SMARC® module

Computer-on-Modules Form Factor

SMARC module

- **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 2x LAN and 2x CAN

JUMPtec®

Boards & Modules - SMARC®

SMARC module

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.

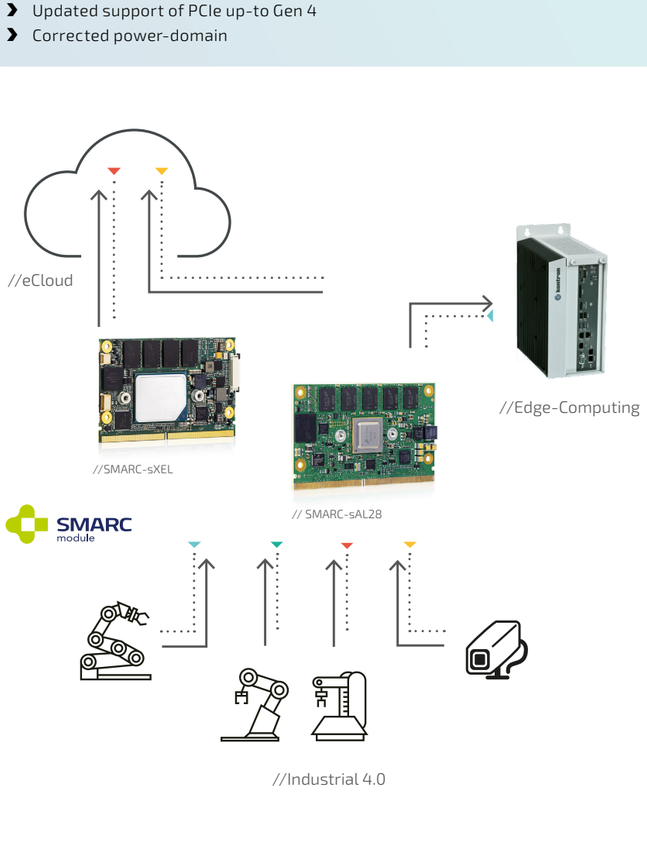
SMARC® 2.2 Module

A new Specification

SMARC® 2.2 module introduces a number of additional features as well as a few revision enhancements to the previous 2.1 specification.

At a Glance:

- Added Soundwire as alternative function for I2S2
- Added SERDES reset signal
- Added SERDES interrupt signals
- Updated supported Ethernet speed
- Added details for mechanical tolerances
- Updated filling-order for USB
- Updated GPIOs with filling-order for interrupt latency
- Updated overview of Carrier connectors
- Added filling-order for SPI Chip-Select signals
- Updated support of PCIe up-to Gen 4
- Corrected power-domain



About JUMPtec®

JUMPtec specializes its technical expertise in designing both - standard and highly customized compute products. Our newly optimized structure enables us to take customers from prototyping and design through to mass production faster than ever before.

We are uniquely positioned to leverage our global design and manufacturing expertise alongside Kontron's extensive worldwide network. While JUMPtec remains a fully owned subsidiary of Kontron, we benefit from their global distribution capabilities and work closely with Kontron's other solution businesses. With more OEMs seeking to mitigate risk and outsource complex manufacturing, the shift to modular solutions is becoming more prevalent. JUMPtec, backed by Kontron, is well-positioned to support customers in implementing this modular approach, offering high-quality, scalable solutions without compromising on size or capability.

JUMPtec serves a diverse range of markets, providing innovative solutions tailored to the unique needs of each industry. Find out more about our offering!

For more information, please visit: **www.jumptec.com**

About the Intel® Partner Alliance

From modular components to market-ready systems, Intel and the over 1,000+ global member companies of the Intel® Partner 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.

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intel partner Titanium IoT Solutions

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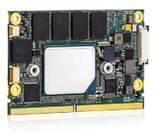
JUMPtec®

Boards & Modules

SMARC®

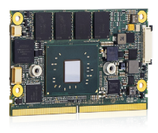
NEW

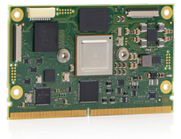


SMARC-sXAS

SMARC-sXEL (E2)

	SMARC-sXAS	SMARC-sXEL (E2)
COMPLIANCE	SMARC module 2.1.1	SMARC module 2.1
DIMENSIONS (H x W x D)	82 x 50 mm	82 x 50 mm
CPU	Intel Amston Lake SKUs – Industrial RE-S	Intel Atom® x6000E Series, Intel® Pentium®, and Intel® Celeron® N and J Series processors
MAIN MEMORY	Up to 16 GByte LPDDR5 memory down with inband ECC support	Up to 16 GByte LPDDR4 memory down with inband ECC support
GRAPHICS CONTROLLER	Gen 12 IGFX	Intel® UHD Gfx Gen11
ETHERNET CONTROLLER	integrated	integrated
ETHERNET	Up to 2.5GbE	Up to 3x 1 Gbit LAN (2x GBE0/1 and 1x optional SGMII via SERDES)
SATA	1x SATA 6Gb/s	1x SATA 6 Gb/s
FLASH ONBOARD	up to 128 GByte eMMC (MLC)	Up to 64 GByte eMMC
PCI EXPRESS® / PCI SUPPORT	up to 4x PCIe x1	up to 4x PCIe x1
PANEL SIGNAL	1x HDMI (on request DP++), 1x DP++, 1x Dual LVDS (on request eDP)	1x HDMI (on request DP), 1x DP++, 1x LVDS dual channel (on request eDP)
USB	1x USB 3.2, 6x USB 2.0	2x USB 3.0 (incl. USB 2.0) + 4x USB 2.0, alternatively USB #3 as OTG
SERIAL	4x UART (2x RX/TX only)	4x serial interfaces (2x RX / TX only)
ADDITIONAL INTERFACES	HD Audio, I²C, 2x SPI, 14x GPIOs	HD Audio and I²S, 5x I²C, 2x SPI, 14x GPIOs
OPERATING SYSTEM	Windows® 10 (IOT) Enterprise x64, Windows® 11, Linux	Windows® 10, Enterprise, Windows® 10 IoT, Linux
POWER SUPPLY	5V only! No Widerange	3.3 V to 5.25 V wide-range input (5 V recommended)
TEMPERATURE	Industrial grade: -40 °C to +85 °C operating, -40 °C to +85 °C non-operating	SMARC-sXEL: Commercial temperature: 0 °C to +60 °C operating, -30 °C to +85 °C non-operating SMARC-sXEL E2: Industrial temperature: -40 °C to +85 °C operating, -40 °C to +85 °C non-operating
SPECIAL FEATURES	Trusted Platform Module TPM 2.0 Industrial Temperature Grade versions	Trusted Platform Module TPM 2.0 Industrial Temperature Grade versions





NEW

SMARC-sXAL(4) (E2)
SMARC-sXAL (E2)

Microsoft Azure Certified

SMARC-sAM67

	SMARC-sXAL(4) (E2) SMARC-sXAL (E2)	SMARC-sAM67
COMPLIANCE	SMARC 2.0	SMARC 2.2
DIMENSIONS (H x W x D)	82 x 50 mm	82 x 50 mm
CPU	Intel Atom® processor E3900 series, Intel® Celeron® processor N3350 and Intel® Pentium® processor N4200	TI dual/quad AM67x Jacinto™ processor (Standard AM67, optional AM67A or AM67D)
MAIN MEMORY	Up to 8 GByte ECC DDR3L (SMARC-sXAL) Up to 8 GByte LPDDR4 (SMARC-sXAL4)	up to 8 GByte LPDDR4
GRAPHICS CONTROLLER	Intel® HD Gfx Gen9	integrated
ETHERNET CONTROLLER	Intel® I210IT	integrated
ETHERNET	1x 1 GB Ethernet (SMARC-sXAL) up to 2x 1 GB Ethernet (SMARC-sXAL4)	up to 2x 10/100/1000 MBit Ethernet
SATA	1x SATA 3 Gb/s	-
FLASH ONBOARD	Up to 64 GByte MMC	up to 64GB eMMC 5.1
PCI EXPRESS® / PCI SUPPORT	3x PCIe x1	1x PCIe up to Gen3 x1
PANEL SIGNAL	1x HDMI (on request DP), 1x DP++, 1x LVDS dual channel (on request eDP)	Dual Channel LVDS up to 24bit, DSI
USB	2x USB 3.0 (incl. USB 2.0) + 4x USB 2.0, alternatively USB #0 as OTG	1x USB 2.0 OTG, 1x USB 3.2 (optional up to 2x USB 2.0, 2x USB 3.2)
SERIAL	4x serial interfaces (2x RX / TX only)	4x UART (2x RX/TX only)
ADDITIONAL INTERFACES	12x GPIO, SDIO, 5x I²C, MIPI-CSI	2x I2S, 1x SPI, 4x I2C, 14x GPIO, 2x CAN, 4x MIPI CSI, 1x QSPI, 1x MDIO (optional)
OPERATING SYSTEM	Windows® 10, Enterprise, Windows 10 IoT, Linux, VxWorks	Yocto Linux, Buildroot
POWER SUPPLY	3V – 5.25 V operates directly from single level Lithium Ion cells or fixed 3.3 V – 5 V power supplies (SMARC-sXAL) 5V only (SMARC-sXAL4)	3 V – 5.25 V operates directly from single level Lithium Ion cells or fixed 3.3 V – 5 V power supplies
TEMPERATURE	SMARC-sXAL(4): Commercial temperature: 0 °C to +60 °C operating, -30 °C to +85 °C non-operating SMARC-sXAL(4) E2: Industrial temperature: -40 °C to +85 °C operating, -40 °C to +85 °C non-operating	Operating: extended consumer -40 °C to + 85 °C Non-Operating: -40 °C to +85 °C
SPECIAL FEATURES	Trusted Platform Module TPM 2.0 on request, Ind. Temp. Grade versions	Failsafe Update, ultra low Power Consumption high accuracy RTC

NEW

SMARC-sAMX8M+

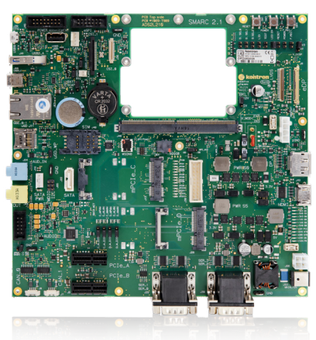
SMARC-sAL28

	SMARC-sAMX8M+	SMARC-sAL28
COMPLIANCE	SMARC® 2.1	SMARC 2.1
DIMENSIONS (H x W x D)	82 x 50 mm	82 x 50 mm
CPU	NXP i.MX8M Plus	NXP Dual Cortex A72 LS1028A processor
MAIN MEMORY	4 GByte LPDDR4 (optional 1 GByte, 2 GByte)	up to 8 GByte DDR3L (ECC)
GRAPHICS CONTROLLER	integrated	integrated
ETHERNET CONTROLLER	integrated	integrated
ETHERNET	2x 1 Gbit/s IEEE 1588 (1x mit TSN)	up to 2x 1 GByte Ethernet (TSN capable)
SATA	-	-
FLASH ONBOARD	32 GByte (optional 4 GByte up to 64 GByte)	Up to 64 GByte eMMC
PCI EXPRESS® / PCI SUPPORT	1x PCIe	Up to 2x PCIe x1 or 2x PCIe x2 or 1x PCIe x4
PANEL SIGNAL	1x LVDS, 1x HDMI, 1x MIPI DSI, up to 4K @30fps	LVDS dual channel, eDP or DP as BOM option on request
USB	2x USB 2.0	up to 6x USB 2.0, 1x USB 3.0
SERIAL	4x UART, 2x I²C, 1x SPI, 10x GPIO, 1x PCIe, 1x I²C, 1x SDIO (1x 4-bit) 2x CAN FD	3x serial interfaces (2x RX / TX only)
ADDITIONAL INTERFACES	2x CSI (1x 2-lanes, 1x 4-lanes)	12x GPIO, SDIO, 3xI2C, 1x CAN
OPERATING SYSTEM	Yocto Linux	Yocto Linux
POWER SUPPLY	5 V DC ±5 %	3 V – 5.25 V operates directly from single level Lithium Ion cells or fixed 3.3 V – 5 V power supplies
TEMPERATURE	-25 °C to +85 °C (operating and non-operating)	Operating: -40 °C to + 85 °C Non-Operating: -40 °C to +85 °C
SPECIAL FEATURES	Industrial Temperature Grade versions 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),

SMARC® 2.2 Carrier

SMARC® Evaluation Carrier

- Evaluation Carrier Board for SMARC 2.2 based Computer-on-Modules
- Broad range of interface options for Design Development flexibility
- Compliant with SMARC 2.2 specification by SGET



Learn more about JUMPtec SMARC embedded systems visit:
www.jumptec.com/smarc