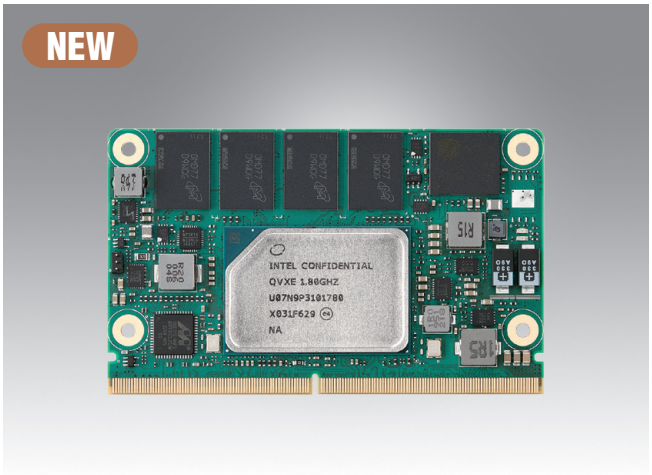
SOM-2532

Intel Atom® x6000, Pentium® and Celeron® x6000 Series Processor (Code Name: Elkhart Lake) SMARC Module



Features

- Intel Atom® x6000, Pentium® and Celeron® x6000 Series processor
- SMARC2.1.1 pinout, small size
- Dual-CH LPDDR4 3200MT/s up to 16GB, support IBECC
- Triple displays up to 4K2K (DP++, HDMI, LVDS/eDP/MIPI-DSI)
- Multiple I/O expansion: PCIe gen3, USB3.2 Gen2, USB2.0, SATA
- On board eMMC 32GB (Optional)
- Supports iManager, Embedded Software APIs and Wise-DeviceOn

Software APIs: Watchdog, I²C, SMBus, H/W Monitor, GPIO, Brightness

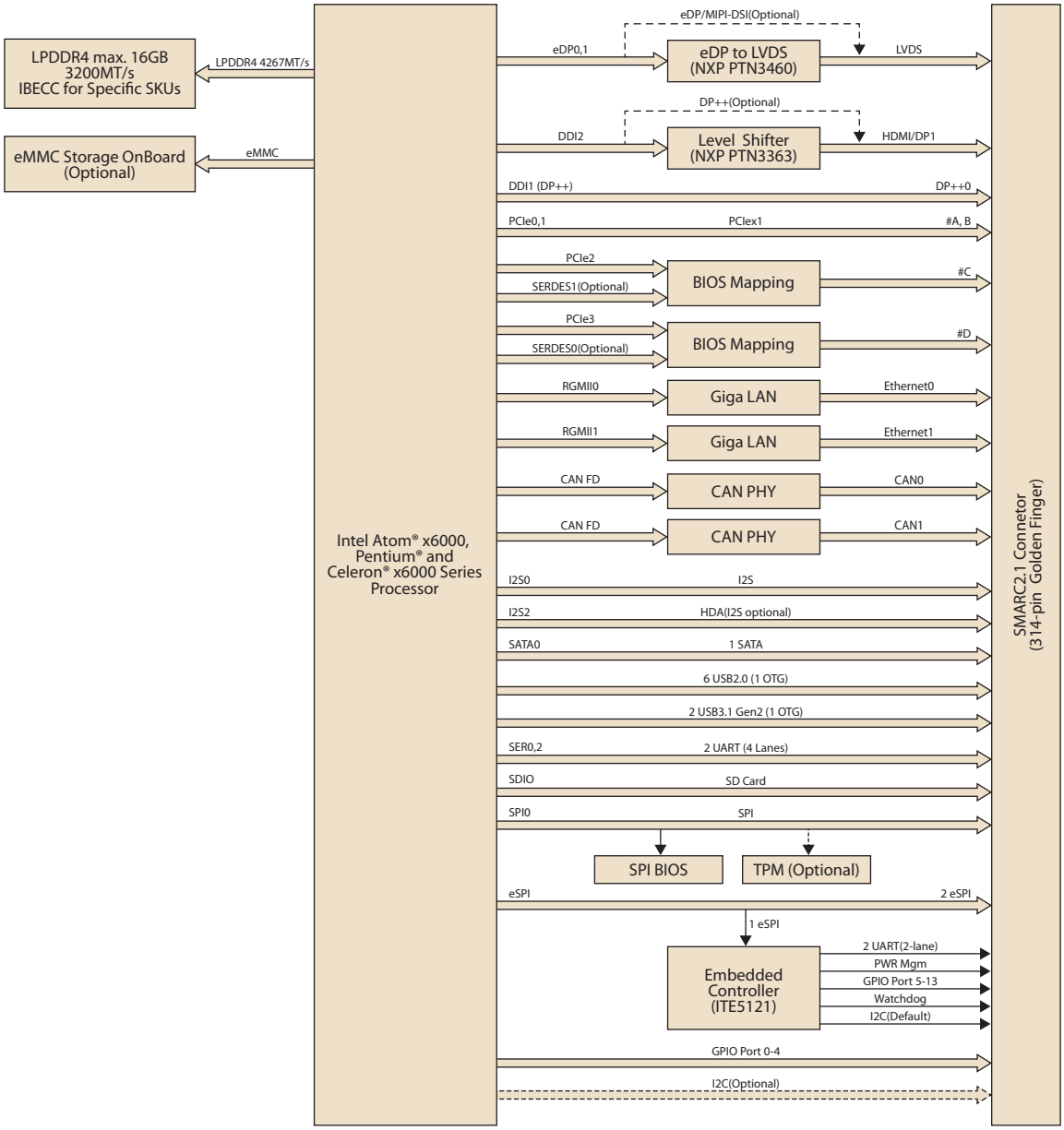
Windows Embedded iManager WISE-DeviceOn CE FC

Specifications

Form Factor	Form Factor	SMARC2.1.1		
	PCB Size	82 mm x 50 mm		
Processor System	CPU	Atom® X6425E	Atom® X6425RE	Atom® x6211E
	Base Frequency	2.0 GHz	1.9 GHz	1.3 GHz
	Burst Frequency	3.0 GHz	N/A	3.0 GHz
	Cores	4	4	2
	Cache	1.5MB L2 Cache	1.5MB L2 Cache	1.5MB L2 Cache
	CPU TDP	12W	12W	6W
	IBECC	Yes	Yes	Yes
	BIOS	AMI UEFI 256Mbit		
Memory	Technology	LPDDR4	LPDDR4	LPDDR4
	Speed	3200MT/s, Up to 4267MT/s by Specific SPU SKUs		
	ECC support	IBECC supported by Specific CPU SKUs		
	Max. Capacity	Max. 16GB		
	Channel / Socket	Dual channel / Memory down		
Graphics	Controller	Intel® UHD Graphics		
	Max. Frequency	500 MHz	400 MHz	350 MHz
	Graphic Memory	750 MHz	N/A	750 MHz
	3D/HW Acceleration	OpenGL* 4.5, DirectX* 12, OpenCL*1.2, Vulkan 1.1		
Display	LCD (LVDS/eDP/MIPI-DSI)	1 Port LVDS: 1920 x 1200 @ 60Hz/eDP: 4096 x 2160 @ 60Hz (Optional: MIPI-DSI, only support under Windows)		
	DP++	1 Port (up to 4096 x 2160 @ 60 Hz)		
	HDMI	1 Port HDMI 1.4b: Up to 3840 x 2160 @ 30 Hz, DP 1.2: Up to 4096 x 2160 @ 60 Hz (Optional)		
	Multiple Display	Triple Simultaneous Independent Display		
Expansion	PCI Express x1 (Gen3)	4 PCIex1 (PCIe2 colay SERDES 1, PCIe3 colay SERDES 0 by BOM option)		
	Audio Interface	Intel HD Audio/ up to 2 I2S		
	eSPI	eSPI		
Serial Bus	SMBus	N/A		
	I2C Bus	Yes		
Ethernet	Gigabit	2 Ports Marvell 88E1512 (10/100/1000BASE-T), Support TSN by Specific CPU SKUs		
I/O	SATA3.0	1 Port (6 Gbps)		
	USB3.2 (Gen2)	2 Ports (10 Gbps)		
	USB2.0	6 Ports (480 Mbps)		
	SPI Bus	Yes. For BIOS EEPROM and TPM		
	Onboard Storage	eMMC 32GB (Optional)		
	GPIO	14-bit		
	Watchdog	65536 level, 0 ~ 65535 sec		
	COM Port	4 Ports (2 Ports 4-wire / 2 Ports 2-wire)		
	TPM	TPM 2.0 (Optional)		
	CAN-FD	2 Ports (Only by Linux)		
	Smart Fan	N/A		
Power	Type	ATX/ATX: Vin		
	Supply Voltage	Vin: 4.75-5.25V, RTC Battery: 2.0V ~ 3.3V		
	Power Consumption (Max.)	24.107 W (PTU turbo CPU + GPU100%) 15.723 W (Burn-in)		
	Power Consumption (Idle)	4.013 W		
Environment	Operating Temperature	Standard: 0 ~ 60 °C (32 ~ 140 °F) Extend: -40 ~ 85 °C (-40 ~ 185 °F)		
	Storage Temperature	-40 ~ 85 °C (-40 ~ 185 °F)		
	Humidity	Operating: 40 °C @ 95% relative humidity, non-condensing Storage: 60 °C @ 95%relative humidity, non-condensing		
	Vibration Resistance	3.5 Grms		
Mechanical	Dimensions	82 mm x 50 mm		

Last updated: 4-Oct-2022

Block Diagram



Ordering Information

Part No.	CPU	Core	Graphics	Base Freq.	Max. Boost Freq.	GFX HFM	GFX Burst Mode	CPU TDP	Onboard Memory	EMMC	IBECC	Thermal solution	Operating Temp.
SOM-2532CCBC-S9A1	Atom® x6425RE	4	32EU	1.9GHz	N/A	400MHz	N/A	12W	8GB	32GB	Yes	Passive	0 ~ 60 °C
SOM-2532DCBC-U0A1	Atom® x6425E	4	32EU	2.0GHz	3.0GHz	500MHz	750MHz	12W	16GB	N/A	Yes	Passive	0 ~ 60 °C
SOM-2532CCBC-U0A1	Atom® x6425E	4	32EU	2.0GHz	3.0GHz	500MHz	750MHz	12W	8GB	32GB	Yes	Passive	0 ~ 60 °C
SOM-2532CCBC-S3A1	Atom® X6211E	2	16EU	1.3GHz	3.0GHz	350MHz	750MHz	6W	8GB	32GB	Yes	Passive	0 ~ 60 °C
SOM-2532CCBX-S9A1	Atom® x6425RE	4	32EU	1.9GHz	N/A	400MHz	N/A	12W	8GB	32GB	Yes	Passive	-40 ~ 85 °C
SOM-2532DCBX-U0A1	Atom® x6425E	4	32EU	2.0GHz	3.0GHz	500MHz	750MHz	12W	16GB	N/A	Yes	Passive	-40 ~ 85 °C
SOM-2532CCBX-S3A1	Atom® X6211E	2	16EU	1.3GHz	3.0GHz	350MHz	750MHz	6W	8GB	32GB	Yes	Passive	-40 ~ 85 °C

*Any other SKUs or combination is project based support. Please contact sales for details.

Development Board

Part No.	Description
SOM-DB2510-00A1	SMARC R2.1 Devel. Board Rev. A1
SOM-DB2510A-00A1	SMARC R2.1 Devel. Board Rev. A1 w/eDP

Packing List

Part No.	Description	Quantity
-	SOM-2532 COM module	1
1970005009N001/ 1970005010N001	Heatspreader IHS/'Heatspreader NON-I	1

Optional Accessories

Part No.	Description
1970005111T001	Semi-Heatsink

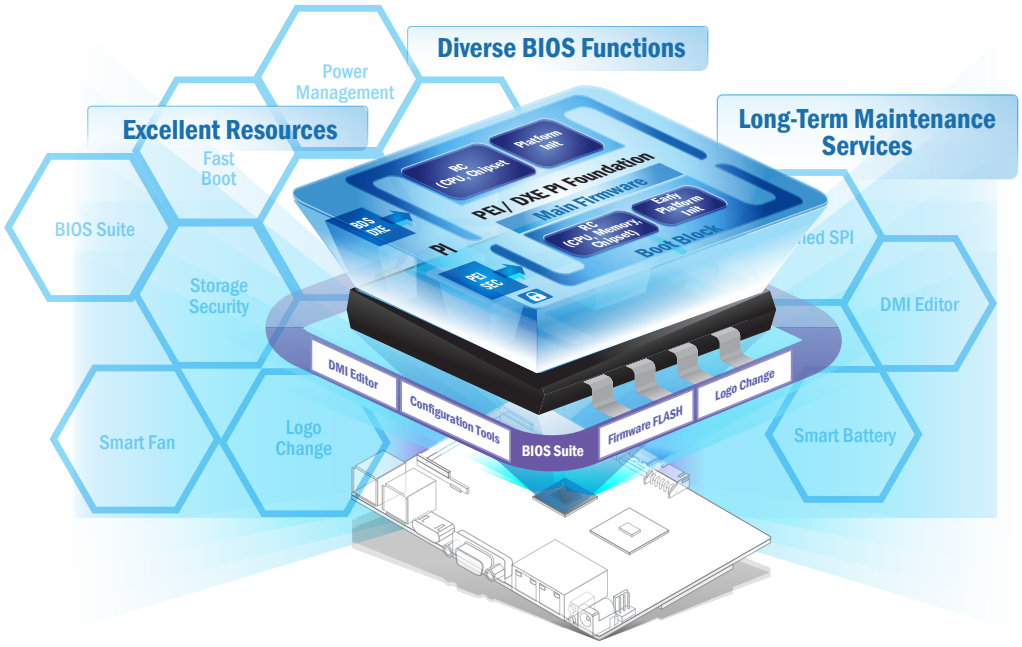
Embedded OS

OS	Part No.	Description
Win10 (HL)	20706WX9HS0137	Img W10 19HL SOM-2532 64b 1809 ENU
Win10 (VL)	20706WX9VS0141	Img W10 19VL SOM-2532 64b 1809 ENU
Win10 (EL)	20706WX9ES0151	Img W10 19EL SOM-2532 64b 1809 ENU

Reliable Embedded BIOS Solutions

Custom BIOS services with long-term support

Advantech's high-quality embedded BIOS solutions deliver rapid execution and feature expert BIOS team support. These solutions feature multi-functional designs that ensure security and enable power/boot management. Advantech further provides 10+ years of BIOS version management, internal management, and longevity support for both hardware and BIOS — enhancing application efficiency, diversifying functionality, and optimizing performance.



Embedded BIOS Solution Advantages

Sufficient Sources

- Strong partnership with BIOS vendors
- 50+ engineers with extensive industrial BIOS experience

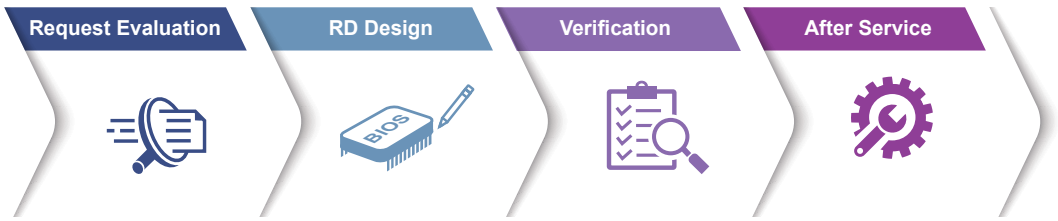
Diverse BIOS Functions

- Multi-layer security
- 3 second fast boot
- Power management
- BIOS suite utility

Long-Term Maintenance Services

- Platform longevity support
- 10-year BIOS version control
- BIOS remote backup

Value-Added Customization Process



WISE-DeviceOn

Massive IoT Device Management Utility

IoT deployment and management typically involves numerous disparate devices installed on multiple sites. These devices require effective monitoring, managing, and tracking. Advantech's easy-to-use WISE-DeviceOn interface enables users to remotely monitor device health, troubleshoot problems, and send software/firmware updates over-the-air (OTA). In sum, DeviceOn empowers quick real-time responsiveness to emerging problems.

Features

Comprehensive Management	Remote Access	Efficient Operations
• Devices status • Peripherals/firmware • Open for extension	• Real-time monitoring • Remote controls • Troubleshooting	• Zero-touch on-boarding • OTA updates • Batch control

Product Highlights

SOM-6883
High-performance 11th Gen Intel® COMe Type 6 Module

MIO-5375
Compact 11th Gen Intel® Outdoor Focused 3.5" SBC

EPC-B5587
10th Gen Intel® Xeon® based Edge server

EPC-R3220
Arm based IoT Edge Gateway

Edge AI Suite

AI development for diverse application at the Edge

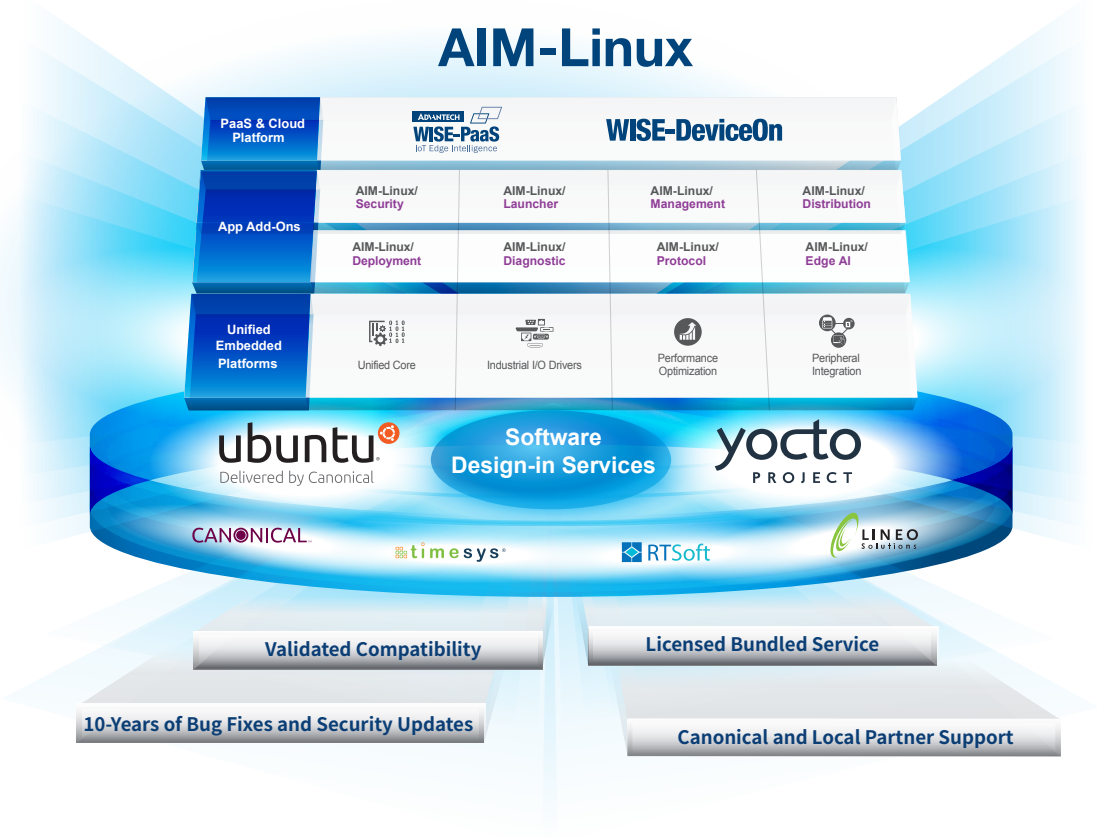
Increasing demand for AI inference/analytic capabilities at the Edge make AI training models, software development environments, and hardware configuration key factors in successful solution deployment. Advantech's Edge AI Suite helps users build AI demo devices quickly and choose optimal hardware solutions easily.

5x Performance Boost	All-in-one Installation	One Click AI Experience	Plug-and-play Environment	Discover Cost-effective Hardware
• Integrated Intel® OpenVINO™ technology • Boost AI using Advantech hardware	• Build AI environment in under 5 minutes • Ready-to-use configuration	• User friendly configuration guidance • One-click Benchmark acquisition	• Easy access to 100+ AI inference extensions • Software development package available	• Diverse CPU/RAM options • Find hardware solutions for AI development

Embedded Linux Support and Design-in Services

Hardware Certified Ubuntu and Yocto with Eco Partner Services

Linux is the most popular embedded OS for transportation, outdoor services, factory automation, and mission critical applications. Its open source and kernel reliability features ease security updates, and make it particularly adaptable to new AI and Edge computing technology. Advantech has cooperated with Canonical and other software partners to provide hardware certified Ubuntu image and Yocto BSP as Linux offerings. The Advantech, Embedded Linux, and Android Alliance (ELAA) delivers local software services and consultation.



Features

Certified OS and BSP

- Platform compatibility tests
- Preloaded functional driver and software stacks

Licensed Services

- License authorized Canonical delivers 10-years of bug fixes and security updates
- In-house bundled service

Numerous AI and Edge Resources

- Containerized technology for service provision and deployment
- AI resources from Caffe, TensorFlow, and mxnet

Local Partner Alliance

- Embedded Linux and Android Alliance (ELAA)