



OUR GLOBAL
COMPETENCE
CENTRES

 APOLLO DISPLAY
TECHNOLOGIES



 DISTEC



 DISPLAY
TECHNOLOGY



Datasheet

congatec

conga-PA5

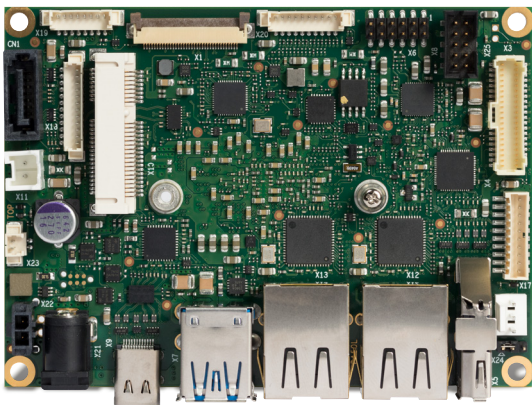
**2,5" Pico-ITX™ Single-Board Computer with Intel® Apollo Lake
Pentium® N4200, Celeron® N3350 / J3455 and Atom™ E39xx Processor,
up to -40°..+85°C**



The information contained in this document has been carefully researched and is, to the best of our knowledge, accurate. However, we assume no liability for any product failures or damages, immediate or consequential, resulting from the use of the information provided herein. Our products are not intended for use in systems in which failures of product could result in personal injury. All trademarks mentioned herein are property of their respective owners. All specifications are subject to change without notice.

INDUSTRIAL PICO-ITX

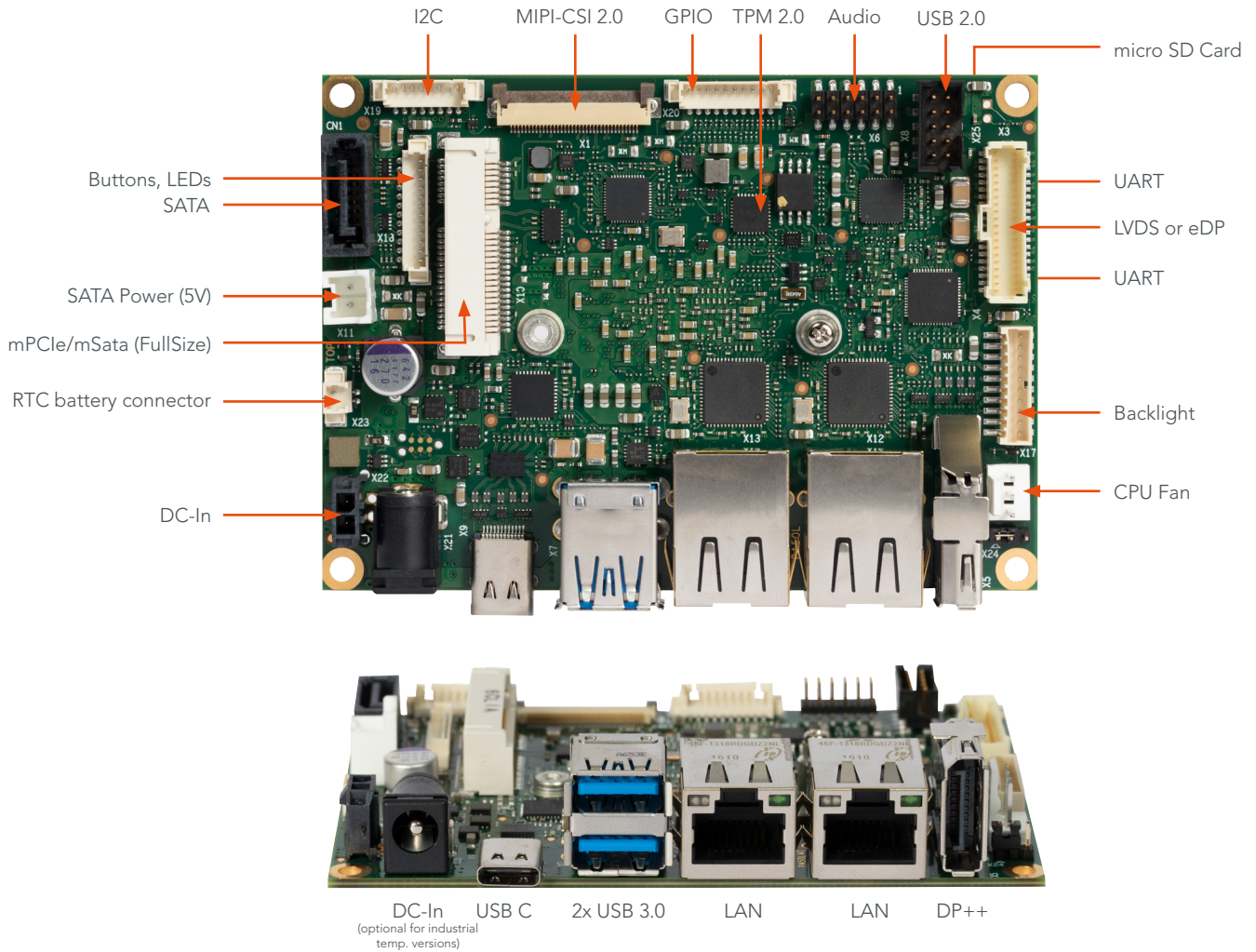
conga-PA5



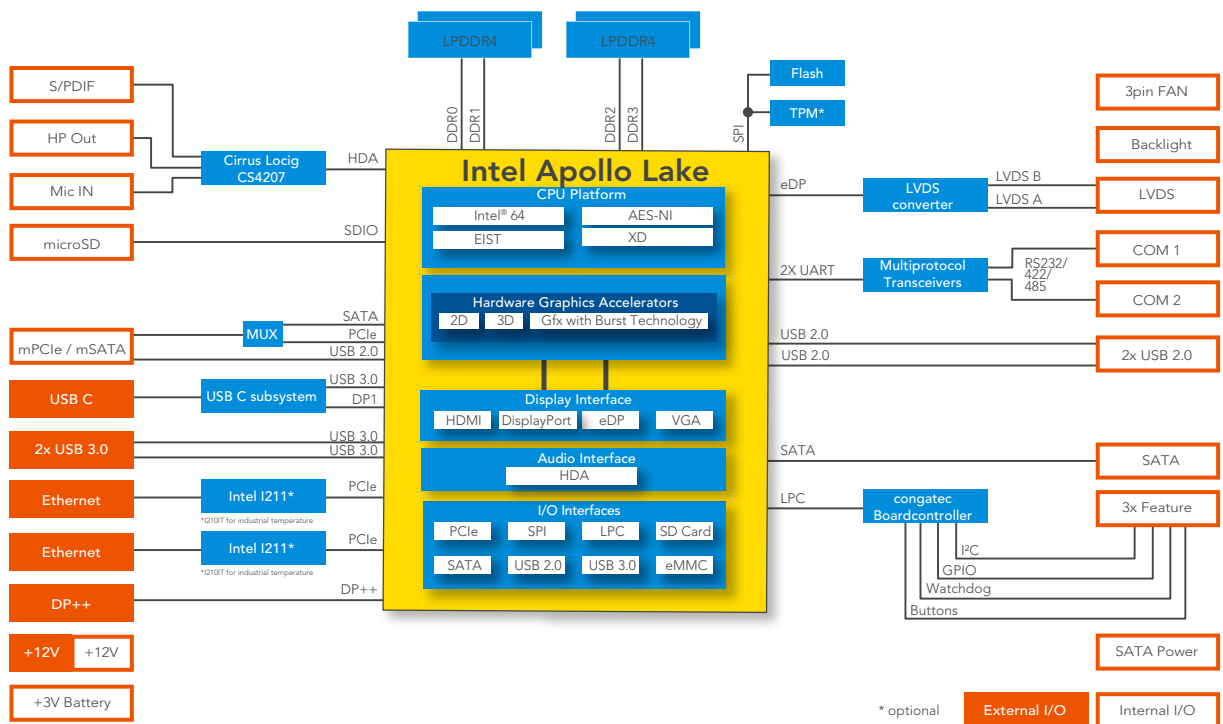
- 5th Generation Intel Atom®, Intel® Celeron® and Intel® Pentium® Processors
- Low Power CPUs 6 to 12 Watt TDP
- Enhanced Intel HD Graphics Generation 9
- Compact design for size-sensitive devices in harsh environments
- Long life components for 24/7 embedded use
- Two Intel® i210/211 Ethernet controllers allowing for enhanced industrial communication
- Extended Temperature variants
- On board TPM for enhanced security

Formfactor	pico-ITX Singleboard Computer 100x72 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
	Intel® Celeron® J3455	2.30 GHz (Burst)	1.5 GHz Clock	Quad Core	L2 cache 2MB 10W TDP
DRAM Memory	up to 4 Channels onboard LPDDR4 (V1.1) with up to 2400 MT/s max. 8 GB				
Chipset	Integrated in SoC				
Ethernet	2x LAN Gbit / 100 Mbit / 10 Mbit Intel Gigabit Ethernet controller i211 (i210 for industrial temperature variants)				
Sound	High Definition Audio Interface Cirrus Logic CS4207				
Graphics	Intel® Gen 9 HD Graphics with support for DirectX12 OpenGL 4.3 OpenCL 2.0 OpenGL ES 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	1x 18/24-bit Single/Dual Channel LVDS Interface or eDP 1.3 1x DisplayPort DP++ up to 4096x2160 @ 60Hz with eDP				
Internal Connectors	1x miniPCIe or mSATA full size 1x SATA (6G) (with auxiliary +5V power connector for 2.5" HDD) 2x USB 2.0 1x LVDS 18/24bit or eDP 1.3 1x Backlight power connector 1x Line Out 1x Mic In 1x S/PDIF Out 1x Power In (+12V) 2x COM (RS232 / RS-485 / RS422) 1x Fan Connector 3x Feature Connector micro SD Card MIPI-CSI 2.0				
External Connectors (Frontpanel)	1x DisplayPort DP++ 2x LAN RJ45 1x USB 3.0 Type C (with PD and DP++) 2x USB 3.0 1x DC-In (optional for industrial temperature variants)				
congatec embedded Controller	Multi-Stage Watchdog non-volatile User Data Storage Manufacturing and Board Information Board Statistics BIOS Setup Data Backup I²C bus (fast mode, 400 kHz, multi-master) Power Loss Control				
Embedded BIOS	AMI Aptio® 2.X (UEFI) BIOS; SM-BIOS BIOS Update Logo Boot Quiet Boot HDD Password				
Security	Integrated Intel® PTT (TPM 2.0) or Infineon SLB9670 (SPI TPM 2.0)				
Power Specification	Power Supply 12V RTC battery				
Operating Systems	Microsoft® Windows 10 Microsoft® Windows 10 IoT Enterprise Microsoft® Windows 10 IoT Core Linux Android				
Temperature	Commercial Variants:	Operating Temperature: 0 .. +60°C		Storage Temperature: -20 .. +70°C	
	Industrial Variants:	Operating Temperature: -40 .. +85°C		Storage Temperature: -40 .. +85°C	
Humidity	Operating:	10 - 90% r. H.			
	Storage:	5 - 95% r.H.			
Size	100 x 72 mm (~3.9 x 2.8")				

conga-PA5 | Connectors



conga-PA5 | Block diagram



conga-PA5 | Order Information

conga-PA5 SBC	PN	Description
conga-PA5/E3950-8G	048100	pico-ITX board based on Intel® Atom™ x7-E3950 quad core processor with 2.00 GHz, 2MB cache and 8 GB 2400 MT/s onboard memory
conga-PA5/E3940-4G	048101	pico-ITX board based on Intel® Atom™ x5-E3940 quad core processor with 1.80 GHz, 2MB cache and 4 GB 2133 MT/s onboard memory
conga-PA5/E3930-4G	048102	pico-ITX board based on Intel® Atom™ x5-E3930 dual core processor with 1.80 GHz, 2MB cache and 4 GB 2133 MT/s onboard memory
conga-PA5/i-E3950-8G	048110	pico-ITX board based on Intel® Atom™ x7-E3950 quad core processor with 2.00 GHz, 2MB cache and 8 GB 2400 MT/s onboard memory. Extended temperature version -40°C to 85°C
conga-PA5/i-E3940-4G	048111	pico-ITX board based on Intel® Atom™ x5-E3940 quad core processor with 1.80 GHz, 2MB cache and 4 GB 2133 MT/s onboard memory. Extended temperature version -40°C to 85°C
conga-PA5/i-E3930-4G	048112	pico-ITX board based on Intel® Atom™ x5-E3930 dual core processor with 1.80 GHz, 2MB cache and 4 GB 2133 MT/s onboard memory. Extended temperature version -40°C to 85°C
conga-PA5/N4200-8G	048120	pico-ITX board based on Intel® Pentium® N4200 quad core processor with 2.50 GHz, 2MB cache and 8 GB 2400 MT/s onboard memory
conga-PA5/J3455-4G	048122	pico-ITX board based on Intel® Celeron® J3455 quad core processor with 1.52GHz up to 2.30 GHz and 4GB 2400MT/s LPDDR4 onboard memory
conga-PA5/N4200-4G	048123	pico-ITX board based on Intel® Pentium® N4200 quad core processor with 1.5/2.5 GHz and 4GB 2400MT/s LPDDR4 onboard memory
conga-PA5/N3350-4G	048121	pico-ITX board based on Intel® Celeron™ N3350 dual core processor with 2.40 GHz, 2MB cache and 4 GB 2400 MT/s onboard memory

conga-PA5 Accessories	PN	Description
Cooling Solution		
PA5/HSP-T	048150	Heatspreader solution for conga-PA5 based on Pentium and Celeron processors. All standoffs are with M2.5 thread.
PA5/i-HSP-T	048151	Heatspreader solution for conga-PA5 based on Atom E39xx processors. All standoffs are with M2.5 thread.
PA5/CSP-T	048152	Passive cooling solution for conga-PA5 based on Pentium and Celeron processors and heat sink with 12mm heatsink fins. All standoffs are with M2.5 thread.
PA5/i-CSP-T	048153	Passive cooling solution for conga-PA5 based on Atom E39xx processors with 12mm heatsink fins. All standoffs are with M2.5 thread.
PA5/HSP-B	048154	Heatspreader solution for conga-PA5 based on Pentium and Celeron processors. All standoffs are with 2.7mm bore hole.
PA5/i-HSP-B	048155	Heatspreader solution for conga-PA5 based on Atom E39xx processors. All standoffs are with 2.7mm bore hole.
Cables		
PA5 cable kit	14000203	Cable Kit for conga-PA5 containing cab-Pico-ITX-USB2.0-Twin, cab-Pico-ITX-Audio Cable Adapter, cab-Pico-ITX-Buttons-LED, cab-Pico-ITX-GPIO, cab-Pico-ITX-RS232, cab-Pico-ITX-RS485, cab-Pico-ITX-External-Power, cab-Pico-ITX-Feature, cab-Pico-ITX-SATA-Power, SATA Cable and Mini-PCIe full-size card extender
cab-Pico-ITX-LVDS	14000211	LVDS data cable for Pico-ITX to connect LCD panel AUO G170EG01 V.1 (panel part number #10000132 17" LVDS Panel G170EG01 V.1)
cab-Pico-ITX-Backlight	14000206	Backlight power cable for Pico-ITX to connect LCD panel AUO G170EG01 V.1 (panel part number #10000132 17" LVDS Panel G170EG01 V.1)
cab-Pico-ITX-RS232	14000152	RS232 internal cable adapter, DSUB9 male, length 150mm
cab-Pico-ITX-RS422	14000153	RS422 cable adapter, DSUB9 male, length 150mm
cab-Pico-ITX-RS485	14000154	RS485 cable adapter, DSUB9 male, length 150mm
cab-Pico-ITX-GPIO	14000151	GPIO cable, free end, length 150 mm
cab-Pico-ITX-Buttons-LED	14000147	Buttons and LEDs cable, length 150 mm
cab-Pico-ITX-Power	14000172	Internal power cable for industrial versions of conga-PA5, length 150 mm
Power Supplies		
Power Supply 40W	10000238	PSU, 40W, 12V / 3.33A, Plug 5.5x2.5mm / 9.5mm length
Power Supply 60W	10000239	PSU, 60W, 12V / 5A, Plug 5.5x2.5mm / 10mm length

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

© 2020 congatec AG. All rights reserved.

All data is for information purposes only. Although all the information contained within this document is carefully checked, no guarantee of correctness is implied or expressed. Product names, logos, brands, and other trademarks featured or referred are the property of their respective trademark holders. These trademark holders are not affiliated with congatec AG. Rev. March 11, 2020 CE

CONGA-PA5 – 2,5" PICO-ITX SBC

BOARD / TFT-DISPLAY KITS WITH CABLES AND ACCESSORIES

Display Size	7,0" (17.78cm)	7,0" (17.78cm)	10,1" (25.654cm)	10,1" (25.654cm)	10,4" (26.416cm)	12,1" (30.734cm)	13,3" (33.782cm)
Part Number	TM070JVHG33-01	AA070TA01	TM101JVHG32-01	TM101JDHG32-00	G104XVN01.0	G121EAN01.0	G133HAN01.0
Manufacturer	Tianma	Mitsubishi	Tianma	Tianma	AUO	AUO	AUO
Resolution	1280x800	1280x768	1280x800	1280x800	1024x768	1280x800	1920x1080
Brightness [cd/m2]	500 cd/m2	1000 cd/m2	850 cd/m2	1000 cd/m2	470	500	400
Backlight	LED	LED	LED	LED	LED	LED	LED
Converter	integrated	integrated	integrated	integrated	integrated	integrated	integrated
Viewing Angle v/h	170°/170°	176°/176°	170°/170°	170°/170°	178°/178°	178°/178°	178°/178°
Interfaces	LVDS	LVDS	LVDS	LVDS	LVDS	LVDS	LVDS
Dimensions mm	181.8x125.6x6.35	169.8x109.7x8.9	258.7x177.3x12.5	229.8x149.0x9.11	238.6x175.8x6.5	278.0x184.0x9.29	309.7x184.1x9.6
Touch	PCAP	PCAP	PCAP	PCAP			

Form Factor	2,5" Pico-ITX™ Single-Board Computer
Manufacturer	congatec
Part Number	conga-PA5
Processor	Intel® Celeron® N4200
Memory	4GB DDR3L (optional up to 8GB)
SSD	32GB MLC mSATA (included)
Expansion Slot	1x miniPCIe (1x Full Size shared with mSATA)
Display Interface	DisplayPort
LVDS	24-bit Dual Channel LVDS
LAN	2x Gigabit LAN
SATA	1x SATA
	2x RS232/422/485,
I/O	2x USB 3.0, 1x USB 3.0 Type C, 2x USB 2.0
	Digital I/O
Power	12V DC-in



Other configuration on request!

Our company network supports you worldwide with offices in Germany, Austria, Switzerland, the UK and the USA. For more information please contact:

Headquarters

Germany



FORTEC Elektronik AG

Augsburger Str. 2b
82110 Germering

Phone: +49 89 894450-0
E-Mail: info@forteca.de
Internet: www.forteca.de

Fortec Group Members

Austria



Distec GmbH Office Vienna

Nuschinggasse 12
1230 Wien

Phone: +43 1 8673492-0
E-Mail: info@distec.de
Internet: www.distec.de

Germany



Distec GmbH

Augsburger Str. 2b
82110 Germering

Phone: +49 89 894363-0
E-Mail: info@distec.de
Internet: www.distec.de

Switzerland



ALTRAC AG

Bahnhofstraße 3
5436 Würenlos

Phone: +41 44 7446111
E-Mail: info@altrac.ch
Internet: www.altrac.ch

United Kingdom



Display Technology Ltd.

Osprey House, 1 Osprey Court
Hichingbrooke Business Park
Huntingdon, Cambridgeshire, PE29 6FN

Phone: +44 1480 411600
E-Mail: info@displaytechnology.co.uk
Internet: www.displaytechnology.co.uk

USA



Apollo Display Technologies, Corp.

87 Raynor Avenue,
Unit 1 Ronkonkoma,
NY 11779

Phone: +1 631 5804360
E-Mail: info@apolloDisplays.com
Internet: www.apolloDisplays.com