3.5"-SBC-EKL

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

kontron

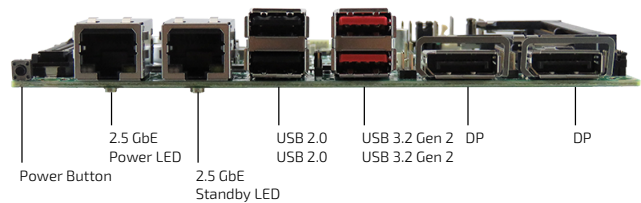## 3.5" Single Board Computer with Intel® Atom® x6000E Series Processors

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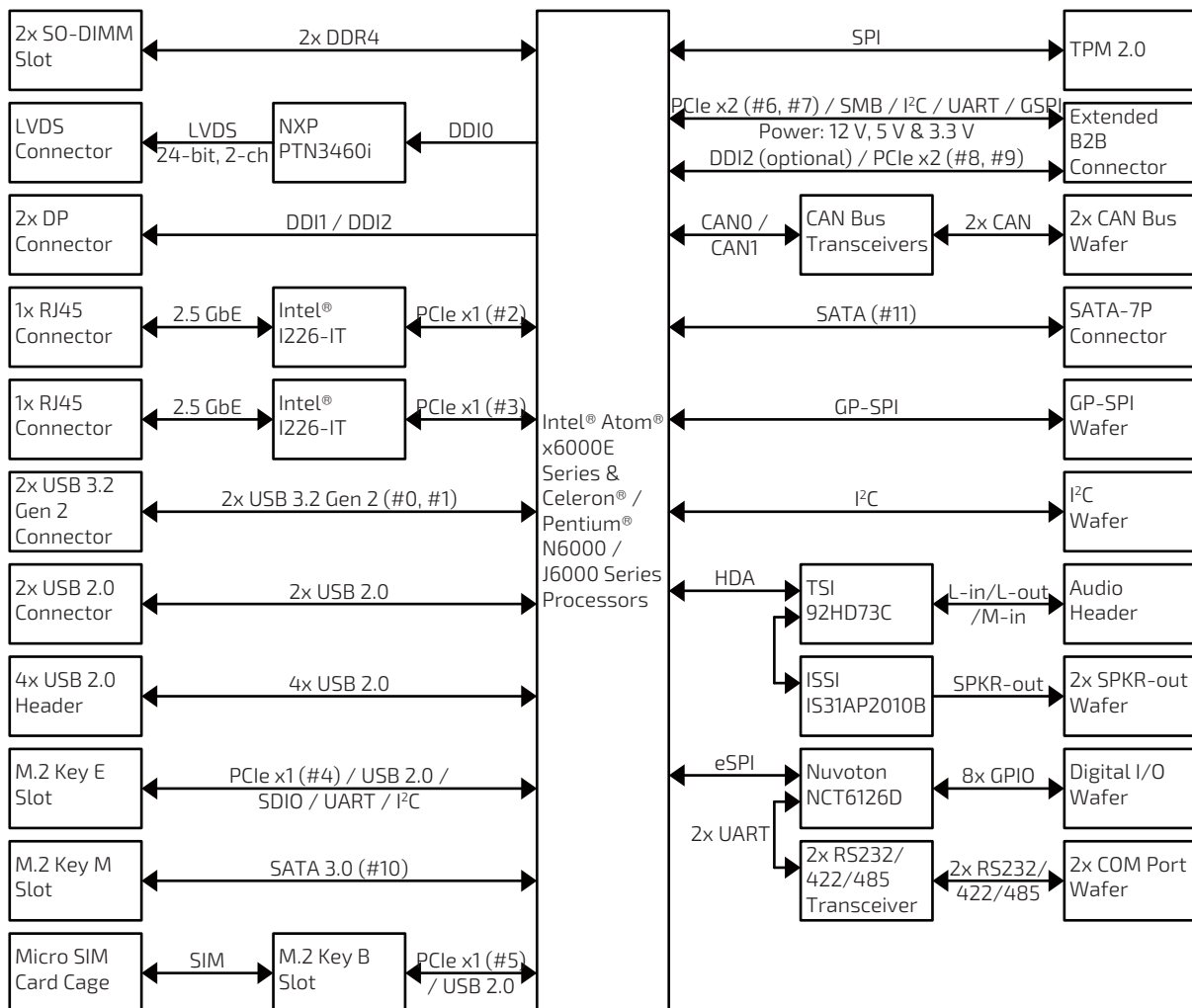
The board supports an extended board-to-board connector, providing additional I/O port expansion to fulfill possible application requirements.

- 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

Power Button — 2.5 GbE Power LED — 2.5 GbE Standby LED — USB 2.0 / USB 2.0 — USB 3.2 Gen 2 / USB 3.2 Gen 2 — DP — DP

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 MULTIPLE DISPLAY	Intel® UHD Graphics for 10th Gen Intel® Processors 1x LVDS (24-bit, 2-ch, 1920 x 1200 @ 60 Hz) 2x DP (4096 x 2160 @ 60 Hz, on rear, DDI2 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 SERIAL PORT OTHER I/Os	2x USB 3.2 Gen 2 (Type A on rear) 6x USB 2.0 (2x Type A on rear, 4x by header) 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 I²C (by header)
STORAGE & EXPANSION	SATA M.2 SIM CARD HOLDER BOARD-TO-BOARD CONNECTOR	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 / I²C) 1x M.2 Key M (Type 2280, w/ SATA 3.0) 1x SIM Card Holder (Micro type) 2x PCIe x2 1x SM Bus 1x I²C 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 STORAGE TEMPERATURE HUMIDITY	0 °C ~ 60 °C / 32 °F ~ 140 °F (Standard) -40 °C ~ 85 °C / -40 °F ~ 185 °F (Extreme) -20 °C ~ 80 °C / -4 °F ~ 176 °F (Standard) -55 °C ~ 85 °C / -67 °F ~ 185 °F (Extreme) 0 % ~ 95 %
COMPLIANCE	EMC & SAFETY	CE Class B, FCC Class B

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