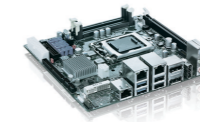
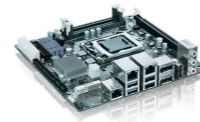


# MOTHERBOARDS



	mITX-BW	mITX-E38	mITX-APL	mITX-KBL-S-C236	mITX-SKL-H	mITX-SKL-S-H110	FlexATX-KBL-S-C236	FlexATX-SKL-S
<b>PROCESSOR</b>	Intel® Celeron and Pentium™ N3xxx SoC (2 or 4 cores)	Intel® Atom™ E38xx SoC (1, 2 or 4 cores)	Intel® Atom™ E39xx series and Celeron® N3350	Intel® Xeon® E3, Core™ i7/i5	Intel® Xeon® E3, Core™ i7/i5, Celeron® G3900E	Intel® Core i7/i5/i3	Intel® Xeon® E3, Core™ i7/i5	Intel® Xeon® E3, Core™ i7/i5
<b>SOC</b>	N3700 SKU (4core), 1.6 GHz, max. 6 W TDP	E3815 SKU (1core), 1.46 GHz, max. 5 W TDP						
<b>MEMORY</b>	2x 8 GByte SODIMM slot supporting DDR3L-1600	1x 8 GByte SODIMM slot supporting DDR3L-1066	1x DDR3L 1.35 V SODIMM 1867 MHz (up to 8 GByte)	2x DDR4 ECC/Non ECC SODIMM 2133 MHz (up to 32 GByte)	2x DDR4 SODIMM 2133 MHz (up to 32 GByte)	2x DDR4 Non ECC SODIMM 2133 MHz (up to 32 GByte)	2x DDR4 ECC/Non ECC SODIMM 2133 MHz (up to 32 GByte)	2x DDR4 ECC/Non ECC SODIMM 2133 MHz (up to 32 GByte)
<b>GRAPHICS INTERFACE</b>	2x independent graphic outputs (2x Display Port 1.1a) 400 MHz, 16 Execution Units	2x independent graphic outputs (2x Display Port 1.1a)	3x Independent Displays (DP/LVDS)	3x Independent Displays (3x DP, 2DP+LVDS)	3x Independent Displays (2x DP; 1x LVDS)	2x Independent Displays (1x DP, 1x LVDS/VGA)	3x Independent Displays (3x DP, 2DP+LVDS)	3x Independent Displays (3x DP, 2DP+LVDS)
<b>SPECIAL</b>	SIM card holder		TPM, Hardware Security, eMMC, CAN Bus	TPM2.0, hardware security device, M.2 (2280, Socket 3, M-Key)	TPM2.0, hardware security device, M.2 (2280, Socket 3, M-Key), SPI Fast Interface, SIM	TPM2.0, HDMI	TPM2.0, hardware security device, M.2 (2280, Socket 3, M-Key)	TPM2.0, hardware security device, M.2 (2280, Socket 3, M-Key)
<b>ETHERNET</b>		2x RJ45 10/100/1000 Mb/s Ethernet						
<b>ONBOARD FLASH</b>	uSD	-						
<b>SATA PORTS</b>	2x SATA Gen 2 (1 port shared with mSATA)	2x SATA Gen 2 (1 port shared with mSATA)	2x SATA Gen 3.0	4x SATA Gen 3.0	4x SATA Gen 3.0	3x SATA Gen 3.0	6x SATA Gen 3.0	6x SATA Gen 3.0
<b>MPCIe / MSATA SLOT</b>	1x mPCIe / mSATA slot	1x mPCIe / mSATA slot	1x (Full size)	1x Mini-PCIe (Full size) with USB2.0	1x Mini-PCIe with USB 2.0/PCI/SATA and external to SIM	1x Mini-PCIe (Half size) with USB2.0	1x Mini-PCIe (Full size) with USB2.0	1x Mini-PCIe (Full size) with USB2.0
<b>SERIAL PORTS</b>	4x RS232, 1x RS485	2x Serial ports UART 16550	1 x RS232 (Internal); 1 x RS422/RS485 Half duplex (Internal)	1x RS232; 1x RS485 Half duplex / 2 pairs RS422	1x RS232; 1x RS485 Half duplex / RS422	1x RS-232/422/485 1x RS-232 2x RS-232(Internal)	1x RS232; 1x RS485 Half duplex 2 pairs RS422	1xRS232; 1xRS485 Half duplex / 2 pairs RS422
<b>LAN PORTS</b>	2x GBE	2x GBE	2x RJ-45 LAN Port	4x Ethernet on rear IO Gigabit-LAN (10/100/1000 MBit)	4x Ethernet on front IO Gigabit-LAN (10/100/1000 MBit), 2x optional	2x Ethernet on rear IO Gigabit-LAN (10/100/1000 MBit)	4x Ethernet on rear IO Gigabit-LAN (10/100/1000 MBit)	4x Ethernet on rear IO Gigabit-LAN (10/100/1000MBit)
<b>USB PORTS</b>	4x USB 3.0	4x USB 2.0, 1x USB 3.0	4x USB 3.0/2.0 (Rear), 2x USB 2.0 (Internal)	2x USB 3.0 (Rear) + 2x USB 2.0 (Rear) + 2x USB 2.0 (Front Header) + 1x USB 2.0 (mPCIe)	2x USB 3.0 (Internal) + 1x USB 3.0 (Client) + 2x USB 3.0 (Rear I/O) + 2x USB 2.0 (Rear I/O) + 2x USB 2.0 (Front Header) + 1x USB 2.0 (mPCIe)	4x USB 3.0 (Rear) + 2x USB 2.0 (Front Header) + 1x USB 2.0 (mPCIe)	2x USB 3.0 (Rear) + 2x USB 2.0 (Rear) + 2x USB 2.0 (Front Header) + 1x USB 2.0 (mPCIe) + 2x USB 3.0 (Internal)	2x USB 3.0 (Rear)+ 2x USB 2.0 (Rear) + 2x USB 2.0 (Front Header) + 1x USB 2.0 (mPCIe) + 2x USB 3.0 (Internal)
<b>AUDIO</b>	HD Analog audio interface (Line-In, Line-Out, Mic-In, SPDIF)	HD Analog audio interface (Line-In, Line-Out, Mic-In, SPDIF)	HD Analog audio interface (Line-In, Line-Out, Mic-In, SPDIF)	HD Analog audio interface (Line-In, Line-Out, Mic-In, SPDIF)	HD Analog audio interface (Line-In, Line-Out, Mic-In, SPDIF)	HD Analog audio interface (Line-In, Line-Out, Mic-In, SPDIF)	HD Analog audio interface (Line-In, Line-Out, Mic-In, SPDIF)	HD Analog audio interface (Line-In, Line-Out, Mic-In, SPDIF)
<b>PCIe SLOTS</b>	1x PCIe x1 slot	1x PCIe x1 slot		1x PCIe x16 (Gen 3)	1x PCIe x16 (Gen 3)	1x PCIe x16 (Gen 3)	1x PCIe x16 (Gen 3) + 1x PCIe x 4 + 1x PCIe x 1	1x PCIe x16 (Gen 3) + 1x PCIe x 4 + 1x PCIe x 1
<b>TPM</b>	Yes	-		TPM2.0, Hardware Security Device	TPM2.0, Hardware Security Device	TPM2.0	TPM2.0, Hardware Security Device	TPM2.0, Hardware Security Device
<b>I/O FEATURES</b>	1x mPCIe® 2.0 port (x1 lane), PCIe® x1 connector, Kontron embedded feature connector with ADC, DAC and up to 160 GPIO	1x mPCIe® 2.0 port (x1 lane), PCIe® x1 connector, Kontron embedded feature connector with ADC, DAC and up to 160 GPIO						
<b>POWER SUPPLY</b>	Single supply 12/24 V DC, Internal and external connector	Single supply 12 V DC, Internal and external connector	Single supply 12-24 V DC (External) + ATX 12 V 4 pin (Internal)	ATX PWR 20pin + 4pin (Internal Input Power)	12/24 V	ATX PWR 20pin + 4pin (Internal Input Power)	ATX PWR 24pin	ATX PWR 24pin
<b>MTBF</b>	tbd	Prediction Model: Telcordia Issue 2 Method I Case 3, 40° C & 60° C	tbd.	tbd.	tbd.	tbd.	tbd.	tbd.
<b>SAFETY</b>	IEC 60950-1: 2005, 2nd Edition UL 60950-1, CSA C22.2 No. 60950-1	IEC 60950-1: 2005, 2nd Edition UL 60950-1, CSA C22.2 No. 60950-1	IEC 60950-1: 2005, UL 60950-1, CSA 60950-1	IEC 60950-1: 2005, 2nd Edition UL 60950-1, CSA C22.2 No. 60950-1	IEC 60950-1: 2005, 2nd Edition UL 60950-1, CSA C22.2 No. 60950-1	IEC 60950-1: 2005, 2nd Edition UL 60950-1, CSA C22.2 No. 60950-1	IEC 60950-1: 2005, 2nd Edition UL 60950-1, CSA C22.2 No. 60950-1	IEC 60950-1: 2005, 2nd Edition UL 60950-1, CSA C22.2 No. 60950-1
<b>COOLING SOLUTIONS</b>	Passive and active cooling solutions	Passive and active cooling solutions	Passive and active cooling solutions	Active cooling solutions	Passive and active cooling solutions	Passive and active cooling solutions	Active cooling solutions	Passive and active cooling solutions
<b>OPERATING TEMPERATURE</b>	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C	0 °C to 60 °C
<b>REGUALTORY</b>	Comply with Emission: EN55022, Immunity EN55022, RoHS	Comply with Emission: EN55022, Immunity EN55022, RoHS	Comply with Emission: EN55022, Immunity EN55022, RoHS	Comply with Emission: EN55022	Comply with Emission: EN55022	Comply with Emission: EN55022	Comply with Emission: EN55022	Comply with Emission: EN55022
<b>DIMENSIONS</b>	Thin Mini-ITX, 170 x 170 mm	Thin Mini-ITX, 170 x 170 mm	Thin Mini ITX, 170 x 170 mm	Thin Mini-ITX, 170 x 170 mm	Thin Mini-ITX, 170 x 170 mm	Thin Mini-ITX, 170 x 170 mm	Thin Mini-ITX, 170 x 170 mm	Thin Mini-ITX, 170 x 170 mm
<b>OPERATING SYSTEMS</b>	Win7, Win8.1, WES7, Linux	Win7, Win8, WES7, WES8, Linux, WxWorks	Win10, Win10 IoT, Linux	Win7, Win8.1, Win10, WES7, Linux	Win7, Win8.1, Win10, WES7, Linux	Win7, Win8.1, Win10, Linux	Win7, Win8.1, Win10, WES7, Linux	Win7, Win8.1, Win10, WES7, Linux