5/N3350	052821	Thin Mini-ITX board based on Intel® Celeron® N3350 dual core processor with 1.1/2.4 GHz, 1600 MT/s dual channel DDR3L SODIMM memory interface

conga-IA5 Accessories	PN	Description
<b>Cooling Solution</b>		
conga-IA5/CSP	052830	Passive cooling solution suitable for Mini-ITX conga-IA5 [for versions with Celeron or Pentium CPU]
conga-IA5/i-CSP	052831	Passive Cooling Solution for Mini-ITX conga-IA5 [for versions with E39xx CPU]
conga-IC87/Retention Frame	052254	Retention frame for standard cooling suitable for conga-IC87/97/170/IA5

I/O Shields	PN	Description
conga-IA4/IO Shield - Standard	052651	IO shield for conga-IA4/IA5 with Standard Mini-ITX height
conga-IA4/IO Shield - Thin	052652	IO shield for conga-IA4/IA5 with Thin Mini-ITX height

Memories	PN	Description
DDR3L-SODIMM-1866 (2GB)	068730	DDR3L SODIMM, 1.35V & 1.5V memory module with 1866 MT/s and 2GB RAM
DDR3L-SODIMM-1866 (4GB)	068731	DDR3L SODIMM, 1.35V & 1.5V memory module with 1866 MT/s and 4GB RAM
DDR3L-SODIMM-1866 (8GB)	068732	DDR3L SODIMM, 1.35V & 1.5V memory module with 1866 MT/s and 8GB RAM
DDR3L-SODIMM-1866 (2GB) / i-temp	068733	DDR3L SODIMM, 1.35V & 1.5V memory module with 1866 MT/s and 2GB RAM supporting extended operating temperature range of -40°C to +85°C
DDR3L-SODIMM-1866 (4GB) / i-temp	068734	DDR3L SODIMM, 1.35V & 1.5V memory module with 1866 MT/s and 8GB RAM supporting extended operating temperature range of -40°C to +85°C
DDR3L-SODIMM-1866 (8GB) / i-temp	068735	DDR3L SODIMM, 1.35V & 1.5V memory module with 1866 MT/s and 8GB RAM supporting extended operating temperature range of -40°C to +85°C

Cables & Adapters	PN	Description
conga-Thin mITX/eDP to DP Adapter	052231	eDP to standard DisplayPort evaluation adapter for congatec Thin Mini-ITX boards
conga-Thin mITX/eDP to HDMI Adapter	052232	eDP to standard HDMI evaluation adapter for congatec Thin Mini-ITX boards
Cab-ThinMini-ITX-SATA-Power	14000120	SATA Power Cable, 15pin female 3x, 6pin female 1x, length 500 mm
Cab-ThinMini-ITX-UART	14000121	UART cable, 2x5pin, 2.54mm female header, D-Sub 9P male, length 200mm
Cab-ThinMini-ITX-USB20-Single	14000122	USB2.0 cable - single, 1x5pin, 2.54mm female header, USB A female w/molding, length 200mm
Cab-ThinMini-ITX-LVDS-OE	14000125	eDP cable for conga-IA5, with open end, 40pin, length 250mm
Cab-ThinMini-ITX-BKLT	14000127	Backlight cable for Thin Mini-ITX, 8pin, with open end, length 300mm
Cab-ThinMini-ITX-SATA-Power	14000136	SATA Power Cable, 15pin female 2x, length 300mm
SATA III Cable Straight/Straight	48000029	SATA III cable with data transfer rate of up to 6 Gbps, connector: straight / straight, length 300mm
SATA III Cable Down/Straight	48000030	SATA III cable with data transfer rate of up to 6 Gbps, connector: down / straight, length 300mm

Power Supplies	PN	Description
Power Supply Unit 65W, 19V / 3.42A	10000145	PSU, 65W, 19V / 3.42A, plug 7.4x5.1mm / 12.5mm length
Power Supply Unit 90W, 19V / 4.74A	10000146	PSU, 90W, 19V / 4.74A, plug 7.4x5.1 / 12.5mm length

This Datasheet should be read in conjunction with "[Errata sheet - congatec xA5 designs](#)", available in the document section of congatec's webportal.

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