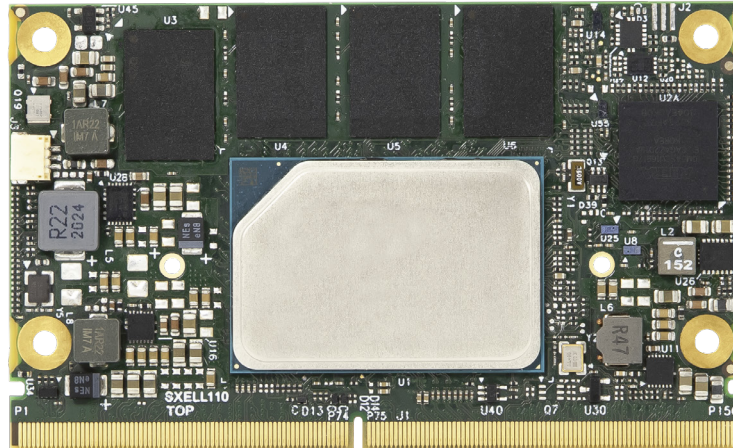


SMARC-sXEL (E2)



SMARC 2.1 module based on Intel Atom®, Pentium® and Celeron® Processor Series

- ▶ Up to 16 GByte LPDDR4 memory down with inband ECC support
- ▶ 2x USB 3.0, 4x USB 2.0, 1x SATA, eMMC onboard, up to 2x LAN onmodule +1 optional via SERDES
- ▶ TSN support
- ▶ Industrial grade temperature

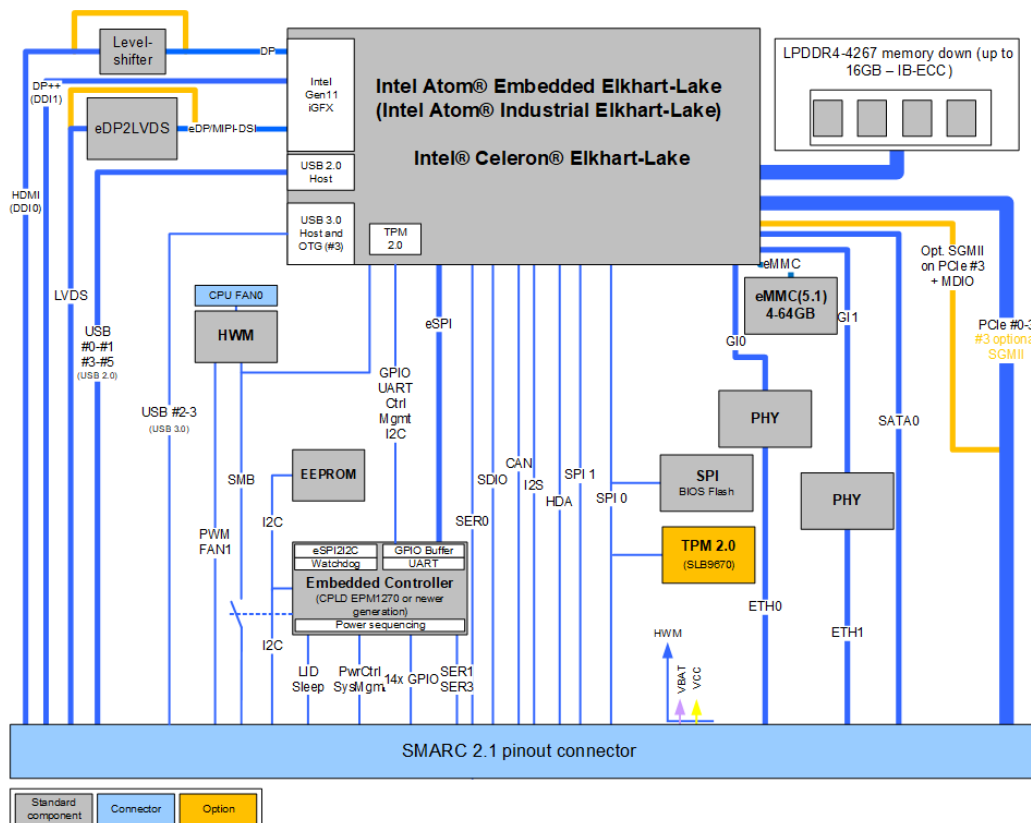
Technical Information

FEATURES	DESCRIPTION
COMPLIANCE	SMARC module 2.1
DIMENSIONS (H X W X D)	82 x 50 mm
CPU	Intel Atom®/ Pentium®/ Celeron® series For details see table (CPU Variants) given below
CHIPSET	-
MAIN MEMORY	Up to 16 GByte LPDDR4 memory down with inband ECC support
GRAPHICS CONTROLLER	Intel® UHD Gfx Gen11
ETHERNET	Up to 3x 1 Gbit LAN (2x GBE0/1 and 1x optional SGMII via SERDES)
STORAGE	1x SATA 6 Gb/s
FLASH ONBOARD	up to 128 GByte eMMC (MLC)
PCI EXPRESS®	up to 4x PCIe x1
PANEL SIGNAL	1x HDMI (on request DP), 1x DP++, 1x LVDS dual channel (on request eDP)
USB	2x USB 3.0 (incl. USB 2.0) + 4x USB 2.0, alternatively USB #3 as OTG
SERIAL	3x serial interfaces (2x RX/TX only)
OTHERS FEATURES	HD Audio and I2S, 5x I2C, 2x SPI, 14x GPIOs
SPECIAL FEATURES	Trusted Platform Module TPM 2.0 Industrial Temperature Grade versions
FEATURES ON REQUEST	4x PCI vs 3x PCIe 1x SERDES eMMC: up to 64 GByte pSLC RAM: from 2 GByte to 16 GByte LPDDR4
BIOS	AMI Aptio V
OPERATING SYSTEM	Windows® 10, Enterprise, Windows® 10 IoT, Linux
POWER SUPPLY	3.3 V to 5.25 V wide-range input (5 V recommended)
TEMPERATURE	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
HUMIDITY	93 % relative Humidity at 40 °C, non-condensing (according to IEC 60068-2-78)

CPU Variants

BRAND	PROCESSOR NUMBER	TDP	CORES	THREADS	CACHE	BASE FREQ	MAX TURBO FREQ	GRAPHICS GEN 11	ECC	PREMIUM IO	FUNCTIONAL SAFETY CERTIFIED	USE CONDITION
INTEL® CELERON® PROCESSOR	J6413	10 W	4	4	1.5 MByte	1.8 GHz	3.0 GHz	16 EU	no	Intel® PSE	no	PC Client
INTEL® PENTIUM® PROCESSOR	J6426	10 W	4	4	1.5 MByte	1.8 GHz	3.0 GHz	32 EU	no	Intel® PSE	no	PC Client
INTEL® CELERON® PROCESSOR	N6211	6 W	2	2	1.5 MByte	1.2 GHz	3.0 GHz	16 EU	no	Intel® PSE	no	PC Client
INTEL® PENTIUM® PROCESSOR	N6415	6 W	4	4	1.5 MByte	1.2 GHz	3.0 GHz	16 EU	no	Intel® PSE	no	PC Client
INTEL ATOM® PROCESSOR	x6211E	6 W	2	2	1.5 MByte	1.2 GHz	3.0 GHz	16 EU	yes—In Band	Intel® PSE	no	Embedded
INTEL ATOM® PROCESSOR	x6413E	9 W	4	4	1.5 MByte	1.5 GHz	3.0 GHz	16 EU	yes—In Band	Intel® PSE	no	Embedded
INTEL ATOM® PROCESSOR	x6425E	12 W	4	4	1.5 MByte	1.8 GHz	3.0 GHz	32 EU	yes—In Band	Intel® PSE	no	Embedded
INTEL ATOM® PROCESSOR	x6212RE	6 W	2	2	1.5 MByte	1.2 GHz	n/a	16 EU	yes—In Band	Intel® PSE, Intel® TCC	no	Industrial
INTEL ATOM® PROCESSOR	x6414RE	9 W	4	4	1.5 MByte	1.5 GHz	n/a	16 EU	yes—In Band	Intel® PSE, Intel® TCC	no	Industrial
INTEL ATOM® PROCESSOR	x6425RE	12 W	4	4	1.5 MByte	1.9 GHz	n/a	32 EU	yes—In Band	Intel® PSE, Intel® TCC	no	Industrial

Block Diagram



Standard Variants

PART NO.	CPU	MEMORY	FLASH	ETH PHY	DISPLAY	SERDES	OP. TEMPERATURE
51016-0432-J2-4	J6426	4 GByte	32 GByte	2x 1 GBit	LVDS, HDMI, DP++	no	0 °C - 60 °C
51016-0416-N1-2	N6211	4 GByte	16 GByte	2x 1 GBit	LVDS, HDMI, DP++	no	0 °C - 60 °C
51017-0416-R1-2	x6212RE	4 GByte	16 GByte	2x 1 GBit	LVDS, HDMI, DP++	no	-40 °C - 85 °C
51017-0432-R1-4	x6414RE	4 GByte	32 GByte	2x 1 GBit	LVDS, HDMI, DP++	no	-40 °C - 85 °C
51017-0832-R2-4	x6425RE	8 GByte	32 GByte	2x 1 GBit	LVDS, HDMI, DP++	no	-40 °C - 85 °C

Carrier

ARTICLE	PART NO.	DESCRIPTION
51301-0000-00-0	SMARC EVALUATION CARRIER 2.1	SMARC Evaluation Carrier for SMARC modules according to the SMARC 2.1 standard (without SMARC module)

Cooling

ARTICLE	PART NO.	DESCRIPTION
51016-0000-99-1	HSP SMARC-sXEL	Heatspreader for SMARC-sXEL (only for 51016-XXXXX-XX-X)
51017-0000-99-1	HSP SMARC-sXEL E2	Heatspreader for SMARC-sXEL (only for 51017-XXXXX-XX-X)
51099-0000-99-1	SMARC Passive Uni Cooler (w/o HSP)	SMARC Passive Uni Cooler

Accessories

ARTICLE	PART NO.	DESCRIPTION
51117-0000-00-0	SMARC Mounting Kit	Mounting Kit for SMARC modules

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