

ECX-APL

EXTENDED / EXTREME TEMPERATURE SUPPORT



3.5" ECX SINGLE BOARD COMPUTER WITH INTEL® APOLLO LAKE SOC PROCESSORS

- ▶ 1x LVDS, 1x HDMI, 1x DP for display output
- ▶ 2x GbE LAN for Ethernet
- ▶ 4x USB 3.0, 2x USB 2.0, 2x RS232/422/485, 4x RS232, 1x 8-bit DIO for peripherals
- ▶ 1x SATA 3.0, 1x Micro-SD Cage for storage
- ▶ 1x mPCIe, 1x M.2 Key B for expansion

POSSIBILITIES START HERE



ECX-APL

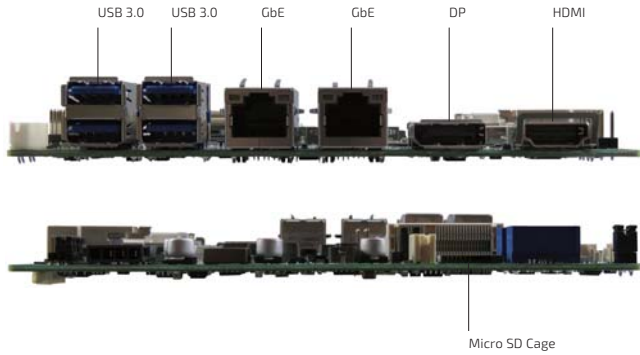
3.5" ECX SINGLE BOARD COMPUTER WITH INTEL® APOLLO LAKE SOC PROCESSORS

ECX-APL is a 3.5" ECX (Embedded Compact eXtended) form factor SBC (Single Board Computer) equipped with Intel Apollo Lake SoC Processors, providing up to 30 % increase in processing / graphics performance and 15 % increase in power efficiency over models powered by previous-generation processors. In addition, ECX-APL

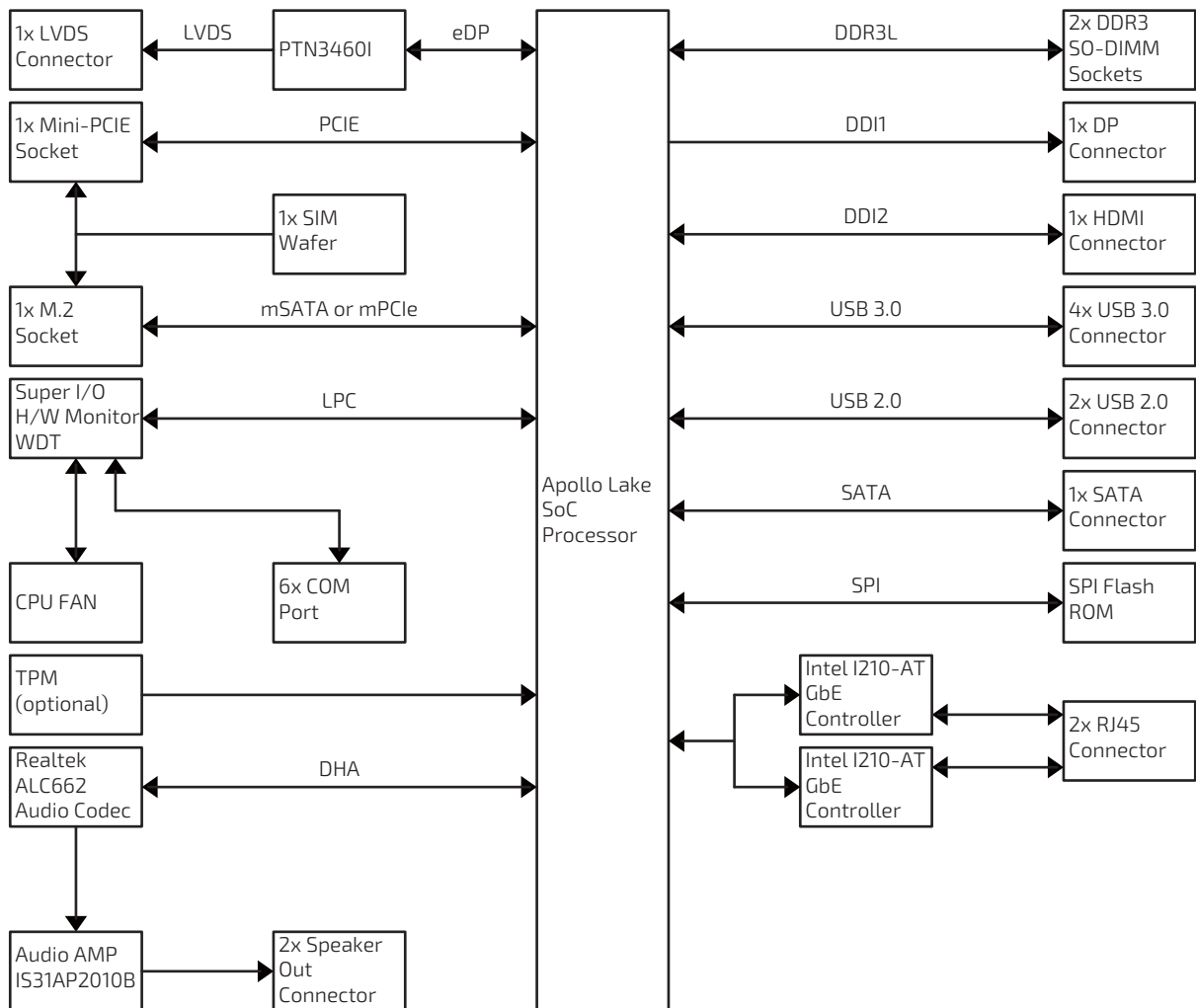
supports a highly-integrated M.2 expansion socket and thus allows developers to build more compact or thinner embedded devices. Extended and extreme temperature models are available for integration into the systems used under extreme high, low or radically fluctuating temperatures.

▶ PRODUCT HIGHLIGHTS

- ▶ Intel® Apollo Lake SoC Processors
- ▶ 2x DDR3L SO-DIMM
- ▶ 1x LVDS, 1x HDMI, 1x DP for display output
- ▶ Triple display support
- ▶ 2x GbE LAN for Ethernet
- ▶ 4x USB 3.0, 2x USB 2.0, 6x COM, 1x 8-bit DIO for peripherals
- ▶ 1x SATA 3.0, 1x Micro-SD Cage for storage
- ▶ 1x mPCIe, 1x M.2 Key B for expansion
- ▶ Extended / extreme temperature model available



▶ BLOCK DIAGRAM



► TECHNICAL INFORMATION

SYSTEM	PROCESSOR	Intel® Atom™ x7-E3950 (Quad Core, 2M Cache, up to 2.00 GHz, FCBGA1296, 12 W TDP) Intel® Atom™ x5-E3940 (Quad Core, 2M Cache, up to 1.80 GHz, FCBGA1296, 9.5 W TDP) Intel® Atom™ x5-E3930 (Dual Core, 2M Cache, up to 1.80 GHz, FCBGA1296, 6.5 W TDP) Intel® Pentium® N4200 (Quad Core, 2M Cache, up to 2.50 GHz, FCBGA1296, 6 W TDP) Intel® Celeron® N3350 (Dual Core, 2M Cache, up to 2.40 GHz, FCBGA1296, 6 W TDP) 2x DDR3L 1867 1.35 V SO-DIMM
VIDEO	GRAPHICS	Intel® HD Graphics 505 (for models w/ x7-E3950, N4200)
	DISPLAY INTERFACE	Intel® HD Graphics 500 (for models w/ x5-E3940, x5-E3930, N3350) 1x LVDS (18/24-bit, 1/2-ch) 1x HDMI 1.4 (3840 x 2160 @ 30 Hz, on rear) 1x DP 1.2 (4096 x 2160 @ 60 Hz, on rear)
	MULTIPLE DISPLAY	Triple Display
AUDIO	AUDIO CODEC	Realtek ALC662
	AUDIO INTERFACE	2x Speaker-out (3 W) 1x Line-in (by header, extreme temperature model excluded) 1x Line-out (by header, extreme temperature model excluded) 1x Mic-in (by header, extreme temperature model excluded)
NETWORK CONNECTION	ETHERNET	2x GbE LAN (RJ45 on rear, Intel® I210-AT)
PERIPHERAL CONNECTION	USB	4x USB 3.0 (Type A on rear)
	SERIAL PORT	2x USB 2.0 (by header)
	OTHER I/Os	2x RS232/422/485 (by wafer, auto flow control function for RS485) 4x RS232 (by wafer) 1x 8-bit DIO (by header)
STORAGE & EXPANSION		1x SATA 3.0 1x Micro SD Cage (on front) 1x mPCIe (full size) 1x M.2 Key B (mixed w/ USB 2.0 / SATA type 22x42) 1x SIM Card Cage (by wafer, switchable between mPCIe and M.2)
POWER	CONNECTOR	1x4-pin Wafer (Straight & Right Angle dual-footprint)
	INPUT VOLTAGE	DC 12 V
FIRMWARE	BIOS	AMI uEFI BIOS w/ 128 Mb SPI Flash
	WATCHDOG	Programmable WDT to generate system reset event
	H/W MONITOR	Voltages, Temperatures
	REAL TIME CLOCK	Processor integrated RTC
	TPM	Optional (Infineon SLB 9665 TPM 2.0)
SYSTEM CONTROL & MONITORING	FP HEADER	1x Header Reset button, HDD LED & External Speaker 1x Header for Power button, Power LED & SM bus 1x Header for mPCIe activity LED 1x Header for M.2 activity LED
COOLING	FAN	1x Wafer for System Smart Fan
SOFTWARE	OS SUPPORT	Windows 10, Linux
MECHANICAL	DIMENSION (L x W)	ECX (146 mm x 105 mm / 5.75" x 4.13")
ENVIRONMENTAL	OPERATION TEMPERATURE	0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard) -20 °C ~ 70 °C / -4 °F ~ 158 °F (Extended) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)
	STORAGE TEMPERATURE	-20 °C ~ 80 °C / -4 °F ~ 176 °F (Standard) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extended) -55 °C ~ 85 °C / -67 °F ~ 185 °F (Extreme)
	HUMIDITY	0 % ~ 95 %
CERTIFICATION	EMC & SAFETY	CE, FCC Class A

▶ ORDERING INFORMATION

ARTICLE	DESCRIPTION
ECX-APL-E3950	Intel® Atom™ x7-E3950, w/ audio, w/o TPM, Operating temperature: 0 °C ~ 60 °C
ECX-APL-E3950	Intel® Atom™ x7-E3950, w/ audio, w/ TPM, Operating temperature: 0 °C ~ 60 °C
ECX-APL-E3940	Intel® Atom™ x5-E3940, w/ audio, w/o TPM, Operating temperature: 0 °C ~ 60 °C
ECX-APL-E3930	Intel® Atom™ x5-E3930, w/ audio, w/o TPM, Operating temperature: 0 °C ~ 60 °C
ECX-APL-E3930	Intel® Atom™ x5-E3930, w/ audio, w/ TPM, Operating temperature: 0 °C ~ 60 °C
ECX-APL-N4200	Intel® Pentium® N4200, w/ audio, w/o TPM, Operating temperature: 0 °C ~ 60 °C
ECX-APL-N3350	Intel® Celeron® N3350, w/ audio, w/o TPM, Operating temperature: 0 °C ~ 60 °C
ECX-APL-E3950-XT	Intel® Atom™ x7-E3950, w/o audio, w/o TPM, Operating temperature: -40 °C ~ 85 °C
ECX-APL-E3940-XT	Intel® Atom™ x5-E3940, w/o audio, w/o TPM, Operating temperature: -40 °C ~ 85 °C
ECX-APL-E3930-XT	Intel® Atom™ x5-E3930, w/o audio, w/o TPM, Operating temperature: -40 °C ~ 85 °C

OPTIONAL ACCESSORIES - CABLING

COM PORT CABLE	10-pin pitch = 1.25 mm to DB-9 connector, L = 350 mm
DIO CABLE	MX51021-10P 1x10P 1.25 pitch to D-SUB-9P (Female), L = 200 mm
USB CABLE (2 PORT)	DP-2.54 2x5P pitch: 2.54 mm to 2x USB Female, L = 340 mm
SATA PPOWER CABLE	SATA 1x15P pitch: 1.27 mm to PH 2.0 HSG 1x4P 2.0 pitch, L = 460 mm
SATA CABLE	SATA 1x7P pitch: 1.27 mm with lock, L = 460 mm
AUDIO CABLE	WL6008H 2x6P 2.54 pitch to EAR phone jack x3 pitch: 3.5 mm, L = 350 mm
DC IN CABLE	2.5 DC Jack w/ 2 mm nut, 0.5 mm washer to H-300F-XX 1x4P 3.0 pitch, L = 300 mm
MINI SIM CARD HOLDER KIT	1x Mini SIM card holder, 1x Cable (0C5020000001300L)
HEATSINK (FOR N-SERIES 6 W)	148 x 105 x 15.8 mm metal AL6063 T5 RoHS, K5 pad, 40 x 25 x 0.5 mm, w/ 4x M3X5 screw
HEATSINK (FOR E-SERIES 12 W)	148 x 105 x 15.8 mm metal AL6063 T5 RoHS, T725 pad, 31 x 24 x 0.13 mm, w/ 4x M3X5 screw

▶ GLOBAL HEADQUARTERS

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