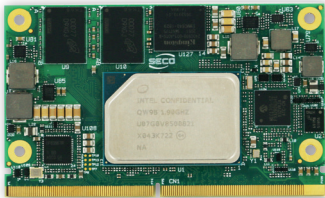




SOM-SMARC-EHL

SMARC® Rel 2.1.1 with Intel® Atom® x6000E Series and Intel® Pentium® and Celeron® N and J Series processors (Codename: Elkhart Lake) for FuSa applications.

The first SMARC module specifically designed for Functional Safety (FuSa) of Safety-related systems



HIGHLIGHTS



CPU

Intel® Atom® x6000E Series and Intel® Pentium® and Celeron® N and J Series processors



GRAPHICS

Integrated Gen11 UHD Graphics controller supporting 3 independent displays



CONNECTIVITY

2x GbE with precision time protocol IEEE 1588, optional SERDES for external 3rd Ethernet, 6x USB 2.0, 3x USB 3.1, up to 4x PCI-e



MEMORY

Quad Channel LPDDR4x Soldered Down with IBCECC

Available in Industrial Temperature Range



MAIN FIELDS OF APPLICATION



Medical



Industrial Automation









FEATURES

Processor	Intel® Atom® x6000E CPUs certified for FuSa, compliant to IEC 61508 and ISO 13849 requirements for Functional Safety and Safety Integrity Levels: <ul style="list-style-type: none"> Atom® x6427FE Quad Core @1.9GHz (no Turbo) 12W TDP w/ IBCECC, IHS and TCC, FuSa Certified - Ind. Temp. Range Atom® x6200FE Dual Core @1.0GHz (no Turbo) 4.5W TDP no Graphics w/ IBCECC, IHS and TCC, FuSa Certified- Ind. Temp. Range 	Memory 32-bit LPDDR4x Soldered Down Memory Up to 16GB Quad Channel with In-Band Error Correction Code (IBCECC, Safety Related feature) supported 4GB Dual Channel, 8GB or 16GB Quad Channel supported Speed: 4267MT/s single rank (1GB / 2GB / 4GB / 8GB), 3733MT/s dual rank (16GB)
	Other Intel Atom® x6000E, Pentium® and Celeron® N and J Series CPUs: <ul style="list-style-type: none"> Celeron® J6413 Quad Core @1.8GHz (3.0GHZ Turbo) 10W TDP - Comm. Temp. Range Celeron® N6211 Dual Core @1.2GHz (3.0GHZ Turbo) 6.5W TDP - Comm. Temp. Range Pentium® J6426 Quad Core @2GHz (3.0GHZ Turbo) 10W TDP - Comm. Temp. Range Pentium® N6415 Quad Core @1.2GHz (3.0GHZ Turbo) 6.5W TDP - Comm. Temp. Range Atom® x6211E Dual Core @1.3GHz (3.0GHZ Turbo) 6W TDP w/ IBCECC and IHS - Ind. Temp. Range Atom® x6413E Quad Core @1.5GHz (3.0GHZ Turbo) 9W TDP w/ IBCECC and IHS - Ind. Temp. Range Atom® x6425E Quad Core @2GHz (3.0GHZ Turbo) 12W TDP w/ IBCECC and IHS - Ind. Temp. Range Atom® x6212RE Dual Core @1.2GHz (no Turbo) 6W TDP w/ IBCECC, IHS and TCC - Ind. Temp. Range Atom® x6414RE Quad Core @1.5GHz (no Turbo) 9W TDP w/ IBCECC, IHS and TCC - Ind. Temp. Range Atom® x6425RE Quad Core @1.9GHz (no Turbo) 12W TDP w/ IBCECC, IHS and TCC - Ind. Temp. Range (*) IHS: Integrated Heatspreader; TCC: Time Coordinated Computing	Graphics Up to 3 independent displays Integrated Gen11 UHD Graphics controller with up to 32 EU 4K HW decoding and encoding of HEVC (H.265), H.264, VP8/VP9, WMV9/VC1 (decoding only) DirectX 12.1, OpenGL ES 3.1, OpenGL 4.5, OpenCL™ 1.2, Vulkan 1.0
Max Cores	Video Interfaces	Video Interfaces eDP 1.3 or Dual Channel 18/24bit LVDS interface (factory options) 2 x DP++ 1.4 or 1x DP++ 1.4 and 1x HDMI® 1.4 interfaces
	Video Resolution	Video Resolution Up to 4096x2160 @60Hz
Mass Storage	Mass Storage	Mass Storage 1 x external S-ATA Gen3 Channel SDIO interface Optional eMMC 5.1 drive soldered on-board (Safety Related)
	Networking	Networking 2x Gigabit Ethernet PHY with precision clock synchronization and synchronous Ethernet clock output for IEEE 1588 (Safety Related - Black channel). Optional SERDES (SGMII) Interface for additional third Gigabit Ethernet (factory option, alternative to fourth PCI-e lane)
USB	USB	USB 6 x USB 2.0 Host Ports 2 x USB 3.1 Gen2 Ports
	PCI-e	PCI-e Up to 4 x PCI-e Gen3 Lanes
Audio	Audio	Audio HD Audio interface

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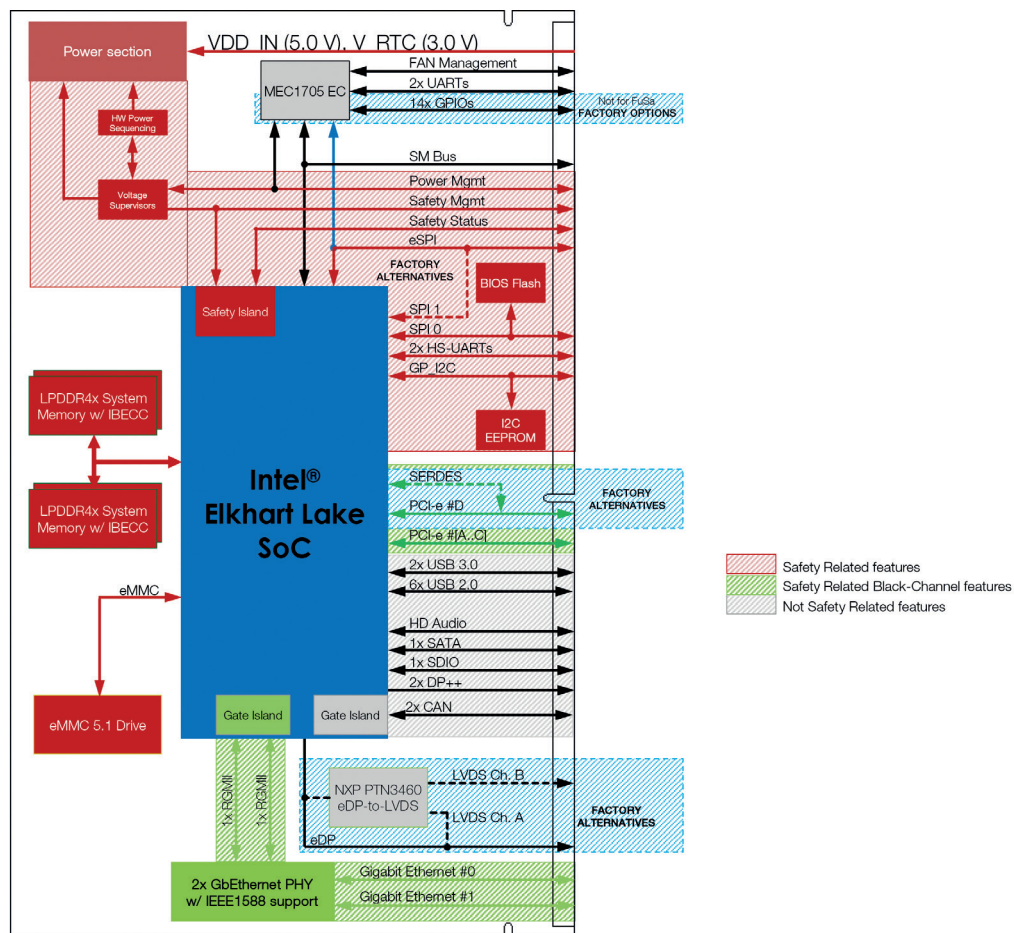
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FEATURES

 Serial Ports	2 x HS-UARTs (Safety Related) 2 x UARTs	 Operating System	Microsoft® Windows 10 Enterprise (64 bit) Linux Yocto 64-bit
 CAN Bus	2x	 Operating Temperature*	-40°C ÷ +85°C (Industrial version)
 Other Interfaces	Up to 14x GPIOs SM Bus Power Management Signals I2C Bus 1x SPI interface for boot 1x General Purpose SPI or eSPI (Factory Alternatives)	 Dimensions	50 x 82 mm
 Functional Safety features	FuSa Interface signals for IEC 61508 and ISO 13849	<p>*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.</p>	
 Power Supply	+5V _{DC} and +3.3V _{RTC}		

*Measured at any point of SECO standard heatspreader for this product, during any and all times (including start-up). Actual temperature will widely depend on application, enclosure and/or environment. Upon customer to consider application-specific cooling solutions for the final system to keep the heatspreader temperature in the range indicated.

BLOCK DIAGRAM



Streamline and expedite your edge computing implementations

EDGEHOG OS

A flexible operating system that adapts to your needs, thanks to the customization tool and Docker support. Reliability and security are built-in through a dual-partition system and native integration with Exein's robust AI-based protection.

DATA ORCHESTRATION

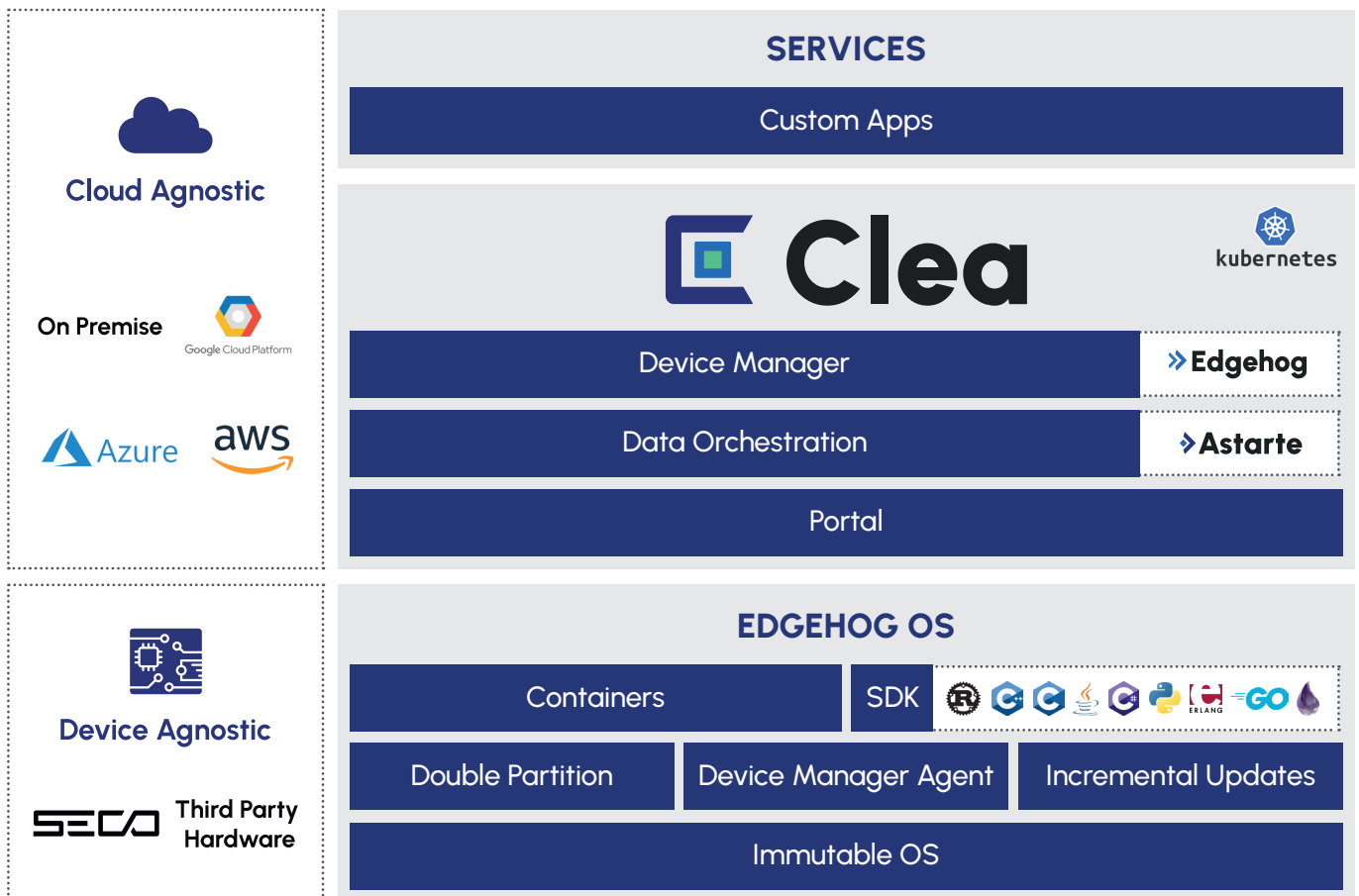
Integrate third-party services, simplify data flows and analysis, and enhance business efficiency by enabling easy and fast utilization of AI.

DEVICE MANAGER

Update, configure, and manage remote devices. Optimize time and costs to maximize operational efficiency and security without the need for costly field interventions.

PORTAL

Analyze data from remote devices, customize the user experience with applications tailored to user needs, and manage user rights, company access, and tenant privileges.



Scan to know more about our solution

EDGEHOG OS



CLEA DOCS

