

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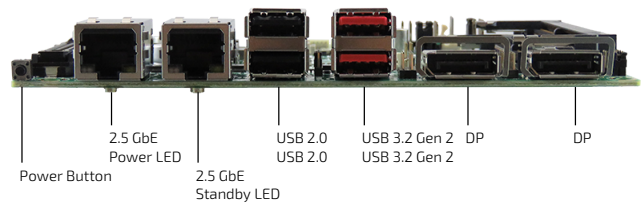
3.5"-SBC-EKL is a 3.5" single board computer powered by Intel® Atom® x6000E Series, Celeron® J6000 / N6000 Series and Pentium® J6000 / N6000 Series processors. Besides great performance improvement in graphics, it features 2.5 GbE with TSN (Time Sensitive Networking) capability and enhanced TPM 2.0 security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

industrial automation, retail, smart city and healthcare.

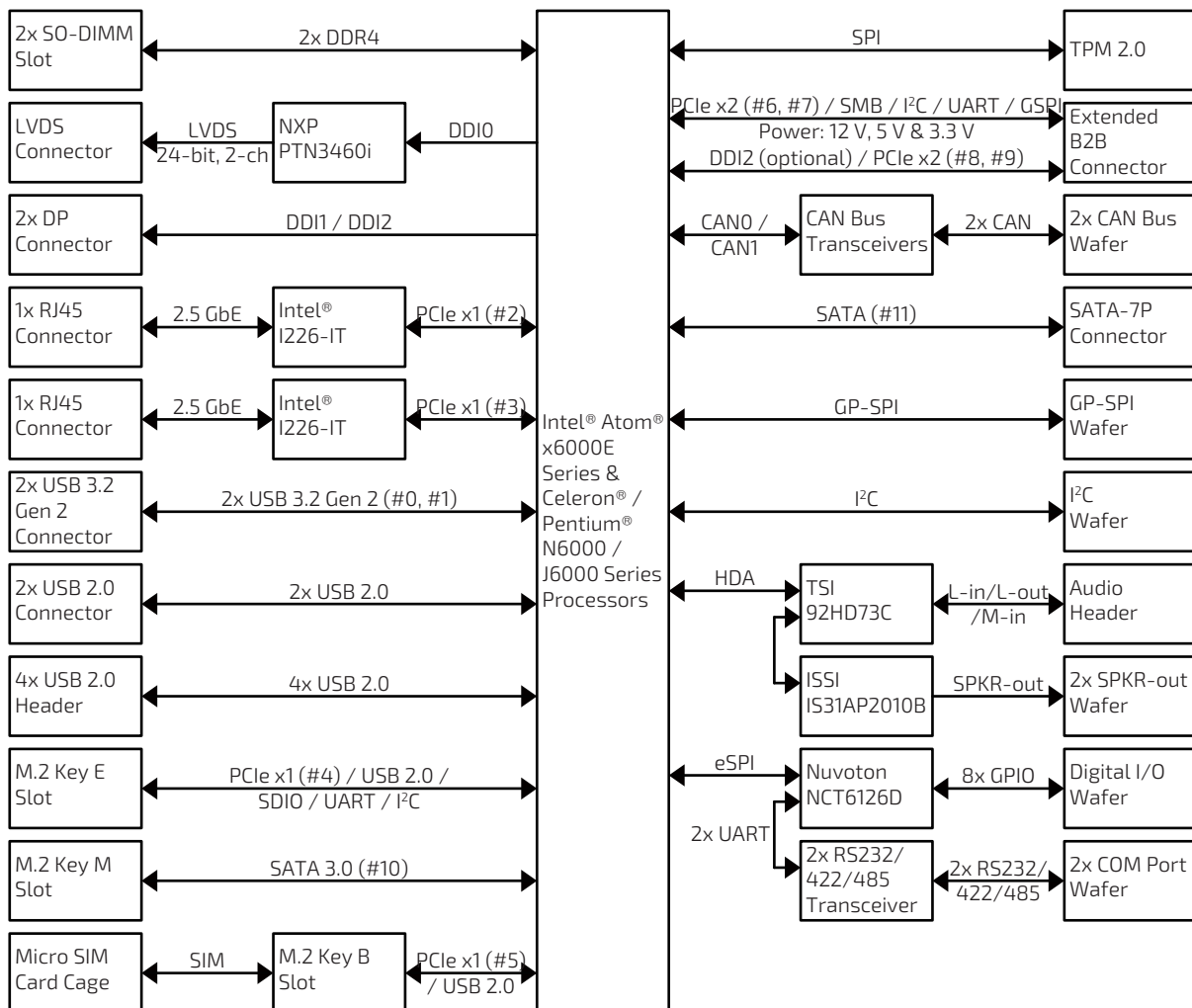
The board supports an extended board-to-board connector, providing additional I/O port expansion to fulfill possible application requirements.

- 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 I<sup>2</sup>C 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



<b>SYSTEM</b>	<b>PROCESSOR</b>	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)
	<b>MEMORY</b>	2x DDR4 3200 SO-DIMM up to 32 GByte
<b>VIDEO</b>	<b>GRAPHICS DISPLAY INTERFACE</b>	Intel® UHD Graphics for 10th Gen Intel® Processors 1x LVDS (24-bit, 2-ch, 1920 x 1200 @ 60 Hz)
	<b>MULTIPLE DISPLAY</b>	2x DP (4096 x 2160 @ 60 Hz, on rear, DDIZ can support on B2B optionally) Triple Display
<b>AUDIO</b>	<b>AUDIO CODEC AUDIO INTERFACE</b>	TSI 92HD73C 1x Speaker-out (Stereo, 3 W) 1x Line-in (by header) 1x Line-out (by header) 1x Mic-in (by header)
<b>NETWORK CONNECTION</b>	<b>ETHERNET</b>	2x 2.5 GbE LAN (RJ45 on rear, Intel® I226-LM/IT, TSN support*)
<b>PERIPHERAL CONNECTION</b>	<b>USB</b>	2x USB 3.2 Gen 2 (Type A on rear) 6x USB 2.0 (2x Type A on rear, 4x by header)
	<b>SERIAL PORT OTHER I/Os</b>	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 <sup>2</sup> C (by header)
<b>STORAGE &amp; EXPANSION</b>	<b>SATA M.2</b>	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 <sup>2</sup> C) 1x M.2 Key M (Type 2280, w/ SATA 3.0)
	<b>SIM CARD HOLDER BOARD-TO-BOARD CONNECTOR</b>	1x SIM Card Holder (Micro type) 2x PCIe x2 1x SM Bus 1x I <sup>2</sup> C 1x UART 1x GSPI 1x DDI (optional)
<b>POWER</b>	<b>INPUT VOLTAGE CONNECTOR</b>	DC 12 V 1x4-pin pitch 3.0 mm Wafer
<b>FIRMWARE</b>	<b>BIOS WATCHDOG H/W MONITOR REAL TIME CLOCK SECURITY</b>	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)
<b>SYSTEM CONTROL &amp; MONITORING</b>	<b>FP HEADER BUTTON, SWITCH &amp; INDICATOR</b>	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)
<b>COOLING</b>	<b>COOLING METHOD</b>	Passive
<b>SOFTWARE</b>	<b>OS SUPPORT</b>	Windows 10, Linux
<b>MECHANICAL</b>	<b>DIMENSION (L x W)</b>	ECX (146 mm x 105 mm / 5.75" x 4.13")
<b>ENVIRONMENTAL</b>	<b>OPERATING TEMPERATURE</b>	0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard)
	<b>STORAGE TEMPERATURE</b>	-40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme)
	<b>HUMIDITY</b>	-20 °C ~ 80 °C / -4 °F ~ 176 °F (Standard) -55 °C ~ 85 °C / -67 °F ~ 185 °F (Extreme)
<b>COMPLIANCE</b>	<b>EMC &amp; SAFETY</b>	0 % ~ 95 % CE Class B, FCC Class B

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

# Ordering Information

ARTICLE	DESCRIPTION
3.5"-SBC-EKL-0-J6413	Intel® Celeron® J6413, Operating Temperature: 0 °C ~ 60 °C
3.5"-SBC-EKL-1-x6211E-XT	Intel® Atom® x6211E, Operating Temperature: -40 °C ~ 85 °C
3.5"-SBC-EKL-2-x6212RE-XT	Intel® Atom® x6212RE, Operating Temperature: -40 °C ~ 85 °C
3.5"-SBC-EKL-3-x6425RE-XT	Intel® Atom® x6425RE, Operating Temperature: -40 °C ~ 85 °C

## Accessories

NO.	ARTICLE	ORDERING CODE		DESCRIPTION
		EMEA / AMERICA	APAC	
1	DC IN CABLE*	1064-2433	0C502000004220L	2.5 mm DC Jack to H-300F-XX 1x4P 3.0 pitch, L = 300 mm
2	SATA CABLE	1064-2431	0C502000004240L	1x7-pin connector with lock, pitch = 1.27 mm, L = 460 mm
3	SATA POWER CABLE	1064-2430	0C502000004230L	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	0C502000005130L	10-pin pitch = 1.25 mm to DB9 connector, L = 350 mm
5	DIO CABLE	1065-3137	0C502000003360L	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	0C502000005840L	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"-eIO-GPA-0)	1069-6159	B35EGPA0-001001T	2x DP, 2x 2.5 GbE, 1x UART, 1x I <sup>2</sup> C, 1x SMBus, 1x GSPI, 1x DC In, 0 °C ~ 60 °C
12	I/O CARD (3.5"-eIO-GPA-1)	1069-6922	B35EGPA0-011001T	2x DP, 2x 2.5 GbE, 1x UART, 1x I <sup>2</sup> C, 1x SMBus, 1x GSPI, 0 °C ~ 60 °C
13	I/O CARD (3.5"-eIO-GPA-2-XT)	TBD	B35EGPAI-021000T	2x DP, 2x 2.5 GbE, 1x UART, 1x I <sup>2</sup> 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

## Global Headquarters

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