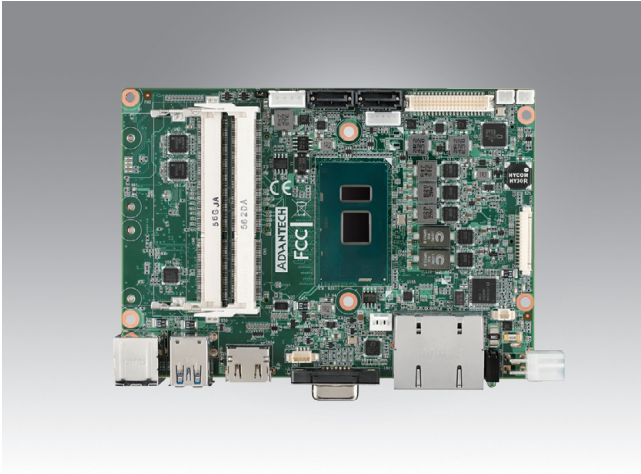


# MIO-5272

7<sup>th</sup> & 6<sup>th</sup> Gen. Intel® Core™ U-series (i7/i5/i3/\*Celeron®), 3.5" SBC w/MIOe



## Features

- 7<sup>th</sup> & 6<sup>th</sup> Gen. Intel® Core™ U-series (i7/i5/i3/\*Celeron®)
- Dual SO-DIMM slots support up to 16GB memory
- Multi-Display: VGA + HDMI 1.4 + LVDS (48bit)
- Expansion: 2x Full-size miniPCIe slots (one for mSATA), MIOe connector for I/O extension
- Dual GbE, 6x USB, 2x COM, SMBus/I2C, GPIO, TPM (optional)
- Supports Windows 10 LTSC & Ubuntu 20.04 LTS, embedded software APIs, WISE-DeviceOn

### Software APIs:



### Utilities:



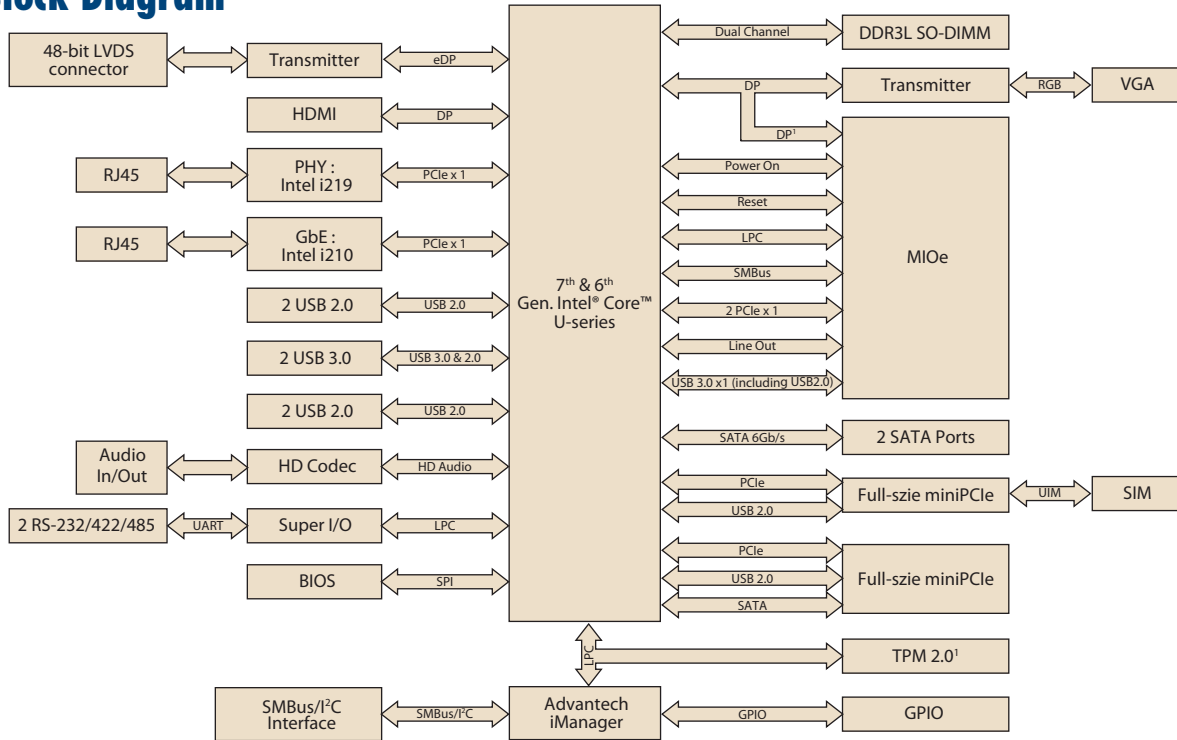
ubuntu yocto Windows 10 iManager WISE-DeviceOn CE FCC

## Specifications

		Intel 7th Core™ U-series	Intel 6th Core™ U-series	Intel Core i5 6300U	Intel Core i3 6100U	Intel Celeron 3955U*	
Processor System	CPU	Intel Core i7 7600U	Intel Core i7 6600U	Intel Core i5 6300U	Intel Core i3 6100U	Intel Celeron 3955U*	
	Base Frequency	2.8 GHz (Dual-Core)	2.6 GHz (Dual-Core)	2.4 GHz (Dual-Core)	2.3 GHz (Dual-Core)	2.0 GHz (Dual-Core)	
	Max Turbo Frequency	3.9 GHz	3.4 GHz	3.0 GHz	-	-	
	L3 Cache	4MB	4MB	3MB	3MB	2MB	
	BIOS	AMI UEFI 128 Mbit					
Memory	Technology	DDR3L 1600 MHz					
	Max. Capacity	16 GB					
	Socket	2 x 204-pin SODIMM					
Display	Controller	Intel HD Graphics 620	Intel HD Graphics 520	Intel HD Graphics 520	Intel HD Graphics 520	Intel HD Graphics 510	
	Processor Graphics	DirectX 12, DirectX 11.3, OpenGL 4.4, and OpenCL 2.1 Full AVC/VC1/MPEG2 HW Decode					
	VGA	1920 x 1200 @ 60Hz or 2048 x 1152 @ 60Hz with reduced blanking					
	LVDS	LVDS with 3.3V, 5V and 12V on LCD VDD power, 5V and 12V support on LVDS inverter Dual channel 24-bit LVDS, max resolution up to 1920 x 1200 at 60Hz					
	HDMI	Supports HDMI 1.4 for HD Video playback Max resolution up to 4096 x 2160 at 24 Hz					
	Multi-Display	VGA + HDMI, VGA + LVDS, HDMI + LVDS, VGA + HDMI + LVDS					
Ethernet	Speed	10/100/1000Mbps					
	Controller	GbE1: Intel i219, GbE2: Intel i210					
	Connector	2 RJ45 on Rear I/O					
Audio	Codec	High Definition Audio (HD), Line-in, Line out, Mic-in					
	Amplifier	Optional via MIOe					
WatchDog Timer		Output System reset, Programmable counter from 1 – 255 minutes/ seconds					
Storage	SATA	2, up to 6.0 Gb/s (600 MB/s)					
	mSATA	1 x Full-size (support either mSATA or miniPCIe)					
Rear I/O	Ethernet	2					
	VGA	1					
	HDMI	1					
	USB 2.0	2					
	USB 3.0	2					
	LED	Power, HDD					
	DC Jack*	Support by request					
Internal I/O	Serial	2 x RS-232/422/485 with auto flow control (ESD protection: Air gap ±15kV, Contact ±8kV)					
	USB	2					
	FC	1 (Shares with SMBus pin)					
	SMBus	1					
Security	GPIO	8-bit general purpose input/output					
	TPM2.0*	Support by request					
Expansion	Mini PCIe	2 x Full-size (One with SIM card holder. Another one with mSATA support, default support mSATA)					
	MIOe	Displayport*, SMBus, USB3.0, LPC, 2 x PCIe x1, line out, +5 Vsb/+12 Vsb power, Power On, Reset					
Power	Power Type	Single 12V DC power input					
	Power Supply Voltage	Supports single 12V input, ± 10%					
	Power Consumption (Typical)	i7 7600U: 6.46W, i7 6600U: 6.46 W, i5 6300U: 5.26 W, i3 6100U: 5.02 W, Celeron 3955U: 4.88 W					
	Power Consumption (Max)	i7 7600U: 22.03W, i7 6600U: 22.03 W, i5 6300U: 20.87 W, i3 6100U: 20.45 W, Celeron 3955U: 17.81 W					
	Power Management	ACPI					
Environment	Battery	Lithium 3 V / 210 mAh					
	Operating	0 – 60 °C (32 – 140 °F); Extend: -40 – 85 °C (-40 – 185 °F) (Operating humidity: 40 °C @ 95% RH Non-Condensing)					
	Non-Operating	-40 °C – 85 °C and 60 °C @ 95% RH Non-Condensing					
Physical Characteristics	Dimensions (L x W)	146 x 102 mm (5.7" x 4"), same as 3.5"					
	Weight	0.67kg, weight of total package					
	Height	Top Side: 16.5 mm; Bottom Side: 7.8 mm; PCB: 2.0 mm					

\* Supported by request; please contact Advantech if this function is needed.

## Block Diagram



<sup>1</sup> Supported by request

## Ordering Information

Part No.	CPU <sup>1</sup>	L3 Cache	Memory	LVDS	VGA	HDMI	GbE	HD Audio	RS-232/422/485	USB 3.0	USB 2.0	SATAIII	Full-size Mini PCIe <sup>2</sup>	MIOe	Power connector <sup>3</sup>	Thermal Solution	Operating Temp.
<b>7th Gen. Intel® Core™ U-series</b>																	
MIO-5272U-U8A2	Intel i7 7600U, 2.8GHz 15W	4MB	SODIMM	48 bit	Yes	Yes	2	1	2	2	4	2	2	1	2x2 pin	Passive	0 - 60 °C
MIO-5272Z-U8A2	Intel i7 7600U, 2.8GHz 15W	4MB	SODIMM	48 bit	Yes	Yes	2	1	2	2	4	2	2	1	2x2 pin	Passive	-20 - 80 °C
MIO-5272Z2-U8A2	Intel i7 7600U, 2.8GHz 15W	4MB	SODIMM	48 bit	Yes	Yes	2	1	2	2	4	2	2	1	2x2 pin	Passive	-40 - 85 °C
<b>6th Gen. Intel® Core™ U-series</b>																	
MIO-5272U-U6A2	Intel i7 6600U 2.6GHz 15W	4MB	SODIMM	48-bit	Yes	Yes	2	1	2	2	4	2	2	1	2x2 pin	Passive	0 - 60 °C
MIO-5272U-U4A2	Intel i5 6300U 2.4GHz 15W	3MB	SODIMM	48-bit	Yes	Yes	2	1	2	2	4	2	2	1	2x2 pin	Passive	0 - 60 °C
MIO-5272U-U3A2	Intel i3 6100U 2.3GHz 15W	3MB	SODIMM	48-bit	Yes	Yes	2	1	2	2	4	2	2	1	2x2 pin	Passive	0 - 60 °C
MIO-5272Z2-U6A2	Intel i7 6600U 2.6GHz 15W	4MB	SODIMM	48-bit	Yes	Yes	2	1	2	2	4	2	2	1	2x2 pin	Passive	-40 - 85 °C
MIO-5272Z2-U4A2	Intel i5 6300U 2.4GHz 15W	3MB	SODIMM	48-bit	Yes	Yes	2	1	2	2	4	2	2	1	2x2 pin	Passive	-40 - 85 °C
MIO-5272Z2-U4A2	Intel i5 6300U 2.4GHz 15W	3MB	SODIMM	48-bit	Yes	Yes	2	1	2	2	4	2	2	1	2x2 pin	Passive	-20 - 80 °C

<sup>1</sup> Intel Celeron 3955U is supported by request

<sup>2</sup> One Mini PCIe default support mSATA

<sup>3</sup> DC jack is supported by request

## Packing List

Part No.	Description	Quantity
	MIO-5272 SBC	1
2006527200	Startup Manual	1
1700006291	SATA cable, 7P, 30cm	1
1700018785	SATA power cable, 35cm	1
1701200220	COM Cable, D-SUB 9P (M)*2, 22cm	1
1700019584-01	Audio cable, Audio jack*3, 20cm	1
	Mini Jumper pack	1
1960068763T011	Heatsink (H: 24 mm) for 0 ~ 60 °C	1
1960072272T001	Heatsink (H: 34 mm) for -40 ~ 85 & -20 ~ 80 °C	1

## Rear I/O View



## Optional Accessories

Part No.	Description
1960074236N001	Heat spreader (H: 16mm) for MIO-5272
1700002172	Internal 2 ports USB cable 17cm

## Embedded OS/API

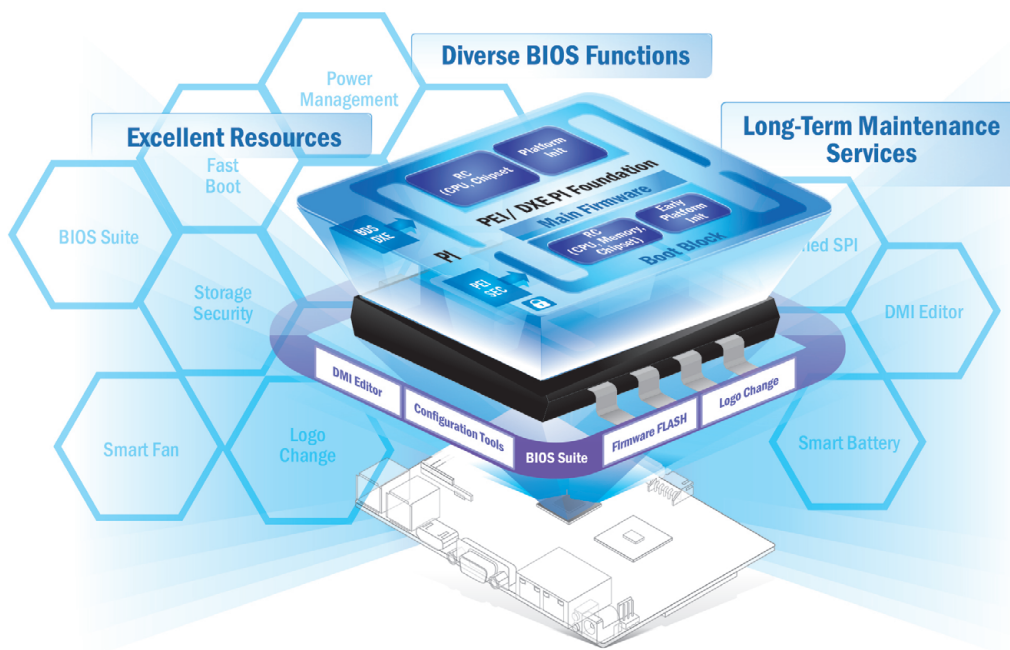
Embedded OS/API	Part No.	Description
Win10 IoT Enterprise	20706WX9VS0105	2019 LTSC, 64bit, 1809, Value: Core i3/i5
	20706WX9HS0101	2019 LTSC, 64bit, 1809, High End: Core i7
Win Emb Std. 7	20706WE7PS0018	WES7P, 64bit, 1709, 10 MUI (Legacy mode only)
Yocto BSP	Support by Request	Yocto BSP and Test Image
Linux	20706U20DS0022	Ubuntu Desktop 20.04, LTS, 64bit, Image & License Sticker for MIO-5272
Software API	Website Download	SUSI 4.0

Note: Intel i7 7600U support Win10 only

# 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

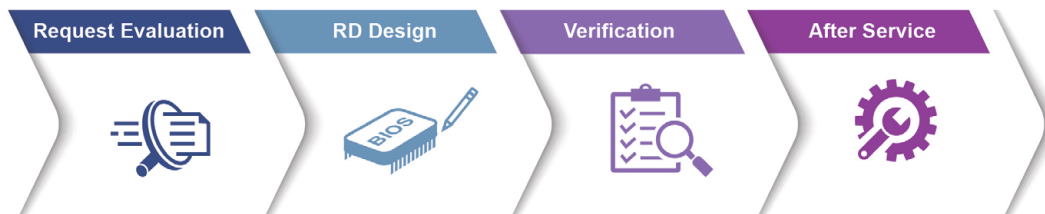
### Diverse BIOS Functions

- 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

<p><b>Certified OS and BSP</b></p> <ul style="list-style-type: none"> <li>Platform compatibility tests</li> <li>Preloaded functional driver and software stacks</li> </ul>	<p><b>Licensed Services</b></p> <ul style="list-style-type: none"> <li>License authorized Canonical delivers 10-years of bug fixes and security updates</li> <li>In-house bundled service</li> </ul>	<p><b>Numerous AI and Edge Resources</b></p> <ul style="list-style-type: none"> <li>Containerized technology for service provision and deployment</li> <li>AI resources from Caffe, TensorFlow, and mxnet</li> </ul>	<p><b>Local Partner Alliance</b></p> <ul style="list-style-type: none"> <li>Embedded Linux and Android Alliance (ELAA)</li> </ul>
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# 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
<ul style="list-style-type: none"> <li>Integrated Intel® OpenVINO™ technology</li> <li>Boost AI using Advantech hardware</li> </ul>	<ul style="list-style-type: none"> <li>Build AI environment in under 5 minutes</li> <li>Ready-to-use configuration</li> </ul>	<ul style="list-style-type: none"> <li>User friendly configuration guidance</li> <li>One-click Benchmark acquisition</li> </ul>	<ul style="list-style-type: none"> <li>Easy access to 100+ AI inference extensions</li> <li>Software development package available</li> </ul>	<ul style="list-style-type: none"> <li>Diverse CPU/RAM options</li> <li>Find hardware solutions for AI development</li> </ul>

# 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
<ul style="list-style-type: none"> <li>• Devices status</li> <li>• Peripherals/firmware</li> <li>• Open for extension</li> </ul>	<ul style="list-style-type: none"> <li>• Real-time monitoring</li> <li>• Remote controls</li> <li>• Troubleshooting</li> </ul>	<ul style="list-style-type: none"> <li>• Zero-touch on-boarding</li> <li>• OTA updates</li> <li>• Batch control</li> </ul>

### Product Highlights



**SOM-6883**

High-performance 11<sup>th</sup> Gen Intel® COMe Type 6 Module



**MIO-5375**

Compact 11<sup>th</sup> Gen Intel® Outdoor Focused 3.5" SBC



**EPC-B5587**

10<sup>th</sup> Gen Intel® Xeon® based Edge server



**EPC-R3220**

Arm based IoT Edge Gateway