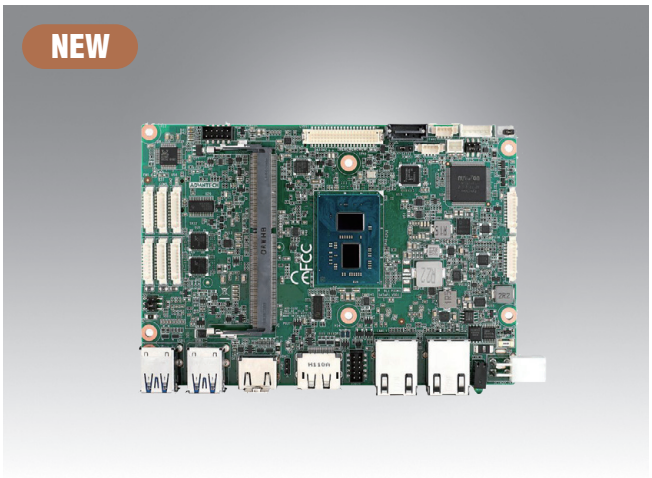
MIO-5152

Intel® Atom® x6000E series and Intel® Celeron® N and J series 3.5" SBC



Features

- Atom® x6000E series and Intel® Celeron® J and N series with Quad/Dual Cores, TDP 6W/ 10W/ 12W
- Single Channel DDR4-3200 up to 32GB
- 3 independent displays via LVDS, DP1.4, and HDMI2.0 up to 4K@60Hz
- Dual GbE, 6 USB, 6 UART, TPM2.0
- CE/FCC Class B, Coastline I/O ESD 8KV/15KV Criteria A
- Support Windows 10 LTSC & Ubuntu 20.04 LTS, embedded software APIs, WISE-DeviceOn

Software APIs: GPIO, I²C, Watch Dog Timer, Backlight On/Off, Brightness, Hardware Monitor, System Throttling, Thermal Protection, Smart Fan, Data Security, System Info

ubuntu yocto PROJECT Windows10 iManager WISE-DeviceOn CE FC

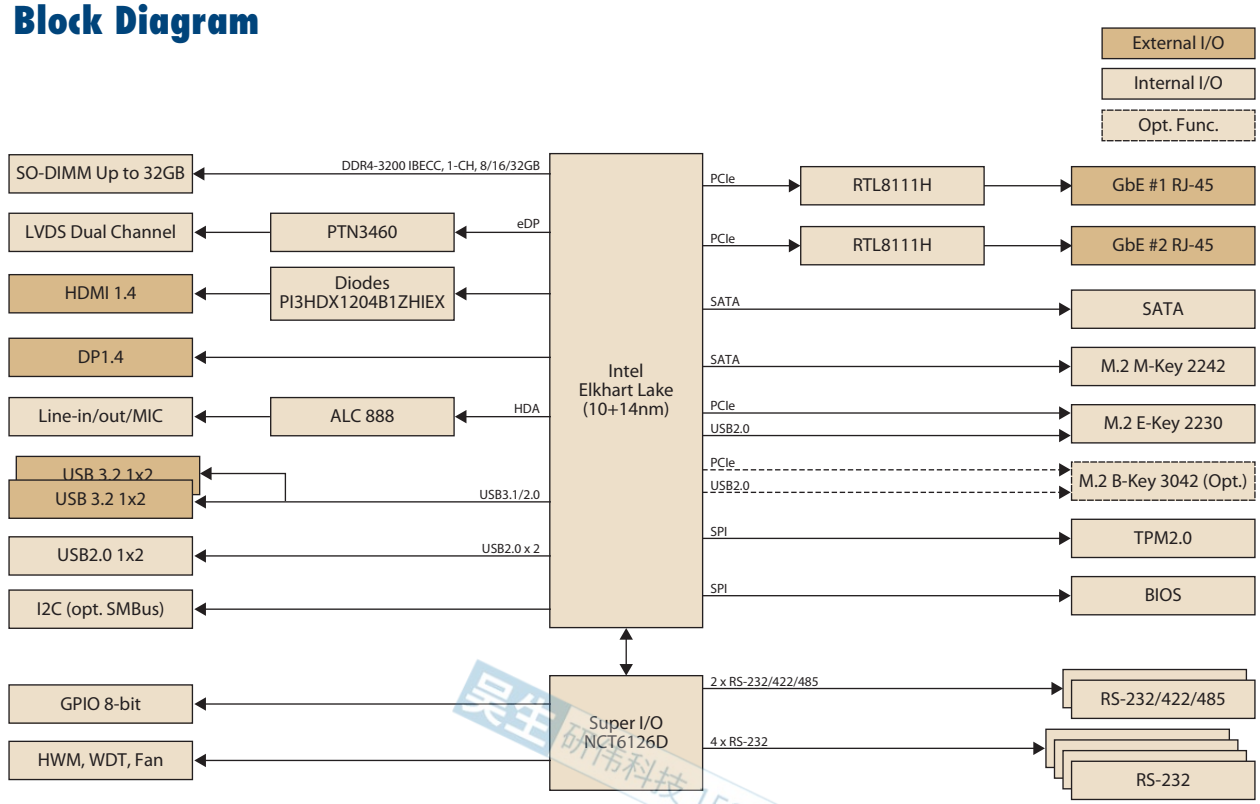
Specifications

Platform	Processor	Intel® Celeron® J6412	Intel® Celeron® N6210	Intel Atom® x6425E
	Max Frequency	2.6GHz	2.6GHz	3.0GHz
	Base Frequency	2.0GHz	1.2GHz	2.0GHz
	Core/Thread	4/4	2/2	4/4
	LLC	L2	L2	L2
	CPU TDP	10W	6.5W	12W
	Chipset	Intel® Chipset (SoC Integrated)		
	BIOS	AMI EFI 256Mbit		
Memory	Technology	DDR4-3200 SDRAM		
	Max Capacity	32GB		
	Channel/Socket	Single Channel/ 1 Socket		
	ECC Support	N/A	N/A	In-Band ECC Supported by SoC
Graphic	Controller	Intel Gen11 Graphics Engines (SoC integrated)		
	Max Frequency	800MHz	750MHz	750MHz
	Base Frequency	400MHz	250MHz	500MHz
	Graphic Memory	TBU		
	3D/HW Acceleration	DX12, OGL4.5, OCL1.2, Vulkan 1.1, MPEG2, H.264, JPEG/MJPEG, H.265 (HEVC)		
Display I/F	LCD	1 x LVDS: Dual Channel 18/24-bit, up to 1920 x 1200		
	HDMI/DP	1 x HDMI2.0 up to 4096 x 2160 x 24bpp @ 60Hz 1 x DP1.4a, up to 4096 x 2160 x 36bpp@60Hz		
	Triple Display	3 simultaneous displays with LVDS, HDMI, DP		
External I/O	Ethernet	2 x RJ-45; LAN1: Realtek RTL8111H, LAN2: Realtek RTL8111H		
	HDMI/DP	1/1		
	USB3.2	4 x TypeA; 4 x USB3.2 Gen2 (10Gbps)		
	Power DC-Jack	Optional		
Internal I/O	SATA	1 x SATA GenIII 6.0 Gbps		
	USB	2 x USB2.0		
	Serial Bus	I2C		
	COM Ports	2 x RS-232/422/485 (Max baud rate: 1Mbps), 4 x RS-232		
	GPIO	8-bit general purpose input output I/O		
	Audio	Realtek ALC888S, Line-in/Line-out/MIC		
	Inverter	12V/5V		
	SPI Bus	eSPI		
	Fan	4-wire smart fan		
	Front Panel Control	Power-on, Reset, Buzzer, SATA LED, CaseOpen		
Board Feature	Watchdog Timer	Programmable 1 ~ 255 sec/min		
	TPM	TPM2.0		
Expansion	M.2 E-Key/B-Key	1 x E-Key 2230 (PCIex1, USB2.0) Optional B-key 3042 w/ NanoSIM		
	M.2 M-Key	1 x M-key 2242 (SATA)		
Power	Supply Voltage	Vin: DC 12V ± 10%; RTC Battery Lithium 3V/210mAH		
	Connector	ATX 2x2pin 90D, optional DC-Jack		
	Power Management	AT, ATX mode		
	Max Consumption	1.78 @12V (21.39Watt)		
	Idle Consumption	0.61 @12V (7.31Watt)		
Environment	Temperature	Operating Standard: 0 ~ 60 °C (32 ~ 140 °F)		
	Humidity	Operating: 40 @95% relative humidity, non-condensing		
	Vibration Resistance	3.5 Grms		
Certification	EMC	CE, FCC Class B		
Mechanical	Dimensions	146 x 102 mm (5.7" x 4")		
	Net weight			

All product specifications are subject to change without notice.

Last updated: 27-May-2022

Block Diagram



昊生 研伟科技 15323776600

Ordering Information

Part Number	CPU	TDP	Max. Frequency	Core	GbE	USB3.1	USB3.0	USB2.0	RS232/ 422/485	RS232	TPM2.0	Thermal solution	Operating Temp
MIO-5152J-U6A1	Intel® Celeron® Processor J6412	10W	2.6GHz	4	2	2	2	2	2	4	Y	Passive	0 ~ 60° C
MIO-5152N-U6A1	Intel® Celeron® Processor N6210	6.5W	2.6GHz	2	2	2	2	2	2	4	Y	Passive	0 ~ 60° C
MIO-5152A-P0A1	Intel Atom® x6425E Processor	12W	3.0GHz	4	2	2	2	2	2	4	Y	Passive	0 ~ 60° C

Packing List

Part No.	Description	Quantity
	MIO-5152 SBC	
	Startup Manual	
1970005053T011	MIO-5152 Passive Heatsink for Celeron series	1
1970005053T001	MIO-5152 Passive Heatsink for x6000E	1
1700006291	M Cable SATA 7P/SATA 7P 30cm C=R 180/90	1
1700031583-01	M CABLE SATA 15P/1*2P-2.0 35cm	1
1700030406-01	M Cable 2*5P-2.0/USB-A 4P(F)*2 20cm	1
1700030404-01	F Cable D-SUB 9P(M)/1*10P-1.25 20cm	2
1700019584-01	A Cable 2*5P-2.0/Audio JACK*3 20cm	1

Embedded OS/API

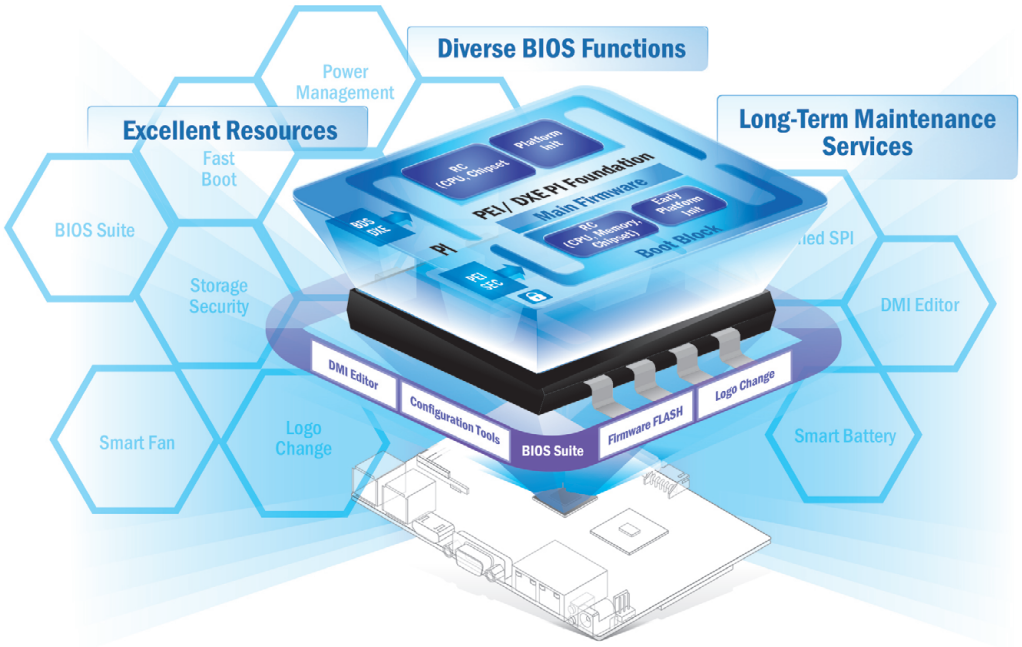
Embedded OS/API	Part No.	Description
Windows 10	20706WX9HS0142	64-bit (UEFI Mode Only)
Ubuntu 20.04	20706U20DS0034	Ubuntu Desktop 20.04 LTS 64-bit Image & License Sticker for MIO-5152
Yocto	Support by Request	Yocto BSP and Test Image
Software API	Website Download	SUSI v4.0

Rear IO View

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

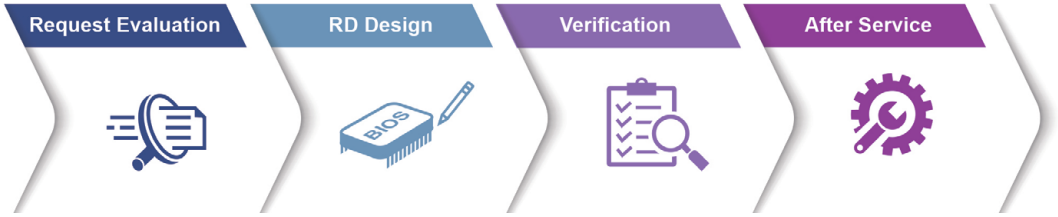
Diverse BIOS Functions

- 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



昊生研伟科技 15323116600

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	Licensed Services	Numerous AI and Edge Resources	Local Partner Alliance
• Platform compatibility tests • Preloaded functional driver and software stacks	• License authorized Canonical delivers 10-years of bug fixes and security updates • In-house bundled service	• Containerized technology for service provision and deployment • AI resources from Caffe, TensorFlow, and mxnet	• Embedded Linux and Android Alliance (ELAA)

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

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