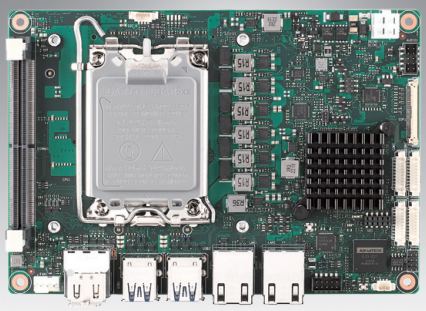
MIO-4370

12th Gen. Intel® Core™ Processors S-series (LGA1700) on 4" EPIC SBC

Preliminary



ubuntu yocto PROJECT Windows 10 iManager WISE-DeviceOn CE FC

Features

- 12th Gen. Intel® Core™ Processor up to 16 Cores, TDP 35W
- High scalability with socket type CPU (LGA1700) & Support Std. Fan cooler
- DDR5 4800 up to 32GB + 3 simultaneous display: Dual HDMI + eDP
- Dual High Speed 2.5G Ethernet with TSN, 2x COM, CANbus, TPM
- 3 Expansions: Dual M.2 M-Key (support NVMe), M.2 E-Key
- Supports Windows 10 LTSC & Ubuntu 20.04 LTS, embedded software APIs, WISE-DeviceOn

Software APIs: GPIO, SMBus/I²C, Watch Dog Timer, Backlight On/Off, Brightness, CAN bus

Utilities: Hardware Monitor, System Throttling, Thermal Protection, Smart Fan, Data Security, System Info

Specifications

Platform	Processor	i9-12900TE	i7-12700TE	i5-12500TE	i3-12100TE
	Max. Frequency	4.8 GHz	4.7 GHz	4.3 GHz	4.0 GHz
	Base Frequency	1.1 GHz	1.4 GHz	1.9 GHz	2.1 GHz
	Core/Thread	16C (8+8) / 24T	12C (8+4) / 20T	6C (6+0) / 12T	4C (4+0) / 8T
	LLC	30MB	25MB	18MB	12MB
	CPU TDP	35W	35W	35W	35W
	Chipset	R680E			
	BIOS	AMI UEFI 256Mbit			
Memory	Technology	DDR5-4800			
	Max. Capacity	Up to 32GB			
	Channel/Socket	Single Channel / 1 Socket			
Graphics	Controller	Intel® UHD Graphics 770	Intel® UHD Graphics 770	Intel® UHD Graphics 770	Intel® UHD Graphics 730
	Max. Frequency	1.4 GHz	1.3 GHz	1.25 GHz	1.4 GHz
	Execution Unit	32	32	32	24
	3D/HW Acceleration	DX12, OGL4.5, OCL2.1, HW Encode: AVC/H264, JPEG, HEVC/H265, VP9 HW Decode: WMV9, AVC/H264, JPEG/MJPEG, HEVC/H265, VP9, AV1			
Display I/F	LCD	1 x eDP 1.4b, up to 5120 x 3200 @60Hz, 24bpp			
	HDMI/DP	2 x HDMI 1.4, up to 4096 x 2160 @ 30Hz, 24bpp			
	Multiple Display	3 simultaneous displays via eDP + HDMI + HDMI			
Ethernet	Controller	LAN1/LAN2: Intel I225			
	Speed	LAN1/LAN2: 2.5GbE			
External I/O	Ethernet	2 x RJ-45			
	HDMI	2			
	USB	4 x USB 3.2 Gen 1x1 (5Gbps)			
	LED	Power status, SATA R/W			
Internal I/O	USB	2 x USB 2.0			
	COM Port	2 x RS-232/422/485, max. 1Mbps			
	CANBus	1 x CAN2.0, max. 1Mbps			
	Serial Bus	1 x I²C (BOM Default, optional to 1 x SMBus*)			
	Audio	Realtek ALC888s, Line-in/Line-out/MIC			
	GPIO	8-bit general purpose input output I/O			
	Fan	12V, 2A (4-wire)			
	Front Panel Control	Power-on, Reset, Buzzer, SATA LED, CaseOpen			
Board Feature	Watchdog Timer	65536 level, 0~65535 sec			
	TPM	TPM2.0			
	iManager 3.0	SW API for Hardware Monitor, Smart Fan Control, Brightness Control, I²C, GPIO, WDT			
Expansion	M.2 E-Key	1 x E-Key 2230 (PCIex1, USB2.0)			
	M.2 B-Key	0 (Option: Change 1 x M-Key to 1 x B-Key 3042 (PCIex1, USB2.0) w/ support bracket and Nano SIM)			
	M.2 M-Key	2 x M-Key 2280 (PCIe Gen.4 x4)			
Power	Supply Voltage	Vin: DC 12V ± 10%; RTC Battery: Lithium 3V/210mAH			
	Connector	ATX 2x2 pin 180D (Option to ATX 2x2 pin 90D)			
	Power Management	AT, ATX			
	Max. Consumption	TBU	TBU	TBU	TBU
	Idle Consumption	TBU	TBU	TBU	TBU
Environment	Temperature	Operating: Standard: 0 ~ 60° C (32 ~ 140° F) Storage: -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			
Certification	EMC	CE, FCC Class B			
Mechanical	Dimensions	165 x 114 mm (6.5" x 4.5")			
	Net Weight	320g (w/o CPU & Cooler)			

*Note: Support by request

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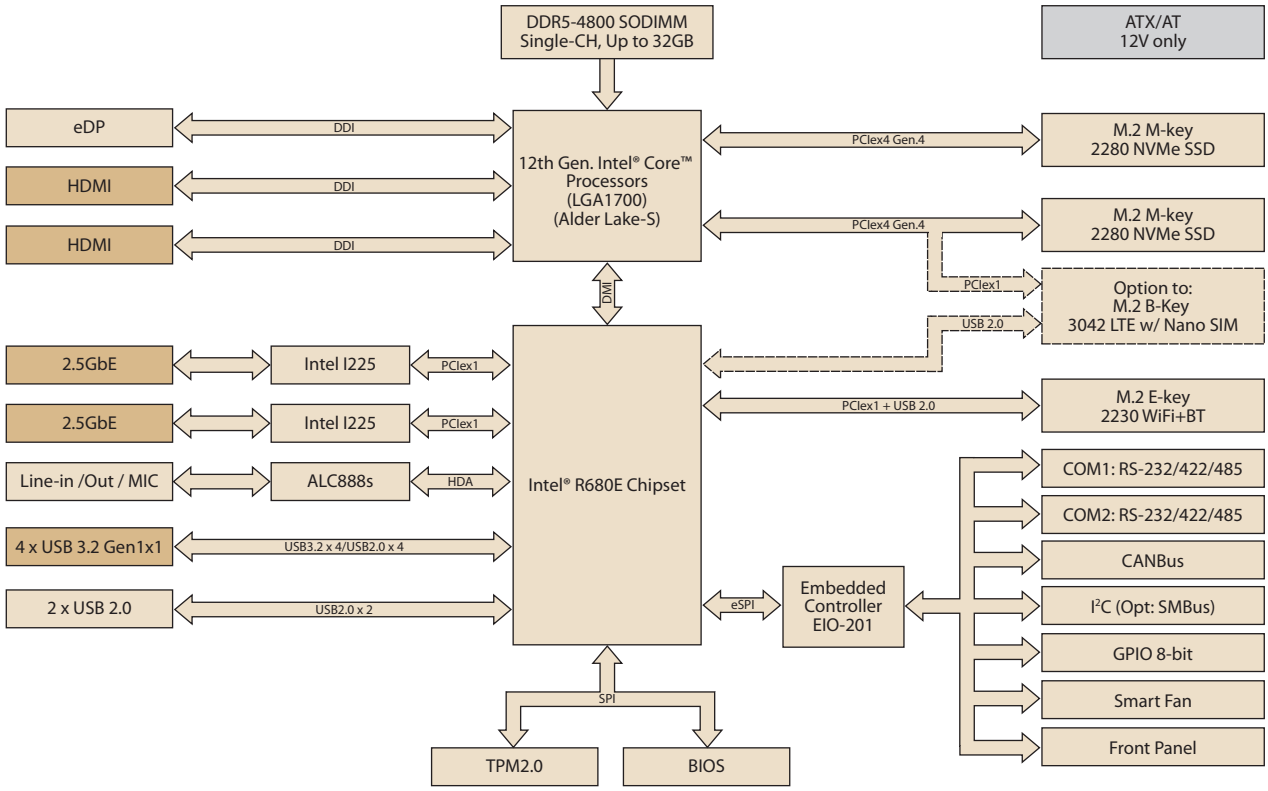
All product specifications are subject to change without notice.

Block Diagram



Ordering Information

Part No.	CPU	Core	Max Freq.	Base Freq.	TDP	vPro	PCH	ECC	M.2 Extension[1]	Thermal Solution	Operating Temperature
(TBD)	i9-12900TE	16 (8+8)	4.8 GHz	1.1 GHz	35W	Yes	R680E	Yes	2x M-Key + E-Key	Active Cooler	0 ~ 60 °C
(TBD)	i7-12700TE	12 (8+4)	4.7 GHz	1.4 GHz	35W	Yes	R680E	Yes	2x M-Key + E-Key	Active Cooler	0 ~ 60 °C
(TBD)	i5-12500TE	6 (6+0)	4.3 GHz	1.9 GHz	35W	Yes	R680E	Yes	2x M-Key + E-Key	Active Cooler	0 ~ 60 °C
(TBD)	i3-12100TE	4 (4+0)	4.0 GHz	2.1 GHz	35W	No	R680E	Yes	2x M-Key + E-Key	Active Cooler	0 ~ 60 °C

Note 1 : 1x M-Key is BOM optional to B-key to support 4G/LTE module by request.

Packing List

Part No.	Description	Quantity
	MIO-4370 SBC	1
(TBD)	Startup Manual	1
1700019584-01	Audio Cable	1
1700030404-01	COM Port Cable	2
1700030406-01	USB 2.0 Cable	1

Optional Accessories

Part No.	Description
1970004564T010	CPU Cooler, for TDP 35W, 75(W)x75L)x25(H)mm

Embedded OS/API

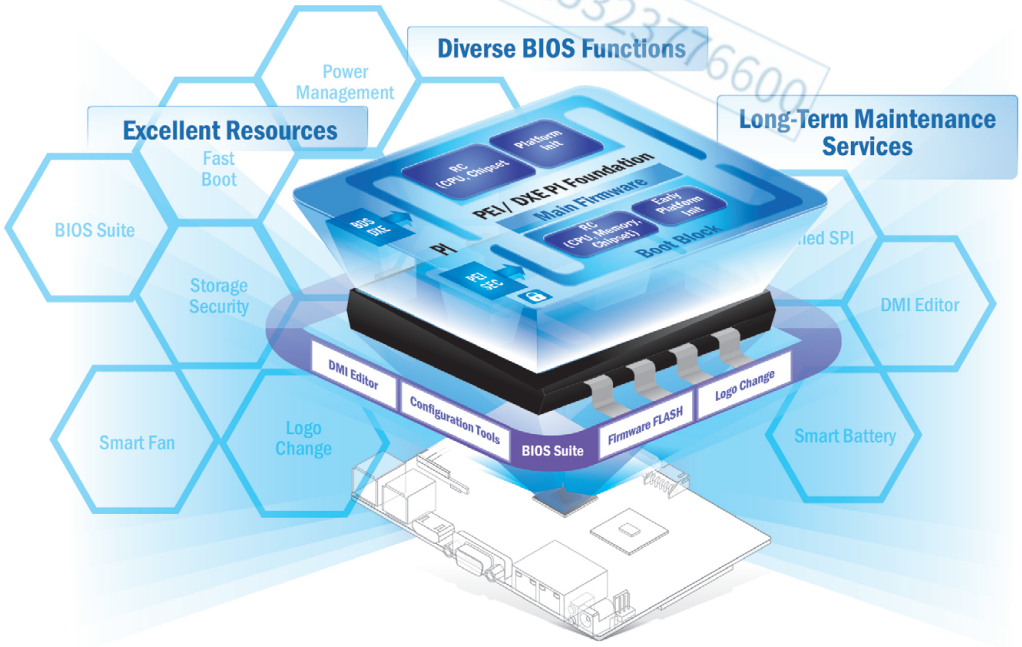
OS	Part No.	Description
Windows 10 LTSC	TBD	64-bit (UEFI mode only)
Ubuntu 20.04 LTS	TBD	Ubuntu Desktop 20.04 LTS 64-bit
Software API	Website Download	SUSI v4.0
Yocto BSP	Support by Request	Yocto BSP and Test Image

Rear I/O 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

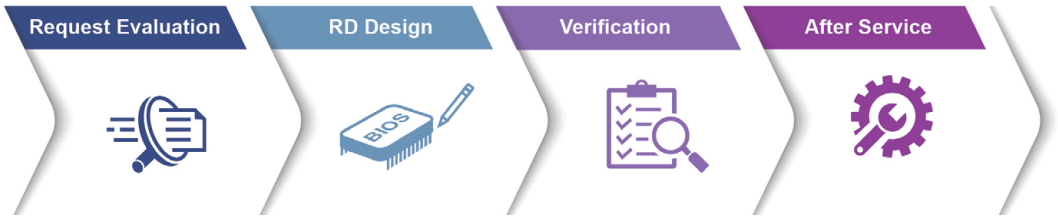
Diverse BIOS Functions

- 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



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)

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