

3.5" Single Board Computer with Intel® Atom® x6000E Series Processors

- ▶ Time Coordinated Computing / Time Sensitive Networking for real-time control
- ▶ Intel® Programmable Services Engine support for real-time Arm-based applications
- ▶ Additional Rear I/O expansion via board-to-board connector
- ▶ Industrial-grade operating temperature range for extreme environmental conditions
- ▶ Hardware-based protection against malware and sophisticated cyberattacks

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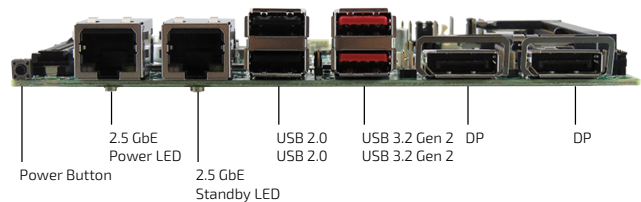
3.5"-SBC-EKL is a 3.5" single board computer powered by Intel® Atom® x6000E Series, Celeron® J6000 / N6000 Series and Pentium® J6000 / N6000 Series processors. Besides great performance improvement in graphics, it features 2.5 GbE with TSN (Time Sensitive Networking) capability and enhanced TPM 2.0 security / encryption support, ideal for a variety of IoT applications, such as

industrial automation, retail, smart city and healthcare.

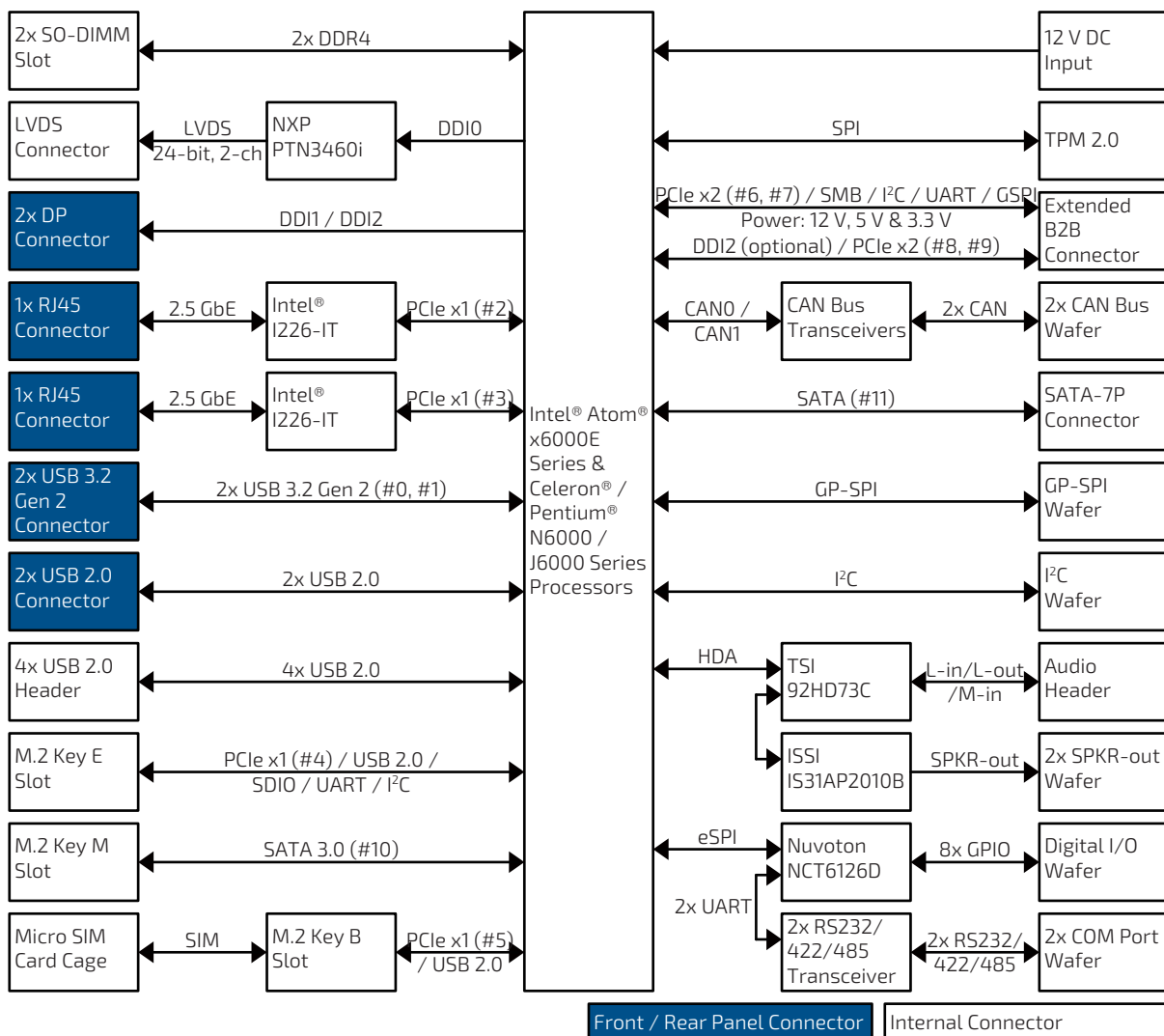
The board supports an extended board-to-board connector, providing additional I/O port expansion to fulfill possible application requirements.

- ▶ Intel® Atom® x6000E Series processors
- ▶ Intel® Celeron® J6000 / N6000 Series processors
- ▶ Intel® Pentium® J6000 / N6000 Series processors
- ▶ 2x DDR4 SO-DIMM memory socket
- ▶ 2x DP, 1x LVDS for video output
- ▶ 2x 2.5 GbE LAN for Ethernet
- ▶ 2x USB 3.2 Gen 2, 6x USB 2.0 for USB device connection
- ▶ 2x RS232/422/485 for programmable serial communication
- ▶ 1x GP-SPI for synchronous serial communication
- ▶ 2x CAN Bus for industrial networking
- ▶ 1x I²C for sensor or other control function
- ▶ 8x DIO for device / signal control
- ▶ 1x SATA 3.0 for storage device

- ▶ 1x M.2 Key B for SSD, WWAN or other expansion
- ▶ 1x M.2 Key E for WLAN, Bluetooth or other expansion
- ▶ 1x M.2 Key M for SSD
- ▶ 1x board-to-board connector for additional rear I/Os
- ▶ TPM 2.0 support
- ▶ Extreme temperature model available: -40 °C ~ 85 °C



Block Diagram



SYSTEM	PROCESSOR	Intel® Atom® x6211E (Dual Core, 1.5M Cache, 1.3 / 3.0 GHz, FCBGA1493, 6 W TDP) Intel® Atom® x6212RE (Dual Core, 1.5M Cache, 1.2 GHz, FCBGA1493, 6 W TDP) Intel® Atom® x6425RE (Quad Core, 1.5M Cache, 1.9 GHz, FCBGA1493, 12 W TDP) Intel® Celeron® J6413 (Quad Core, 1.5M Cache, 1.8 / 3.0 GHz, FCBGA1493, 10 W TDP)
	MEMORY	2x DDR4 3200 SO-DIMM up to 32 GByte
VIDEO	GRAPHICS DISPLAY INTERFACE	Intel® UHD Graphics for 10th Gen Intel® Processors 1x LVDS (24-bit, 2-ch, 1920 x 1200 @ 60 Hz)
	MULTIPLE DISPLAY	2x DP (4096 x 2160 @ 60 Hz, on rear, DDIZ can support on B2B optionally) Triple Display
AUDIO	AUDIO CODEC AUDIO INTERFACE	TSI 92HD73C 1x Speaker-out (Stereo, 3 W) 1x Line-in (by header) 1x Line-out (by header) 1x Mic-in (by header)
NETWORK CONNECTION	ETHERNET	2x 2.5 GbE LAN (RJ45 on rear, Intel® I226-LM/IT, TSN support*)
PERIPHERAL CONNECTION	USB	2x USB 3.2 Gen 2 (Type A on rear) 6x USB 2.0 (2x Type A on rear, 4x by header)
	SERIAL PORT OTHER I/Os	2x RS232/422/485 (by header) 8x DIO (by header) 2x CAN bus (by header, Intel® PSE support) 1x GP-SPI (by header, Intel® PSE support) 1x I ² C (by header)
STORAGE & EXPANSION	SATA M.2	1x SATA 3.0 1x M.2 Key B (Type 2242 / 2280, w/ PCIe x1 / USB 2.0 / UIM) 1x M.2 Key E (Type 2230, w/ PCIe x1 / USB 2.0 / SDIO / UART / I ² C) 1x M.2 Key M (Type 2280, w/ SATA 3.0)
	SIM CARD HOLDER BOARD-TO-BOARD CONNECTOR	1x SIM Card Holder (Micro type) 2x PCIe x2 1x SM Bus 1x I ² C 1x UART 1x GSPI 1x DDI (optional)
POWER	INPUT VOLTAGE CONNECTOR	DC 12 V 1x4-pin pitch 3.0 mm Wafer
FIRMWARE	BIOS WATCHDOG H/W MONITOR REAL TIME CLOCK SECURITY	AMI uEFI BIOS w/ 256 Mb SPI Flash Programmable WDT to generate system reset event Voltages, Temperatures SoC integrated RTC TPM 2.0 Support (Infineon SLB 9670)
SYSTEM CONTROL & MONITORING	FP HEADER BUTTON, SWITCH & INDICATOR	1x Header for Reset Button, HDD LED & External Speaker 1x Header for Power Button, Power LED & SM Bus 1x Standby LED (on rear) 1x Power LED (on rear, GPIO controlled) 1x Power Button (on rear)
COOLING	COOLING METHOD	Passive
SOFTWARE	OS SUPPORT	Windows 10, Linux
MECHANICAL	DIMENSION (L x W)	ECX (146 mm x 105 mm / 5.75" x 4.13")
ENVIRONMENTAL	OPERATING TEMPERATURE	0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard)
	STORAGE TEMPERATURE	-40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)
	HUMIDITY	-20 °C ~ 80 °C / -4 °F ~ 176 °F (Standard) -55 °C ~ 85 °C / -67 °F ~ 185 °F (Extreme)
COMPLIANCE	EMC & SAFETY	0 % ~ 95 % CE Class B, FCC Class B, ICES Class B, UKCA, UR (UL Recognized)

*TSN support only for models with Atom® RE Series processors

Ordering Information

ARTICLE	ORDERING CODE*		DESCRIPTION
	EMEA / AMERICA	APAC	
3.5"-SBC-EKL-0-J6413	43018-0000-18-4		Intel® Celeron® J6413, Operating Temperature: 0 °C ~ 60 °C
3.5"-SBC-EKL-1-x6211E-XT	43018-0000-13-2		Intel® Atom® x6211E, Operating Temperature: -40 °C ~ 85 °C
3.5"-SBC-EKL-2-x6212RE-XT	43018-0000-12-2		Intel® Atom® x6212RE, Operating Temperature: -40 °C ~ 85 °C
3.5"-SBC-EKL-3-x6425RE-XT	43018-0000-19-4		Intel® Atom® x6425RE, Operating Temperature: -40 °C ~ 85 °C

(* For ordering code for APAC, contact your local account manager.)

Accessories

NO.	ARTICLE	ORDERING CODE		DESCRIPTION
		EMEA / AMERICA	APAC	
1	DC IN CABLE*	1064-2433	0C5020000004220L	2.5 mm DC Jack to H-300F-XX 1x4P 3.0 pitch, L = 300 mm
2	SATA CABLE	1064-2431	0C5020000004240L	1x7-pin connector with lock, pitch = 1.27 mm, L = 460 mm
3	SATA POWER CABLE	1064-2430	0C5020000004230L	PH 2.0 HSG 1x4P 2.0 mm pitch to SATA 1x15P Pitch: 1.27 mm, L = 460 mm
4	COM PORT CABLE	1064-2427	0C5020000005130L	10-pin pitch = 1.25 mm to DB9 connector, L = 350 mm
5	DIO CABLE	1065-3137	0C5020000003360L	D-SUB-9P (Female) to MX51021-10P 1x10P 1.25 pitch, L = 200 mm
6	USB CABLE (2 PORT)	1069-7893	0C5020003000010L	2x5-pin pitch 2.0 mm to 2x USB 2.0 Type A female w/ bracket, L = 27 cm
7	AUDIO CABLE	1070-1245	0C5020000005840L	2x5-pin pitch 1.25 mm to 3x 3.5 mm ear phone jack, L = 400 mm
8	ADAPTER	1069-3055	0I0902G5T60A101L	Input: AC 90 V ~ 264 V, output: DC 12 V @ 5 A Max. 60 W
9	HEATSINK	1070-1238	0ZHK35SEKL000001	AL heatsink w/ thermal pad & screws for Celeron®/Pentium® N/J Series
10	HEATSINK	1070-1239	0ZHK35SEKL000002	AL heatsink w/ thermal pad & screws for Atom® x6000E Series
11	I/O CARD (3.5"-elO-GPA-0)	1069-6159	B35EGPA0-001001T	2x DP, 2x 2.5 GbE, 1x UART, 1x I ² C, 1x SMBus, 1x GSPI, 1x DC In, 0 °C ~ 60 °C
12	I/O CARD (3.5"-elO-GPA-1)	1069-6922	B35EGPA0-011001T	2x DP, 2x 2.5 GbE, 1x UART, 1x I ² C, 1x SMBus, 1x GSPI, 0 °C ~ 60 °C
13	I/O CARD (3.5"-elO-GPA-2-XT)	TBD	B35EGPAI-021000T	2x DP, 2x 2.5 GbE, 1x UART, 1x I ² C, 1x SMBus, 1x GSPI, 1x DC In, -40 ~ 85 °C

(*: standard supplied accessories for single-piece box packing)

Starter Kits

ARTICLE	ORDERING CODE		DESCRIPTION
	EMEA / AMERICA	APAC	
STARTER KITS FOR 3.5"-SBC-EKL N/J SERIES	1070-4932	0ZHK35SEKL000003	Including above accessories table No. 1 - 8 & 9
STARTER KITS FOR 3.5"-SBC-EKL X SERIES	1070-2327	0ZHK35SEKL000004	Including above accessories table No. 1 - 8 & 10

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