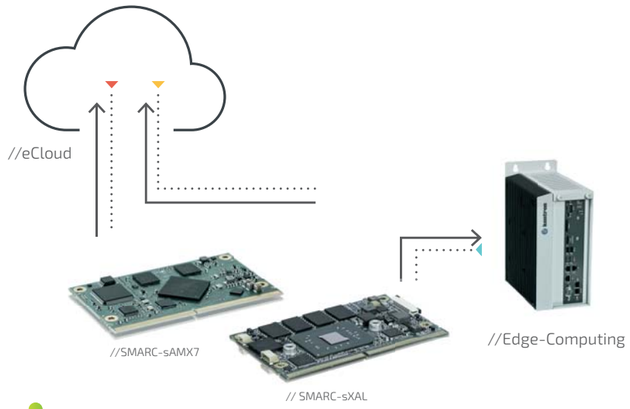
BOARDS & MODULES – SMARC™

Low-power embedded architecture platform for Computer-on-Modules based on ARM and X86 technology. Perfect fit for mobile, embedded, connected solutions with scalable building blocks. Optimized pin-out definition for versatile architectures. Constructed to withstand harsh industrial environments.

SMARC 2.0
COMPUTER-ON-MODULE SOLUTIONS

The SMARC™ (Smart Mobility Architecture) standard has in a matter of a few years become a major driving force behind the enablement of innovative ultra-low-power embedded computing technology solutions. Market demand and the disruptive influence of the Internet of Things (IoT) have already hastened the arrival of a new specification, SMARC 2.0.



About Kontron | Member of the S&T Group

Kontron is a global leader in IoT/embedded computing technology (ECT). As a part of technology group S&T, Kontron offers a combined portfolio of secure hardware, middleware and services for Internet of Things (IoT) and Industry 4.0 applications. With its standard products and tailor-made solutions based on highly reliable state-of-the-art embedded technologies, Kontron provides secure and innovative applications for a variety of industries. As a result, customers benefit from accelerated time-to-market, reduced total cost of ownership, product longevity and the best fully integrated applications overall.

About the Intel® Internet of Things Solutions Alliance

From modular components to market-ready systems, Intel and the 400+ global member companies of the Intel® Internet of Things Solutions Alliance provide scalable, interoperable solutions that accelerate deployment of intelligent devices and end-to-end analytics. Close collaboration with Intel and each other enables Alliance members to innovate with the latest IoT technologies, helping developers deliver first-in-market solutions.

intel IoT Solutions Alliance
Premier

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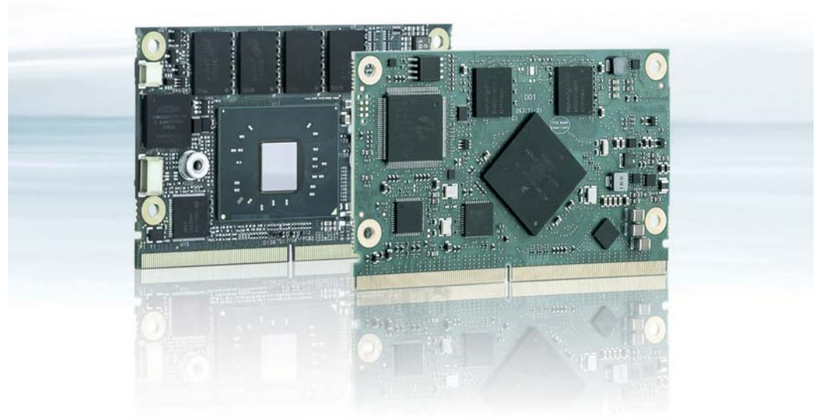
COMPUTER-ON-MODULES FORM FACTOR SMARC™



SMARC

- **MODULE STANDARD FOR X86 AND ARM**
  Optimized pin-out definition for versatile architectures
- **CREATING MOBILE, EMBEDDED, CONNECTED SOLUTIONS**
  Ultra low-power, low profile
- **PERFECT FIT FOR IIOT APPLICATIONS**
  High connectivity with USB, PCIe, up to 2 x LAN and 2x CAN

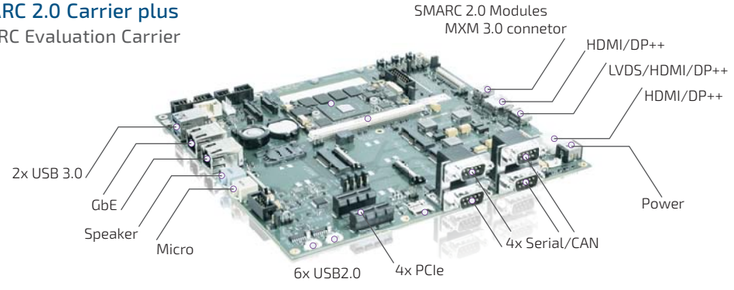
POSSIBILITIES START HERE kontron S&T Group

BOARDS & MODULES – SMARC™

	SMARC-sXBTi	SMARC-sXAL (E2)	SMARC-sAMX6i	SMARC-sAMX7	SMARC-sAMX8X	SMARC-sAL28
COMPLIANCE	SMARC 1.1	SMARC 2.0	SMARC 1.1	SMARC 2.0	SMARC 2.0	SMARC 2.0
DIMENSIONS (H x W x D)	82 mm x 50 mm	82 x 50 mm	82 mm x 50 mm	82 x 50 mm	82 x 50 mm	82 x 50 mm
CPU	Intel Atom® E3845, 4C, 1.91 GHz, 10 W TDP Intel Atom® E3827, 2C, 1.75 GHz, 8 W TDP Intel Atom® E3826, 2C, 1.46 GHz, 7 W TDP Intel Atom® E3825, 2C, 1.33 GHz, 6 W TDP Intel Atom® E3815, 1C, 1.46 GHz, 5 W TDP	Intel Atom® x7-E3950, 4C, 1.6 / 2.0 GHz, 12 W TDP Intel Atom® x5-E3940, 4C, 1.6 / 1.8 GHz, 9.5 W TDP Intel Atom® x5-E3930, 2C, 1.3 / 1.8 GHz, 6.5 W TDP Intel® Pentium® N4200, 4C, 1.1 / 2.5 GHz, 6 W TDP Intel® Celeron® N3350, 2C, 1.1 / 2.4 GHz, 6 W TDP	NXP i.MX 6 Single, Dual and Quad Core ARM Cortex-A9 800 MHz, 1.0 GHz, 1.2 GHz	NXP single/dual i.MX7 processor	NXP dual/quad i.MX8X processor	NXP Dual Cortex A72 LS1028 processor
MAIN MEMORY	Up to 8 GByte DDR3L-1333 memory down (ECC optional)	Up to 8 GByte DDR3-1867 (-1600) memory down (ECC for Atom-versions)	Up to 2 GByte DDR3 memory down	Up to 2 GByte DDR3	Up to 3 GByte LPDDR4	up to 4 GByte DDR3L (ECC)
GRAPHICS CONTROLLER	Intel® HD Graphics (Gen7)	Intel® HD Gfx Gen9	Dual Displayz HD 1080p Decode/Encode, 2D/3D acceleration	integrated	integrated	integrated
ETHERNET CONTROLLER	Intel® i210IT	Intel® I210IT / I211AT	Integrated	integrated	1x integrated, 1x on request	integrated
ETHERNET	1x 1GB Ethernet	1x 1GB Ethernet	1x 1GB Ethernet	up to 2x 1GB Ethernet	up to 2x 1GB Ethernet	up to 2x 1GB Ethernet (TSN capable)
SATA	1x SATA 3Gb/s	1x SATA 3 Gb/s	1x SATA (dual/quad core)-solo	-	-	-
FLASH ONBOARD	Up to 64 GByte eMMC	Up to 64 GByte e MMC	Up to 64 GByte eMMC	Up to 64 GByte eMMC	Up to 64 GByte eMMC	Up to 64 GByte eMMC
PCI EXPRESS® / PCI SUPPORT	3x PCIe Gen2 x1	3x PCIe x1	3x PCIe Gen2 x1	1x PCIe with dual core processor up to 3x PCIe (on request)	Up to 3x PCIe	Up to 2x PCIe x1 or 2x PCIe x2 or 1x PCIe x4
PANEL SIGNAL	LVDS Single Channel 18/24 bit or eDP HDMI or DP	1x HDMI (on request DP), 1x DP++, 1x LVDS dual channel (on request eDP)	Parallel LCD 18/24 bit LVDS Single Channel 18/24bit HDMI	1x LVDS dual channel	1x LVDS, 1x HDMI, 1x DP	x LVDS dual channel, eDP or DP as BOM option on request
USB	3x USB 2. 1x USB 3.0 (via AFB)	2x USB 3.0 (incl. USB 2.0) + 4x USB 2.0, alternatively USB #0 as OTG	2x USB 2.0, USB OTG	up to 5x USB 2.0	1x USB 3.0, 6x USB 2.0	up to 6x USB 2.0, 1x USB 3.0
SERIAL	1x RX/TX (Ser0) 2x UART (Ser1/3)	4x serial interfaces (2x RX / TX only)	2x RX/TX (Ser1/3) 2x UART (Ser0/2)	4x serial interfaces (2x RX / TX only)	4x serial interfaces (2x RX / TX only)	4x serial interfaces (2x RX / TX only)
ADDITIONAL INTERFACES	HD Audio and I2S, 5x I2C, 2x SPI, Camera Interface (MIPI CSI)	12x GPIO, SDIO, 5x I²C, MIPI-CSI	12x GPIO, SDIO, 5x I²C, 2x I²S, 2x SPI, SPDIF, WDT,	12x GPIO, SDIO, 5x I²C, MIPI-CSI, 2x CAN	12x GPIO, SDIO, 5x I²C, MIPI-CSI 2x CAN	12x GPIO, SDIO, 3xI2C, 1x CAN
OPERATING SYSTEM	Windows® 8, Windows® 7, WE8S, WES7, WEC7, Linux, VxWorks	Windows® 10, Enterprise, Windows 10 IoT, Linux, VxWorks	Linux, Android, WEC7	Yocto Linux	Yocto Linux	Yocto Linux
POWER SUPPLY	3 V - 5.25 V Operates directly from single level Lithium Ion from single level Lithium Ion cells or fixed 3.3 V or 5 V power supplies	3 V – 5.25 V operates directly from single level Lithium Ion cells or fixed 3.3 V – 5 V power supplies	3 V - 5.25 V Operates directly from single level Lithium Ion from single level Lithium Ion cells or fixed 3.3 V or 5 V power supplies	3 V – 5.25 V operates directly from single level Lithium Ion cells or fixed 3.3 V – 5 V power supplies	3 V – 5.25 V operates directly from single level Lithium Ion cells or fixed 3.3 V – 5 V power supplies	3 V – 5.25 V operates directly from single level Lithium Ion cells or fixed 3.3 V – 5 V power supplies
TEMPERATURE	Operation: -40 °C to 85 °C	SMARC-sXAL: Commercial temperature: 0 °C to +60 °C operating, -30 °C to +85 °C non-operating SMARC-sXAL E2: Industrial temperature: -40 °C to +85 °C operating, -40 °C to +85 °C non-operating	Operation: -40 °C to 85 °C	Operating: extended consumer -20 °C to + 85 °C Non-Operating: -30 °C to +85 °C	Operating: -40 °C to 85 °C	Operating: -40 °C to + 85 °C Non-Operating: -40 °C to +85 °C
SPECIAL FEATURES	Industrial temperature version, ECC, WIndows® 8	Trusted Platform Module TPM 2.0 Security Solution (APPROTECT) on request, Industrial Temperature Grade versions	Ultra low-power, 2x CAN Interfaces	Security Solution (APPROTECT) on request	Security Solution (APPROTECT) on request	Alternate function on PCIe C/D: SXGMII or UXGMII to connect Ethernet bridge phy directly on the carrier (allows up to 5x TSN capable 1GB LAN ports) Security Chip (Support of Kontron APPROTECT) on request

SMARC 2.0 Carrier plus

SMARC Evaluation Carrier



Learn more about Kontron SMARC embedded systems visit:
https://www.kontron.com/products/boards-and-standard-form-factors/smarc/