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# 2024

## SELECTION GUIDE 2ND ED.

THE TRUSTED INNOVATION PARTNER



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A member of the ASUS Group: A strong high-tech conglomerate

## ASUS Technology and Financing AAEON Design Flexibility and Domain Know-how



## OEM/ODM Capability

The OEM/ODM service has been a key factor in AAEON's phenomenal growth over the past 10 years. AAEON offers design services for full custom requirements as well as modification services for its off-the-shelf products. Whatever you need, AAEON has the experience and expertise to help you create or modify products to perfectly fit your requirements.





# AAEON.AI

Connecting You **AI**  
with AI at the Edge



## Introduction

To keep ahead of the ever-growing markets and demand for AI hardware solutions, AAEON is pleased to announce our new webpage, AAEON.ai. AAEON.ai offers developers and systems integrators a centralized resource for finding the latest AI edge computing technology from AAEON.

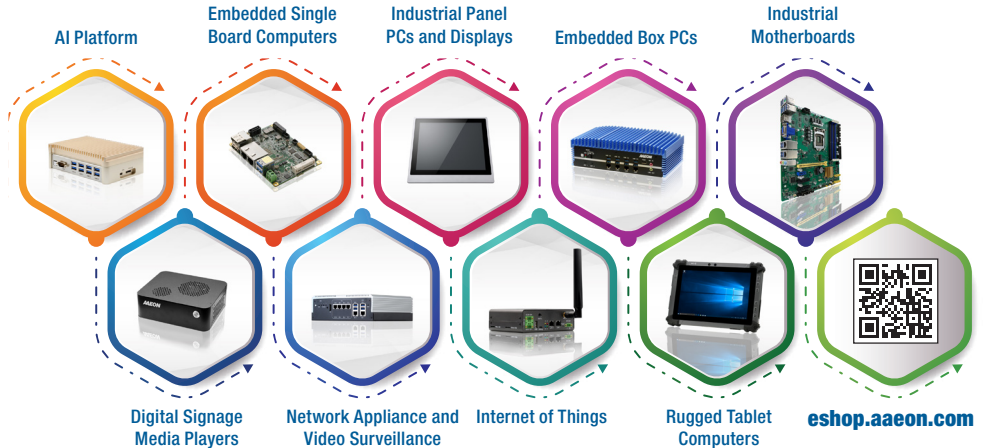
Market analysts have consistently pointed to expanded growth and deployment of Industry 4.0 technologies, especially AI edge computing, in various vertical markets. AAEON.ai collects all of AAEON's rugged, compact, industrial grade AI edge solutions in one convenient location. From boards and systems to AI accelerator modules, AI developers and systems integrators can easily find the platforms that meet their project, budget and performance needs. AAEON.ai will also feature solutions partners, allowing visitors to connect with local vendors and software providers, and building an AI ecosystem designed to make creating and deploying AI applications easier than ever. Visitors to AAEON.ai will also have a chance to learn about the latest news and browse a library of application stories and white papers of real-world applications using AAEON technology.



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- 
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- 
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- 
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# AAEON's Embedded OS Solutions

AAEON provides Embedded OS Solutions to customers who are in need of OS customization. AAEON's Embedded OS Solutions are designed to shorten times to market and save our customers' time and R&D resources.

## Windows® Embedded Products

 Windows 10 IoT

**Windows® 10 IoT Enterprise LTSC 1607/1809**

 Windows Embedded 8

Windows Embedded 8.1  
Industry

Windows Embedded 8  
Standard

Windows Embedded 8.1  
Pro

Windows Embedded 8.1  
Handheld

 Windows Embedded 7

Windows Embedded  
Enterprise 7

Windows Embedded  
POSReady 7

Windows Embedded  
Standard 7

## AAEON Embedded OS Solutions

Chipset	Windows® Embedded Standard 2009 (Note 1)	Windows® Embedded Standard 7 (Note 2)	Windows® Embedded 8 Standard	Windows® 10 IoT Enterprise
Intel® 7th KabyLake (Q170/H110/C236)	—	—	—	✓
Intel® 6th SkyLake (Q170/H110/C236)	—	✓	✓	✓
Intel® 5th Broadwell (5010U/5350U/5650U/D1548/D1518)	—	✓	✓	✓
Intel® 4th Haswell (QM87/Q87/H81)	—	✓	✓	—
Intel® 3rd IvyBridge (QM77/Q77/HM76/B75)	✓	✓	✓	—
Intel® 2nd SandyBridge (QM67/Q67/H61/QM57/Q57)	✓	✓	✓	—
Intel® ApolloLake (N4200/N3350/E3930/E3940/E3950)	—	✓	✓	✓
Intel® Braswell (N3060/N3160/X5-E8000/N3710)	—	✓	✓	✓
Intel® Baytrail (J1900/N2000/E3800)	—	✓	✓	—
Intel® TunnelCreek (E620/E640/E660/E680)	✓	✓	—	—
Intel® Pinewview (N450/D410/D510/D525/N455/D425)	✓	✓	—	—
Intel® Cedarview (D2550/N2800/N2600)	✓	✓	—	—
AMD Geode (LX700/LX800/LX900)	—	✓	—	—
AMD T56N/T40R/T40E/T16R	✓	✓	✓	—

Note 1: Former Windows® Embedded XP

Note 2: Former Windows® Embedded

# AAEON's Embedded OS Solution/Hi-Supervisor

## Embedded OS Main Features

OS Family	Windows® Embedded Standard	Windows® Embedded POS Ready	Windows® Embedded Enterprise
Features	Full Customization	Simple Installation	Full Function
Windows® Product Sku	Windows® Embedded Standard 2009 Windows® Embedded Standard 7 Windows® Embedded Standard 8	WEPOS 1.1 POSReady 7 POSReady 2009 Windows® Embedded Industry 8.1 Pro Retail	Windows® 7 Professional Windows® 8.1 Professional Windows® 10 IoT Enterprise LTSC 1607/1809/ 2021
CPU Type	x86	x86	x86
Development Tool	Customization Image	CD Installation	CD Installation
Development Time	Short	None	None
Maintenance Cost	Middle	Low	Low
Embedded Features	Custom Shell/ EWF/ FBWF/ USB Boot/ HORM	Custom Shell/ FBWF/ USB Boot	Standard Shell UWF

## AAEON Hi-Supervisor

Hi-Supervisor is a remote hardware monitor application for Windows based on MQTT protocol. This software allows users to get device status and set device configurations like GPIO, Fan, Watch Dog Timer, SMBus, ..., etc. It supports remote reboot and shutdown, too. Hi-Supervisor supports AAEON Windows platforms which support Hi-Safe. Users can set warning thresholds to acknowledge users abnormal conditions by e-mail.

## Hi-Supervisor Advantages

- ▶ Support Hi-Safe full functions remotely
- ▶ Customized support
- ▶ Support Azure IoT Central



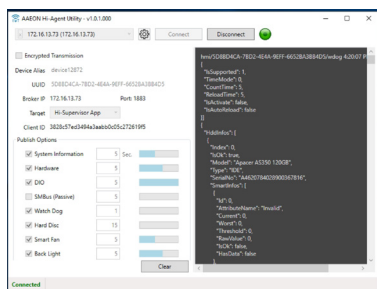
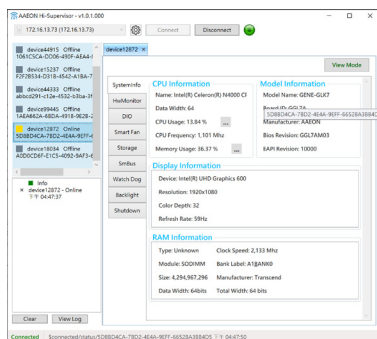
### Hardware Monitor:

Retrieves fan, temperature and voltage data

### Hard Disc:

obtain hard disk S.M.A.R.T information

### Remote Control Fan

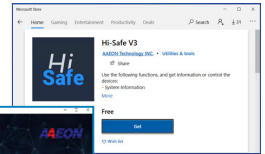


# AAEON Hi-Safe

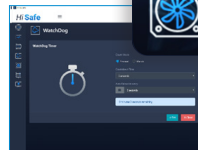
Hi-Safe is a powerful, free program which provides SDKs for systems and UIs running Microsoft® Windows® operating systems. Hi-Safe controls system hardware by utilizing the Windows Management Interface, providing a safe and standard interface for Windows machines. Hi-Safe allows end users to easily develop their own UI software to monitor vital system components such as the processor, RAM and display. It also provides interface and functionality for Hardware Monitor, Digital I/O, Watchdog timer, Smart Fan settings, SM Bus, and backlight controller for LVDS and eDP. With the SDK user interface, no coding is needed, and customers can create their own user interface by using the function codes provided by AAEON. Customers can download the Hi-Safe V3 application directly from the Microsoft Store.

## Hi-Safe V3 Advantages

- ▶ **Modern and Flexible User Interface**
- ▶ **Easy and Friendly to Use**
- ▶ **Safe Operation Control for Windows**



**System Information:**  
Receives CPU, display and RAM information



**Smart Fan:**  
Supports multi-stage adjustment of temperature and speed controls



**Hardware Monitor:**  
Receives super I/O, fan, temperature and voltage data



**SM Bus:**  
Reads and writes to SMBus device and detects SMBus base address automatically



**DIO:**  
Obtains DIO information: sets the pin direction and pin data



**Backlight Controller:**  
Controls LVDS or eDP display



**Watchdog:**  
Sets the system reboot timer



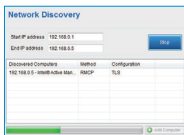


# AAEON Hi-Manager

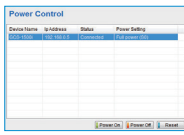
Hi-Manager is a tool based on the Intel® Active Management Technology 12.0 (iAMT 12.0) and has backward compatibility with earlier versions of iAMT. This allows users to locate all iAMT devices within the intranet, power On/Off target devices remotely, set power On/Off scheduling, arrange device groupings for better management, offer event logs and timer settings to wake up devices at specified times, recover systems that have crashed from virtual CD-ROM, remote KVM management and access to target device hardware information for asset management. Hi-Manager can be installed on all AAEON platforms and can remotely manage AAEON client devices that use Intel® M67/ Q77/ QM77/ HM76/ B75A/Q87/QM87/QM170/Q370/ C246 chipsets and run Microsoft® Windows® XP, Windows® 7, and Windows® 10 Operating Systems.

## Hi-Manager Advantages

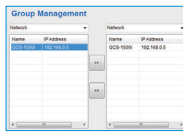
- ▶ Easy-to-use and build custom applications
- ▶ Supports AAEON products with iAMT
- ▶ In-depth technical support



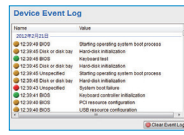
**Network Discovery:**  
AMT device discovery



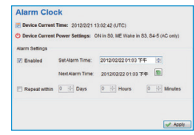
**Power Control:**  
Powers On/Off the target device



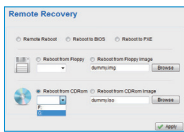
**Group Management:**  
Arrange devices in this function



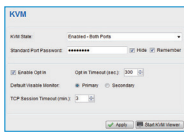
**Event Log:**  
Logs boot records of the selected device



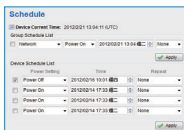
**Alarm Clock:**  
Sets timer to wake up a sleeping device



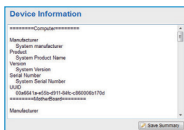
**Remote Recovery:**  
Mounts boot image or physical CD-ROM to target device



**KVM:**  
Controls remotely from the target device



**Schedule:**  
Schedules the power On/Off target devices



**Device Information:**  
Shows target device assets

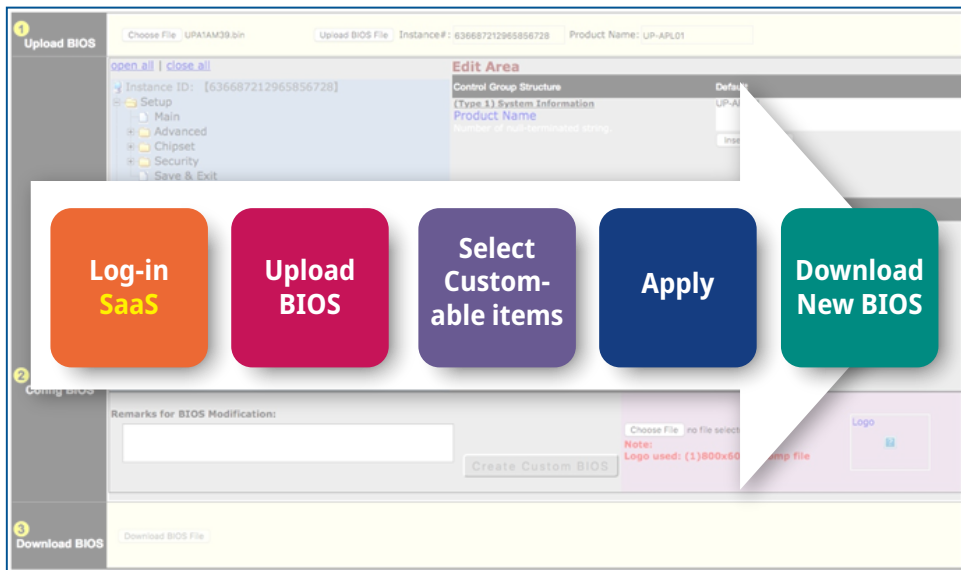
## Intel® Active Management Technology Features

Intel® Chipset	M67/ Q77/ QM77/ HM76/ B75A/ Q87/ QM87/QM170/Q170/Q370/ Q470/C246
Intel® AMT Version	7.0/8.0/9.0/10.0/11.0/12.0/14.0
HW Inventory	✓
SW Inventory	✓
Power State Management	✓
System Defense	✓
Remote Configuration	✓
Remote Boot Option	✓
KVM Redirection	✓
KVM Remote Control	✓
ME Wake on LAN	✓
Proactive Security Block, HW-Based and Remote Management Recovery	✓
Host-Based Provisioning	✓
Enhanced System Defense Filters	✓



# AAEON BIOX

BIOX is a BIOS customization SaaS solution for AAEON products. Most field applications and deployments require BIOS customization for platforms and systems to meet a customer's requirements. Often this requires constant communication with vendors, possibly delaying deployment or slowing down maintenance. With BIOX, the end user can customize the BIOS on their own, anytime, in five simple steps, without the need to contact a service rep.



## BIOX Advantages

### Modern and Flexible User Interface

- ▶ Logo
- ▶ Boot Order
- ▶ Setup Values
- ▶ SMBIOS Strings
- ▶ Password Management

### Version Control Access

- ▶ Retrievable
- ▶ Re-customizable
- ▶ History Traceable



**AAEON Software  
Support Portal:**

<https://aaeoncm.github.io/>

# Focus • Agility • Competitiveness

[www.aaeon.com](http://www.aaeon.com)



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# 01



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# ▶ Board Level Products

# O1



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# Board Level Products

## AI Edge Computing Solutions

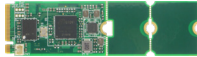


Model	PICO-APL3-A10-FAI1
<b>SYSTEM</b>	
FORM FACTOR	PICO-ITX
CPU	Intel® Celeron® Processor: Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, TDP 6W)
CHIPSET	Integrated with Intel® SoC
MEMORY TYPE	Onboard DDR3L 4GB
BIOS	UEFI
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC Battery	Lithium Battery 3V/240mAh
DIMENSION	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs. (0.08 kg)
OS Support	Windows 10 (64 bit)
<b>POWER</b>	
POWER REQUIREMENT	+12V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	Lockable DC Jack Connector
POWER CONSUMPTION	Intel® N4200 processor, DDR3L 4GB, 1.1A@12V
<b>DISPLAY</b>	
CONTROLLER	Intel® HD Graphics 505
LVDS/eDP	—
Display Interface	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
Multiple Display	1 Simultaneous Displays
<b>AUDIO</b>	
CODEC	—
AUDIO INTERFACE	—
Speaker	—
<b>EXTERNAL I/O</b>	
ETHERNET	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 1
USB	USB 3.2 Gen 1 x 2
SERIAL PORT	—
VIDEO	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
<b>INTERNAL I/O</b>	
USB	USB 2.0 x 2 (Internal, co-use with FAN connector)
SERIAL PORT	COM1 (RS232)
VIDEO	eDP x 1 (up to 3840x2160@60Hz, Optional)
SATA	SATA III x 1 +5V SATA Power Connector x 1 eMMC 32GB
AUDIO	—
DIO/GPIO	4-bit
SMBus/I2C	I2C/SMBus x 1 (I2C as default)
Touch	—
FAN	—
SIM	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
<b>EXPANSION</b>	
Mini PCI-E/mSATA	—
M.2	M.2 E-Key 2230 x 1 (PCIe/USB) M.2 B-Key 2280 x 1 (SATA/USB)
Others	—
<b>ENVIRONMENT &amp; CERTIFICATION</b>	
OPERATING TEMP	32°F ~ 140°F (0°C ~ 60°C)
STORAGE TEMP	-40°F ~ 185°F (-40°C ~ 85°C)
OPERATING HUMIDITY	0% ~ 90% relative humidity, non-condensing
MTBF (HOURS)	110,000
EMC	CE/FCC Class A
Note	





Model	M2AI-2242-520	M2AI-2280-520	Mini-AI-520
System			
IC	Kneron KL520		
Type	Integrated SoC		
Support Framework	ONNX, TensorFlow, Keras, Caffe		
Support Model	Vgg16, Resnet, GoogleNet, YOLO, Tiny YOLO, Lenet, MobileNet, DenseNet		
Memory Type	LPDDR2		
NPU Performance	0.35 TOPS		
Overall Power Consumption	0.5 W		
Others			
Operating Temperature	32°F ~ 158°F (0°C ~ 70°C)		
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)		
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
Certification	CE/FCC Class A		



Model	M2AI-2242-720	M2AI-2280-720	Mini-AI-720
System			
IC	Kneron KL720	Dual Kneron KL720	Kneron KL720
Type	ARM CM & DSP		
Support Framework	Pytorch, ONNX, TensorFlow 1.6, Tensorflow lite, Keras, Caffe		
Support Model	Resnet, GoogleNet, YOLO, Tiny YOLO, MobileNet-SSD, DenseNet, RNN, LSTM		
Memory Type	128MB LPDDR3		LPDDR3
NPU Performance	1.4 TOP/s	1.4 TOP/s x2	1.4 TOPS
Overall Power Consumption	2.3W	5W	5W TDP
Others			
Operating Temperature	32°F-122°F(0°C ~ 50°C with cooler 5m/s )		
Storage Temperature	32°F~158°F(0°C ~ 70°C)		
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
Certification	CE/FCC Class A		





Model	MXM-ACMA
System	
Form Factor	Standard MXM 3.1 Type A form factor
GPU	Intel® Arc™ A370M GPU (8 Xe-cores, TGP 35W) Intel® Arc™ A350M GPU (6 Xe-cores, TGP 25W)
Memory	4GB GDDR6, 64-bit, Bandwith 112GB/s
Display Interface	DP++ 1.4 x 4 or HDMI 2.1 x 4
Dimension	3.2" x 2.7" (82mm x 70mm)
Power Consumption	Intel® Arc™ A370M GPU, TGP 35W Intel® Arc™ A350M GPU, TGP 25W
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C) in 0.5m/sec airflow
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
OS Support	Windows 10 (64bit) / Windows 11 Ubuntu 22.04 LTS
Others	OpenCL™ 4.6/OpenGL® 3.0/oneAPI/DirectX 12 Ultimate/Ray Tracing Support

Note





Model	GAR-A750E
<b>System</b>	
Graphics High Frequency	2050MHz
Graphics Turbo Frequency	2400MHz
Xe-Core	28
Render Slices	7
Ray Tracing Units	28
Intel® XMN Engines	448
Xe Vector Engines	448
Memory Size	16GB GDDR6
Graphics Memory Interface	256 bit
Graphics Memory Bandwidth	512 GB/s
Graphics Memory Speed	16 Gbps
Bus Type	PCI Express 4.0 x16
TBP	225W
Display output	DP 2.0 x 4 up to UHBR 10
Resolution	DP: 7680 x 4320@60Hz
H.264 Hardware Encode/Decode	Yes
H.265 (HEVC) Hardware Encode/Decode	Yes
AV1 Encode/Decode	Yes
VP9 Bitstream & Decoding	Yes
<b>Features</b>	
Ray Tracing	Yes
Variable Rate Shading (VSR)	Yes
DirectX Support	DirectX 12 Ultimate
Vulkan	1.3
OpenGL	4.6
OpenCL	3
Adaptive Sync	Yes
AV1 Encode / Decode	Yes
VP9 Bistream & Decoding	Yes
Intel Deep Link Hyper Compute	Yes
Intel Deep Link Hyper Encode	Yes
Intel Deep Link Stream Assist	Yes
<b>Mechanical</b>	
Dimension	236mm x 109mm x 42mm
<b>Requirement</b>	
Minimum recommended PSU	550 Watt or greater
PCIe power connector	Two available 8-pin or 6+2pin
OS	Windows 11, Windows 10, Ubuntu* 22.04.
Graphics slot	PCI Express 3.0, 4.0 or 5.0 compliant motherboard with one
<b>Note</b>	



## Gateway Board &amp; Expansion Board



Model	SRT-IMX8P	PICO-IMX8PL
System		
Form Factor	Standard RISC Gateway Board	PICO-ITX, 2.5" SBC
Processor	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor (NPU Optional)	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor (Default w/NPU, optional w/o NPU)
Memory	Onboard LPDDR4 2GB (Optional 4GB)	Onboard LPDDR4 up to 4GB
Storage	eMMC 5.1 16GB (Optional 32GB)	eMMC 5.1 16/32GB (Optional 64/128 GB) Micro SD Card slot x1
Real Time Clock	RTC x 1, with 3V CR2032H Lithium battery	
Security	TPM 2.0	TPM 2.0 (optional)
Indicators	Programmable LED control x 7	Programmable LED control x 3
Cellular	Mini PCIe Connector x 1 (USB signal)	Full Size Mini Card x 1 (USB signal)
Wireless Lan	Mini PCIe Connector x 1 (USB signal)	M.2 2230 E-key x 1 (USB, PCIe)
Operating System	Debian 11(Default, GUI is optional) Android 13 Win 10 IoT Yocto	Debian 11(Default, GUI is optional) Android 13 Win 10 IoT Yocto
Support Protocol	—	Modbus, MQTT, OPCUA
I/O Interfaces		
Serial Port	RS-232/422/485 switchable x 2, Phoenix Connector	
Ethernet	Gigabit Ethernet x 2, RJ-45	Gigabit Ethernet x 2, RJ-45 support IEEE 1588, TSN, integrated RGMII
Audio	—	Line in / Line Out / Mic x 1 (optional)
USB	USB 3.0 Type-A x 2	USB 3.0 Gen1 x 2 (rear I/O) USB 2.0 x 1 (pin header)
ADC	—	—
DI/DO	—	—
CAN Bus	CAN-FD x 2 CH, Phoenix Connector	
Display	HDMI 2.0a x 1	HDMI 2.0 x 1 LVDS x 1, dual channel, 18/24bit
Power Connector	2 Pin 3.81mm Pitch Phoenix Connector	
Debug Port	Micro USB x 1	
Expansion Slot	SIM card slot x 1 Micro SD slot x 1	M.2 2230 E-key x 1, support Wifi/BT module, etc Full Size Mini Card x 1, support 4G module, etc Power control available by software
Other Interface	Board to board connector to ODM board (PCIe Gen3 x 1, USB 3.0 x 1, I2C x 2, GPIO x 4)	GPIO x 8 (w/o TPM: include SPI x1, I2C x1, GPIO x2, w/TPM: I2C x1, GPIO x2) UART x 1 (optional w/o debug port)
Power Supply		
Power Requirement	DC 9-36V	DC 9-36V (Optional: 12V)
Power Consumption	9.36W (Full Loading)	14.8W (Full Loading)
MTBF (Hours)	479,374	1,699,754 Hours
Environmental and Mechanical		
Dimension	3.66" x 5.43" (93 x 138mm)	3.94" x 2.84"(100mm x 72mm)
Weight	0.7lb (350 g)	0.18 lbs (0.08 kg)
Mount Options	—	
Operation Temperature	-4 °F ~ 158 °F (-20 °C ~ 70 °C)	-40 °F ~ 176 °F (-40 °C ~ 80 °C) (Option: 0°C ~ 60°C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)	
Operation Humidity	10% ~ 95% relative humidity, non-condensing	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A UL61010/IEC61000-6-2/IEC61000-6-4/IEC61131-2	CE/FCC Class A
Note		





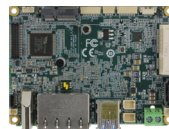


Model	PICO-AM62
<b>System</b>	
Form Factor	PICO ITX , 2.5" SBC
Processor	ARM TI AM62x, up to Quad 64-bit Arm® Cortex®-A53
Memory	Onboard DDR4 16 bit, up to 4 GB
Storage	eMMC 5.1 16 GB (Optional 32/64/128 GB) Micro SD Card slot x1
Real Time Clock	RTC x 1, with 3V CR2032H Lithium battery
Security	TPM 2.0 (optional)
Indicators	Programmable LED control x 3
Cellular	Full Size Mini Card x 1 (USB signal)
Wireless Lan	Half Size Mini Card x 1 (USB signal)
Operating System	Debian 12 (Default, GUI is optional) Android 14
Support Protocol	—
<b>I/O Interfaces</b>	
Serial Port	RS-232/422/485 switchable x 4, 2 by Phoenix Connector, 2 by pin header
Ethernet	Gigabit Ethernet x 2, RJ-45 support IEEE 1588, TSN, integrated RGMII
Audio	Line in / Line Out / Mic x 1 (optional)
USB	USB 2.0 Gen1 x 2 (rear I/O) -Host/device by image option, default: host x 1 -Host x 1 USB2.0 (Pin Header) x 1
ADC	—
DI/DO	—
CAN Bus	CAN-FD x 2 CH, Phoenix Connector (optional)
Display	HDMI 1.4b up to 1080p x 1 LVDS x 1, dual channel, 18/24bit
Power Connector	2 Pin 3.81mm Pitch Phoenix Connector
Debug Port	Micro USB x 1
Expansion Slot	Half Size Mini Card (USB2.0) x 1, power control available by software Full Size Mini Card (USB2.0) x 1, power control available by software SPI x 4 (optional) I2C x 2 (optional) UART x 2 (optional)
Other Interface	GPIO x 1, I2C x 1, SPI x 1 (CSx2)
<b>Power Supply</b>	
Power Requirement	DC 9-36V (Optional: 12V)
Power Consumption	5.76W (Full Loading)
MTBF (Hours)	1,279,408 Hours
<b>Environmental and Mechanical</b>	
Dimension	3.94" x 2.84"(100mm x 72mm)
Weight	0.18 lbs (0.08 kg)
Mount Options	—
Operation Temperature	-40 °F ~ 185 °F (-40 °C ~ 85 °C) (Option: 0°C ~ 60°C)
Storage Temperature	-40 °F ~ 185 °F (-40 °C ~ 85 °C)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A
Note	



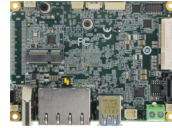
# Board Level Products

## Pico-ITX Boards



Model	PICO-MTU4	PICO-ASL4 Rev.B	PICO-ADN4 Rev.B
System Form Factor	PICO-ITX		
CPU	Intel® Core™ Ultra 7/Ultra 5 SoC Intel® Core™ Ultra 7 Processor 165U (2PC+10EC/14T, P-core 1.70 GHz, E-core 1.20 GHz, 15W) Intel® Core™ Ultra 7 Processor 155U (2PC+10EC/14T, P-core 1.70 GHz, E-core 1.20 GHz, 15W) Intel® Core™ Ultra 5 Processor 135U (2PC+10EC/14T, P-core 1.60 GHz, E-core 1.10 GHz, 15W) Intel® Core™ Ultra 5 Processor 125U (2PC+10EC/14T, P-core 1.30 GHz, E-core 0.80 GHz, 15W)	Intel Atom® x7000E Series Atom® x7213RE(2C, 2.0GHz, 9W) Atom® x7433RE(4C, 1.5GHz, 9W) Atom® x7835RE(8C, 1.3GHz, 12W)	Intel Atom® x7000E Series, N-series, Core™ i3-N305 Processor (formerly Alder Lake N) N50 (2C, 2.00GHz, 6W) N97 (4C, 2.00GHz, 12W) Core™ i3-N305 (8C, 1.80GHz, 15W) Atom® x7425E (4C, 1.50GHz, 12W)
Chipset	Integrated with Intel® SoC		
Memory Type	Single-Channel LPDDR5 6400, up to 32GB	DDR5 4800, Single Channel SODIMM x 1, Max.16GB, Non-ECC	
BIOS	UEFI		
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Security	TPM 2.0		
RTC Battery	Lithium Battery 3V/240mAh		
Dimension	3.94" x 2.84" (100mm x 72mm)		
Gross Weight	0.18 lbs (0.08 kg)		
OS Support	Windows 10 (64bit) Linux Ubuntu 22.04.2 kernel 5.19.0 32 generic	Windows 10 (64 bit) Ubuntu 22.04.2/Kernel 5.19	
Power	+12V (Optional: +9 ~ 36V, support by power adapter card)		
Power Requirement	AT/ATX		
Power Supply Type	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)		
Connector	Intel® Core™ Ultra 7 Processor 165U, DDR5 32GB x1, 2.94A@+12V (Typical) Intel® Core™ Ultra 7 Processor 165U, DDR5 32GB x1, 5.13A@+12V (Max)		
Power Consumption	Intel® x7835RE, DDR5 16GB x1, 3.06A@ +12V (TYPICAL) Intel® x7835RE, DDR5 16GB x1, 4.21A@ +12V (MAX)	TBD	
Display	Intel® UHD Graphics for 12th Gen Intel® Processors		
Controller	Intel® Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors	Intel® Gen 12 UHD Graphics
LVDS/eDP	eDP 1.4 x 1	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz eDP 1.4 x 1, 3840 x 2160 @60Hz (Optional)	
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz Up to 2 Simultaneous Displays		
Multiple Display			
Audio	Realtek ALC256		
Codec	Line-out (Optional, audio function not available for WITAS SKU)		
Audio Interface			
Speaker			
External I/O			
Ethernet	Intel® Ethernet Controller I226 2.5GbE, RJ-45 x 1 Intel® Ethernet Connection I219, 1GbE, RJ-45 x 1	Intel® i226 2.5GbE, RJ-45 x 1 Realtek, RTL8111H-CG, 1GbE, RJ-45 x 1	
USB	USB 3.2 Gen 2 x 2 ports		
Serial Port			
Video	HDMI 1.4 x 1		
Internal I/O			
USB	USB 2.0 x 2		USB 2.0 x 4
Serial Port	COM 1 ~ 2 (RS-232/422/485, supports 5V/12V/RI)		COM1~2 (RS232/422/485, supports 5V/12V/RI) COM3~4 (RS232)
Video	LVDS/eDP x 1(Default: LVDS) Inverter x 1 (12V/2A)		
SATA	SATA 6Gb/s x 1 +5V SATA Power Connector x 1		
Audio	Line-out header x 1 (Optional, audio function not available for WITAS SKU)		
DIO/GPIO	GPIO 4-bit		
SMBus/I2C	I2C/SMBus (Default: SMBus)		
Fan	4pins Smart Fan x1		
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset		
Others			
Expansion	Full-Sized mSATA/mPCIe x 1 (default: mSATA, select with BIOS)		
Mini PCIe/mSATA			
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] / SATA, Default: PCIe [x4], select by BOM) M.2 2230 E-Key x 1 (PCIe 4.0 [x1] + USB 2.0)	M.2 2230 E-Key x 1	
Others			
Environment & Certification			
Operating Temp	-4°F ~ 158°F (-20°C ~ 70°C)	WITAS 2: -40°F ~ 185°F (-40°C ~ 85°C)	32°F ~ 140°F (0°C ~ 60°C) WITAS 2: -40°F ~ 185°F (-40°C ~ 85°C)
Storage Temp	-40°F ~ 185°F (-40°C ~ 85°C)		
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
MTBF (Hours)	1,063,716	2,219,397	TBD
EMC	CE/FCC Class A		



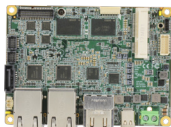


Model	PICO-RAP4	PICO-ADN4
System	PICO-ITX	
Form Factor	PICO-ITX	
CPU	13th Generation Intel® Core™/U series Processors: Intel® Core™ i7 1370PE (6P+8E/20T, 1.90 GHz, 28W) Intel® Core™ i7 1370PRE (6P+8E/20T, 1.90 GHz, 28W) Intel® Core™ i5 1340PE (4P+8E/16T, 1.80 GHz, 28W) Intel® Core™ i3 1320PE (4P+4E/12T, 1.70 GHz, 28W) Intel® Processor U300E (1P+4E/6T, 1.10 GHz, 15W)	Intel Atom® x7000E Series, Intel® Processor N-series, and Intel® Core™ i3 Processor N-series Processors: Intel® Processor N50 (2C, 1.00 GHz, 6W) Intel® Processor N97 (4C, 2.00 GHz, 12W) Intel® Core™ i3-N305 (8C, 1.80 GHz, 15W) Intel Atom® x7425E (4C, 1.50 GHz, 12W)
Chipset	Integrated with Intel® SoC	
Memory Type	DDR5 5200, SODIMM x 1, Non-ECC (Max. 32GB)	Onboard LPDDR5, Single Channel (Max. 16GB)
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM2.0	
RTC Battery	Lithium Battery 3V/240mAh	
Dimension	3.94" x 2.84" (100mm x 72mm)	
Gross Weight	0.18 lbs (0.08 kg)	
OS Support	Windows 10 (64 bit) Ubuntu 22.04.2 (eDP is verified on Ubuntu 23.10.1)	Windows 10 (64 bit) Ubuntu 22.04.2/Kernel 5.19
Power	12V only	
Power Requirement	AT/ATX	
Power Supply Type	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	
Power Consumption	Intel® Core™ i7-1370PE, DDR5 32GB, 4.51A@ +12V (TYPICAL) Intel® Core™ i7-1370PE, DDR5 32GB, 7.46A@ +12V (MAX)	Intel® Core™ i3-N305, LPDDR5 16GB x1, 2.97A@ +12V (TYPICAL) Intel® Core™ i3-N305, LPDDR5 16GB x1, 4.46A@ +12V (MAX)
Display	Intel® Gen 12 UHD Graphics	
Controller	Intel® UHD Graphics	Intel® Gen 12 UHD Graphics
LVDS/eDP	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz eDP 1.4 x 1, up to 3840 x 2160 (Optional)	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz eDP 1.4 x 1, 7680 x 4320 (Optional)
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz	HDMI 1.4 x 1, 3840 x 2160 @30Hz DDI (Via BIO, Optional)
Multiple Display	Up to 2 Simultaneous Displays	Up to 3 Simultaneous Displays
Audio	Realtek ALC256	
Codec	Realtek ALC256	Realtek ALC256 (Optional)
Audio Interface	Line-in/Line-out/Mic (Optional, Audio function not available for WITAS SKU)	Line-Out (Audio function not available for WITAS SKU)
Speaker	—	
External I/O	—	
Ethernet	Intel® i226 2.5GbE, RJ-45 x 1 Intel® i219, 1GbE, RJ-45 x 1	Intel® i226 2.5GbE, RJ-45 x 1 Realtek RTL8111H-CG, 1GbE, RJ-45 x 1
USB	USB 3.2 Gen 2 x 2	
Serial Port	—	
Video	HDMI 1.4 x 1	
Internal I/O	—	
USB	USB 2.0 x 2	
Serial Port	COM1~2 (RS232/422/485, supports 5V/12V/RI)	
Video	LVDS/eDP x 1 (Default: LVDS) Inverter x 1 (12V/2A)	
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1	
Audio	Audio Header x 1 (Optional, audio function not available for WITAS SKU)	Line-out header x 1 (Optional, audio function not available for WITAS SKU)
DIO/GPIO	GPIO 8-bit	
SMBus/I2C	SMBus/ I2C x 1 (Default: SMBus)	
Fan	4pins Smart Fan x1	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—	
Expansion	—	
Mini PCIe/mSATA	Half Size mSATA/mPCIe x 1 (default: mSATA, select with BIOS)	Full-Size mSATA/mPCIe x 1 (default: mSATA, select with BIOS)
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4])	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0)
Others	MIPI-CSI via 61-Pin FPC Connector	BIO (Optional, need customized BIOS, USB2.0, SMBUS, DDI, LPC, PCIe [x1] x 1)
Environment & Certification	—	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C) WITAS 2: -40°F ~ 185°F (-40°C ~ 85°C)
Storage Temp	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	1,087,053	1,087,822
EMC	CE/FCC Class A	



# Board Level Products

## Pico-ITX Boards



Model	PICO-V2K4	PICO-V2K4-SEMI
System Form Factor	PICO-ITX	PICO-SEMI
CPU	AMD RYZEN™ V2000 embedded Processor Family V2718 (8C/16T, 1.70GHz, 25W), V2516 (6C/12T, 2.10GHz, 25W)	
Chipset	Integrated with AMD RYZEN™ V2000 embedded Processor	
Memory Type	Onboard LPDDR4x 3733, Dual Channel, Non-ECC (Max. 32GB)	
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM2.0	
RTC Battery	Lithium Battery 3V/240mAh	
Dimension	3.94" x 2.84" (100mm x 72mm)	4.80" x 3.18" x 2.13" (122mm x 80.8mm x 54 mm)
Gross Weight	0.18 lbs (0.08 kg)	0.84 lbs (0.38 kg)
OS Support	Windows 10 (64 bit); Linux Ubuntu 20.04.3/Kernel 5.18.0-4449-amd+	
Power Requirement	+12V	
Power Supply Type	AT/ATX	
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	DC Jack Connector
Power Consumption	V2718, LPDDR4x 32GB, NVMe64GB 4.24A @ +12V(TYPICAL) V2718, LPDDR4x 32GB, NVMe64GB, 4.82A @ +12V(MAX)	
Display Controller	AMD Radeon 6, 7 Graphics (Renoir)	
LVDS/eDP	LVDS x 1 (18/24bit) 1024 x 768 @60Hz eDP1.3 x 1, 3840 x 2160 @60Hz (Optional)	—
Display Interface	Type C to DP x 1, 3480 x 2160 @60Hz HDMI 2.0 x 1, 3480 x 2160 @60Hz HDMI 1.4 x 1, 3480 x 2160 @30Hz	
Multiple Display	Up to 4 Simultaneous Displays	Up to 3 Simultaneous Displays
Audio Codec	Realtek ALC269 (Optional)	
Audio Interface	Line-In / Line-Out / Mic (Optional, audio function not available for WiTAS SKU)	Line-in/Line-out/MIC (Optional)
Speaker	—	
External I/O	—	
Ethernet	Intel® i225/i226 2.5GbE, RJ-45 x 1 Intel® i210 1GbE, RJ-45 x 1	
USB	USB3.2 Gen2 Type C x 1 USB3.2 Gen2 x 2	USB3.2 Gen2 Type C x 1 USB3.2 Gen2 x 2 USB2.0 x 2 (Optional)
Serial Port	—	COM1~2 (RS232/422/485, support 5V/12V/RI, Optional)
Video	DP x 1 (Via Type C), HDMI 2.0 x 1, HDMI 1.4 x 1	
Internal I/O	—	
USB	USB2.0 x 4	
Serial Port	COM1~4 (RS232/422/485, support 5V/12V/RI)	
Video	LVDS/eDP x 1(Default: LVDS)	
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1 Onboard NVME SSD (Optional, up to 128GB, PCIe[x2])	Onboard NVME SSD (Optional, up to 128GB, PCIe[x4])
Audio	Audio Header (Optional, audio function not available for WiTAS SKU)	Line-out (Optional)
DIO/GPIO	GPIO 8-bit	
SMBus/I2C	I2C/SMBus x 1 (Default: SMBus)	
Fan	4pins Smart Fan x 1	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—	
Expansion	—	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mPCIe, select with HW BOM)	
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4]/SATA, Default: PCIe [x4], select with BIOS)	
Others	—	
Environment & Certification	—	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2 -40°F ~ 185°F (-40°C ~ 85°C)	32°F ~ 122°F (0°C ~ 50°C) with 0.2 m/s airflow
Storage Temp	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	407,784	





Model	PICO-TGU4	PICO-TGU4-SEMI
System		
Form Factor	PICO-ITX	PICO-SEMI
CPU	Intel® 11th Generation Core™ / Celeron Processors: i7-1185G7E (4C/8T, 1.80GHz, 15W) i5-1145G7E (4C/8T, 1.5GHz, 15W) i3-1115G4E (2C/4T, 2.20GHz, 15W) 6305E (2C/2T, 1.80GHz, 15W)	
Chipset	Integrated with Intel® SoC	
Memory Type	Onboard LPDDR4x 3200, Dual Channel, In-Band ECC (select SKUs, Max.32GB)	
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM2.0 (Optional)	
RTC Battery	Lithium Battery 3V/240mAh	
Dimension	3.94" x 2.84" (100mm x 72mm)	4.80" x 3.18" x 1.98" (122mm x 80.8mm x 50.4 mm)
Gross Weight	0.18 lbs (0.08 kg)	0.84 lbs (0.38 kg)
OS Support	Windows 10 (64bit); Linux Ubuntu 20.10.2/Kernel 5.8.0-33-generic	
Power		
Power Requirement	+12V	
Power Supply Type	AT/ATX	ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	DC Jack Connector
Power Consumption	Intel® i7-1185G7E, LPDDR4x 32GB, 2.89A@ +12V (TYPICAL)	
Display		
Controller	Intel® Iris® Xe (i5/i7 support) Intel® UHD Graphics (i3/Celeron support)	
LVDS/eDP	eDP1.3 x 1, 3840 x 2160@60Hz	—
Display Interface	HDMI2.0 x 1, 3840 x 2160 @60Hz	
Multiple Display	Up to 2 Simultaneous Displays	Single display
Audio		
Codec	Realtek ALC269 (Optional)	Realtek ALC269 (By request)
Audio Interface	Line-In / Line-Out / Mic (Optional, audio function not available for WITAS SKU)	Line-out (By request)
Speaker	—	
External I/O		
Ethernet	Intel® I225/226, 2.5GbE, RJ-45 x 1 Intel® I219, 1GbE, RJ-45 x 1	
USB	USB3.2 Gen2 x 2	
Serial Port	COM1 – 2 (RS232/422/485, support 5V/12V/RI, Optional)	
Video	HDMI2.0 x 1	
Internal I/O		
USB	USB3.2 Gen1 x 2 USB2.0 x 4	—
Serial Port	COM1 – 2 (RS232/422/485, support 5V/12V/RI)	
Video	eDP x 1	
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1	
Audio	Audio Header (Optional, audio function not available for WITAS SKU)	
DIO/GPIO	GPIO 8-bit	
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)	
Fan	4pins Smart Fan x1	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—	
Expansion		
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mPCIe, select with BIOS)	
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4]/SATA, Default: PCIe [x4], select with HW BOM)	
Others	—	
Environment & Certification		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) WITAS1 -4°F ~ 158°F (-20°C ~ 70°C)	32°F ~ 122°F (0°C ~ 50°C)
Storage Temp	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	424,208	
EMC	CE/FCC Class A	
Note		





Model	PICO-WHU4	PICO-WHU4-SEMI
System		
Form Factor	PICO-ITX	PICO-SEMI
CPU	Intel® 8th Generation Core™ / Celeron Processors: i7-8665UE (4C/8T, 1.70GHz, 15W) i5-8365UE (4C/8T, 1.60GHz, 15W) i3-8145UE (2C/4T, 2.20GHz, 15W) 4305UE (2C/2T, 2.00GHz, 15W)	
Chipset	Integrated with Intel® SoC	
Memory Type	DDR4 2400, SODIMM x 1, Non-ECC (Max. 32GB)	
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	—	
RTC Battery	Lithium Battery 3V/240mAh	
Dimension	3.94" x 2.84" (100mm x 72mm)	5.9" x 3.94" x 2.36" (150mm x 100mm x 60mm)
Gross Weight	0.18 lbs (0.08 kg)	1.41 lbs (0.64 kg)
OS Support	Windows 10 (64 bit) Linux Ubuntu 18.04.3/Kernel 5.3.0-51-generic	
Power		
Power Requirement	+12V	
Power Supply Type	ATX	
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	DC Jack Connector
Power Consumption	Intel® i7-8665UE @ DDR4 16GB, 2.23A@ +12V(TYPICAL)	
Display		
Controller	Intel® UHD Graphics 610/620	
LVDS/eDP	—	
Display Interface	HDMI 1.4 x 2, up to 3840 x 2160 @30Hz	
Multiple Display	Up to 2 Simultaneous Displays	2 Simultaneous Displays
Audio		
Codec	—	
Audio Interface	—	
Speaker	—	
External I/O		
Ethernet	Realtek 8111 1GbE, RJ45 x 2	
USB	USB 3.2 Gen2 x 2	USB 3.2 Gen2 x 2 USB 2.0 x 2
Serial Port	—	COM1~2 (RS232/422/485, support 5V/12V/RI, Optional)
Video	HDMI 1.4 x 2	
Internal I/O		
USB	USB2.0 x 2	—
Serial Port	COM1~2 (RS232/422/485, support 5V/12V/RI)	—
Video		
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1	
Audio	—	
DIO/GPIO	GPIO 4-bit	—
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)	—
Fan	4pins Smart Fan x1	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—	
Expansion		
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mPCIe, select with BIOS)	
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0)	
Others	—	
Environment & Certification		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) WITAS 2 -40°F ~ 185°F (-40°C ~ 85°C)	32°F ~ 122°F (0°C ~ 50°C) with airflow 0.5m/s for 2.5" SSD SKU
Storage Temp	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	298,762	
EMC	CE/FCC Class A	
Note		





Model	PICO-KBU4	PICO-KBU4-SEMI
System		
Form Factor	PICO-ITX	PICO-SEMI
CPU	7th Generation Intel® Core™/Celeron® Processors: Intel® Core™ i7-7600U (2C/4T, 2.80GHz, 15W) Intel® Core™ i5-7300U (2C/4T, 2.60GHz, 15W) Intel® Core™ i3-7100U (2C/4T, 2.40GHz, 15W) Intel® Celeron® Processor 3965U (2C/2T, 2.20GHz, 15W)	
Chipset	Integrated with Intel® SoC	
Memory Type	DDR4 2133, SODIMM x 1, Non-ECC (Max. 16GB)	
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	—	
RTC Battery	Lithium Battery 3V/240mAh	
Dimension	3.94" x 2.84" (100mm x 72mm)	4.80" x 3.18" x 1.98" (122 mm x 80.8 mm x 50.4 mm)
Gross Weight	0.18 lbs (0.08 kg)	0.88 lb (0.4 kg)
OS Support	Windows 10 (64 bit) Linux Ubuntu 16.04.3/Kernel 4.10.0	
Power		
Power Requirement	+12V	
Power Supply Type	AT/ATX	ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	Lockable DC Jack Connector
Power Consumption	Intel® Core™ i7-7600U , DDR4 16GB, 1.53A@ +12V(TYPICAL)	
Display	Intel® HD Graphics 510/620	
Controller	Intel® HD Graphics 510/620	
LVDS/eDP	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz	—
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz DDI (Via BIO, Optional)	HDMI 1.4 x 1, 3840 x 2160 @30Hz
Multiple Display	Up to 3 Simultaneous Displays	1 Simultaneous Display
Audio		
Codec	Realtek ALC269	Realtek ALC269 (Optional)
Audio Interface	Line-Out (Audio function not available for WiTAS SKU)	Line-out (Optional)
Speaker	—	
External I/O		
Ethernet	Realtek 8111 1GbE, RJ45 x 2	
USB	USB 3.2 Gen1 x 2	
Serial Port	—	COM1 (RS232, Optional) COM2 (RS232/422/485, support 5V/12V/RI, Optional)
Video	HDMI 1.4 x 1	
Internal I/O		
USB	USB 2.0 x 2	—
Serial Port	COM1 (RS232) COM2 (RS232/422/485, support 5V/12V/RI)	—
Video	LVDS x 1	—
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1	—
Audio	Line-out header x 1 (Audio function not available for WiTAS SKU)	Line-out (Optional)
DIO/GPIO	GPIO 4-bit	—
SMBus/I2C	I2C/SMBus x 1 (Default: SMBus)	—
Fan	4pins Smart Fan x1	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—	
Expansion		
Mini PCIe/mSATA	—	
M.2	M.2 2242 B-Key x 1 (PCIe 3.0 [x1]/SATA, Default: mSATA, select with BIOS) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0)	
Others	BIO x 1 (Optional, supports PCIe [x1] x 2, line out, DDI, GPIO, LPC, SMBus/I2C,USB.3.0/2.0)	—
Environment & Certification		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), WiTAS1 -4°F ~ 158°F (-20°C ~ 70°C) 32°F ~ 122°F (0°C ~ 50°C)	
Storage Temp	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	163,000	
EMC	CE/FCC Class A	



# Board Level Products

## Pico-ITX Boards



Model	PICO-EHL1	PICO-EHL4
System Form Factor	PICO-ITX	
CPU	Intel® Atom® x6000E series, Pentium®, and Celeron® N and J series Processors: J6412 (4C/4T, 2.00GHz, 10W) N6210 (2C/2T, 1.20GHz, 6.5W) x6425E (4C/4T, 2.0GHz, 12W) x6211E (2C/2T, 1.3GHz, 6W)	
Chipset	Integrated with Intel® SoC	
Memory Type	DDR4 3200, SODIMM x 1, Non-ECC (Max.32GB)	Onboard LPDDR4x 3200, Single Channel, Non-ECC (Max.16GB)
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM2.0 (Optional)	Intel® PTT (Integrated TPM)
RTC Battery	Lithium Battery 3V/240mAh	
Dimension	3.94" x 2.84" (100mm x 72mm)	
Gross Weight	0.18 lbs (0.08 kg)	
OS Support	Windows® 10 (64-bit), Ubuntu 20.04.5/Kernel 5.15	Windows 10 (64 bit), Ubuntu 20.04.4/Kernel 5.13.0-30-generic
Power	+12V	
Power Requirement	AT/ATX	
Power Supply Type	Phoenix 2-pin Connector (Default), Lockable DC Jack Connector (colay)	
Connector	Phoenix 2-pin Connector (Default), Lockable DC Jack Connector (colay)	
Power Consumption	Intel Atom® x6425E, DDR4 32GB, 2.67A@ +12V (TYPICAL) Intel Atom® x6425E, DDR4 32GB, 2.84A@ +12V (MAX)	Intel® Atom™ x6425E, LPDDR4x onboard 16GB, 2.48A@ +12V(TYPICAL) Intel® Atom™ x6425E, LPDDR4x onboard 16GB, 2.62A@ +12V(MAX)
Display Controller	Intel® UHD Graphics for 10th Gen Intel® Processors	
LVDS/eDP	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz eDP 1.3 x 1, 3840 x 2160 @60Hz (Optional)	
Display Interface	HDMI 1.4 x 1, 3480 x 2160 @30Hz	HDMI 2.0 x 2, 3840 x 2160 @60Hz
Multiple Display	Up to 2 Simultaneous Displays	Up to 3 Simultaneous Displays
Audio Codec	Realtek ALC269 (Optional)	—
Audio Interface	Line-In / Line-Out / Mic (Optional, audio function not available for WITAS SKU)	—
Speaker	—	
External I/O Ethernet	Realtek 8111H-CG 1GbE, RJ45 x 1	Realtek 8111 1GbE, RJ45 x 2
USB	USB 3.2 Gen2 x 2	
Serial Port	—	
Video	HDMI 1.4 x 1	HDMI 2.0 x 2
Internal I/O USB	USB 2.0 x 2	
Serial Port	COM1~2 (RS232/422/485, support 5V/12V/RI)	
Video	LVDS/eDP x 1(Default: LVDS)	
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1 eMMC5.1 32GB (Optional to 16/64/128GB)
Audio	Audio Header x 1 (Optional, Audio function not available for WITAS SKU)	—
DIO/GPIO	GPIO 4-bit	
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)	
Fan	4pins Smart Fan x1	
Front Panel Others	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Expansion	—	
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mSATA, select with BIOS)	Full size mPCIe/mSATA x 1 (SATA as default, PCIe selected by BIOS)
M.2	M.2 2242 B-key x 1 (PCIe [x2] as default, USB2.0 is optional)	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0)
Others	BIO x 1 (Optional, supports PCIe [x1] x 2, line out, DDI, GPIO, LPC, SMBUS, USB.3.0/2.0)	CANBUS x 2 (Optional, N6210/J6412 not support, support up to 5Mbit/s)
Environment & Certification	—	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), WITAS 2 -40°F ~ 185°F (-40°C ~ 85°C)	
Storage Temp	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	







Model	PICO-EHL4-SEMI	PICO-APL1
System		
Form Factor	PICO-SEMI	PICO-ITX
CPU	Intel® Celeron® Processor J6412 (4C/4T, 2.00 GHz, 10W) Intel® Celeron® Processor N6210 (2C/2T, 1.20 GHz, 6.5W)	Intel® Atom® / Celeron® / Pentium® Processors: N4200 (4C/4T,1.10GHz, 6W) N3350 (2C/2T,1.10GHz, 6W) E3950 (4C/4T,1.60GHz, 12W) E3940 (4C/4T,1.60GHz, 9.5W) E3930 (2C/2T,1.306GHz, 6.5W)
Chipset	Integrated with Intel® SoC	
Memory Type	Onboard Single-Channel LPDDR4x 3200MHz (Max. 16GB, Non ECC)	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	Intel® PTT (Integrated TPM)	—
RTC Battery	Lithium Battery 3V/240mAh	
Dimension	4.80" x 3.18" x 1.75" (122mm x 80.8mm x 44.4mm)	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.88 lb. (0.40kg)	0.18 lbs (0.08 kg)
OS Support	Windows 10 (64 bit) Ubuntu 20.04.3(IOT)/Kernel 5.13	Windows 10 (64 bit) Linux Ubuntu 20.04.4/ Kernel 5.11.0-13-generic
Power		
Power Requirement	12V only	+12V
Power Supply Type	ATX	AT/ATX
Connector	DC Jack Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
Power Consumption	Intel® Pentium® J6426, LPDDR4x onboard 16GB, 1.43A@+12V(TYPICAL) Intel® Pentium® J6426, LPDDR4x onboard 16GB, 1.78A@+12V(MAX)	Intel® E3940 Processor, DDR3L 8GB x 1, 1.11A@+12V(TYPICAL)
Display		
Controller	Intel® UHD Graphics for 10th Gen Intel® Processors	Intel® HD Graphics 500/505
LVDS/eDP	—	LVDS x 1 (18/24bit 2Ch) 1920 x 1200 @60Hz (Optional)
Display Interface	HDMI 2.0 x 1, 3840 x 2160 @60Hz	HDMI 1.4 x 1, 3840 x 2160 @30Hz; DDI (Via BIO, Optional)
Multiple Display	Up to 1 Display	Up to 3 Simultaneous Displays
Audio		
Codec	—	Realtek ALC897/892
Audio Interface	—	Line-Out (Audio function not available for WITAS SKU)
Speaker	—	
External I/O		
Ethernet	RTL8111H-CG 1GbE, RJ45 x 2	Intel® i210 1GbE, RJ45 x 1
USB	USB 3.2 Gen 2 x 2	USB 3.2 Gen1 x 2
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI, Optional)	—
Video	HDMI 2.0 x 1	HDMI 1.4 x 1
Internal I/O		
USB	—	USB 2.0 x 1
Serial Port	—	COM1 (RS232), COM2 (RS232/422/485, support 5V/12V/RI)
Video	—	LVDS x 1
SATA	32GB eMMC 5.1 (Optional: 64GB/128GB)	SATA 6.0 Gb/s x 1,+5V SATA Power Connector x 1
Audio	—	Line-out header x 1 (Audio function not available for WITAS SKU)
DIO/GPIO	—	GPIO 4-bit
SMBus/I2C	—	I2C/SMBus x1 (Default: SMBus)
Fan	—	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—	
Expansion		
Mini PCIe/mSATA	Full size mPCIe/mSATA x 1 (SATA as default, PCIe selected by BIOS)	Full-Size mSATA/mPCIe x 1 (Default: mSATA, select with HW BOM) Half-Sized mPCIe x 1
M.2	M.2 2230 E-Key x 1 (PCIe [x1]/USB 2.0)	—
Others	—	BIO x 1 (Optional, supports PCIe [x1] x 2, line out, DDI, GPIO, LPC, SMBUS,USB3.0/2.0)
Environment & Certification		
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C) with 0.5m/s air flow	32°F ~ 140°F (0°C ~ 60°C)
Storage Temp	—	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	489,989	170,000



# Board Level Products

## Pico-ITX Boards



Model	PICO-APL1-SEMI	PICO-APL2
System		
Form Factor	PICO-SEMI	PICO-ITX
CPU	Intel® Celeron® Processor: N3350 (2C/2T, 1.10GHz, 6W)	Intel® Atom® / Celeron® / Pentium® Processors: N3350 (2C/2T, 1.10GHz, 6W) N4200 (4C/4T, 1.10GHz, 6W) E3950 (4C/4T, 1.60GHz, 12W)
Chipset	Integrated with Intel® SoC	
Memory Type	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)	
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	—	
RTC Battery	Lithium Battery 3V/240mAh	
Dimension	4.8" x 3.18" x 1.75" (122mm x 80.8mm x 44.4 mm)	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.59 lb (0.27 kg)	0.18 lbs (0.08 kg)
OS Support	Windows 10 (64 bit) Linux Ubuntu 20.04.4/ Kernel 5.11.0-13-generic	Windows 10 (64 bit) Linux Ubuntu 20.04.4/ Kernel 5.11.0-30-generic
Power		+12V
Power Requirement		+12V
Power Supply Type	ATX	AT/ATX
Connector	Lockable DC Jack Connector	2-pin Connector (Pin header)
Power Consumption	Intel® N3350 Processor, DDR3L 8GB x 1, 0.91A@+12V(TYPICAL)	Intel® N4200, DDR3L 8GB x 1, 2.16A@ +12V(TYPICAL) Intel® N4200, DDR3L 8GB x 1, 2.28A@ +12V(MAX)
Display		
Controller	Intel® HD Graphics 500	Intel® HD Graphics 500/505
LVDS/eDP	—	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz	HDMI 1.4 x 1, 3840 x 2160 @30Hz DDI (Via BIO, Optional)
Multiple Display	1 Simultaneous Display	Up to 3 Simultaneous Displays
Audio		
Codec	Realtek ALC897/892 (Optional)	Realtek ALC897/888
Audio Interface	Line-out (Optional)	Line-Out (Audio function not available for WiTAS SKU)
Speaker	—	
External I/O		
Ethernet	Intel® i210 1GbE, RJ45 x 1	
USB	USB 3.2 Gen1 x 2	
Serial Port	COM1 (RS232, Optional) COM2 (RS232/422/485, support 5V/12V/R, Optional)	—
Video	HDMI 1.4 x 1	
Internal I/O		
USB	—	USB 2.0 x 1
Serial Port	—	COM1 (RS232) COM2 (RS232/422/485, support 5V/12V/R)
Video	—	LVDS x 1
SATA	—	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1
Audio	Line-out (Optional)	Line-out header x 1 (Audio function not available for WiTAS SKU)
DIO/GPIO	—	GPIO 4-bit
SMBus/I2C	—	I2C/SMBus x1 (Default: SMBus)
Fan	—	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—	
Expansion		
Mini PCIe/mSATA	Full-Size mSATA/mPCIe x 1 (Default: mSATA, select with HW BOM) Half-Sized mPCIe x 1	
M.2	—	
Others	—	BIO x 1 (Optional, supports PCIe [x1] x 2, line out, DDI, GPIO, LPC, SMBUS, USB.3.0/2.0)
Environment & Certification		
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s airflow	32°F ~ 140°F (0°C ~ 60°C)
Storage Temp	—	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	—	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	170,000	525,137
EMC	CE/FCC Class A	





Model	PICO-APL3	PICO-APL3-SEMI
System	PICO-ITX	
Form Factor	PICO-SEMI	
CPU	Intel® Atom® / Celeron® / Pentium® Processors: N4200 (4C/4T, 1.10GHz, 6W) N3350 (2C/2T, 1.10GHz, 6W) E3950 (4C/4T, 1.60GHz, 12W) E3940 (4C/4T, 1.60GHz, 9.5W) E3930 (2C/2T, 1.306GHz, 6.5W)	Intel® Atom® / Celeron® / Pentium® Processors: N4200 (4C/4T, 1.10GHz, 6W) N3350 (2C/2T, 1.10GHz, 6W)
Chipset	Integrated with Intel® SoC	
Memory Type	Onboard DDR3L 1866, Single Channel, Non-ECC (Max. 4GB)	
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM2.0 (Optional)	
RTC Battery	Lithium Battery 3V/240mAh	
Dimension	3.94" x 2.84" (100mm x 72mm)	W/O heat sink: 4.80" x 3.18" x 1.18" (122mm x 80.8mm x 30mm) W/ heat sink: 4.80" x 3.18" x 1.75" (122mm x 80.8mm x 44.4mm)
Gross Weight	0.18 lbs (0.08 kg)	W/O heat sink: 0.38 lb (0.17 kg), W/ heat sink: 0.91 lb (0.41 kg)
OS Support	Windows 10 (64 bit) Linux Ubuntu 16.04.2/ Kernel 4.8.0-36	
Power	+12V	
Power Requirement	ATX	
Power Supply Type	ATX	
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	DC Jack Connector
Power Consumption	Intel® N4200, DDR3L 8GB x 1, 1.08A, eMMC 32GB@ +12V(TYPICAL)	
Display	Intel® HD Graphics 500/505	
Controller	Intel® HD Graphics 500/505	
LVDS/eDP	eDP x 1, 1920 x1080 @60Hz (Optional)	—
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz; DDI (Via BIO, Optional)	HDMI 1.4 x 1, 3840 x 2160 @30Hz
Multiple Display	Up to 3 Simultaneous Displays	
Audio	1 Simultaneous Display	
Codec	Realtek ALC269	Realtek ALC269 (Optional)
Audio Interface	Line-In / Line-Out / Mic (Optional, audio function not available for WITAS SKU)	Line-out (Optional)
Speaker	Amplifier Header	—
External I/O	Realtek 8111 1GbE, RJ45 x 1	
Ethernet	USB 3.2 Gen1 x 2	
USB	COM1~2 (RS232, Optional)	
Serial Port	HDMI 1.4 x 1	
Serial Port	—	
Video	—	
Video	—	
Internal I/O	—	
USB	USB 2.0 x 2	—
Serial Port	COM1~2 (RS232)	—
Video	eDP x 1 (Optional)	—
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1 eMMC5.1 32GB (Optional to 16/64GB)	eMMC5.1 32GB (Optional to 16/64GB)
Audio	Audio Header(Audio function not available for WITAS SKU)	Line-out (Optional)
DIO/GPIO	GPIO 4-bit	—
SMBus/I2C	I2C/I2S x 1 (Default: I2C)	—
Fan	—	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—	
Expansion	—	
Mini PCIe/mSATA	—	
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0), M.2 2280 B-Key x 1 (SATA + USB2.0)	
Others	MIPI-CSI x 2 Lanes (Optional) MIPI-CSI x 4 Lanes (Optional) BIO x 1 (Optional, supports PCIe [x1] x 2, DDI, LPC, SMBUS,USB3.0/2.0)	
Environment & Certification	—	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s airflow
Storage Temp	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	110,000	
EMC	CE/FCC Class A	



# Board Level Products

## Pico-ITX Boards



Model	PICO-APL4	PICO-APL4-SEMI
System		
Form Factor	PICO-ITX	PICO-SEMI
CPU	Intel® Atom® / Celeron® / Pentium® Processors: N4200 (4C/4T,1.10GHz, 6W) N3350 (2C/2T,1.10GHz, 6W) E3950 (4C/4T,1.60GHz, 12W) E3940 (4C/4T,1.60GHz, 9.5W) E3930 (2C/2T,1.306GHz, 6.5W)	Intel® Atom® / Celeron® / Pentium® Processors: N4200 (4C/4T,1.10GHz, 6W) N3350 (2C/2T,1.10GHz, 6W)
Chipset	Integrated with Intel® SoC	
Memory Type	Onboard DDR3L 1866, Single Channel, Non-ECC (Max.4GB)	
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	—	
RTC Battery	Lithium Battery 3V/240mAh	
Dimension	3.94" x 2.84" (100mm x 72mm)	4.80" x 3.18" x 1.98" (122 mm x 80.8 mm x 50.4 mm)
Gross Weight	0.18 lbs (0.08 kg)	0.88 lb (0.4 kg)
OS Support	Windows 10 (64 bit) Linux Ubuntu 16.04.2/ Kernel 4.8.0-36	
Power		
Power Requirement	+12V	
Power Supply Type	AT/ATX	ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	DC Jack Connector
Power Consumption	Intel® N4200, DDR3L 4GB, 1.43A@+12V(TYPICAL)	Intel® N4200, DDR3L 4GB, 1.18A@+12V(TYPICAL)
Display		
Controller	Intel® HD Graphics 500/505	
LVDS/eDP	eDP x 1, 1920x1080 @60Hz (Optional)	—
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz DDI (Via BIO, Optional)	HDMI 1.4 x 1, 3840 x 2160 @30Hz
Multiple Display	Up to 3 Simultaneous Displays	1 Simultaneous Display
Audio		
Codec	—	
Audio Interface	—	
Speaker	—	
External I/O		
Ethernet	Realtek 8111 1GbE, RJ45 x 2	
USB	USB 3.2 Gen1 x 2	
Serial Port	—	COM1 (RS232, Optional) COM2 (RS232/422/485, support 5V/12V/RI, Optional)
Video	HDMI 1.4 x 1	
Internal I/O		
USB	USB 2.0 x 2 (Internal, co-use with FAN connector)	—
Serial Port	COM1 (RS232) COM2 (RS232/422/485, support 5V/12V/RI)	—
Video	eDP x 1	—
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1 eMMC5.1 32GB (Optional to 16/64GB)	eMMC5.1 32GB (Optional to 16/64GB)
Audio	—	
DIO/GPIO	GPIO 4-bit	
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)	
Fan	—	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—	
Expansion		
Mini PCIe/mSATA		
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0). M.2 2280 B-Key x 1 (SATA + USB2.0)	
Others	BIO x 1 (Optional, supports PCIe [x1] x 2, DDI, LPC, USB3.0/2.0)	
Environment & Certification		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s airflow
Storage Temp	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	191,895	





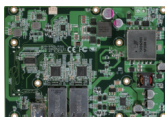
Model	PICO-BT01
System	
Form Factor	PICO-ITX
CPU	Intel® Atom® / Celeron® / Pentium® Processors: N4200 (4C/4T, 1.10GHz, 6W) N3350 (2C/2T, 1.10GHz, 6W) E3950 (4C/4T, 1.60GHz, 12W) E3940 (4C/4T, 1.60GHz, 9.5W) E3930 (2C/2T, 1.306GHz, 6.5W)
Chipset	Integrated with Intel® SoC
Memory Type	Onboard DDR3L 1866, Single Channel, Non-ECC (Max.4GB)
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.18 lbs (0.08 kg)
OS Support	Windows 10 (64 bit) Linux Ubuntu 16.04.2/ Kernel 4.8.0-36
Power	
Power Requirement	+12V
Power Supply Type	AT/ATX
Connector	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)
Power Consumption	Intel® N4200, DDR3L 8GB x 1, 1.08A, eMMC 32GB@ +12V(TYPICAL)
Display	
Controller	Intel® HD Graphics 500/505
LVDS/eDP	eDP x 1, 1920 x1080 @60Hz (Optional)
Display Interface	HDMI 1.4 x 1, 3840 x 2160 @30Hz; DDI (Via BIO, Optional)
Multiple Display	Up to 3 Simultaneous Displays
Audio	
Codec	Realtek ALC269
Audio Interface	Line-Out (Audio function not available for WITAS SKU)
Speaker	Amplifier Header
External I/O	
Ethernet	Realtek 8111 1GbE, RJ45 x 1
USB	USB 3.2 Gen1 x 2
Serial Port	—
Video	HDMI 1.4 x 1
Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM1~2 (RS232)
Video	eDP x 1 (Optional)
SATA	SATA 6.0 Gb/s x 1, +5V SATA Power Connector x 1 eMMC5.1 32GB (Optional to 16/64GB)
Audio	Line-out header x 1 (Audio function not available for WITAS SKU)
DIO/GPIO	GPIO 4-bit
SMBus/I2C	I2C/I2S x 1 (Default: I2C)
Fan	—
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	—
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0), M.2 2280 B-Key x 1 (SATA + USB2.0)
Others	MIPi-CSi x 2 Lanes (Optional) MIPi-CSi x 4 Lanes (Optional) BIO x 1 (Optional, supports PCIe [x1] x 2, DDI, LPC, SMBUS, USB3.0/2.0)
Environment & Certification	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temp	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	110,000
EMC	CE/FCC Class A



## Pico-ITX Boards: Pico-ITX Boards - BIO



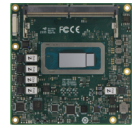
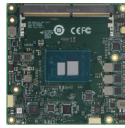
Model	BIO-ST01-L1U2	BIO-ST01-M1U1	BIO-ST02-C4M1	BIO-ST03-P2U1
System	2.5" Board			
Form Factor	80-Pin high speed board to board connector			
BIO	Power Supplied from MB via board to board connector			
Power Requirement	12V or +9 ~ 36V input (external power supply)			
Dimension	3.94" x 2.84" (100mm x 72mm)	3.94" x 2.84" (100mm x 72mm)	3.94" x 2.84" (100mm x 72mm)	5.25" x 4" (146mm x 101.6mm)
Gross Weight	0.44 lb (0.2 kg)			
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)			
Storage Temperature	-40 °F ~ 176°F (-40°C ~ 80°C)			
Operating Humidity	0% ~ 90% relative humidity, non-condensing			
Certification	—			CE,FCC
OS support	Windows 10 (64 bit)			
I/O				
Ethernet	Realtek 8111E, 10/100/1000Base-TX, RJ-45 x 1	—	—	Intel® i210/i211, 10/100/1000Base-TX x 2 (support PoE 802.3af)
USB	USB 2.0 x 2 on rear I/O			
Audio	Speaker Out with 2W Amp			—
Expansion Interface	SMBus x 1			
PCIe	—	Mini-Card x 1	Mini-Card x 1 (full size), SIM x 1	—
Serial Port	—	—	COM1, COM2 RS-232 by Pin Header COM3, COM4 RS-232 on Rear I/O	—
SIM	—	SIM Slot x 1	—	—
DIO	—			



Model	BIO-ST02-C14-D32
System	2.5" Board
Form Factor	80-Pin high speed board to board connector
BIO	Power Supplied from MB via board to board connector
Power Requirement	Power Supplied from MB via board to board connector
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.44 lb (0.2 kg)
Operating Temperature	32 F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE,FCC
OS support	Windows 10 (64 bit)
I/O	
Ethernet	Intel® i211, 10/100/1000Base-TX x 1
USB	USB 3.2 Gen 1 x 1 & USB 2.0 x 3 or USB 2.0 x5(for PICO-BT01)
Audio	Speaker output with 2W Amp.
Expansion Interface	PCIe [x1] x1 (optional), LPT x1
PCIe	—
Serial Port	COM x14, RS-232 by Pin Header
SIM	—
DIO	32 bits

Model	PER-P30D
Power input	DC 9~36V
Power output	DC 5V + DC 12V /max.120W
Voltage tolerance	±5%
Dimension	1.18" x 2.84" (30mm x 72mm)
Gross Weight	0.07 lbs (0.03 kg)
Input Connector	2-pin Phoenix Connector.180D (Default) 3-pin Phoenix Connector.90D (colay)
Output Connector	2-pin Phoenix Connector.90D (Default)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)



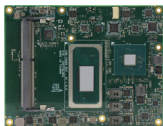


Model	COM-ADNC6	COM-R2KC6	COM-RAPC6
System			
Form Factor	COM Express Compact Size, Type 6		
CPU	Intel Atom® X Series/N-series/Core™ i3-N305 CPU Intel® Core™ i3-N305 (8C, up to 3.8 GHz, 15W) Intel Atom® x7425E (4C, up to 3.4 GHz, 12W) Intel Atom® x7211E (2C, up to 3.2 GHz, 6W) Intel® Processor N97 (4C, up to 3.6 GHz, 12W) Intel® Processor N50 (2C, up to 3.4 GHz, 6W)	AMD Ryzen™ Embedded R2000 Series Processors: AMD Ryzen™ Embedded R2544 (4C/8T, 3.35 GHz, 45W) AMD Ryzen™ Embedded R2514 (4C/8T, 2.10 GHz, 15W) AMD Ryzen™ Embedded R2314 (4C/4T, 2.10 GHz, 15W)	13th Intel® Core™ Processor: Intel® Core™ i7-13800HRE Processor (14C/20T, 2.5GHz, 45W, In-Band ECC) Intel® Core™ i7-13800HE Processor (14C/20T, 2.5GHz, 45W) Intel® Core™ i5-13600HE Processor (12C/16T, 2.7GHz, 45W) Intel® Core™ i3-13300HE Processor (8C/12T, 2.1GHz, 45W) Intel® Core™ i7-1370PE Processor (14C/20T, 1.9GHz, 28W) Intel® Core™ i5-1340PE Processor (14C/16T, 1.8GHz, 28W) Intel® Core™ i3-1320PE Processor (8C/12T, 1.7GHz, 28W) Intel® Core™ i3-1315UE Processor (6C/8T, 1.2GHz, 15W)
Chipset	Integrated with Intel® SoC		
Memory	DDR5 SODIMM Socket x1, non-ECC, up to 16GB, 4800MT/s	DDR4 3200MHz SODIMM x 2, up to 32GB	DDR5 SODIMM Socket x 2, non-ECC, up to 64GB (U Processor up to 4800MT/s, H/P Processor up to 5200 MT/s)
Onboard Storage	—		
BIOS	AMI BIOS (UEFI)		
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Dimension	3.74" x 3.74" (95mm x 95mm)		
Security	TPM 2.0		
Power			
Power Requirement	+12V and +5VSB for ATX, +12V for AT		
Power Type	AT (default)/ATX, switch by BIOS		
Power Consumption (Typical)	Intel® Core™ i3-N305, 1.57A @+12V	AMD Ryzen™ R2544, 4.8A @+12V	Intel® Core™ i7-13800HE, DDR5 32GB x 2, 8.30A @ +12V
Display			
Graphics Controller	Intel® UHD Graphics for 12th Gen Intel® Processors	AMD Radeon™ Vega 8 Graphics / AMD Radeon™ Vega 6 Graphics	Intel® Iris® Xe Graphics Intel® UHD Graphics
Video Output	3 Displays: 18/24-bit Single/Dual-Channel LVDS/eDP x 1, up to 1920 x 1080/ 3840 x 2160 DP x 2, up to 3840 x 2160, 144Hz	4 Simultaneous Displays: eDP x 1, up to 3840 x 2160 DDI x 3, up to 3840 x 2160	4 Simultaneous Displays: DDI x 3, up to 3840 x 2160 18/24-bit Single/Dual-Channel LVDS/eDP x 1, up to 1920 x 1080 / 3840 x 2160 @60Hz VGA x 1, up to 1920 x 1080
I/O			
Ethernet	Intel® I226-V or I226-IT 2.5GbE x 1	Intel® I226-LM/IT 2.5GbE x 1	Intel® Ethernet Controller I226, 2.5GbE x 1
Audio	High Definition Audio Interface		
USB Port	USB 2.0 x 8, USB 3.2 Gen 2 x 2	USB 2.0 x 8, USB3.2 10Gbps x2, USB3.2 5Gbps x1	USB 2.0 x 8, USB 3.2 Gen 2 x 4
Serial Port	2-Wire UART x 2 (Tx/Rx)		
HDD Interface	SATA 6Gb/s x 2	SATA III x 2	SATA 6.0Gbps x 2
Expansion	PCIe [x1] x 4 or [x2] x 2, LPC, WDT, HWM	PEG [x4] PCIe Gen3[x1] x4 (0~3) PCIe Gen3[x4] x1 (4~7) LPC	PCIe[x1] x 4 (Configurable by BIOS)+ PCIe[x4] x 1+PCIe[x8] x 1 (PCIe[x8] for H series CPU only)
GPIO	8-bit		
SMBus/I2C	I2C x 1, SMBus x 1		
Environment			
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) WITAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C) WITAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)		
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
EMC	CE/FCC Class A		
OS Support	Windows® 10 (64-bit) Linux Ubuntu 22.04.02/Kernel 5.19	Windows® 10 (64-bit) Linux Ubuntu 22.04.2/Kernel 5.19.0-32	Windows® 10 (64-bit) Linux Ubuntu 23.10/Kernel 6.5



# Board Level Products

## COM Express CPU Modules



Model	COM-TGHB6	COM-TGUC6	COM-TGUC6 Rev.B
System			
Form Factor	COM Express Basic Size, Type 6		COM Express Compact Size, Type 6
CPU	11th Generation Intel® Core™ Processors: Intel® Core™ i7-11850HE (8C/16T, 2.1 GHz, 35W) Intel® Core™ i5-11500HE (6C/12T, 2.1 GHz, 35W) Intel® Core™ i3-11100HE (4C/8T, 1.9 GHz, 35W) Intel® Xeon® W Processors: Intel® Xeon® W-11865MRE (8C/16T, 2.1 GHz, 35W) Intel® Xeon® W-11865MLE (8C/16T, 1.5 GHz, 25W)	11th Generation Intel® Core™ Processors: Intel® Core™ i7-1185G7E (4C/8T, 1.8 GHz, 15W) Intel® Core™ i7-1185GRE (4C/8T, 1.80 GHz, 15W) Intel® Core™ i5-1145G7E (4C/8T, 1.5 GHz, 15W) Intel® Core™ i5-1145GRE (4C/8T, 1.50 GHz, 15W) Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W) Intel® Core™ i3-1115GRE (2C/4T, 2.20 GHz, 15W) Intel® Celeron® Processor 6000 Series: Intel® Celeron® 6305E Processor (2C/2T 1.80 GHz, 15W)	11th Generation Intel® Core™ Processors: Intel® Core™ i7-1185G7E (4C/8T, 1.8 GHz, 15W) Intel® Core™ i5-1145G7E (4C/8T, 1.5 GHz, 15W) Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W) Intel® Celeron® Processor 6000 Series: Intel® Celeron® 6305E Processor (2C/2T 1.80 GHz, 15W)
Chipset	Intel® QM580E, Intel® RM590E	Integrated with Intel® SoC	
Memory	DDR4 3200MHz Dual Channel , SODIMM x 2 , up to 64GB	DDR4 3200MHz SODIMM x 2, up to 64GB (In-Band ECC by SKU)	DDR4 3200MHz Dual channel , SODIMM x 2, up to 64GB (In-Band ECC by SKU)
Onboard Storage	—		
BIOS	AMI UEFI		
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Dimension	4.92" x 3.75" (125mm x 95mm)	3.74" x 3.74" (95mm x 95mm)	
Security	TPM 2.0	TPM 2.0 (Optional)	TPM 2.0
Power			
Power Requirement	+12V and +5VSB for ATX, +12V for AT		
Power Type	AT/ATX		
Power Consumption (Typical)	Intel® Xeon® W-11865MRE, 5.26A @+12V	Intel® Core™ i7-1185GRE, 3.5A @+12V	Intel® Core™ i7-1185G7E, 3.22A @+12V
Display			
Graphics Controller	Intel® UHD Graphics	Intel® Iris® Xe Graphics Intel® UHD Graphics	
Video Output	5 Simultaneous Displays: DDI x 3, up to 3840 x 2160 LVDS/eDP x 1, up to 1920 x 1080 VGA x 1, up to 1920 x 1080	4 Simultaneous Displays: DDI x 3, up to 3840 x 2160 18/24-bit Single/Dual-Channel LVDS/eDP x 1, up to 3840 x 2160/1920 x 1080 VGA x 1, up to 1920 x 1080	
I/O			
Ethernet	Intel® I226-LM 2.5GbE x 2	Intel® I225-LM 2.5GbE x 1	Intel® I225/I226 2.5GbE x 1
Audio	High Definition Audio Interface		
USB Port	USB 2.0 x 8, USB 3.2 Gen 2 x 4		
Serial Port	2-Wire UART x 2 (Tx/Rx)		
HDD Interface	SATA III x 4	SATA III x 2	
Expansion	PEG 4.0 [x16] x 1, PCIe 3.0 [x1] x 8, LPC x 1	PEG 4.0 [x4] x 1 PCIe 3.0 [x1] x 5 LPC x 1	
GPIO	8-bit		
SMBus/I2C	I2C x 1, SMBus x 1		
Environment			
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)		
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)		
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
EMC	CE/FCC Class A		
OS Support	Windows® 10 (64-bit) Linux Ubuntu 20.04.4/Kernel 5.13	Windows® 10 (64-bit) Linux Ubuntu 20.04.2/Kernel 5.8	
Weight	0.33 lb. (0.15Kg)	0.44 lb. (0.20Kg)	

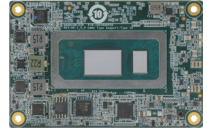




# Board Level Products COM Express CPU Modules

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COM Express CPU Modules



Model	COM-WHUC6	COM-ICDB7	NanoCOM-RAP
System			
Form Factor	COM Express Compact Size, Type 6	COM Express Basic Size, Type 7	COM Express Mini Size, Type 10
CPU	8th Generation Intel® Core™ Processors: Intel® Core™ i7-8665UE (4C/8T, 1.70 GHz, 15W) Intel® Core™ i5-8365UE (4C/8T, 1.60 GHz, 15W) Intel® Core™ i3-8145UE (2C/4T, 2.20 GHz, 15W)  Intel® Celeron® Processor 4000 Series: Intel® Celeron® Processor 4305UE (2C/2T, 2.00 GHz, 15W)	Intel® Xeon® D-1848TER (10C/20T, 2.00 GHz, 57W) Intel® Xeon® D-1746TER (10C/20T, 2.00 GHz, 67W) Intel® Xeon® D-1735TR (8C/16T, 2.20 GHz, 59W) Intel® Xeon® D-1712TR (4C/4T, 2.00 GHz, 40W)	13th Generation Intel® Core™ U-series Processors: Intel® Core™ i7-1365UE (10C/12T, 1.70 GHz, 15W) Intel® Core™ i5-1335UE (10C/12T, 1.30 GHz, 15W) Intel® Core™ i3-1315UE (6C/8T, 1.20 GHz, 15W) Intel® Processor U300E (5C/6T, 1.10 GHz, 15W)
Chipset	Integrated with Intel® SoC		Integrated with Intel® SoC
Memory	DDR4 2400MHz SODIMM x 2, up to 64GB (non-ECC)	DDR4 2400MHz SODIMM x 4, Dual Channel, up to 128GB	Onboard LPDDR5, up to 16GB
Onboard Storage	eMMC, up to 64GB (Optional)	—	NVME, up to 128GB (Optional)
BIOS	AMI UEFI		
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Dimension	3.74" x 3.74" (95mm x 95mm)	4.92" x 3.75" (125mm x 95mm)	3.31" x 2.17" (84mm x 55mm)
Security	TPM 2.0 (Optional)	TPM 2.0	
Power			
Power Requirement	+12V and +5VSB for ATX, +12V for AT	+12V and +5VSB for ATX, +12V and +5V for AT	+9V-15V and +5VSB for ATX, +9-15V for AT
Power Type	AT/ATX	AT/ATX(default)	AT/ATX
Power Consumption (Typical)	Intel® Core™ i7-8665UE, 2.61A @+12V	Intel® Xeon® D-1746TER, 7.75A @+12V	Intel® Core™ i7-1365UE, LPDDR5 8GB, 2.82A@ +12V
Display			
Graphics Controller	Intel® UHD Graphics 620 Intel® UHD Graphics 610	—	Intel® UHD Graphics for 13th Gen Intel® Processors
Video Output	3 Simultaneous Displays: DDI x 1, up to 3840 x 2160 18/24-bit Single/Dual-Channel LVDS/eDP x 1, up to 1920 x 1080 VGA x 1, up to 2048 x 1152	—	Dual Display: DDI x 1, up to 3840 x 2160 eDP x 1, up to 3840 x 2160 @60Hz
I/O			
Ethernet	Intel® I219-LM GbE x 1	Intel® I210-IT GbE x 1 10GbE x 4, support x557(default) or SFP+	Intel® I226-IT 2.5GbE x 1
Audio	High Definition Audio Interface	—	High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.2 Gen 2 x 4	USB 2.0 x 4, USB 3.2 Gen 1 x 4	USB 2.0 x 8, USB 3.2 Gen 2 x 2
Serial Port	2-Wire UART x 2 (Tx/Rx)		
HDD Interface	SATA 6Gb/s x 2		
Expansion	PCIe 3.0 [x1] x 4 PCIe 3.0 [x4] x 1 LPC x 1	PEG 4.0 [x16] x 1 PCIe 3.0 [x2] x 8 LPC x 1	PCIe [x1] x 4 LPC x 1
GPIO	8-bit		
SMBus/I2C	I2C x 1, SMBus x 1	I2C x 1 (Windows® 10 Ready), SMBus x 1	I2C x 1, SMBus x 1
Environment			
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	-4°F ~ 158°F (-20°C ~ 70°C)	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)		
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
EMC	CE/FCC Class A		
OS Support	Windows® 10 (64-bit) Linux Ubuntu 18.04.2/Kernel 4.18	Windows® 10 (64-bit) Linux Ubuntu 20.04/Kernel 5.4	Windows® 10 (64-bit) Linux Ubuntu 22.04.2/Kernel 5.19
Weight	0.44 lb. (0.20Kg)	0.44 lb. (0.20Kg)	0.15 lb. (0.07Kg)



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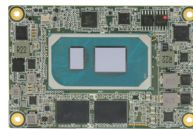
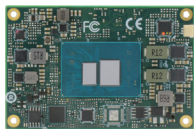
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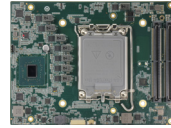
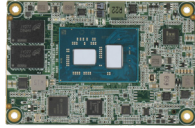
# Board Level Products

## COM Express CPU Modules



Model	NanoCOM-ADN	NanoCOM-TGU
System		
Form Factor	COM Express Mini Size, Type 10	
CPU	Intel® Core™ i3 Processor N-series: Intel® Core™ i3-N305 (8C/8T, 1.80 GHz, 15W)  Intel Atom® Processor X Series: Intel Atom® x7425E (4C, 1.50 GHz, 12W)  Intel® Processor N-series: Intel® Processor N97 (4C, 2.00 GHz, 12W) Intel® Processor N50 (2C, 1.00 GHz, 6W)	11th Generation Intel® Core™ Processors: Intel® Core™ i7-1185G7E (4C/8T, 1.80 GHz, 15W) Intel® Core™ i5-1145G7E (4C/8T, 1.50 GHz, 15W) Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W) Intel® Core™ i7-1185G9E (4C/8T, 1.80 GHz, 15W) Intel® Core™ i5-1145G9E (4C/8T, 1.80 GHz, 15W) Intel® Core™ i3-1115G9E (2C/4T, 2.20 GHz, 15W)
Chipset	Integrated with Intel® SoC	
Memory	Onboard LPDDR5x 4800MHz, 4 Channel , up to 16GB	Onboard LPDDR4 4267MHz, up to 16GB
Onboard Storage	eMMC, up to 64GB	NVMe, up to 256GB (Optional)
BIOS	AMI UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Dimension	3.31" x 2.17" (84mm x 55mm)	
Security	TPM	fTPM
Power		
Power Requirement	+12V and +5VSB for ATX, +12V for AT	
Power Type	AT(default)/ATX, switch by BIOS	AT/ATX
Power Consumption (Typical)	Intel® Core™ i3-N305, 2.32A @+12V	Intel® Core™ i7-1185G7E, 2.75A @+12V
Display		
Graphics Controller	Intel® UHD Graphics	Intel® UHD Graphics for 11th Gen Intel® Processors
Video Output	Dual Display: DDI x 1, up to 3840 x 2160 18/24-bit Single-Channel LVDS/eDP x 1, up to 3840 x 2160	Dual Display: DP x 1, up to 3840 x 2160 eDP x 1, up to 3840 x 2160
I/O		
Ethernet	Intel® I226-V/IT 2.5GbE x 1	Intel® I225-LM/IT 2.5GbE x 1
Audio	High Definition Audio Interface	
USB Port	USB 2.0 x 8, USB 3.2 Gen 2 x 2	
Serial Port	2-Wire UART x 2 (Tx/Rx)	
HDD Interface	SATA 6Gb/s x 2	
Expansion	PCIe 3.0 [x1] x 4 LPC x 1	
GPIO	8-bit	
SMBus/I2C	I2C x 1, SMBus x 1	
Environment		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) by SKU	32°F ~ 140°F (0°C ~ 60°C) WiTAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
EMC	CE/FCC Class A	
OS Support	Windows® 10 (64-bit) Linux Ubuntu 22.04.2/Kernel 5.19	Windows® 10 (64-bit) Linux Ubuntu 20.04.4/Kernel 5.13.0
Weight	0.15 lb. (0.07Kg)	
Note		



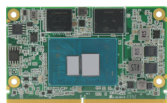


Model	NanoCOM-EHL	HPC-ADSC / HPC-RPSC
System		
Form Factor	COM Express Mini Size, Type 10	COM HPC Client Size C
CPU	Intel Atom® Processor X Series: Intel Atom® x6413E (4C/4T, 1.50 GHz, 9W) Intel Atom® x6425E (4C/4T, 2.20 GHz, 12W) Intel Atom® x6425RE (4C/4T, 1.90 GHz, 12W)  Intel® Celeron® Processor J & N Series: Intel® Celeron® Processor J6412 (4C/4T, 2.00 GHz, 10W) Intel® Celeron® Processor N6211 (2C/2T, 1.20 GHz, 6.5W)  Intel® Pentium® Processor J Series: Intel® Pentium® Processor J6426 (4C/4T, 2.00 GHz, 10W)	14th Generation Intel® Core™ Processors: Intel® Core™ i9-14900 (24C/32T, P-core 2.00 GHz, E-core 1.50 GHz, 65W) Intel® Core™ i7-14700 (20C/28T, P-core 2.10 GHz, E-core 1.50 GHz, 65W) Intel® Core™ i5-14500 (14C/20T, P-core 2.60 GHz, E-core 1.90 GHz, 65W) 13th Generation Intel® Core™ Processors: Intel® Core™ i9-13900E (24C/32T, P-core 1.80 GHz, E-core 1.30 GHz, 65W) Intel® Core™ i9-13900 (24C/32T, P-core 2.00 GHz, E-core 1.50 GHz, 65W) Intel® Core™ i7-13700E (16C/24T, P-core 1.90 GHz, E-core 1.30 GHz, 65W) Intel® Core™ i5-13500E (14C/20T, P-core 2.40 GHz, E-core 1.50 GHz, 65W) 12th Generation Intel® Core™ Processors: Intel® Core™ i9-12900E (16C/24T, P-core 2.30 GHz, E-core 1.70 GHz, 65W) Intel® Core™ i7-12700E (12C/20T, P-core 2.10 GHz, E-core 1.60 GHz, 65W) Intel® Core™ i7-12700 (12C/20T, P-core 2.10 GHz, E-core 1.60 GHz, 65W)
Chipset	Integrated with Intel® SoC	Intel® R680E
Memory	Onboard LPDDR4 3733MHz, up to 16GB	DDR5 5600 MHz, Dual Channel SODIMM x 2, up to 64GB(ECC)
Onboard Storage	eMMC, up to 64GB (Optional)	—
BIOS		AMI UEFI
Wake on LAN		Yes
Watchdog Timer		255 Levels
Dimension	3.31" x 2.17" (84mm x 55mm)	6.30" x 4.72" (160mm x 120mm)
Security	TPM	TPM 2.0
Power		
Power Requirement	+12V and +5VSB for ATX, +12V for AT	+12V and +5VSB for ATX, +12V for AT
Power Type		AT/ATX
Power Consumption (Typical)	Intel Atom® x6425E, 1.44A @+12V	Intel® Core™ i9-13900E, 7.13A @+12V
Display		
Graphics Controller	Intel® UHD Graphics for 10th Gen Intel® Processors	Intel® UHD Graphics 770
Video Output	Dual Display: DDI x 1, up to 3840 x 2160 18/24-bit Single-Channel LVDS x 1, up to 1920 x 1080 or eDP x 1, up to 3840 X 2160	4 Simultaneous Displays: eDP x 1, up to 3840 x 2160 @60Hz DDI x 3, up to 3840 x 2160 @144Hz
I/O		
Ethernet	Intel® I226-IT 2.5GbE x 1	Intel® Ethernet Controller I226-LM 2.5GbE x 2
Audio		High Definition Audio Interface
USB Port	USB 2.0 x 8, USB 3.2 Gen 2 x 2	USB 2.0 x 8; USB 3.2 Type-C x 2 (20Gbps x 2); USB 3.2 Type-A x 4 (10Gbps)
Serial Port	2-Wire UART x 2 (Tx/Rx)	4-Wire UART x 2 (Tx/Rx)
HDD Interface	SATA III x 2	SATA III x 2
Expansion	PCIe 3.0 [x1] x 4; LPC x 1	PEG 5.0 [x16] x 1; PCIe 4.0 [x4] x 3; PCIe 3.0 [x1] x 8; eSPI x 1; LPC x 1
GPIO	8-bit	12-bit
SMBus/I2C	I2C x 1, SMBus x 1	I2C x 2, SMBus x 1
Environment		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) WITAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature		-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity		0% ~ 90% relative humidity, non-condensing
EMC		CE/FCC Class A
OS Support	Windows® 10 (64-bit) Linux Ubuntu 20.04.3/Kernel 5.13.0	Windows® 10 (64-bit) Linux Ubuntu 20.04.1/Kernel 5.15
Weight	0.15 lb. (0.07Kg)	0.66 lb. (0.30Kg)
Note		



# Board Level Products

## COM Express CPU Modules



Model	uCOM-ADN	AQ7-ADN
System		
Form Factor	SMARC Module	Qseven Module
CPU	Intel® Core™ i3-N305 Processor (8C/8T, up to 3.8 GHz, 15W) Intel Atom™ x7425E Processor (4C, up to 3.4 GHz, 12W) Intel® Processor N97 (4C, up to 3.6 GHz, 12W)	Intel Atom® X Series/N-series/Core™ i3-N305 CPU Intel® Core™ i3-N305 (8C, up to 3.8 GHz, 15W) Intel Atom™ x7425E (4C, up to 3.4 GHz, 12W) Intel® Processor N200 (4C, up to 3.7 GHz, 6W) Intel® Processor N97 (4C, up to 3.6 GHz, 12W) Intel® Processor N50 (2C, up to 3.4 GHz, 6W)
Chipset	Integrated with Intel® SoC	Integrated with Intel® SoC
Memory	Onboard LPDDR5x 4800MHz, up to 8GB	LPDDR5x up to 4800MT/s, 8GB
Onboard Storage	eMMC, up to 64GB	eMMC up to 64GB
BIOS	AMI UEFI	AMI UEFI
Wake on LAN	Yes	Yes
Watchdog Timer	255 Levels	255 Levels
Dimension	3.23" x 1.97" (82mm x 50mm)	2.76" x 2.76" (70mm x 70mm)
Security	TPM 2.0	TPM 2.0 (Optional)
Power		
Power Requirement	+5V for ATX / AT	+5V +/- 50mV, +3Vrvc
Power Type	AT (default)/ATX, switch by BIOS	AT (default) / ATX, switch by BIOS
Power Consumption (Typical)	Intel® Core™ i3-N305, 4.23A @+5V	Intel® Core™ i3-N305, LPDDR5x 8GB x1, 4.5A@ +5V
Display		
Graphics Controller	Intel® UHD Graphics	Intel® UHD Graphics
Video Output	Display: DP++ x 2, up to 3840 x 2160 eDP x 1, up to 3840 x 2160	Dual Display: DP x 1 eDP or LVDS x 1 (Change by BOM)
I/O		
Ethernet	Intel® Ethernet Controller I226-V/IT 2.5GbE x 2	Realtek RTL8111H-CG 1GbE x 1
Audio	High Definition Audio Interface	High Definition Audio Interface
USB Port	USB 2.0 x 6, USB 3.2 x 2	USB 2.0 x 6, USB 3.2 x 2
Serial Port	2-Wire UART x 2 (Tx/Rx) 4-Wire UART x 2 (Tx/Rx/RTS/CTS)	4-Wire UART x 1 (Tx/Rx/CSR/RTS)
HDD Interface	SATA 6Gb/s x 1	SATA III x 1
Expansion	PCIe Gen 3 [x1] x 3 (Max PCIe [x2] x 1) MIPI CSI x 2 Note: To get a fourth PCIe Gen 3 [x1] interface, please contact the AAEON support team.	PCIe [x1] x 4 4-lane MIPI-CSI x 1
GPIO	7-bit (up to 14-bit by customization)	8-bit (Change by BOM)
SMBus/I2C	GP_I2C x 1 SMBus x 1	I2C x 1, SMBus x 1
Environment		
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C) -40°F ~ 185°F (-40°C ~ 85°C)	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing	0% ~ 90% relative humidity, non-condensing
EMC	CE/FCC Class A	CE/FCC Class A
OS Support	Windows® 10 (64-bit) / Windows 11(enterprise) Linux Ubuntu 22.04.2/Kernel 5.19	Windows® 10 (64-bit) Linux Ubuntu 22.04.x/Kernel 5.19.0
Weight	0.14 lb. (0.06Kg)	0.26 lb. (0.12Kg)
Note		

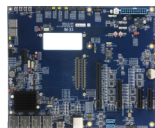
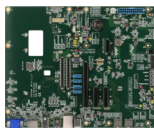


# Board Level Products

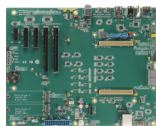
## COM Express CPU Modules: COM Carrier Boards

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COM Express CPU Modules



Model	ECB-920A-A11	ECB-927A
System		
Form Factor	ATX	COM Express Basic Size Type 7 Carrier Board in ATX Form Factor
COM Express Connector	x 2 (Row A,B & Row C,D)	x 2 (Row AB and Row CD, Type 7 pin-out)
I/O Chipset	—	
Front Panel Control	10-pin Header (5x2)	
Ethernet	10/100/1000/2500 Base-TX, RJ45 x 1 (From CPU Module)	10GbE x 4 (Intel® Ethernet Connection X557-AT4) GbE x 1 (from Module)
Expansion Interface	PCIe [x4] x 2 PCIe [x16] x 1	PCIe [x4] x 2 PCIe [x8] x 1 PCIe [x16] x 1 (PEG port)
Power Supply Type	ATX	Standard 24-pin ATX + 4-pin 12V
CMOS Battery	RTC Battery Socket x 1	CR2032 Holder x 1
BIOS	—	
Board Size	12" x 9.6" (304mm x 244mm)	
Gross Weight	1.32 lb. (0.6Kg)	1.54 lb. (0.7Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	—	
Display	—	
DVT/CRT/VGA	D-SUB15 Connector x 1	N/A. via PCIe Graphic card
LVDS / eDP	LVDS: 40-pin Dual-Channel LVDS Connector (20x2) eDP: 30-pin Board Wire Connector	N/A. via PCIe Graphic card
SDVO	—	N/A. via PCIe Graphic card
DDI	Display Port x 3 (Dual x 1, Single x 1)	N/A. via PCIe Graphic card
I/O	—	
Storage	SATA III x 4	SATA x 2
Serial Port	COM Port x 2 (2-Wire UART Tx/Rx)	2-wire UART x 2 (TX/RX)
USB	USB 2.0 x 4 (Type-A), USB 3.2/2.0 x 4 (Type-A)	USB 3.2 x 4
Audio	Audio Jack, supports Line-in, Line-out, Microphone	N/A
PS/2 Port	—	
GPIO	8-bit Programmable	8-bit
Switch/Button	Power Button x 1 / Reset Button x 1	
Debug LED	80 PORT	7-SEG LED X2 80 PORT POST CODE INDICATOR
I2C	1	
Expansion Interface	LPC, SMBus, eSPI, CAN Bus, 4 pin fan connector, Micro SD Card Slot x 1	SMBus, LPC/eSPI slot
Note		



System	ECB-980A	ECB-970G
System		
Form Factor	COM HPC Client Size A/B/C	3.5" SubCompact Board
COM Express Connector	x 2 (J1 and J2)	MXM 220pin
I/O Chipset		
Front Panel Control	10-pin Header (2x5P)	10-pin Header (2x5P) power button and LED reset button STATUS LED
Ethernet	2.5 GbE x 1 10 GbE x 1	10/100/1000M, RJ-45 x 1 (From CPU module GbE0)
Expansion Interface	PCIe [x4] x 2 (Group 0, Lane 0 ~ 7) PCIe [x16] x 2 (one PCIe [x16] only supports PCIe [x4])	PCIe[x1] Connector x 1
Power Supply Type	Standard 24-pin ATX + 8-pin 12V	+12V DC-in
CMOS Battery		RTC battery socket x 1
BIOS	Yes	SPI socket x1
Board Size	12" x 9.6" (305mm x 244mm)	5.75" x 4" (146mm x 101.7mm)
Gross Weight	1.54 lb. (0.7Kg)	1.32 lb (0.6 kg)
Operating Temperature		32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity		0% ~ 90% relative humidity, non-condensing
Display		
DVT/CRT/VGA	HDMI x 1	DP x 1
LVDS / eDP	eDP x 1	eDP x1 or LVDS x 1
DDI	Display Port x 2	—
I/O		
Storage	SATA x 2 M.2 2280 M-Key x 2 (PCIe Gen 4 [x4] for NVMe)	SATA x2 M.2 2280 Key-B (PCIe [x2] lane1, lane2) microSD Card x 1
Serial Port	4-wire UART x 2	4-wire UART
USB	USB 3.2 x 2 (20Gbps, up to Gen 2 x 2 support) USB 3.2 x 1 (10Gbps, up to Gen 2 x 1 support) USB 3.2 x 2 (5Gbps, up to Gen 1 x 1 support) USB 2.0 x 8	USB2.0 Type A x3 USB3.0 Type A x2 USB microA
Audio	Audio Jack, supports Line-in, Line-out, Microphone	HD Audio (ALC897)
GPIO	12 bit	8-bit
Switch/Button		Power Button x 1 / Reset Button x 1
Debug LED	7-Segment Display LED x 2 (80 Port Post Code Indicator)	7-seg LED x2 (80 Port Post code indicator)
I2C		x 1
Expansion Interface	SMBus, LPC/eSPI slot	SMBus, WDT M.2 2230 Key-E PCIe [x1] Slot
Note		



# COM Express CPU Modules: COM Carrier Boards

Board Level Products

01

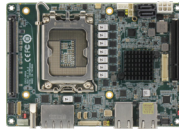
COM Express CPU Modules



System	ECB-960T
System	
Form Factor	Mini-ITX form Factor
COM Express Connector	—
I/O Chipset	—
Front Panel Control	—
Ethernet	10/100/1000/2500 Base-TX RJ45 x 2
Expansion Interface	PCIe lane[x4] x 1
Power Supply Type	Depends on module
CMOS Battery	RTC battery socket x 1
BIOS	—
Board Size	6.69" x 6.69" (170mm x 170mm)
Gross Weight	1.54 lb. (0.7Kg)
Operating Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Display	
DVT/CRT/VGA	—
LVDS / eDP	LCD connectors x 2 for:(OPTIONAL, BY BOM) 2ch LVDS x 1 / 1ch LVDS x 2 or eDP x 2 or mipi-DSI x 2
DDI	DDI1: HDMI or DP++ (Optional, by BOM) DDI2: DP++
I/O	
Storage	SATA3 x 1
Serial Port	4-Wire UART x 4 or Serial x 4 (Optional, by BOM)
USB	Type A connector x 6 (USB2.0 x 4 , USB 3.2/2.0 x 2) OTG x 1 (Client Mode Only) co-lay USB 2.0 x 1
Audio	High Definition Audio (pin header) x 1 or I2S x 1 (Optional, by BOM)
GPIO	14 bit
Switch/Button	Power Button x 1 / Reset Button x 1 / Sleep Button x 1
Debug LED	7-Segment Display LED x 1 (80 Port Post Code Indicator)
I2C	x 1
Expansion Interface	microSD card x 1 (Optional, by BOM) MIPI CSI x 2 CANBUS x 2 (Optional, by BOM) 3 pin Fan connector x 1 4 pin Fan connector x 1 SMBus x 1
Note	

# Board Level Products

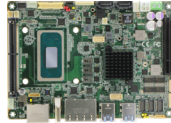
## EPIC Boards



Model	EPIC-RPS9
System	
Form Factor	4" EPIC Board
CPU	13th Generation Intel® Core™ Processor (up to 35W/65W) 12th Generation Intel® Core™ Processor (up to 35W/65W)
Chipset	Intel® 600 Series Chipset (R680E/Q670E/H610E)
Memory Type	DDR5 Dual Channel SODIMM x 2, up to 64GB (ECC support only for R680E)
BIOS	UEFI
Wake On Lan	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimension	4.53" x 6.50" (115mm x 165mm)
OS Support	Windows 10 (64bit) Ubuntu 22.04.2/kernel 5.19.0-32-generic #33
Power	
Power Requirement	+12V (Note: To achieve stable performance, using the power supply unit rated 22A@12V DC output, to meet the potential maximum peak requirement is recommended)
Power Supply Type	AT/ATX
Connector	6-Pin Connector
Power Consumption	Intel® Core™ i9-13900E, DDR5 32GB x2, 7.73A @+12V (Typical) Intel® Core™ i9-13900E, DDR5 32GB x2, 21.39A @+12V (Max)
Display	
Controller	Intel® UHD Graphics 770 (5 SKU and above) Intel® UHD Graphics 730 (3 SKU) Intel® UHD Graphics 710 (Intel® Celeron® G6900TE SKU)
LVDS/eDP	eDP 1.4 x 1, up to 3840 x 2160
Display Interface	HDMI 2.0 x 1, up to 3840 x 2160 @60Hz; VGA x 1, up to 1920 x 1080
Multiple Display	Up to 3 Simultaneous Displays
Audio	
CODEC	Realtek ALC897
Audio Interface	Line-In/Line-Out/MIC
Speaker	---
External I/O	
Ethernet	Intel® i226, 2.5GbE RJ-45 x 3, Intel® i219, GbE RJ-45 x 1 (R680E & Q670E sku) Intel® i226, 2.5GbE RJ-45 x 1 + Intel® i219, GbE RJ-45 x 1 (H610E sku only)
USB	USB 3.2 Gen 2 x 2
Serial Port	---
Video	HDMI 2.0 x 1 up to 3840 x 2160 @60Hz
Internal I/O	
USB	USB 2.0 x 2
Serial Port	COM 1 (RS-232/422/485, supports RI only) COM 2 (RS-232/422/485, supports 12V/5V/RI)
Video	eDP 1.4 x 1, up to 3840 x 2160; VGA x 1, up to 1920 x 1080
SATA	SATA 6Gb/s x 2, +5V SATA Power Connector x 2
Audio	Audio Header x 1
DIO/GPIO	GPIO 8-bits
SMBus/I2C	SMBus /I2C (change by BOM, I2C only for Windows 10)
Touch	---
Fan	4 Pin Smart Fan
SIM	Nano SIM x 1
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer
Others	TCC x 1 (R680E sku only)
Expansion	
Mini PCI-E/mSATA	---
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1, R680E & Q670E support) M.2 3052 B-Key x 1 (PCIe 3.0 [x1] + USB 3.0) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0)
Others	PCIe 4.0 [x8] Slot x 1 FPC Connector x 1 (PCIe 3.0 [x2] x 1)
Environment & Certification	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) (Note: To achieve the best performance, keeping the EPIC-RPS9 operating with 0.5m/sec airflow when DDR5 SODIMM1 installed on bottom side is recommended)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	353,666
EMC	CE/FCC Class A
Note	





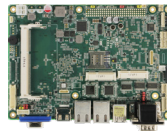
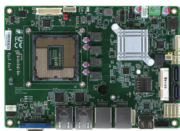


Model	EPIC-TGH7	EPIC-TGH7-PUC
System	EPIC System	
Form Factor	4" EPIC Board	
CPU	Onboard 11th Generation Intel® Core™/Xeon® Processors: Intel® Xeon® W-11865MRE (8C/16T, 2.60 GHz, 45W) Intel® Core™ i7-11850HE (8C/16T, 2.60 GHz, 45W) Intel® Core™ i5-11500HE (6C/12T, 2.60 GHz, 45W) Intel® Core™ i3-11100HE (4C/8T, 2.40 GHz, 45W) Intel® Celeron® 6600HE (2C/2T, 2.60 GHz, 35W)	11th Generation Intel® Xeon/Core™ Processor : Intel® Core™ i7-11850HE (8C/16T, 2.60GHz, 45W) Intel® Xeon® W-11865MRE (8C/16T, 2.60GHz, 45W)
Chipset	Intel® 500 Series Mobile Chipset (RM590E/HM570E)	
Memory Type	DDR4 3200, Dual Channel SODIMM x 2, Max 64GB (ECC supported by Xeon only)	
BIOS	UEFI	
Wake On Lan	Yes	
Watchdog Timer	255 Levels	
Security	TPM 2.0 (Optional)	
RTC Battery	Lithium Battery 3V/240mAh	
Dimension	4.53" x 6.50" (115mm x 165mm)	10.2" x 6.3" x 1.9" (260mm x 160mm x 50mm)
OS Support	Windows 10 (64bit) Ubuntu 20.04.3/Kernel 5.11.0-27-generic x86_64 or above	Windows 10 (64bit) Ubuntu 20.04.5 / Kernel 5.15.0-46-generic x86_64
Power	+9V to +24V (Optional: +12V)	
Power Requirement	+9V to +24V	
Power Supply Type	AT/ATX	
Connector	ATX 4-Pin connector + Phoenix 2-Pin Connector	DC Jack Connector
Power Consumption	Xeon® W-11865MRE, DDR4 32GB x 2, 8.32A@12V, 99.84W (TYPICAL) Xeon® W-11865MRE, DDR4 32GB x 2, 12.52A@12V, 150.24W (MAX)	Intel® Xeon® W-11865MRE, DDR4 32GB x 2, 8.32A @12V, 99.84W (Typical) Intel® Xeon® W-11865MRE, DDR4 32GB x 2, 12.52A @12V, 150.24W (Max)
Display Controller	Intel® UHD Graphics for 11th Gen Intel® Processors	
LVDS/eDP	LVDS x 1, Dual Channel 24/48bit, up to 1920 x 1080 eDP 1.4 x 1, up to 1920 x 1089	—
Display Interface	—	VGA x 1, up to 1920 x 1080 DP++ 1.2 x 2, up to 3840 x 2160 @60Hz HDMI 2.0 x 1, up to 3840 x 2160 @60Hz
Multiple Display	Up to 4 Simultaneous Displays	
Audio	—	
CODEC	Realtek ALC269	
Audio Interface	Line-In/Line-Out/Mic	
Speaker	2W Amp.	
External I/O	—	
Ethernet	Intel® I225, 2.5GbE RJ-45 x 1 Intel® I219, 1GbE RJ-45 x 1	Intel® I226, 2.5GbE RJ-45 x 2 Intel® I225, 2.5GbE RJ-45 x 1 Intel® I219, GbE RJ-45 x 1 (Wake on LAN supported for Intel® I219 x 1 + Intel® I225 x 1)
USB	USB 3.2 Gen 2 x 4	
Serial Port	COM 1 – COM 2 (RS-232/422/485, RI as default, 5V/12V selected by BOM change)	
Video	VGA x 1 DP 1.2 x 2 HDMI 2.0 x 1	VGA x 1, up to 1920 x 1080 DP++ 1.2a x 2, up to 3840 x 2160 @60Hz HDMI 2.0b x 1, up to 3840 x 2160 @60Hz
Internal I/O	—	
USB	USB 2.0 x 4	
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI) COM 3, COM 4, COM 5, COM 6 (RS-232 only, supports RI only)	
Video	LVDS or eDP x 1 (Default: LVDS) LVDS Inverter 5V/12V @2A VGA x 1	
SATA	SATA 6Gb/s x 2 +5V SATA Power Connector x 1 (Total up to 5V@2A) (Up to 5V@1A, shared with 2 x 2.5" SSD as limitation with 170X000592)	SATA III x 2 +5V SATA Power Connector x 1 (Total up to 5V @2A, up to 5V @1A, shared with 2.5"SSD x 2 as limitation with 170X000592)
Audio	Audio Header x 1	
DIO/GPIO	GPIO-16 bits	
SMBus/I2C	SMBus/I2C (Default : SMBus)	
Touch	4/5/8-wire Touch Controller x 1	
Fan	4 Pin Smart Fan	
SIM	Nano SIM x 1	
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer	
Others	Power Button, Power LED	
Expansion	—	
Mini PCI-E/mSATA	Half Size mSATA/mPCIe x 1 (Default: mPCIe, selected by BIOS)	
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 3052 B-Key x 1 (PCIe 3.0 [x2]) + USB 3.2 + USB 2.0)	
Others	PCIe 4.0 [x8] Slot x 1 (Supply maximum 25W to the PCIe peripheral) FPC Connector x 1 (PCIe3.0 [x4] x 1)	
Environment & Certification	—	
Operating Temperature	32°F – 140°F (0°C – 60°C)	
Storage Temperature	-40°F – 185°F (-40°C – 85°C)	
Operating Humidity	0% – 90% relative humidity, non-condensing	
MTBF (Hours)	274,169	250,817



# Board Level Products

## EPIC Boards



Model	EPIC-KBS7	EPIC-BT07
System Form Factor	4" EPIC Board	
CPU	6th/7th Generation Intel Core™ Processor (up to 35W/54W): Intel® Core™ i7-7700T (4C/8T, 2.9 GHz, 35W) Intel® Core™ i5-7500T (4C/4T, 2.7 GHz, 35W) Intel® Core™ i3-7100T (2C/4T, 3.4 GHz, 35W) Intel® Core™ i7-6700TE (4C/8T, 2.4 GHz, 35W) Intel® Core™ i5-6500TE (4C/4T, 2.3 GHz, 35W) Intel® Core™ i3-6100TE (2C/4T, 2.7 GHz, 35W)	Onboard Intel Atom®/Celeron® Processors: Intel® Celeron® Processor J1900 (4C/4T, 2.00GHz, 10W) Intel® Celeron® Processor N2930 (4C/4T, 1.83GHz, 7.5W) Intel® Celeron® Processor E3845 (2C/2T, 1.58GHz, 4.3W) Intel Atom® Processor N2805 (4C/4T, 1.91 GHz, 10W)
Chipset	Intel® 100 Series Mobile Chipset (H110/Q170)	Integrated with Intel® SoC
Memory Type	DDR4 2133, Single channel SODIMM x 1, Up to 16GB (Non-ECC Support)	DDR3L 1333, Single Channel SODIMM x 1, up to 8GB
BIOS	UEFI	
Wake On Lan	Yes	
Watchdog Timer	255 Levels	
Security	TPM 2.0 (Optional)	
RTC Battery	Lithium Battery 3V/240mAh	
Dimension	4.53" x 6.50" (115mm x 165mm)	
OS Support	Windows 10 (64bit) Ubuntu 21.04/Kernel 5.11.0-13-generic	Windows 7/10 (64bit) Ubuntu 21.04 / kernel 5.11.0-13-generic #14
Power	+9V to +24V (Optional: +12V)	
Power Requirement	AT/ATX	
Power Supply Type	Phoenix 2-Pin Connector	
Connector	Phoenix 2-Pin Connector	ATX 4-Pin connector or Phoenix 2-Pin Connector
Power Consumption	Intel® Core™ i7-6700TE, DDR4 16GB, 3.50A @12V, 49.8W	Intel® Celeron® Processor J1900, DDR3L 8GB, 0.99A@12V, 11.88W
Display		
Controller	Intel® HD Graphics 630 Intel® HD Graphics 530 (by CPU sku)	Intel® HD Graphics for Intel Atom® Processor Z3700 Series
LVDS/eDP	LVDS x 1, Dual Channel 24/48bit, up to 1920 x 1080 (Q170 sku support only)	LVDS x 1, Dual Channel 24/48bit, up to 1920 x 1080
Display Interface	VGA x 1, up to 1920 x 1080 HDMI x 1, up to 3840 x 2160 @60Hz	VGA x 1, up to 1920 x 1080 HDMI x 1, up to 1920 x 1080
Multiple Display	Up to 3 Simultaneous Displays	
Audio		
CODEC	Realtek ALC897	
Audio Interface	Line-In/Line-Out/Mic	Line-In / Line-Out / Mic (Audio function not available for WITAS SKU)
Speaker	2W Amp.(Audio function not available for WITAS SKU)	
External I/O		
Ethernet	Intel®I210-AT, 1GbE RJ-45 x 2	
USB	USB 3.2 Gen 1 x 4	USB 3.2 Gen 1 x 1 USB 2.0 x 1
Serial Port	COM 2, COM 3 (RS-232/422/485, supports 5V/12V/RI)	
Video	VGA x 1, up to 1920 x 1080 HDMI x 1, up to 3840 x 2160 @60Hz	HDMI x 1
Internal I/O		
USB	USB 2.0 x 2	USB 2.0 x 4
Serial Port	COM 2 (RS-232/422/485, supports 5V/12V/RI) COM 1, COM 3, COM 4 (RS-232 only, supports RI only)	COM 1, COM 4, COM 5, COM 6 (RS-232, supports RI only)
Video	LVDS x 1 (Q170 sku support only) LVDS Inverter 5V/12V @2A	LVDS x 1 LVDS Inverter 5V/12V@2A VGA x 1
SATA	SATA 6Gb/s x 2 +5V SATA Power Connector x 1 (Total up to 5V@2A) (Up to 5V@1A, shared with 2 x 2.5" SSD as limitation with 170X0000592)	SATA 3Gb/s x 1 (Default) (up to SATA x 2 shared with mSATA, BOM Optional)
Audio	Audio Header x 1	Audio Header x 1 (Optional, audio function not available for WITAS SKU)
DIO/GPIO	GPIO 8-bit	GPIO 16-bits
SMBus/I2C	SMBus/I2C (Default: SMBus)	
Touch	4/5/8-wire Touch Controller x 1 (Optional)	
Fan	4 Pin Smart Fan	DC Fan x 1
SIM	Micro SIM x 1 (Optional)	SIM x 1
Front Panel	Power Button, Reset Button,	Power LED, SATA LED, Buzzer
Others	Micro-SD x 1 (Optional, only E3800 series) PCI-104 x 1 (Optional, only E3800 series) LPT (SPP/EPP/ECP) x 1 (Optional, co-lay with GPIO, selected by BIOS)	
Expansion		
Mini PCI-E/mSATA	Full Size mSATA/mPCIe (Default: mSATA) (H110 SKU mPCIe by BOM Optional, Q170 SKU mPCIe selected by BIOS)	Full Size mPCIe x 1 Full Size mSATA x 1
M.2		
Others		
Environment & Certification		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) W2 Support (E3845 SKU only)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	393,440	358,806
EMC	CE/FCC Class A	





Model	EPIC-ADN9
System	
Form Factor	4" EPIC Board
CPU	Intel Atom® x7000E Series/Intel® Processor N Series/Intel® Core™ i3-N305 Processors: Intel® Core™ i3-N305 (8C/8T, up to 3.8 GHz, TDP 15W) Intel Atom® x7425E (4C/4T, up to 3.4 GHz, TDP 12W) Intel® Processor N97 (4C/4T, up to 3.6 GHz, TDP 12W) Intel® Processor N50 (2C/2T, up to 3.4 GHz, TDP 6W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR4 3200MHz Single-Channel SODIMM x 1, up to 16GB
BIOS	UEFI
Wake On Lan	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimension	4.53" x 6.50" (115mm x 165mm)
OS Support	Windows® 10 (64-bit) Ubuntu 22.04.2 LTS/Kernel 5.19
Power	
Power Requirement	+9-24V or +12V
Power Supply Type	AT/ATX
Connector	2-Pin Phoenix Connector
Power Consumption	Intel® Core™ i3-N305, DDR4 16GB, 1.87A+24V (Typical) Intel® Core™ i3-N305, DDR4 16GB, 2.66A +24V (Max)
Display	
Controller	Intel® UHD Graphics
LVDS/eDP	24/48-bit Dual-Channel LVDS x 1, up to 1920 x 1080 eDP 1.4 x 1 , up to 1920 x 1080 (Optional)
Display Interface	HDMI 1.4 x 1, up to 3840 x 2160 @30Hz DP 1.2 x 1, up to 3840 x 2160 @144Hz or VGA x 1, up to 1920 x 1080
Multiple Display	Up to 3 Simultaneous Displays
Audio	
CODEC	Realtek ALC897
Audio Interface	Line-In / Line-Out / MIC
Speaker	5W Speaker (Optional)
External I/O	
Ethernet	RJ-45 for Intel® I226-V 2.5GbE x 2 (Standard: 2 Ports, Advanced: 4 Ports)
USB	USB 3.2 Gen 2 x 2
Serial Port	COM 1, COM 2 (RS-232/422/485, support 5V/12V/RI)
Video	HDMI 1.4 x 1 DP 1.2 x 1
Internal I/O	
USB	USB 2.0 x 4
Serial Port	COM 3, COM 4, COM 5, COM 6 (RS-232, support RI only)
Video	LVDS / eDP x 1 (Default : LVDS) Inverter x 1 (5V/12V@2A)
SATA	SATA 6.0Gbps x 1 (Default) (up to SATA x 2 shared with mSATA, BOM Optional)
Audio	Audio Header x 1
DIO/GPIO	GPIO 16-bits
SMBus/I2C	SMBus / I2C (Default : SMBus)
Touch	—
Fan	4 Pin Smart Fan
SIM	Nano SIM x 1
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer
Others	—
Expansion	
Mini PCI-E/mSATA	Full Sized mPCIe x 1 Full Sized mSATA x 1
M.2	M.2 2242 B-Key x 1 (PCIe 2.0 [x1] + USB 2.0)
Others	—
Environment & Certification	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	364,565



# Board Level Products

## SubCompact Boards



Model	GENE-ADN6	GENE-RAP6
System Form Factor	3.5" SubCompact Board	
CPU	Intel Atom® x7000E Series, Intel® Processor N Series, Intel® Core™ i3-N305 Processors: Intel® Core™ i3-N305 (8C/8T, up to 3.8 GHz, 15W) Intel Atom® x7425E (4C/4T, up to 3.4 GHz, 12W) Intel® Processor N97 (4C/4T, up to 3.6 GHz, 12W) Intel® Processor N50 (2C/2T, up to 3.4 GHz, 6W)	13th Generation Intel® Core™ i3-series Processors: Intel® Core™ i7-1370PE (6PC+8EC/20T, 1.90 GHz, 28W) Intel® Core™ i7-1370PRE (6PC+8EC/20T, 1.90 GHz, 28W) Intel® Core™ i5-1340PE (4PC+8EC/16T, 1.80 GHz, 28W) Intel® Core™ i5-1335UE (2PC+8EC/12T, 1.30 GHz, 15W) Intel® Core™ i3-1320PE (4PC+4EC/12T, 1.70 GHz, 28W) Intel® Processor U300E (1PC+4EC/6T, 1.10 GHz, 15W)
Chipset	Integrated with Intel® SoC	
Memory Type	DDR5 4800, Single Channel SODIMM x 1, Max.16GB, Non-ECC	DDR5 4800, Dual Channel SODIMM x 2, Max. 64GB, Non-ECC
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM 2.0 (Optional)	
RTC Battery	Lithium Battery 3V/240mAH	
Dimensions	5.75" x 4" (146mm x 101.7mm), 0.94 lbs (0.43 kg)	
OS Support	Windows 10 (64bit) Ubuntu 22.04 / Kernel 5.15.0-25-generic	Windows 10/11 (64bit) Ubuntu 22.04.2/5.19.0-32-generic
Power		
Power Requirement	+9V~36V (Optional: +12V)	
Power Supply Type	AT/ATX	
Connector	Phoenix 2-pin Connector	
Power Consumption	Intel® Core™ i3-N305, DDR5 16GB x 1, 3.80A@ +12V (TYPICAL) Intel® Core™ i3-N305, DDR5 16GB x 1, 5.48A@ +12V (MAX)	Intel® Core™ i7-1370PE, DDR5 32GB x 2, 5.33A@ +12V (TYPICAL) Intel® Core™ i7-1370PE, DDR5 32GB x 2, 8.55A@ +12V (MAX)
Display		
Controller	Intel® UHD Graphics	Intel® Iris® Xe Graphics Intel® UHD Graphics
LVDS/eDP	LVDS x 1, Dual Channel 18/24bit, up to 1920 x1080	LVDS x 1, Dual Channel 18/24bit, up to 1920 x 1080 eDP 1.4 x 1, up to 3840 x 2160 (Optional)
Display Interface	HDMI 1.4 x 1, up to 3840 x2160 @30Hz VGA x 1, up to 1920 x1080	HDMI 2.1 x 1, up to 8K x 4K@60Hz or 4K x 2K@120Hz DP 1.4 x 1, up to 7680 x 4320@60Hz 30bpp (support DP++)
Multiple Display	Up to 4 Simultaneous Displays	
Audio		
Codec	Realtek ALC897	
Audio interface	Line-In / Line-Out / Mic (Audio function not available for WITAS SKU)	
Speaker		
External I/O		
Ethernet	Intel® i226 2.5G, RJ-45 x 3	Intel® I219 1GbE, RJ-45 x 1 Intel® I226 2.5GbE, RJ-45 x 1
USB	USB3.2 Gen 2 x 2	USB 3.2 Gen 2 x 3 USB Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A)
Serial Port		
Video	HDMI 1.4 x 1, VGA x 1	HDMI 2.1 x 1, DP 1.4 x 1
Internal I/O		
USB	USB 2.0 x 4	
Serial Port	COM1 , COM2 (RS232/422/485, supports 5V/12V/RI) COM3 , COM4 (RS232)	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/RI) COM 3, COM 4 (RS-232/422/485)
Video	LVDS x 1, Inverter x 1 (12V/2A)	LVDS x 1 eDP x 1 Inverter x 1 (12V/2A)
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1	
Audio	Audio Header x 1 (Optional, audio function not available for WITAS SKU)	
DIO/GPIO	GPIO 8-bit	
SMBus/I2C	SMBus / I2C x 1 (Default: SMBus)	
Touch		
Fan	4pins Smart Fan x 1	
Sim	Nano SIM x 1	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others		
Expansion		
Mini PCIe/mSATA	Full-size mSATA / mPCIe x 1 (Default: mSATA, select by BIOS)	
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0) M.2 3052 B-Key x 1 (USB3.2 Gen2 + USB2.0)	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 3052/3042/2242 B-Key x 1 (PCIe 3.0 [x2]/SATA + USB3.2), Default: SATA (selected by BOM) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0) FPC x 1 (PCIe 4.0 [x4] x1), Only support Graphic or NVME
Others		
Environment & Certification		
Operating Temp.	-4°F ~ 158°F (-20°C ~ 70°C) WITAS2: -40°F ~ 185°F (-40°C ~ 85°C)	32°F ~ 140°F (0°C ~ 60°C) WITAS2: -40°F ~ 185°F (-40°C ~ 85°C)
Storage Temp.	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	337,963	
EMC	CE/FCC Class A	
Note		



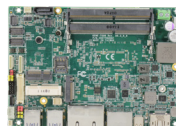


Model	GENESYSM-RAP6	GENE-ADP6
System	3.5" SubCompact Board System	
Form Factor	3.5" SubCompact Board	
CPU	13th Generation Intel® Core™ iU-series Processors: Intel® Core™ i7-1370PE (6PC+8EC/20T, 1.90 GHz, 28W) Intel® Core™ i5-1340PE (4PC+8EC/16T, 1.80 GHz, 28W) Intel® Core™ i3-1320PE (4PC+4EC/12T, 1.70 GHz, 28W)	12th Generation Intel® Core™/Celeron® Processors: Intel® Core™ i7-1270PE (4PC+8EC/16T, 1.80 GHz, 28W) Intel® Core™ i7-1265UE (2PC+8EC/12T, 1.70 GHz, 15W) Intel® Core™ i5-1250PE (4PC+8EC/16T, 1.70 GHz, 28W) Intel® Core™ i3-1220PE (4PC+4EC/12T, 1.50 GHz, 28W) Intel® Celeron® Processor 7305E (1PC+4EC/5T, 1.00 GHz, 15W)
Chipset	Integrated with Intel® SoC	
Memory Type	DDR5 4800, Dual Channel SODIMM x 2, Max. 64GB, Non-ECC	
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM 2.0 (Optional)	
RTC Battery	Lithium Battery 3V/240mAh	
Dimensions	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)	5.75" x 4" (146mm x 101.7mm), 0.94 lbs (0.43 kg)
OS Support	Windows 10/11 (64bit) Ubuntu 22.04.2/5.19.0-32-generic	Windows 10/11 (64bit) Ubuntu 22.04/Kernel 5.15.0-25-generic
Power	+9~36V	
Power Requirement	+9V~36V (Optional: +12V)	
Power Supply Type	ATX	
Connector	DC Jack Connector	Phoenix 2-pin Connector
Power Consumption	Intel® Core™ i7-1370PE, DDR5 32GB x 2, 5.33A@ +12V (TYPICAL) Intel® Core™ i7-1370PE, DDR5 32GB x 2, 8.55A@ +12V (MAX)	Intel® Core™ i7-1270PE, DDR5 32GB x 2, 5.72A @+12V (Typical) Intel® Core™ i7-1270PE, DDR5 32GB x 2, 7.95A @+12V (Max)
Display Controller	Intel® Iris® Xe Graphics, Intel® UHD Graphics	
LVDS/eDP	LVDS x 1, Dual Channel 18/24bit, up to 1920 x 1080 eDP 1.4 x 1, up to 3840 x 2160 (Optional)	
Display Interface	HDMI 2.1 x 1, up to 8K x 4K@60Hz or 4K x 2K@120Hz DP 1.4 x 1, up to 7680 x 4320@60Hz 30bpps (support DP++) Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A)	HDMI 2.1 x 1, up to 8K x 4K@60Hz or 4K x 2K@120Hz DP 1.4 x 1, up to 7680 x 4320@60Hz 30bpps (support DP++)
Multiple Display	Up to 3 Simultaneous Displays	
Audio Codec	Realtek ALC897	
Audio Interface	Line-in/Line-out/MIC	
Speaker	Line-in / Line-Out / Mic (Audio function not available for WITAS SKU)	
External I/O	—	
Ethernet	Intel® I219 1GbE, RJ-45 x 1 Intel® I226 2.5GbE, RJ-45 x 1	
USB	USB 3.2 Gen 2 x 3 USB Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A) USB2.0 x 2	USB 3.2 Gen 2 x 3 USB Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A)
Serial Port	COM1, COM2 (RS232/422/485, supports 5V/12V/Ri)	
Video	HDMI 2.1 x 1, DP 1.4 x 1	
Internal I/O	—	
USB	USB 2.0 x 4	
Serial Port	COM 1, COM 2 (RS-232/422/485, supports 5V/12V/Ri) COM 3, COM 4 (RS-232/422/485)	
Video	LVDS x 1 eDP x 1 Inverter x 1 (12V/2A)	
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1	
Audio	Audio Header x 1	
DIO/GPIO	GPIO 8-bit	
SMBus/I2C	SMBus/I2C x1 (Default: SMBus)	
Touch	—	
Fan	4pins Smart Fan x1	
Sim	Nano SIM x 1	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—	
Expansion	—	
Mini PCIe/mSATA	—	
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 3052/3042/2242 B-Key x 1 (PCIe 3.0 [x2]/SATA + USB3.2), Default: SATA(selected by BOM) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0)	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 3052/3042/2242 B-Key x 1 (PCIe 3.0 [x2]/SATA + USB 3.2), Default: SATA (selected by BOM) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0) FPC x 1 (PCIe 4.0 [x4] x 1), Only support Graphic or NVME
Others	—	
Environment & Certification	—	
Operating Temp.	32°F ~ 122°F (0°C ~ 50°C) 0.5 m/s air flow	32°F ~ 140°F (0°C ~ 60°C) WITAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temp.	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	338,172	344,735
EMC	CE/FCC Class A	
Note	—	



# Board Level Products

## SubCompact Boards



Model	GENESYSM-ADP6	GENE-TGU6
System	3.5" SubCompact Board System	
Form Factor	3.5" SubCompact Board	
CPU	Intel® 12th Generation Core™/Celeron CPU Intel® Core™ i7-1270PE (4PC+8EC/16T, 1.80 GHz, 28W) Intel® Core™ i5-1250PE (4PC+8EC/16T, 1.70 GHz, 28W) Intel® Core™ i3-1220PE (4PC+4EC/12T, 1.50 GHz, 28W)	11th Generation Intel® Core™/Celeron® Processors: Intel® Core™ i7-1185G7E (4C/8T, 1.80 GHz, 15W) Intel® Core™ i5-1145G7E (4C/8T, 1.5 GHz, 15W) Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W) Intel® Celeron® 6305E (2C/2T, 1.80 GHz, 15W) Intel® Core™ i7-1185G9E (4C/8T, 1.80 GHz, 15W)
Chipset	Integrated with Intel® SoC	
Memory Type	DDR5 4800 MHz, Dual Channel SODIMM x 2, up to 64GB	DDR4 3200, Dual Channel SODIMM x 2, Max.64GB, Non-ECC
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM2.0 (NPCT750AABYX)	
RTC Battery	Lithium Battery 3V/240mAh	
Dimensions	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)	5.75" x 4" (146mm x 101.7mm), 0.94 lbs (0.43 kg)
OS Support	Windows 10/11 (64bit) Linux Ubuntu 20.04/Kernel 5.15	Windows 10 (64bit) Linux Ubuntu 20.04.2/Kernel 5.8
Power	+9-36V	
Power Requirement	+9V-36V (Optional: +12V)	
Power Supply Type	ATX	
Connector	DC Jack Connector	Phoenix 2-pin Connector
Power Consumption	Intel® Core™ i7-1270 PE, DDR5 32GB x 2, 5.72A@ +12V(TYPICAL) Intel® Core™ i7-1270 PE, DDR5 32GB x 2, 7.95A@ +12V(MAX)	Intel® Core™ i7-1185G7E, DDR4 3200MHz 32GB x 2, 4.96A @+12V (Typical) Intel® Core™ i7-1185G7E, DDR4 3200MHz 32GB x 2, 7.32A @+12V (Max)
Display	Intel® Iris® Xe Graphics Intel® UHD Graphics	
Controller	Intel® Iris® Xe Graphics Intel® UHD Graphics	
LVDS/eDP	LVDS x 1, Dual Channel 18/24bit, up to 1920 x 1080 eDP 1.4 x 1, up to 3840 x 2160 (Optional)	
Display Interface	HDMI 2.1 x 1, up to 8K x 4K@60Hz or 4K2K 120Hz DP 1.4 x 1, up to 7680 x 4320@60Hz 30bps (support DP++) Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A)	HDMI 2.0 x 1, up to 4K x 2K@60Hz DP 1.4 x 2, up to 4K x 2K@60Hz DP 1.4 x 1 (via USB Type-C), up to 4K x 2K@60Hz
Multiple Display	Up to 3 Simultaneous Displays	
Audio	Up to 4 Simultaneous Displays	
Codec	Realtek ALC897	
Audio Interface	Line-In/Line-out/MIC	Line-In / Line-Out / Mic (Audio function not available for WITAS SKU)
Speaker	—	
External I/O	—	
Ethernet	Intel® i219, 10/100/1000Base Intel® i226, 10/100/2500Base	Intel® I219 1GbE, RJ-45 x1 Intel® I225/I226 2.5GbE, RJ-45 x 1
USB	USB3.2 Gen 2 x 3 USB Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A) USB2.0 x 2	USB 3.2 Gen 2 x 4 USB Type-C x 1 (USB 3.2 Gen 2, DP 1.4, PD 5V/3A)
Serial Port	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)	—
Video	HDMI 2.1 x 1 DP 1.4 x 1	HDMI 2.0 x 1, DP 1.4 x 2, Type-C DP 1.4 x 1
Internal I/O	—	
USB	USB 2.0 x 2	
Serial Port	COM 1, COM 3, COM 4 (RS-232/422/485) COM 2 (RS-232/422/485, supports 5V/12V/RI)	
Video	LVDS/eDP x 1 (Default: LVDS) Inverter x 1 (12V/2A)	
SATA	SATA III x 1 +5V SATA Power Connector x 1	
Audio	Audio Header x 1	Audio Header x 1 (Optional, audio function not available for WITAS SKU)
DIO/GPIO	GPIO 8-bit	
SMBus/I2C	SMBus/I2C x1 (Default: SMBus)	
Touch	4/5/6-wire Touch Controller x 1 (Optional)	
Fan	4pins Smart Fan x 1	
Sim	Nano SIM x 1	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—	
Expansion	—	
Mini PCIe/mSATA	Full-size mSATA / mPCIe x 1 (Default: mSATA, select by BIOS)	
M.2	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 3052/3042/2242 B-Key x 1 (PCIe 3.0 [x2]/SATA + USB 3.2), Default: SATA (selected by BOM) M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0)	M.2 2280 M-Key x 1 (PCIe 4.0 [x4] x 1) M.2 2230 E-Key x 1 (PCIe 3.0 [x1], USB 2.0)
Others	—	
Environment & Certification	—	
Operating Temp.	32°F - 122°F (0°C - 50°C) 0.5 m/s air flow	32°F - 140°F (0°C - 60°C) WITAS 2: -40°F - 185°F (-40°C - 85°C) on selected CPU SKU
Storage Temp.	-40°F - 185°F (-40°C - 85°C)	
Operating Humidity	0% - 90% relative humidity, non-condensing	
MTBF (Hours)	344,735	329,884
EMC	CE/FCC Class A	





Model	GENESYSM-TG06	GENE-WHU6
System	3.5" SubCompact Board System	
Form Factor	3.5" SubCompact Board	
CPU	Intel® 11th Generation Core™/Celeron CPU i7-1185G7E (4C/8T, 1.80GHz, up to 4.40GHz, TDP-up 28W) i5-1145G7E (4C/8T, 1.50GHz, up to 4.10GHz, TDP-up 28W) i3-1115G4E (2C/4T, 2.20GHz, up to 3.90GHz, TDP-up 28W) Celeron® 6305E (2C/2T, 1.80GHz, TDP 15W)	Intel® 8th Generation Core™ / Celeron® Processors: i7-8655UE (4C/8T, 1.70GHz, 15W) i5-8365UE (4C/8T, 1.60GHz, 15W) i3-8145UE (2C/4T, 2.20GHz, 15W) 4305UE (2C/2T, 2.00GHz, 15W)
Chipset	Integrated with Intel® SoC	
Memory Type	DDR4 up to 3200MHz, Dual Channel SODIMM x 2, up to 64GB, Support IBCEC(select SKUs)	DDR4 2400, Dual Channel SODIMM x 2, Max.64GB, Non-ECC
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM2.0	
RTC Battery	Lithium Battery 3V/240mAh	
Dimensions	7.00" x 5.28" x 1.97" (178.0mm x 134.1mm x 50.0mm)	5.75" x 4" (146mm x 101.7mm)
OS Support	Windows 10 (64bit) Linux Ubuntu 20.04.3(LO)/Kernel 5.13	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
Power	+9V~36V (Optional: +12V)	
Power Requirement	+9V~36V (Optional: +12V)	
Power Supply Type	ATX/ATX	
Connector	DC Jack Connector	Phoenix 2-pin Connector
Power Consumption	Intel® i7-1185G7E, DDR4 3200MHz 32GB x 2, 4.96A@ +12V(TYPICAL) Intel® i7-1185G7E, DDR4 3200MHz 32GB x 2, 7.32A@ +12V(MAX)	Intel® i7-8665UE, DDR4 2400MHz 16GB x2, 4.83A@ +12V (TYPICAL) Intel® i7-8665UE, DDR4 2400MHz 16GB x2, 7.3A@ +12V (MAX)
Display	Intel® Iris® Xe Graphics	
Controller	Intel® UHD Graphics	Intel® UHD Graphics 610/620
LVDS/eDP	LVDS x 1, Dual Channel 18/24bit, up to 1920 x 1080 eDP 1.4 x 1, up to 1920 X 1200 (Optional)	
Display Interface	HDMI 2.0b x 1 DP1.4 x 2 Type-C DP1.4 x 1	HDMI 2.0 x 1, up to 3840 x 2160 VGA x 1, up to 2560 x 1440
Multiple Display	Up to 4 Simultaneous Displays	
Audio	Realtek ALC897/892	
Codect	Realtek ALC897	
Audio Interface	Line-in/Line-out/MIC (Optional)	Line-In / Line-Out / Mic (Audio function not available for WITAS SKU)
Speaker	—	
External I/O	—	
Ethernet	Intel® i219, 10/100/1000Base, RJ-45 x 1 Intel® i225/i226, 10/100/2500Base, RJ-45 x 1	Intel® i210 1GbE, RJ45 x1 Intel® i219, 1GbE, RJ45 x1
USB	USB3.2 Gen 2 x 4 USB3.2 Gen 2 Type C x 1 (PD 5V/3A) USB2.0 x 2	USB 3.2 Gen2 x 4
Serial Port	COM1 (RS232/422/485) COM2 (RS232/422/485, supports 5V/12V/RI)	
Video	HDMI 2.0b x 1, DP1.4 x 2, Type-C DP1.4 x 1	
Internal I/O	—	
USB	USB 2.0 x 2	
Serial Port	COM1 (RS232/422/485, support RI) COM2 (RS232/422/485, support 5V/12V/RI)	
Video	LVDS / eDP x 1 (Default: LVDS)	
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1	
Audio	Audio Header x 1 (Optional, Audio function not available for WITAS SKU)	
DIO/GPIO	GPIO 8-bit	
SMBus/I2C	SMBus / I2C x 1 (Default: I2C)	
Touch	4/5/8 wire Touch Controller x 1 (Optional)	
Fan	DC Fan x 1 (Option: Smart Fan x 1)	
Sim	Nano SIM x 1	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—	
Expansion	—	
Mini PCIe/mSATA	Full-Sized mSATA/mPCIe x 1 (default: mSATA, select with BIOS)	
M.2	M-Key 2280 x 1 (PCIex4) E-Key 2230 x 1 (PCIe, USB2.0)	M.2 2280 B-Key x1 (PCIe 3.0 [x2], SATA, USB2.0), Default: selected by BIOS M.2 2230 E-Key x 1 (PCIe 3.0 [x1], USB2.0)
Others	—	
Environment & Certification	—	
Operating Temp.	32°F ~ 122°F (0°C ~ 50°C)	32°F ~ 140°F (0°C ~ 60°C) WITAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temp.	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	329,884	354,194
EMC	CE/FCC Class A	
Note	—	



# Board Level Products

## SubCompact Boards



Model	GENESYS-WHU6	GENE-KBU6	GENE-SKU6
System Form Factor	3.5" SubCompact Board System		3.5" SubCompact Board
CPU	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC i7-8665UE (4C/8T, 1.7GHz, up to 4.4GHz, TDP 15W) i5-8365UE (4C/8T, 1.6GHz, up to 4.1GHz, TDP 15W) i3-8145UE (2C/4T, 2.2GHz, up to 3.9GHz, TDP 15W) Celeron® 4305UE (2C/2T, 2GHz, TDP 15W)	Intel® 7th Generation Core™ i7/Celeron Processor: Intel® i7-7600U (2C/4T, 2.80GHz, up to 3.90GHz, TDP-up 25W) Intel® i5-7300U (2C/4T, 2.60GHz, up to 3.50GHz, TDP-up 25W) Intel® i3-7100U (2C/4T, 2.40GHz, TDP-up 25W) Intel® Celeron 3965U (2C/2T, 2.20GHz, TDP-up 15W)	Intel® 6th Generation Core™ i7/Celeron Processor: Intel® i7-6600U (2C/4T, 2.6GHz, up to 3.4GHz, TDP-up 25W) Intel® i5-6300U (2C/4T, 2.4GHz, up to 3.0GHz, TDP-up 25W) Intel® i3-6100U (2C/4T, 2.3GHz, TDP-up 25W) Intel® Celeron 3955U (2C/2T, 2.20GHz, TDP-up 15W)
Chipset	Integrated with Intel® SoC		
Memory Type	DDR4 up to 2400MHz Dual Channel, SODIMM x 2, up to 64GB, Non-ECC	DDR4 up to 2133MHz, SODIMM x 1, up to 16GB, Non-ECC	
BIOS	UEFI		
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Security	TPM 2.0 (Optional)		
RTC Battery	Lithium Battery 3V/240mAh		
Dimensions	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)	5.75" x 4" (146mm x 101.7mm)	
OS Support	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.1	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10	
Power Requirement	+9-36V (Optional: +12V)		
Power Supply Type	ATX	AT/ATX	
Connector	DC Jack Connector	Phoenix 2-pin Connector	
Power Consumption	Intel® i7-8665UE, DDR4 2400 MHz 16GB, 2.8A@+12V(Typical)	Intel® i7-7600U, DDR4 2666MHz 32GB, 3.26A@+12V(TYPICAL) Intel® i7-7600U, DDR4 2666MHz 32GB, 4.22A@+12V(MAX)	Intel® i7-6600U, DDR4 2666MHz 32GB, 3.42A@+12V(TYPICAL) Intel® i7-6600U, DDR4 2666MHz 32GB, 4.24A@+12V(MAX)
Display Controller	Intel® UHD Graphics 610/620	Intel® HD Graphics 610/620	Intel® HD Graphics 510/520
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080		
Display Interface	HDMI2.0a x 1 VGA x 1	Default: DP1.2 x 1 (up to 3840 x 2160) + DVI-D x 1 Optional: DVI-I x 1 (with VGA signal)	
Multiple Display	Up to 2 Simultaneous Displays		
Audio	Up to 3 Simultaneous Displays		
Codec	Realtek ALC897/892		
Audio Interface	Line-in/Line-out/MIC(Optional)	Line-In / Line-Out / Mic (Audio function not available for WITAS SKU)	
Speaker	—		
External I/O	—		
Ethernet	Intel® i210/i211 & i219, 10/100/1000Base, RJ-45 x2	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2	
USB	USB 3.2 Gen2 x4	USB 3.2 Gen 1 x 4	
Serial Port	—		
Video	HDMI2.0a x 1, VGA x 1		
Internal I/O	—		
USB	USB 2.0 x 2		
Serial Port	COM1 (RS232/422/485, supports RI) (Optional) COM2 (RS232/422/485, supports 5V/12V/RI) (Optional)	COM1 (RS232), COM2, COM3, COM4 (RS232/422/485, support 5V/12V/RI)	
Video	LVDS x 1		
SATA	SATA III x 1, +5V SATA Power Connector x 1		
Audio	Audio Header x 1 (optional)	Audio Header x 1 (Audio function not available for WITAS SKU)	
DIO/GPIO	8-bit		
SMBus/I2C	I2C/ SMBus x 1 (Default: I2C)	SMBus x 1	
Touch	4/5/8-wire Touch Controller x 1 (optional)		
Fan	DC Fan x 1 (optional: Smart Fan)		DC Fan x 1 (optional: Smart Fan) / Micro SIM x 1 (Optional)
Sim	Nano SIM x 1	Micro SIM x 1 (Optional)	
Front Panel	PWR LED, Power Button	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	—		
Expansion	—		
Mini PCIe/mSATA	Full-size mSATA/mPCIe x 1 (Default mSATA, select by BIOS)	Full-size mPCIe x 1 Half size mSATA/mPCIe x 1 (Default mSATA, select by BIOS)	
M.2	M.2 2280 B-Key x1 (PCIe x 2, SATA, USB2.0, selected by BIOS) M.2 2230 E-Key x 1 (PCIe, USB2.0)	—	
Others	—		
Environment & Certification	—		
Operating Temp.	32°F ~ 122°F (0°C ~ 50°C)	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C), WITAS1 -4°F ~ 158°F (-20°C ~ 70°C)
Storage Temp.	-40°F ~ 185°F (-40°C ~ 85°C)		
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
MTBF (Hours)	354,194	375,577	
EMC	CE/FCC Class A		
Note	—		



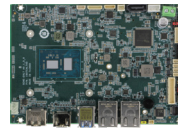




Model	GENE-SKU6 Rev. B	GENE-EHL5
System Form Factor	3.5" SubCompact Board	
CPU	Intel® 6th Generation Core™/Celeron Processor: Intel® i7-6600U (2C/4T, 2.6GHz, up to 3.4GHz, TDP-up 25W) Intel® i5-6300U (2C/4T, 2.4GHz, up to 3.0GHz, TDP-up 25W) Intel® i3-6100U (2C/4T, 2.3GHz, TDP-up 25W) Intel® Celeron 3955U (2C/2T, 2.20GHz, TDP-up 15W)	Intel Atom® x6000E series, Pentium®, and Celeron® N and J series Processors: Intel Atom® x6425RE (4C/4T, 1.90 GHz, 12W) Intel Atom® x6425E (4C/4T, 2.00 GHz, 12W) Intel Atom® x6211E (2C/2T, 1.30 GHz, 6W) Intel® Pentium® Processor J6426 (4C/4T, 2.00 GHz, 10W) Intel® Celeron® Processor J6412 (4C/4T, 2.00 GHz, 10W) Intel® Celeron® Processor N6210 (2C/2T, 1.20 GHz, 6.5W)
Chipset	Integrated with Intel® SoC	
Memory Type	DDR4 up to 2133MHz, SODIMM x 1, up to 16GB, Non-ECC	DDR4 3200, Single Channel SODIMM x 1, Max. 32GB, Non-ECC *IBECC supported by selected CPU SKU
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM 2.0 (Optional)	
RTC Battery	Lithium Battery 3V/240mAh	
Dimensions	5.75" x 4" (146mm x 101.7mm)	5.75" x 4" (146mm x 101.7mm), 1.10 lbs (0.50 kg)
OS Support	Windows 7/10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10	Windows 10 (64bit) Linux Ubuntu 20.04.3(IOT)/Kernel 5.13
Power	+9-36V (Optional: +12V) AT/ATX	
Power Requirement	Phoenix 2-pin Connector	
Power Supply Type	Intel Atom® x6425E, DDR4 32GB, 3.26A @+12V (Typical) Intel Atom® x6425E, DDR4 32GB, 3.42A @+12V (Max)	
Connector	Intel Atom® x6425E, DDR4 32GB, 3.26A @+12V (Typical) Intel Atom® x6425E, DDR4 32GB, 3.42A @+12V (Max)	
Power Consumption	Intel® i7-6600U, 6600U, DDR4 2400MHz 16GB, 0.73A at +36V	Intel Atom® x6425E, DDR4 32GB, 3.26A @+12V (Typical) Intel Atom® x6425E, DDR4 32GB, 3.42A @+12V (Max)
Display	Intel® UHD Graphics for 10th Gen Intel® Processors	
Controller	Intel® HD Graphics 510/520	Intel® UHD Graphics for 10th Gen Intel® Processors
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080	LVDS x 1, Dual Channel 18/24bit, up to 1920 x 1080 eDP 1.3 x 1, up to 1920 x 1200 (Optional)
Display Interface	VGA x1, Up to 1920 x 1200 HDMI 1.4 x1, up to 4096 x 2304	HDMI 2.0 x 1, up to 3840 x 2160@60Hz DP 1.4 x 1, up to 3840 x 2160@120Hz (support DP++) VGA x 1, up to 2560 x 1440 (Optional)
Multiple Display	Up to 3 Simultaneous Displays	
Audio	Realtek ALC256	
Codec	Realtek ALC892/897	Realtek ALC256
Audio Interface	Line-In / Line-Out / Mic (Audio function not available for WITAS SKU)	
Speaker	3W Amplifier (Audio function not available for WITAS SKU)	2W Speaker (Audio function not available for WITAS SKU)
External I/O	USB 2.0 x 2	
Ethernet	Intel® i210, 10/100/1000Base-TX, RJ-45 x 2	Intel® I210 1GbE, RJ45 x 2
USB	USB 3.2 Gen 1 x 4	USB 3.2 Gen 2 x 2
Serial Port	HDMI 2.0 x 1 DP 1.4 x 1 (Optional:VGA x 1)	
Video	HDMI 1.4 x 1 VGA x 1	HDMI 2.0 x 1 DP 1.4 x 1 (Optional:VGA x 1)
Internal I/O	USB 2.0 x 2	
USB	COM 1, COM 4 (RS-232/422/485) COM 2, COM 3 (RS-232/422/485, supports 5V/12V/R)	
Serial Port	COM1 (RS232) COM2, COM3, COM4 (RS232/422/485, support 5V/12V/R)	COM 1, COM 4 (RS-232/422/485) COM 2, COM 3 (RS-232/422/485, supports 5V/12V/R)
Video	LVDS x 1	LVDS/eDP x 1 (Default: LVDS) Inverter x 1 (12V/2A)
SATA	SATA III x 1 +5V SATA Power Connector x 1	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1 (Audio function not available for WITAS SKU)	Audio Header x 1 (Optional, audio function not available for WITAS SKU) Speaker Header x 2 (Optional, audio function not available for WITAS SKU)
DIO/GPIO	8-bit	GPIO 16-bits (8 In / 8 Out)
SMBus/I2C	I2C/SMBus x 1 (Default: SMBus)	
Touch	4/5/8-wire Touch Controller x 1 (optional)	
Fan	DC Fan x 1 (optional: Smart Fan)	4pins Smart Fan x 1 Nano SIM x 1
Sim	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Front Panel	eMMC5.1 32GB CANBUS x 2, TX/RX (Celeron J6412 and Celeron N6210 don't support CANBUS)	
Others	—	
Expansion	Full-size mSATA/mPCIe x 1 (Default mPCIe, select by BIOS) Half size mSATA/mPCIe x 1 (Default mSATA, select by BIOS)	
Mini PCIe/mSATA	—	
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1], USB 2.0) M.2 2242 B-Key x 1 (PCIe 3.0 [x2]/SATA, Default: PCIe [x2]) M.2 2280 B-Key x 1 (PCIe 3.0 [x1], USB 2.0, PCIe 3.0 [x2] select by BIOS) M.2 3052 B-Key x 1 (USB 3.2 Gen 2, USB2.0)	
Others	BIO x 1 (optional)	
Environment & Certification	—	
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C) WITAS 2: -40°F ~ 185°F (-40°C ~ 85°C) on selected CPU SKU
Storage Temp.	-40°F ~ 176°F (-40°C ~ 80°C)	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	371,039	335,427
FMC	CF/FCC, Class A	

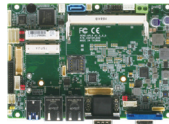
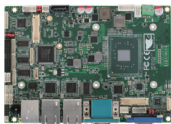
# Board Level Products

## SubCompact Boards



Model	GENESYSM-EHL5	GENE-EHL7
System	3.5" SubCompact Board System	
Form Factor	3.5" SubCompact Board	
CPU	Intel Atom® x6000E series, Pentium®, and Celeron® N and J series Processors: Intel Atom® x6425E (4C/4T, 2.00 GHz, 12W) Intel® Celeron® Processor J6412 (4C/4T, 2.00 GHz, 10W) Intel® Celeron® Processor N6210 (2C/2T, 1.20 GHz, 6.5W)	Intel Atom® x6000E series, Pentium®, and Celeron® N and J series Processors: x6413E (4C/4T, 1.50GHz, 9W) J6412 (4C/4T, 2.00GHz, 10W) N6210 (2C/2T, 1.20GHz, 6.5W)
Chipset	Integrated with Intel® SoC	
Memory Type	DDR4 up to 3200, Single Channel SODIMM x 1, Max. 32GB, Non-ECC *B-ECC supported by selected SOC	Single-Channel DDR4 3200MHz SODIMM x 1, Max. 32GB, Non-ECC *B-ECC supported by selected CPU SKU
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM 2.0	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh	
Dimensions	7.00" x 5.28" x 2.08" (178mm x 134.1mm x 53mm), Weight 1 kg	5.75" x 4" (146mm x 101.7mm), 0.83 lbs (0.38 kg)
OS Support	Windows 10 (64bit) Linux Ubuntu 20.04.3(OT)/Kernel 5.13	Windows 10 (64bit) Linux Ubuntu 20.04.5 / 5.15.0-46-generic
Power		
Power Requirement	+12V/+9-36V	+12V
Power Supply Type	ATX	AT/ATX
Connector	DC Jack Connector	Phoenix 2-pin Connector
Power Consumption	Intel Atom® x6425E, DDR4 32GB, 3.26A @+12V (Typical) Intel Atom® x6425E, DDR4 32GB, 3.42A @+12V (Max)	Intel Atom® x6413E, DDR4 32GB, 2.17A @+12V (Typical) Intel Atom® x6413E, DDR4 32GB, 2.72A @+12V (Max)
Display		
Controller	Intel® UHD Graphics for 10th Gen Intel® Processors	
LVDS/eDP	—	Dual-Channel 18/24-bit LVDS x 1, up to 1920 x 1080 eDP 1.3 x 1, up to 1920 x 1200 (Optional)
Display Interface	HDMI 2.0 x 1, up to 4K@60Hz VGA x 1, up to 2560 x 1440	HDMI 1.4 x 1, up to 3840 x 2160 @ 30Hz DP 1.4 x 1, up to 3840 x 2160 @ 120Hz
Multiple Display	Up to 2 Simultaneous Displays	Up to 3 Simultaneous Displays
Audio		
Codec	—	Realtek ALC897
Audio Interface	—	Line-In / Line-Out / Mic
Speaker	—	
External I/O		
Ethernet	Intel® I210 1GbE, RJ45 x 2	Realtek RTL8111H 1GbE, RJ-45 x 2
USB	USB 3.2 Gen 2 x 2 USB 2.0 x 2	USB 3.2 Gen2 x 2
Serial Port	COM 1 (RS-232/422/485) COM 2 (RS-232/422/485, supports 5V/12V/RI)	—
Video	HDMI 2.0 x 1 VGA x 1	HDMI 1.4 x 1 DP 1.4 x 1
Internal I/O		
USB	—	USB 2.0 x 4
Serial Port	—	COM1 (RS232/422/485, supports 5V/12V/RI) COM2 (RS232)
Video	—	LVDS / eDP x 1 (Default: LVDS) Inverter x 1 (12V/2A)
SATA	—	SATA 6Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1	
DIO/GPIO	GPIO 16-bit (Optional: with E-Base)	GPIO 8-bits
SMBus/I2C	SMBus/I2C x 1 (Default: SMBus)	
Touch	—	
Fan	4pins Smart Fan x 1	
Sim	Nano SIM x 1	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	eMMC5.1 32GB	—
Expansion		
Mini PCIe/mSATA	—	Full-size mPCIe x 1
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB 2.0) M.2 2242 B-Key x 1 (PCIe 3.0 [x2]/SATA), Default: PCIe [x2] M.2 2280 B-Key x 1 (PCIe 3.0 [x1] + USB 2.0) M.2 3052 B-Key x 1 (USB 3.2 Gen 2)	M.2 2230 E-Key x 1 (PCIe 3.0 [x1], USB2.0) M.2 2280 M-Key x 1 (PCIe 3.0 [x2] / SATA), SATA select by BOM
Others	—	
Environment & Certification		
Operating Temp.	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s air flow	32°F ~ 140°F (0°C ~ 60°C)
Storage Temp.	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	335,427	484,355
EMC	CE/FCC Class A	





Model	GENE-APL5	GENE-APL6
System	3.5" SubCompact Board	
Form Factor	3.5" SubCompact Board	
CPU	Intel® Atom®/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, 6W) Celeron N3350 (2C/2T, 1.10GHz, up to 2.40GHz, 6W) Atom E3950 (4C/4T, 1.66GHz, up to 2.00GHz, 9.5W) Atom E3940 (4C/4T, 1.60GHz, up to 1.80GHz, 9.5W) Atom E3930 (2C/2T, 1.30GHz, up to 1.80GHz, 6.5W)	Intel® Atom®/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, 6W) Celeron N3350 (2C/2T, 1.10GHz, up to 2.40GHz, 6W) Atom E3950 (4C/4T, 1.66GHz, up to 2.00GHz, 9.5W) Atom E3940 (4C/4T, 1.60GHz, up to 1.80GHz, 9.5W) Atom E3930 (2C/2T, 1.30GHz, up to 1.80GHz, 6.5W)
Chipset	Integrated with Intel® SoC	
Memory Type	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)	
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM 2.0 (Optional)	
RTC Battery	Lithium Battery 3V/240mAh	
Dimensions	5.75" x 4" (146mm x 101.7mm)	
OS Support	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10	
Power		
Power Requirement	+12V (Optional: +9-19V)	+9-36V (Optional: +12V)
Power Supply Type	AT/ATX	
Connector	Phoenix 2-pin Connector	
Power Consumption	Intel® E3950,DDR3L 1866MHz 8GB,2.03A @+12V(TYPICAL) Intel® E3950,DDR3L 1866MHz 8GB,2.45A @+12V(MAX)	Intel® E3950, DDR3L 1866MHz 8G, 2.36A @+12V(TYPICAL) Intel® E3950, DDR3L 1866MHz 8G, 2.41A @+12V(MAX)
Display	Intel® HD Graphics 500/505	
Controller	LVDS1 Dual Channel 18/24bit x 1, up to 1920 x 1080 LVDS2 Dual Channel 18/24bit x 1 (Optional), HDMI1.4b, up to 3840 x 2160	
LVDS/eDP	VGA x 1, up to 1920 x 1200 Up to 3 Simultaneous Displays	
Display Interface		
Multiple Display		
Audio	Realtek ALC897/892	
Codec	Line-In / Line-Out / Mic (Audio function not available for WITAS SKU)	
Audio Interface		
Speaker		
External I/O		
Ethernet	Intel® i210/i211, 10/100/1000Base, RJ-45 x 2	
USB	USB3.2 Gen 1 x 2	
Serial Port	COM1 (RS232, supports RI)	COM1 (RS232)
Video	VGA x 1	
Internal I/O		
USB	USB2.0 x 4	USB 2.0 x 2
Serial Port	COM2, COM3 (RS232/422/485, supports 5V/12V/RI),COM4 (RS232, supports RI)	COM2, COM3 (RS232/422/485, support 5V/12V/RI) COM4 (RS232)
Video	LVDS1 x 1, LVDS2/HDMI x 1 (Default: LVDS2)	
SATA	SATA III x 1, +5V SATA Power Connector x 1	
Audio	Audio Header x 1 (Audio function not available for WITAS SKU)	
DIO/GPIO	8-bit	
SMBus/I2C	I2C x1, SMBus x 1	I2C/SMBus x 1 (Default: I2C)
Touch	4/5/8-wire Touch Controller x 1 (optional)	
Fan	DC Fan x 1 (optional: Smart Fan)	
Sim	Micro SIM x 1 (Optional)	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	Parallel Port(SPP/EPP/ECP) x 1 (optional, select by BIOS)	eMMC 16G/32G/64G (optional) Parallel Port(SPP/EPP/ECP) x 1 (optional, select by BIOS)
Expansion		
Mini PCIe/mSATA	mSATA x 1 (Full-Size), Mini Card x 1 (Half-Size)	Full-size mPCIe x 1 Half-size mSATA x 1
M.2		
Others		
Environment & Certification		
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C), WITAS2 -40°F ~ 185°F (-40°C ~ 85°C)	
Storage Temp.	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	365,976	374,567
EMC	CE/FCC Class A	
Note		

# Board Level Products

## SubCompact Boards



Model	GENE-APL7	GENESYS-APL7
System	3.5" SubCompact Board System	
Form Factor	3.5" SubCompact Board System	
CPU	Intel® Atom®/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, 6W) Celeron N3350 (2C/2T, 1.10GHz, up to 2.40GHz, 6W) Atom E3950 (4C/4T, 1.66GHz, up to 2.00GHz, 9.5W) Atom E3940 (4C/4T, 1.60GHz, up to 1.80GHz, 9.5W) Atom E3930 (2C/2T, 1.30GHz, up to 1.80GHz, 6.5W)	Intel® Atom®/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, TDP 6W) Celeron N3350 (2C/2T, 1.10GHz, up to 2.40GHz, TDP 6W)
Chipset	Integrated with Intel® SoC	
Memory Type	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)	
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	—	
RTC Battery	Lithium Battery 3V/240mAh	
Dimensions	5.75" x 4" (146mm x 101.7mm)	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)
OS Support	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10	
Power		
Power Requirement	12V Only	+12V
Power Supply Type	AT/ATX	ATX
Connector	Phoenix 2-pin Connector	DC Jack Connector
Power Consumption	Intel® E3950, DDR3L 1866MHz 8GB, 4.15A @+12V(TYPICAL) Intel® E3950, DDR3L 1866MHz 8GB, 4.29A @+12V(MAX)	Intel® N4200, DDR3L 1600MHz 8GB, 1.61A@+12V(Typical)
Display	Intel® HD Graphics 500/505	
Controller	Intel® HD Graphics 500/505	
LVDS/eDP	LVDS1 Dual Channel 18/24bit x 1 (Optional: eDP1.3, up to 3840 x 2160) LVDS2 Dual Channel 18/24bit x 1, up to 1920 x 1080	—
Display Interface	VGA x 1, up to 1920 x 1200	VGA x 1
Multiple Display	Up to 3 Simultaneous Displays	—
Audio	—	
Codec	Realtek ALC897/892	—
Audio Interface	Line-in/Line-out/MIC	—
Speaker	2W Amplifier(Optional)	—
External I/O		
Ethernet	Realtek RTL8119-CG, 10/100/1000Base, RJ-45 x 2	
USB	USB 3.2 Gen1 x 2	
Serial Port	COM1 (RS232) COM2 (RS232/422/485, support 5V/12V/RI)	COM1 (RS232)
Video	VGA x 1	
Internal I/O		
USB	USB2.0 x 8	USB2.0 x 2
Serial Port	COM3-COM6 (RS232, COM3-COM5 support 5V/12V/RI) Optional: COM3-COM12	Optional: COM3, COM4 (RS232, COM3-COM5 support 5V/12V/RI) Optional: COM9-COM12
Video	LVDS1/eDP (Default: LVDS1) LVDS2	—
SATA	SATA III x 1 +5V SATA Power Connector x 1	
Audio	Audio Header x 1 Speaker Header x 2 (optional)	—
DIO/GPIO	8-bit	—
SMBus/I2C	I2C/SMBus x 1 (Default: SMBus)	
Touch	—	
Fan	DC Fan x 1 (optional: Smart Fan)	
Sim	Micro SIM x 1 (Optional)	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	PWR LED, Power Button
Others	—	
Expansion		
Mini PCIe/mSATA	Full-size mPCIe x 1 Full-Size mSATA/mPCIe x 1 (Default mSATA, BOM Option: mPCIe)	
M.2	—	
Others	—	
Environment & Certification		
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C)
Storage Temp.	-40°F ~ 185°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	409,108	126,000
EMC	CE/FCC Class A	
Note		





Model	GENE-BSW5	GENE-BT04
System Form Factor	3.5" SubCompact Board	
CPU	Intel® Celeron® N Processor: Intel® Celeron® N3160 (4C/4T, 1.60GHz, up to 2.24GHz)	Intel® Atom®/ Celeron® Processor: Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, 10W) Celeron® N2807 (2C/2T, 1.58GHz, up to 2.16GHz, 4.3W)
Chipset	Integrated with Intel® SoC	
Memory Type	DDR3L up to 1600MHz, SODIMM x 1, up to 8GB, Non-ECC	DDR3L up to 1333MHz, SODIMM x 1, up to 8GB, Non-ECC
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	—	
RTC Battery	Lithium Battery 3V/240mAh	
Dimensions	5.75" x 4" (146mm x 101.7mm)	
OS Support	Windows 7/10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10	Windows 7/10 (64bit) Linux Ubuntu 20.04.3/Kernel 5.11
Power	—	
Power Requirement	+12V Only	+12–24V
Power Supply Type	AT/ATX	
Connector	Phoenix 2-pin Connector	DC Jack Connector
Power Consumption	Intel®N3160, DDR3L 1600MHz 8GB, 1.63A @+12V(TYPICAL) Intel®N3160, DDR3L 1600MHz 8GB, 1.95A @+12V(MAX)	Intel® N2807, DDR3L 1600MHz 4G, 0.65A@ +12V(TYPICAL)
Display	—	
Controller	Intel® HD Graphics for Intel® Celeron® Processor N3000 Series	Intel® HD Graphics for Intel Atom® Processor Z3700 Series
LVDS/eDP	LVDS1 Dual Channel 18/24bit x 1, up to 1920 x 1080 LVDS2 Dual Channel 18/24bit x 1(Optional: HDMI1.4b)	—
Display Interface	VGA x 1, up to 1920 x 1200	HDMI x 2: HDMI 1(w/Audio), HDMI 2(w/o Audio)
Multiple Display	Up to 3 Simultaneous Displays	
Audio	—	
Codec	Realtek ALC897/892	—
Audio Interface	Line-In / Line-Out / Mic (Audio function not available for WITAS SKU)	—
Speaker	—	
External I/O	—	
Ethernet	Realtek RTL8119-CG, 10/100/1000Base-TX, RJ-45 x2	Intel® i210, 10/100/1000Base, RJ-45 x 4
USB	USB 3.2 Gen1 x 2	USB 2.0 x 2, USB 3.2 Gen 1 x 1
Serial Port	COM1 (RS232)	COM1 (RS232)
Video	VGA x 1 HDMI x1 (optional)	HDMI x2
Internal I/O	—	
USB	USB2.0 x 3	—
Serial Port	COM2, COM3 (RS232/422/485, supports 5V/12V/RI) COM4, COM5, COM6 (RS232)	—
Video	LVDS1 x 1 LVDS2/HDMI x 1(Default: LVDS2)	—
SATA	SATA III x 1 +5V SATA Power Connector x 1	
Audio	Audio Header x 1 (Audio function not available for WITAS SKU)	—
DIO/GPIO	8-bit	4-bit
SMBus/I2C	I2C/SMBus x1 (Default: SMBus)	—
Touch	4/5/8-wire Touch Controller x 1 (optional)	—
Fan	DC Fan x 1 (optional: Smart Fan)	—
Sim	—	SIM X1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	CFast™ x 1	
Expansion	—	
Mini PCIe/msATA	Full-size mPCIe x 1 Half size mPCIe/msATA x 1 (Default msATA, BOM Option: mPCIe)	Mini-Card x 1 (for USB only)
M.2	—	
Others	—	
Environment & Certification	—	
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temp.	-40°F ~ 176°F (-40°C ~ 80°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	325,391	155,000
EMC	CE/FCC Class A	
Note	—	



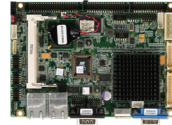
# Board Level Products

## SubCompact Boards



Model	GENE-BT05	GENE-BT06
System Form Factor	3.5" SubCompact Board	
CPU	Intel® Atom®/ Celeron® Processor: Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, TDP 10W) Celeron® N2930 (4C/4T, 1.83GHz, up to 2.16GHz, TDP 7.5W) Celeron® N2807 (2C/2T, 1.58GHz, up to 2.16GHz, TDP 4.3W) Atom® E3845 (4C/4T, 1.91 GHz, TDP 10W) Atom® E3825 (2C/2T, 1.33 GHz, TDP 6W)	
Chipset	Integrated with Intel® SoC	
Memory Type	DDR3L up to 1333MHz, SODIMM x 1, up to 8GB, Non-ECC	On Board DDR3L 1066/1333MHz, up to 4GB, Non-ECC
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Security	TPM 1.2(Optional)	
RTC Battery	Lithium Battery 3V/240mAh	
Dimensions	5.75" x 4" (146mm x 101.7mm)	
OS Support	Windows 7/10 (64bit) Linux Ubuntu 20.04.3/Kernel 5.11	
Power Requirement	+12V Only	+9~24V
Power Supply Type	AT/ATX	
Connector	Phoenix 2-pin Connector	
Power Consumption	Intel® J1900, DDR3L 1600MHz 8GB, 1.73A @ +12V(TYPICAL) Intel® J1900, DDR3L 1600MHz 8GB, 1.88A @ +12V(MAX)	Intel® E3845, DDR3L on board RAM 4GB, 2.10A @ +12V(TYPICAL) Intel® E3845, DDR3L on board RAM 4GB, 2.26A @ +12V(MAX)
Display Controller	Intel® HD Graphics for Intel Atom® Processor Z3700 Series	
LVDS/eDP	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080	
Display Interface	HDMI 1.4a x 1, up to 3840 x 2160 VGA x 1, up to 1920 x 1200	HDMI 1.4a, up to 3840 x 2160 (Optional: DP1.1a) VGA x 1, up to 1920 x 1200
Multiple Display	Up to 3 Simultaneous Displays	
Audio Codec	Realtek ALC897/892	
Audio Interface	Line-In / Line-Out / Mic (Audio function not available for WITAS SKU)	
Speaker	2W Amplifier (Optional, audio function not available for WITAS SKU)	
External I/O		
Ethernet	Intel® i210/i211, 10/100/1000Base, RJ-45 x 2	Intel® i210, 10/100/1000Base, RJ-45 x 2
USB	USB 3.2 Gen 1 x 1, USB 2.0 x 1	
Serial Port	COM1 (RS232)	
Video	VGA x 1, HDMI 1.4a x 1	VGA x 1, HDMI 1.4a x 1 (Optional)
Internal I/O		
USB	USB2.0 x 2	
Serial Port	COM2, COM3 (RS232/422/485, supports 5V/12V/RI), COM4 (RS232)	
Video	LVDS x 1	
SATA	SATA III x 1, +5V SATA Power Connector x 1	
Audio	Audio Header x 1 (Audio function not available for WITAS SKU)	
DIO/GPIO	8-bit	
SMBus/I2C	I2C/SMBus x 1 (Default: SMBus)	SMBus x 1
Touch	4/5/8-wire Touch Controller x 1 (optional)	4/5/8 wire Touch Controller x 1 (Optional)
Fan	DC Fan x 1 (optional: Smart Fan)	
Sim	SIM x 1	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	CFast™ (option with mSATA by BOM, occupies one Mini Card location)	—
Expansion		
Mini PCIe/mSATA	Full-Size mPCIe/ USB2.0 x 1 Half-Size mSATA/ mPCIe x 1 (BOM optional)	
M.2	—	
Others	—	
Environment & Certification		
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C) or WITAS 2 (E3825)	32°F ~ 140°F (0°C ~ 60°C) or WITAS 2 -40°F ~ 185°F (-40°C ~ 85°C)
Storage Temp.	-40°F ~ 176°F (-40°C ~ 80°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	344,859	403,079
EMC	CE/FCC Class A	
Note		





Model	GENE-5315 Rev. A	GENE-5315 Rev. B
System	3.5" SubCompact Board	
Form Factor	AMD Geode™ LX800 Processor AMD Geode™ LX 800(500MHz, 3.6W)	
CPU	CS5536	
Chipset	DDR333 SODIMM x 1 (DDR400 optional), up to 1GB	
Memory Type	Award 1MB	
BIOS	Yes	
Wake on LAN	255 Levels	
Watchdog Timer	—	
Security	Lithium Battery 3W/240mAh	
RTC Battery	5.75" x 4" (146mm x 101.7mm)	
Dimensions	Windows XP 32-bit	
OS Support	—	
Power	+5V	
Power Requirement	AT/ATX	
Power Supply Type	4Pin Connector	
Connector	LX 800 500 MHz, DDR400 1 GB, 1.17A@+5V(Typical)	
Power Consumption	—	
Display	AMD Geode™	
Controller	Up to 24-bit Single Channel LVDS/ TTL LCD	
LVDS/eDP	VGA x1, up to 1920 x 1200	
Display Interface	Up to 2 Simultaneous Displays	
Multiple Display	—	
Audio	High Definition Audio Interface	
Codex	Line-In / Line-Out / Mic (Audio function not available for WITAS SKU)   Line-in/Line-out/MIC/CD-in (Audio function not available for WITAS SKU)	
Audio Interface	—	
Speaker	—	
External I/O	10/100Base-TX x 2, Realtek RTL 8139DL	
Ethernet	—	
USB	COM1(RS-232)	
Serial Port	VGA x1	
Video	—	
Internal I/O	USB2.0 x 4	
USB	COM2(RS-232/422/485)	
Serial Port	TTL LCD x1 LVDS LCD x1	
Video	—	
SATA	Audio Header x 1(Audio function not available for WITAS SKU)	
Audio	8-bit	
DIO/GPIO	—	
SMBus/I2C	—	
Touch	—	
Fan	System Fan x1	
Sim	—	
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset	
Others	SPP/EPP/ECP x 1, CompactFlash™ x1, UDMA33 x 1	
Expansion	—	
Mini PCIe/mSATA	—	
M.2	—	
Others	Mini-PCI x1, PC/104 x1, Floppy Disk Drive x 1	Mini-PCI x 1, Floppy Disk Drive x 1
Environment & Certification	—	
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C), WITAS1 -4°F ~ 158°F (-20°C ~ 70°C)
Storage Temp.	-40°F ~ 176°F (-40°C ~ 80°C)	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	90,000	
EMC	CE/FCC Class A	
Note	—	



# Board Level Products

## SubCompact Boards



Model	GENESYSM-ADN6
System	
Form Factor	3.5" SubCompact Board System
CPU	Intel® Processor N Series, Intel® Core™ i3-N305 Processors: Intel® Core™ i3-N305 (8C/8T, up to 3.8 GHz, 15W) Intel® Processor N97 (4C/4T, up to 3.6 GHz, 12W)
Chipset	Integrated with Intel® SoC
Memory Type	DDR5 4800, Single Channel SODIMM x 1, Max.16GB, Non-ECC
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Security	TPM 2.0 (Optional)
RTC Battery	Lithium Battery 3V/240mAh
Dimensions	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)
OS Support	Windows 10 (64bit) Ubuntu 22.04 / Kernel 5.15.0-25-generic
Power	
Power Requirement	+9-36V
Power Supply Type	ATX
Connector	DC Jack Connector
Power Consumption	Intel® Core™ i3-N305, DDR5 16GB x 1, 3.4A @+12V(Typical) Intel® Core™ i3-N305, DDR5 16GB x 1, 5.24A @+12V(Max)
Display	
Controller	Intel® UHD Graphics
LVDS/eDP	—
Display Interface	HDMI 1.4 x 1, up to 3840 x 2160 @30Hz VGA x 1, up to 1920 x 1080
Multiple Display	Up to 2 Simultaneous Displays
Audio	
Codec	Realtek ALC897
Audio Interface	Line-In/Line-Out/MIC
Speaker	—
External I/O	
Ethernet	Intel® i226 2.5G, RJ-45 x 3
USB	USB3.2 Gen 2 x 2 ports USB2.0 x 4
Serial Port	COM1, COM2 (RS232/422/485, supports 5V/12V/RI) COM3, COM4 (RS-232 x 2, optional)
Video	HDMI 1.4 x 1, VGA x 1
Internal I/O	
USB	—
Serial Port	—
Video	—
SATA	SATA 6.0 Gb/s x 1 +5V SATA Power Connector x 1
Audio	Audio Header x 1
DIO/GPIO	GPIO 8-bit
SMBus/I2C	SMBus/I2C x1 (Default: SMBus)
Touch	—
Fan	—
Sim	Nano SIM x 1
Front Panel	HDD LED, PWR LED, Power Button, Buzzer, Reset
Others	—
Expansion	
Mini PCIe/mSATA	Full-size mSATA / mPCIe x 1 (Default: mSATA, select by BIOS)
M.2	M.2 2230 E-Key x 1 (PCIe 3.0 [x1] + USB2.0) M.2 3052 B-Key x 1 (USB3.2 Gen2 + USB2.0)
Others	—
Environment & Certification	
Operating Temp.	14°F ~ 140°F (-10°C ~ 60°C) 0.5m/s air flow
Storage Temp.	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	337,963
EMC	CE/FCC Class A
Note	

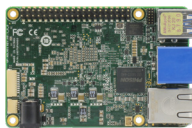
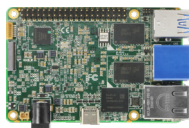






Model	de next-TGU8	de next-V2K8	de next-TGU8-EZBOX
System Form Factor	86mm x 55mm, Single Board Computer		de next System
CPU	Onboard 11th Gen. Intel® Core™ Processor i7-1185G7E (4C/8T, 1.80GHz, 15W) i5-1145G7E (4C/8T, 1.50GHz, 15W) i3-1115G4E (2C/4T, 2.20GHz, 15W)	AMD Ryzen™ Embedded V2000 Series Processor AMD Ryzen™ Embedded V2718 with Radeon™ Graphics (6C/16T, 1.7GHz, 25W) AMD Ryzen™ Embedded V2516 with Radeon™ Graphics (6C/16T, 2.1GHz, 23W)	Onboard 11th Gen Intel® Core™ Processors Intel® Core™ i7-1185G7E (4C/8T, 1.80 GHz, 15W), with Cooler Version Only Intel® Core™ i5-1145G7E (4C/8T, 1.50 GHz, 15W), with Cooler Version Only Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W), with Cooler Version & Heatsink Version
Chipset	Integrated with Intel® SoC	Integrated with AMD SoC	Integrated with Intel® SoC
Memory Type	Onboard LPDDR4x 3733, up to 16GB	Onboard LPDDR4x 3200, up to 16GB	Onboard LPDDR4x 3733, up to 16GB
BIOS	UEFI		
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Security	fTPM		
RTC Battery	Lithium Battery 3V/240mAh		
Dimensions	3.38" x 2.17" (86mm x 55mm)		3.75" x 2.73" x 1.78" (95.5mm x 69.5mm x 45.4mm), with Cooler Version 3.75" x 2.73" x 1.67" (95.5mm x 69.5mm x 42.5mm), with Heatsink Version
OS Support	Windows 10 (64bit) Ubuntu 20.04.4 (Kernel 5.13)	Windows 10 (64bit) Ubuntu 22.04 (kernel 5.15)	Windows 10 (64bit) Ubuntu 20.04.4 (Kernel 5.13)
Power			+12V
Power Requirement			AT/ATX
Power Supply Type			
Connector	DC Jack Connector (Optional : Phoenix 2-Pin Connector)		DC Jack Connector
Power Consumption	i7-1185G7E, LPDDR4x 16GB, 4.58A@12V, 55W (TYPICAL) i7-1185G7E, LPDDR4x 16GB, 7A@12V, 84W (MAX)	V2718, LPDDR4 16GB, 3.07A @12V, 36.84W (TYPICAL) V2718, LPDDR4 16GB, 3.92A @12V, 47.04W (MAX)	Intel® Core™ i7-1185G7E, LPDDR4x 16GB, 4.58A@12V, 55W (Typical) Intel® Core™ i7-1185G7E, LPDDR4x 16GB, 7A@12V, 84W (Max)
Display	Intel® UHD Graphics for 11th Gen Intel® Processors	AMD V-Series V2000 with Radeon™ Graphics	Intel® UHD Graphics for 11th Gen Intel® Processors
Controller	Intel® UHD Graphics for 11th Gen Intel® Processors	AMD V-Series V2000 with Radeon™ Graphics	Intel® UHD Graphics for 11th Gen Intel® Processors
LVDS/eDP	eDP 1.4 x 1, up to 3840 x 2160		—
Display Interface	HDMI 1.4 x 1, up to 3840 x 2160@30Hz		
Multiple Display	2 Simultaneous Displays		Single Display
Audio			
Codec			—
Audio Interface			—
Speaker			—
External I/O			
Ethernet	Intel® i225, 2.5GbE RJ-45 x 1 Intel® i219, 1GbE RJ-45 x 1	Realtek RTL8111, 1GbE RJ-45 x 1 Intel® i226, 2.5GbE RJ-45 x 1	Intel® Ethernet Controller I225/I226, 2.5GbE RJ-45 x 1 Intel® Ethernet Connection I219, 1GbE RJ-45 x 1
USB			USB 3.2 Gen 2 x 2
Serial Port			—
Video			—
Internal I/O	HDMI 1.4b x 1		HDMI 1.4b x 1, up to 3840 x 2160 @30Hz
USB	USB 2.0 x 4 Note : USB2.0 x 2 shared with adapter card PER-T642 / PER-T643	USB 2.0 x 4 Note : USB2.0 x 2 shared with adapter card PER-T642 / PER-T643. (de next-V2K8-A11 only)	—
Serial Port	COM1, COM2 (RS232/422/485, support 5V/RI)		—
Video	eDP 1.4 x 1		—
SATA	SATA 6.0 Gbps x 1 with +5V SATA Power Connector x 1		—
Audio			—
DIO/GPIO	GPIO 8 bits		—
SMBus/I2C	Optional		—
Touch			—
Fan	4 Pin Smart Fan		4 Pin Smart Fan (with Cooler version only)
Sim			—
Front Panel	Power Button, Reset Button, Power LED, SATA LED, Buzzer		—
Others			—
Expansion			—
Mini PCIe/mSATA			—
M.2	M.2 2280 M-key x 1 (PCIe[x2] x 1 or PCIe[x1] x 2, selected by BIOS)		M.2 2280 M-Key x 1 (PCIe 4.0 [x2] x 1)
Others	FPC Connector x 1 (PCIe 3.0 [x4] x 1)		—
Environment & Certification			
Operating Temp.	32°F ~ 140°F (0°C ~ 60°C), -40°F ~ 185°F (-40°C ~ 85°C) by sku support	32°F ~ 140°F (0°C ~ 60°C)	14°F ~ 122°F (-10°C ~ 50°C) with 0.7m/sec air flow
Storage Temp.			-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity			0% ~ 90% relative humidity, non-condensing
MTBF (Hours)			609,263
EMC			CE/FCC Class A





Model	UP 4000	UP 7000	UP Squared
System			
Processor	Intel® Celeron® Processor N3350 Intel® Pentium® Processor N4200 Intel Atom® x7-E3950	Intel® Processor N200 Intel® Processor N97 Intel® Processor N100 Intel® Processor N50 (formerly Alder Lake-N)	Intel® Celeron® Processor N3350 Intel® Pentium® Processor N4200 Intel Atom® x7-E3950 Intel Atom® x5-E3940
Graphics	Intel® HD Graphics	Intel® UHD Graphics	Intel® HD Graphics
Memory	Up to 8GB on board LPDDR4	Dual-Channel LPDDR5, up to 8GB	Up to 8GB onboard LPDDR4
Storage	Up to 64GB onboard eMMC	Up to 64GB eMMC	Up to 128GB onboard eMMC
I/O	HDMI 1.4b x 1 DP 1.4a x 1 (via USB Type-C) 41-pin FPC connector for high speed expansion x 1 6-pin Audio wafer x 1 (Mic-in+Line-out)	HDMI 1.4b/USB 3.2 Gen 2 STACK Connector x 1 (Type-A) 4-pin Front Panel x 1 2-pin Fan Wafer x 1 (12V) 2-pin RTC Battery Wafer x 1	HDMI 1.4b x 1 DP 1.2 x 1
Camera		—	MIPI-CSI via 21 Pin FPC connector x 1 MIPI-CSI via 31 Pin FPC connector x 1
USB	USB 2.0 x 2 (from 10-pin header x 1) USB 3.2 Gen 1 (Type A) x 3 USB 3.2 Gen 1 OTG (USB Type-C) x 1	USB 3.2 Gen 2 (Type-A) x 3 10-pin USB 2.0 x 2/UART x 1	USB 2.0 x 2 (via 10 Pin Header x 1) USB 3.2 Gen 1 x 3 (Type-A) USB 3.2 Gen 1 OTG x 1 (Micro B)
Expansion	40-pin GPIO x 1 Via carrier board: M.2 2230 E-Key x 1 M.2 2280 M-Key x 1 M.2 3052/3042 B-Key x 1	40-pin GPIO x 1	40-pin GPIO x 1 Full-sized mPCIe x 1 (PCIe & SATA [x1] , USB2.0 [x1]) M.2 2230 E-Key x 1 (PCIe [x1], USB2.0 [x1]) SATA III x 1 60 Pin EXHAT x 1
Display Interface	HDMI 1.4b x 1 DP 1.4a x 1 (via USB Type-C)	HDMI 1.4b x 1	HDMI 1.4b x 1 DP 1.2 x 1 eDP 1.3 x 1
Ethernet	1GbE RJ-45 x 1 (Realtek RTL8111H CG)	1GbE RJ-45 x 1 (Realtek RTL8111H CG)	GbE x 2 (Realtek 8111H CG)
Security	Onboard TPM 2.0		fTPM
RTC	Yes		
OS Support	Microsoft Windows 10 and Windows IoT Linux Ubuntu 22.04 Linux Yocto 4.0	Windows® 10 Enterprise LTSC 2021 Linux: Ubuntu 22.04 LTS/Kernel 5.15, Yocto 4.0	Windows® 10 IoT Enterprise LTSC 2021 Windows IoT Core Linux Ubuntu 20.04 LTS Linux Yocto 3.1
Power Requirement			
Power	12V DC-in	12V DC-in, 5A	5V DC-in
Power Supply Type	AT/ATX (AT as default)	AT (default) /ATX	AT/ATX (AT as default)
Power Consumption (Typical)	19W~25W	30~36W	15.05W
Mechanical			
Dimension	3.34" x 2.20" (85mm x 56mm)		3.37" x 3.54" (85.6 mm x 90 mm)
Net Weight	4.63 lbs (2.10kg)	0.33 lb. (0.15Kg)	0.463 lbs (0.21kg)
Gross Weight	6.39 lbs (2.90kg)	0.44 lb. (0.20Kg)	0.639 lbs (0.29kg)
Environment			
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow		
Operation Humidity	10% ~ 80% relative humidity, non-condensing	0% ~ 90% relative humidity, non-condensing	
MTBF	538,629 Hours	685,218 Hours	173,446 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH		
Note			





Model	UP Squared V2	UP Squared i12
System		
Processor	Intel® Celeron® N6210 Processor SoC Intel® Celeron® J6412 Processor SoC Intel® Pentium® J6426 Processor SoC	12th Gen Intel® Core™ Processor SoC Intel® Core i7-1270PE Intel® Core i7-1260PE Intel® Core i5-1250PE Intel® Core i5-1240PE Intel® Core i3-1220PE Intel® Celeron® 7305E 13th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1370PE Intel® Core™ i7-1360P Intel® Core™ i5-1340PE Intel® Core™ i3-1320PE
Graphics	Intel® UHD Graphics	
Memory	Up to 16GB LPDDR4	Up to 16GB Onboard LPDDR5
Storage	Up to 64GB eMMC	Up to 128GB Onboard SSD M.2 2280 M-Key NVMe x 1 (PCIe Gen 4.0 [x4]) SATA 6Gb/s x 1
I/O	HDMI 1.4b x 1 DP 1.2 x 1 eDP 1.3 x 1 Audio 6 pin wafer (Line out + MIC in) x 1 RS-232/422 6 pin header x 1	HDMI 1.4b/DP 1.2 STACK Connector x 1 DP 1.4a x 1 (via USB Type-C) 6-pin Audio Wafer x 1 (Line out + MIC in) 6-pin Front Panel x 1 2-pin Fan Wafer x 1 (12V) 2-pin RTC Battery Wafer x 1
Camera	—	MIPI CSI camera via 61pin wafer w/carrier board HDMI-in via 61pin wafer w/carrier board
USB	USB 2.0 x 2 (from 10 pin wafer x 1) USB 3.2 Gen 2 Type A x 3	10-pin USB 2.0 x 2/UART x 1 USB 3.2 Gen 2 (Type-A) x 2 USB 3.2 Gen 2 (Type-C for DP 1.4) x 1
Expansion	40 pin GPIO x 1 M.2 2230 E-Key x 1 (PCIe x2, USB2.0 x1) M.2 2280 M-key x 1 (PCIe x2) SATA3 x 1	40-pin GPIO x 1 M.2 2230 E-Key x 1 (CNVI & PCIe Gen 3.0 [x1]) M.2 2280 M-Key NVMe x 1 (PCIe Gen 4.0 [x4]) SATA 6Gb/s x 1
Display Interface	HDMI 1.4b x 1 DP 1.2 x 1 eDP 1.3 x 1	HDMI 1.4b/DP 1.2 STACK Connector x 1 DP 1.4a x 1 (via USB Type-C)
Ethernet	Gb Ethernet (full speed) RJ-45 x 2	1GbE RJ45 x 2 (Dual Stacked) (Realtek 8111H CG)
Security	Onboard TPM 2.0	
RTC	Yes	
OS Support	Microsoft Windows 10 (full) Windows IOT Core Ubuntu 20.04 LTS Yocto 3.1	Windows®10 IoT Enterprise LTSC 2021, Ubuntu 22.04, Yocto 4.0
Power Requirement		
Power	12V DC-in, 5A	12V DC-in
Power Supply Type	AT/ATX	AT/ATX (AT as default)
Power Consumption (Typical)	30~38W	26W~39W
Mechanical		
Dimension	3.37" x 3.54" (85.6 mm x 90 mm)	
Net Weight	0.41 lbs (0.19kg)	0.59 lbs (0.27kg)
Gross Weight	0.66 lbs (0.3kg)	0.84 lbs (0.38kg)
Environment		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow	
Operation Humidity	0%~90% relative humidity, non-condensing	
MTBF	465,586	522,716 Hours
Certification	CE/FCC Class A, RoHS complaint, REACH	
Note		



# Board Level Products

## UP Boards



Model	UP Squared 7100
System	
Processor	Intel® Processor N97 Intel® Processor N100
Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors
Memory	Up to 16GB LPDDR5
Storage	Up to 128GB eMMC
I/O	HDMI 2.0b x 1 DP 1.2 x 1 eDP 1.3 x 1 Audio wafer (Line out + MIC in) x 1 RS-232/422/485 via wafer x 2
Camera	—
USB	USB 2.0 x 2 (from 10 pin wafer x 1) USB 3.2 Gen 2 Type A x 3
Expansion	40 pin GPIO x 1 M.2 2230 E-Key x 1 (PCIe x1, USB2.0 x1) M.2 2280 M-key x 1 (PCIe x2)
Display Interface	HDMI 2.0b x 1 DP 1.2 x 1 eDP 1.3 x 1
Ethernet	Gb Ethernet (full speed) RJ-45 x 2
Security	Onboard TPM 2.0
RTC	Yes
OS Support	Microsoft Windows 10/11 Ubuntu 22.04 LTS Yocto 5.1
Power Requirement	
Power	12V DC-in
Power Supply Type	AT/ ATX (ATX as default)
Power Consumption (Typical)	15W~37W
Mechanical	
Dimension	3.37" x 3.54" (85.6 mm x 90 mm)
Net Weight	0.41 lbs (0.19kg)
Gross Weight	0.66 lbs (0.3kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing
MTBF	1,224,238
Certification	CE/FCC Class A, RoHS Compliant, REACH
Note	

Model	UP Squared
System	
Processor	Intel® Pentium® N4200/ Celeron® N3350/ Atom® E3950 Processor SoC
Graphics	Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264, VP8
I/O	HDMI x 1 DP x 1 COM port (RS422/RS232/RS485) x 2 Audio Jack x 1
Camera	—
USB	USB 2.0 x 2 USB 3.2 Gen 1 OTG x 1 USB 3.2 Gen 1 (Type A) x 3
Expansion	40 pin GPIO x 1 M.2 2230 E-key x 1 M.2 2280 M-key x 1 SATA3 x 1 M.2 3042/3052 B-key x 1
RTC	Yes
Power	12V-24V DC-in (Lockable plug)/ Phoenix connector (optional)
Dimension	10.16cm x 10.16cm
Memory	2GB (single channel) LPDDR4 4GB/8GB (dual channel) LPDDR4
Storage	eMMC 32 GB / 64 GB
Display Interface	HDMI1.4 x 1 DP1.2 x 1 eDP x 1
Ethernet	Gb Ethernet (full speed) RJ-45 x 2
OS Support	Microsoft Windows 10 (full), Windows IoT Core Linux: Ubuntu 18.04.5, Ubuntu 20.04.1, Yocto 3.1
Operating Temperature	with Fan: 32°F ~ 140°F (0°C ~ 60°C, with airflow 0.5m/s) with Heatsink: 32°F ~ 122°F (0°C ~ 50°C, with airflow 0.5m/s)
Operation Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant, REACH
Note	





Model	UP Squared Pro 7000	UP Squared Pro 710H
System		
Processor	Intel® Core™ i3-N305 Intel Atom® x7425E Intel® Processor N97 Intel® Processor N50	Intel® Core™ i3-N305 Intel Atom® x7425E Intel® Processor N97 Intel® Processor N50 Onboard Hailo-8™ edge AI processor
Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors	
Memory	Up to 16GB onboard LPDDR5	
Storage	Up to 64GB onboard eMMC	
I/O	HDMI 2.0b x 1 DP 1.2 x 1 DP 1.4a via USB Type C Audio Jack x 1 (Mic-in+Line-out) RS-232/422/485 via 10 Pin header x 2	HDMI 2.0b x 1 DP 1.2 x 1 RS-232/422/485 from 10 pin header x 2
Camera	MIPI-CSI via 61-Pin FPC Connector x 1	
USB	USB 2.0 x 2 (via 10 Pin Header x 1) USB 3.2 Gen 2 (Type-A) x 2 USB 3.2 Gen 2 (Type-C) x 1	USB 2.0 x 2 (from 10 pin header x 1) USB 3.2 Gen 2 (Type-A) x 2
Expansion	40 Pin GPIO x 1 M.2 2230 E-Key x 1 (CNVI, PCIe Gen 3 [x1], USB 2.0) M.2 2280 M-Key x 1 (PCIe Gen 3 [x2], USB 2.0) M.2 3052 B-Key x 1 (USB 3.2 Gen 2 only) with Nano SIM slot (USB 3.0) SATA 6Gb/s x 1	40-pin GPIO x 1 M.2 2230 E-Key x 1 (CNVI, PCIe Gen 3 [x1], USB 2.0) M.2 2280 M-Key x 1 (PCIe Gen 3 [x2], USB 2.0, colay with M.2 3052 B-Key x 1) M.2 3052 B-Key x 1 (USB 3.2 Gen 2 only, optional)
Display Interface	HDMI 2.0b x 1 DP 1.2 x 1 DP 1.4a via USB Type C	HDMI 2.0b x 1 DP 1.2 x 1
Ethernet	2.5GbE x 2 (Intel® I226-IT)	
Security	Onboard TPM 2.0	
RTC	Yes	
OS Support	Windows 10 IoT Enterprise Ubuntu 22.04 LTS Yocto 4.0	
Power Requirement		
Power	12V DC-in	12V-36V DC-in Phoenix connector (Optional: Lockable plug)
Power Supply Type	AT/ATX (ATX as default)	
Power Consumption (Typical)	26W-35W	TBD
Mechanical		
Dimension	4" x 4" (101.6mm x 101.6mm)	
Net Weight	0.44 lbs (0.20kg)	TBD
Gross Weight	0.77 lbs (0.35kg)	TBD
Environment		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow, WiTAS1 -4°F ~ 158°F (-20°C ~ 70°C)	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF	422,053 Hours	TBD
Certification	CE/FCC Class A, RoHS Compliant, REACH	
Note		





System	UP Xtreme i1	UP Xtreme i12
System		
Processor	11th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1185G7E Intel® Core™ i7-1185GRE Intel® Core™ i5-1145 G7E Intel® Core™ i5-1145GRE Intel® Core™ i3-1115GRE Intel® Celeron® 6305E	12th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1270PE Intel® Core™ i7-1260P Intel® Core™ i5-1250PE Intel® Core™ i5-1240P Intel® Core™ i3-1220PE Intel® Celeron® Processor 7305E 13th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1370PE Intel® Core™ i7-1360P Intel® Core™ i5-1340PE Intel® Core™ i3-1320PE
Graphics		Intel® Iris® Xe graphics
Memory	DDR4 SODIMM Slot x 2, up to 64GB	Up to 32GB onboard LPDDR5
Storage	M.2 2280 M-Key x 1 for NVMe (PCIe [x2]) SATA 6Gb/s x 1	M.2 2280 M-Key x 2 (PCIe Gen 4.0 [x4]), SATA 6Gb/s x 1
I/O	HDMI 2.0 x 1 DP 1.4x 1 eDP x 1 Audio Jack x 1 (Mic-in+Line-out) RS-232/422 10-pin header x 2	HDMI 2.0b x 1 DP 1.4a x 1 DP 1.4a x 1 (via USB Type-C) eDP 1.4b x 1 Audio Jack x 1 (Mic-in+Line-out) RS-232/422/485 10-pin header x 2
Camera	—	MIPSI CSI camera via 61pin wafer w/carrier board (optional for 13th Gen) HDMI-in via 61pin wafer w/carrier board (optional for 13th Gen)
USB	USB 2.0 x 2 (from wafer x 1) USB 2.0 (Type-A) x 1 USB 3.2 Gen 2 (Type-A) x 3 USB 4.0 (Type-C) x 1	USB 2.0 x 2 (from 10 pin header x 1) USB 2.0 (Type-A) x 1 USB 3.2 Gen 2 (Type-A) x 3 USB 4.0 (Type-C) x 1
Expansion	40-pin GPIO x 1 M.2 2230 E-Key x 1 M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 SATA 6Gb/s x 1 PCIe [x4] Slot	40-pin GPIO x 1 M.2 2230 E-Key x 1 M.2 2280 M-Key x 2 (PCIe Gen 4.0 [x4]) SATA 6Gb/s x 1 M.2 3052 B-Key x 1 Nano SIM Slot x 1
Display Interface	HDMI 2.0 x 1 DP 1.4 x 1 eDP x 1	HDMI 2.0b x 1, DP 1.4a x 1, DP 1.4a x 1 (via USB Type-C), eDP 1.4b x 1
Ethernet	Intel® I225-IT x 1 Intel® I219 (vPRO) x 1	Intel® I226-IT x 1 (TSN), Intel® I219 x 1 (vPRO)
Security	—	Onboard TPM 2.0
RTC		Yes
OS Support	Microsoft Windows 10 and Windows IoT Linux Ubuntu 22.04 Linux Yocto 3.1	Windows* 10 Enterprise 2021 LTSC, Ubuntu 22.04, Yocto 4.0
Power Requirement		
Power	12V (Lockable plug)	12-36V DC-in (Lockable plug)
Power Supply Type		AT/ATX (ATX as default)
Power Consumption (Typical)	Balance: 32.4W Max current: 66W	Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 5.86A@+ 12V (Typical) Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 8.05A@+ 12V (Max)
Mechanical		
Dimension		4.74" x 4.82" (120.35mm x 122.5mm)
Net Weight	0.57 lbs (0.26kg)	0.88lb (0.4kg)
Gross Weight	1.15 lbs (0.52kg)	1.32lb (0.6kg)
Environment		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow	With Heatsink: 32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow
Operation Humidity		0% ~ 90% relative humidity, non-condensing
MTBF	372,419 Hours	362,068 Hours
Certification		CE/FCC Class A, RoHS Compliant, REACH
Note		





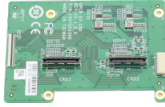
System	UP Xtreme i14	UP Xtreme 7100
System		
Processor	Intel® Core™ Ultra 5 processor 125U (12M Cache, up to 4.30 GHz) Intel® Core™ Ultra 5 processor 125H (18M Cache, up to 4.50 GHz) Intel® Core™ Ultra 7 processor 155H (24M Cache, up to 4.80 GHz) Intel® Core™ Ultra 7 processor 165H (24M Cache, up to 5.00 GHz)	Intel® Processor N97 Intel® Core™ i3-N305
Graphics	Intel® Arc™ graphics	Intel® UHD Graphics Gen 12
Memory	Up to 64GB onboard LPDDR5 (Dual-Channel)	Up to 16GB LPDDR5
Storage	M.2 2280 M-Key x 2 SATA 6Gb/s x 1	Up to 64GB onboard eMMC M.2 2280 M-Key x 1 (PCIe Gen 3 [x2]) SATA 6Gb/s x 1
I/O	HDMI 2.1 x 2 DP 2.1 x 1 DP 1.4 via USB Type-C x 1 Audio Jack x 1 (Mic-in+Line-out) RS-232/422/485 10-pin header x 2	RS-232/422/485 x 1 (Terminal Block) (Default RS232) 30pin board-to-board Connector x 1 UART x 1 (via 10 Pin Header x 1)
Camera	MIPI-CSI via 61-Pin FPC Connector x 1	—
USB	USB 2.0 x 2 (from 10 pin header x 1) USB 2.0 (Type-A) x 1 USB 3.2 Gen 2 (Type-A) x 2 USB 3.2 Gen 2 (Type-C) x 1	USB 2.0 (Type A) x 2 USB 3.2 Gen 2 (Type A) x 2 USB 3.2 Gen 2 (Type C) x 1 (Supports DP alt mode)
Expansion	40-pin GPIO x 1 M.2 2230 E-Key x 1 (PCIe Gen 3 [x1], USB 2.0) M.2 2280 M-Key x 2 (PCIe Gen 4 [x4]) M.2 3052 B-Key x 1 (PCIe Gen 3 [x1], USB 3.2 Gen 2 [x1]) with Nano SIM slot (USB 3.0) SATA 6Gb/s x 1	M.2 3052 B-Key x 1 with Nano SIM slot (USB 3.0) M.2 2230 E-Key x 1 (USB 2.0/PCIe) M.2 2280 M-Key x 1 (PCIe Gen 3 [x2]) 24V 8-in/8-out Digital I/O x 1 via Terminal Block (Output current: 500mA per channel) 6 pin GPIO x 1 via Terminal Block 6 pin 2-channel CAN 2.0B x 1 via Terminal Block (10 ~ 1000 kbps) DIP Switch for CANBus function x 1 CAN LED indicator x 2 SATA 6Gb/s x 1
Display Interface	HDMI 2.1 x 2 DP 2.1 x 1 DP 1.4 via USB Type-C x 1	DP 1.4a x 1 (via USB Type-C) eDP 1.3 x 1
Ethernet	2.5GbE x 1 (via Intel® Ethernet Controller I226-IT), GbE x 1 (Intel® Ethernet Connection I219)	2.5GbE x 2 (Intel® I226-IT)
Security	Onboard TPM 2.0	
RTC	Yes	
OS Support	Windows 10/11 (64bit) Ubuntu 22.04/Kernel 6.5 up	Ubuntu 22.04 LTS (kernel 5.15 and kernel 5.19)
Power Requirement		
Power	9-36V DC-in (Lockable plug)	9-36V
Power Supply Type	AT/ATX (ATX as default)	AT/ATX (AT as default)
Power Consumption (Typical)	67-80W	52W~55W
Mechanical		
Dimension	4.74" x 4.82" (120.35mm x 122.5mm)	
Net Weight	12.7 lb. (0.36Kg)	1.11.lb (0.5kg)
Gross Weight	1.32lb (0.6kg)	1.76 lb (0.8kg)
Environment		
Operating Temperature	With Cooler: 32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow	With Heatsink: -4°F ~ 158°F (0°C ~ 60°C)/0.5m/s airflow
Operation Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF	1,014,016	421,998
Certification	CE/FCC Class A, RoHS Compliant, REACH	
Note		



Model	UP-3G HAT
System	
IC	2-CH FULL-SPEED USB UART x 1 USB 2.0 Hub x 1 RS-232/RS-485/RS-422 transceiver x 2
I/O Placements	
External Ports	RS-232/422/485 Connector (DB9) x 1
Internal connector	RS-232 wafer (RS-232/422/485) x 1 USB wafer x 1 Minicard x 1 uSIM Card Reader x 1 HAT 40 GPIO male (4x GPIO, 3.3V, 5V, GND) x 1 WIFI LED x 1 3G LED x 1 Power LED x 1
Others	
Form Factor	2.56" x 2.2" (65 mm x 56 mm)
Certification	CE/FCC Class A
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Operating Humidity	10%~80% RH, non-condensing
Optional	
WiFi Module	UP-WIFIMD-A20-7001 (WiFi module: 7M02) UP-WIFIMD-A20-4001 (WiFi module: 4M02)
BT Module	—
3G Module	9741UC20G0 (3G module: UC20-G)
Note	







Launching in Q4

Model	MIPICSI Camera RVP Converter Kit	UP Xtreme 7100 DIO Carrier Board
System		
I/O	<p>Power: 5V/2A In from Wafer</p> <p>MIPI-CSI In: 4-Lane + Clock from Camera Module Connector x 2</p> <p>MIPI-CSI Out: 61-pin FPC Connector x 1</p>	<p>Digital Input: Channel: Isolated Digital Input x 8 Type: Dry contact (Source), Wet contact (Sink/Source)</p> <p>Digital Output: Channel: Isolated Digital Output x 8 Type: Sink (Max load current 500mA per channel)</p> <p>7 pin SPI wafer x 1 20-pin DIO Phoenix Connector x 1 30-pin Wafer Box x 1</p>
Dimension	3.3" x 2.4" (85mm x 61mm)	4.72" x 1.57" (120mm x 40mm)
Net Weight	0.1 lb. (0.04Kg)	0.17 lb. (0.08Kg)
Gross Weight	0.13 lb. (0.06Kg)	0.3 lb. (0.14Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow	32°F ~ 140°F (0°C ~ 60°C)
Operation Humidity	10% ~90% relative humidity, non-condensing	0% ~ 90% relative humidity, non-condensing
Certification	—	CE /FCC Class A
Note		



## UP Boards: UP Expansion Modules



Model	UP 4000 M.2 Plus	UP POE V2 Expansion Board	HDMI IN Carrier Board	CAN Bus Carrier Board
System				
I/O	<p>UP-APL03CB-A10-0001: M.2 3052/3042 B Key x1 (USB3.0) M.2 2230 E Key x1 (PCIe x1) (w/o Bluetooth) Push-push Nano SIM card x1 41pin FPC connector x1</p> <p>UP-APL03CB-A10-0002: M.2 2280 M Key x1 (PCIe x1) 41pin FPC connector x1</p> <p>UP-APL03CB-A10-0003: M.2 2230 E Key x1 (PCIe x1, USB 2.0 x1) 41pin FPC connector x1</p>	<p>UP-POEV2-30W-A10-0001: RJ-45 Input x 1 (10/100/1000M Gigabit Ethernet) USB 3.2 Gen 1 x 1 41-Pin FPC Connector x 1</p> <p>UP-POEV2-30W-A10-0002: RJ-45 Input x 1 (10/100M) 10-Pin Wafer x 1</p>	<p>FPC 61-pin MIPI CSI x 1 (Lontium.LT6911UXC) 2-pin Power Wafer x 2 HDMI 2.0 x 1</p> <p>Color Format: CSC disabled: RGB565/666/888, YUV422 8/10-bit, Legacy YUV420 8-bit CSC enabled: RGB565/666/888, YUV422 8-bit</p> <p>Video Resolutions 3840×2160p@30fps 1920×1200@30fps 1920×1080@30fps 1680×1050@30fps 1440×900@30fps 1366×768p@30fps 1280×1024p@30fps 1280×960p@30fps 1280×800p@30fps 1280×768p@30fps 1280×720p@30fps 1280×600p@30fps 1152×864p@30fps 1024×768p@30fps 800×600p@30fps 720×576i@60fps</p> <p>*Once change resolution or frequency please reboot or unplug and plug in HDMI IN carrier board</p>	<p>UP Board Connector x 1 6 pin terminal block x 1 6 pin LED Wafer x 1 Termination Resistor DIP Switch x 1 Reset Button x 1</p>
Dimension	<p>UP-APL03CB-A10-0001: 2" x 2.36" (51mm x 60mm) UP-APL03CB-A10-0002: 2" x 3.5" (51mm x 89 mm) UP-APL03CB-A10-0003: 2" x 2.36" (51mm x 60mm)</p>	3.37" x 2.22" (85mm x 56mm)	1.9" x 0.9" (49mm x 23mm)	2.56" x 2.20" (65 mm x 56 mm)
Net Weight	<p>UP-APL03CB-A10-0001: 16g UP-APL03CB-A10-0002: 19g UP-APL03CB-A10-0003: 15g</p>	0.1 lb. (0.04Kg)	0.44 lb. (0.2Kg)	0.066 lb. (0.03Kg)
Gross Weight	<p>UP-APL03CB-A10-0001: 55g UP-APL03CB-A10-0002: 58g UP-APL03CB-A10-0003: 54g</p>	0.13 lb. (0.06Kg)	0.88 lb. (0.4Kg)	0.13 lb. (0.06Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow	32°F ~ 140°F (0°C ~ 60°)
Operation Humidity	10% ~ 80% relative humidity, non-condensing	10% ~ 80% relative humidity, non-condensing	10% ~ 80% relative humidity, non-condensing	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant	CE/FCC Class A, RoHS Compliant, REACH	—	CE/FCC Class A
Note				

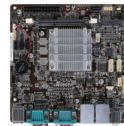
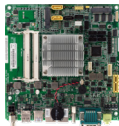




Model	EMB-APL1	EMB-APL3
System		
Processor	N4200, (4C @ 2.50GHz CPU [Burst Mode], 750MHz GFX [Turbo], ~6W TDP) N3350, (2C @ 2.40GHz CPU [Burst Mode], 650MHz GFX [Turbo], ~6W TDP)	
Chipset	Integrated into SoC	
Memory	DDR3L 1866, Single Channel SODIMM x 2, Non-ECC (Max.8GB, up to 1600MHz)	
I/O Chipset	NCT6116D	
Ethernet	Realtek® PCIe Gb LAN 8111H x 2	
Audio	Realtek® ALC897	
TPM	Nuvoton NPCT652ABCYX TPM2.0 (default: No)	Nuvoton NPCT652 TPM2.0 (default: No)
Expansion Slots	PCIe2.0 [x1] x 1 M.2 M key (22 x 42mm) x 1, for SATA M.2 E Key (22 x 30mm) x 1, for PCIe	
BIOS	128Mbit Flash ROM x 1, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/SV/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	Chassis Fan (Fanless)	
Wake On LAN/ PXE	Yes (WOL/PXE)	
Power State	S3, S4, S5	
Graphics	Intel® HD Graphics	
Graphics Chipset	Intel® HD Graphics	
Graphics Multi Display	Three Independent Display	
VGA	Up to 1920 x 1200 @60Hz	
DVI	—	
HDMI	Up to 3840 x 2160 @ 30Hz	Up to 3840 x 2160 @30 Hz(HDMI 1.4b)
Display Port	—	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz (Colay with VGA)
LVDs	Up to 1920 x 1200 @60Hz, dual-channel 18/24 bit (via PS8625) (colay with eDP)	
eDP	Up to 4096 x 2160 @60Hz	
Backlight Control	Voltage/PWM	
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	12V~24V wide-range voltage input back panel DC jack x 1; 4-pin ATX Power connector x 1 Power consumption: 84W	12V DC jack (screw type) 4-pin infernal power connector Power consumption: 84W
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Operation Humidity	0% ~ 90% RH, non-condensing	
Certificate	CE & FCC Class A	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
Weight	1.1 lb (0.5 Kg)	
MTBF (Hours)	263,080	
Rear Panel I/O Ports		
USB	USB 3.2 Gen 1 (5 Gbps) x 2, USB 2.0 x 2	USB 3.2 Gen 1 (5 Gbps) x 4
Display I/O	HDMI x 1, VGA x 1	VGA/DP x 1, HDMI x 1
Audio I/O	Mic-in, Line-out	Line-out x 1
LAN I/O	RJ-45 x 2	LAN (RJ-45) port x 2
Serial Port	—	
PS/2 Port	—	
Others	DC power jack x 1	
Internal I/O Connectors		
Storage	SATA 6.0Gb/s x 2(1 colay with M.2 M-key), M.2 M-key (22 x 42mm) x 1	SATA 6.0Gb/s x 2(1 colay with M.2 M-key), M.2 M-key (22 x 42mm) x 1
USB	USB 2.0 headers support additional 3 USB ports (2*5-pin, p=2.00mm) x 2	USB 2.0 headers support additional 6 USB ports (2*5-pin, p=2.00mm) x 3
Display I/O	40-pin LVDS/eDP connector x 1 (default LVDS)	40-pin LVDS/eDP connector x 1(default LVDS)
Audio I/O	AAFP	
Serial Port	RS-232/422/485 x 1, RS-232 x 5	
PS/2 Port	—	
Parallel Port	—	
DIO	8-bit x 1 (In/Out programmable)	
FAN	4-pin Chassis Fan x 1	
Power	—	
Others	Front panel header x 1, Clear CMOS jumper x 1, AT/ATX mode select jumper (optional) x 1, SATA power connector x 1, M.2 E key (22 x 30mm) for PCIe x 1	
OS		
OS Support	Windows® 10 64bit, Ubuntu16.04.02/Kernel4.8.0	
Note		



# Board Level Products Industrial Motherboards



Model	EMB-BT1	EMB-BT2
System		
Processor	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP), Intel® Celeron® N2807 Processor (2C @ 1.58 GHz CPU, 313/750 MHz GFX, 4.3W TDP), Intel® Atom® E3845 Processor (4C @ 1.91 GHz CPU, 542/792 MHz GFX, 10W TDP)	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP)
Chipset		
Memory	DDR3L 1333 MHz SODIMM x 2 up to 8 GB (for J1900 / E3845), DDR3L 1333 MHz SODIMM x 1 up to 4 GB (for N2807), Non-ECC, un-buffered memory, Dual-channel memory architecture flat type	DDR3L 1333 MHz SODIMM x 1 up to 8 GB, Non-ECC, un-buffered memory
I/O Chipset		Fintech 81866D
Ethernet		Realtek® PCIe Gb LAN 8111H x 2
Audio		Realtek® ALC897
TPM		Infineon SLB9635 TT 1.2 (default : No)
Expansion Slots	Full-size Mini-Card (mSATA default) (PCIe+USB optional) + SIM Card (default: No) x 1, Half-size Mini-Card (PCIe+USB) x 1, PCIe [x1] x 1	Full-size Mini-Card (mSATA default PCIe+USB optional) x 1, PCIe [x1] x 1
BIOS		64 M bit Flash ROM, AMI BIOS
H/W Monitor		Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer		1~255 steps by software program
Smart Fan Control		Chassis Fan (fanless)
Wake On LAN/ PXE		Yes (WOL/PXE)
Power State		S3, S4, S5
Graphics		
Graphics Chipset		Intel® HD Graphics
Graphics Multi Display	VGA+LVDS, VGA+HDMI, LVDS+HDMI	VGA+LVDS, Dual LVDS
VGA		Up to 1920 x 1200 @60 Hz
DVI		—
HDMI	Up to 1920 x 1200 @60 Hz	—
Display Port		—
LVDS	Up to 1920 x 1080 @60Hz, dual-channel 18/24-bit (via CH7511)	Dual LVDS, Up to 1920 x 1080 @60Hz, dual-channel 18/24-bit (via CH7511)
eDP		—
Backlight Control		Voltage/PWM
Environment & Power & ME		
Battery		Lithium battery
Power Requirement	12VDC	ATX
Operation Temperature		32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature		-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity		0% ~ 90% R/H, non-condensing
Certificate		CE & FCC
Form Factor		Mini-ITX 6.7" x 6.7" (170mm x 170mm)
Weight		1.1 lb (0.5 Kg)
MTBF (Hours)	111,131	290,990
Rear Panel I/O Ports		
USB	USB 3.2 Gen 1 (5 Gbps)/2.0 x 1, USB 2.0 x 2	USB 2.0 x 6
Display I/O	VGA x 1, HDMI x 1	VGA x 1
Audio I/O	Line-out x 1	Mic-in x 1, Line-out x 1
LAN I/O		LAN (RJ-45) port x 2
Serial Port	COM (RS-232) (optional) x 1	COM (RS-232/422/485) x 1, COM (RS-232) x 2
PS/2 Port	—	PS/2 Keyboard Mouse combo x 1
Others	DC port (12V) Screw type x 1	—
Internal I/O Connectors		
Storage	SATA3 (6.0Gb/s) x 2, SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), SATA power connector x 1, Full Size Mini-Card slot (mSATA) x 1	SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), Full Size Mini-Card slot (mSATA) x 1
USB	USB 2.0 (2 x 5-pin, 2.54mm) x 2 ports support additional 4 USB, USB 2.0 (1x 5-pin, 2.0mm) x 1 port supports additional 1 USB,	USB 2.0 (2 x 5-pin, 2.54mm) x 2 ports support additional 4 USB
Display I/O	LVDS connector x 1, LVDS 3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1	LVDS connector x 2, LVDS 3V /5V jumper x 2, LCD DC / PWM mode jumper x 2, LCD backlight connector (inverter) x 2, LCD backlight 12V /5V jumper x 2, LCD push button for backlight control (2PIN) x 2
Audio I/O	AAFP x 1	AAFP x 1, Speaker x 1
Serial Port	Box header for COM (RS-232) x 4, Box header for COM (RS-232/422/485) x 1	Box header for COM (RS-232) x 3
PS/2 Port	PS/2 Keyboard Mouse 6 PIN Connector x 1	—
Parallel Port	SPP/EPP Mode	—
DIO		DIO (4in/4out) x 1
FAN		Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (default : No) x 1	24PIN ATX power connector x 1, AT/ATX mode select jumper (default : No) x 1
Others	Half-size Mini-Card (PCIe + USB) x 1, PCIe [x1] x 1, SIM Card Socket (default : No) x 1, LPT PIN header x 1, Front Panel connector x 1, CMOS jumper x 1	Front Panel connector x 1, CMOS jumper x 1
OS		
OS Support		Windows® 10 64-bit, Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Linux Fedora





Model	EMB-BT4	MIX-EHLD1
System		
Processor	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP)	Intel® Elkhart LAKE Processor Max. 12W TDPs
Chipset		
Memory	DDR3L 1333 MHz SODIMM x 2 up to 8 GB (for J1900), Non-ECC, unbuffered memory, Dual-channel memory architecture flat type	S0-DIMM, max. 32GB, DDR4 3200MTS x 2
I/O Chipset	Fintech 81866D	NCT6126D
Ethernet	Realtek PCIe Gb LAN 8111Hx 1	RTL8111H x 2
Audio		Realtek® ALC897
TPM	Infineon SLB9635 TT 1.2 (default : No)	Nuvoton NPCT750 TPM2.0 onboard
Expansion Slots	Full-size Mini-Card (mSATA default) (PCIe+USB optional) + SIM Card (default: No) x 1, Half-size Mini-Card (PCIe+USB) x 1	M.2 Slot (B key; 3042/3052) x1 mini-PCIe(Full/Half) x 1 SIM socket x 1 (default for B-key)
BIOS	64 M bit Flash ROM, AMI BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on Chassis
WatchDog Timer		1~255 steps by software program
Smart Fan Control	Chassis Fan (fanless)	Chassis Fan
Wake On LAN/ PXE		Yes (WOL/PXE)
Power State		S3, S4, S5
Graphics		
Graphics Chipset	Intel® HD Graphics	Intel® UHD Graphics
Graphics Multi Display	VGA+LVDS, VGA+HDMI, LVDS+HDMI	3 Independent Display(1xVGA+1x HDMI + 1x LVDS/eDP)
VGA		Up to 1920 x 1200 @60 Hz
DVI		
HDMI	Up to 1920 x 1200 @60 Hz	Up to 4096 x 2160 @ 60Hz
Display Port		
LVDS	Up to 1920 x 1080 @60Hz, dual-channel 18/24-bit (via CH7511)	Up to 1920 x 1080 @60Hz, Dual Channel 18/24 bit (via CH7513) co-layout eDP (default LVDS)
eDP		Up to 3840 x 2160 @ 30Hz
Backlight Control	Voltage/PWM	Voltage / PWM, use HW control
Environment & Power & ME		
Battery		Lithium battery
Power Requirement	12VDC	12(+/-5%) DC
Operation Temperature		32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature		-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity		0% ~ 90% R/H, non-condensing
Certificate	CE & FCC	CE & FCC Class A
Form Factor		Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight		1.1 lb (0.5 Kg)
MTBF (Hours)	295,750	
Rear Panel I/O Ports		
USB	USB 3.2 Gen 1/2.0 x 1, USB 2.0 x 2	USB 3.2(Gne1) ports x 2 USB 2.0 ports x 4 (Upper 2 ports by BOM Optional)
Display I/O	HDMI x 1	HDMI x 1, VGA x 1
Audio I/O	Line in x 1, Line-out x 1	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 1	1GbE x 2
Serial Port	COM (RS-232) x 1	RS232 by BOM Optional
PS/2 Port		
Others	DC port (12V) Screw type x 1	DC Jack x 1
Internal I/O Connectors		
Storage	SATA3 (6.0Gb/s) x 2, SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), SATA power connector x 1, Full Size Mini-Card slot (mSATA) x 1	M.2 Slot (M key; 2280;PCIex2) SATA 6Gb/s x 1 SATA power connector (5V / 12V @1A) x 1
USB	USB 2.0 (2 x 5-pin, 2.54mm) x 2 ports support additional 4 USB, USB 2.0 (1x 5-pin, 2.0mm) x 1 port supports additional 1 USB	USB2.0 ports x 2
Display I/O	VGA pin header x 1, LVDS connector x 1, LVDS 3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1	40-pin LVDS / eDP connector x 1
Audio I/O	AAFP x 1	AAFP follow ASUS pin out x 1
Serial Port	Box header for COM (RS-232) x 4, Box header for COM (RS-232/422/485) x 1	Box header x 5 for COM (COM1: RS-232/422/485 supports 5V/12V/RI; COM2-6: RS-232)
PS/2 Port	PS/2 Keyboard Mouse 6 PIN Connector x 1	
Parallel Port	SPP/EPP Mode	
DIO	DIO (4in/4out) x 1	Digital I/O box header x 1
FAN	Chassis Fan connector x 1	4-pin Chassis Fan connector x 1
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (default : No) x 1	
Others	Half-size Mini-Card (PCIe + USB) x 1, SIM Card Socket(default : No) x 1, LPT PIN header x 1, Front Panel connector x 1, CMOS jumper x 1	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, Clear CMOS jumper x 1, AT/ATX mode select jumper x 1
OS		
OS Support	Windows® 10 64-bit, Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Linux Endos	Windows® 10 64-bit, Linux Ubuntu 64 bit (20.04.2/Kernel 5.4)



# Board Level Products Industrial Motherboards



Model	MIX-TLUD1	MIX-H310A1
System		
Processor	Intel® 11th Gen (Tiger Lake-UP3) Core™ Processors, up to 28W TDPs - i7-1185G7E, QC, Max Speed up to 4.4GHz - i5-1145G7E, QC, Max Speed up to 4.1GHz - i3-1115G4E, DC, Max Speed up to 3.9GHz - Celeron 6305E, DC, 1.8GHz	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	—	Intel® H310 Express Chipset
Memory	DDR4 2666/3200 MHz SODIMM x 2, Up to 64GB	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 32GB, Non-ECC, Unbuffered Memory, Dual channel memory architecture
I/O Chipset	IT5121E	NCT6793D
Ethernet	Intel® PCIe Gb LAN 219LM x 1 Intel® PCIe Gb LAN 225LM x 1	Intel® PCIe Gb LAN 219V x 1, Intel® PCIe Gb LAN i210AT x 3
Audio	Realtek® ALC897	Realtek® ALC897 with Amp.
TPM	Nuvoton NPCT750 TPM2.0 onboard	Firmware TPM
Expansion Slots	PCIe 3.0 [x4] x 1, mini-card x 1 (PCIe/SATA; BOM Optional)	PCIe3.0 [x16] x 1, M.2 M-key(22x80mm) at bottom side x 1 for SATA, M.2 E-key(22x30mm)
BIOS	256Mbit Flash ROM, AMI BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 step by software program	
Smart Fan Control	CPU Fan/ Chassis Fan	
Wake On LAN/ PXE	Yes (WOL / PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® Xe(Gen 12) Graphics	Intel® UHD Graphics
Graphics Multi Display	Quad Display	HDMI+VGA
VGA	—	Up to 1920 x 1200 @ 60 Hz
DVI	—	—
HDMI	HDMI 2.0	Up to 4096 x 2160 @30Hz(HDMI 1.4)
Display Port	DP1.4	—
LVDS	Up to 1920 x 1200 @60Hz, Dual Channel 18/24 bit (via CH7511B)	—
eDP	eDP1.4b	—
Backlight Control	—	
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	12(+/-5%) DC	ATX
Operation Temperature	32°F ~122°F (0°C ~ 50°C)	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	—	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	—	0%~90%RH, non-condensing
Certificate	CE & FCC Class A	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
Weight	1.1 lb (0.5 Kg)	
MTBF (Hours)	288,900	
Rear Panel I/O Ports		
USB	USB 3.2 Gen2 x 2, USB2.0 x 4	USB 3.2 Gen 1 (5 Gbps) x 4, USB 2.0 x 2
Display I/O	HDMI x 2, DP++ x 2	VGA x 1, HDMI x 1
Audio I/O	—	Mic-in x 1, Line out x 1
LAN I/O	1GbE x 1, 2.5GbE x 1	LAN (RJ-45) port x 4
Serial Port	—	—
PS/2 Port	—	—
Others	—	—
Internal I/O Connectors		
Storage	M.2 M key (2280) for (NVMe;PCIe4) storage x 1 SATA 6.0Gb/s x 1	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1 (SATA only)
USB	USB 3.0 Box header x 1 (support additional USB3.2 Gen1 x 2ports)	USB 2.0 (2 x 5-pin, 2.00mm) x 1 ports support additional 2 USB.
Display I/O	40-pin LVDS connector x 1, 40-pin eDP connector x 1	—
Audio I/O	AAFP follow ASUS pin out x 1	AAFP x 1, Speaker x 1
Serial Port	Box header x 2 for COM (COM1/2: RS-232)	Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) x 1
PS/2 Port	—	—
Parallel Port	—	—
DIO	Digital I/O box header x 1	
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1	
Power	—	
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, Clear CMOS jumper x 1, AT/AIX mode select jumper x 1; SIM socket x 1	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS		
OS Support	Windows® 10 64-bit, 20.04.2/Kernel 5.8	Windows® 10 64-bit, Linux Ubuntu 18.04 LTS
Note		





Model	MIX-H310A2	MIX-H310D1
System	Intel® H310 Express Chipset	
Processor	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® H310 Express Chipset	
Memory	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture	DDR4 2666 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6793D	
Ethernet	Intel® PCIe Gb LAN 219V x 1, Intel® PCIe Gb LAN i210AT x 1	Realtek® PCIe Gb LAN RTL8111H
Audio	Realtek® ALC897 with Amp.	Realtek® ALC897
TPM	Firmware TPM	
Expansion Slots	PCIe3.0 [x16] x 1	PCIe3.0 [x4] x 1 M.2 E-key(22 x 30 mm) x 1 for Wireless-wifi module ( PCIe+USB)
BIOS	256Mbit Flash ROM, AMI BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan/ Chassis Fan	
Wake On LAN/ PXE	Yes (WOL / PXE)	
Power State	S3, S4, S5	
Graphics	Intel® UHD Graphics	
Graphics Chipset	Intel® UHD Graphics	
Graphics Multi Display	HDMI+VGA, HDMI+DP, HDMI+LVDS, VGA+DP, VGA+LVDS, DP+LVDS	HDMI1+HDMI2, HDMI1+DP2, DP1+HDMI2, HDMI1+LVDS, HDMI2+LVDS, HDMI1+eDP, HDMI2+eDP, DP1+DP2, DP1+LVDS, DP2+LVDS, DP1+eDP, DP2+eDP
VGA	Up to 1920 x 1200 @ 60 Hz	—
DVI	—	—
HDMI	Up to 3840 x 2160 @30 Hz(HDMI 1.4b)	Up to 4096 x 2304@24Hz (HDMI 1.4b)
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz	Up to 4096 x 2304@60Hz
LVDS	LVDS Up to 1920 x 1200 @60 Hz, Dual Channel 18/24 bit (1 x inverter)	Up to 1920 x 1200 @ 60 Hz, dual-channel 18/24 bit (via CH 7511)
eDP	—	UP to 4096 x 2304 @ 60Hz
Backlight Control	—	Voltage/PWM
Environment & Power & ME	Lithium battery	
Battery	Lithium battery	
Power Requirement	ATX	12V DC Typical: 120W
Operation Temperature	32°F ~140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~185°F (-40°C ~85°C)	
Operation Humidity	0%~90%RH, non-condensing	
Certificate	CE & FCC	
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
Weight	1.1 lb (0.5 Kg)	
MTBF (Hours)	333,520	246,210
Rear Panel I/O Ports	USB 3.2 Gen 1 (5 Gbps) x 4	
USB	USB 3.2 Gen 1 (5 Gbps) x 4	
Display I/O	VGA x 1, HDMI x 1, DP x 1	HDMI x 2, DP x 1 + HDMI x 1 (Optional), DP x 2 (Optional)
Audio I/O	Mic-in x 1, Line-out x 1	
LAN I/O	LAN (RJ-45) port x 2	
Serial Port	1x COM(RS485/422/232)	—
PS/2 Port	—	—
Others	—	DC Jack
Internal I/O Connectors	—	
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) x 1	SATA3.0 (6.0Gb/s) x 2 M.2 M-key (SATA) (22 x 42mm) x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 1 port support additional 2 USB.	USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 5 USB.
Display I/O	LVDS x 1	—
Audio I/O	AAFP x 1, Speaker x 1	AAFP x 1, Speaker header x 1
Serial Port	Box header for COM (RS-232) x 1	Box header for COM (RS-232/422/485) x 1 Box header for COM (RS-232) x 1
PS/2 Port	—	—
Parallel Port	—	—
DIO	Digital I/O box header x 1	
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1	
Power	—	
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1	
OS	—	
OS Support	Windows® 10 64-bit, Linux Ubuntu 18.04 LTS	
Note	—	



# Board Level Products

## Industrial Motherboards



Model	MIX-H310D2	MIX-Q370A1
System Processor	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs	
Chipset	Intel® H310 Express Chipset	Intel® Q370 Express Chipset
Memory	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 64GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture	
I/O Chipset	NCT6793D	
Ethernet	Intel® GbE LAN i219V x 1, Intel® GbE LAN i210AT x 1	
Audio	Realtek® ALC897	Realtek® ALC897 with Amp.
TPM	NPCT750 TPM2.0 (default: No)	Firmware TPM
Expansion Slots	PCIe3.0 [x16] x 1 M.2 E-key(22 x 30 mm) x1 for Wireless-wifi module ( PCIe+USB; CNVi)	PCIe3.0 [x16] x 1 M.2 E-key (22 x 30mm; Support CNVi)
BIOS	256Mbit Flash ROM, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan/ Chassis Fan	
Wake On LAN/ PXE	Yes (WOL / PXE)	
Power State	S3, S4, S5	
Graphics	Intel® UHD Graphics	
Graphics Chipset	Intel® UHD Graphics	
Graphics Multi Display	HDMI+HDMI, HDMI+eDP, HDMI+VGA, VGA+eDP	HDMI+VGA
VGA	Up to 1920 x 1200 @ 60 Hz (Optional)	Up to 1920 x 1200 @ 60 Hz
DVI	—	
HDMI	Up to 3840 x 2160 @30 Hz(HDMI 1.4)	Up to 4096 x 2160 @30Hz (HDMI 1.4)
Display Port	—	
LVDS	—	
eDP	UP to 4096 x 2304 @ 60Hz	—
Backlight Control	Support eDP	—
Environment & Power & ME	Lithium battery	
Battery	ATX	
Power Requirement	12V DC	32°F ~140°F (0°C ~ 60°C)
Operation Temperature	-40°F ~-185°F (-40°C ~-85°C)	
Storage Temperature	0%~90%RH, non-condensing	
Operation Humidity	CE & FCC	
Certificate	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)	
Form Factor	1.1 lb (0.5 kg)	
Weight	373.720	—
MTBF (Hours)	Rear Panel I/O Ports	
USB	USB 3.2 Gen 1 x 4, USB 2.0 x 4	USB 3.2 Gen 2 (10 Gbps) x 4, USB 2.0 x 2
Display I/O	HDMI x 2, VGA x 1 (Optional)	VGA x 1, HDMI x 1
Audio I/O	eDP x 1	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 2	LAN (RJ-45) port x 4
Serial Port	—	
PS/2 Port	—	
Others	12V DC Jack (max:192W)	—
Internal I/O Connectors	—	
Storage	SATA3.0 (6.0Gb/s) x 2 M.2 M-key (22 x 42/80mm; PCIe) x 1	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1(SATA only)
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 1 port support additional 1 USB	USB 2.0 (2 x 5-pin, 2.00mm) x 1 ports support additional 2 USB
Display I/O	—	
Audio I/O	AAFP x 1	AAFP x 1, Speaker x 1
Serial Port	Box header for COM (RS-232) x 1; RS-232/422/485 x 1	Box header for COM (RS-232/422/485) x 1 Box header for COM (RS-232) x 1
PS/2 Port	—	
Parallel Port	—	
DIO	Digital I/O box header x 1	
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1	
Power	—	
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1, ATX/AT mode select x 1, ME disable x 1, eDP Tcon IC voltage select x 1, eDP panel backlight voltage select x 1, COM RI select jumper x 1, SATA PWR x 1	Front Panel connector x 1 Chassis Intrusion x 1 Buzzer onboard x 1 CMOS jumper x 1
OS	—	
OS Support	Windows® 10 64-bit, Linux Ubuntu 18.04.2	Windows® 10 64-bit, Linux Ubuntu 18.04. 64-bit
Note	—	





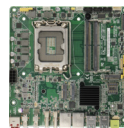


Model	MIX-Q370D1	MIX-Q370D2
System		
Processor	8th/9th Generation Intel® Core™ i7/ i5/ i3, Pentium® LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
Chipset	Intel® Q370 Express Chipset	
Memory	SODIMM x 2, Max. 32GB, DDR4 2666/2400 MHz, Non-ECC, Un-buffered Memory, Dual channel	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 64GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6793D	
Ethernet	Intel® PHY i219LM Giga LAN (support Intel® AMT 12.0) x 1 Intel® i210AT Giga LAN x 1	Intel® GbE LAN i219V x 1, Intel® GbE LAN i210AT x 1
Audio	Realtek® ALC897	
TPM	Nuvoton TPM version 2.0	NPCT750 TPM2.0
Expansion Slots	PCIe 3.0 [x4] x 1 M.2 M key (22 x 80 mm) x 1 at Bottom side, SATA & PCIe [x4] M.2 E key (22 x 30 mm) x 1 for Wireless-wifi module (PCIe+USB)	PCIe3.0 [x16] x 1 M.2 E-key(22 x 30 mm) x1 for Wireless-wifi module ( PCIe+USB; CNVi)
BIOS	256M bit Flash ROM, AMI BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on Chassis	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan/Chassis Fan	
Wake On LAN/ PXE	Yes (WOL/PXE)	
Power State	S3, S4, S5 S3, S4, S5	
Graphics	Intel® UHD Graphics	
Graphics Chipset	Intel® UHD Graphics	
Graphics Multi Display	Three Independent Display	HDMI+VGA+eDP, HDMI+HDMI+VGA, HDMI+HDMI+eDP
VGA	—	Up to 1920 x 1200 @ 60 Hz
DVI	—	—
HDMI	—	Up to 3840 x 2160 @30 Hz(HDMI 1.4b)
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio, DP++ supported	—
LVDS	LVDS Up to 1920 x 1200 @ 60 Hz, dual-channel 18/24 bit (via Chrontel 7511)	—
eDP	eDP UP to 4096 x 2304 @ 60Hz	
Backlight Control	Voltage/PWM	Support eDP
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	12V DC Typical:120W	12V DC
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Operation Humidity	0% ~ 90% RH, non-condensing	
Certificate	CE & FCC (Class A)	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)	
Weight	1.1 lb (0.5 Kg)	
MTBF (Hours)	256,310	319,160
Rear Panel I/O Ports		
USB	USB 3.2 Gen 2 (10 Gbps) x 4	USB 3.2 Gen2 x 6, USB2.0 x 4
Display I/O	DP x 2	VGA x 1, HDMI x 2
Audio I/O	Mic-in x 1, Line out x 1	
LAN I/O	LAN (RJ45) port x 2	
Serial Port	—	
PS/2 Port	—	
Others	DC Jack	12V DC Jack (max:192W)
Internal I/O Connectors		
Storage	SATA 6.0Gb/s x4 M.2 M key (22 x 80 mm) x1 (Support Intel® NVMe M.2 SSD)	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 42/80mm; NVME/SATA) x 1
USB	3 x USB 2.0 pin header support additional 6 USB ports	USB 2.0 (2 x 5-pin, 2.00mm) x 1 port support additional 2 USB
Display I/O	40-pin LVDS connector x 1; 40-pin eDP connector x 1 LCD backlight connector (inverter) x 1	eDP x 1
Audio I/O	Speaker for 2W/4Ω x 1, AAFP follow ASUS pin out x 1	AAFP x 1
Serial Port	Box header x 1 for COM (COM1: RS-232/422/485 supports 5V/12V/RL)	Box header for COM (RS-232) x 1; RS-232/422/485 x 1
PS/2 Port	—	
Parallel Port	—	
DIO	8-bit x 1 (In/Out programmable)	Digital I/O box header x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1	
Power	12V DC Power jack x 1	12V ATX Power Connector x 1
Others	Front panel header x 1 Clear CMOS jumper x 1 ATX/ATX select jumper x 1 Chassis Intrusion x 1 4-pin SATA power x 1	Front Panel connector x 1, Chassis Intrusion x 1 Buzzer onboard x 1, CMOS jumper x 1 SATA Power connector x 1, SPI ROM programming header x 1 ATX/AT mode jumper x 1, eDP backlight power jumper x 1 eDP T-con IC power jumper x 1



# Board Level Products

## Industrial Motherboards



Model	MIX-Q670A1	MIX-Q670D1
System		
Processor	13th & 12th Gen Intel® Core™ Processors (Raptor Lake-S/Alder Lake-S)	
Chipset	Q670E	Intel® Q670E
Memory	Dual-Channel DDR5 4800MHz SODIMM x 2, Max. 64GB	Dual-Channel DDR5 4800MHz SODIMM x 2 (Non-ECC, Max. 64GB)
I/O Chipset		Intel® UHD Graphics Intel® UHD Graphics
Ethernet		Intel® I219-LM GbE LAN x 1 Intel® I210-AT GbE LAN x 1
Audio		Realtek® ALC897 with Amp
TPM		Onboard TPM 2.0 IC
Expansion Slots	PCIe Gen 5 [x16] x 1 A10: M.2 3042/3052 B-Key x 1 A11-EK: M.2 2230 E-Key x 1	M.2 3042/3052 B-Key x 1 (PCIe [x1]), USB 3.2 Gen 1/USB 2.0 M.2 2230 E-Key x 1 (PCIe [x1]), Optional: dual PCIe [x1], USB 2.0)
BIOS		256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V, Fan Monitor on CPU/Chassis
WatchDog Timer		1~255 step by software program
Smart Fan Control	CPU Fan/Chassis Fan	CPU Fan/ System Fan
Wake On LAN/ PXE		Yes (WOL/PXE)
Power State		S3, S4, S5
Graphics		
Graphics Chipset		Intel® UHD Graphics Intel® UHD Graphics
Graphics Multi Display		HDMI x 2 + DP x 2, HDMI x 2 + DP x 1 + LVDS x 1, HDMI x 2 + DP x 1 + eDP x 1, HDMI x 1 + DP x 2 + LVDS x 1, HDMI x 1 + DP x 2 + eDP x 1
VGA		---
DVI		---
HDMI	Up to 4096 x 2160 @60Hz (HDMI 2.0)	HDMI 2.0, Up to 4096 x 2160 @60Hz
Display Port	Up to 4096 x 2160 @60Hz	DP 1.2, Up to 4096 x 2160 @60Hz
LVDS	Up to 1920 x 1080 @60Hz, Dual-Channel 18/24 bit	Dual-Channel 18/24 bit LVDS via CH7513, up to 1920 x 1080 @60Hz, colay eDP
eDP	Up to 1920 x 1080 @60Hz (via CH7513), co-layout LVDS	Up to 1920 x 1080 @60Hz
Backlight Control		PWM
Environment & Power & ME		
Battery		Lithium Battery
Power Requirement	ATX (Voltage/Current(A) requirement:+3.3V/0.06A;+5V/11.65A;+12V/17.68A;+5VSB/0.14A	DC 12V Peak: 330W;Typical:150W
Operation Temperature		32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature		-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity		0%~90%RH, non-condensing
Certificate		CE & FCC
Form Factor		Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight		1.1 lb. (0.5Kg)
MTBF (Hours)		---
Rear Panel I/O Ports		
USB	A10: USB 3.2 Gen 2 x 8 + USB 2.0 x 4 A11-EK: USB 3.2 Gen 2 x 8 + USB 2.0 x 2	USB 3.2 Gen 2 x 4
Display I/O		HDMI x 2, DP x 2
Audio I/O	Mic-in x 1, Line-out x 1	Line-out x 1
LAN I/O		LAN Port x 2 (RJ-45)
Serial Port		---
PS/2 Port		---
Others	SIM Socket x 1 (A10 only)	---
Internal I/O Connectors		
Storage	SATA III x 2 (6.0Gb/s), M.2 2280 M-Key	SATA III x 2 with SATA Power Connector x 2 (1A) M.2 2280 M-Key (PCIe [x4]/NVMe) x 1
USB	USB 3.0 Pin Header x 1 (Supports additional USB 3.2 Gen 1 x 2)	USB 2.0 x 4 via 2x5P Header x 2
Display I/O		40-pin LVDS/eDP connector x 1 with inverter
Audio I/O	AAFP x 1, Speaker x 1	HD Audio x 1 (via AAFP Header), Internal Speaker x 1 (2W/40hms2)
Serial Port	Box Header for COM x 1 (RS-232/422/485) Box Header for COM x 1 (RS-232)	COM Box Header x 1 (RS-232/422/485) COM Box Header x 1 (RS-232)
PS/2 Port		---
Parallel Port		---
DIO		Digital I/O Box Header x 1
FAN		4-pin CPU Fan Connector x 1, 4-pin Chassis Fan Connector x 1
Power		---
Others		Front Panel Connector x 1, Chassis Intrusion x 1, Onboard Buzzer x 1, CMOS Jumper x 1
OS		
OS Support		Windows® 10 64-bit, Windows® 11 64-bit





Model	MIX-ALND1	MIX-ALPSD1
System		
Processor	Intel® Processor N-series: Intel® Processor N97 Intel® Processor N50 *For additional compatible CPUs, please contact regional sales	i7-1255UL/i7-12700HL/i5-1235UL/i5-12500HL/i3-1215UL/i3-12300HL/ Celeron 7305L
Chipset	Soc	N
Memory	Single-Channel DDR5 4800MHz SODIMM x 1 (Non-ECC, Max. 32GB)	Single-Channel DDR5 4800 MHz SODIMM x 2 (Non-ECC, Max. 64GB)
I/O Chipset		NCT6126D
Ethernet	Realtek 8111H x 2	Realtek® RTL8111H-CG x 2
Audio		Realtek® ALC897 with Amp.
TPM	fTPM (TPM chip by BOM optional)	TPM2.0
Expansion Slots	M.2 3042/3052 B-Key x 1 (PCIe [x1], SATA, USB 3.2 Gen 1/USB 2.0) with SIM socket M.2 2230 E-Key x 1 (PCIe [x1], USB 2.0)	M.2 3042 B-Key x 1 (PCIe [x1]) M.2 2230 E-Key x 1 (PCIe [x1] x 2)
BIOS		256Mbit Flash ROM, AMI BIOS
H/W Monitor		Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V, Fan Monitor on CPU/Chassis
WatchDog Timer		1~255 steps by software program
Smart Fan Control		CPU Fan/Chassis Fan
Wake On LAN/ PXE		Yes (WOL/PXE)
Power State		S3, S4, S5
Graphics		
Graphics Chipset		Intel® UHD Graphics
Graphics Multi Display	HDMI x 2 + DP x 1, HDMI x 2 + LVDS x 1, HDMI x 2 + eDP x 1, HDMI x 1 + DP x 1 + LVDS x 1, HDMI x 1 + DP x 1 + eDP x 1	HDMI x 2 + eDP x 1, HDMI x 2 + LVDS x 1
VGA		—
DVI		—
HDMI		HDMI 2.0, Up to 4096 x 2160 @60Hz
Display Port	DP 1.4, Up to 4096 x 2160 @60Hz	—
LVDS	18/24-bit Dual-Channel LVDS via CH7513, up to 1920 x 1080 @60Hz, coloy eDP	Dual-Channel 18/24 bit LVDS via CH7513, up to 1920 x 1080 @60Hz, coloy eDP
eDP	Up to 1920 x 1080 @60Hz	Up to 4096 x 2160 @ 60 Hz
Backlight Control		PWM
Environment & Power & ME		
Battery		Lithium battery
Power Requirement	DC 12V Peak: 100W; Typical: 60W	DC 12V
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C), Intel® Core™ i3-N305 with 0.5m/s Air flow	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature		-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity		0% ~ 90%RH, non-condensing
Certificate		CE & FCC class A
Form Factor		Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight		1.1 lb. (0.5Kg)
MTBF (Hours)		—
Rear Panel I/O Ports		
USB	USB 3.2 Gen 2 x 2; USB 2.0 x 2	USB 3.2 Gen 2 x 3; USB 2.0 x 1
Display I/O	HDMI x 2, DP x 1	HDMI 2.0 x 2
Audio I/O	Line-out x 1	Line-out x 1, MIC-in x 1
LAN I/O		RJ-45 LAN Port x 2
Serial Port		—
PS/2 Port		—
Others		—
Internal I/O Connectors		
Storage		SATA III x 1 with SATA Power Connector x 1(1A) M.2 2280 M-Key x 1 (PCIe [x4]/NVMe)
USB		USB 2.0 x 4 via 2x5P Headers x 2
Display I/O		40-pin LVDS/eDP Connector x 1 with Inverter
Audio I/O	HD Audio x 1 (via AAFP Header), Internal Speaker x 1 (2W/4Ω)	HD Audio x 1 (via AAFP Header), Internal Speaker x 1 (2W/40hmΩ)
Serial Port	COM Box Header x 2 (RS-232/422/485) COM Box Header x 4 (RS-232)	COM Box Header x 1 (RS-232/422/485) COM Box Header x 3 (RS-232)
PS/2 Port		—
Parallel Port		—
DIO		Digital I/O Box Header x 1
FAN		4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power		—
Others	Front Panel Connector x 1, Chassis Intrusion x 1, Onboard Buzzer x 1, CMOS Jumper x 1	Clear CMOS Jumper x 1, Front Panel Connector x 1 Chassis Intrusion x 1, Buzzer Onboard x 1 ATX/AT Mode Select x 1, ME Disable x 1 eDP/LVDS Tcon IC Voltage Select x 1 eDP/LVDS Panel Backlight Voltage Select x 1 SATA PWR Connector x 1, LVDS Inverter Connector x 1
OS		
OS Support	Windows® 10.64 bit, Windows® 11.64 bit	Windows® 10.64 bit, Windows® 11.64 bit



# Board Level Products Industrial Motherboards



Model	EMB-Q170A	EMB-Q170B
System		
Processor	6th/7th Generation Intel® Core™ i7/i5/i3, LGA1151 Socket Processor, Max. 65W TDPs	
Chipset	Intel® Q170	
Memory	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture	
I/O Chipset	NCT6791D	
Ethernet	Intel® PCIe Gb LAN 219LM x 1, Intel® PCIe Gb LAN i210AT x 1	Intel® PCIe Gb LAN 219LM for vPro x 1, Intel® PCIe Gb LAN 210AT x 1
Audio	Realtek® ALC897	
TPM	Infineon SLB96XX TT 1.2/2.0 (default: No)	
Expansion Slots	PCIe3.0 [x16] x 1, M.2 M-key(22 x 80 mm) at bottom side x 1	PCIe 3.0 [x4] x 1 M.2 M key (22 x 80 mm) at Bottom side x 1 M.2 E key (22 x 30 mm) at Top side x 1
BIOS	128M bit Flash ROM, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan/ Chassis Fan	
Wake On LAN/ PXE	Yes (WOL/PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® HD Graphics	
Graphics Multi Display	DP+DP, DP+VGA, DP+DP+VGA, DP+DP+DP	2DP + LVDS, DP + eDP + LVDS, 2DP + eDP
VGA	Up to 1920 x 1200 @60 Hz	—
DVI	—	—
HDMI	—	—
Display Port	Up to 4096 x 2160 @24 Hz / 3840 x 2160 @60 Hz, with Digital Audio	
LVDS	—	Up to 1920 x 1200 @60 Hz, dual-channel 18/24-bit
eDP	—	UP to 4096 x 2340 @60Hz
Backlight Control	—	Voltage/PWM
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	ATX Typical Voltage/Current(A) requirement:+3.3V/2.57A;+5V/2.19A;+12V/5.93A +5VSB/3.65A	12VDC Typical Voltage/Current(A) requirement:+3.3V/2.57A;+5V/2.19A;+12V/5.93A +5VSB/3.65A
Operation Temperature	32°F ~140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~185°F (-40°C ~85°C)	
Operation Humidity	0% ~ 90% R/H, non-condensing	
Certificate	CE & FCC	
Form Factor	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)	
Weight	1.1 lb (0.5 Kg)	
MTBF (Hours)	221,850	292,450
Rear Panel I/O Ports		
USB	USB 3.2 Gen 1 (5 Gbps) x 4, USB 2.0 x 2	USB 3.2 Gen 1 x 4
Display I/O	VGA x 1, DP x 3	DP x 2
Audio I/O	Mic-in x 1, Line-out x 1	
LAN I/O	LAN (RJ-45) port x 2	
Serial Port	—	
PS/2 Port	PS/2 for KB/MS x 1	—
Others	—	DC Jack x 1
Internal I/O Connectors		
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80 mm) at bottom side x 1	SATA3 (6.0Gb/s) x 4, SATA power connector x 1, M.2 M key (22 x 80mm) at Bottom side x 1, M.2 E key (22 x 30mm) at Top side x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 2 ports support additional 4 USB.	USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 6 USB.
Display I/O	—	40-pin LVDS connector x 1, 40-pin eDP connector x 1, LVDS 3.3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight connector (inverter) x 1, LCD backlight 12V /5V jumper x 1
Audio I/O	Speaker x 1	AAFP x 1, Speaker x 1 (pin out refer to manual)
Serial Port	Box head for COM (RS-232/422/485) x 1, Box head for COM (RS-232) x 1	Box header for COM (RS-232/422/485) x 1
PS/2 Port	—	
Parallel Port	—	
DIO	Digital I/O box head x 1	
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1	
Power	ATX Power Connector x 2, AT/ATX mode select jumper (optional) x 1	12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard (pin header) x 1, CMOS jumper x 1
OS		
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit,	Windows® 10 64-bit, Ubuntu16.04.02/Kernel4.8.0
Note		





Model	EMB-H110B	MAX-Q670A
System		
Processor	6th/7th Generation Intel® Core™ i7/i5/i3, LGA1151 Socket Processor, Max. 65W TDPs	12th/13th Generation Intel® Core™ LGA1700 Socket Processors (formerly Alder Lake/Raptor Lake), TDP Max 125W
Chipset	Intel® H110	Intel® Q670 Express Chipset
Memory	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture	DDR5 4000MHz DIMM x 4, Up to 128GB Non-ECC, Un-buffered Memory, Dual-Channel Memory Architecture
I/O Chipset	NCT6791D	NCT6126D
Ethernet	Realtek® PCIe Gb LAN 8111H x 2	RJ-45 GbE LAN x 1 (Intel® PHY I219-LM, supports Intel® AMT 12.0) RJ-45 GbE LAN x 1 (Intel® I210-AT) RJ-45 2.5GbE LAN x 2 (Intel® I225-LM, Optional)
Audio	Realtek® ALC897	Realtek ALC897 6-Channel High Definition Audio CODEC
TPM	Infineon SLB96XX TT 1.2/2.0 (default: No)	TPM 2.0 onboard
Expansion Slots	PCIe 2.0 [x1] x 1, Full-size Mini-Card (mSATA default) (PCIe+USB optional)x 1, Half-size Mini-Card (PCIe+USB) x 1	PCIe Gen 5 [x16] x 1 (8 Lanes/8 Lanes when dual-use PCIe [x16] slot), PCIe Gen 3 [x4] x 1 (2 Lanes, Open Slot), PCIe Gen 5 [x16] x 1 (8 Lanes), PCIe Gen 4 [x4] x 1 (4 Lanes), M.2 3042/3052/2242 B-Key x 1 (PCIe 3.0 [x1]/USB 3.2 Gen 1) + Micro SIM Slot x 1, M.2 2230 E-Key x 1 (PCIe 3.0 [x1]/USB 2.0)
BIOS	64 M bit Flash ROM, AMI BIOS	256 Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer		1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan	CPU Fan x 1/Chassis Fan x 2 (3rd Chassis Fan is DC Fan)
Wake On LAN/ PXE		Yes (WOL/PXE)
Power State		S3, S4, S5
Graphics		
Graphics Chipset		Intel® Graphics Media Accelerator
Graphics Multi Display	HDMI1+HDMI2, HDMI1+DP2, DP1+HDMI2, HDMI1+LVDS, HDMI2+LVDS, HDMI1+eDP, HDMI2+eDP, DP1+DP2, DP1+LVDS, DP2+LVDS, DP1+eDP, DP2+eDP	HDMI + VGA + DP + LVDS/eDP
VGA		Up to 1920 x 1200 @60Hz (via IT6516B)
DVI		
HDMI	Up to 4096 x 2160 @24 Hz / 2560 x 1600 @60 Hz, with Digital Audio (HDMI/DP Combo)	HDMI 2.0 x 1, up to 4096 x 2160 @60/30 Hz, with Digital Audio
Display Port	Up to 1920 x 1200 @60 Hz, with Digital Audio (HDMI/DP Combo)	DP 1.4 x 1, up to 4096 x 2160 @24 Hz or 3840 x 2160 @60 Hz, with Digital Audio
LVDS	Up to 1920 x 1200 @60 Hz, dual-channel 18/24-bit colay	18/24-bit Dual-Channel LVDS x 1, up to 1920 x 1080 @60 Hz
eDP	UP to 4096 x 2340 @60Hz	eDP x 1, up to 3840 x 2160 @30 Hz
Backlight Control	Voltage/PWM	Yes
Environment & Power & ME		
Battery		Lithium battery
Power Requirement	12VDC Typical: 100W	24-pin ATX connector x 1, 8-pin 12V ATX Power Connector x 1
Operation Temperature		32°F ~140°F (0°C ~ 60°C)
Storage Temperature		-40°F ~185°F (-40°C ~85°C)
Operation Humidity		0% ~ 90% relative humidity, non-condensing
Certificate	CE & FCC	CE & FCC Class A
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	Micro-ATX Form Factor, 9.6" x 9.6" (244mm x 244mm)
Weight	1.1 lb (0.5 Kg)	1.76 lb. (0.8Kg)
MTBF (Hours)	315,210	267,950
Rear Panel I/O Ports		
USB	USB 3.2 Gen 1 x 4	USB 3.2 Gen 2 x 4 (10Gbps), USB Type-C x 1 (Optional, 20Gbps, 5V, 3A) (All ports are bootable, can be deactivated per BIOS function; USB Power switchable feature)
Display I/O	DP/HDMI (BOM Change) x 2	HDMI 2.0 x 1, VGA x 1, DP 1.4 x 1
Audio I/O	Mic-in x 1, Line-out x 1	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ-45) port x 2	RJ-45 LAN x 2 (Optional: RJ-45 x 4)
Serial Port	—	DB-9 x 1 (Supports RS-232/422/485, 5V/12V/RI)
PS/2 Port	—	—
Others	DC Jack x 1	—
Internal I/O Connectors		
Storage	SATA3 (6.0Gb/s) x 2, Full Size Mini-Card (mSATA) x 1, SATA power connector x 1	SATA III x 8, supports RAID 0, 1, 5, 10 M.2 2242/2280 M-Key x 2 (PCIe Gen 4.0, 4 Lanes, supports RAID 0, 1, 5, 10) USB 3.0 x 1 (2x5P 2.54mm Pitch Box Header, supports USB 3.2 Gen 1 x 2) USB 2.0 Header x 1 (2x5P 2.54mm Pitch Box Header, supports USB 2.0 x 2) USB 3.2 Gen 1 x 1 (Type-A, vertical) (All Headers support USB Power switchable feature)
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 2 ports support additional 4 USB.	
Display I/O	40-pin LVDS connector x 1, 40-pin eDP connector x 1, LVDS 3.3V /5V jumper x 1, LCD DC / PWM mode jumper x 1, LCD backlight inverter (inverter) x 1, LCD backlight 12V /5V jumper x 1	
Audio I/O	AAFP x 1, Speaker x 1	Speaker header x 1 (Line-out), AAFP x 1
Serial Port	Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) x 1	RS-232 x 5 (via 1x9P Header)
PS/2 Port		
Parallel Port		
DIO	Digital I/O box header x 1	8-bit Digital I/O Interface x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1	4-pin CPU Fan Connector x 1 (PWM Mode), 4-pin Chassis Fan connector x 2 (PWM Mode), 3-pin Chassis Fan connector x 1 (DC Mode)
Power	12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1	
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard (pin header) x 1, CMOS jumper x 1	Chassis Intrusion x 1, AT/ATX Mode Select Jumper x 1, Front Panel Header x 1, Clear CMOS Jumper x 1, Onboard Buzzer x 1, 3-pin ME Lock Header x 1 LED Header for Ethernet x 2 (Optional: LED Header x 4 when RJ-45 x 4)

# Board Level Products Industrial Motherboards



Model	MAX-Q470A	MAX-Q370A
System		
Processor	Intel® 10th Generation (Comet Lake-S) Core™ i9 / i7 / i5 / i3, Pentium 14nm LGA 1200 socket Processor. Max. 10 Core 80W	8th/9th Generation Intel® (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9 / i7 / i5 / i3, Pentium™ 14nm LGA 1151 socket processor, max. TDP 6 Core 95W
Chipset	Intel® Q470E Express Chipset	Intel® Q370 Express Chipset
Memory	DDR4 4, DDR4 (2933/2666/2400 MHz, max. 128GB) non-ECC, un-buffered memory Dual channel memory architecture	DDR4 4, DDR4 (2666/2400/2133 MHz, max. 128GB) Non-ECC, un-buffered memory Dual-channel memory architecture
I/O Chipset	IT5121E + F81216HD	NCT6793D - F81216HD
Ethernet	Intel® PHY i219LM Gb LAN (supports Intel® AMT 12.0) x 1 Intel® i210AT Gb LAN x 1 RJ45 x 2	
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC	
TPM	Nuvoton NPC1750AADYX TPM2.0 onboard (optional; default: onboard)	Nuvoton NPC1750 TPM2.0 onboard
Expansion Slots	PCIe 3.0[x16] Slot (16 lanes) (8 lanes when dual use PCIe[x16]) x 1, PCIe 3.0[x16] (8 lanes) x 1, PCIe 3.0[x4] Slot x 1, PCIe 3.0[x4] Slot (2 lanes) x 1, M.2 2230 E-key (PCIe/CNV) x 1, M.2 3042/3052/2242 B-key (PCIe/SATA) x 1, Micro SIM card Slot x 1	PCIe 3.0[x16] Slot x 1 PCIe 3.0[x4] Slot (open edge) x 2 PCIe 3.0[x1] Slot (open edge) x 1 M.2 2230 E-key (PCIe/USB) x 1 M.2 2280 M-key (PCIex4/SATA) x 1
BIOS		256Mbit Flash ROM, AMI BIOS
H/W Monitor		Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer		1~255 steps by software program
Smart Fan Control		CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE		Yes (WOL / PXE)
Power State		S3, S4, S5
Graphics		
Graphics Chipset	Intel® Graphics Media Accelerator	Intel® UHD Graphics
Graphics Multi Display	HDMI+HDMI+VGA, HDMI+HDMI+LVDS, HDMI+VGA+LVDS, HDMI+HDMI+HDMI	HDMI+VGA+DP, HDMI+HDMI+VGA, HDMI+HDMI+DP
VGA		Up to 1920 x 1200 @60Hz (via IT6516B)
DVI		
HDMI	Up to 4096 x 2160 @ 60 / 30 Hz, with Digital Audio	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port		Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	Up to 1920 x 1200 @ 60 Hz, Dual Channel 18/24 bit	
eDP		
Backlight Control		Yes
Environment & Power & ME		
Battery		Lithium battery
Power Requirement		24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature		32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature		-40°F ~ -185°F (-40°C ~ -85°C)
Operation Humidity		0%~90%RH, non-condensing
Certificate		CE & FCC Class A
Form Factor		Micro-ATX Form Factor, 9.6"x9.6" (244 mm x 244 mm)
Weight		1.76 lb (0.8 Kg)
MTBF (Hours)	259,360 Hrs	264,820
Rear Panel I/O Ports		
USB	USB 3.2 Gen2 ports (10 Gbps) x 2, USB 3.2 Gen1 ports (5 Gbps) x 4	USB 3.2 Gen 2 ports (10 Gbps) x 6, USB 3.2 Gen 1 ports (5 Gbps) x 4
Display I/O	VGA x 1, HDMI x 3 (2.0 x 1, 1.4 x 2)	DP x 1, VGA x 1, HDMI x 2
Audio I/O		Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O		LAN (RJ45) ports x 2
Serial Port	DB-9 COM (supports RS-232/422/485, 5V/12V/RI) x 1	
PS/2 Port		PS/2 combo Port (Keyboard & Mouse) x 1
Others	BIOS recovery button	
Internal I/O Connectors		
Storage	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280/2242 M-key (PCIex4) x 1	SATA3 (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA) x 1
USB	USB3.2 Gen1 box header support additional 2 USB ports (2x5PIN, p=2.54mm) x 1, USB3.2 Gen1 Type A (vertical) connector x 1, USB 2.0 header support additional 2 USB ports (2x5PIN, p=2.54mm) x 1	USB 2.0 headers support additional 3 USB ports (2x5PIN, p=2.54mm)
Display I/O	40-pin LVDS connector x 1	
Audio I/O	speaker header (Line-out) x 1, AAFP x 1	
Serial Port	RS-232 headers x 3	RS-232 Box headers x 5 RS-232/422/485 Box header (COM1, Pin9 supports 5V/12V/RI optional) x 1
PS/2 Port		
Parallel Port		
DIO		8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2	CPU Fan connector (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2
Power	24-pin EATX Power header x 1 8-pin EATX 12V Power connector x 1	
Others	Chassis Intrusion x 1, AT/ATX mode select jumper x 1, Front panel header x 1, Clear CMOS jumper x 1, 3-pin ME lock header x 1, Buzzer on board x 1	Chassis intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1 3-pin ME lock header x1 Buzzer on-board x1
OS		





Model	MAX-C246A	MAX-H310A
System		
Processor	8th/9th Generation Intel® (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5/ i3, Pentium™ 14nm, Celeron™, Xeon™ E-2200/2100, LGA 1151 socket Processor, max. TDP 8 Core 95W	8th/9th Generation Intel® (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5/ i3, Pentium 14nm LGA 1151 socket Processor
Chipset	Intel® C246 Express Chipset	Intel® H310 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB) ECC, un-buffered memory Dual-channel memory architecture	DIMM x 2, DDR4 (2666/2400/2133 MHz, max. 64GB) non-ECC, un-buffered memory Dual-channel memory architecture
I/O Chipset	NCT6793D+ F81216HD	
Ethernet	Intel® PHY i219LM Gb LAN (supports Intel® AMT 12.0) x 1 Intel® i210AT Gb LAN x 1 RJ45 x 2	Intel® PHY i219V Gb LAN x 1 Intel® i210AT Gb LAN x 1 RJ45 x 2
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC	
TPM	Nuvoton NPCT750 TPM2.0 onboard	
Expansion Slots	PCIe 3.0[x16] Slot x 1 PCIe 3.0[x4] Slot x 2(open edge) PCIe 3.0[x1] Slot x 1(open edge) M.2 2230 E-key x 1(PCIe/USB) M.2 2280 M-key x 1(PCIex4/SATA3)	PCIe 3.0[x16] Slot x 1 PCIe 2.0[x1] Slot (open edge) x 3 M.2 2280 M-key (BOM option: PCIe or SATA; default: SATA) x 1
BIOS	256Mbit Flash ROM, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan/ Chassis Fan x 2	
Wake On LAN/ PXE	Yes (WOL / PXE)	
Power State	S3, S4, S5	
Graphics	Intel® UHD Graphics	
Graphics Chipset	Intel® UHD Graphics	
Graphics Multi Display	HDMI+VGA+DP, HDMI+HDMI+VGA, HDMI+HDMI+DP	
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)	
DVI	---	
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio	
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio	
LVDS	---	
eDP	---	
Backlight Control	---	
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1	
Operation Temperature	32°F ~140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~-185°F (-40°C ~-85°C)	
Operation Humidity	0%~90%RH, non-condensing	
Certificate	CE & FCC Class A	
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244mmx244mm)	
Weight	1.76 lb (0.8 Kg)	
MTBF (Hours)	264,820	
Rear Panel I/O Ports	261,090	
USB	USB 3.2 Gen 2 ports (10 Gbps) x 6, USB 3.2 Gen 1 ports (5 Gbps) x 4	
Display I/O	USB 3.2 Gen 1 ports (5 Gbps) x 4, USB 2.0 ports x 4	
Audio I/O	DP x 1, VGA x 1, HDMI x 2	
LAN I/O	Audio Jack x 3: Line-in, Mic-in, Line-out	
Serial Port	LAN (RJ45) ports x 2	
PS/2 Port	---	
Others	PS/2 combo port (Keyboard & Mouse) x 1	
Internal I/O Connectors		
Storage	SATA3 (6.0Gb/s) ports x 4, support RAID 0/1/5/10	
USB	SATA III (6.0Gb/s) ports x 3; BOM option: can support additional 2 SATA	
Display I/O	M.2 2280 M-key (PCIex4/SATA3) x 1	
Audio I/O	M.2 2280 M-key (BOM option: PCIe1 or SATA; default: SATA) x 1	
Serial Port	USB 2.0 headers support additional 3 USB ports (2x5PIN, p=2.54mm)	
PS/2 Port	USB 2.0 header support additional 2 USB ports (2x5PIN, p=2.54mm) x 1	
Parallel Port	Speaker for 2W@4Ω x 1	
DIO	AAFP x 1	
FAN	RS-232 Box headers x 5	
Power	RS-232/422/485 Box header (COM1, Pin9 supports 5V/12V/RL optional) x 1	
Others	8-bit Digital I/O interface (In/Out programmable) x 1	
OS	CPU Fan connector (4-pin) x 1	
OS Support	Chassis Fan connector(s) (4-pin) x 2	
OS Support		
OS Support	Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64-bit (18.04.1/Kernal4.8.0)	



# Board Level Products

## Industrial Motherboards



Model	IMBM-Q170A	IMBM-H110A
System	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor	
Processor	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor	
Chipset	Intel® Q170 Express Chipset	Intel® H110
Memory	288-pin DIMM x 4, max. 64GB, DDR4 2133/1867 MHz, non-ECC, unbuffered memory, dual-channel memory architecture	288-pin DIMM x 2, max. 32GB, DDR4 2400/2133/1867, dual-channel
I/O Chipset	NCT6791D, F81216HD	
Ethernet	LAN 1: Intel® PHY i219LM Gb LAN (supports iAMT 11.0) x 1 LAN 2: Intel® i210AT Gb LAN x 1, RJ-45 x 2	Intel® i210AT Gb LAN x 2
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPC750 TPM2.0 onboard (optional; default: not onboard)	Nuvoton NPC750 TPM2.0 (default : No)
Expansion Slots	PCIe 3.0/2.0[x16] Slot x 1, PCIe 3.0/2.0[x4] Slot (open edge) x 1, PCIe 3.0/2.0[x1] Slot (open edge) x 1, PCI x 1	PCIe [x16] x 1, PCIe [x1] (open edge) x 2, PCI x 1, M.2 M key (22 x 42mm) x 1
BIOS	128M bit Flash ROM x 1, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/SV/3.3V/12V/ Fan Monitor on CPU/Chassis	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/SV/3.3V/12V/ 3VSB/VBAT, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan x 1, Chassis Fan x 2	
Wake On LAN/ PXE	Yes (WOL/PXE)	
Power State	S3, S4, S5	
Graphics	Intel® HD Graphics	
Graphics Chipset	Intel® HD Graphics	
Graphics Multi Display	DVI-I+HDMI, HDMI+HDMI	DVI-D+HDMI, HDMI+HDMI, VGA+HDMI, DVI-D+VGA
VGA	Up to 1920 x 1200 @60Hz	
DVI	Up to 1920 x 1200 @60Hz	
HDMI	HDMI 1.4 up to 4096 x 2304 @30Hz	HDMI 1.4 up to 4096 x 2304 @24Hz
Display Port	---	
LVDS	---	
eDP	---	
Backlight Control	---	
Environment & Power & ME	---	
Battery	Lithium battery	
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1	
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Operation Humidity	0% ~ 90% RH, non-condensing	
Certificate	CE & FCC Class A	
Form Factor	Micro-ATX Form Factor, 9.6" x 9.6" (244mm x 244mm)	
Weight	1.76 lb (0.8 Kg)	
MTBF (Hours)	193,470	245,250
Rear Panel I/O Ports	---	
USB	USB 3.2 Gen 1 port x 10	USB 3.2 Gen 1 x 4
Display I/O	DVI-I x 1, HDMI x 2	HDMI x 2, VGA x 1, DVI-D x 1
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out	Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ-45) port x 2	RJ-45 x 2
Serial Port	RS-232/422/485 DB-9 connector x 1 (COM1, supports 5/12V on RI pin)	DB-9 COM x 1 (supports RS-232/422/485)
PS/2 Port	PS/2 Combo Port (Keyboard & Mouse) x 1	Stack Port (Keyboard & Mouse) x 1
Others	---	
Internal I/O Connectors	---	
Storage	SATA3 (6.0Gb/s) port x 6, supports RAID 0/1/5/10	SATA 6.0Gb/s x 5, M.2 M key (22 x 42mm) x 1
USB	USB 2.0 header supports additional 2 USB ports x 2	USB 2.0 x 6
Display I/O	---	
Audio I/O	Speaker header x 1 (Line-out)	---
Serial Port	RS-232 header x 5	
PS/2 Port	---	
Parallel Port	---	
DIO	8-bit Digital I/O interface x 1 (In/Out programmable)	8-bit x 1 (In/Out programmable)
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2	4-pin CPU Fan x 1, 4-pin Chassis Fan x 2
Power	---	
Others	Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1	Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1
OS	---	
OS Support	Windows® 7 32/64-bit, Windows® 8.1 64-bit, Windows® 10 64-bit, Linux Fedora 64bit	Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used), Windows® 8.1 64-bit (not supported when a Kaby Lake processor is used), Windows® 10 64-bit, Linux Fedora 64bit
Note	---	







Model	ATX-Q670A	ATX-Q370A
System		
Processor	12th/13th Generation Intel® Core™ LGA1700 Socket Processors (formerly Alder Lake/Raptor Lake), TDP Max 125W	Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5/ i3, Pentium 14nm LGA 1151 socket Processor, max. TDP 8 Core 95W
Chipset	Intel® Q670E Chipset	Intel® Q370 Express Chipset
Memory	DDRS 4000MHz DIMM x 4, up to 128GB Non-ECC, Unbuffered Memory, Dual-Channel Memory Architecture	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB) Non-ECC, un-buffered memory Dual channel memory architecture
I/O Chipset	NCT6126D	NCT6793D + F81261HD
Ethernet	Intel® PHY i219-LM Giga LAN x 1 (supports Intel® AMT 12.0) Intel® i210-AT Giga LAN x 1 Intel® i225-LM Giga LAN x 1 (Optional) RJ-45 x 2 (Optional: RJ-45 x 3, LAN 3 with USB 3.2 Gen 2 x 1)	Intel® PHY i219LM Giga LAN x 1 (supports Intel® AMT 12.0) Intel® i210AT Giga LAN x 1 (BOM option: i210AT x 2) RJ45 x 2 (BOM option: RJ45 x 3)
Audio	Realtek ALC897 6-Channel High Definition Audio CODEC	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	TPM 2.0 onboard	Nuvoton NPC1750 TPM2.0 onboard
Expansion Slots	PCIe Gen 5 [x16] x 1 (16 Lanes), PCIe Gen 3 [x1] x 1 (1 Lane, Open Slot) PCIe Gen 4 [x4] x 1 (4 Lanes, Open Slot), PCIe Gen 4 [x16] x 1 (4 Lanes) PCI Slot x 3, M.2 3042/3052 B-Key x 1 (PCIe 3.0 [x1]/USB 3.2 Gen 1) Mini PCIe Slot x 1 (PCIe 3.0/USB 2.0) Micro SIM Card Slot x 1 (M.2 B-Key or Mini PCIe Slot)	PCIe 3.0[x16] Slot x 1, PCIe 3.0[x4] Slot (open edge) x 2, PCIe 3.0[x4] Slot (open edge) x 2, PCI x 2, M.2 2280 E-Key (PCIex1/USB2.0/CNV) x 1, M.2 2280 M-Key (PCIex4/SATA3) x 1
BIOS		256Mbit Flash ROM, AMI BIOS
H/W Monitor		Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer		1~255 step by software program
Smart Fan Control	CPU Fan x 1/Chassis Fan x 3	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE		Yes (WOL/PXE)
Power State		S3, S4, S5
Graphics		
Graphics Chipset	Intel® Graphics Media Accelerator	Intel® Graphics Media Accelerator
Graphics Multi Display	HDMI+HDMI+DP+DP, HDMI+HDMI+DP+VGA, HDMI+VGA+DP+DP	HDMI+VGA+DP (BOM option: USB 3.2 Gen 2-10Gbps Type-C connector (Alternate Mode: USB+DP) x 1)
VGA		Up to 1920 x 1200 @60Hz (via IT616516)
DVI		—
HDMI	HDMI 2.0, up to 4096 x 2160 @60/30Hz, with Digital Audio	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	DP 1.4, up to 4096 x 2160 @24Hz or 3840 x 2160 @60 Hz, with Digital Audio	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS		—
eDP		—
Backlight Control		—
Environment & Power & ME		
Battery		Lithium battery
Power Requirement	24-pin ATX Connector x 1, 8-pin ATX 12V Power Connector x 1	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature		32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature		-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity		0%~90%RH, non-condensing
Certificate		CE & FCC Class A
Form Factor		ATX Form Factor, 12" x 9.6" (305mm x 244mm)
Weight		1.76 lb (0.8 Kg)
MTBF (Hours)	281,760	281,410
Rear Panel I/O Ports		
USB	USB 3.2 Gen 2 x 2 (10Gbps, Optional: x 3 units if with LAN 3 i225-LM) USB 3.2 Gen 1 x 2 (5Gbps), USB Type C x 1 (5Gbps, 5V, 1.5A, Optional) (All ports are bootable, can be deactivated per BIOS function; USB Power switchable feature)	USB 3.2 Gen 2 ports (10 Gbps) x 4, USB 3.2 Gen 1 ports (5 Gbps) x 2, USB 2.0 ports x 4
Display I/O	HDMI 2.0 x 2, DP 1.4 x 2	HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)
Audio I/O		Audio Jack x 3, Line-in, Mic-in, Line-out
LAN I/O	RJ-45 LAN x 2 (Optional: RJ-45 x 3)	LAN (RJ45) ports x 2 (BOM option: RJ45 x 3)
Serial Port	DB-9 COM x 1 (supports RS-232/422/485, 5V/12V/RI)	—
PS/2 Port		—
Others		—
Internal I/O Connectors		
Storage	SATA III x 8, supports RAID 0/1/5/10 M.2 2280 M-Key x 1 (PCIe Gen 4.0, 4 Lanes) M.2 2242/B0 M-Key x 1 (PCIe Gen 3.0 1 Lane)	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA3) x 1
USB	USB 3.0 Box Header x 1 (2x5P, p=2.54mm), supports USB 3.2 Gen 1 x 2 (USB Power switchable feature) USB 2.0 Header x 1 (2x5P, p=2.54mm) supports USB 2.0 x 2 (USB Power switchable feature) USB 2.0 x 1 (Vertical Type-A)	USB 2.0 headers x 1 support additional 2 USB ports (2x5Pin, p=2.54mm)
Display I/O	VGA Header x 1	—
Audio I/O	Speaker Header (Line-out), AAFP x 1	—
Serial Port	RS-232 Header x 5	5 x RS-232 headers, 1 x RS-232/422/485 (COM1, supports 5V/12V/RI optional)
PS/2 Port		—
Parallel Port		—
DIO		8-bit Digital I/O Interface x 1 (In/Out Programmable)
FAN	4-pin CPU Fan Connector x 1 (PWM Mode) 4-pin Chassis Fan Connector x 3 (PWM Mode)	CPU Fan connector(s) (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2
Power		
Others	Chassis Intrusion x 1, AT/ATX Mode Select Jumper x 1, Front Panel Header x 1 Clear CMOS Jumper x 1, Buzzer Onboard x 1, 3-pin ME Lock Header x 1	Chassis Intrusion x 1, AT/ATX mode select jumper x 1, Front panel header x 1, Clear CMOS jumper x 1, 3-pin ME lock header x 1, Buzzer on-board x1



# Board Level Products Industrial Motherboards



Model	ATX-C246A	ATX-H310A
System		
Processor	Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5/ i3, Pentium 14nm, Celeron™, Xeon E-2200/2100, LGA 1151 socket Processor, max. TDP 8 Core 95W	Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5/ i3, Pentium 14nm LGA 1151 socket Processor, Max. 6 Core 95W
Chipset	Intel® C246 Express Chipset	Intel® H310 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB) ECC, un-buffered memory Dual channel memory architecture	DIMM x 2, DDR4 (2666/2400/2133 MHz, max. 64GB) non-ECC, un-buffered memory Dual channel memory architecture
I/O Chipset		NCT6793D + F81216HD
Ethernet	Intel® PHY i219LM Giga LAN x 1 (supports Intel® AMT 12.0) Intel® i210AT Giga LAN x 1 (BOM option: i210AT x 2) RJ45 x 2 (BOM option: RJ45 x 3)	Intel® PHY i219V Giga LAN x 1 Intel® i210AT Giga LAN x 1 RJ45 x 2
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPC1750 TPM2.0 onboard	Nuvoton NPC1750 TPM2.0 onboard (optional, default: on-board)
Expansion Slots	PCIe 3.0[x16] Slot x 1, PCIe 3.0[x4] Slot (open edge) x 2, PCIe 3.0[x1] Slot (open edge) x 2, PCI x 2, M.2 2280 E-key (PCIex1/USB2.0/CNV) x 1, M.2 2280 M-key (PCIex4/SATA3) x 1	PCIe 3.0[x16] Slot x 1, PCIe 2.0[x4] Slot (open edge) x 2 (#1: 1Lane #2: Default: 2LANs, only support 1Lane when Mini PCIe slot is installed.), PCI x 3, M.2 2280/2242 M-key (PCIex1/SATA3) x 1, Mini PCIe + Micro SIM card Slot (optional, default: N/A)
BIOS	256Mbit Flash ROM x 1, AMI BIOS	128Mbit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1-255 steps by software program	
Smart Fan Control	CPU Fan/ Chassis Fan x 2	
Wake On LAN/ PXE	Yes (WOL / PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® Graphics	Media Accelerator
Graphics Multi Display	HDMI+VGA+DP (BOM option: USB 3.2 Gen 2-10Gbps Type-C connector (Alternate Mode: USB+DP) x 1)	HDMI+VGA, HDMI+DP, VGA+DP
VGA	Up to 1920 x 1200	@60Hz (via IT6516B)
DVI	—	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio	Up to 4096 x 2160 @ 30 Hz
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio	
LVDS	—	—
eDP	—	—
Backlight Control	—	—
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1	
Operation Temperature	32°F ~140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~185°F (-40°C ~85°C)	
Operation Humidity	0%~90%RH, non-condensing	
Certificate	CE & FCC Class A	
Form Factor	ATX Form Factor, 12"x9.6" (305mm x 244mm)	
Weight	1.76 lb (0.8 Kg)	
MTBF (Hours)	281,410	285,600
Rear Panel I/O Ports		
USB	USB 3.2 Gen 2 ports (10 Gbps) x 4, USB 3.2 Gen 1 ports (5 Gbps) x 2, USB 2.0 ports x 4	USB 3.2 Gen 1 ports x 2, USB 2.0 ports x 4
Display I/O	HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)	HDMI x 1, VGA x 1, DP x 1
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out	
LAN I/O	LAN (RJ45) ports x 2 (BOM option: RJ45 x 3)	LAN (RJ45) ports x 2
Serial Port	—	DB-9 COM x 1 (supports RS-232/422/485, 5V/12V/RL)
PS/2 Port	—	—
Others	—	—
Internal I/O Connectors		
Storage	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA3) x 1	SATA III (6.0Gb/s) ports x 3 M.2 2280/2242 M-key (PCIex1/SATA3) x 1
USB	USB 2.0 headers x 1 support additional 2 USB ports (2x5PIN, p=2.54mm)	USB 3.2 Gen 1 headers support additional 2 USB ports (2x5PIN, p=2.54mm) x 1, USB 2.0 Type A (vertical) x 1
Display I/O	—	—
Audio I/O	—	AAFP x 1
Serial Port	5 x RS-232 headers 1 x RS-232/422/485 (COM1, supports 5V/12V/RL optional)	RS-232 headers x 5
PS/2 Port	—	—
Parallel Port	—	—
DIO	8-bit Digital I/O interface (in/Out programmable) x 1	
FAN	CPU Fan connector(s) (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2
Power		
Others	Chassis Intrusion x 1 AT/ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1 3-pin ME lock header x 1 Buzzer on-board x 1	Chassis Intrusion x 1, AT/ATX mode select jumper x 1, Front panel header x 1, Clear CMOS jumper x 1, 3-pin ME lock header x 1, Buzzer on-board x 1
OS		
OS Support	Windows® 10 64bit, Windows® 11 64bit, <small>Linux Ubuntu 64bit (5.9.0.14.3-rc0014.9.0)</small>	Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64 bit (18.04.3/Kernel5)





Model	IMBA-Q170A	IMBA-H110A
System		
Processor	Intel® 7th/ 6th Generation(Kaby Lake-S/ Skylake-S) Core™ i7/i5/i3/ Pentium®/ Celeron® 14nm LGA1151 Socket Processor	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor
Chipset	Intel® Q170	Intel® H110
Memory	288-pin DIMM x 4, max. 64GB, DDR4 2400/2133/1867, dual-channel	288-pin DIMM x 2, max. 32GB, DDR4 2400/2133/1867, dual-channel
I/O Chipset		NCT6791D, F81216HD
Ethernet	LAN1: Intel® PHY I219LM Gb LAN (supports iAMT 11.0), LAN2: Intel® I210AT Gb LAN	LAN1: Intel® PHY I219V Gb LAN, LAN2: Intel® i210AT Gb LAN
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC	Realtek® ALC897
TPM	Nuvoton NPC1750AADYX TPM2.0 onboard (optional; default: onboard)	Nuvoton NPC1750 TPM2.0
Expansion Slots	SKJ1: PCIe [x16] x 1, PCIe [x4] (open edge) x 2, PCI x 3, M.2 E key (22 x 30mm) x 1, M.2 M key (22 x 80mm, for SATA) x 1 SKJ2: PCIe [x16] x 1, PCIe [x4] (open edge) x 1, PCI x 3, M.2 E key x 1, M.2 M key (for SATA & PCIe4) x 1	PCIe [x16] x 1, PCIe [x4] (open edge) x 1, PCI x 4, M.2 M key (22 x 80mm) x 1
BIOS		128M bit Flash ROM x 1, AMI BIOS
H/W Monitor		Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer		1~255 steps by software program
Smart Fan Control		CPU Fan x1, Chassis Fan x 2
Wake On LAN/ PXE		Yes (WOL/PXE)
Power State		S3, S4, S5
Graphics		
Graphics Chipset		Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, HDMI+HDMI, VGA+HDMI+HDMI	VGA+HDMI, VGA+DP, HDMI+DP
VGA		Up to 1920 x 1200 @60Hz
DVI		
HDMI	HDMI 1.4 up to 4096 x 2304 @24Hz	HDMI 1.4 up to 4096 x 2304 @24 Hz
Display Port	—	DP 1.2, up to 4096 x 2304 @60 Hz
LVDS		
eDP		
Backlight Control		
Environment & Power & ME		
Battery		Lithium battery
Power Requirement		24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operation Temperature		32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature		-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity		0% ~ 90% RH, non-condensing
Certificate		CE & FCC Class A
Form Factor		ATX, 12" x 9.6" (305 mm x 244 mm)
Weight		1.76 lb (0.8 Kg)
MTBF (Hours)	219,970	244,580
Rear Panel I/O Ports		
USB	USB 3.2 Gen 1 x 10	USB 3.2 Gen 1 x 4, USB 2.0 x 2
Display I/O	HDMI x 2, VGA x 1	HDMI x 1, DP x 1, VGA x 1
Audio I/O		Line-in, Mic-in, Line-out
LAN I/O		RJ-45 x 2
Serial Port	DB-9 COM x 1 (supports RS-232/422/485, 5V/12V/RI)	DB-9 COM x 1 (supports RS-232/422/485)
PS/2 Port		Stack Port (Keyboard & Mouse) x 1
Others		
Internal I/O Connectors		
Storage	Supports RAID 0/1/5/10 SKJ1: SATA 6.0Gb/s x 3, M.2 M key (SATA) x 1 SKJ2: SATA 6.0Gb/s x 4, M.2 M key (PCIe4) x 1	SATA 6.0Gb/s x 3, M.2 M key (22 x 80mm) x 1
USB	USB 2.0 x 3	USB 2.0 x 4
Display I/O		
Audio I/O		Speaker header x 1 (Line-out)
Serial Port		RS-232 header x 5
PS/2 Port		
Parallel Port		
DIO	8-bit DIO x 1 (In/Out programmable)	8-bit x 1 (In/Out programmable)
FAN		4-pin CPU Fan x 1, 4-pin Chassis Fan x 2
Power		
Others	Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2)x4 P p=1.27mm) x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1	
OS		
OS Support		Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used), Windows® 8.1 64-bit (not supported when a Kaby Lake processor is used), Windows® 10 64-bit, Linux Fedora 64bit
Note		



# Board Level Products Industrial Motherboards



Model	MIX-H610A1	MIX-H610A2
System		
Processor	12th/13th Generation Intel® Core™ LGA1700 Socket Processor, Max. 65W	12th/13th Generation Intel® Core™ LGA1700 Socket Processors
Chipset	Intel® H610E Chipset	
Memory	Dual-Channel DDR4 3200MHz SODIMM x 2, Max 64GB	Dual Channel DDR4 3200MHz U-DIMM x 2 (Max. 32GB)
I/O Chipset	Intel® UHD Graphics	NCT5525D
Ethernet	Intel® Ethernet Connection I219-V x 1 Realtek RTL8111H x 3	Realtek® RTL8111H x 1 Realtek® ALC897
Audio	Realtek® ALC897 with Amp.	Realtek® ALC897
TPM	TPM2.0 IC on board	—
Expansion Slots	PCIe Gen 3 [x16] x 1, M.2 2232 E-Key x 1 (PCIe [x1]/CNVi/USB)	M.2 2230 E-Key x 1 (PCIe [x1]), USB 2.0 PCIe Gen 5 [x16] x 1
BIOS	256Mbit Flash ROM, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on Chassis
WatchDog Timer	1-255 step by software program	
Smart Fan Control	CPU Fan/ Chassis Fan	
Wake On LAN/ PXE	Yes (WOL / PXE)	
Power State	S3, S4, S5	
Graphics	Intel® UHD Graphics	
Graphics Chipset	Intel® UHD Graphics	
Graphics Multi Display	HDMI x 2 + DP x 1, HDMI x 1 + DP x 2, HDMI x 1 + DP x 1 + LVDS x 1, HDMI x 1 + DP x 1 + eDP x 1	Triple Independent Display
VGA	—	
DVI	—	
HDMI	HDMI 2.0, up to 3840 x 2160 @60Hz	HDMI 1.4, Up to 4096 x 2160 @30Hz/2560 x 1600 @60Hz, with Digital Audio
Display Port	DP 1.2, up to 3840 x 2160 @60Hz	DP 1.4a, up to 4096 x 2160 @60Hz
LVDS	18/24-bit Dual-Channel LVDS, up to 1920 x 1080 @60Hz (co-lay eDP, Default LVDS)	Dual-Channel 18/24 bit, up to 1920 x 1080 @60Hz
eDP	eDP, Up to 1920 x 1080 @60Hz	Up to 4096 x 2340 @60Hz
Backlight Control	—	PWM
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	ATX; [330 Watt or greater power supply] Voltage/Current(A) requirement:+3.3V/0.05A;+5V/6.07A;+12V/17.3A	ATX
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Operation Humidity	0%~90%RH, non-condensing	
Certificate	CE & FCC (Class A)	
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
Weight	1.1 lb (0.5 Kg)	
MTBF (Hours)	—	
Rear Panel I/O Ports		
USB	USB 3.2 Gen 2 x 2, USB 2.0 x 4	USB 3.2 Gen 2 x 2 + USB 2.0 x 2
Display I/O	HDMI 2.0 x 2, DP 1.2 x 2	HDMI 1.4 x 1, DP 1.4 x 1
Audio I/O	Mic-in x 1, Line-out x 1	
LAN I/O	RJ-45 LAN x 4	RJ-45 LAN Port x1
Serial Port	—	
PS/2 Port	—	
Others	—	
Internal I/O Connectors		
Storage	SATA 6Gb/s x 2, M.2 2280 M-Key x 1	SATA 6Gb/s x 2 M.2 2280 M-Key x 1 (PCIe [x4]/NVMe)
USB	USB 3.2 Pin Header x 1 (USB 3.2 Gen 1 x 2)	USB 2.0 x 2 via Pin Header x 1 USB 3.2 Gen 1 x 2 via Box Header x 1
Display I/O	40-pin LVDS/eDP connector x 1 with Inverter	40-pin LVDS/eDP Connector x 1 (Default: LVDS)
Audio I/O	AAFP x 1, Speaker x 1	HD Audio x 1 via Pin Header
Serial Port	Box Header for COM (RS-232/422/485) x 1, Box Header for COM (RS-232) x 1	—
PS/2 Port	Box Header for COM (RS-232) x 1	—
Parallel Port	—	
DIO	8-bit programmable (4-in/4-out) x 1	
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1	4-pin Chassis Fan connector x 1 4-pin CPU Fan connector x 1
Power	TBD	
Others	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1	ATX Clear CMOS jumper x 1, Front Panel connector x 1, ATX/AT mode select x 1, ME disable x 1, eDP/LVDS Tcon IC voltage select x 1, Backlight Voltage Select x 1
OS		
OS Support	Windows® 10 64-bit, Windows® 11 64-bit	
Note		



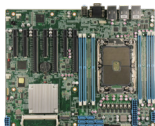


Model	MIX-MTLD1
System	
Processor	Intel® Core™ Ultra processors (H-series & U-series support) TDP: 15W (U-series)/28W (H-series)
Chipset	—
Memory	Dual Channel DDR5 5600MHz SODIMM x 2, Max 64GB
I/O Chipset	NCT5525D
Ethernet	Intel® Ethernet Controller I210-AT x 1 Intel® Ethernet Controller I226-V x 1
Audio	Realtek® ALC897
TPM	Onboard TPM 2.0
Expansion Slots	M.2 2230 E-Key x 1 (one pair PCIe [x1], USB 2.0, CNV) M.2 3042/52 B-Key x 1 (PCIe [x1], USB 3.2 Gen 1) with Nano SIM socket (Default 3052 by BOM) PCIe Gen 5 [x8], H-series only; Open edge
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/SW/3.3V/12V, Fan Monitor on Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S4, S5
Graphics	
Graphics Chipset	Intel® Xe-LPG Graphics
Graphics Multi Display	Quad Display
VGA	—
DVI	—
HDMI	HDMI 2.0, up to 4096 x 2160 @60Hz, with Digital Audio
Display Port	—
LVDS	Dual-Channel 18/24 bit, up to 1920 x 1080 @60hz (Co-layout eDP header; default: LVDS)
eDP	Up to 4096 x 2160 @60Hz (4ch; Co-layout LVDS by BOM optional)
Backlight Control	PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12V ±5%
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC (Class A)
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb. (0.5Kg)
MTBF (Hours)	—
Rear Panel I/O Ports	
USB	USB 3.2 Gen 2 (Type-A) x 1 USB 2.0 x 3 USB 3.2 Gen 1 (Type-C) x 1 (5Gbps)
Display I/O	HDMI 2.0 x 4
Audio I/O	Line-out x 1, MIC-in x 1
LAN I/O	RJ-45 LAN Port x 2
Serial Port	—
PS/2 Port	—
Others	2x4-pin DC-in connector x 1
Internal I/O Connectors	
Storage	SATA 6Gb/s x 2 with SATA power Connector x 1 (2A), RAID 0,1,5,10 support M.2 2280 M-Key x 1 (PCIe Gen 4 [x4], NVMe)
USB	USB 3.2 Gen 1 x 1 (2x10-pin, 2.0mm Header) additional 2 USB port interface USB 2.0 x 1 (2x5-pin, 2.00mm Header) additional 2 USB port interface
Display I/O	LVDS/eDP Header x 1
Audio I/O	Pin header (1x4-pin) Support 2W/4ohm x 1
Serial Port	Box Header x 1 for RS-232/422/485 Box Header x 3 for RS-232
PS/2 Port	—
Parallel Port	—
DIO	8-bit programmable (4-in/4-out) x 1
FAN	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
Power	2x4-pin DC-in 12V (-5% ~ +5%) x 1
Others	Clear CMOS Jumper x 1 Front Panel Connector x 1 Buzzer Header x 1 ATX/AT Mode Select x 1 ME Disable x 1 eDP/LVDS Tcon IC Voltage Select x 1 eDP/LVDS Panel Backlight Voltage Select x 1 SATA PWR Connector x 1 LVDS Inverter Connector x 1 1x3-pin ME Lock Header 1x5-pin SMBUS Header NCSI Header x 1 for OOB Module (via Intel® Ethernet Controller I210-AT)
OS	



# Board Level Products

## Industrial Server Board



Model	ARES-WHIO	ARES-EAGO
System		
Form Factor	ATX Sever Board Whitely Platform	EATX Sever Board Eagle Stream Platform
Processor	Single Intel® Xeon® Processor Ice Lake-SP processor, supports up to 270W	Dual 4th Generation Intel® Xeon® Scalable Processors (formerly Sapphire Rapids-SP), TDP Max. 350W
System Memory	DDR4 2666MHz R-DIMM Slot x 6, supports up to 192GB (32GB per DIMM)	DDR5 4800 MHz R-DIMM Slot x 12
Chipset	Intel®C621A	Intel® Emmitsburg PCH
Ethernet	Intel® i210 Gigabit Ethernet x 2	Intel® i226LM LAN controller x 1, Intel® X550-AT2 x 1
COM	RS-232 x 1	Pin header x 1
BIOS	AMI BIOS	
Serial ATA	SATA III port x 8	SATA III port x 2, miniSAS x 1 (up to 4x SATA)
Audio and VGA	1	VGA x 1, Audio In Out (Optional)
Expansion Interface	PCIE 1: 1 x PCIe x16 (Gen4 x16) slot PCIE 2: 1 x PCIe x8 (Gen3 x4) slot PCIE 3: 1 x PCIe x16 (Gen4 x16) slot PCIE 4: 1 x PCIe x8 (Gen4 x4) slot PCIE 5: 1 x PCIe x16 (Gen4 x16) slot PCIE 6: 1 x PCIe x8 (Gen3 x4) slot PCIE 7: 1 x PCIe x8 (Gen4 x8) slot	PCle 1: PCIe Gen 5 [x16] x 1 PCle 2: PCIe Gen 5 [x16] x 1 PCle 3: PCIe Gen 5 [x16] x 1 PCle 4: PCIe Gen 5 [x16] x 1 PCle 5: PCIe Gen 5 [x16] x 1 PCle 6: PCIe Gen 5 [x16] x 1
Watchdog Timer	1~255 steps by software programming	
RTC	Internal RTC	
System Fan	4-pin fan headers x 5 (up to 5 fans)	
Front I/O Panel	---	
Rear I/O Panel	USB 3.0 x 6, 1Gb RJ45 LAN x 2, AUDIO in and out x 1, VGA x 1	USB 3.2 Gen 1 x 4 2.5GbE LAN x 1 10GbE LAN x 2 VGA x 1 COM x 1
Color	---	
Power Supply	ATX	
Dimension	12.0" x 9.6" (305mm x 244 mm)	12" x 13" (305mm x 330mm)
Power Consumption	269W (Based on Intel® Xeon® Platinum 8352S)	TBD
MTBF (Hours)	292,321	TBD
Display		
Chipset	SM750	AST2510
Graphic Engine	N/A	---
Resolution	1920x1080 (WIN Server 2019); 800x600 (CentOS 7.3)	TBD
Connector	VGA	
I/O		
Serial Port	COM x 1 Pin	
K/B and Mouse	---	
USB	USB 3.0 x 6	USB 3.2 Gen. 1 x 4
Environment		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	
Operating Humidity	10%~80% relative humidity, non-condensing	
Storage Humidity	10%~80% @40°C; non-condensing	
Vibration	0.5 g rms/ 5 ~ 500Hz / operation (2.5" Hard Disk Drive) 1.5 g rms/ 5 ~ 500Hz / non operation	
Shock	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation	
Note		





Model	ZEUS-PURO	ZEUS-WHIO
System Form Factor	4U Rackmount Server System	
Processor	Intel® Xeon® Skylake-SP and Cascade Lake-SP Processors	Single Intel® Xeon® Processor Ice Lake-SP processor, supports up to 205W
System Memory	DDR4 2133/2400/2666 R-DIMM, Up to 512 GB	DDR4 2666MHz R-DIMM Slot x 6, supports up to 192GB (32GB per DIMM)
Chipset	Intel® C621	Intel®C621A
Ethernet	Intel® i211 Gigabit Ethernet x 2	Intel® i210 Gigabit Ethernet x 2
BIOS	AMI BIOS	
Serial ATA	SATA II port x 6	SATA III port x 8
Storage	2.5" HDD x 6 or 3.5" HDD x 6, M.2 x 1	2.5" HDD x 8 or 3.5" HDD x 8, M.2 2280 M key socket x 1
Expansion Interface	NIM slot x 4 (Project Base NIM Slot x 8) Option front PCIe [x16] slots x 2 Option rear side PCIe [x4] x 4 (or PCIe [x8] x 2) + PCIe [x8] x 2 (Or PCIe [x16] x 1) M.2 Slot x 1 Mini PCIe x 1	PCIe 1: 1 x PCIe x16 (Gen4 x16) slot PCIe 2: 1 x PCIe x8 (Gen3 x4) slot PCIe 3: 1 x PCIe x16 (Gen4 x16) slot PCIe 4: 1 x PCIe x8 (Gen4 x4) slot PCIe 5: 1 x PCIe x16 (Gen4 x16) slot PCIe 6: 1 x PCIe x8 (Gen3 x4) slot PCIe 7: 1 x PCIe x8 (Gen4 x8) slot
Watchdog Timer	1~255 steps by software programmable	
RTC	Internal RTC	
System Fan	5	Middle Fan x 3 (Default), Rear Fan x 2 (Optional)
Front I/O Panel	Power LED x 1, Status LED x 1, HDD Active LED x 1	Power LED x 1, HDD Active LED x 1
Rear I/O Panel	AC Power Input x 1, Power Switch x 1, VGA port (Optional), Rear Expansion Slot (Option)	AC Power Input x 1, Power Switch button x 1, USB 3.1 Gen 1 x 6 (Type-A), 1Gb RJ45 LAN x 2, AUDIO in and out x 1, VGA x 1, Rear Expansion Slots x 7
Color	Black	
Power Supply	800 ~1600W Redundant PSU	800 mini redundant PSU; 1600W CRPS PSU, optional
Dimension	(480mm x 600mm x 176mm)	23.5" x 17" x 6.88" (597.2mm x 430mm x 174.8mm)
Power Consumption	TBD	—
MTBF (Hours)	TBD	—
Display	—	
Chipset	AST2500	SM750
Graphic Engine	From IPMI or Mini PCIe Option	—
Resolution	—	1920x1080 (WIN Server 2019); 800x600 (CentOS 7.3)
Connector	VGA Option	VGA
I/O	—	
Serial Port	RJ-45 Console x 1	COM x 1
K/B and Mouse	—	—
USB	USB 3.0 x 2	USB 3.1 Gen 1 x 6 (Type-A)
Environmental	—	
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)	
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	10% ~ 80% relative humidity, non-condensing	10% ~ 90% relative humidity, non-condensing
Storage Humidity	10% ~ 80% @40°C; non-condensing	
Vibration	0.5 g rms/ 5 ~ 500Hz / operation (2.5" Hard Disk Drive) 1.5 g rms/ 5 ~ 500Hz / non operation	0.5 g rms/ 5 ~ 500Hz / operation (3.5" Hard Disk Drive) 1.5 g rms/ 5 ~ 500Hz / non operation
Shock	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation	
Note	—	



# 02



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# ► System Level Products



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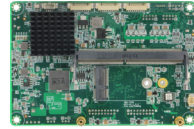


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Model	BOXER-8221AI
<b>System</b>	
AI Accelerator	NVIDIA® Jetson Nano™
CPU	Quad Core Arm® Cortex®-A57 MPCore Processor
System Memory	4GB LPDDR4
Storage Device	32GB Micro-SD (A version) or 16GB eMMC (B version)
Display Interface	HDMI 2.0
Ethernet	10/100/1000Base-TX x 1
I/O	USB 3.2 Gen 1 x 4 LAN x 1 RS-232 x 2 HDMI x 1 MicroSD x 1 DC Power Input x 1 Recovery Button x 1 Micro-USB for Flash OS x 1
Expansion	M.2 E-Key 2230 x 1(for WiFi)
Indicator	Power LED x 1
OS Support	Linux (AAEON ACLinux 4.9) Linux (NVIDIA Jetpack 4.5)
<b>Power Supply</b>	
Power Requirement	12Vdc w/ 2-pin terminal block
<b>Mechanical</b>	
Mounting	Wallmount
Dimensions (W x D x H)	3.39" x 2.87" x 1.3" (88mm x 75mm x 39mm)
Gross Weight	1.10 lb (0.5 Kg)
Net Weight	0.66 lb (0.3 Kg)
<b>Environmental</b>	
Operating Temperature	-4°F ~ 122°F (-20°C ~ 50°C, according to IEC60068-2 with 0.5 m/s AirFlow)
Storage Temperature	-49°F ~176°F (-45°C ~ 80°C)
Storage Humidity	95% @ 40°C, non-condensing
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation – MicroSD or eMMC
Anti-Shock	—
Certification	CE/FCC class A
Note	







Model	BOXER-8223AI	BOXER-8224AI
System		
AI Accelerator	NVIDIA® Jetson Nano™	
CPU	Quad Core ARM® Cortex®-A57 MPCore Processor	ARM® Cortex® -A57 Quad-Core Processor
System Memory	4GB LPDDR4	
Storage Device	16GB eMMC + Micro SD Card Slot 2.5" SATA Drive Bay x 1	16GB eMMC 5.1 x 1 MicroSD slot x 1
Display Interface	HDMI 2.0 (Type-A) x 1 (Output) HDMI 1.4 (Type-A) x 1 (Input)	Mini HDMI x 1 for HDMI 2.0
Ethernet	PoE/PSE LAN x 2 (IEEE 802.3at)	Wafer connector x 2 for Giga LAN
I/O	USB 3.2 Gen 1 (Type-A) x 4 GbE LAN with LED Indicator PoE/PSE LAN x 2 (IEEE 802.3at) DB-9 x 1 for RS-232/485 DB-15 x 1 Female for 13-Channel DIO 0.S Flash Port x 1 Recovery Port x 1 Antenna Opening x 2 HDMI 2.0 (Type-A) x 1 (Output) HDMI 1.4 (Type-A) x 1 (Input via MIPI CSI) Power Bottom x 1	USB 3.2 Gen 1 x 4 (via 2x19-Pin Wafer) Mini HDMI x 1 for HDMI 2.0 RS-232/485 x 2 (via 1x9-Pin Wafer) UART x 1 and I2C x 2 (via 1x9-Pin Wafer) 5V Output (via 1x2-Pin Wafer) GPIO x 6 (via 1x9-Pin Wafer) MIPI Connector x 2 for MIPI Camera LAN LED x 2 (via 2x6-Pin Wafer) Micro USB for Flash OS x 1 Recovery Button x 1 Reset Button x 1 and Power Button x 1 (via Pin Header)
Expansion	Mini Card x 1 w/ SIM Slot M.2 2230 E-Key x 1 (for Wi-Fi)	M.2 2230 E Key x 1 for Wifi/BT Mini Card x 1 (LTE) Micro SD x 1 SIM card slot x 1
Indicator	Power LED x 1	—
OS Support	NVIDIA Jetpack™ 4.5 or above	Linux (NVIDIA Jetpack™ 4.6 and above)
Power Supply		
Power Requirement	DC 12V~24V with 2-pin terminal block ATX mode	Wafer connector x 1 for 12V ~ 24V DC
Mechanical		
Mounting	Wall mount kit (default)	—
Dimensions (W x D x H)	7.09" x 5.35" x 2.41" (180.0mm x 136.0mm x 61.1mm)	4.72" x 3.1" x 0.76" (120mm x 80mm x 19.7mm), SOM + Carrier Board Only
Gross Weight	4.63 lb. (2.1Kg)	0.45lb (0.2Kg)
Net Weight	2.87 lb. (1.3Kg)	0.23lb (0.1Kg)
Environmental		
Operating Temperature	14°F ~ 158°F (-10°C ~ 70°C), with 0.5m/s airflow	-4°F ~ 140°F (-20°C ~ 60°C with 0.5 m/s airflow)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	Random, 3 Grms, 5~500Hz	3.5Grms / 5~500Hz / X/Y/Z axis, random (by M.2 storage)
Anti-Shock	50G peak acceleration (11 msec. duration,eMMC)	—
Certification	CE/FCC Class A/UKCA	CE/FCC Class A
Note		






Model	BOXER-8240AI	BOXER-8251AI
System		
AI Accelerator	NVIDIA® AGX Xavier	NVIDIA Jetson Xavier NX
CPU	8-core ARM v8.2 64bit CPU, 8MB L2 + 4MB L3	6 Core ARM® Carmel®V8.2 64bit CPU 6MB L2 + 4MB L3
System Memory	32GB 256-Bit LPDDR4x 137GB/s	8GB LPDDR4x
Storage Device	32GB eMMC 5.1 Micro SD card slot 2.5" SATA drive bay M.2 Key M 2280	16GB eMMC + MicroSD
Display Interface	HDMI 2.0 x 1	HDMI 2.0
Ethernet	10/100/1000 Base-TX with IEEE 802.3af PoE LAN x 4	10/100/1000Base-TX x 1
I/O	PoE x 4 (IEEE 802.3af, total 60W) USB Type A x 1 for USB 3.2 Gen 1 USB Type C x 2 for USB 3.2 Gen 1 USB Type A x 1 for USB 2.0 RS-232/422/485 x1 CANBUS x 1 HDMI 2.0 x1 DP 1.4 x 1 Mic-in x 1 Line-out x 1 MicroSD slot x 1 Micro USB x 1 for OS Flash Recovery button x 1 Power button x 1 40-pin header compliance with NVIDIA Dev Kit 40 pins (4 pins CANBUS occupied)	USB 3.2 Gen 1 x 4 LAN x 1 RS-232 x 2 HDMI x 1 MicroSD x 1 DC Power Input x 1 Recovery Button x 1 Micro-USB for Flash OS x 1
Expansion	USB 2.0 header x 1 (Optional, circuit reserved) M.2 Key E 2230 x 1 for WiFi/Bluetooth (PCIe[x1] + USB) M.2 Key M 2280 x 1 (PCIe[x4]) SATA x 1 RS-232/422/485 pin header x 1	M.2 E-Key 2230 x 1(for WiFi)
Indicator		Power LED x 1
OS Support	Linux (NVIDIA Jetpack 4.5 and above)	Linux (AAEON ACLinux 4.9) Linux (NVIDIA Jetpack 4.5) Ubuntu18.04
Power Supply		
Power Requirement	DC 12V~24V 2-pin terminal	12Vdc w/ 2-pin terminal block
Mechanical		
Mounting		Wallmount
Dimensions (W x D x H)	8.26" x 6.46" x 2.32" (210mm x 164.2mm x 59mm)	Standard: 3.46" x 2.95" x 1.53" (88mm x 75mm x 39mm) High heatsink Dimension: 3.54" x 3.30" x 2.04" (90mm x 84mm x 52mm)
Gross Weight	6 lbs (2.72kg)	Standard: 1.10 lb (0.5 kg) High heatsink: 1.76lb(0.8kg)
Net Weight	4.23 lbs (1.92kg)	Standard: 0.66 lb (0.3 kg) High heatsink: 1.3lb(0.6kg)
Environmental		
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C, according to IEC60068-2 with 0.5 m/s AirFlow)	-4°F ~ 140°F (-20°C ~ 60°C) (varies depending on selected power model)
Storage Temperature	-40 °F ~ 158°F(-40°C ~ 70°C)	-40°F ~ 158°F (-40°C ~ 70°C)
Storage Humidity		95% @ 40°C, non-condensing
Anti-Vibration	Random, 3 Grms, 5 ~ 500Hz	3 Grms/ 5 ~ 500Hz/ operation – MicroSD or eMMC
Anti-Shock		—
Certification		CE/FCC class A
Note	 	





Model	BOXER-8253AI	BOXER-8256AI
System		
AI Accelerator	NVIDIA® Jetson Xavier™ NX	
CPU	6 Core ARM® Carmel@v8.2 64bit CPU 6MB L2 + 4MB L3	6-core NVIDIA Carmel Arm@v8.2 64-bit CPU
System Memory	8GB LPDDR4x	
Storage Device	eMMC 16GB MicroSD slot x 1 Full-size mSATA (sharing slot with Full-size minicard module) 2.5" SATA drive bay x 1	16GB eMMC x 1 MicroSD Slot x 1 M.2 M-Key 2280 x 1 (PCIe[x4]) 2.5" SATA x 1
Display Interface	HDMI Type A for HDMI 2.0 x 1	
Ethernet	RJ-45 x 2 For GbE PoE/PSE (802.3at) RJ-45 x 1 For GbE LAN	RJ-45 x 1 for GbE LAN
I/O	USB Type A x 4 for USB 3.2 Gen 1 USB Micro A/B x 1 for OS Flash RJ-45 x 2 for PoE/PSE (802.3at) (Total 60W) RJ-45 x 1 for GbE LAN DB-9 x 1 for RS-232/485 & CANbus DB15 x1 for Digital I/O 13-Channel (programmable) Recovery Button x 1 MicroSD card slot x 1 Antenna opening x 4 HDMI Type A for HDMI 2.0 output x 1 HDMI Type A for HDMI 1.4 input x 1 Power Button x 1	USB Type A x 3 for USB 3.2 Gen 1 DB9 for RS-232/422/485 (By switch) and CANbus x1 HDMI x 2 for Video Display 2.0 HDMI x 4 for Video Input 1.4 (Limitation have stated in User manual) Mic-in x 1, Line-Out x 1 Micro USB for OS Flash x 1 Power ON/OFF switch x 1 Recovery button x 1 SMA Antenna hole x 2
Expansion	Full-size minicard slot x1 (PCIe/USB/mSATA, default PCIe) M.2 E-Key 2230 x 1 (for WiFi) SIM socket x 1 SATA III (6.0 Gbps) port x 1 for 2.5" drive	M.2 B-Key 3042/3052 x 1 (PCIe[x2] + USB 3.0) M.2 E-key x 1(PCIe[x1] + USB 2.0)
Indicator	Power LED x 1	
OS Support	Linux (AAEON ACLinux4.9) Linux (NVIDIA Jetpack 4.5)	Linux (NVIDIA Jetpack 4.6.2 or above)
Power Supply		
Power Requirement	12~24V DC with 2-pin terminal block	DC-in 12-24V with 2-pin terminal block
Mechanical		
Mounting	Wall mount kit	
Dimensions (W x D x H)	7.09 " x 5.35 " x 2.41" (180.0 mm x 136.0 mm x 61.1 mm)	7.09" x 5.35" x 2.64" (180 mm x 136 mm x 67 mm )
Gross Weight	4.63 lbs. (2.1 kg)	4.23 lb (1.92 kg)
Net Weight	2.87 lbs. (1.3 kg)	2.87 lb (1.3 kg)
Environmental		
Operating Temperature	5°F ~ 131°F (-15°C ~ 55°C with 0.5 m/s airflow)	-5°F ~ 140°F (-15°C ~ 60°C with 0.5 m/s airflow)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	
Storage Humidity	5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	3.5Gm / 5~500Hz / operation-eMMC, MicroSD or mSATA	3.5 Grms/ 5 ~ 500Hz/ operation – eMMC
Anti-Shock	50G peak acceleration (11 msec. duration, eMMC, microSD, or mSATA)	50G, IEC 60068-2-27, half sine, 11 ms duration – eMMC
Certification	CE / FCC class A	
Note	 <p>TAIWAN EXCELLENCE 2022</p>	





Model	BOXER-8621AI	BOXER-8622AI
System		
AI Accelerator	NVIDIA® Jetson Orin Nano™	
CPU	6-core Arm® Cortex®-A78AE v8.2 64-bit CPU	
System Memory	4GB/8GB LPDDR5	
Storage Device	M.2 3052 B-Key x 1 for M.2 2242 B+M Key SSD (Default Storage) M.2 2230 E-Key x 1 (Optional)	M.2 2280 M-Key x 1
Display Interface	HDMI 1.4 (Type-A) x 1	
Ethernet	RJ-45 x 1 for GbE LAN	RJ-45 x 2 for 10/100/1000 Base-T
I/O	USB 3.2 Gen 2 (Type-A) x 2 USB 2.0 (Type-A) x 2 DB-9 for RS-232 (Rx/Tx/CTS/RTS)/485 x 1 and CANbus FD x 1 DB-15 for RS-232 (Rx/Tx)/422/485 x 1 and DIO x 8 Micro USB x 1 for OS Flash Recovery Button x 1 Antenna x 2	USB 3.2 Gen 2 (Type-A) x 2 USB 2.0 (Type-A) x 2 Micro USB x 1 for OS Flash DB-9 x 1 for CANbus DB-9 x 1 for RS-232/422/485 DB-15 x 1 for 13-bit DIO Power ON/OFF switch x 1 Recovery button x 1 Antenna Hole x 6
Expansion	M.2 3042/3052 B Key x 1 (4G/5G/M.2 2242 B+M Key storage) M.2 2230 E Key x 1 (Wifi/BT/Storage) SIM Slot x 1	M.2 2230 E-Key x 1 (Wi-Fi/Bluetooth) M.2 3042/3052 B-Key x 1 (4G/5G) M.2 2280 M-Key x 1
Indicator	Power LED x 1	
OS Support	Linux (NVIDIA Jetpack™ 5.0 and up)	
Power Supply		
Power Requirement	DC-in 12-24V with 2-pin terminal block	
Mechanical		
Mounting	Wallmount	Wall mount kit
Dimensions (W x D x H)	4.13" x 3.54" x 2.05" (105mm x 90mm x 52mm), w/o bracket	5.98" x 3.78" x 2.42" (152mm x 96 mm x 61.5mm)
Gross Weight	2.4 lb. (1.1Kg)	3.97lb (1.8kg)
Net Weight	1.58 lb. (0.7Kg)	2.65lb (1.2kg)
Environmental		
Operating Temperature	-5°F ~ 140°F (-15°C ~ 60°C), according to IEC60068-2 with 0.5 m/s AirFlow	-5°F ~ 149°F (-15°C ~ 65°C with 0.5 m/s airflow)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Storage Humidity	5% ~ 95% @ 40C, non-condensing	
Anti-Vibration	3.5Grm / 5~500Hz / Operation	3.5Grm / 5~500Hz
Anti-Shock	50G peak acceleration	
Certification	CE/FCC class A	
Note		





Model	BOXER-8623AI	BOXER-8640AI
System	NVIDIA® Jetson Orin Nano™	
AI Accelerator	NVIDIA® Jetson AGX Orin™	
CPU	6-core Arm® Cortex®-A78AE ARMv8.2 64-bit CPU	AGX Orin 32GB: 8-core Arm® Cortex®-A78AE CPU AGX Orin 64GB: 12-core Arm® Cortex®-A78AE CPU
System Memory	4GB LPDDR5	32GB LPDDR5 64GB LPDDR5
Storage Device	M.2 2280 M Key x 1	64GB eMMC 5.1 Micro SD Card Slot x 1 2.5" SATA Drive Bay x 1 M.2 2280 M-Key x 1
Display Interface	HDMI 1.4 (Type-A) x 1	HDMI 2.0 x 1
Ethernet	RJ-45 x 1 for GbE LAN RJ-45 x 4 for GbE PoE/PSE 802.3af/at (Max.60W)	RJ-45 for GbE PoE/PSE 802.3af x 4 (Max. 60W)
I/O	USB 3.2 Gen 1 (Type-A) x 2 USB 2.0 (Type-A) x 2 DB-9 x 1 for RS-232 (Rx/Tx/CTS/RTS)/RS485 x 1 and CANBus FD x 1 DB-15 x 1 for RS-232(Rx/Tx)/422/485 x 1 and DIO x 8 Micro USB x 1 for OS Flash Power Button x 1 Recovery Button x 1 Antenna x 6	USB 3.2 Gen 2 (Type-A) x 2 USB 3.2 Gen 2 (Type-C) x 2 RS-232/422/485 x 1 CANBus x 1 Mic-in x 1 Line-out x 1 MicroSD Slot x 1 Micro USB x 1 for OS Flash Recovery Button x 1 Power Button x 1 40-pin Header compliant with NVIDIA Jetson Orin Nano Developer Kit (without CANBus)
Expansion	M.2 2280 M-Key x 1 (NVMe) M.2 3042/3052 B-Key x 1 M.2 2230 E-Key x 1 SIM Slot x 1	USB 2.0 Header x 1 (Optional, Circuit Reserved) M.2 2230 E-Key x 1 (Wifi/BT) M.2 2280 M-Key x 1 (NVMe) 2.5" SATA Drive Bay x 1 RS-232/422/485 Pin Header x 1
Indicator	Power LED x 1	
OS Support	Linux (NVIDIA Jetpack™ 5.0 or above)	
Power Supply		
Power Requirement	12V ~ 24V DC in with 2-pin Terminal Block x 1	DC 12V ~ 24V 2-pin terminal
Mechanical		
Mounting	Wallmount	
Dimensions (W x D x H)	7.09" x 5.35" x 2.95" (180mm x 136mm x 75mm)	8.26" x 6.46" x 2.91" (210mm x 164.2mm x 74mm)
Gross Weight	TBD	8.3 lb. (3.76Kg)
Net Weight	TBD	6.4 lb. (2.9Kg)
Environmental		
Operating Temperature	5°F ~ 149°F (-15°C ~ 65°C), according to IEC60068-2 with 0.5 m/s AirFlow	-4°F ~ 131°F (-20°C ~ 55°C), according to IEC60068-2 with 0.5 m/s AirFlow
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	-40°F ~ 158°F (-40°C ~ 70°C)
Storage Humidity	5% ~ 95% @ 40°C, non-condensing	95% @ 40°C, non-condensing
Anti-Vibration	3.5Grm / 5~500Hz / Operation	Random, 3.5 Grms, 5 ~ 500Hz
Anti-Shock	50G peak acceleration	
Certification	CE/FCC class A	
Note		





Model	BOXER-8641AI	BOXER-8645AI
System		
AI Accelerator	NVIDIA® Jetson AGX Orin™	
CPU	AGX Orin 32GB: 8-core Arm® Cortex®-A78AE CPU AGX Orin 64GB: 12-core Arm® Cortex®-A78AE CPU	
System Memory	32GB LPDDR5 64GB LPDDR5	
Storage Device	64GB eMMC 5.1 x 1 MicroSD slot x 1 SATA drive bay x 1	64GB eMMC 5.1 x 1 M.2 2280 M-Key x 1 (NVMe) 2.5" SATA x 2
Display Interface	HDMI Type A for HDMI 2.0 x 1	HDMI 2.0 x 1 (Type-A)
Ethernet	RJ-45 for GbE LAN x 2	RJ-45 for 10G LAN x 1 RJ-45 for Giga LAN x 1 Additional LAN x 8 (By request)
I/O	USB Type A for USB 3.2 Gen 2 x 2 USB Type C for USB 3.2 Gen 2 x 1 USB Type A for USB 2.0 x 1 Micro USB x 1 for OS Flash Mic in and Line out x 1 Reset Button x 1 Recovery Button x 1 MicroSD card slot x 1 Antenna opening x 4 Power Button x 1 DB-9 x 2 for RS-232/422/485 DB-9 x 1 for DIO x 8	GMSL2 with FAKRA x 8 USB 3.2 Gen 2 x 4 (Type-A) Micro USB x 1 for OS Flash Line-Out x 1 DB-9 x 1 for Isolated CANBus x 2 DB-9 x 2 for RS-232 (Rx/Tx/CTS/RTS)/RS-485 x 2 DB-9 x 1 for DIO x 8 Switch x 2 for Ignition Delay On/Off 3-pin Terminal Block x 1 for Power Input Power Button x 1 Recovery Button x 1 Antenna Hole x 7 TPM Support GNSS Support 9-Axis Sensor Support
Expansion	M.2 E-Key 2230 ( for Wifi/BT ) x 1 M.2 B-Key 3052 x 1 M.2 M-Key 2280 ( NVMe ) x 1 2.5" SATA drive bay SIM Slot x 1	M.2 2230 E-Key x 1 (Wifi/BT) M.2 3052 B-Key x 1 (LTE) M.2 2280 M-Key x 1 (NVMe) 2.5" SATA x 2 SIM Slot x 2 MicroSD Slot x 1
Indicator	Power LED x 1	
OS Support	Linux (NVIDIA JetPack™ 5.0 and above)	
Power Supply		
Power Requirement	12V DC with lockable DC Jack	3-pin Terminal Block x 1 for 9V ~ 36V ACC Ignition Delay On/Off
Mechanical		
Mounting	Wall mount kit	Wall mount (default)
Dimensions (W x D x H)	7.09 " x 5.35 " x 3.11" (180.0 mm x 136.0 mm x 79.1 mm)	11.26" x 7.95" x 3.54" (286mm x 202mm x 90mm)
Gross Weight	7.8lb ( 3.55kg )	13 lb. (5.9Kg)
Net Weight	5.5lb ( 2.5kg )	11 lb. (5Kg)
Environmental		
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C with 0.5 m/s airflow)	-13°F ~ 149°F (-25°C ~ 65°C with 0.5 m/s airflow)
Storage Temperature	-40°F ~ 158°F (-40°C ~ 70°C)	-40°F ~ 185°F (-40°C ~ 85°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	3.5Grms / 5~500Hz / operation-eMMC, MicroSD or SSD	MIL-STD-810G, 514.6C Procedure 1, Category 4 Trucker/ Semitrailer on US highway (Figure 514.6C-1-Category 4-Common carrier)
Anti-Shock	50G peak acceleration (11 msec. duration, eMMC, microSD, or SSD)	MIL-STD-810G, Method 516.6, Procedure I, flight vehicle equipment
Certification	CE / FCC Class B	E-Mark, CE/FCC Class A
Note		







Model	BOXER-8646AI	BOXER-8651AI
System		
AI Accelerator	NVIDIA® Jetson AGX Orin™	NVIDIA® Jetson Orin NX
CPU	AGX Orin 32GB: 8-core Arm® Cortex®-A78AE CPU AGX Orin 64GB: 12-core Arm® Cortex®-A78AE CPU	6-core Arm® Cortex®-A78AE ARMv8.2 64-bit CPU
System Memory	32GB LPDDR5 64GB LPDDR5	8GB/16GB LPDDR5
Storage Device	64GB eMMC 5.1 x 1 MicroSD slot x 1 SATA drive bay x 1	M.2 3052 B-Key x 1 for M.2 2242 B+M Key SSD (Default Storage) M.2 2230 E-Key x 1 (Optional)
Display Interface	HDMI Type A for HDMI 2.0 x 1	HDMI 2.1 (Type-A) x 1
Ethernet	RJ-45 for GbE LAN x 2	RJ-45 x 1 for GbE LAN
I/O	USB Type A for USB 3.2 Gen 2 x 2 USB Type C for USB 3.2 Gen 2 x 1 USB Type A for USB 2.0 x 1 Micro USB x 1 for OS Flash Mic in and Line out x1 Reset Button x 1 Recovery Button x 1 MicroSD card slot x 1 Antenna opening x 4 Power Button x 1 DB-9 x 2 for RS-232/422/485 DB-9 x 1 for DIO x 8	USB 3.2 Gen 2 (Type-A) x 2 USB 2.0 (Type-A) x 2 DB-9 for RS-232 (Rx/Tx/CTS/RTS)/485 x 1 and CANBus FD x 1 DB-15 for RS-232 (Rx/Tx)/422/485 x 1 and DIO x 8 Micro USB x 1 for OS Flash Recovery Button x 1 Antenna x 2
Expansion	M.2 E-Key 2230 ( for Wifi/BT ) x 1 M.2 B-Key 3052 x 1 M.2 M-Key 2280 ( NVMe ) x 1 2.5" SATA drive bay SIM Slot x 1	M.2 3042/3052 B Key x 1 (4G/5G/M.2 2242 B+M Key storage) M.2 2230 E Key x 1 (Wifi/BT/Storage) SIM Slot x 1
Indicator		Power LED x 1
OS Support		Linux ( NVIDIA Jetpack 5.0 or above )
Power Supply		
Power Requirement	12V DC with lockable DC Jack	12V~24V DC in with 2 pins terminal block x 1
Mechanical		
Mounting	Wall mount kit	Wallmount
Dimensions (W x D x H)	7.09 " x 5.35 " x 3.11" (180.0 mm x 136.0 mm x 79.1 mm)	4.13" x 3.54" x 2.05" (105mm x 90mm x 52mm), w/o bracket
Gross Weight	7.8lb ( 3.55kg )	2.4 lb. (1.1Kg)
Net Weight	5.5lb ( 2.5kg )	1.58 lb. (0.7Kg)
Environmental		
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C with 0.5 m/s airflow)	-5°F ~ 131°F (-15°C ~ 55°C), according to IEC60068-2 with 0.5 m/s AirFlow
Storage Temperature	-40°F ~ 158°F (-40°C ~ 70°C)	-40°F ~ 185°F (-40°C ~ 85°C)
Storage Humidity		5% ~ 95% @ 40C, non-condensing
Anti-Vibration	3.5Gm / 5~500Hz / operation-eMMC, MicroSD or SSD	3.5Gm / 5~500Hz / Operation
Anti-Shock	50G peak acceleration (11 msec. duration, eMMC, microSD, or SSD)	50G peak acceleration
Certification	CE / FCC Class B	CE/FCC class A
Note		





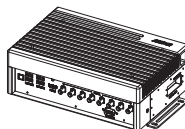
Model	BOXER-8652AI	BOXER-8653AI
System		
AI Accelerator	NVIDIA® Jetson Orin™ NX	
CPU	6-core Arm® Cortex®-A78AE v8.2 64-bit CPU	6-core Arm® Cortex®-A78AE ARMv8.2 64-bit CPU 8-core Arm® Cortex®-A78AE ARMv8.2 64-bit CPU
System Memory	8GB/16GB LPDDR5	
Storage Device	M.2 2280 M-Key x 1	
Display Interface	HDMI 2.0 (Type-A) x 1	
Ethernet	RJ-45 x 2 for 10/100/1000 Base-T	RJ-45 x 1 for GbE LAN RJ-45 x 4 for GbE PoE/PSE 802.3af/at (Max.60W)
I/O	USB 3.2 Gen 2 (Type-A) x 2 USB 2.0 (Type-A) x 2 Micro USB x 1 for OS Flash DB-9 x 1 for CANbus DB-9 x 1 for RS-232/422/485 DB-15 x 1 for 13-bit DIO Power ON/OFF switch x 1 Recovery button x 1 Antenna Hole x 6	USB 3.2 Gen 2 (Type-A) x 4 DB-9 x 1 for RS-232 (Rx/Tx/CTS/RTS)/RS485 x 1 and CANBus FD x 1 DB-15 x 1 for RS-232(Rx/Tx)/422/485 x 1 and DIO x 8 Micro USB x 1 for OS Flash Power Button x 1 Recovery Button x 1 Antenna Hole x 6
Expansion	M.2 2230 E-Key x 1 (Wi-Fi/Bluetooth) M.2 3042/3052 B-Key x 1 (4G/5G) M.2 2280 M-Key x 1	M.2 2280 M-Key x 1 (NVMe) M.2 3042/3052 B-Key x 1 M.2 2230 E-Key x 1 SIM Slot x 1
Indicator	Power LED x 1	
OS Support	Linux (NVIDIA Jetpack™ 5.0 and up)	
Power Supply		
Power Requirement	DC-in 12-24V with 2-pin terminal block	12V ~ 24V DC in with 2-pin Terminal Block x 1
Mechanical		
Mounting	Wall mount kit	Wall Mount
Dimensions (W x D x H)	5.98" x 3.78" x 2.42" (152mm x 96 mm x 61.5mm)	7.09" x 5.35" x 2.95" (180mm x 136mm x 75mm)
Gross Weight	3.97lb (1.8kg)	7.7 lb (3.5kg)
Net Weight	2.65lb (1.2kg)	5.5 lb (2.5kg)
Environmental		
Operating Temperature	-5°F ~ 140°F (-15°C ~ 60°C with 0.5 m/s airflow)	5°F ~ 140°F (-15°C ~ 60°C), according to IEC60068-2 with 0.5 m/s AirFlow
Storage Temperature	-40°F ~ 176°F (-40°C ~ 85°C)	
Storage Humidity	5% ~ 95% @ 40°C, non-condensing	
Anti-Vibration	3.5Grm / 5~500Hz / Operation	
Anti-Shock	50G peak acceleration	
Certification	CE / FCC class A	
Note		





Model	BOXER-8658AI	BOXER-8642AI
System		
AI Accelerator	NVIDIA® Jetson Orin™ NX	NVIDIA® Jetson AGX Orin™
CPU	Orin NX 8GB: 6-core Arm® Cortex®-A78AE v8.2 64-bit CPU Orin NX 16GB: 8-core Arm® Cortex®-A78AE v8.2 64-bit CPU	AGX Orin 32GB: 8-core Arm® Cortex®-A78AE CPU AGX Orin 64GB: 12-core Arm® Cortex®-A78AE CPU
System Memory	8GB LPDDR5 16GB LPDDR5	32GB LPDDR5 64GB LPDDR5
Storage Device	2.5" SATA Driver Bay x 1 M.2 2280 NVMe M Key x 1	64GB eMMC 5.1 x 1 2.5" SATA SSD drive bay x 1
Display Interface	HDMI 2.0 type A x 1	HDMI 2.0 x 1
Ethernet	RJ-45 x 2 for Giga LAN RJ-45 x 8 for GbE PoE/PSE (802.3af/at, MAX.:120W) *4 PoE ports sharing one MAC address and one Giga bandwidth. Supports total 120W PoE when input voltage is at or over 24V. Supports total 80W PoE when input voltage is between 12~24V. Supports total 30W PoE when input voltage is below 12V.	RJ-45 x 2 for GbE LAN
I/O	USB 3.2 Gen 2 type A x 4 DB-9 x 1 for CANBus FD x 1 DB-15 x 1 for RS232/422/485 x 1 and DIO x 8 Line out x 1 Micro USB x 1 for OS Flash Power button x 1 Recovery button x 1 Switch x 2 for ACC Ignition Delay On/Off Antenna x 7 TPM Support GNSS Support 9-Axis Sensor Support	USB 3.2 Gen 2 (Type-A) x 8 DB-9 x 2 for RS-232/422/485(Rx/Tx) & CANBus FD Mic-in x 1 Line-Out x 1 Power Button x 1 Recovery Button x 1 Micro USB x 1 for OS Flash SMA Antenna Hole x 2
Expansion	M.2 2230 E Key x 1 (Wifi/BT) M.2 3052 B Key x 1 (LTE) M.2 2280 NVMe M Key x 1 2.5" SATA x 1 SIM Slot x 2	M.2 E-key 2230 (for WIFI/BT) x 1 2.5" SATA SSD drive bay x 1
Indicator		Power LED x 1
OS Support	Linux (NVIDIA JetPack™ 5.0 and above)	Linux (NVIDIA Jetpack™ 5.1.2 and above)
Power Supply		
Power Requirement	3-pin Terminal Block x 1 for 9V ~ 36V ACC Ignition Delay On/Off	12V ~ 24V DC-in with 2-pin Terminal Block x 1
Mechanical		
Mounting		Wall Mount Kit
Dimensions (W x D x H)	8.27" x 6.46" x 2.99" (210 x 164.2 x 76 mm) (Without Bracket) 9.69" x 6.46" x 3.27" (246 x 164.2 x 83 mm) (With Bracket)	TBD
Gross Weight	8.6 lbs (3.9Kg)	TBD
Net Weight	6.7 lbs (3Kg)	TBD
Environmental		
Operating Temperature	5°F ~ 140°F (-15°C ~ 60°C with 0.7 m/s airflow, with Industrial wide Temp. SSD)	-13°F ~ 131°F (-25°C ~ 55°C), according to IEC60068-2 with 0.7 m/s AirFlow (w/Industrial wide Temp. SSD)
Storage Temperature		-40°F ~ 185°F (-40°C ~ 85°C)
Storage Humidity		5 ~ 95% @ 40°C, non-condensing
Anti-Vibration	MIL-STD-810G, 514.6C Procedure 1, Category 4 Trucker/ Semitrailer on US highway (Figure 514.6C-1-Category 4-Common carrier)	3.5 Grms/ 5 ~ 500Hz/ operating
Anti-Shock	MIL-STD-810G, Method 516.6, Procedure 1, flight vehicle equipment	50G peak acceleration
Certification	CE / FCC class A, E-Mark Compliance	CE / FCC class A
Note		





Model	BOXER-8655AI
System	
AI Accelerator	NVIDIA® Jetson Orin™ NX
CPU	Orin NX 8GB : 6-core Arm® Cortex®-A78AE v8.2 64-bit CPU 1.5MB L2 + 4MB L3 Orin NX 16GB : 8-core Arm® Cortex®-A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3
System Memory	Orin NX 8GB : 8GB LPDDR5 Orin NX 16GB : 16GB LPDDR5
Storage Device	M.2 2280 M-Key x 1 (NVMe)
Display Interface	HDMI 2.1 x 1
Ethernet	RJ-45 for GbE LAN x 5
I/O	GMSL2 x 8 with Fakra connectors DB-9 x 1 for CANBus FD DB-15 for RS232 ( Rx/Tx )/RS422/RS485 x 1, programmable DIO x 8 USB 3.2 Gen 2 x 1 (Type A) USB 2.0 x 3 (Type A) Line-out x 1 Micro USB x 1 for image flash External SMA antenna x 7 Power button x 1 Recovery button x 1 3 pin terminal block x 1 for power in
Expansion	M.2 2230 E-Key x 1 (Wifi/BT) M.2 3042/3052 B-Key x 1 (LTE/5G) (USB 2.0,USB3.0) M.2 2280 M-Key x 1 (NVMe)
Indicator	Power LED
OS Support	Linux (NVIDIA JetPack™ 5.1 and above)
Power Supply	
Power Requirement	3-pin Terminal Block x 1 for 9V ~ 36V ACC Ignition Delay On/Off
Mechanical	
Mounting	Wallmount
Dimensions (W x D x H)	TBD
Gross Weight	TBD
Net Weight	TBD
Environmental	
Operating Temperature	5°F ~ 158°F (-15°C ~ 70°C with 0.7 m/s airflow)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing
Anti-Vibration	MIL-STD-810G, 514.6C Procedure 1, Category 4 Trucker/Semitrailer on US highway (Figure 514.6C-1-Category 4-Common carrier)
Anti-Shock	MIL-STD-810G, Method 516.6, Procedure I, flight vehicle equipment
Certification	E-Mark, CE/FCC Class A





Model	MAXER-2100
System	
CPU	12/13th Generation Intel® Core™ LGA1700 Socket Processors, TDP Max 125W Build in: i9-13900
GPU	GeForce RTX 4080 SUPER (Optional support NVIDIA GeForce Graphic or AI computing card)
Chipset	Intel Q670
System Memory	DDR5 4000MHz DIMM x 4, Up to 128GB Non-ECC, Un-buffered Memory, Dual-Channel Memory Architecture
Display Interface	HDMI 2.0 x 1, DP 1.4 x 1, VGA x 1
Storage Device	2.5" SATA-III Drive Bay x 2 (Swappable, RAID 0/1) M.2 2280 M key for NVMe SSD x 1
Ethernet	RJ-45 GbE LAN x 1 (supports intel® AMT 12.0) RJ-45 GbE LAN x 1 RJ-45 2.5GbE LAN x 2
USB	USB 3.2 Gen2 x 4 (10Gbps)
Serial Port	DB-9 x 1 for RS-232/422/485
Audio	Audio (Mic-in/Line-out/Line-In)
Expansion	PCIe [x16] x 1 for RTX 4080 Super M.2 3042/3052 B-Key x 1 + MicroSIM Slot M.2 2230 E-Key x 1
TPM	TPM 2.0 Onbaord
Indicator	System LED x 1, HDD Activity x 1
OS support	Windows® 10 IoT Enterprise 64-bit Windows® 11 PRO 64-bit Ubuntu 22.04.3 and above
Drive Bay	2.5" SATA-III Drive Bay x 2 (Swappable, RAID 0/1)
Front Control	Power On/Off, System Reset
Power Supply	
Power Requirement	Build in 1000W power supply
Mechanical	
Mounting	Rack Mount
Dimensions (W x H x D)	17" x 3.46" x 17.6" (431.8mm x 88mm x 448mm)
Gross Weight	31.52 lb (14.3kg)
Net Weight	24.25 lb (11kg)
Environmental	
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C), according to IEC68-2 with 0.5 m/s AirFlow
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing
Certification	CE/FCC class A
Note	



## RISC Gateway Solutions - RISC Gateway &amp; Expansion



Model	SRG-IMX8P	SRG-AM62	SRG-IMX8PL
System			
Processor	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor	ARM TI AM62x, up to Quad 64-bit Arm® Cortex®-A53	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor (Default w/ NPU, optional w/o NPU)
Memory	Onboard LPDDR4 2GB (Optional 4GB)	Onboard DDR4 16 bit, up to 4 GB	Onboard LPDDR4 up to 4GB (8GB by request)
Storage	eMMC 5.1 16GB (Optional 32GB)	eMMC 5.1 16 GB (Optional 32/64/128 GB) Micro SD Card slot x1	eMMC 5.1 16/32GB (Optional 64/128 GB) Micro SD Card slot x 1
Real Time Clock	RTC x 1, with 3V CR2032H Lithium battery	RTC x 1, with 3V CR2032H Lithium battery	RTC x 1, with 3V CR2032H Lithium battery
Security	TPM 2.0		TPM 2.0 (optional)
Indicators	Programmable LED control x 7	Programmable LED control x 3	Programmable LED control x 3
Cellular	Mini PCIe Connector x 1 (USB signal)		Full Size Mini Card x 1 (USB signal)
Wireless Lan	Mini PCIe Connector x 1 (USB signal)	Half Size Mini Card x 1 (USB signal)	M.2 2230 E-key x 1 (USB, PCIe)
Operating System	Debian 11(Default, GUI is optional) Android 13 Win 10 IoT Yocto	Debian 12 (Default, GUI is optional) Android 14	Debian 11 (Default, GUI is optional) Android 13 Win 10 IoT Yocto 4.0
Support Protocol	Modbus / MQTT Library (by request)	—	Modbus, MQTT, OPCUA
I/O Interfaces			
Serial Port	RS-232/422/485 switchable x 2, Phoenix Connector	RS-232/422/485 switchable x 2, Phoenix Connector	RS-232/422/485 switchable x 2, Phoenix Connector
Ethernet	Gigabit Ethernet x 2, RJ-45	Gigabit Ethernet x 2, RJ-45 support IEEE 1588, TSN, integrated RGMII	Gigabit Ethernet x 2, RJ-45 support IEEE 1588, TSN, integrated RGMII
Audio	—	Line Out x 1 (by request)	Line Out x 1 (optional)
USB	USB 3.0, Type-A x 2	USB 2.0 Gen1 x 2 -Host/device by image option, default: host x 1 -Host x 1	USB 3.0 Type-A x 2
ADC		—	
DI/DO		—	
CAN Bus	CAN-FD x 2 CH, Phoenix Connector	CAN-FD x 2 CH, Phoenix Connector	CAN-FD x 2 CH, Phoenix Connector
Display	HDMI 2.0a x 1	HDMI 1.4b up to 1080p x 1	HDMI 2.0 x 1
Power Connector	2 Pin 3.81mm Pitch Phoenix Connector	2 Pin 3.81mm Pitch Phoenix Connector	2 Pin 3.81mm Pitch Phoenix Connector
Debug Port		Micro USB x 1	
Expansion Slot	SIM card slot x 1 Micro SD slot x 1	Half Size Mini Card (USB2.0) x 1, support Wifi/BT module, etc Full Size Mini Card (USB2.0) x 1, support 4G module, etc Power control available by software	M.2 2230 E-key x 1, support Wifi/BT module Full Size Mini Card x 1, support 4G module, etc)
Other Interface		—	
Power Supply			
Power Requirement	DC 9-36V	DC 9-36V (Optional: 12V)	
Power Consumption		9.36W (Full Loading)	
MTBF (Hours)	479,374	1,279,408 Hours	1,699,754 Hours
Environmental and Mechanical			
Dimension	5.54" x 3.86" x 1.89" (140.76 x 98.2 x 48 mm)	4.25" x 3.13" x 1.29" (108mm x 79.5mm x 33mm)	4.25" x 3.12" x 1.69" (108mm x 79.5mm x 43mm)
Weight	2.6lb (1.18kg)	0.72 lbs (0.33 kg)	1.01 lbs (0.46kg)
Mount Options		Wall Mount, Din Rail (Optional)	
Operation Temperature	-4 °F ~ 158 °F (-20 °C ~ 70 °C)	-40 °F ~ 185 °F (-40 °C ~ 85 °C) (Option: 0°C ~ 60°C)	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)	-40 °F ~ 185 °F (-40 °C ~ 85 °C)	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operation Humidity	10% ~ 95% relative humidity, non-condensing	0% ~ 90% relative humidity, non-condensing	
Certification	CE/FCC Class A UL61010/IEC61000-6-2/IEC61000-6-4/IEC61131-2		CE/FCC Class A



# System Level Products Compact Fanless BOX PC Solutions

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Compact Fanless BOX PC Solutions



Model	BOXER-6614	BOXER-6615
System		
CPU	Intel® Celeron® N2930, 1.83 GHz Intel® Celeron® N2807, 1.58GHz	Intel® Pentium® N3710 1.6GHz
Chipset	Intel® System on Chip	
System Memory	DDR3L 1333 SODIMM slot x 1, up to 8 GB (N2930) or 4 GB (N2807)	204-pin 1600 DDR3L SODIMM x 1, up to 8GB
Display Interface	VGA, HDMI	
Storage Device	CFast™, HDD/SSD	mSATA, 2.5" HDD/SSD
Ethernet	Intel® I210/I211, 10/100/1000 Base-TX x 2	Realtek® RTL-8111E, 10/100/1000 Base x2
I/O	RS-232/422/485 x 2 RS-232 x 2 USB 2.0 x 3 USB 3.2 Gen 1 x 1 VGA x 1 HDMI x 1 Line-out x 1 LAN x 2 CFast slot x 1 Antenna holes x 2 Power switch Power input	RS-232/422/485 x 2 RS-232 x 4 USB 3.2 Gen 1 x 2 USB2.0 x 2 VGA x 1 HDMI x 1 DIO x 1 Line-Out x 1 Antenna holes x 2 Power switch Power input
Expansion	Full-size Mini-Card x 1 (PCI-E + USB, w/ SIM slot) Half-size Mini-Card x 1 (PCI-E + USB)	Full-size Mini-Card x 1 (PCI-E + USB, w/ SIM slot) Half-size Mini-Card x 1 (mSATA + USB)
Indicator	Power LED HDD active LED	
OS support	Windows® 10, Windows® 8.1 (32/64-bit), Windows® 7 (32/64-bit), WES7/WES8, Linux Ubuntu 14.04/ Kernel 3.13.0	Windows® 10 IoT, Ubuntu 15.04 Kernel 3.19 .0
Power Supply		
Power Requirement	9 - 30V with 3-pin terminal block, 12V with lockable DC jack	
Mechanical		
Mounting	Wallmount DIN Rail (Mounting kit is optional)	
Dimensions (W x H x D)	8.35" x 4.21" x 2.53" (212.15mm x 107mm x 64.2mm )	7.76" x 2.17" x 4.33" (197mm x 55mm x 110mm)
Gross Weight	6.6 lb (2.8 kg)	6.6 lb (2.8 kg)
Net Weight	4.4 lb (2 kg)	4.4 lb (2 kg)
Environmental		
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C) with wide temperature CFast™ card -4°F ~ 140°F (-20°C ~ 60°C) with wide temperature HDD (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)	-4°F ~ 140°F (-20°C ~ 60°C) with W.T. SSD/HDD/mSATA (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	95% @ 40°C, non-condensing	
Anti-Vibration	5 Grms/ 5 ~ 500Hz/ operation –CFast™ card 1 Grms/ 5~ 500Hz/ operation – HDD	5 Grms/ 5 ~ 500Hz/ operation –mSATA/SSD 1 Grms/ 5~ 500Hz/ operation – HDD
Anti-Shock	—	
Certification	CE/FCC class A, UL	CE/FCC class A
Note		





Model	BOXER-6616	BOXER-6617-ADN
System		
CPU	Intel® Pentium® N4200, 2.5 GHz Intel® Celeron® N3350, 2.4 GHz	Intel® Processor N50 Intel® Processor N97 Intel® Core™ i3-N305 Intel Atom® x7211E
Chipset	Intel® System on Chip	Intel® SoC
System Memory	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)	DDR5 4800MHz SODIMM x 1, up to 32GB
Display Interface	HDMI (max. 2048 x 1152) VGA (max. 2048 x 1152)	HDMI x 2
Storage Device	mSATA, HDD/SSD	M.2 2280 M-Key x 1 (PCIe [x2]) 2.5" SATA HDD/SSD x 1
Ethernet	Intel® I211, 10/100/1000 Base-TX x 2	RJ-45 x 2 for 2.5GbE LAN (Intel® I226)
I/O	RS-232/422/485 x 2 RS-232 x 4 USB 3.2 Gen 1 x 4 VGA x 1 HDMI x 1 LAN x 2 Remote On/Off x 1 Reset Button x 1 AT/ATX DIP Switch Mic-In x 1 Line-Out x 1 Antenna holes x 1 Power button Power input	HDMI x 2 RJ-45 x 2 for 2.5GbE LAN (Intel® I226) USB 3.2 Gen 2 x 2 (Type-A) USB 2.0 x 4 (Type-A) DB-9 x 6 for RS-232/422/485 Mic-in/Line-out 10-Pin Terminal Block x 1 for Digital I/O 8-channel 3-Pin Terminal Block for DC In x 1 2-Pin Remote On/Off x 1 Reset Button x 1 Power Button with LED x 1
Expansion	Full-size Mini-Card x 1 (PCI-E + USB, w/ SIM slot) Half-size Mini-Card x 1 (A1:PCI-E + USB, A2: mSATA + USB)	M.2 2280 M-Key x 1 (PCIe [x2]) M.2 2230 E-Key x 1 (for Wi-Fi) M.2 3052 B-Key x 1 (for 5G/LTE) SIM Slot x 1
Indicator	Power LED HDD active LED	Sys LED Storage active LED
OS support	Windows® 10 IoT Ent LTSC 2019 64 bit Ubuntu 16.04 above	Windows® 10 IoT Enterprise Linux Ubuntu 22.04
Power Supply		
Power Requirement	DC-in 9-36V x 1 for 3-Pin Terminal Block	
Mechanical		
Mounting	Wallmount DIN Rail (Mounting kit is optional)	Wall Mount
Dimensions (W x H x D)	7.76" x 2.17" x 4.33" (197mm x 55mm x 110mm)	8.42" x 4.54" x 2.59" (214mm x 115.5mm x 65.8mm) without brackets
Gross Weight	6.6 lb (2.8 kg)	6.17 lb. (2.8Kg)
Net Weight	4.4 lb (2 kg)	4.4 lb. (2Kg)
Environmental		
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C) with W.T. SSD/HDD/mSATA (according to IEC682-14 with 0.5 m/s AirFlow; with industrial devices)	-4°F ~ 158°F (-20°C ~ 70°C), according to IEC68-2 with 0.5 m/s AirFlow (w/ Industrial wide Temp. SSD/RAM)
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	-40°F ~ 176°F (-40°C ~ 80°C)
Storage Humidity	95% @ 40°C, non-condensing	5 ~ 95% @ 40°C, non-condensing
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation – mSATA/SSD 1 Grms/ 5 ~ 500Hz/ operation – HDD	3 Grms/ 5 ~ 500Hz/ operation (with SSD)
Anti-Shock	—	50G, IEC 68-2-27, half sine, 11 ms duration (with SSD)
Certification	CE/FCC class A	
Note	 <b>TAIWAN EXCELLENCE 2018</b>	






# System Level Products

## Compact Fanless BOX PC Solutions

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Compact Fanless BOX PC Solutions




Model	BOXER-6639	BOXER-6639M
System		
CPU	Intel® Core™ i7-7700T, 2.9 GHz Intel® Core™ i5-7500T, 2.7 GHz Intel® Core™ i7-6700TE, 2.4 GHz Intel® Core™ i5-6500TE, 2.3 GHz Intel® Core™ i3-6100TE, 2.7 GHz Intel® Pentium® G4400TE, 2.4 GHz Intel® Celeron® G3900TE, 2.3 GHz	7th Generation Intel® Core™ Processor family: Intel® Core™ i7-7700T, 2.9 GHz, Intel® Core™ i5-7500T, 2.8 GHz Intel® Core™ i3-7101TE, 3.4 GHz, Intel® Pentium® G4600T, 3.0 GHz Intel® Pentium® G4560T, 2.9 GHz, Intel® Celeron® G3930T, 2.7 GHz 6th Generation Intel® Core™ Processor family: Intel® Core™ i7-6700TE, 2.4 GHz, Intel® Core™ i5-6500TE, 2.3 GHz Intel® Core™ i3-6100TE, 2.7 GHz, Intel® Pentium® G4500T, 3.0 GHz Intel® Pentium® G4400T, 2.9 GHz, Intel® Celeron® G3900T, 2.6 GHz
Chipset	Intel® Q170	
System Memory	DDR4 1866/2133 SODIMM slot x 2, up to 32 GB, ECC or Non-ECC support	DDR4 1866/2133 SODIMM slot x 2, up to 32GB
Display Interface	HDMI, VGA	
Storage Device	CFast x 1, 2.5" SATA SSD x 1 (2.5" SATA SSD x 2 supports RAID 0/1 for A3/A4 model)	CFast™, HDD/SSD
Ethernet	Intel® i210, 10/100/1000Base-TX x 3	
I/O	RS-232/422/485 x 6, USB 3.2 Gen 1 x 4, USB 2.0 x 2, VGA x 1, HDMI x 2, Line-out x 1, Mic-in x 1, LAN x 3, CFast slot x 1, SIM slot x 1, Antenna holes x 2, 34bit DIO x 1 (A2 & A4 SKU), Power switch, Power input, Remote power switch, Reset Button	RS-232/422/485 x 6, USB Type A x 6 for USB 3.2 Gen 1, USB Type A x 2 for USB 2.0 RJ-45 x 3 for GbE LAN, RJ-45 x 4 for PoE (802.3at, max. 80W in total) DB-44 for 34-bit Digital I/O (5V), CFast™ slot x 1, SIM card slot x 1 Power On/Off Button x 1, 2 pin Remote power on/off, Reset switch Mic-in x 1, Line-out x 1, Antenna opening x 2, SYS LED indicator x 1, HDD LED indicator x 1, DB-15 x 1 for VGA, HDMI v1.3 x 2, DC-in 3-pin terminal block (12-36V)
Expansion	Full-size Mini-Card x 1 (PCI-E + USB, w/ SIM slot) Full-size Mini-Card x 1 (PCI-E + USB, Optional for mSATA and SIM Slot)	Full-size Mini-Card x 1 (PCI-E + USB, w/ SIM slot) Full-size Mini-Card x 1 (PCI-E + USB, Optional for mSATA and SIM Slot)
Indicator	Power LED, HDD active LED	
OS support	Windows® 7 (32/64-bit), Windows® 8/8.1 (64-bit), Windows® 10 (64-bit)	<b>7th Generation Intel® Core™ Processor family:</b> Windows® 10 IoT (64bit), Ubuntu 16.04 above, Fedora 25 above, CentOS 7.3 above <b>6th Generation Intel® Core™ Processor family:</b> Windows® 10 IoT (64bit), Windows® 8.1 (64bit), Windows® Embedded 8 Standard (64bit), Windows® 7 (32/64bit), Windows® Embedded Standard 7 (32/64bit), Ubuntu 16.04 above, Fedora 25 above, CentOS 7.3 above
Power Supply		
Power Requirement	9 - 36V with 3-pin terminal block	12 - 36V with 3-pin terminal block
Mechanical		
Mounting	Wallmount, DIN Rail (Mounting Kit is optional)	Wallmount
Dimensions (W x H x D)	10.4" x 2.6" x 6.1" (264.2mm x 66.5mm x 156.2mm)	10.4" x 3.8" x 6.1" (264.2mm x 96.4mm x 154.2mm)
Gross Weight	7.7 lb (3.5 kg)	13.0 lb (5.9 kg)
Net Weight	6.6 lb (3 kg)	8.8 lb (4.0 kg)
Environmental		
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)	-13°F ~ 131°F (-25°C ~ 55°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)
Storage Temperature	-49°F ~ 176°F (-45°C ~ 80°C)	
Storage Humidity	5~95% @ 40°C, non-condensing	
Anti-Vibration	2 Grms/ 5 ~ 500Hz/ operation –CFast™ card 1 Grms/ 5~ 500Hz/ operation – HDD	5 Grms/ 5 ~ 500Hz/ operation – SSD/CFast™ card 1 Grms/ 5~ 500Hz/ operation – HDD
Anti-Shock	—	
Certification	CE/FCC class A	
Note		



## Compact Fanless BOX PC Solutions



Model	BOXER-6640	BOXER-6641	BOXER-6641-PRO
System			
CPU	Intel® Core™ i7-7700T, Quad Core, 2.9 GHz Intel® Core™ i5-7600T, Quad Core, 2.8 GHz Intel® Core™ i3-7300T, Dual Core, 3.5 GHz Intel® Core™ i7-6700TE, Quad Core, 2.4 GHz Intel® Core™ i5-6500TE, Quad Core, 2.3 GHz Intel® Core™ i3-6100TE, Dual Core, 2.7 GHz	Intel® Xeon® E-2124G (for A2 & A6 model only) Intel® i9-9900T Intel® i7-9700TE Intel® i7-8700T Intel® i5-8500T Intel® i3-8100T Pentium® G5400T Celeron® G4900T	Intel® i7-9700TE Intel® i7-8700T Intel® i5-8500T Intel® i3-8100T Pentium® G5400T Celeron® G4900T
Chipset	Intel® H110	Intel® C246/H310	
System Memory	DDR4 SODIMM socket (double deck) x 2 Supports 1866/2133MHz DDR4 and up to 32GB Supports un-buffered and ECC / non-ECC type SODIMM	DDR4-2666 S0-DIMM slot x 2. Up to 64GB, ECC or Non-ECC Support	
Display Interface	VGA x 1, HDMI x 2 (Combo DP x 2) - A1 Sku VGA x 1 - A2 Sku	HDMI x 2	
Storage Device	mSATA, SATA HDD/SSD	2.5" SATA HDD/SSD Bay x 1 (x 2 for A5 & A6 model, A6 supports RAID 0/1)	2.5" SATA HDD/SSD Bay x 2
Ethernet	Intel® i211AT x 1, i219LM x 1	Intel® i211 x 3, i219 x 1	
I/O	2 pin Remote power on/off connector Audio x1 (MIC-in, Line-out) USB 2.0 x 3 DB-9 x 3 for RS-232 8-bit DIO DB-9 x 1 for RS-232/422/485 with auto flow control Power ON/OFF switch x 1 3 pin 9~36V DC Power input x 1 (+, -, GND) VGA x 1 HDMI x 2 (Combo DP x 2) USB 3.2 Gen 1 x 4 RJ-45 x 2 for GbE (i211AT x 1, i219LM x 1)	HDMI x 2 RJ-45 x 4 for GbE LAN (i211 x 3, i219 x 1) USB 3.2 Gen 1 x 4, USB2.0 x 4 (A1 & A5 model) USB 3.2 Gen 1 x 8 (A2 & A6 model) DB-9 x 6 for RS-232/422/485 Audio x 1 (MIC-in, Line-out) 3 pin 10~35V Power Input x 1 Power Button x 1 Remote Power switch x 1 Reset Button x 1 HDD LED x 1 SYS LED x 1	HDMI x 2 RJ-45 x 4 for GbE LAN (i211 x 3, i219 x 1) USB 3.2 Gen 1 x 4, USB2.0 x 4 (A1 model) USB 3.2 Gen 1 x 8 (A2 model) DB-9 x 6 for RS-232/422/485 10 pin Terminal Block for 8-bit DIO Audio x 1 (MIC-in, Line-out) 3 pin 10~35V Power Input x 1 Power Button x 1 Remote Power switch x 1 Reset Button x 1
Expansion	Full-size Mini-Card x 1 (PCI-E + USB, w/ SIM slot) Full-size Mini-Card x 1 (mSATA + USB) LPC x 1	Full-size Mini PCIe x 1 Full-size Mini PCIe x 1 (PCIe/mSATA switch by BIOS, Default: mSATA) SIM slot x 1	Full-size Mini PCIe x 1 Full-size Mini Card x 1 (PCIe/mSATA switch by BIOS, Default: mSATA) SIM slot x 1
Indicator	Power LED, HDD active LED	HDD LED x 1, SYS LED x 1	
OS support	Windows® 10 64-bit (Kabylake, Skylake CPU) Windows® 8.1 64-bit (Skylake CPU only) Windows® embedded 8 standard 64-bit (Skylake CPU only)	Windows® 10 64-bit Linux Ubuntu 20.04	Windows® 10 64-bit Linux Ubuntu 20.04.2
Power Supply		3-pin DC Input 10~35V	
Power Requirement	3-pin Phoenix DC Input 9~36V	3-pin DC Input 10~35V	
Mechanical			
Mounting		Wallmount	
Dimensions (W x H x D)	10.39" x 3.8" x 7.33" (264mm x 96.4mm x 186.2mm)	10.4" x 3.19" x 6.15" (264.2mm x 80.92mm x 156.2mm)	
Gross Weight	12.76 lb (5.8 kg)	10.4 lb (4.7 kg)	
Net Weight	9.9 lb (4.5 kg)	8.2 lb (3.7 kg)	
Environmental			
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)	-4°F ~ 131°F (-20°C ~ 55°C) with 0.5 m/s airflow - with TDP ≤ 35W CPU -4°F ~ 113°F (-20°C ~ 45°C) with 0.5 m/s airflow - with TDP >35W CPU	-40°F ~ 158°F (-40°C ~ 70°C), according to IEC68-2-14 with 0.5 m/s AirFlow
Storage Temperature	-49°F ~ 176°F (-45°C ~ 80°C)	-40°C ~ 80°C	
Storage Humidity		5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	2 Grms/ 5 ~ 500Hz/ operation - SSD 1 Grms/ 5 ~ 500Hz/ operation - HDD	2 Grms/ 5 ~ 500Hz/ operation - SSD/mSATA 1 Grms/ 5 ~ 500Hz/ operation - HDD	2 Grms/ 5 ~ 500Hz/ operation (with SSD)
Anti-Shock		-	
Certification		CE/FCC class A	
Note		 TAIWAN EXCELLENCE 2021	



# System Level Products

## Compact Fanless BOX PC Solutions

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Compact Fanless BOX PC Solutions



Model	BOXER-6642-CML	BOXER-6643-TGU	BOXER-6645-ADS
System			
CPU	Intel® Core™ i9-10900TE Intel® Core™ i7-10700TE Intel® Core™ i5-10500TE Intel® Core™ i3-10100TE Intel® Celeron® G5900TE	Intel® Core™ i7-1185G7E Intel® Core™ i5-1145G7E Intel® Core™ i3-1115G4E	13th Generation Intel® Core™ Processors: Intel® Core™ i9-13900TE, Intel® Core™ i9-13900E, Intel® Core™ i7-13700TE, Intel® Core™ i7-13700E, Intel® Core™ i5-13500TE, Intel® Core™ i5-13500E, Intel® Core™ i3-13100TE, Intel® Core™ i3-13100E
Chipset	Intel® Q470E	Intel® SoC	Intel® H610E/Q670E
System Memory	DDR4 SO-DIMM x 2, up to 64GB	DDR4 3200MHz SO-DIMM x 2, max 64GB	DDR5 4800MHz SODIMM x 2, up to 64GB
Display Interface	HDMI 1.4 x 1	HDMI 2.0 x 2	HDMI 1.4b (Type-A) x 2 DP 1.4a x 2 *A2 model supports four simultaneous display outputs *A1 model supports three simultaneous display outputs
Storage Device	M.2 2280 slot x 1 (PCIe4), 2.5" SATA SSD/HDD bay x 1	M.2 2280 M Key NVMe Slot x1 (PCIe4) 2.5" SATA Drive Bay x1	2.5" SATA 6Gb/s Drive Bay x 2 (A2 SKU supports RAID 0, 1) M.2 2280 M-Key x 1 (NVMe, extra heatsink required, refer to optional accessories) (A2 Model)
Ethernet	Intel® i211-AT x 1, i219-LM x 1	RJ-45 x 2 for 1G/2.5GbE LAN (i219x1, i225x1)	Intel® i210-AT, 10/100/1000 Base-TX x 2 Intel® i219-LM, 10/100/1000 Base-TX x 1 Intel® i226-LM, 2.5GbE Base-TX x 1
I/O	HDMI x 1 RJ-45 x 2 for GbE LAN (i211-AT x 1, i219-LM x 1) USB 3.2 Gen 2 x 4 USB 2.0 x 2 DB-9 x 4 for RS-232/422/485 DB15 x 1 for 8 channel DIO Line out x 1 3 pin 10-35V Power Input x 1 Power Button with LED x 1	HDMI 2.0 x 2 RJ-45 x 2 for 1G/2.5GbE LAN (i219 x 1, i225 x 1) USB Type-A x3 for USB3.2 Gen2 USB Type-A x1 for USB 2.0 DB-9 x 2 for RS-232/422/485 DB15 x1 Male for Digital I/O 8-channel Line out x 1 3 pin 9-36V Power Input x 1 Power Button with LED x 1	USB 3.2 Gen 2 (5Gbps) x 4 (A1 Model) USB 3.2 Gen 2 (10Gbps) x 8 (A2 Model) USB 2.0 x 4 (A1 Model) Audio x 1 (MIC-in, Line-out) DB-9 x 6 for RS-232/422/485 SMA Antenna Hole x 6 DIO x 8
Expansion	M.2 2230 E Key x 1 M.2 2280 M Key x 1 Full-Size Mini Card x1 (mSATA/PCIe switch by BIOS, default PCIe) SIM x 1	M.2 3052 B Key x 1 (for 5G module) Full-Size Minicard x1 (PCIe + USB / SATA, Default PCIe + USB) SIM Slot x 1	M.2 2230 E-Key x 1 for WiFi module M.2 3052 B-key x 1 for 4G/5G module
Indicator	Power LED	Power / System LED	System LED x 1 HDD LED x 1
OS support	Windows® 10 IoT Enterprise 64-bit Linux Ubuntu 20.04.2	Windows® 10 IoT 64-bit Windows® 11 Pro 64-bit Linux Ubuntu 20.04.2	Windows® 10 IoT Enterprise 64-bit Windows® 11 Pro 64-bit Linux Ubuntu 20.04 (Kernel 15.5 or above)
Power Supply			
Power Requirement	10-35V DC-in with 3-pin terminal block	DC-in 9-36V x1 for 3-pin Terminal Block	3-pin DC Input 12-24V
Mechanical			
Mounting		Wallmount	
Dimensions (W x H x D)	11.58" x 5.98" x 2.11" (292.4mm x 152mm x 53.5mm)	9.84" x 5.62" x 2.03" (250 x 143 x 51.5) with bracket 7.87" x 5.62" x 1.75" (200 x 143 x 44.5) w/o bracket	10.39" x 3.8" x 7.33" (264mm x 80.92mm x 186.2mm)
Gross Weight	8.4lb (3.8kg)	4.4 lb (2.0 kg)	11.7 lb (5.3 kg)
Net Weight	6.2lb (2.8kg)	3.3 lb (1.5 kg)	9.5 lb (4.3 kg)
Environmental			
Operating Temperature	32°F ~ 113°F (0°C ~ 45°C) (35W CPU), according to IEC68-2-14 with 0.5 m/s AirFlow	-4°F ~ 140°F (-20°C ~ 60°C), according to IEC68-2 with 0.5 m/s AirFlow (w/ Industrial wide Temp. SSD/ RAM)	-4°F ~ 122°F (-20°C ~ 50°C), IEC68-2 with 0.5 m/s AirFlow, with wide temperature memory/storage (TDP 65W CPU) -4°F ~ 140°F (-20°C ~ 60°C), IEC68-2 with 0.5 m/s AirFlow, with wide temperature memory (Max. 32Gb/ Storage (TDP 35W CPU)
Storage Temperature		-40°F ~ 176°F (-40°C ~ 80°C)	
Storage Humidity		5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	2 Grms/5 ~ 500Hz/operation (with SSD)	3 Grms/5 ~ 500Hz/ operation (with SSD)	3 Grms/5 ~ 500Hz/ operation – SSD 1 Grms/5 ~ 500Hz/ operation – HDD
Anti-Shock	50G peak acceleration (11msec) (with SSD)		50G, IEC 68-2-27, half sine, 11 ms duration (with SSD)
Certification			CE/FCC class A
Note			



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## System Level Products

## Compact Fanless BOX PC Solutions



Model	BOXER-6646-ADP	BOXER-6645U-RPL	BOXER-6647-MTH
System			
CPU	13th Generation Intel® Core™ Processors: Intel® Core™ i7-1370PE Intel® Core™ i5-1350PE Intel® Core™ i3-1320PE 12th Generation Intel® Core™ Processors: Intel® Core™ i7-1270PE Intel® Core™ i5-1250PE Intel® Core™ i3-1220PE	12/13/14th Generation Intel® Core™ LGA 1700 socket-type Processor, Max TDP 65W 13th Generation Intel® Core™ Processors: Intel® Core™ i9-13900TE, Intel® Core™ i9-13900E, Intel® Core™ i7-13700TE, Intel® Core™ i7-13700E, Intel® Core™ i5-13500TE, Intel® Core™ i5-13500E, Intel® Core™ i3-13100TE, Intel® Core™ i3-13100E, 14th Generation Intel® Core™ Processors: Intel® Core™ i9-14900, Intel® Core™ i9-14900T, Intel® Core™ i7-14700, Intel® Core™ i7-14700T, Intel® Core™ i5-14500, Intel® Core™ i5-14500T, Intel® Core™ i3-14100, Intel® Core™ i3-14100T,	Intel® Core™ Ultra 5 processor 125H Intel® Core™ Ultra 7 processor 155H
Chipset	Intel® System on Chip	Intel® H610E	Intel® SoC
System Memory	DDR5 SODIMM slot x 2, max. 64GB	DDR5 SODIMM x 2, up to 64GB	DDR5 4800 MT/s S0-DIMM slot x 2, up to 64GB
Display Interface	HDMI x2, Display Port x 2	HDMI x 2, 4K x 2K @30Hz	HDMI x 2 (Support 4K @60Hz)
Storage Device	Removable 2.5" SATA Drive Bay x 1 M.2 2280 M Key NVMe Slot x 1	2.5" SATA Drive Bay x 2 M.2 2280 M-Key x 1 (PCIe Gen 3 [x4]) for NVMe	M.2 2280 M-Key x 1 (NVMe PCIe SSD, quick access tray design) 2.5" SATA HDD/SSD x 1 (quick access tray design)
Ethernet	RJ-45 x 2 for 2.5GbE LAN i225-LM x 2 RJ-45 x 1 for GbE LAN i219-LM x 1	Intel® i219-LM, GbE RJ-45 x 1 Intel® i226-LM, 2.5GbE RJ-45 x 1	RJ-45 x 2 for 2.5GbE LAN (Intel® Ethernet Controller I226) RJ-45 x 1 for GbE LAN (Intel® Ethernet Connection I219)
I/O	USB Type-A x 3 for USB3.2 Gen2 (10Gbps) USB Type-A x 3 for USB 2.0 DB-9 x 4 for RS-232/422/485 Line out SMA Antenna Holes x 6 10pin D-Sub connector for DIO 8 bit x 1 Power Button with LED indicator x 1 Remote Power on/off 2pin connector x 1	USB 3.2 Gen 2 x 4, USB 2.0 x 2 DB-9 x 2 for RS-232/422/485 Audio x 1 (Mic-/Line-out) Power Button with power LED x 1 Remote Power On/Off x 1	HDMI x 2 USB 3.2 Gen 2 (Type-A) x 4 USB 2.0 (Type-A) x 2 DB-9 Male x 2 for RS-232/422/485 Line out x 1 D-Sub Male Connector x 1 for 8-bit DIO DC 9V ~ 36V 3-pin Terminal Block Connector Remote Power x 1 Power Button with LED x 1
Expansion	M.2 E key 2230 x 1 M.2 B Key 3052 x 1 (for 5G/LTE module)	M.2 2280 M-Key x 1 (For NVMe Storage) M.2 2230 E-Key x 1 (for Wi-Fi/Bluetooth) Full Size MiniPCIe x 1 (optional for mSATA) Onboard TPM 2.0	M.2 2280 M-Key x 1 (PCIe [x4] for NVMe Storage) M.2 2230 E-Key x 1 (for Wi-Fi) M.2 3052 B-Key x 1 (for 5G/LTE) SIM Slot x 1
Indicator	System Power LED x 1	System / Storage	Sys LED Storage active LED
OS support	Windows® 10 IoT Ent LTSC, Windows® 11 PRO, Ubuntu 22.04	Windows® 10 IoT Enterprise 64-bit Windows® 11 PRO 64-bit Linux Ubuntu 22.04	Windows® 10 IoT Enterprise, Windows® 11 Pro, Windows® 11 IoT Enterprise, Linux Ubuntu 22.04
Power Supply			
Power Requirement	DC-in 10~35V in 3pin Terminal block connector	3-pin DC Input 10~35V	DC-in 9-36V x1 for 3-pin Terminal Block
Mechanical			
Mounting		Wallmount	
Dimensions (W x H x D)	8.66" x 6.06" x 2.42" (220 mm x 154 mm x 61.6 mm)	7.09" x 3.04" x 8.66" (180mm x 77.2mm x 220mm) 8.43" x 3.31" x 8.66" (214mm x 84.2mm x 220mm) with brackets	8.66" x 6.06" x 2.42" (220mm x 154mm x 62.1mm) w/o bracket 10.7" x 6.1" x 3.0" (272mm x 154mm x 76.1mm) with bracket
Gross Weight	6.6 lbs. (3.0 kg)	8.59 lb (3.9 kg)	6.6 lbs. (3.2 kg)
Net Weight	4.9 lbs. (2.2 kg)	6.39 lb (2.9 kg)	4.9 lbs. (2.4 kg)
Environmental			
Operating Temperature	-4°F ~ -140°F (-20°C ~ 60°C), IEC68-2 with 0.5 m/s AirFlow, with wide temperature Memory/Storage	-13°F ~ 131°F (-25°C ~ 55°C), IEC60068-2 with 0.7 m/s AirFlow, with wide temperature memory/storage (TDP 65W CPU) -13°F ~ 158°F (-25°C ~ 70°C), IEC60068-2 with 0.7 m/s AirFlow, with wide temperature memory/storage (TDP 35W CPU)	-4°F ~ -158°F (-20°C ~ 70°C), IEC68-2 with 0.7 m/s AirFlow, with wide temperature Memory/Storage
Storage Temperature		-40°F ~ 176°F (-40°C ~ 80°C)	
Storage Humidity		5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	SSD: Random, 3Grms, 5~500Hz	IEC60068-2-64, 3 Grms/ 5 ~ 500Hz/ operation (with SSD)	SSD: Random, 3Grms, 5~500Hz
Anti-Shock	SSD: 50G @ wallmount. Half-sine. 11ms	50G, IEC60068-2-27, half sine, 11ms duration	SSD: 50G @ wallmount. Half-sine. 11ms





Model	BOXER-6404U	BOXER-6404
System		
CPU	Intel® Celeron® J1900, 2.0 GHz Intel® Celeron® N2807, 1.58 GHz	
Chipset	Intel® System on Chip	
System Memory	DDR3L 1333 SODIMM slot x 1, up to 8 GB (J1900) or 4 GB (N2807)	
Display Interface	VGA	HDMI (max. 1920 x 1080)
Storage Device	mSATA, HDD/SSD	CFast™
Ethernet	Intel® I211-AT x 2	Intel® I210AT, 10/100/1000Base-TX x 4
I/O	RS-232 x 1 USB 2.0 x 1 USB 3.2 Gen 1 x 1 VGA x 1 LAN x 2 Digital I/O x 8 bit Antenna holes x 3 Power switch Power input	RS-232 x 1 USB 2.0 x 2 USB 3.2 Gen 1 x 1 HDMI x 2 LAN x 4 CFast slot x 1 Antenna holes x 1 Power button Power input
Expansion	Full-size Mini-Card x 1 Half Mini-Card x 1 (for mSATA) SIM card slot x 1	Full-size Mini-Card (USB interface only) x 1
Indicator	Power LED HDD active LED	Power LED on power button
OS support	Windows® 10, Windows® 8.1, Windows® 7, Windows® Embedded 8, Windows® Embedded 7, Linux Fedora	
Power Supply		
Power Requirement	12 - 24V with 3-pin terminal block	12V - 24V with lockable DC jack
Mechanical		
Mounting	Wallmount VESA (Mounting kit is optional) DIN rail (Mounting kit is optional)	VESA (Mounting kit is optional) DIN rail (Mounting kit is optional)
Dimensions (W x H x D)	6.53" x 4.20" x 1.63" (166 mm x 106.6 mm x 41.5 mm)	6.53" x 4.20" x 1.18" (166 mm x 106.6 mm x 30 mm)
Gross Weight	3.6 lb (1.6 kg)	2.9 lb (1.3 kg)
Net Weight	1.76 lb (0.8 kg)	1.9 lb (0.86 kg)
Environmental		
Operating Temperature	-13°F ~ 140°F (-25°C ~ 60°C) with wide temperature HDD/mSATA (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)	-22°F ~ 149°F (-30°C ~ 65°C) with wide temperature CFast™ card (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)
Storage Temperature	-22°F ~ 176°F (-30°C ~ 80°C)	
Storage Humidity	95% @ 40°C, non-condensing	
Anti-Vibration	5 Grms/ 5 ~ 500Hz/ operation –mSATA	5 Grms/ 5 ~ 500Hz/ operation –CFast™ card
Anti-Shock	—	
Certification	CE/FCC class A	
Note		

## Ultra Slim Fanless BOX PC Solutions



Model	BOXER-6404WT	BOXER-6404M
System		
CPU	Intel® Celeron® J1900, 2.0 GHz Intel® Celeron® N2807, 1.58 GHz	
Chipset	Intel® System on Chip	
System Memory	DDR3L 1333 SODIMM slot x 1, up to 8 GB (J1900) or 4 GB (N2807)	
Display Interface	HDMI	
Storage Device	CFast™	CFast™, HDD/SSD
Ethernet	Intel® I210AT, 10/100/1000Base-TX x 4	
I/O	RS-232 x 1 USB 2.0 x 2 USB 3.2 Gen 1 x 1 HDMI x 2 LAN x 4 CFast™ slot x 1 Antenna holes x 1 Power button Power input	
Expansion	Full-size Mini-Card (USB interface only) x 1	
Indicator	Power LED on power button	
OS support	Windows® 10, Windows® 8.1, Windows® 7, Windows® Embedded 8, Windows® Embedded 7, Linux Fedora	
Power Supply		
Power Requirement	12V - 24V with lockable DC jack	
Mechanical		
Mounting	VESA (Mounting kit is optional) DIN rail (Mounting kit is optional)	
Dimensions (W x H x D)	6.53" x 4.20" x 1.59" (166mm x 106.6mm x 40.5mm)	6.53" x 4.20" x 2.05" (166mm x 106.6mm x 52mm)
Gross Weight	3.59 lb (1.63 kg)	3.81 lb (1.73 kg)
Net Weight	2.6 lb (1.17 kg)	2.8 lb (1.27 kg)
Environmental		
Operating Temperature	-22°F ~ 167°F (-30°C ~ 75°C) with wide temperature CFast™ card (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)	
Storage Temperature	-22°F ~ 176°F (-30°C ~ 80°C)	
Storage Humidity	95% @ 40°C, non-condensing	
Anti-Vibration	5 Grms/ 5 ~ 500Hz/ operation –CFast™ card	5 Grms/ 5 ~ 500Hz/ operation –CFast™ card or SSD 1 Grms/ 5 ~ 500Hz/ operation –HDD
Anti-Shock	—	
Certification	CE/FCC class A	
Note		



# System Level Products

## Ultra Slim Fanless BOX PC Solutions

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Ultra Slim Fanless BOX PC Solutions



Model	BOXER-6405	BOXER-6405M
System	Intel® Celeron®/Pentium® processor	
CPU	Intel® System on Chip	
Chipset	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)	
System Memory	HDMI type A x 1 for HDMI v1.4b VGA x 1	
Display Interface	HDD/SSD, (mSATA BOM option)	
Storage Device	Intel® i211-AT x 2	
Ethernet	Power Button x 1 USB Type A x 4 for USB 3.2 Gen 1 HDMI type A x 1 for HDMI v1.4b RJ-45 x 2 for GbE LAN with LED indicator (i211-AT x 2) Power input x 1 3-pin terminal block in default (+, -, GND) Co-layout 3-pin terminal block & lockable DC-in jack, Co-layout internal DC Mic-in x 1, Line-out x 1 RS-232/422/485 x 3 with automatic flow control (switch by BIOS) VGA x 1 Remote On/Off Antenna opening x 2 DC-in 3-pin terminal block(9~24V) x 1	
I/O	Power Button x 1 USB Type A x 4 for USB 3.2 Gen 1 HDMI type A x 1 for HDMI v1.4b RJ-45 x 2 for GbE LAN with LED indicator (i211-AT x 2) Power input x 1 3-pin terminal block in default (+, -, GND) Co-layout 3-pin terminal block & lockable DC-in jack, Co-layout internal DC Mic-in x 1, Line-out x 1 RS-232/422/485 x 4 with automatic flow control (switch by BIOS) VGA x 1 Remote On/Off Antenna opening x 2	
Expansion	Full-size Mini PCIe slot x 1 (PCIe/USB/SIM slot), one screw Half-size Minicard slot x 1 (mSATA only)	Full-size Mini PCIe slot x 1 (PCIe/USB/SIM slot), one screw Half-size Minicard slot x 1 (optional for mSATA,PCIe/mSATA)
Indicator	Power LED x1, HDD active LED x1	
OS support	Windows® 10, Windows® 10 IoT, Linux	
Power Supply		
Power Requirement	9-24V with 3-pin terminal block	3-pin Phoenix DC Input 9~24V without power protection
Mechanical		
Mounting	Wallmount	
Dimensions (W x H x D)	6.54" x 4.2" x 1.45" (166mm x 106.6mm x 37mm)	6.54" x 4.2" x 1.65" (166mm x 106.6mm x 42mm)
Gross Weight	3.6 lb (1.6kg)	3.6 lb (1.6kg)
Net Weight	1.76 lb (0.8 kg)	1.7 lb (0.8 kg)
Environmental		
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C) with W.T. mSATA (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial decives)	
Storage Temperature	-22°F ~ 140°F (-30°C ~ 60°C)	
Storage Humidity	95% @ 40°C, non-condensing	
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation – mSATA 1 Grms/ 5 ~ 500Hz/ operation - HDD	
Anti-Shock	—	
Certification	CE/FCC class A	
Note		



Model	BOXER-6406-ADN	BOXER-6406U-ADN
System		
CPU	Intel® Processor N200 Intel® Processor N50 Intel Atom® x7211E (formerly Alder Lake-N)	
Chipset	Intel® SoC	
System Memory	DDR5 4800Mhz SODIMM x 1, up to 32GB	
Display Interface	HDMI x 2	
Storage Device	M.2 2280 M-Key x 1 (PCIe Gen 3 [x2]) 2.5" SATA HDD/SSD x 1	
Ethernet	RJ-45 x 2 for 2.5GbE LAN (Intel® Ethernet Controller I226-LM)	
I/O	HDMI x 2 RJ-45 x 2 for 2.5GbE LAN (Intel® I226-LM) USB 3.2 Gen 2 x 2 (Type-A) USB 2.0 x 2 (Type-A) DB-9 x 3 for RS-232/422/485 DB-15 x 1 Male for Digital I/O 8-Channel 3-pin Terminal Block for DC In x 1 Power Button with LED x 1	HDMI x 2 RJ-45 x 2 for 2.5GbE LAN (Intel® Ethernet Controller I226-LM) USB 3.2 Gen 2 (Type-A) x 2 USB 2.0 (Type-A) x 2 DB-9 x 2 for RS-232/422/485 DB-15 x 1 Male for 8-Channel Digital I/O 12V DC Jack Input Power Button with LED x 1 Antenna Opening x 4
Expansion	M.2 2280 M-Key x 1 (PCIe [x2]) M.2 2230 E-Key x 1 Full-Size Mini Card x 1 (PCIe + USB) SIM Slot x 1	
Indicator	—	Power Button with LED
OS support	Windows® 10 IoT Enterprise Windows® 11 Pro Linux Ubuntu 22.04	Windows® 10 IoT Ent LTSC Windows® 11 Pro Ubuntu 22.04
Power Supply		
Power Requirement	9 ~ 36V DC-In x 1 for 3-pin Terminal Block	Lockable DC Jack x 1 for 12V DC-in
Mechanical		
Mounting	Wallmount	
Dimensions (W x H x D)	7.32" x 4.12" x 1.93" (186mm x 104.6mm x 49.1mm) without bracket 8.74" x 4.12" x 2.21" (222mm x 104.6mm x 56.1mm) with bracket	6.46" x 4.11" x 1.85" (164mm x 104.5mm x 47mm) without bracket 8.74" x 4.11" x 2.13" (222mm x 104.5mm x 54mm) with bracket
Gross Weight	4.32 lb (1.96 Kg)	3.8 lb. (1.73Kg)
Net Weight	2.56 lb (1.16 Kg)	2 lb. (0.93Kg)
Environmental		
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C), according to IEC68-2 with 0.5 m/s AirFlow (w/ Industrial wide Temp. SSD/RAM)	-4°F ~ 140°F (-20°C ~ 60°C), according to IEC68-2 with 0.7 m/s AirFlow (w/ Industrial wide Temp. SSD/RAM)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	
Storage Humidity	5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	With SSD: Random, 3 Grms, 5~500Hz	
Anti-Shock	With SSD: 50 G, IEC 60068-2-27, half sine, 11 ms duration	
Certification	CE/FCC Class A	
Note		







Model	BOXER-6451-ADP
System	
CPU	Intel® Core™ i7-1265UE Intel® Core™ i5-1245UE Intel® Core™ i3-1215UE
Chipset	Intel® SoC
System Memory	DDR4 SODIMM x 1, up to 32GB
Display Interface	HDMI 1.4b x 2 (Type-A)
Storage Device	2.5" SATA Drive Bay x 1 M.2 2280 M-Key x 1 (PCIe [x4])
Ethernet	RJ-45 x 1 for 2.5GbE (Intel® I226-LM) RJ-45 x 1 for GbE (Intel® I219-LM)
I/O	USB 3.2 Gen 2 x 3 (Type-A) USB 2.0 x 1 (Type-A) DB-9 x 4 for RS-232/422/485 HDMI 1.4b x 2 (Type-A) Power Button x 1 DC Jack 12V Input Antenna Opening x 6
Expansion	M.2 2230 E-Key x 1 (Wi-Fi/BT) M.2 3052 B-Key w/ SIM x 1 (LTE/5G) M.2 2280 M-Key x 1 (NVMe)
Indicator	Power Button with LED
OS support	Windows® 10 IoT Ent LTSC Windows® 11 PRO Ubuntu 22.04
Power Supply	
Power Requirement	DC-in 12V x 1 for Lockable DC Jack
Mechanical	
Mounting	Wallmount
Dimensions (W x H x D)	7.68" x 4.37" x 2.5" (195mm x 111mm x 63.5mm) w/o bracket
Gross Weight	4.4 lb. (2Kg)
Net Weight	3.3 lb. (1.5Kg)
Environmental	
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C), IEC68-2 with 0.5 m/s AirFlow with Wide Temperature Memory/Storage
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing
Anti-Vibration	SSD: Random, 3Grms, 5~500Hz
Anti-Shock	SSD: 50G @ wallmount, Half-sine, 11ms
Certification	CE/FCC Class A
Note	



## DIN Rail Fanless BOX PC



Model	BOXER-6751-ADP	BOXER-6750
System		
CPU	Intel® Core™ i7-1265UE Intel® Core™ i5-1245UE Intel® Core™ i3-1215UE	Intel® Core™ i3-6100U Intel® Celeron® 3955U Intel® Core™ i3-7100U Intel® Core™ i5-7300U
Chipset	Intel® SoC	Intel® System on Chip
System Memory	DDR4 SODIMM x 1, up to 32GB	DDR4 2133MHz SODIMM slot x 1, up to 16GB
Display Interface	HDMI 1.4b (Type-A) x 2	HDMI x 1, VGA x 1
Storage Device	2.5" SATA III Drive Bay x 1 M.2 2280 M-Key x 1 (PCIe [x4])	mSATA, HDD/SSD
Ethernet	RJ-45 x 1 for Intel® I226-LM, 2.5GbE RJ-45 x 1 for Intel® I219-LM, GbE	Intel® i211-AT x 2
I/O	USB 3.2 Gen 2 (Type-A) x 3 USB 2.0 (Type-A) x 3 DB-9 x 2 for RS-232/422/485 DB-15 x 1 for DIO 8-bit HDMI 1.4b (Type-A) x 2 Audio x 1 for Line-Out Power Button x 1 3-pin Terminal Block for DC-in x 1 Antenna Opening x 4	RS-232/422/485 x 4 RJ-45 x 2 for GbE (i211AT x 2) USB 3.2 Gen 1 x 4 VGA x 1 HDMI x 1 Antenna Holes x 2 Power Switch Power Input
Expansion	M.2 2230 E-Key x 1 (Wi-Fi/BT) M.2 3052 B-Key w/ SIM x 1 (LTE/5G) M.2 2280 M-Key x 1 (NVMe)	Full-size minicard x 1 (PCIe+USB with SIM slot, optional for mSATA) Full-size minicard x 1 (PCIe+USB)
Indicator		Power Button with LED
OS Support	Windows® 10 IoT Ent LTSC Windows® 11 PRO Ubuntu 22.04	Windows® 10 (64-bit) Windows® 8.1 (64-bit) Windows® 7 (32/64-bit) Linux
Power Supply		
Power Requirement	DC 9 - 36V with 3-pin terminal block	9 - 30V with 3-pin terminal block
Mechanical		
Mounting	DIN Rail Mount Wallmount (Mounting kit is optional)	Din Rail Mount (Wall mount optional)
Dimensions (W x H x D)	2.93" x 7.32" x 5.0" (74.3mm x 186mm x 127mm)	2.72" x 7.2" x 6.1" (69mm x 183mm x 155mm)
Gross Weight	5.3 lb (2.41 Kg)	6.1 lb (2.8kg)
Net Weight	3.9 lb (1.77 Kg)	3.9 lb (1.8kg)
Environmental		
Operating Temperature	-4°F ~140°F (-20°C ~ 60°C), IEC68-2 with 0.5 m/s AirFlow	-4°F ~ 140°F (-20°C ~ 60°C) with W.T. SSD/HDD/mSATA (according to IEC68-2-14 with 0.5 m/s AirFlow ; with industrial devices)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing	95% @ 40°C, non-condensing
Anti-Vibration	With SSD: Random, 3 Grms, 5~500Hz	3 Grms/ 5 ~ 500Hz/ operation – mSATA/SSD 1 Grms/ 5 ~ 500Hz/ operation – HDD
Certification		CE/FCC class A
Note		





Model	BOXER-6711-ADN	BOXER-6710
System		
CPU	Intel Atom® x7211E Intel® Processor N200 Intel® Processor N50	Intel® Pentium® processor N4200 Intel® Celeron® processor N3350
Chipset	Intel® SoC	Intel® System on Chip
System Memory	DDR5 4800 MT/s S0-DIMM slot x 1, up to 32GB	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
Display Interface	HDMI x 2	HDMI, VGA
Storage Device	M.2 2280 M-Key x 1 (PCIe [x2]) 2.5" SATA HDD/SSD x 1	HDD/SSD, optional mSATA
Ethernet	RJ-45 x 2 for 2.5GbE LAN (Intel® I226)	Intel® i211-AT x 2
I/O	HDMI x 2 RJ-45 x 2 for 2.5GbE LAN (Intel® I226) USB 3.2 Gen 2 (Type-A) x 2 USB 2.0 (Type-A) x 2 DB-9 x 3 for RS-232/422/485 DB-15 x 1 for 8-bit DIO 3-pin Terminal Block for DC in x 1 Power Button with LED x 1	VGA x 1 HDMI x 1 RJ-45 x 2 for GbE LAN USB Type A x 4 for USB 3.2 Gen 1 Mic-in x 1 Line-out x 1 RS-232/422/485 x 3 with automatic flow control Power On/Off Button x 1 DC-in 3-pin terminal block (9~24V) x 1
Expansion	M.2 2280 M-Key x 1 (PCIe [x2]) M.2 2230 E-Key x 1 Full Size Mini Card x1 (PCIe + USB) SIM Slot x 1	Full-size Minicard x 1 w/ SIM Slot Half-size Minicard x 1 (optional for mSATA)
Indicator	—	Power LED on power button
OS Support	Windows® 10 IoT Enterprise Windows® 11 Pro Linux Ubuntu 22.04	Windows® 10 (64-bit) Windows® 10 IoT (64-bit) Linux Ubuntu 16.04.4
Power Supply		
Power Requirement	DC-in 9-36V x1 for 3-pin Terminal Block	9 - 24V with 3-pin terminal block
Mechanical		
Mounting	DIN Rail Mount	
Dimensions (W x H x D)	1.89" x 7.48" x 4.88" (48mm x 190mm x 124mm)	1.73" x 6.54" x 4.17" (44mm x 166mm x 106mm)
Gross Weight	3.50 lb (1.59 Kg)	3.08lb (1.4kg)
Net Weight	2.40 lb (1.09 Kg)	1.32lb (0.6kg)
Environmental		
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C), according to IEC68-2 with 0.5 m/s AirFlow (w/ Industrial wide Temp. SSD/RAM)	-4°F ~ 140°F (-20°C ~ 60°C) with W.T. SSD/HDD/mSATA (according to IEC68-2-14 with 0.5 m/s AirFlow ; with industrial devices)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing	95% @ 40°C, non-condensing
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation (with SSD)	3 Grms/ 5 ~ 500Hz/ operation – mSATA/SSD 1 Grms/ 5~ 500Hz/ operation – HDD
Certification	CE/FCC class A	
Note		



## Expandable Fanless BOX PC Solutions



Model	BOXER-6839	BOXER-6839-CFL
System		
CPU	7th Generation Intel® Core™ Processor family: Intel® Core™ i7-7700T, 2.9 GHz Intel® Core™ i5-7500T, 2.8 GHz Intel® Core™ i3-7101TE, 3.4 GHz Intel® Pentium® G4600T, 3.0 GHz Intel® Pentium® G4560T, 2.9 GHz Intel® Celeron® G3930T, 2.7 GHz 6th Generation Intel® Core™ Processor family: Intel® Core™ i7-6700TE, 2.4 GHz Intel® Core™ i5-6500TE, 2.3 GHz Intel® Core™ i3-6100TE, 2.7 GHz Intel® Pentium® G4500T, 3.0 GHz Intel® Pentium® G4400T, 2.9 GHz Intel® Celeron® G3900T, 2.6 GHz	Intel® Xeon® E-2124G Intel® i9-9900T Intel® i7-9700TE Intel® i7-8700T Intel® i5-8500T Intel® i3-8100T Pentium® G5400T Celeron® G4900T
Chipset	Intel® Q170	C246
System Memory	DDR4 1866/2133 SODIMM slot x 2, up to 32GB	DDR4-2666 SO-DIMM slot x 2 Up to 64GB, ECC or Non-ECC Support
Display Interface	HDMI, VGA	HDMI x 2
Storage Device	CFast™, HDD/SSD	2.5" SATA HDD/SSD Bay x 2
Ethernet	Intel® i210, 10/100/1000 Base-TX x 3	RJ-45 x 4 for GbE LAN (211-AT x 3, i219-LM x 1)
I/O	RS-232/422/485 x 6 USB Type A x 6 for USB 3.2 Gen 1 USB Type A x 2 for USB 2.0 RJ-45 x 3 for GbE LAN DB-44 for 34-bit Digital I/O (5V) CFast™ slot x 1 SIM card slot x 1 Power On/Off Button x 1 2 pin Remote power on/off Reset switch Mic-in x 1, Line-out x 1 Antenna opening x 2 SYS LED indicator x 1, HDD LED indicator x 1 DB-15 x 1 for VGA HDMI v1.3 x 2 DC-in 3-pin terminal block (9-36V)	HDMI x 2 RJ-45 x 4 for GbE LAN (i211 x 3, i219 x 1) USB 3.2 Gen 1 x 8 DB-9 x 6 for RS-232/422/485 Audio x 1 (Mic-in, Line-out) DB-15 for DIO 8 bit x 1 3 pin 10-35V Power Input x 1 Power Button x 1 Remote Power switch x 1 Reset Button x 1
Expansion	Full-size Mini-Card x 2 PCIe [x4] x 1 & PCIe [x1] x 1 (for A1) PCIe [x4] x 1 & PCI x 1 (for A2) PCI x 2 (for A3) Max. size of expansion card 150 x 105 x 40 mm	Full-size Mini card x 1 (PCIe) Full-size Mini card x 1 (PCIe/mSATA switch by BIOS, Default: mSATA) SIM slot x 1 PCIe slot : Riser card type 1: PCIe[x4] slot x 1 & PCIe[x1] x 1 (A1) Riser card type 2: PCIe[x4] slot x 1 & PCI x 1 (A2) Riser card type 3: PCI x 2 (A3) Max. size of expansion card 150 x 105 x 40 mm
Indicator	Power LED, HDD active LED	HDD LED x 1, System LED x 1
OS Support	7th Generation Intel® Core™ Processor family: Windows® 10 IoT (64bit) Ubuntu 16.04 above, Fedora 25 above CentOS 7.3 above 6th Generation Intel® Core™ Processor family: Windows® 10 IoT (64bit), Windows® 8.1 (64bit) Windows® embedded 8 standard (64bit) Windows® 7 (64bit/32bit) Windows® embedded standard 7 (32/64bit) Ubuntu 16.04 above, Fedora 25 above CentOS 7.3 above	Windows® 10 64-bit, Linux Ubuntu 20.04
Power Supply		
Power Requirement	9 - 36V with 3-pin terminal block	3-pin Phoenix DC Input 10-35V
Mechanical		
Mounting		Wallmount
Dimensions (W x H x D)	10.40" x 4.90" x 6.15" (264.2mm x 124.5mm x 156.2mm)	264mm x 156mm x 125mm
Gross Weight		13.2 lb (6.0 kg)
Net Weight		9.9 lb (4.5 kg)
Environmental		
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)	-4°F ~ 131°F (-20°C ~ 55°C) with 0.5 m/s airflow (with TDP ≤ 35W CPU) -4°F ~ 113°F (-20°C ~ 45°C) with 0.5 m/s airflow (with TDP > 35W CPU)
Storage Temperature		-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity		5-95% @ 40°C, non-condensing
Anti-Vibration	5 Grms/ 5 ~ 500Hz/ operation - SSD/CFast™ card 1 Grms/ 5 ~ 500Hz/ operation - HDD	5 Grms/ 5 ~ 500Hz/ operation - SSD
Anti-Shock	—	SSD: 50G @ wallmount, Half-sine, 11ms
Certification		CE/FCC class A
Note		



# System Level Products

## Expandable Fanless BOX PC Solutions

02

Expandable Fanless BOX PC Solutions



Model	BOXER-6842M	BOXER-6843-ADS
System		
CPU	Intel® Xeon® E-2124G Intel® Core™ i9-9900T Intel® Core™ i7-8700T Intel® Core™ i5-9500TE Intel® Core™ i5-8500T Intel® Core™ i3-8100T Intel® Pentium® G5400T Intel® Celeron® G4900T Note: Support max. TPD 71W Processor	12th Generation Intel® Core™, TDP Max. 65W Intel® Core™ i9-12900TE/i9-12900E Intel® Core™ i7-12700TE/i7-12700E Intel® Core™ i5-12500TE/i5-12500E Intel® Core™ i3-12100TE/i3-12100E 13th Generation Intel® Core™, TDP Max. 65W Intel® Core™ i9-13900TE/i9-13900E Intel® Core™ i7-13700E Intel® Core™ i5-13500E Intel® Core™ i3-13100TE
Chipset	C246, No H310 downward support	Q670E
System Memory	DDR4 SO-DIMM socket x4 (double deck) Support max. 2666MHz up to 128GB Support un-buffered and ECC / non-ECC type SODIMM	DDR5 4800MHz U-DIMM x4, up to 128GB
Display Interface	HDMI x 2; Support Dual Independent Display, 4K Ultra HD displays	HDMI x 2 (Type-A); Display Port x 2
Storage Device	2.5" SATA Drive Bay x2 (4 SATA Port w/ RAID Function) mSATA x 1 (optional) M.2 2280 NVMe SSD slot x 1	2.5" SATA Drive Bay x 2 (external, swappable) M.2 2280 M-Key x 2 (PCIe Gen 4 x4) 3.5" SATA Drive Bay (internal, non-swappable, optional)
Ethernet	RJ-45 x 3 for GbE (Intel i211AT x 2, i219LM x 1)	2.5GbE x 3 (Intel® i226-IT); GbE x 1 with LED Indicator (Intel® i219-LM)
I/O	HDMI x 2, Audio (Mic-in, Line-out), USB 3.2 Gen 1 x 6 DB-9 x4 for RS-232/422/485 with automatic flow control 3 pin DC Power input x 1 (+, -, GND), Power ON/OFF switch x 1 2 pin Remote power on/off connector , Reset switch	HDMI x 2, Display Port x 2, RJ-45 x 4, 3.2 Gen 2 x 8 (Type-A), DB-9 Male x 6 for RS-232/422/485 (Autoflow, Programmable), DB-15 Male x 1 for 8-bit DIO, Audio (Mic-in/Line-out), DC 19 ~ 36V 3-pin Terminal Block Connector, Power Button with LED x 1, Remote Power On/Off x 1, Reset Button x 1
Expansion	A2/A3/A4/A5 Full-size Minicard x 1 (PCIe + USB with 1 SIM Slot) Half-size Minicard x 1 (PCIe + USB, optional for mSATA) M.2 M key (2280) x 1 (PCIEx4) - Max. Power Consumption of GPU card 250W - Max. Size of GPU card 280mm x 150mm x 40mm A2 PCIe [x4] x 1 + PCIe [x16] x 1 A3 PCIe [x4] x1 + PCIe [x8] (in x16 slot) x 2 A4 PCIe [x4] x1 + PCIe [x8] (in x16 slot) x2 Support dual Graphics Cards with two power inputs A5 Built in Nvidia A2 x1 PCIe [x4] x 1 + PCIe [x8] x 1 (in x16 slot) Note: A3 is fanless system. A2 & A4 & A5 is fan system with PWM function.	M.2 2230 E-Key x 1 M.2 3052 B-Key w/SIM x 1 M.2 2280 M-Key/B-Key x 2 Full-Size Mini Card x 1 (PCIe + USB)  A1: PCIe [x4] x 1 + PCIe [x16] x 1 A2: PCIe [x4] x1 + PCIe [x8] (in x16 slot) x 2 Max. Power Consumption of GPU card 300W Max. Size of GPU card 305mm x 120mm x 50mm
Indicator	System Power LED x 1 (Green), Storage Active LED x 1 (Red)	—
OS Support	Windows® 10 Enterprise 64 bit, Ubuntu 18.04.4	Windows® 10 IoT Enterprise LTSC 2021, Windows® 11 Pro, Linux Ubuntu 22.04
Power Supply		
Power Requirement	A2/A3/A4 DC In 12~24V with 3-pin terminal block No Graphics Card: CPU 35W->120W Adapter x 1, CPU 71W->240W Adapter x 1 With 250W Graphics Card x1: 480W Adapter x 1 A4 DC In 12~24V with 3-pin terminal block With 250W Graphics Card x2: 330W Adapter x 1 + 480W Adapter x 1 A5 DC In 12~24V with 3-pin terminal block With A2 x 1: 240W Power Adapter x 1 With A2 x 2: 330W Power Adapter x 1	DC 19~36V 3-pin Terminal Block
Mechanical		
Mounting		Wallmount
Dimensions (W x H x D)	A2/A3/A5: 6.17" x 8.92" x 12.8" (156.7mm x 226.5mm x 325mm) A4: 7.77" x 8.92" x 12.8" (197.3mm x 226.5mm x 325mm)	7.35" x 8.92" x 14.76" (186.8 x 226.5 x 375 mm)(Without brackets) 7.35" x 9.19" x 16.50" (186.8 x 233.5 x 419 mm)(With brackets)
Gross Weight	A2/A3: 18.52 lb (8.4 Kg); A4: 20.72 lb (9.4 Kg); A5: 20.5 lb (9.3 Kg)	20.9 lb (9.5Kg)
Net Weight	A2/A3: 15.65 lb (7.1 Kg); A4: 17.86 lb (8.1 Kg); A5: 17.64 (8 Kg)	18.1 lb (8.2 Kg)
Environmental		
Operating Temperature	Without Graphics Cards: -4°F ~ 149°F (-20°C ~ 65°C) with 0.5m/s airflow With 250W Graphics Card: 32°F ~ 113°F (0°C ~ 45°C) with 0.5m/s airflow A5: 32°F ~ 113°F (0°C ~ 40°C) with 0.5m/s airflow	-4°F ~ 113°F (-20°C ~ 45°C), according to IEC68-2 with 0.5 m/s AirFlow (w/ Industrial wide Temp. SSD/RAM)
Storage Temperature		-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity		5 ~ 95% @ 40°C, non-condensing
Anti-Vibration	HDD: Random, 1Grm, 5~500Hz	3 Grms/ 5 ~ 500Hz/ operation (with SSD)
Anti-Shock	—	50G, IEC 68-2-27, half sine, 11 ms duration (with SSD)
Certification		CE / FCC class A
Notes		

## Expandable Fanless BOX PC Solutions: Frame Grabber Card



Model	PER-T479
System	
Bus Interface	PCI-Express® [x4], Gen 2 PCI-Express Specification Revision 2.1 at 5GT/s
USB	4 independent USB 3.2 Gen 1 host controllers 900mA @ 5V for each port Compliant with USB 3.2 Gen 1 Specification Revision 1.0 4 downstream USB ports support SS/HS/FS/LS data rates (5Gbps/480Mbps/12Mbps/1.5Mbps)
USB Connector	4 USB 3.2 Gen 1 Type-A connectors with lockable screw threads
OS Support	Windows® 10, Windows® 8.1 (32/64-bit), Windows® 7(32/64-bit), Linux
Power Supply	
Power Requirement	12V from external IDE 4-pin power connector
Mechanical	
Dimensions (W x D)	4.72" x 4.21" (120mm x 107mm)
Environmental	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) (according to IEC68-2-14 with 0.5 m/s AirFlow ; with industrial devices)
Storage Temperature	-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing



Model	PER-T481	PER-T514
System		
Bus Interface	PCI-Express® [x4], Gen 2 PCI-Express Specification Revision 2.0 at 5GT/s	
USB	-	
USB Connector	-	
Ethernet	LAN: Intel® i211AT Ethernet Controller x 4 (A10) Intel® i211AT Ethernet Controller x 2 (A20) Fully compliant with IEEE 802.3 and IEEE 802.3u Support IEEE 1588 precision time synchronization POE: Intel® i211AT Ethernet Controller x 4 (A30) Intel® i211AT Ethernet Controller x 2 (A40) Fully compliant with IEEE 802.3 and IEEE 802.3u Support IEEE 1588 precision time synchronization Support IEEE 802.3 at	2 Ports 10GbE Ethernet w/ Intel X550 Controller Fully compliant with IEEE 802.3 and IEEE 802.3u Support IEEE 1588 precision time synchronization Support 15.5 KB Jumbo Frame, teaming Support IEEE 802.3 Ethernet interface for 10GBASE-T (IEEE 802.3an) Support NBASE-T (IEEE 802.3bz) and 1000BASE-T (IEEE 802.3ab)
OS Support	LAN: Windows® 10(32/64-bit), Windows® 8.1 (32/64-bit), Windows® 7(32/64-bit), Linux POE: Windows® 10(32/64-bit), Windows® 8.1 (32/64-bit), Windows® 7(32/64-bit) (Linux not Supported)	Windows® 10(64-bit), Windows® 8.1 (64-bit), Windows® 7(64-bit), Linux 18.04.1
Power Supply		
Power Requirement	LAN: Max. 10W POE: 4POE DUAL SATA Power (15 pin) DC Input 12~24V, Max. 90W for 4ports (A30) 2POE DUAL SATA Power (15 pin) DC Input 12~24V, Max. 60W for 2ports (A40)	Max. 7.84W
Mechanical		
Dimensions (W x D)	LAN: 4.33" x 5.35" (110mm x 136mm) POE: 4.41" x 5.91" (112mm x 150mm)	3.94" x 5.35" (100mm x 136mm)
Environmental		
Operating Temperature	LAN: -4°F ~ 140°F(-20°C ~ 60°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices) POE: -4°F ~ 131°F(-20°C ~ 55°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; 90W loading) (A30) -4°F ~ 131°F(-20°C ~ 55°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; 60W loading) (A40)	32°F ~ 140°F(0°C ~ 60°C) (according to IEC68-2-14 with 0.5 m/s AirFlow ; with industrial devices)



## Smart In-vehicle &amp; AMR BOX PC



Model	VPC-3350S	VPC-5600S	VPC-5640S
System			
Form Factor	Multi-PoE & Fanless Appliance		
Processor	Intel® Pentium®/ Celeron®/ Atom® Processor (Default: E3940; Project base: N4200/N3350, or E3950 w/ customized chassis)	7th Generation Intel® Core™ i3/i5/i7 Processors Default: Intel® Core™ i3-7100U Project Base: Intel® Core™ i5-7300U, Intel® Core™ i7-7600U	Default: 12th Generation Intel® Core™ i7-1265UE Processor Project Base: Intel® Core™ i5-1245UE Intel® Core™ i3-1215UE
Chipset	—		
Main Memory	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)	DDR4 2133MHz SODIMM x 2, up to 32GB	DDR5 SODIMM x 2, up to 64GB
Display	HDMI x 1, DP x 1		HDMI x 2
Ethernet	Intel® i211 (colay i210)	PoE x 4, LAN x 2, RTL8111E 10/100/1000 Base-T	2.5GbE x 1 (Intel® i226-LM)
Smart PoE	4 ports, sharing 60W of power budget for every four PoE ports	4 ports, sharing 60W of power budget for every four PoE ports.	2.5GbE x 4 (IEEE802.3 at/af, sharing 60W of power budget for every four PoE ports)
RAID support	—	RAID 0, RAID 1	—
Expansion Slot	Mini-Card slot x 2 (USB 2.0 + PCIe, full size), up to 4 slots (In-vehicle platform) SATA x 1 Built-in CANBus (In-vehicle platform)	Mini-Card x 3 (USB 2.0 x 2 + PCIe & USB 2.0 x 1) Built-in CAN 2.0B x 1	M.2 2230 E-Key x 1 (PCIe [x1] + USB 2.0, for WiFi/ Bluetooth Module) M.2 3052 B-Key w/ Dual-Sim x 2 (USB 3.0 + USB 2.0, for LTE/5G Module) M.2 2280 M-Key x 1 (PCIe [x4]), support NVMe PCIe [x4] SSD)
GPS, G-Sensor	Built-in GPS & G-Sensor (In-vehicle platform)	On board (GPS/GLONASS), G Sensor	VS: Built-in GPS, NEO-M9V & G-Sensor
Front I/O Panel	Power Button x 1 Reset Button x 1 Power/HDD_LED x 2 USB 3.2 Gen 1 x 2 GbE port (RJ-45) x 1 PoE LAN x 4 (IEEE 802.3 at/af) HDMI x 1 CanBus connector x 1 (In-vehicle platform) RS-232 x 3 (In-vehicle platform)	Power Button x 1 3G/4G/WiFi LED x 3 USB 3.2 Gen 1 x 4 RJ-45 x 2 for GbE PoE LAN x 4 (IEEE 802.3 at/af) DP x 1 Reset Button x 1	USB 3.2 Gen 2 (Type-A) x 2, USB 2.0 (Type-A) x 2, 2.5GbE LAN x 1 2.5GbE PoE LAN x 4 (IEEE802.3 at/af) Jack x 1 for Line-out & MIC-in Reset Button x 1, Power Button x 1
Rear I/O Panel	DC-in power x 1 8-bit DIO x 1, 4-ch digital input , 4-ch digital output RS-232/422/485 x 2 DP x 1 Audio Line-out x 1, Mic-In x 1 Micro SIM slot x 2	DC-in Power x 1 Remote Power x 1 8-bit DIO x 1, 4-CH Digital Input (Wet/dry contact with Isolation Protection 3,00VDC), 4-CH Digital Output (Compatible 5 V/TTL, 31mA Max. per Channel) 12V/1A DC Output x 1 RS-232/422/485 x 2 HDMI x 1 CanBus x 1, Audio Line-out x 1, Mic-In x 1 SIM Slot x 2	DB-9 Male x 2 for RS-232/422/485 DB-9 Male x 1 for Isolated CANBus FD x 2 DB-15 Male x 1 for DIO 8 bit HDMI 1.4b x 2 3-pin Terminal Block x 1 DIP Switch x 1 SIM Slot x 4
Storage			
HDD Tray	2.5" HDD/SSD Bay x 1	2.5" SATA SSD x 2	2.5" HDD/SSD Bay x 1
CF/CFast/mSATA Slot	—	mSATA Slot x 1 (Optional, If mSATA x 1 used, then only one SATA available)	—
Environmental			
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C)		-40°F ~ 158°F (-40°C ~ 70°C), IEC68-2 with 0.5 m/s AirFlow
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)		-40°F ~ 176°F (-40°C ~ 80°C)
Storage Humidity	10%~80% @40°C, non-condensing		5 ~ 95% @ 40°C, non-condensing
Vibration/Shock	MIL-STD-810G		MIL-STD-810H
Certification	CE & FCC Class A, eMark Compliance Available Per Project Basis	CE & FCC Class A, EMARK	CE/FCC Class A, UKCA, E-Mark
Power Requirement			
Power Supply	DC 12-24V; DC9-36V with power ignition (In-vehicle platform)	DC 10-36V, with ignition pin	IS: DC-in 9~36V x 1 for 3-pin Terminal Block VS: DC-in 9~36V x 1 for 3-pin Terminal Block with power ignition
Mechanical			
Removable HDD Tray	—	Hot swappable 2.5" SSD x 2 (Project base) via extension module	—
Internal System HDD Bay	—	2.5" HDD x 2	2.5" HDD/SSD Bay x 1
Dimension	6.3" x 5.28" x 2.44" (160mm x 134mm x 62mm) 6.3" x 5.28" x 2.95" (160mm x 134mm x 75mm), In-vehicle platform.	6.85" x 7.87" x 2.52" (174mm x 200mm x 64mm)	9.45" x 6.58" x 2.99" (240mm x 167.1mm x 76mm) Without brackets 11.69" x 6.58" x 3.27" (297mm x 167.1mm x 83mm) With brackets
Gross Weight	3.96 lb (1.8 kg)	5.7 lb. (2.6Kg)	7.93 lb (3.6 Kg)





Model	UP-GWS01	UP 4000 Edge
System		
CPU	Intel Atom® x5-Z8350 Processor SoC	Intel® Celeron® Processor N3350 Intel® Pentium® Processor N4200 Intel Atom® x7-E3950
Memory	Up to 4GB onboard DDR3L	Up to 8GB onboard LPDDR4
Graphics	Intel HD Graphics 400	Intel® HD Graphics
Storage	Up to 64GB onboard eMMC	Up to 64GB onboard eMMC
Ethernet	1GbE RJ-45 x 1 (Realtek RTL8111H-CG)	1GbE RJ-45 x 1 (Realtek RTL8111-CG)
WiFi/BT	Optional	—
Expansion Slot		—
Security	—	Onboard TPM 2.0
OS Support	Microsoft Windows 10 Windows IOT Core Linux Ubuntu 22.04 Linux Yocto 3.1	Microsoft Windows 10 and Windows IoT Linux Ubuntu 22.04 Linux Yocto 4.0
I/O Placements		
USB	USB 2.0 x 4 USB 3.0 OTG x 1	USB 3.2 Gen 1 (Type-A) x 3 USB 3.0 OTG (via USB Type-C) x1
Display Port	HDMI x 1	HDMI 1.4b x 1 DP x 1 (via USB Type-C)
Ethernet		RJ45 x1
COM		—
Audio	—	Audio wafer x 1 (Mic-in+Line-out)
GPIO		—
Power Supply		
Power requirement	5V DC-in	12V DC-in
Power supply type		AT/ATX (AT as default)
Power Consumption (Typical)	6.6W	19W~25W
Mechanical		
Mounting	—	VESA Mount/Wall Mount(Optional)
Dimensions (WxHxD)	3.74" x 3.58" x 1.46" (95mm x 91mm x 37mm)	3.62" x 2.52" x 1.78" (92mm x 64mm x 45.2mm)
Net Weight	0.73 lbs (0.33kg)	0.64lb (0.29kg)
Gross Weight	1.30 lbs (0.59kg)	1.21lb (0.55kg)
Environment		
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)	32°F ~ 140°F (0°C ~ 60°C) with air flow 0.5m/s
Operating Humidity	0% ~ 90% relative humidity non-condensing	10% ~ 80% relative humidity, non-condensing
Storage Temperature	—	-4°F ~ 158°F (-20°C ~ 70°C)
MTBF	270,599 Hours	538,629 hrs @ 30°C
Certification	CE/FCC Class A	CE/FCC Class A, RoHS Compliant, REACH
Note		







Model	UP 7000 Edge	UPS-GWS01
System		
CPU	Intel® Processor N200 Intel® Processor N97 Intel® Processor N100 Intel® Processor N50 (formerly Alder Lake-N)	Intel® Celeron® Processor N3350 Intel® Pentium® Processor N4200 Intel Atom® x7-E3950
Memory	Up to 8GB LPDDR5	Up to 8GB onboard LPDDR4
Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors	Intel® HD Graphics
Storage	Up to 64GB eMMC	Up to 128GB onboard eMMC
Ethernet	1GbE RJ-45 x 1 (Realtek RTL8111H CG)	GbE x 2 (Realtek 8111H CG)
WiFi/BT	—	Optional with M.2 2230 E-key x 1
Expansion Slot	HDMI 1.4b/USB 3.2 Gen 2 STACK Connector x 1 (Type-A) Power Button x 1	40-pin GPIO x 1 Full-sized mPCIe x 1 (PCIe & SATA [x1] , USB2.0 [x1]) M.2 2230 E-Key x 1 (PCIe [x1], USB2.0 [x1]) SATA III x 1
Security	Onboard TPM 2.0	fTPM
OS Support	Windows 10 LTSC 2021 Linux: Ubuntu 22.04 LTS/Kernel 5.15, Yocto 4.0	Windows® 10 IoT Enterprise LTSC 2021 Windows IoT Core Linux Ubuntu 20.04 LTS Linux Yocto 3.1
I/O Placements		
USB	USB 3.2 Gen 2 (Type-A) x 3	USB 2.0 x 2 (via 10 Pin Header x 1) USB 3.2 Gen 1 x 3 (Type-A) USB 3.2 Gen 1 OTG x 1 (Micro B)
Display Port	HDMI 1.4b x 1	HDMI 1.4b x 1 DP 1.2 x 1
Ethernet	1GbE RJ-45 x 1 (Realtek RTL8111H CG)	Realtek® 8111G x 2
COM	—	—
Audio	—	—
GPIO	—	—
Power Supply		
Power requirement	12V DC-in, 5A	5V DC-in
Power supply type	AT (default)/ATX	AT/ATX (AT as default)
Power Consumption (Typical)	30W~36W	15.05W
Mechanical		
Mounting	VESA Mount (optional)	VESA Mounting
Dimensions (WxHxD)	3.62" x 2.52" x 1.78" (92mm x 64mm x 45.2mm)	3.74" x 3.58" x 1.46" (95mm x 91mm x 37mm)
Net Weight	0.68 lbs (0.31kg)	0.99lb (450g)
Gross Weight	1.04 lbs (0.47kg)	1.32lb (600g)
Environment		
Operating Temperature	32°F ~ 131°F (0°C ~ 55°C) with 0.5m/s air flow	32°F ~ 113°F (0°C ~ 45°C)
Operating Humidity	10% ~ 80% relative humidity, non-condensing	0% ~ 90% relative humidity non-condensing
Storage Temperature		-4°F ~ 158°F (-20°C ~ 70°C)
MTBF	685,218 Hours	179,902 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH	CE, FCC Class A, UL
Note		



Model	UP Squared V2 Edge	UP Squared i12 Edge
System		
CPU	Intel® Celeron® N6210 Processor SoC Intel® Celeron® J6412 Processor SoC Intel® Pentium® J6426 Processor SoC	12th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1270PE Intel® Core™ i7-1260P Intel® Core™ i5-1250PE Intel® Core™ i5-1240P Intel® Core™ i3-1220PE Intel® Celeron® Processor 7305E 13th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1370PE Intel® Core™ i7-1360P Intel® Core™ i5-1340PE Intel® Core™ i3-1320PE
Memory	Up to 16GB LPDDR4	Up to 16GB Onboard LPDDR5 (Single-Channel)
Graphics		Intel® UHD Graphics
Storage	Up to 64GB eMMC	Up to 128GB Onboard SSD M.2 2280 M-Key NVMe x 1 (PCIe Gen 4.0 [x4]) SATA 6Gb/s x 1
Ethernet	Gb Ethernet (full speed) RJ-45 x 2	1GbE RJ-45 x 2 (Realtek RTL8111H-CG)
WIFI/BT	Optional with M.2 2230 E-key x 1	Optional: M.2 2230 E-Key
Expansion Slot	M.2 2230 E-Key x 1 (PCIe Gen 3.0 [x2], USB 2.0 [x1]) M.2 2280 M-key x 1 (PCIe Gen 3.0 [x2]) SATA 6Gb/s x 1	M.2 2230 E-Key x 1 (CNVI & PCIe Gen 3.0 [x1]) M.2 2280 M-Key NVMe x 1 (PCIe Gen 4.0 [x4]) SATA 6Gb/s x 1
Security		Onboard TPM 2.0
OS Support	Microsoft Windows 10 (full) Windows IOT Core Ubuntu 20.04 LTS Yocto 3.1	Windows® 10 IoT Enterprise Ubuntu 22.04 LTS Yocto 4
I/O Placements		
USB	USB 2.0 x 2 (via 10 Pin Header x 1) USB 3.2 Gen 2 x 3 (Type-A)	USB 3.2 Gen 2 (Type A) x 2 USB 3.2 Gen2 (Type C) x 1
Display Port	HDMI 1.4b x 1 DP 1.2 x 1	HDMI 1.4b/DP 1.2 STACK Connector x 1 DP 1.4a x 1 (via USB Type-C)
Ethernet	Gb Ethernet (full speed) RJ-45 x 2	1GbE RJ45 x 2 (Dual Stacked) (Realtek 8111H CG)
COM	RS-232/422 x 1	—
Audio	Line out x 1 Mic in x 1	Audio Jack (Line out + MIC in) x 1
GPIO		—
Power Supply		
Power requirement	12V DC-in, 5A	12V DC-in
Power supply type	AT/ATX (AT as default)	AT (default) /ATX
Power Consumption (Typical)	30~38W	26W~39W
Mechanical		
Mounting	VESA Mounting	VESA Mount/Wall Mount(Optional)
Dimensions (WxHxD)	3.74" x 3.74" x 2.16" (95 x 95 x 55 mm)	5.12" x 3.7" x 2.68" (130mm x 94mm x 68mm)
Net Weight	0.99lb (450g)	1.87 lbs (0.85kg)
Gross Weight	1.32lb (600g)	2.36 lbs (1.07kg)
Environment		
Operating Temperature		32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow
Operating Humidity		0% ~ 90% relative humidity, non-condensing
Storage Temperature		-4°F ~ 158°F (-20°C ~ 70°C)
MTBF	465,586	522,716
Certification	CE/FCC Class A, RoHS Compliant, REACH	CE/FCC Class A, RoHS Compliant, REACH
Note		





Model	UPN-Edge Pro
System	
CPU	Intel® Apollo Lake N4200/N3350/E3950 Processor SoC
Memory	onboard DDR4, Max 8GB Single Channel:2GB Dual Channel:4GB,8GB
Graphics	Intel® Graphic ,Gen 9
Storage	EMMC 32G/64G
Ethernet	Intel i210 x2
WIFI/BT	Optional
Audio	Line out+mic in x1
USB	USB 3.2 Gen 1 OTG x 1 USB 3.2 Gen 1 (Type A) x 3
Expansion Slot	40 pin GPIO x 1 M.2 2230 E-key x 1 M.2 2280 M-key x 1 M.2 3052/3042 B-key x 1 (support with SIM) SATA3 connector x 1 (support 2.5" HDD/SSD expansion)
I/O Placements	
Power	DC-in Jack x 1, Power Button x 1
USB	USB3.2 Gen1 OTG x 1 USB3.2 Gen1 (Type A) x 3
Display Port	HDMIx1, DP x1
Ethernet	Gb Ethernet (full speed) RJ-45 x 2 ( Intel i210)
COM	RS232/422/485 x 2
Environment	
Power	12-24VDC
Form Factor	4.61" x4.19" x3.5" (117mm x 106.5mm x 88.8mm)
Gross Weight	2.17 lb (982.5g)
Operating Temperature	32°F ~ 140°F (0°C ~ 55°C) with air flow 0.5m/s
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant , REACH
OS Support	Microsoft Windows 10 (full), Windows IOT Core Linux: Ubuntu 18.04.5 & Ubuntu 20.04.1 Yocto 3.1
Note	





Model	UP Squared Pro 7000 Edge	UP Squared Pro 710H Edge
System		
CPU	Intel® Core™ i3-N305 Intel Atom® x7425E Intel® Processor N97 Intel® Processor N50	Intel® Core™ i3-N305 (8C, 1.80 GHz, 15W) Intel® Processor N97 (4C, 2.00 GHz, 12W) Onboard Hailo-8™ edge AI processor
Memory	Up to 16GB onboard LPDDR5	
Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors VPU: Hailo-8™ M.2 2280 B+M key AI module via m.2 2280 (Optional by SKU from ordering information)	Intel® UHD Graphics for 12th Gen Intel® Processors
Storage	Up to 64GB onboard eMMC	Up to 128GB onboard eMMC
Ethernet	2.5GbE x 2 (Intel® I226-IT)	
WiFi/BT	Optional with M.2 2230 E-key x 1	
Expansion Slot	M.2 2230 E-Key x 1 (CNVI, PCIe Gen 3 [x1], USB 2.0) M.2 2280 M-Key x 1 (PCIe Gen 3 [x2], USB 2.0) M.2 3052 B-Key x 1 (USB 3.2 Gen 2) with Nano SIM slot (USB 3.0) SATA 6Gb/s x 1	M.2 2230 E-Key x 1 (CNVI, PCIe Gen 3 [x1], USB 2.0) M.2 2280 M-Key x 1 (PCIe Gen 3 [x2]), Optional: M.2 3052 B-Key with Nano SIM slot (USB 3.0)
Security	Onboard TPM 2.0	
OS Support	Windows® 10 IoT Enterprise Ubuntu 22.04 LTS Yocto 4.0	Windows® 10 IoT Enterprise Ubuntu 22.04 LTS
I/O Placements		
USB	USB 3.2 Gen 2 x 2 (Type-A) USB 3.2 Gen 2 x 1 (Type-C)	USB 3.2 Gen 2 x 2 (Type-A)
Display Port	HDMI 2.0b x 1 DP 1.2 x 1 DP 1.4a via USB Type C	HDMI 2.0b x 1 DP 1.2 x 1
Ethernet	2.5GbE x 2 (Intel® I226-IT)	
COM	RS-232/422/485 x 2	
Audio	Audio Jack x 1 (Mic-in+Line-out)	—
GPIO	40 Pin GPIO x 1	
Power Supply		
Power requirement	12V DC-in (Lockable plug)	12V-36V DC-in Phoenix connector (Optional: Lockable plug)
Power supply type	AT/ATX (ATX as default)	AT/ATX (AT as default)
Power Consumption (Typical)	26W~35W	50W~55W
Mechanical		
Mounting	—	VESA Mount/Wall Mount/DIN RAIL (Optional)
Dimensions (WxHxD)	5.27" x 4.13" x 2.56" (134mm x 105mm x 65mm)	5.28" x 4.13" x 2.36" (134mm x 105mm x 60mm)
Net Weight	2 lbs (0.95kg)	1.8 lbs (0.69kg)
Gross Weight	2.8 lbs (1.3kg)	2.2 lbs (0.97kg)
Environment		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
MTBF	422,053 Hours	
Certification	CE/FCC Class A, RoHS Compliant, REACH	
Note		





Model	UP Xtreme i11 Edge
System	
CPU	11th Gen Intel® Core™/Celeron® Processor SoC Intel® Core™ i7-1185G7E Intel® Core™ i7-1185GRE Intel® Core™ i5-1145G7E Intel® Core™ i5-1145GRE Intel® Core™ i3-1115G7E Intel® Celeron® 6305E
Memory	DDR4 SODIMM Slot x 2 (up to 64GB)
Graphics	Intel UHD Intel® Iris® Xe graphics: i5/i7 sku with 128bit (dual channel) memory VPU: Hailo-8™ M.2 2280 B+M key AI module via m.2 2280 (Optional by SKU from ordering information)
Storage	M.2 2280 M-Key x 1 for NVMe (PCIe x [2]) SATA 6Gb/s x 1
Ethernet	Intel® I225-IT x 1 Intel® I219 x 1 (Intel vPro®)
WIFI/BT	Optional via M.2 2230 E-Key x 1
Expansion Slot	40-pin GPIO x 1 M.2 2230 E-Key x 1 M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 SATA 6Gb/s x 1 PCIe [x4] Slot
Security	Onboard TPM 2.0
OS Support	Microsoft Windows 10 and Windows IoT Linux Ubuntu 22.04 Linux Yocto 3.1
I/O Placements	
USB	USB 2.0 (Type-A) x 1 USB 3.2 Gen 2 (Type-A) x 3 USB 4.0 (Type-C) x 1
Display Port	HDMI 2.0 x 1 DP 1.4 x 1 (via USB Type-C) eDP x 1
Ethernet	RJ45 x 2
COM	RS232/422/485 x 2
Audio	Audio Jack x 1 (Mic-in+Line-out)
GPIO	16-pin terminal block connector x1
Power Supply	
Power requirement	12V DC-in (Lockable plug)
Power supply type	AT/ATX (ATX as default)
Power Consumption (Typical)	Balance: 32.4W, Max current: 66W
Mechanical	
Mounting	VESA Mount/Wall Mount (optional)
Dimensions (WxHxD)	5.98" x 4.88" x 2.62" (152mm x 123.9mm x 66.5mm)
Net Weight	2.76 lbs (1.25kg)
Gross Weight	3.68 lbs (1.67kg)
Environment	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) Fanless Sku memory and Storage requirement: DRAM Module : 0°C ~ 85°C, 2.5" SSD: -45°C ~ 85°C
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
MTBF	372,419 Hours
Certification	CE/FCC Class A, RoHS Compliant, REACH





Model	UP Xtreme i11 Edge Compute Enabling Kit
System	
CPU	11th Gen Intel® Core™ Processor SoC Core i7-1185GRE Core i5-1145GRE
Memory	8GB 3200MHz SODIMM modules x 2
Graphics	Intel® Iris® Xe graphics
Storage	128GB 2.5" SSD x 1
Ethernet	Intel® i225IT (TSN) x 1, Intel® i219 (vPRO) x 1
WiFi/BT	Optional
Audio	Realtek ALC888s x 1 (Mic /Line out)
USB	USB 3.2 Gen2 x 3 USB 2.0 x 1 (Type A) USB 4.0 via USB type C
Expansion Slot	M.2 2230 E-Key x 1 M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 with SIM
I/O Placements	
Power	12V DC-in (Lockable plug)/ Phoenix connector
USB	USB3.2 Gen2 x 3 USB2.0 x 1 (Type A) USB4.0 via USB type C
Display Port	HDM 2.0 x 1 /DP 1.4 x 1 eDP x 1, 4K at 60hz panel
Ethernet	Intel® i225IT x 1, Intel® i219 (vPRO) x 1
COM	RS232/422/485 x 2
Environment	
Power	12V (AT & ATX)
Form Factor	4.88" x 5.98" x 2.62" (124mm x 152mm x 66.5mm)
Gross Weight	5.07 lb (2.3kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE,FCC Class A
OS Support	Preinstalled Software Ubuntu 20.04 LTS and 5.11 Kernel Intel® Distribution of OpenVINO™ toolkit 2021 R1 Intel® Media SDK Intel® Distribution for Python* MRAA and UPM I/O and sensor libraries for C++, Python*, Java*, and JavaScript* Docker-CE k3s Kubernetes ONNX AWS Greengrass SQLite 3 Node.js cmake gcc Openssl Openssh-server/client git vim tmux
Note	





Model	UP Xtreme i12 Edge	UP Xtreme 7100 Edge
System		
CPU	12th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1270PE Intel® Core™ i7-1260P Intel® Core™ i5-1250PE Intel® Core™ i5-1240P Intel® Core™ i3-1220PE Intel® Celeron® 7305E 13th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1370PE Intel® Core™ i7-1360P Intel® Core™ i5-1340PE Intel® Core™ i3-1320PE	Intel® Core™ i3-N305 Intel® Processor N97
Memory	Up to 32GB onboard LPDDR5	Up to 16GB LPDDR5
Graphics	Intel® Iris® Xe graphics VPU: Hailo-8™ M.2 2280 B+M key AI module via m.2 2280 (Optional by SKU from ordering information)	Intel® UHD Graphics for 12th Gen Intel® Processors
Storage	M.2 2280 M-Key x 2 (PCIe Gen 4.0 [x4]) SATA 6Gb/s x 1	Up to 64GB eMMC
Ethernet	Intel® I226-IT x 1 (TSN), Intel® I219 x 1 (vPRO)	2.5GbE x 2 (Intel® I226-IT)
WIFI/BT	Optional with M.2 2230 E-key x 1	Optional with M.2 2230 E-key x 1
Expansion Slot	40-pin GPIO x 1 M.2 2230 E-Key x 1 M.2 2280 M-Key x 2 (PCIe Gen 4.0 [x4]) SATA 6Gb/s x 1 M.2 3052 B-Key x 1 Nano SIM Slot x 1	M.2 3052 B-Key x 1 with Nano SIM slot (USB 3.0) M.2 2230 E-Key x 1 (USB 2.0/PCIe) M.2 2280 M-Key x 1 (PCIe Gen 3 [x2]) 24V 8-in/8-out Digital I/O x 1 via Terminal Block (Output current: 500mA per channel) 6 pin 2-channel CAN 2.0B x 1 via Terminal Block (10 ~ 1000 kbps) DIP Switch for CANBus function x 1 CAN LED indicator x 2 SATA III x 1
Security		Onboard TPM 2.0
OS Support	Windows® 10 Enterprise 2021 LTSC, Ubuntu 22.04, Yocto 4.0	Ubuntu 22.04 LTS (Kernel 5.15 and kernel 5.19)
I/O Placements		
USB	USB 2.0 (Type-A) x 1, USB 3.2 Gen 2 (Type-A) x 3, USB 4.0 (Type-C) x 1	USB 2.0 (Type-A) x 2 USB 3.2 (Type-A) x 2 USB 3.2 Gen 2 (Type-C) x 1 (Supports DP alt mode)
Display Port	HDMI 2.0b x 1 DP 1.4a x 1 DP 1.4a x 1 (via USB Type-C) eDP1.4b x 1	DP 1.4a x 1 (via USB Type-C)
Ethernet		RJ45 x 2
COM	RS-232/422/485 x 2	RS-232/422/485 x 1 (Terminal Block) (Default RS232)
Audio	Audio Jack x 1 (Mic-in+Line-out)	—
GPIO	16-pin terminal block connector x1	6 pin GPIO x 1 via Terminal Block
Power Supply		
Power requirement	12-36V DC-in (Lockable plug)	9-36V
Power supply type	AT/ATX (ATX as default)	AT/ATX (AT as default)
Power Consumption (Typical)	Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 5.86A@+ 12V (Typical) Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 8.05A@+ 12V (Max)	52W~55W
Mechanical		
Mounting	VESA Mount/Wall Mount(optional)	75mm x 75mm VESA mount, optional Wall mount kit
Dimensions (WxHxD)	5.98" x 4.87" x 2.81" (152mm x 123.8mm x 71.5mm)	5.98" x 4.8" x 1.7" (152mm x 124mm x 40mm)
Net Weight	2.95 lbs (1.34kg)	2.21lb (1.0Kg)
Gross Weight	3.88 lbs (1.76kg)	3.31lb (1.5Kg)
Environment		
Operating Temperature	0°C - 60°C degree with air flow 0.5m/s	32°F ~ 131°F (0°C ~ 55°C)/0.5m/s airflow
Operating Humidity		0% ~ 90% relative humidity, non-condensing
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	-4°F ~ 158°F (-20°C ~ 70°C)
MTBF	366,810 Hours	421,998
Certification		CE/FCC Class A, RoHS Compliant, REACH
Note		



Model		ACS-1U01-BT4
System		
CPU		Intel® Atom® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP), Intel® Atom™ N2807 Processor (2C @ 1.58 GHz CPU, 313/750 MHz GFX, 4.3W TDP)
Chipset		—
System Memory		204-pin SODIMM x 2 up to 8 GB (for J1900) 204-pin SODIMM x 1 up to 4 GB (for N2807) DDR3L 1333 MHz , Non-ECC, un-buffered memory, Dual-channel memory architecture
I/O Chipset		Fintech 81866D
Display Interface	Chipset	Intel® Graphics Media Accelerator
	DP	VGA x 1, Up to 1920 x 1200 @60 Hz ; HDMI x 1, Up to 1920 x 1200 @60 Hz
Storage Devices		2.5" HDD, Full-Size Mini-Card (optional)
Network	LAN	Realtek® PCIe Gb LAN 8111G x 1
I/O		
Front I/O	USB	USB 2.0 port x 4
	Audio	—
	Display	VGA x 1
	Others	On/Off Button x 1, Power LED + HD LED x 1, (COM port optional if not use VGA port)
Rear I/O	USB	USB 3.2 Gen 1/2.0 port x 1, USB 2.0 port x 2
	Audio	Line-out (green) x 1, Line-in (blue) x 1
	Display	HDMI x 1
	LAN	RJ-45 connector x 1
	Power	DC Power x 1
Expansion	Others	RS-232 connector x 1
	Mini PCIe	Full-size Mini-Card (PCIe +USB or mSATA) + SIM Card (mSATA default) x 1, Half-size Mini-Card (PCIe +USB) x 1
	Storage	Full-size Mini-Card slot (mSATA default) x 1, SATA3 (6.0Gb/s) x 1, SATA2 (3.0Gb/s) x 1, SATA power connector x 1
	Others	RS-232 9-pin int. box header x 1, RS-232/422/485 9-pin box header x 1, 5-pin USB 2.0 header(p=2.00mm) x 2
Indicator	Front	Power LED x 1, HDD Active LED x 1
	Rear	—
Power		
Battery		Lithium battery
Power Requirement		DC: 12V
Mechanical		
Dimension (WxHxD)		8" x 8" x 1.75" (203.20mm x 203.20mm x 44.45mm)
VESA Mounting		Wallmount
Anti-Vibration		0.5 Grms/ 5~ 500Hz/ operation – HDD
Anti-Shock		10 G peak acceleration (11 msec. duration)
Environmental		
Operating temperature		32°F ~ 122°F (0°C ~ 50°C)
Certificate		CE & FCC Class A
Operating System		
MS Windows		Windows® 7 32/64-bit, Windows® 8.1 32/64-bit
Linux		Fedora
Note		







Model		ACS-1U01-H110B
System		
CPU Board		EMB-H110B-A10-HH
CPU		Intel® Skylake 14nm LGA 1151 socket Processor, Max. 65W TDPs (follow thin mini-ITX)
Chipset		Intel® H110
System Memory		2 x SODIMM, Max. 32GB, DDR4 2133/1867 MHz, Non-ECC, Un-buffered
I/O Chipset		NCT6791D
Display Interface		Intel® HD Graphics DP(BOM Change, default HDMI): Up to 1920 x 1200 @60Hz, with Digital Audio HDMI: Up to 4096 x 2304 @24Hz / 2560 x 1600 @60Hz, with Digital Audio LVDS: Up to 1920 x 1200 @60Hz, Dual Channel 18/24-bit colay eDP: Up to 4096 x 2304 @60Hz
Storage Devices		2.5" HDD x 1, Full-Size Mini-Card(mSATA default, PCIe + USB optional) x 1
LAN		Realtek® PCIe Gb LAN 8111G x 2
I/O		
Front I/O Ports		USB 2.0 port x 4 Power S/W x 1 COM port x 1 HDD LED x 1 POWER LED x 1
Rear I/O Ports		USB 3.2 Gen 1 port x 4 Mic-In (pink) x 1 Line-Out (green) x 1 HDMI x 2 (BOM Changeable to DP) RJ-45 Connector x 2 DC Power jack x 1
Expansion	Mini PCIe	Half-Size Mini-Card slot (PCIe + USB) x 1, Full-Size Mini-Card (Default mSATA, PCIe + USB optional) x 1
	Storage	Full-size Mini-Card slot (mSATA default) x 1, SATA3(6.0Gb/s) x 1, SATA power connector x 1
	Others	RS-232 9-pin int. box header x 1, RS/232/422/485 9-pin box header x 1, 5-pin USB 2.0 header(p=2.00mm) x 2
Power		
Battery		Lithium battery
Power Requirement		DC: 12V
Mechanical		
Dimension (WxHxD)		8" x 8" x 1.75" (203.20mm x 203.20mm x 44.45mm)
VESA Mounting		Wallmount
Anti-Vibration		0.5 Grms/ 5~ 500Hz/ operation – HDD
Anti-Shock		10 G peak acceleration (11 msec. duration)
Environmental		
Operating temperature		32°F ~ 122°F (0°C ~ 50°C)
Certificate		CE & FCC Class A
Operating System		
MS Windows		Windows® 7 32 / 64-bit, Windows® 8.1 32 / 64-bit, Windows® 10 32 / 64-bit
Linux		Ubuntu 16.04.02/Kernal 4.8.0
Note		

Model		ACS-1U01
System		
M/B		Mini-ITX
Dimension (W x D x H)		8" x 8" x 1.75" (203.20mm x 203.20mm x 44.45mm)
Color		Black
Processor Support		TDP < 65W
Drive Bay		2.5" internal HDD bracket x 1
Front I/O		USB 2.0 Port x 4 COM/VGA Port
Button		Power Switch x 1
LED		Power LED x 1 HDD LED x 1
Other		Antenna Hole x 4
Environmental		
Operating temperature		32°F~122°F (0°C~50°C)
Note		



Model	ARC-645
System	
Construction	1.2 mm SECC Zinc-coated Steel
Storage	External: 3.5" Drive Bay x 1 5.25" Drive Bay x 4 Internal: 3.5" Drive Bay x 2
System Fan	12 cm Ball Bearing Fan with Removable Filter x 1
Front Panel	Power ON/OFF Switch x 1 Reset Button x 1 Power ON LED x 1 Hard Disk Drive Active LED x 1 USB Port x 4
Rear Panel	AT Keyboard Cut-out x 1 14 Slots (including system slot), supports max. 339 mm (length) for expansion card
Color	Black
Dimensions	19" (W) x 20.8" (D) x 7" (H) (482mm x 528mm x 177mm)
Carton Size	21.6" (W) x 27" (D) x 12.4" (H) (548mm x 685mm x 315mm)
Net Weight	26.4 lb (12 kg)
Gross Weight	30.8 lb (14 kg)
Environmental	
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)
Storage Temperature	-4°F ~ 176°F (-20°C ~ 80°C)
Storage Humidity	10 ~ 90% @ 40°C, non-condensing
Vibration	0.5 Grms/ 5 ~ 500Hz/ operation (2.5" Hard Disk Drive) 1.5 Grms/ 5 ~ 500Hz/ non operation
Shock	15 G peak acceleration (11 m sec. duration), operation 30 G peak acceleration (11 m sec. duration), non operation
EMC	CE/FCC Class A
Note	



## Focus - Agility - Competitiveness



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# 03



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# ► Network Platform Solutions

A large, white, sans-serif number '03' is centered in the lower half of the image. The background is a server room with rows of server racks on the right and a doorway with a green exit sign on the left. The lighting is blue and dim, creating a professional and technical atmosphere.

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Model	FWS-2365	FWS-2360
System		
Form Factor	Desktop Network Appliance	Desktop Network Appliance
Processor	Intel Atom® Processor C Series (4 ~ 16 cores)	Dual/Quad Core Intel Atom® Processor C Series Processors
Chipset	SoC	SoC
System Memory	DDR4 SODIMM ECC x 2, up to 64GB	DDR4 SODIMM ECC DIMM (Dual core 1 slot Quad core 2 Slot) Up to 32GB
Network		
Ethernet	1GbE RJ-45 x 6 (2 ports co-lay SFP) 10G SFP+ x 4 (4 cores only support 2 port)	1GbE x 4 (Marvell® Alaska® 88E1543) 1GbE x 2 (Intel® Ethernet Controller I210-AT) (optional Intel® Ethernet Controller I210-IS SFP x 2)
Bypass	Supports 1 pairs on LAN 3-4	Supports up to 2 pairs bypass function
Display		
Graphic Controller		
Connector		
Storage		
HDD	SATA III port x 2, 2.5" HDD/SSD up to 2	2.5" HDD Bay x 1
CF/CFast/MSATA	On board 16GB eMMC, up to 128GB optional mSATA slot x 1 (co-lay with M.2 slot)	SATA 6.0 Gb/s port x 1 (onboard eMMC up to 16GB optional)
Internal/ Expansion Interface		
PCIe Slot		
Mini-PCIe Slot	Mini-card slot x 1 (Half-size, PCIe) Mini-card slot x 1 (Full-size, PCIe + USB2.0) with SIM slot M.2 B key 3052 x 1 (USB3.0) with SIM slot	Mini-Card socket (full-size) x 2 (1 with SIM socket)
Keyboard and Mouse		Reserved pin-header
USB	USB 3.0 x 2 (1 Port only support USB2.0 signal)	Dual Core: USB 3.2 Gen 1 x 1 + USB2.0 x 1
Miscellaneous		
RTC		Internal RTC
Watchdog Timer		1~255 steps by software programmable
Software Button	GPIO programmable push button x 1	
TPM	TPM v2.0 9665	(TPM v1.2 9660/TPM2.0 9665 Optional)
GPIO	4 bits input/ 4 bits output	(4 bits input, 4bits output optional)
Fan		System Fan x 1
MTBF (Hours)	TBD	149683 Hours
Color	Black	Black
Environmental Parameters and Dimension		
Power Requirement	12V DC Power in connector 4 Cores: 40W Power Adapter 8 Cores and above: 60W Power Adapter	12V DC Power in connector
Operating Temperature		32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature		-4°F ~ 140°F (-20°C ~ 60°C)
Operating Humidity		10%~80% relative humidity, non-condensing
Storage Humidity		10%~80% @40°C; non-condensing
Vibration		0.5 Grms/ 5 ~ 500Hz / operation (2.5" HDD) 1.5 Grms/ 5 ~ 500Hz / non operation
Shock		10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation
Dimension (W X D X H)	260mm x 178mm x 44mm	8.66" x 4.13" x 1.73" (220mm x 105mm x 44mm)
I/O		
Front Panel	Power LED x 1 Status LED x 1 Storage Active LED x 1 Bypass LED x 1 Ethernet LED x 20 Antenna Hole x 2 Accessible SIM slot x 2	Power LED x 1, Status LED x 1, Storage Active LED x 1, Bypass LED x 2, LAN LED x 12, (Antenna Hole x 2 Optional)
Rear Panel	USB 3.0 Port x 2 RJ-45 Port x 6 SFP+ Port x 2 RJ-45 Console x 1 12V DC Power Input x 1 Software Reset Button x 1 Power Button x 1 Antenna Hole x 4	USB 3.2 Gen 1 Port x 2, RJ-45 Port x 6 (Optional RJ-45 x 4 + SFP x 2) RJ-45 Console x 1, 12V DC Power Input x 1, Software Reset Button x 1, Power Button x 1, (Antenna Hole x 2 Optional)
Note		





Model	FWS-2280	FWS-2276
System	Desktop Network Appliance	
Form Factor	Desktop Network Appliance	
Processor	Intel® Celeron® Processor J Series/Intel® Pentium® Processor N Series/Intel Atom® Processor X Series	Intel® Celeron® Processor N3350 SoC
Chipset	SoC	
System Memory	260-pin DDR4 SO-DIMM x 1, 3200MT/s	Onboard LPDDR4, 2GB, Optional DDR3L 1866MHz Single-Channel SODIMM x 1 (Max 8GB, up to 1600MHz)
Network		
Ethernet	Intel® Ethernet Controller I211 GbE x 4 Intel® Ethernet Controller I210 SFP x 1	Intel® i211 GbE x 4
Bypass	1 pair bypass function	
Display		
Graphic Controller	Intel® UHD Graphics	Intel® HD graphics integrated
Connector	HDMI x 1	—
Storage		
HDD	—	2.5" HDD Bay x 1
CF/CFast/MSATA	mSATA slot x 1 SATA III port x 1	Onboard 8GB eMMC, SATA 6.0 Gb/s port x 1
Internal/ Expansion Interface		
PCIe Slot	—	
Mini-PCIe Slot	Mini Card Socket (PCIe + USB 2.0, full size) with SIM x1 Mini Card Socket (PCIe, half size) x1 M.2 B key 3052 (USB 3.0, full size) with SIM x1(Optional)	—
Keyboard and Mouse	—	
USB	USB 2.0 Type A x 2	USB 3.2 Gen 1 x 2
Miscellaneous		
RTC	Internal RTC	
Watchdog Timer	1~255 steps by software programmable	
Software Button	GPIO Programmable push button x 1	—
TPM	(TPM SLB9670 VQ2.0 FW7.85 Optional)	(TPM v1.2 9660/TPM2.0 9665 Optional)
GPIO	(4 bits input, 4bits output optional)	4 bits input, 4bits output optional
Fan	Smart fan x 1	1
MTBF (Hours)	TBD	166,000
Color	Black	
Environmental Parameters and Dimension		
Power Requirement	2 x 12V DC Power Input Connector Lockable, 40W power adapter	12V DC Power
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)	
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	
Operating Humidity	10%~80% relative humidity, non-condensing	
Storage Humidity	10%~80% @40°C; non-condensing	
Vibration	0.5 Grms/ 5 ~ 500Hz / operation (mSATA) 1.5 Grms/ 5 ~ 500Hz / non-operation	0.5 Grms/ 5 ~ 500Hz / operation (2.5" HDD) 1.5 Grms/ 5 ~ 500Hz / non operation
Shock	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non-operation	
Dimension (W X D X H)	8.27" x 4.09" x 1.73" (210mm x 105mm x 44mm)	6.5" x 3.62" x 1.57" (165mm x 92mm x 40mm)
I/O		
Front Panel	LEDs (Power, Status, Storage) x 3 Micro-SIM x 1 Antenna Hole x 2	Power LED x 1 Status LED x 1 HDD Active LED x 1 Bypass LED x 1 LAN LEDs x 8
Rear Panel	DC Power Input Connector Lockable x 2 Power Button x 1 USB2.0 Ports x2 1GbE RJ45 Ports x 4, 1 SFP RJ-45 console x 1 Reset Button x 1 Antenna Hole x 3	USB 3.2 Gen 1 Port x 2 RJ-45 Port x 4 RJ-45 Console x 1 12V DC Power Input x 1 Software Programmable Button x 1 Antenna Hole x 2 Optional
Note		



## Desktop Network Appliances



Model	FWS-2275	FWS-2273
System	Desktop Network Appliance	
Form Factor	Intel® Celeron® Processor N3350 SoC	
Processor	Intel® Celeron® Processor N3350 SoC	
Chipset	SoC	Intel® Celeron® N3350 Processor
System Memory	Onboard LPDDR4, 2GB	DDR3L 1866, Single Channel SODIMM x 1 (Max.8GB, up to 1600MHz)
Network		
Ethernet	Intel® i211 GbE x 3	Intel® i211, Gigabit Ethernet x 4; Intel® i210, SFP x 2
Bypass	—	Supports up to 2 pairs bypass function
Display		
Graphic Controller	Intel® HD graphics integrated	Intel® HD Graphics 505 Intergrated
Connector	(HDMI Connector x1 Optional )	HDMI x 1
Storage		
HDD	—	2.5" HDD Bay x 1
CF/CFast/MSATA	Onboard eMMC 16GB (Optional up to 32GB) SATA III Port x 1 for SATA DOM Micro SD card Reader x1	CompactFlash™ socket x 1 (Co-lay for BOM Optional CFast™ socket x 1) SATA 6.0 Gb/s port x 1
Internal/ Expansion Interface		
PCIe Slot	—	
Mini-PCIe Slot	Mini-Card Full Size Slot with SIM Socket x 1 (USB 2.0; PCIe co-lay with LAN 3)	Mini-Card socket (full-size) with SIM socket x 2
Keyboard and Mouse	—	Reserved pin-header
USB	USB 3.2 Gen 1 x 2	
Miscellaneous		
RTC	Internal RTC	
Watchdog Timer	1~255 steps by software programmable	
Software Button	GPIO Programmable push button x 1	—
TPM	(TPM2.0 9665 Optional)	(TPM v1.2 9660/TPM2.0 9665 Optional)
GPIO	4 bits input, 4bits output	Reserved internal pin-header 8-bit Digital I/O interface (4-in /4-out)
Fan	—	Fanless, reserved pin-header for system fan
MTBF (Hours)	550,521 Hours	109,725
Color	Black	
Environmental Parameters and Dimension		
Power Requirement	9~24 V DC Power	12V DC Power in connector
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)	32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	
Operating Humidity	10%~80% relative humidity, non-condensing	
Storage Humidity	10%~80% @40°C; non-condensing	
Vibration	0.5 Grms/ 5 ~ 500Hz / operation 1.5 Grms/ 5 ~ 500Hz / non operation	0.5 Grms/ 5 ~ 500Hz / operation (2.5" HDD) 1.5 Grms/ 5 ~ 500Hz / non operation
Shock	10 G peak acceleration (11 m sec. duration), operation, 20 G peak acceleration (11 m sec. duration), non operation	
Dimension (W X D X H)	4.53" x 4.53" x 1.73 " (115mm x 115mm x 44mm)	8.66" x 4.13" x 1.73" (220mm x 105mm x 44mm)
I/O		
Front Panel	USB 3.2 Gen 1 Ports x 2 LED's (3 x TOP Row, 2 x Bottom Row)x 6 Power Button with LED integrated x 1 Micro-USB Console Port x 1 RS-232/422/485 x 1 GPIO 8 bits, 4-bits input, 4-bits output Reset button x 1	Power LED x 1 Status LED x 1 Storage Active LED x 1 Bypass LED x 2 LAN LED x 12
Rear Panel	1GbE RJ45 Ports x 3 Power Input connector, lockable x 1	USB 3.2 Gen 1 Port x 2 RJ-45 Port x 4 SFP x 2 RJ-45 Console x 1 12V DC Power Input x 1 Software Reset Button x 1 Power Button x 1 HDMI x 1 Antenna Hole x 2
Note	Left I/O: SIM Slot x 1 + Micro-SD Slot with Cover x 1 WiFi Antenna Connector x 1 LTE Antenna Connector Right I/O: WiFi Antenna Connector x 1	







Model	FWS-2272	FWS-2271
System		
Form Factor	Desktop Network Appliance	Desktop 6-port Network Appliance
Processor	Intel® Celeron® N3350 Processor	Onboard Intel® Celeron® processor N3350
Chipset	Intel® Celeron® N3350 Processor	Integrated
System Memory	Onboard LPDDR4, 2GB, Optional DDR3L 1866MHz Single-Channel SODIMM x 1 (Max 8GB, up to 1600MHz)	DDR3L 1866, Single Channel SODIMM x 1 (Max.8GB, up to 1600MHz)
Network		
Ethernet	Intel® i211, Gigabit Ethernet x 4	Intel® i211 (Co-lay with Intel® i210), Gigabit Ethernet x 6 (BOM Optional 4 Ports)
Bypass	—	Supports up to 2 pairs bypass function
Display		
Graphic Controller		Intel® HD Graphics 505 Integrated
Connector	—	HDMI x 1
Storage		
HDD	—	2.5" HDD Bay x 1
CF/CFast/MSATA	Onboard 8GB eMMC SATA 6.0 Gb/s port x 1, for SATA DOM	CFast™ socket x 1 (Co-lay for BOM Optional CompactFlash™ socket x 1)
Internal/ Expansion Interface		
PCIe Slot		—
Mini-PCIe Slot	Mini-Card socket (full-size) with SIM socket x 1	Mini-Card socket (full-size) with SIM socket x 2
Keyboard and Mouse	—	Reserved pin-header
USB	USB 3.2 Gen 1 x 2	USB 3.2 Gen 1 Type A on I/O side x 2
Miscellaneous		
RTC		Internal RTC
Watchdog Timer		1~255 steps by software programmable
Software Button	—	GPIO Programmable push button x 1
TPM	(TPM v1.2 9660/TPM2.0 9665 Optional)	Optional TPM v1.2 9660/TPM2.0 9665
GPIO		Reserved internal pin-header 8-bit Digital I/O interface (4-in /4-out)
Fan	Fanless	System Fan x 1
MTBF (Hours)	162,469	118,725
Color	Silver	White
Environmental Parameters and Dimension		
Power Requirement	12V DC Power in connector	12V DC In/ 40W power adapter x 1
Operating Temperature		32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature		-4°F ~ 140°F (-20°C ~ 60°C)
Operating Humidity		10%~80% relative humidity, non-condensing
Storage Humidity		10%~80% @40°C; non-condensing
Vibration	0.5 Grms/ 5 ~ 500Hz / operation (SATA DOM) 1.5 Grms/ 5 ~ 500Hz / non operation	0.5 Grms/ 5 ~ 500Hz/ operation (2.5" Hard Disk Drive) 1.5 Grms/ 5 ~ 500Hz/ non-operation
Shock		10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation
Dimension (W X D X H)	6.1" x 3.62" x 1.26" (155mm x 92mm x 32mm)	7.87" x 4.13" x 1.73"(200mm x 105mm x 44 mm)
I/O		
Front Panel	Power LED x 1 Status LED x 1 Storage Active LED x 1 LAN LED x 8	Bypass LED x 2 Power LED x 1 Status LED x 1 HDD Active LED x 1 LAN LED x 12
Rear Panel	USB 3.2 Gen 1 Port x 2 RJ-45 Port x 4 RJ-45 Console x 1 12V DC Power Input x 1 Software Reset Button x 1 Power Button x 1 Antenna Hole x 2	USB 3.2 Gen 1 Port x 2 RJ-45 Port x 6 (BOM Optional RJ-45 Port x 4) RJ-45 Console x 1 12V DC Power Input x 1 Software Programmable button x1 HDMI x 1 Power Button x 1
Note		



## Network Appliances

## Desktop Network Appliances



Model	FWS-2277	FWS-2370
System Form Factor	Desktop Network Appliance	
Processor	Intel® Celeron® Processor N3350 SoC Intel Atom® Processor C Series/Intel Atom® Processor P Series Default: Intel Atom® Processor C5315	
Chipset	SoC	
System Memory	Onboard LPDDR4, 4GB DDR4 SODIMM socket x 2, up to ECC/Non-ECC 64GB	
Network	Intel® i211/i210, Gigabit Ethernet x 2 Intel® Ethernet Controller I226-V 2.5GbE x 4 Marvell® Alaska® 88E1543 GbE x 4 10G SFP+ x 4 2 Pair	
Bypass	—	
Display	—	
Graphic Controller	Intel® UHD Graphics	
Connector	HDMI x 1	
Storage	Default 2 x SATAIII for 2.5" HDD/SSD (1 x SATAIII colay 1 x M.2 2242 M key SATAIII for SSD) Default eMMC 32GB, support up to 128GB	
HDD	—	
CF/CFast/MSATA	eMMC 16G	
Internal/ Expansion Interface	—	
PCIe Slot	—	
Mini-PCIe Slot	Mini-Card Full Size Slot x 1	M.2 E Key 2230 colay Mini-card (Half-size, PCIe) for Wifi M.2 B Key 3042/3052 colay Mini-card slot with push-pin SIM slot x 1 (Full-size, PCIe + USB3.0+USB2.0) for 5G/LTE M.2 B Key 3042/3052 colay Mini-card slot with push-pin SIM slot x 1 (Full-size, USB3.0+USB2.0) for 5G/LTE [x4] PCIe connector slot (PCIe [x1] x 2) for 2 x 2.5GbE i226V module (optional with PoE/PoE+)
Keyboard and Mouse	—	
USB	USB 3.2 Gen 1 x 2	USB 3.0 x 2 (2 Port only support USB2.0 signal if plug POE module)
Miscellaneous	Internal RTC	
RTC	1~255 steps by software programmable GPIO Programmable push button x 1	
Watchdog Timer	—	
Software Button	—	
TPM	Optional Infineon.SLB9665TT2.0(FW5.63)	Optional Nuvoton NPCT760AABYX colay Infineon SLB 9672VU2.0 FW15.21
GPIO	(4 bits input, 4bits output optional)	
Fan	Fan-less	Default 1 x smart Fan, reserve 1 internal smart fan pin header
MTBF (Hours)	TBD	TBD
Color	Black	
Environmental Parameters and Dimension	—	
Power Requirement	12V DC Power Input Connector non-lock, 24W power adapter	Dual in 12V 60W Adapter (w/o POE) Dual in 12V 90W Adapter (w/ POE)
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)	
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	
Operating Humidity	10%~80% relative humidity, non-condensing	
Storage Humidity	10%~80% @40°C; non-condensing	
Vibration	0.5 Grms/ 5 ~ 500Hz / operation (mSATA) 1.5 Grms/ 5 ~ 500Hz / non-operation	
Shock	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non-operation	
Dimension (W X D X H) I/O	4.53" x 4.53" x 1.26"(115mm x 115mm x 32mm)	260mm x 178mm x 44mm
Front Panel	USB 3.2 Gen 1 x 2 Power Button x 1 Reset Button x 1	Optional type c console x 1, Micro SIM socket x 2 Main board LAN LED x 24, Optional module LAN LED via cable x 4 Bypass LED x 2, Storage LED x 1, Status LED x 1 Power LED x 2, Antenna hole x 3
Rear Panel	DC Power Input Connector non-lock x 1 1GbE RJ45 Ports x 2 HDMI x 1	DC Power Input Connector Lockable x 2, RJ45 console x 1 USB 3.0 Port x 2, Power LED x 2, 10G SFP+ x 4, 1G Marvell RJ45 Port x 4, 2.5G RJ45 Port x 4, SW reset button x 1 Power button x 1, Antenna hole x 4 Optional 2.5G LAN module x 2 (optional with POE af/at)
Note	—	





Launching in Q4

Model	FWS-2290	FWS-2291
System	Desktop Network Appliance	
Form Factor	Desktop Network Appliance	
Processor	Intel® Processor N-series, 2~8 cores	Intel® Alder lake N / Amston lake SoC Processor
Chipset	SoC	
System Memory	On board 4G LPDDR5 up to 16GB	DDR5 SO-DIMM up to 16GB
Network		
Ethernet	Intel® Ethernet Controller I226-V, 2.5GbE x 4	Intel® i226 V, 2.5 Gigabit Ethernet x 4 Intel® i210IS, SFP x 2 (co-lay with i210AT Copper x2) by PCIe Bridge (ASM2806)
Bypass	1 Pair	2 Pairs
Display	—	
Graphic Controller	Intel® UHD Graphics	—
Connector	HDMI x 1 Optional	HDMI x 1 (Only support on Alder lake N)
Storage		
HDD	—	2.5" HDD Bay x 2, 1 SATA co-lay with M.2 2242
CF/CFast/MSATA	32G eMMC SATA III port x 1	On board 32G eMMC, up to 128G
Internal/ Expansion Interface		
PCIe Slot	—	
Mini-PCIe Slot	M.2 (B Key 3052) for 5G (Co-lay Mini-Card slot-2 with Push-pin SIM for 4G LTE/Wifi) reserve 3042 screw hold for 4G LTE M.2 (E Key 2230) (Co-lay Mini-Card-1 slot for Wifi)	1. M.2 (B Key 3042+3052+ PCIe [x1]) by ASM2086 for 4G/5G (Co-lay Mini-Card full size slot) with Push-pin SIM for 4G LTE/Wifi (USB3.2+USB 2.0+ PCIe [x1]) reserve 3042 screw hold for 4G LTE, Without ASM 2806, only USB3.2+2.0 signal for 4G LTE/5G. 2. M.2 E Key 2230 (Co-lay Mini-Card Half-size slot for Wifi) (PCI-E [x1]+ USB 3.2 & 2.0) 3. [x4] PCIe connector slot (PCIe [x1] x 2 by ASM 2806) for 2 x 2.5GbE i226V module (optional support PoE/PoE+ PIC-POE)
Keyboard and Mouse	—	
USB	USB 3.1 Type A x2 (one only have 2.0 ,share to M.2 for LTE)	2 x USB 3.2 Gen 1 type A port
Miscellaneous		
RTC	Internal RTC	
Watchdog Timer	1~255 steps by software programmable	
Software Button	GPIO Programmable push button x 1	
TPM	(TPM SLB9670 VQ2.0 FW7.85 Optional)	SPI TPM v2.0 (optional) nuvoton co-lay Infineon SLB 9672VU2.0 FW15.21
GPIO	(4 bits input, 4bits output optional)	(4 bits input, 4bits output optional)
Fan	Fan x1	Fan-less/ Fan
MTBF (Hours)	TBD	TBD
Color	Black	
Environmental Parameters and Dimension		
Power Requirement	1 x 12V DC Power Input Connector Lockable, 40W power adapter	Dual in 12V 40W Adapter (w/o POE) Dual in 12V 96W Adapter (w/ POE)
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)	32 ~ 122°F (0 ~ 40°C)
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	-4°F ~ 158°F (-20°C ~ 70°C)
Operating Humidity	10%~80% relative humidity, non-condensing	10%~90% relative humidity, non-condensing
Storage Humidity	10%~80% @40°C, non-condensing	
Vibration	0.5 Grms/ 5 ~ 500Hz / operation (mSATA) 1.5 Grms/ 5 ~ 500Hz / non-operation	0.5G / 5 ~ 500Hz / operation 1.5G / 5 ~ 500Hz / non-operation
Shock	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non-operation	
Dimension (W X D X H)	6.5" x 3.62" x 1.57" (165mm x 92mm x 40mm)	Standard: 220mm x 105mm x 44mm(W x D x H) Support POE card (PIC-POE): 260mm x 178mm x 44mm(W x D x H)
I/O		
Front Panel	3 x LEDs (Power, Status, Storage) 1 x Micro-SIM 2 x Antenna Hole	Power LED x 2 Status LED x 1 Bypass LED x 2 Storage Active LED x 1 Ethernet LED x 12 Antenna Hole x 2 Accessible SIM slot x 2 -Optional 2.5G Lan module x 2 (optional with POE af/at) change the housing
Rear Panel	1 x DC Power Input Connector Lockable 1 x Power Button 2 x USB2.0 Ports 4 x 1GbE RJ45 Ports 1 x RJ-45 console 1 x Reset Button 2 x Antenna Hole	DC Power Input Connector Lockable x 2 Power Button x 1 USB 3.2 Gen 2 Port x 2 RJ-45 Port x 4 Fiber RJ45 x 2 Type C console x 1 Antenna Hole x 4
Note		



## Rackmount Network Appliances



Model	FWS-8600	FWS-7541
<b>System</b>		
Form Factor	2U Rackmount Network Platform	1U Rackmount Platform Network Appliance
Processor	Dual 2nd Gen Intel® Xeon® Scalable Processors, up to 56 cores, 112 threads	Intel® Xeon® D-1700 Processors
Chipset	Intel® C621 Chipset	SoC
System Memory	DDR4 2133/2400/2666 R-DIMM x 16 (8 DIMM per CPU), Up to 512 GB	DDR4 SODIMM x 2 (ECC)
<b>Network</b>		
Ethernet	Intel® i211 Gigabit Ethernet x 2	1GbE RJ-45 x 12 (Intel® I350-AM4 x 3) + up to 10Gb SFP+ x 4 (see note 1)
Bypass	Depend on NIM module	2 Pairs LAN Bypass 3.1
NIM Slot	NIM x 4 (Project based up to 8 slots)	NIM Slot x 1 (Optional)
<b>Display</b>		
Graphic Controller	Optional support via Mini-PCIe module or IPMI	—
Connector	Optional VGA port via module	VGA from IPMI x 1 (Optional by BOM SKU)
<b>Storage</b>		
HDDs	SATA III Port x 6 External Hotswappable 3.5" HDD Bay x 4 Internal 3.5" HDD Bay x 1, option with 2.5" HDD Bay x 2	2.5" HDD x 2 (default) or 3.5" HDD x 1 (If no NIM module present)
CF/CFast/mSATA	M.2 2260 M-key x 1 mSATA slot x 1 (share same slot with Mini-Card)	—
<b>Internal/ Expansion Interface</b>		
PCIe slot	Optional PCIe [x16] slots x 2, via riser card	—
Mini-Card slot	Mini Card slot (full-size) x 1 (PCIe/SATA, USB2.0)	M.2 3052 B-Key x 1 for 4G/5G (USB 3.0 + PCIe) with SIM M.2 2230 E-Key x 1 (PCIe)
IPMI	Optional IPMI via AAEON Module (Project based)	Project base
Keyboard and Mouse	—	—
USB	USB 3.2 Gen1 x 2 (Optional 2*10 pin USB 3.2 Gen1 x 2 Box Header 2.0mm)	USB 3.2 Gen 1 x 2
<b>Miscellaneous</b>		
RTC	Internal RTC	
Watchdog Timer	1~255 steps by software programmable	
Software Button	GPIO Programmable push button x 1	1
TPM	(Optional TPM2.0 9665 on board)	TPM 2.0 SPI
GPIO	(4 bits input, 4 bits output optional)	N/A, DIO pin header x 1 (4-in/4-out), optional by BOM SKU
FAN	5 x Hotswappable FAN	System Fan x 1
MTBF (Hours)	192,691 Hours	TBD
Color	Black	
<b>Environmental Parameters and Dimension</b>		
Power Requirement	550 ~ 600W Redundant Power	220W Power
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)	
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	
Operating Humidity	10% ~ 80% relative humidity, non-condensing	
Storage Humidity	10% ~ 80% @40°C; non-condensing	0%~80% @40°C; non-condensing
Vibration	0.5 Grms/ 5 ~ 500Hz / operation (3.5" Hard Disk Drive x 5) 1.5 Grms/ 5 ~ 500Hz / non operation	0.5 g rms/ 5 ~ 500Hz / operation (2.5" Hard Disk Drive) 1.5 g rms/ 5 ~ 500Hz / non operation
Shock	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation	
Dimension (W X D X H)	17.48" x 22.83" x 3.46" (444mm x 580mm x 88mm)	16.93" x 7.87" x 1.73" (430mm x 200mm x 44mm)
<b>I/O Interfaces</b>		
Front Panel	Power LED x 1 Status LED x 1 HDD Active LED x 1 USB 3.2 Gen 1 Ports x 2 RJ-45 Console x 1 Parallel LCM display and 4 keypad x 1 Software Programmable Button x1 RJ-45 LAN x 2 IPMI x 1 (Project based)	1GbE RJ-45 x 12 (Intel® I350-AM4 x 3) + up to 10GbE SFP+ x 4 (SKU optional) Power LED x 1 Status LED x 1 HDD Active LED x 1 USB 3.2 Gen 1 x 2 RJ-45 Console x 1 LCM display with Keypad x 1 Software Programmable Button x 1
Rear Panel	AC Power Input x 2, Power Switch x 1, VGA port (Optional), Rear Expansion Slot x 2 (PCIe [x16] Optional)	AC Power Input x 1 Power Switch x 1
Note		





Model	FWS-7840	FWS-7830
System	1U Rackmount Network Platform	
Form Factor	1U Rackmount Network Platform	
Processor	10th Generation Intel® Core™/ Xeon® processor	8th Generation Intel® Core™/ Xeon® processor
Chipset	Intel® W480E	Intel® C246
System Memory	2 x DDR4 2666MHz U-DIMM ECC DIMM slots up to 64G	DDR4 2133/2400/2666 UDIMM Up to 128GB 288-pin DIMM x 4
Network		
Ethernet	8 x 1Gb RJ45 Port or 6 x 1Gb RJ45 + 2 x 1Gb SFP , with 2 x i350AM4 LAN chips 2 x 10Gb SFP+ with XL710 AM2 LAN chip (Option)	Intel® I350 AM2 Gigabit Ethernet x 2
Bypass	2 Pairs	Depend on NIM module
NIM Slot	NIM slot x 2	NIM Slot x 3
Display		
Graphic Controller	Intel® UHD Graphics	Intel® HD graphics integrated
Connector	(HDMI x1 Optional)	VGA cable (Optional)
Storage		
HDDs	SATA III port x 2, 2.5" HDD/SSD up to 2	Internal 2.5" SATA HDD x 2 or 3.5" SATA HDD x 1 (Optional)
CF/CFast/mSATA	1 x Mini card socket (Option mSATA)	Default mSATA Slot (Optional CFast™ Socket)
Internal/ Expansion Interface		
PCIe slot	Optional PCIe [x8] slot x 1, via riser card	
Mini-Card slot	Mini Card x 1	
IPMI	—	
Keyboard and Mouse	—	
USB	USB 3.2 Gen1 x 2	Pin-header USB 3.2 Gen 1 x 2, Box Header (2.0mm)
Miscellaneous		
RTC	Internal RTC	
Watchdog Timer	1~255 steps by software programmable	1~255 steps by software programmable, 1 sec per step
Software Button	GPIO Programmable push button x 1	
TPM	TPM v2.0 9665	Optional TPM v2.0
GPIO	4 bits input/4 bits output	8bits, BIOS default 4 bits input, 4bits output.
FAN	System Fan x 2	2
MTBF (Hours)	TBD	TBD
Color	Black	
Environmental Parameters and Dimension		
Power Requirement	220W ATX PSU or 250W ATX PSU	
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)	
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	
Operating Humidity	10% ~ 80% relative humidity, non-condensing	
Storage Humidity	10% ~ 80% @ 40°C, non-condensing	
Vibration	0.5 Grms/ 5 ~ 500Hz/ operation (3.5" H.D.D) 1.5 Grms/ 5 ~ 500Hz/ no operation	
Shock	10G peak acceleration (11 m sec. duration), operation 20G peak acceleration (11 m sec. duration), non-operation	
Dimension (W X D X H)	430mm x 305mm x 44mm	16.93" x 18.7" x 1.73"(430mm x 475mm x 44mm)
I/O Interfaces		
Front Panel	Power LED x 1 Status LED x 1 Storage Active LED x 1 Bypass LED x 2 Ethernet LED x 16 USB 3.2 Type A port x 2 Parallel LCM display and 4 keypad x 1 Software Programmable Switch x 1 1 GbE RJ-45 x 8 or 1 GbE RJ45 x 6 + SFP x 2 10 GbE SFP+ x 2LAN port (Option by module) NIM Slot x 2	Power LED x 1 Status LED x 1 HDD Active LED x 1 USB 3.2 Gen 1 Ports x 2 RJ-45 Console x 1 Parallel LCM display and 4 keypad x 1 Software Programmable Switch x 1
Rear Panel	AC Power Input x 1, Power Switch x 1, (Rear Expansion Slot x 1 Optional)	AC Power Input x 1 Power Switch x 1 VGA port (Optional)
Note		



## Network Appliances

## Rackmount Network Appliances



Model	FWS-7831	FWS-7821
System	1U Rackmount Network Platform	
Form Factor	1U Rackmount Network Platform	
Processor	Intel® Xeon® processor E-2100 family for Intel® C246 Chipset Intel® Core™/ Celeron® processor for Intel® H310 Chipset	6th/7th Generation Intel® Core™/ Xeon® processors
Chipset	Intel®C246/H310	Intel® C236
System Memory	260-pin DDR4 1600/1866/2133 SODIMM/ECC x 2, upto 64GB	DDR4 1600/1866/2133/2400 UDIMM/ECC Up to 64GB 288-pin DIMM x 4
Network		
Ethernet	Intel® i210 Gigabit Ethernet x 8 or Intel® i210 Gigabit Ethernet x 6 + SFP Ethernet ports x2 (C246) Intel® i210 Gigabit Ethernet x 6 (H310)	Intel® i210 GbE x 6 + Intel® i210 GbE x 2 (SFP) + NIM x 1(Or i210 GbE x8 +NIMx1)UDIMM/ECC
Bypass	2 Pairs	Onboard 2 pairs bypass, others depend on NIM module
NIM Slot	Need to configure riser card	1
Display		
Graphic Controller	Intel® UHD Graphics 630	Intel® HD graphics integrated
Connector	(HDMI x1 Optional)	VGA cable (Optional)
Storage		
HDDs	Internal 2.5" HDD bay x 2 or ( 3.5" HDD bay x 1 can't use with NIM Optional )	Internal 2.5" SATA HDD x 2 or 3.5" SATA HDD x 1 (optional)
CF/CFast/mSATA	mSATA	Optional BOM CFast™ socket or mSATA slot or CF™ socket (optional)
Internal/ Expansion Interface		
PCIe slot	—	Up to PCIe[x8] slot x 2
Mini-Card slot	Mini-Card x 1 (PCIe[x1] + mSATA)	Mini Card x 1
IPMI	—	—
Keyboard and Mouse	—	Pin-header
USB	USB 3.2 Gen 1 x 2	USB 3.2 Gen 1 x 2, Box Header (2.0mm)
Miscellaneous		
RTC		Internal RTC
Watchdog Timer	1~255 steps by software programmable	1~255 steps by software programmable, 1 sec per step
Software Button		GPIO Programmable push button x 1
TPM	(TPM2.0 9665/TPM v1.2 9660 optional)	TPM v1.2 9660 (TPM2.0 9665 optional)
GPIO		4 bits input, 4 bits output
FAN		2
MTBF (Hours)	362,825 Hours	94,241
Color		Black
Environmental Parameters and Dimension		
Power Requirement	220W ATX PSU	250W ATX PSU or 220W ATX PSU
Operating Temperature		32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature		-4°F ~ 140°F (-20°C ~ 60°C)
Operating Humidity		10%~80% relative humidity, non-condensing
Storage Humidity		10%~80% @40°C; non-condensing
Vibration	0.5 Grms/ 5 ~ 500Hz / operation (2.5" Hard Disk Drive) 1.5 Grms/ 5 ~ 500Hz / non operation	0.5 Grms/ 5 ~ 500Hz/ operation (3.5" H.D.D) 1.5 Grms/ 5 ~ 500Hz/ no operation
Shock	TBD	10G peak acceleration (11 m sec. duration), operation 20G peak acceleration (11 m sec. duration), non-operation
Dimension (W X D X H)	16.93" x 7.87" x 1.73"(430mm x 200mm x 44mm)	16.93" x 12.01" x 1.73" (430mm x 305mm x 44mm)
I/O Interfaces		
Front Panel	Power LED x 1, Status LED x 1, HDD Active LED x 1 ,USB 3.2 Gen 1 Ports x 2 - RJ-45 Console x 1	Power LED x 1 Status LED x 1 HDD Active LED x 1 USB 3.2 Gen 1 Ports x 2 RJ-45 Console x 1 Parallel LCM display and 4 keypad x 1 (Optional w/ NIM slot) Software Programmable Switch x 1 Bypass LED X2 RJ45 X8 or RJ45 X6+SFPX 2
Rear Panel	AC Power Input x 1, Power Switch x 1, (Rear Expansion Slot x 1 Optional)	AC Power Input x 1 Power Switch x 1 VGA port (Optional) Rear Expansion Slot x 2 (2 x PCIe [x8] slots, NIM slot will be disabled if PCIe Riser supported)
Note		





Model	FWS-7360	FWS-7851
System	1U Rackmount Network Appliance	
Form Factor	1U Rackmount Network Appliance	
Processor	Intel® C3758 processor SoC, optional support up to 16 core	12th/13th Generation Intel® Core™ Processors
Chipset	SoC	Intel® W680 Chipset (Project Base: Intel® Q670, H610)
System Memory	DDR4 Slot x 4, Support ECC UDIMM/RDIMM upto 256GB	DDR5 SODIMM slots x 2
Network		
Ethernet	Intel®X553 RJ45 x 2, Intel® i211 GbE x 3, SFP+ x 2 from CPU	Intel® I226-V 2.5GbE RJ-45 x 10 (Including 2 pairs Bypass) + Intel® I210-IS GbE SFP x 2, optional: 10GbE SFP+ x 2 (PCIe[x4] via PER-T639
Bypass	Onboard 2 pairs bypass, others depend on NIM module	2 Pairs LAN Bypass 3.1 ( LAN 3-4, LAN 5-6)
NIM Slot	1	1
Display		
Graphic Controller		
Connector	—	HDMI port x 1
Storage		
HDDs	2.5" HDD Bay x 2	2.5" HDD x 2 (default) or 3.5" HDD x 1(if no NIM module present)
CF/CFast/mSATA	Default SATA III port x 2 (MSATA Slot X 2 Optional)	—
Internal/ Expansion Interface		
PCIe slot	PCIe [x8] slot x 1, cannot use w/ NIM	—
Mini-Card slot	Default Mini-Card socket (full-size) x 1 (Mini-Card socket (full-size) with SIM socket x 1 Optional)	M.2 2242 M-Key (PCIe [x4]) x 1
IPMI		—
Keyboard and Mouse		—
USB		USB 3.2 Gen 1 x 2
Miscellaneous		
RTC		Internal RTC
Watchdog Timer		1~255 steps by software programmable
Software Button		GPIO Programmable Button x 1
TPM	Optional TPM v1.2 / TPM v2.0	TPM2.0 SPI
GPIO	4 bits input, 4bits output	Reserved internal pin header 8-bit Digital I/O interface (4-in /4-out)
FAN	System Fan x 1	System Fan x 2
MTBF (Hours)	142,412	TBD
Color		Black
Environmental Parameters and Dimension		
Power Requirement	150W Flex ATX PSU	220W Power
Operating Temperature		32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature		-4°F ~ 140°F (-20°C ~ 60°C)
Operating Humidity		10%~80% relative humidity, non-condensing
Storage Humidity	10%~80% @40°C; non-condensing	0%~80% @40°C; non-condensing
Vibration		0.5 Grms/ 5 ~ 500Hz / operation (2.5" HDD) 1.5 Grms/ 5 ~ 500Hz / non operation
Shock		10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation
Dimension (W X D X H)	16.93" x 12.01" x 1.73" (430mm x 305mm x 44mm)	16.93" x 7.87" x 1.73" (430mm x 200mm x 44mm)
I/O Interfaces		
Front Panel	SFP+ with LED x 2 RJ45 Ethernet Port with LED x 5 USB 3.2 Gen 1 x 2 RJ45 Console x 1 Software Programmable Button x 1 Parallel LCM Display and 4 Keypad x 1 LED for Power/HDD/ Status/ Bypass x 5 NIM Slot x 1 Bypass LED x 2 Power LED x1 HDD LED x1 Status LED x1	Intel® I226-V 2.5GbE RJ-45 x 10 (Including 2 pairs Bypass) + Intel® I210-IS GbE SFP x 2, optional: 10GbE SFP+ x 2 (PCIe[x4] via PER-T639 GbE SFP x 2 (Optional: 10GbE SFP+ x 2 (PCIe[x4] via PER-T639) Power LED x 1 Status LED x 1 HDD Active LED x 1 USB 3.2 Gen 1 x 2 HDMI x 1 RJ-45 Console x 1 LCM display with keypad x 1 Software Programmable Button x 1 NIM Slot x 1
Rear Panel	Power Switch x 1 AC Power Input x 1 Rear Expansion Slot x 1	AC Power Input x 1 Power Switch x1
Note		



## Rackmount Network Appliances



Launching in Q4

Model	FWS-7850	FWS-7370
System		
Form Factor	1U Rackmount Network Appliance	Rackmount Network Appliance
Processor	Intel® Alder Lake-S Processors	Intel® Snow Ridge SoC Processor
Chipset	W680	SoC
System Memory	288-pin UDIMM DDR5 ECC x 4, up to 128GB	DDR4 SO-DIMM up to 128 GB
Network		
Ethernet	RJ45 /SFP Ethernet ports x 2 (Intel i350-AM2 x 1)	Intel®4 x 2.5GbE i226V + 4 x 1GbE by Marvell 88E1543 + 4 x 10GbE SFP+
Bypass	Depend on NIM module expansion	2 Pairs
NIM Slot	NIM slot x 3 Option1: PCIe [x4, x4 ] GEN3.0 x 2 + PCI-E [x8] GEN3.0 x 1 Option2: PCI-E [x4, x4] GEN3.0 x 3)	—
Display		
Graphic Controller		—
Connector	HDMI port x 1	—
Storage		
HDDs	Optional 1: 2.5" HDD Bay x 2 or 3.5" HDD x 1 Option 2: 2.5" HDD Bay x 2 + 3.5" HDD x 1 (Rear expansion not presented) Option 3: Upto 2.5" HDD Bay x 6 (Rear expansion not presented)	2.5" HDD Bay x 2, 1 SATA co-lay with M.2 2242
CF/CFast/mSATA	—	(On board 32G Emmc for optional, up to 128G)
Internal/ Expansion Interface		
PCIe slot	—	1 x PCIe x4 slot with PCIe (x1) x2 signal (Optional for 2 x 2.5GbE RJ45 with PoE support module or Riser card for 1 x NIM)
Mini-Card slot	Mini Card x 1 (PCIe [x1] / USB) Colay mSATA M.2 M key 2280 x 1 (PCIe [x4] or SATA [x1] ) for NVMe colay SATA	1 x M.2 (B Key 3042 & 3052) for 5G [1 x M.2 (K key 2230) for WiFi optional, Co-lay with Mini-Card Half size]
IPMI	IPMI port x 1	—
Keyboard and Mouse	—	2 x USB 2.0 type A port
USB	—	USB 3.2 Gen 1 x 2
Miscellaneous		
RTC		Internal RTC
Watchdog Timer		1~255
Software Button	1	GPIO Programmable push button x 1
TPM	TPM2.0 SPI	SPI TPM v2.0 (optional) nuvoton co-lay infineon SLB 9672VU2.0 FW15.21
GPIO	Reserve internal pin header 8-bit Digital I/O interface (4-in /4-out)	(4 bits input, 4bits output optional)
FAN	Smart Fan x 3	Fan-less/ Fan
MTBF (Hours)	TBD	TBD
Color		Black
Environmental Parameters and Dimension		
Power Requirement	Single AC/DC 1U Flex ATX 220W x 1 or 1U 300W Redundant PSU(optional) x 1	Open Frame PSU 200W
Operating Temperature		32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature	-4°F~ 140°F (-20°C ~ 60°C)	-4°F ~ 158°F (-20°C ~ 70°C)
Operating Humidity	10%~80% relative humidity, non-condensing	10%~90% relative humidity, non-condensing
Storage Humidity	0%~80% @40°C; non-condensing	10 ~ 80% @ 40C, non-condensing
Vibration	0.5 g rms/ 5 ~ 500Hz / operation (2.5" Hard Disk Drive) 1.5 g rms/ 5 ~ 500Hz / non operation	0.5G / 5 ~ 500Hz / operation 1.5G / 5 ~ 500Hz / non-operation
Shock	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation	10G peak acceleration (11 m sec. duration), operation 20G peak acceleration (11 m sec. duration), non-operation
Dimension (W X D X H)	16.93" x 15.75" x1.73"(430mm x 400 mm x 44mm )	Standard: 430mm x 200mm x 44mm(W x D x H)
I/O Interfaces		
Front Panel	RJ45 /SFP Ethernet ports x 2 Power LED x 1 Status LED x 1 HDD Active LED x 1 USB 3.2 GEN1 Ports x 2 HDMI port x 1 RJ-45 Console x 1 LCM display with keypad x 1 Software Programmable Button x 1 NIM Slot x 3 IPMI port x 1	Power LED x 1 Status LED x 1 Bypass LED x 2 Storage Active LED x 1 SW programmable button x 1 USB 2.0 type-A Port x 2 RJ-45 Console Port x 1
Rear Panel	AC Power Input x 1 Power Switch x1 Rear expansion slot x 1 (PCIe [x8]) Optional	AC Power Input Connector x 1 Power Button x 1







Model	NIM-S13B	NIM-S13D	NIM-S13E
Main Specification			
Form Factor	1G Fiber Module		
Main Chipset	Intel® 82580EB (i350-AM4; Optional by request) Ethernet Controller x 2		
Bypass	—	—	2
Host Interface	PCI-Express [x4]		
LAN Port	SFP 1GbE Connector x 8	SFP 1GbE Connector x 4	
Indicator	LED x 8 for Active/Link	LED x 4 for Active/Link	
Qualification	CE/FCC Class A		
Operation Temp.	32°F ~ 104°F (0°C ~ 40°C)		
Dimension	5.71" x 3.03" (145mm x 77mm)		



Model	NIM-C13B	NIM-C13D	NIM-S26B
Main Specification			
Form Factor	1G LAN Module	1G Copper Module	40G Fiber Module
Main Chipset	Intel® 82580EB (i350-AM4; Optional by request) Ethernet Controller x 2	Intel® 82580EB (i350-AM4; Optional by request) Ethernet Controller x 1	Intel® Fortville XL710 Ethernet Controller x 1
Bypass	—	2	—
Host Interface	PCI-Express [x8] (x4 + x4)	PCI-Express [x4]	PCI-Express [x8]
LAN Port	1GbE Connector x 8	1GbE Connector x 4	QSFP 40GbE Connector x 2
Indicator	LED x 8 for Active/Link	LED x 4 for Active/Link	LED x 2 for Active/Link
Qualification	CE/FCC Class A		
Operation Temp.	32°F ~ 104°F (0°C ~ 40°C)		
Dimension	5.71" x 3.03" (145mm x 77mm)		



Launching in Q2

Model	NIM-S26C	NIM-S26D	NIM-C15A
Main Specification			
Form Factor	10G Fiber Module		2.5G Copper Module
Main Chipset	Intel® XL710 Ethernet Controller x 1	Intel® XL710-BM1 Ethernet Controller x 1	Intel i226V by 2x ASM 1806 colay 2806
Bypass	—	—	2
Host Interface	PCI-Express [x8]		PCI-Express Gen2/3 [x2]
LAN Port	SFP+ 10 GbE Connector x 4	SFP+ 10 GbE Connector x 4 SR	2.5G GbE RJ45 x 8
Indicator	LED x 4 for Active/Link		LED x 8 for Active/Link
Qualification	CE/FCC Class A		
Operation Temp.	32°F ~ 104°F (0°C ~ 40°C)		
Dimension	5.71" x 3.03" (145mm x 77mm)		





Model	ICS-6270	ICS-6280
System		
Form Factor		DIN Rail/ Desktop
Processor	Intel® Celeron® Processor N3350 SoC	Intel Atom® Processor X Series, Intel® Pentium®/Celeron® N and J Series Processor, 2~4 cores
System Memory	DDR3L 1866, Single Channel SODIMM x 1 (Max.8GB, up to 1600MHz)	260-pin DDR4 3200MT/s SODIMM with IBECC support x 1
Chipset	—	SoC
Ethernet	Intel® Ethernet Controller I210-AT GbE x 6	Intel® Ethernet Controller I210-AT GbE x 4
Bypass	Supports up to 2 pairs	Supports upto 2 Pairs LAN Bypass (Optional)
BIOS		AMI SPI Flash BIOS
Serial ATA	SATA 6.0 Gb/s port x 1, for 2.5" HDD/SSD	SATA III port x 1 for 2.5"SSD support
CFast/mSATA	CFast™ socket x 1	mSATA (Full size) socket colay SATAIII port x 1
Expansion Interface	Supports Mini-Card slot x 1 with SIM socket	Supports Mini-card slot x 1 with Micro SIM socket
USB	USB 3.2 Gen 1 x 2	USB 3.2 Gen 1 x 2
Serial Port	Supports up to RS-232/422/485 COM Port x 2	Supports up to RS-232/422/485 COM Port x 2
Watchdog Timer	1~255 steps by software programmable	1~255 steps by software programmable
RTC		Internal RTC
System Fan		Fanless
Color	Dark Grey	Black
Power Supply	2 Pin Terminal Block	Dual 2-Pin Phoenix terminal block
Dimension	4.96" x 2.93" x 5.74" (126 x 74.5 x 146mm)	5.12" x 4.96" x 2.83" (130mm x 126mm x 72mm)
Power Requirement	+9 ~ 36V, 2-pin terminal block	Redundant 9~48Vdc power input
MTBF (Hours)	101,292	TBD
Display		
Chipset	Intel® HD Graphics 500	Intel® HD Graphics
Interface	VGA port x 1	HDMI port x 1, VGA port x 1
I/O		
Front I/O Panel	RJ-45 GbE x 6 RS-232/422/485 COM Port x 2 VGA port x 1 USB 3.2 Gen 1 x 2 Software programmable button x 1 Power LED x 1 HDD LED x 1 Status LED x 1 Bypass LED x 2	RJ-45 GbE x 4 RS-232/422/485 COM Ports x 2 HDMI portx1 VGA port x 1 USB 3.2 Gen 1 x 2 Micro SIM slot x 1 Software programmable button x 1 Power LED x 1 HDD LED x 1 Status LED x 1
Rear I/O Panel		DIN Rail/ Wallmount Lock
Top Panel	2-Pin Terminal Block +9~36VDC x 1	2-Pin Terminal Block +9~46VDC x 2
Environmental Parameters and Dimension		
Operating Temperature	-40°F ~ 156°F (-40°C ~ 75°C)	-40°F ~ 167°F (-40°C ~ 75°C)
Storage Temperature		-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity		10% ~ 80% relative humidity, non-condensing
Storage Humidity		10% ~ 80% @40°C; non-condensing
Vibration	0.5 Grms/ 5 ~ 500Hz / operation (SSD) 1.5 Grms/ 5 ~ 500Hz / non operation	0.5 g rms/ 5 ~ 500Hz / operation (2.5" SSD) 1.5 g rms/ 5 ~ 500Hz / non operation
Shock		10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation
Note		



# Focus • Agility • Competitiveness



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# 04



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Model	RTC-710RK	RTC-710AP
System Architecture		
Processor	Rockchip RK3399K Processor (Quad-Core A53 1.6GHz & Dual-Core A72 2.0GHz)	Intel® Celeron® Processor N3350 1.10 GHz, dual core, up to 2.4 GHz Intel® Pentium® Processor N4200 1.10 GHz, quad core, up to 2.5 GHz
Operating System	Android 8.1 Android 11 (Optional, no NFC function)	Windows® 10 IOT Enterprise SAC
Memory	Onboard LPDDR4 2GB (Default) / 4GB	Onboard LPDDR4, 4GB (Default)/8GB
Storage	eMMC 16GB (Default) / 32GB / 64GB	eMMC 64GB (Default)/128GB
Display	7" WXGA (1280x800) 700-nit TFT LCD; With Projected Capacitive Multi-Touch Screen	
I/O Port	SIM card slot x 1, USB 3.2 Gen 1 Type-C x 1 Audio jack x 1 (3.5mm), DC-in jack x 1 Micro-SD card slot x 1, USB 2.0 Type-A x 1 UART Port x 1 (Via I/O Module) 10/100/1000 Base-T RJ45 x 1 (Via I/O Module)	SIM Card Slot x 1, USB 3.2 Gen 1 (Type-C) x 1 Audio Jack x 1 (3.5mm), DC-in Jack x 1 MicroSD Card Slot x 1, USB 2.0 (Type-A) x 1 RS-232 COM Port x 1 (via I/O Module)(Cannot co-use with HF RFID) 10/100/1000 Base-T RJ-45 x 1 (via I/O Module)
Communication	Wi-Fi 802.11 b/g/n, Bluetooth v4.2 (EDR + BLE)	Wi-Fi 802.11 b/g/n, Bluetooth v5.1
Navigation	GPS + GLONASS (Default), BeiDou (Optional), External Antenna (Optional)	Up to 3 GNSS, GPS + Galileo (Default), GLONASS, BeiDou (Optional)
WWAN(optional)	LTE via M.2 slot (Optional); Hot-swappable Battery can not be used when LTE module is installed.	
Camera	8MP front camera, 8MP rear camera with flash	2MP Front Camera, 8MP Rear Camera with flash
Sensor	G-sensor, E-compass, Gyro-sensor, Light-sensor	
Expansion Slot	M.2 slot x 1, Docking connector: USB 3.2 Gen 1 x 1	
Barcode Scanner (Optional)	2D Barcode scanner, OPTICON MDI-4100-USB via I/O module (Optional)	
HF RFID (Optional)	ISO 15693 (R/W), ISO 18092 (R/W), ISO 14443-A (R/W), ISO 14443-B (R/W), Depend on card type	ISO 15693 (R/W), ISO 18092 (R/W), ISO 14443-A (R/W), ISO 14443-B (Only Read UID), dependent on card type
Audio	Speaker x 1	
Physical Key	F1 (Audio On/Off), F2 (Screenprint), F3 (Barcode Scanner Trigger), Volume Up, Volume Down	F1 (Ctrl+Alt+Del as Soft Reboot), F2 (Screenprint), F3 (Barcode Scanner Trigger), Volume Up, Volume Down
Mechanical		
Color	Dark Gray	
Dimension (W x H x D)	8.65" x 5.46" x 0.94" (219.8mm x 138.8mm x 23.9mm)	
Gross Weight	1.54 lb (0.7 Kg) based on configurations	
Environmental		
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C) for high-brightness version	
Storage Temperature	-22°F ~ 158°F (-30°C ~ 70°C)	
Humidity	MIL-STD-810G Method 507.5	
Environmental Sealing	IP65	
Vibration	MIL-STD-810G Method 514.6	
Drop	MIL-STD-810G Method 516.6 Procedure IV, Height of Drop: 150 cm 5 ft	
Shock	MIL-STD-810G	—
ESD	Air charge: +/- 8KV, Contact charge: +/- 4KV	Air charge: +/- 8KV, Contact charge: +/- 4KV
Certifications and Standards	UL62368-1, CE, FCC, TELEC	CE, FCC, TELEC
Power Supply		
AC / DC Adapter	AC 100V ~ 240 V, 50Hz ~ 60Hz, Output: 12V/3.34A/40W	
Battery Life	Li-ion Battery 8-hour battery life based on test configurations	
Master Battery	7.2V, 4540mAh, 32.7W	
Slave Battery	Hot-swappable battery: 7.4V, 1530mAh, 11.3W (Optional)	
Display		
LCD	7" TFT-LCD / 16:10, with LED backlight	
Resolution	1280 x 800	
Maximum Color	—	
Dot Size	0.03925mm (H) x 0.11775mm (V)	
Brightness	700 / 300 nits	700 nits
Viewing Angle	Horizontal: 178° (Typ.), Vertical: 178° (Typ.)	
Touch Screen		
Touch Type	7" Projected Capacitive Multi-Touch Screen (700 nits with 10 points)	
Light Transmission	Min. 85%	
Note		





Model	RTC-1010	RTC-1010RK
System Architecture		
Processor	Intel® Celeron® Processor N3350 1.10 GHz, dual core, up to 2.4 GHz; Intel® Pentium® Processor N4200 1.10 GHz, quad core, up to 2.5 GHz	Rockchip RK3399 Processor (Quad-Core Arm® Cortex®-A53, 1.6 GHz & Dual-Core Arm® Cortex®-A72, 2.0 GHz)
Operating System	Windows® 10 IOT Enterprise SAC	Android™ 11
Memory	Onboard DDR3L 4GB (Default)/8GB	Onboard LPDDR4 Memory, 2GB/4GB (Default)
Storage	eMMC 64GB (Up to 256GB, Optional)	eMMC 64GB (Default)/128GB
Display	10.1" WXGA (1280 x 800) 800 nit/300 nit TFT LCD with Projected Capacitive Multi-Touch Screen	10.1" WXGA (1280 x 800) 800-nit/300-nit TFT LCD with Projected Capacitive Multi-Touch Screen
I/O Port	Micro HDMI Port x 1, SIM Card Slot x 1 MicroSD Card Slot x 1, Audio Jack x 1 (3.5mm) USB 3.2 Gen 1 x 2 (USB Type-C x 1), USB 2.0 x 2 DC-in Jack x 1, RS-232/422/485 COM Port x 1 10/100/1000 Base-T RJ-45 x 1 Smart Card Reader x 1 (Optional, Without IP protection)	Micro HDMI Port x 1, SIM Card Slot x 1 MicroSD Card Slot x 1, Audio Jack x 1 (3.5mm) USB 3.2 Gen 1 x 2 (USB Type-C x 1), USB 2.0 x 2 DC-in Jack x 1, RS-232/422/485 COM Port x 1 10/100/1000 Base-T RJ-45 x 1
Communication	Wi-Fi 802.11 a/b/g/n/ac, Bluetooth v5.1 (EDR + BLE), Intel AC9260	Wi-Fi 802.11 a/b/g/n/ac, Bluetooth v5.2 (EDR + BLE)
Navigation	Up to 3 GNSS, GPS + Galileo (Default), GLONASS, BeiDou (Optional)	GPS + GLONASS (Default), BeiDou (Optional)
WWAN(optional)	LTE via Mini Card slot (Optional)	LTE via M.2 slot, B Key 3042 (Optional)
Camera	2MP Front Camera, 8MP Rear Camera with flash	8MP Front Camera, MIPI I/F, 8MP Rear Camera with flash, MIPI I/F
Sensor	G-sensor, E-compass, Gyro-sensor, Light-sensor	G-sensor, E-compass, Gyro-sensor, Light-sensor
Expansion Slot	Inside M.2 slot x 1 (For WiFi module) Mini-card slot x 1 (For LTE module) Docking connector: USB 2.0 x 1	M.2 3042 B-Key (LTE) Docking connector: USB 2.0 x 1
Barcode Scanner (Optional)	2D Barcode scanner, OPTICON MDI-4100-USB (Optional)	
HF RFID (Optional)	ISO 15693 (R/W), ISO 18092 (R/W), ISO 14443-A (R/W), ISO 14443-B (Only Read UID), Depend on card type	
Audio	Speaker x 1	
Physical Key	F0 or Windows (Windows Start Key), F1 (BCR Trigger Button (When BCR is enabled)), F2 (Screenprint), F3 (Ctrl+Alt+Del as Soft Reboot), Volume Up (Speaker Volume Up), Volume Down (Speaker Volume Down)	F0, F1 (BCR Trigger Button (When BCR is enabled)), F2 (Screenprint), F3 (Audio On/Off), Volume Up (Speaker Volume Up), Volume Down (Speaker Volume Down)
Mechanical		
Color	Black & Dark Grey	
Dimension (W x H x D)	10.71" x 7.48" x 0.80" (272.0mm x 190.0mm x 20.4mm)	
Gross Weight	2.2 lb. (1.0Kg) based on configurations	
Environmental		
Operating Temperature	-4°F ~ 122°F (-20°C ~ 50°C)	
Storage Temperature	-67°F ~ 158°F (-55°C ~ 70°C)	
Humidity	0% ~ 90% relative humidity, non-condensing	
Environmental Sealing	IP65	
Vibration	MIL-STD-810G-514.6 Procedure I Cat.24, Fig 514.6E-1 & 514.6E-2 (Unit is non-operating) ASTM 4169-99 Truck Assurance Level II, Schedule E (Unit is non-operating)	MIL-STD-810H: 2019, 514.8 Procedure I, Table 514.8C-IV Category 4 common carrier 5~500Hz X, Y, Z axes, 1-hour duration for each axis
Drop	MIL-STD-810G-516.6, Procedure IV Drop height: 122 cm Number of Drop: 26 times, for all surfaces, edges and corners Condition: Based on 2" plywood over concrete	MIL-STD-810H: 2019, 516.8 Procedure I Drop height: 122cm Number of Drop: 26 times, for all surfaces, edges and corners Condition: Based on 2" plywood over concrete
Shock	MIL-STD-810H: 2019, 516.8 Procedure V	
ESD	Air charge: +/- 8KV, Contact charge: +/- 4KV	
Certifications and Standards	UL60950-1, CE, FCC	CE, FCC, TELEC
Power Supply		
AC / DC Adapter	AC 100V ~ 240V, 50Hz ~ 60Hz, Output: 12V/3A/36W	
Battery Life	Li-ion Battery 8-hour battery life based on test configurations	
Master Battery	Hot-swappable battery: 14.4V, 2270mAh, 32.7W	
Slave Battery	7.4V, 1530mAh, 11.3W	
Display		
LCD	10.1" TFT-LCD Display	
Resolution	1280 x 800	
Maximum Color	16.7M	
Dot Size	0.1692mm (H) x 0.1692mm (V)	
Brightness	300 nits (800 nits, Optional)	
Viewing Angle	Horizontal: 170°, Vertical: 170° (Typical)	
Touch Screen		



# Rugged Mobile and Panel PC Solutions

## Rugged Tablet Computers



Model	RTC-1020	RTC-1200
System Architecture		
Processor	11th Gen Intel® Core™/Celeron® Processor SoC Intel® Core™ i5-1145G7E, Intel® Core™ i3-1115G4E, Intel® Celeron® 6305E	Intel® Core™ i7000 / 7300U Dual Core up to 3.9GHz Intel® Celeron® 3965U Dual Core 2.2GHz Processor
Operating System	Windows® 10 IOT Enterprise SAC	Windows® 10 IoT Enterprise 64bit (Default)
Memory	Onboard LPDDR4X, 8GB (Default)/16GB/32GB	DDR4 SO-DIMM Socket x 1, up to 16GB
Storage	M.2 SSD, 64GB/128GB/256GB (Default: 64GB)	M.2 (NGFF) SSD, 64GB (Default) / 128GB / 256GB
Display	10.1" FHD (1920 x 1200) 450 nit/800 nit TFT LCD with Projected Capacitive Multi Touch Screen	11.6" FHD (1920x1080) 500-nit / 850-nit TFT-LCD With Projected Capacitive Multi-Touch Screen
I/O Port	Micro-HDMI port x 1, SIM card slot x 1, Micro-SD card slot x 1, Audio jack x 1 (3.5mm), USB 3.2 Gen 2 x 2 (Type-C x 1, Type-A x 1), USB 2.0 x 2, DC-in Jack x 1, RS-232/422/485 COM Port x 1, 10/100/1000 Base-T RJ45 x 1	HDMI port x 1, SIM card slot x 1, Micro-SD card slot x 1 Audio jack x 1 (3.5mm), USB 3.2 Gen 1 x 2 (USB Type-C x 1), USB 2.0 x 2, DC-in Jack x 1, RS-232/422/485 COM Port x 1 10/100/1000 Base-T RJ45 x 1
Communication	Wi-Fi 802.11 a/b/g/n/ac , Bluetooth v5.1 (EDR + BLE), Intel AC9260	Wi-Fi 802.11 b/g/n, Bluetooth v5.1
Navigation	Up to 3 GNSS, GPS + Galileo (Default), GLONASS, BeiDou (Optional)	GPS, GLONASS ==> Located in I/O board, PER-T407 143NEOM800: u-blox NEO-M8Q-0
WWAN(optional)	LTE via M.2 slot (Optional)	LTE via mini-card slot (Optional)
Camera	5MP front camera, 8MP rear camera with flash	2MP front camera, 8MP auto-focus rear camera with flash
Sensor	G-sensor, E-compass, Gyro-sensor, Light-sensor	G-sensor, E-compass, Gyro-sensor, Light-sensor
Expansion Slot	M.2 M-Key for SSD (PCIe [x4]/ SATA 6Gb/s), M.2 E-Key for WiFi/BT (PCIe [x1]/ USB 2.0), M.2 B-Key for LTE (USB 2.0), Docking Connector: USB 3.2 Gen 2 x 1	Mini-card slot x 1 (For LTE module), Docking connector x 1, GNSS antenna Pass-through connector x 1, WWAN antenna Pass-through connector x 1
Barcode Scanner (Optional)	2D Barcode scanner, OPTICON MDI-4100-USB (Optional)	2D Barcode scanner, OPTICON MDI-4100-USB (Optional)
HF RFID (Optional)	ISO 15693 (R/W), ISO 18092 (R/W), ISO 14443-A (R/W), ISO 14443-B (Only Read UID), Depend on card type	ISO 15693 (R/W), ISO 18092 (R/W), ISO 14443-A (R/W), ISO 14443-B (Only Read UID), Depend on card type
Audio	Speaker x 1	Speaker x 1
Physical Key	F0 or Windows (Windows Start Key), F1 (BCR Trigger Button (When BCR is enabled)), F2 (Screenprint), F3 (Ctrl+Alt+Del), Volume Up (Speaker Volume Up), Volume Down (Speaker Volume Down)	F0 or Windows (Windows Start Key), F1 (Ctrl+Alt+Del & BCR Trigger Button (When BCR is enabled)), F2 (Touch Mode Switch), F3 (Screenprint), Volume Up (Speaker Volume Up), Volume Down (Speaker Volume Down)
Mechanical		
Color	Black & Dark Grey	Gray & Black
Dimension (W x H x D)	10.71" x 7.48" x 0.94" (272.0mm x 190.0mm x 24.0mm)	12.36" x 7.87" x 0.96" (310.4 mm x 200.0 mm x 24.5 mm)
Gross Weight	3.3 lb. (1.5Kg) based on configurations	3.3 lbs (1.5 Kg)
Environmental		
Operating Temperature	-4°F ~ 122°F (-20°C ~ 50°C)	-4°F ~ 140°F (-20°C ~ 60°C ) Charging Temperature 50°F ~ 113°F (10°C ~ 45°C)
Storage Temperature	-22°F ~ 158°F (-30°C ~ 70°C)	
Humidity	0% ~ 90% relative humidity, non-condensing	5% ~ 90% relative humidity, non-condensing
Environmental Sealing	IP65	
Vibration	MIL-STD-810H: 2019, 514.8 Procedure I, Table 514.8C-I Category 4 common carrier	MIL-STD-810G-514.6 Procedure I Cat.24, Fig 514.6E-1 & 514.6E-2
Drop	MIL-STD-810H: 2019, 516.8 Procedure I Drop height: 122cm Number of Drop: 26 times, for all surfaces, edges and corners Condition: Based on 2" plywood over concrete	MIL-STD-810G Method 516.6 Procedure IV -Height of Drop: 122cm (48 inch; 4ft) -Number of Drop: 26 times, for all surfaces, edges and corners Condition: Based on 2" plywood over concrete
Shock	MIL-STD-810H: 2019, 516.8 Procedure I	—
ESD	Air charge: +/- 8KV, Contact charge: +/- 4KV	
Certifications and Standards	CE, FCC, TELEC	CE/LVD: EN60950-1, CE, FCC
Power Supply		
AC / DC Adapter	AC 100 ~ 240 V, 50 ~ 60 Hz, Output: 19W/ 3.42A/ 65W	
Battery Life	Li-ion Battery 6-hour battery life based on test configurations	
Master Battery	Hot-swappable battery: 14.4V, 2270mAh, 32.7W 14.8V, 3450mAh, 51.1W (Optional)	Hot-swappable battery: 14.4V, 2270mAh, 32.7W
Slave Battery	Hot-swappable battery: 14.4V, 2270mAh, 32.7W 14.8V, 3450mAh, 51.1W (Optional)	Hot-swappable battery: 14.4V, 2270mAh, 32.7W
Display		
LCD	10.1" TFT-LCD Display	11.6" TFT-LCD Display
Resolution	1920 x 1200	
Maximum Color	16.7M	
Dot Size	—	0.117 (H) x 0.117 (V) mm
Brightness	450 nits (800 nits, Optional)	500 nits (850 nits, Optional)
Viewing Angle	Horizontal: 178° (Typical), Vertical: 178° (Typical)	
Touch Screen		
Touch Type	Projected Capacitive Multi-Touch Screen (PCT)	Projected Capacitive Multi-Touch Screen (PCT) Gloves / Finger mode Switchable by F2
Light Transmission	Min. 87%	Min. 87% (ASTM D1003; Wavelength = 550 nm)







Model	RDS-0710	RDS-411
System		
I/O	Front-facing I/Os: USB 2.0 x 2 Downward-facing I/Os: USB 3.2 Gen 1 x 2 RS-232 x 1 RJ45 GbE x 1	Front-facing I/Os: USB 2.0 x 2 with protection cover Downward-facing I/Os: USB 2.0 x 2 RS-232 x 1 (Two: Optional) RJ45 GbE x 1
DC Input	Phoenix connector: DINKLE ECH381H-03P Wide Voltage Input: DC 9V to 36V Mating connector: DINKLE EC381V-03P	Phoenix connector: DINKLE ECH381H-03P Wide Voltage Input: DC 9V to 36V Mating connector: DINKLE EC381V-03P
LED Indicator	Orange: DC in w/o Tablet; Blue: DC in w/ Tablet	
Others	Anti-theft lock with key & VESA mount support (75x75)	
Mechanical		
Color	Black	Black
Construction	Metal	PC
Dimensions (W x H x D)	8.07" x 4.96" x 2.96" (205mm x 126mm x 75mm)	10.08" x 7.28" x 2.96" (256mm x 185mm x 75mm)
Gross Weight	1.8 lb (0.82Kg)	6.17 lb (2.8 Kg)
Environmental		
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C)
Storage Temperature	-22°F ~ 158°F (-30°C ~ 70°C)	14°F ~ 140°F (-10°C ~ 60°C)
ESD	Air charge: +/- 8KV, Contact charge: +/- 4KV	
EMC/ Safety	CE / FCC Class A	
Power Supply		
AC/DC Adapter	AC 100V ~ 240V, 50Hz ~ 60Hz, Output: 12V/3.34A/40W; DC connector: DINKLE EC381V-03P	
DC/DC Adapter	—	



Model	RDS-241V	RDS-1020
System		
I/O	Front-facing I/Os: USB 2.0 x 2 with protection cover Downward-facing I/Os: USB 3.2 Gen 1 x 2 RS-232 x 2 (One with 5V in Pin 9 & the Other with GPIO x 8) RJ45 GbE x 1 M12 DC-in x 1	Front-facing I/Os: USB 2.0 x 2 Downward-facing I/Os: USB 3.2 Gen 1 x 2 RS-232 x 1 RJ45 GbE x 1
DC Input	M12 5P Female (DC 9V to 36V)	Phoenix connector: DINKLE ECH381H-03P Wide Voltage Input: DC 9V to 36V Mating connector: DINKLE EC381V-03P
LED Indicator	Orange: DC in w/o Tablet; Blue: DC in w/ Tablet	
Others	Anti-theft lock with key & VESA mount support	
Mechanical		
Color	Black	
Construction	PC	Metal
Dimensions (W x H x D)	10.28" x 6.50" x 2.96" (261mm x 165mm x 75mm)	3.18" x 10.12" x 2.96" (125mm x 257mm x 75mm)
Gross Weight	6.44 lb (2.92 Kg)	2.2 lb. (1Kg)
Environmental		
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)	0°C ~ 50°C (32°F ~ 122°F)
Storage Temperature	14°F ~ 122°F (-10°C ~ 50°C)	-10°C ~ 60°C (14°F ~ 140°F)
ESD	Air charge: +/- 8KV; Contact charge: +/- 4KV	
EMC/ Safety	CE / FCC Class B	
Power Supply		
AC/DC Adapter	AC 100V ~ 240V, 47Hz ~ 63Hz Output: 19V/4.74A/90W	AC 100 ~ 240 V, Output: 19V/ 6.32A/ 120W DC connector: 3P phoenix.3.81mm
DC/DC Adapter	—	



## Rugged Mobile and Panel PC Solutions

## Rugged Tablet Computers : Accessories



Model	RTC-1010-HS-000	RTC-1010-SB-000	RTC-1010-VMP-000
Description	Hand Strap for RTC-1010, RTC-1010M, RTC-1010RK, RTC-1020	Shoulder Belt for RTC-1010, RTC-1010M, RTC-1010RK, RTC-1020	VESA Mount Plate for RTC-1010M
Mechanical			
Color	Black		
Dimensions (W x H x D)	9.13" x 3.62" x 1.18" (232mm x 92mm x 30mm)	41.34" x 2.56" x 0.20" (1050mm x 65mm x 5mm)	10.85" x 7.55" x 0.98" (275.6mm x 191.7mm x 25mm)



Model	RTC-1010-DTDPA-002	RTC-1010-DTDPA-001	RTC-1200HSP01-000
Description	DC-To-DC Power Adapter, Flying Wires for RTC-1010, RTC-1010M, RTC-1010RK	DC-To-DC Power Adapter, Cigarette Plug for RTC-1010, RTC-1010M, RTC-1010RK	Hand Strap for RTC-1200
Mechanical			
Color	Black		
Dimensions (W x H x D)	Adapter case: 1.57" x 4.13" x 1.04" (40mm x 105mm x 26.5mm) Plug side length: 47.24" ± 1.18" (1200mm ± 30mm) Flying Wires side length: 23.62" ± 1.18" (600mm ± 30mm) Total length: 75" ± 2.36" (1905mm ± 60mm)	1.57" x 4.13" x 1.04" (40mm x 105mm x 26.5mm) Plug side length: 47.24" ± 1.18" (1200mm ± 30mm) Cigarette Plug side length: 23.6" ± 1.9" (600mm ± 50mm) Total length: 75" ± 1.9" (1905mm ± 50mm)	10.24" x 3.62" x 1.18" (260mm x 92mm x 30mm)



Model	RTC-1200BLT01-000	RTC-1200BLT02-000	RTC-1200BKT01-000
Description	Shoulder Belt for RTC-1200		VESA Mount Bracket for RTC-1200
Mechanical			
Color	Black		
Dimensions (W x H x D)	1050 x 65 x 5 mm	450 x 350 x 50 mm	180 x 203.3 x 45.4 mm



Model	RTC-1010BKT-000	RTC-1010-SBG-000
Description	Bracket for RTC-1010, RTC-1010M, RTC-1010RK	Shoulder Bag for RTC-1010, RTC-1020, RTC-1200, RTC-1010RK
Mechanical		
Color	Black	Black
Dimensions (W x H x D)	103.1 x 228.4 x 49 mm	Bag: 330 x 245 x 50 mm Shoulder strap: Length: 710 mm (Min) ~ 1310 mm (Max)





Model	RBC-1200-000	RTC-1200BAT01-000
Description	4-bay Battery Charger for RTC-1010, RTC-1010M, RTC-1010RK, RTC-1020, RTC-1200	Battery Pack for RTC-1010, RTC-1010M, RTC-1200, RTC-1010RK, RTC-1020
Mechanical		
Color		Black
Dimensions (W x H x D)	5.5" x 2.6" x 4.7" (140.5mm x 68.4mm x 121.87mm)	2.8" x 4.3" x 0.5" (71.5mm x 110mm x 13.3mm)
Power Supply		
AC/DC Adapter	AC power input:100-240V, 50Hz-60Hz, 65W, DC power output: 19V/3.42A	14.4V, 2270mAh, 32.7W



# Rugged Mobile and Panel PC Solutions

## RISC Boards



Model	RICO-3288	RICO-3288MINI
System		
Form Factor	Pico-ITX (100mm x 72mm)	
CPU	Rockchip RK3288	
GPU	ARM Cortex™-A17 Quad-core 1.6 GHz	
Graphics	Mali-T764	
Memory Capacity	Onboard DDR3L 2GB/4GB (Optional)	Onboard DDR3L 2GB
Storage/SSD	16GB eMMC and Micro-SD card	16GB eMMC
Operating System	Android 9.0 / Debian 10	Android 9.0 / Debian
Kernel	Kernel 4.4	
Watchdog Timer	Integrated	
Power Requirement	+12V DC input, Optional 7.4V battery	+12V DC input
Power Consumption (Typical)	0.6A@12V, full load, Quad-core CPU	0.6A@12V, full load, Quad-core CPU
Dimension	3.94" x 2.84" (100mm x 72mm)	
Gross Weight	0.44 lb (0.2 Kg)	0.22 lb (0.1 Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)(-20°C~60°C: Optional)	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	80,000	
Certification	CE/FCC	
Display		
HDMI	HDMI (1.4) up to 4K x 2K @60Hz	
eDP	Up to 2560 x 1440 @60Hz	—
LVDS	Support 18/24-bit up to 1920 x 1080 @60Hz	—
MIPI	Up to 2560 x 1440 @60Hz	—
RF Function		
WiFi	802.11 a/b/g/n/ac	—
BT	Bluetooth V4.2 + EDR	—
I/O		
Ethernet	GbE x 1	GbE x 1
USB Port	Micro-USB OTG x 1 USB 2.0 Type A x 2 USB2.0 Pin header x 1 (Integrated)	Micro-USB OTG x 1 USB 2.0 Type A x 2
Serial Port	RS-232/422/485 x 1 RS-232 Pin header x 1 Debug port pin header x 1	—
Audio	2.5W (by 4Ω) Speaker/ Microphone/ Earphone	—
GPIO	8-bit (4-in, 4-out)	
Expansion Slot	Full-size mini-PCIe slot x 1 (For 3G/4G card)	—
SIM Slot	Nano-SIM	—
SD Socket	Support Micro-SD card	—
Camera	—	
Note		



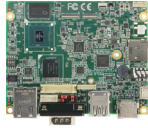


Model	RICO-3399	RICO-3568
System		
Form Factor	Pico-ITX	Pico-ITX Plus (100mm x 80mm)
CPU	Rockchip RK3399 Cortex™-A72 Dual-core 1.8GHz and Cortex™-A53 Quad-core 1.4GHz	Rockchip RK3568 Quad-Core Arm® Cortex®-A55 Processor NPU: 0.8 TOPS
GPU	Mali-T864	Arm® Mali™-G52 GPU
Graphics	Video Decode: MPEG-1, MPEG-2, MPEG-4, H.263, H.264, H.265, VC-1, VP8, VP9, MVC Video Encode: H.264 UP to HP@level4.1, MVC and VP8	Video Encode: 1080P @60fps H.264/H.265 Video Decode: 4K@60fps H.264/H.265/AV1 4KP60 AVS2/VP9 1080P MPEG1/VP8
Memory Capacity	Onboard LPDDR3 2GB/4GB (Optional)	Onboard LPDDR4 2GB/4GB/8GB (Optional)
Storage/SSD	16GB eMMC and Micro-SD card	16GB eMMC and Micro-SD card Full-size mini-PCIe slot x 1 (mSATA / USB)
Operating System	Android 8.1 / Debian	Android™ 12 Debian® 10
Kernel	Kernel 4.4	TBD
Watchdog Timer		Integrated
Power Requirement	+12V DC input	+12V DC input AT: Default, ATX: Optional
Power Consumption (Typical)	0.6A@12V, full load, Hexa-core CPU	TBD
Dimension	3.94" x 2.84" (100 mm x 72 mm)	3.94" x 3.15" (100mm x 80mm)
Gross Weight		0.44 lb (0.2 Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C): Normal -4°F ~ 140°F (-20°C ~ 60°C): Optional
Storage Temperature		-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity		0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	80,000	TBD
Certification		CE/FCC
Display		
HDMI	HDMI (2.0) up to 4K x 2K @60Hz	HDMI 2.0, up to 4K x 2K @60Hz
eDP	Up to 4K x 2K @60Hz	eDP 1.3, up to 2560 x 1600 @60Hz 18/24-bit LVDS, up to 1280 x 800 @60Hz
LVDS	—	JP2, 3.3V/5V: LVDS Power Selection JP3, 5V/12V: Backlight Power Selection LCD Backlight connector
MIPI	—	Up to 2048 x 1536 @60Hz for Dual-MIPI Mode
RF Function		
WiFi	802.11 a/b/g/n/ac	Onboard 802.11 a/b/g/n/ac ANT1 for Antenna
BT	Bluetooth V4.2 + EDR	Bluetooth V5.0 + EDR
I/O		
Ethernet	GbE x 1	GbE x 2 RJ-45 x 2 (Onboard x 1 + T650 Daughter Board RJ-45 Port or T650 Wide-Voltage Board RJ-45 Port)
USB Port	USB 3.2 Gen 1 Type C OTG x 1 USB 3.2 Gen 1 (Bottom)/USB 2.0 (Top) dual port x 1 USB 2.0 Pin Header x 1 (Integrated)	USB 3.2 Gen 1 OTG (Type-C) x 1 USB 3.2 Gen 1 x 1 USB 2.0 x 2 (Type-A x 1, Pin Header with Integrated USB, I2C, 5V x 1)
Serial Port	RS-232/422/485 x 1 RS-232 Pin header x 1 Debug port pin header x 1	RS-232/422/485 x 1 JP1, 5V/12V: RS-232/422/485 Voltage Output Selection RS-232 / Debug port 7-pin wafer x 1 CN3: UART (Tx/Rx only), I2C, USB, Others
Audio	2.5W (by 4Ω) Speaker/ Microphone/ Earphone	Microphone/ Earphone (3.5mm)
GPIO	8-bit (4-in, 4-out)	GPIO x 8, 2x6 Wafer x 1
Expansion Slot	Full-size mini-PCIe slot x 1 (For 3G/4G card)	Full-size mini-PCIe slot x 1 (mSATA / USB) Connect to Daughter board: 40-pin FPC connector x 1
SIM Slot	Nano-SIM	Nano-SIM, Push-Push type with tray
SD Socket	Support Micro-SD card	Micro-SD card, Push-Push type
Camera		
Note		



# Rugged Mobile and Panel PC Solutions

## RISC Boards



Model	RICO-MX8P
System	
Form Factor	Pico-ITX Plus (100mm x 80mm)
CPU	NXP i.MX 8M Plus Quad-Core ARM® Cortex®-A53 Processor, 1.8GHz ARM® Cortex®-M7, 800MHz Processor for Low-Power Processing NPU: 2.3 TOPS (Optional)
GPU	GC7000 UltraLite: 3D GPU (2 shaders) OpenGL ES 3.1, Vulkan, OpenCL 1.2 GC520L: 2D GPU
Graphics	Video Processing Unit (VPU): • 1080p60 H.265, VP9 decoder • 1080p60 H.264, VP8 decoder • 1080p60 H.265, H.264 encoder
Memory Capacity	Onboard LPDDR4 2GB/4GB/8GB (Optional)
Storage/SSD	16GB eMMC and Micro-SD card
Operating System	Debian 10
Kernel	Kernel 4.19 (Debian 10)
Watchdog Timer	Integrated
Power Requirement	+12V DC Input
Power Consumption (Typical)	TBD
Dimension	3.94" x 3.15" (100mm x 80mm)
Gross Weight	0.44 lb. (0.2Kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC
Display	
HDMI	HDMI 2.0 (Type-A)
eDP	N/A
LVDS	4-Lane/8-Lane LVDS Interface JP2, 5V/12V: Backlight Power Selection JP3, 3.3V/5V: LVDS Power Selection LCD Backlight Connector
MIPI	4-Lane MIPI DSI Interface
RF Function	
WiFi	Supported via M.2 2230 E-Key (Optional, PCIe 3.0 [x1] I/F)
BT	Supported via M.2 2230 E-Key (Optional, PCIe 3.0 [x1] I/F)
I/O	
Ethernet	Onboard RJ45 GbE Port x 1 RJ45 GbE Port x 1 (via Daughter Board, T650 or T668)
USB Port	USB 3.2 Gen 1 x 2 (Type-C OTG x 1, Type-A x 1) USB 2.0 x 1 (Type-A)
Serial Port	RS-232/422/485 x 1 JP1, 5V/12V: RS-232/422/485 Voltage Output Selection COM Port Setting via S/W RS-232 Pin Header x 1 Debug Port x 1 UART x 2 (Tx/Rx Only)
Audio	Audio Combo Jack x 1 (3.5mm)
GPIO	GPIO x 8, 2x6P Wafer x 1
Expansion Slot	Full Size Mini-PCIe Slot x 1 (For LTE, USB I/F) 40-Pin FPC Connector x 1 (Connect to Daughter Board)
SIM Slot	Push-Push Nano-SIM Slot with Tray
SD Socket	Push-Push Micro-SD Card Slot x 1
Camera	4-Lane MIPI CSI Interface
Note	

Model	PER-T650
System	
Description	I/O Module with 9V ~ 36V Input, PoE x 1, CANBus x 2, USB 2.0 x 2
Features	POE: Supports 802.3at CANBus x 2 (For RICO-3568 x 1) Wide-Voltage Input: 9V ~ 36V USB 2.0 x 2 Battery Charger (Reserved) Small Size: 3.9" x 3.1" (100mm x 80mm)





Model	BOXER-RK88	BOXER-RK99
System		
CPU	Rockchip RK3288 ARM Cortex™-A17 Quad-core 1.6GHz	Rockchip RK3399 ARM Cortex™-A72 Dual-core 1.8GHz and Cortex™-A53 Quad-core 1.4GHz
GPU	Mali-T764	Mali-T864
Chipset	—	
Graphics	Video Decode: MPEG-1, MPEG-2, MPEG-4, H.263, H.264, AVS, VC-1, VP8, MVC Video Encode: H.264 (BP@level4.0, MP@level4.0, HP@level4.0), MVC and VP8	Video Decode: MPEG-1, MPEG-2, MPEG-4, H.263, H.264, H.265, VC-1, VP8, VP9, MVC Video Encode: H.264 UP to HP@level4.1, MVC and VP8
System Memory	DDR3L 2GB/4GB (Optional)	LPDDR3 2GB/4GB (Optional)
Display Interface	HDMI (1.4)	HDMI (2.0) up to 4K x 2K @ 60Hz
Storage/SSD	16GB eMMC and Micro-SD card	
I/O	Micro-SD Card Slot x 1 HDMI (1.4) Port x 1 Antenna Connector for WiFi 802.11 b/g/n, BT V4.2 Antenna Connector for LTE (Optional) GbE: RJ45 x 1 USB 2.0: Micro-USB OTG x 1, Type A x 2 RS-232/422/485 x 1, RS-232 x 1 (Optional)	Micro-SD Card Slot x 1 HDMI (2.0) Port x 1 Antenna Connector for WiFi 802.11 b/g/n, BT V4.2 Antenna Connector for LTE (Optional) GbE: RJ45 x 1 USB 3.2 Gen 1: Type C OTG x 1, Type A x 1 USB 2.0: Type A x 1 RS-232/422/485 x 1, RS-232 x 1 (Optional)
Expansion	mPCIe Slot x 1 for LTE module	
Indicator	Power LED x 1	
OS Support	Android 9.0	Android 8.1
Power Supply		
Power Requirement	+12V DC input	
Mechanical		
Mounting	VESA mount, 75mm x 75mm	
Dimension (W x D x H)	4.07" x 3.78" x 1.97" (103.4 mm x 96 mm x 50 mm)	
Gross Weight	1.1 lb (0.5 Kg)	
Net Weight	0.66 lb (0.3 Kg)	
Environmental		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	
Storage Humidity	0% ~ 90% relative humidity, non-condensing	
Anti-Vibration	—	
Certification	CE/FCC/IC	
Note		





Model	ACP-1108	ACP-1106	ACP-1105
System			
Processor	Rockchip™ RK3568 Quad-Core Arm® Cortex®-A55 Processor	Intel® Pentium® N4200 processor, 1.1 GHz (Quad-Core), Burst frequency 2.5GHz Intel® Celeron® N3350 processor, 1.1 GHz (Dual-Core), Burst frequency 2.4GHz	Intel® Pentium® N4200/ Celeron® N3350/ Atom™ Processor SoC
System Memory	LPDDR4 2GB/4GB (Optional)	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)	LPDDR4 2GB/4GB (Optional)
LCD/CRT controller	—	Integrated in processor	—
Ethernet	10/100/1000 Base TX x 2	10/100/1000 Base-TX, RJ-45 x 2	10/100/1000 Base TX x1
I/O Port	LAN x 2 COM x 2 USB 3.2 Gen 1 (Type-C OTG) x 1 (For System Recovery) USB 3.2 Gen 1 x 2 USB 2.0 x 2 HDMI x 1 Audio x 1	Bottom I/O Port: DB9 Type RS-232 x 1 USB 3.2 Gen 1 x 2 HDMI x 1 RJ-45 10/100/1000 LAN x 2 2 Pin terminal block for power input Top I/O Port: Power Button x 1 Type A USB 2.0 x 1 Expansion I/O Slot	LAN x1 COM x1 USB 3.2 Gen 1 x 2 USB 2.0 x1 HDMI x 1
Storage Disk Drive	16GB eMMC and Micro-SD card	Full Size mSATA x 1	Onboard 32GB eMMC(16 GB/64GB Optional)
Expansion Slot	Full-size mini-PCIe slot x 1 (PCIe 3.0 [x1] or mSATA)	Half size mini card x 1(Internal)	M.2 B Key (2280) x 1, M.2 E Key (2230) x 1
OS support	Android™ 12 / Debian	Windows® 10, Linux Kernel 4.4.0 or higher	Windows 10(64 Bit)
Mechanical			
Construction	Aluminum Front Bezel + Metal Chassis	Aluminum Front Bezel + Metal Chassis	SECC
Mounting	VESA / Panel Mount	VESA 75, Panel Mount	—
Dimension	10.5" x 7.2" x 1.5" (266.9mm x 184.5mm x 40mm)	10.47" x 7.24 x 1.89" (266 x 184 x 48mm)	TBD
Carton Dimension	13.3" x 10.2" x 5.9" (339mm x 260mm x 152mm)	13.38" x 7.64 x 9.96" (340 x 194 x 253mm)	TBD
Gross Weight	3.5 lb. (1.6Kg)	6.38 lb (2.9 kg)	TBD
Environmental			
Operating Temperature	23°F ~131°F (-5°C ~ 50°C) with 0.5 m/s airflow		32°F~104°F (0°C ~ 40°C) with 0.5 m/s airflow
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	-4°F ~ 158°F (-20°C ~ 70°C)	32°F~113°F(0°C~45°C)
Storage Humidity	90% @40°C; non-condensing		
Vibration	1Grms / 5~ 500Hz/ operation	1 Grms/ 5~ 500Hz/ operation – with HDD	—
Shock	15 G peak acceleration (11 msec. duration)	—	—
EMC	CE/FCC Class A Compatible	CE/FCC Class A	—
Power Supply			
DC Input	DC 12~24V	DC 9~30V	DC 12V
LCD			
Display Type	10.1" WXGA (1280 x 800) Color TFT LCD Display	10.1" TFT-LCD, LED	10.1" WXGA (1280 x 800) Color TFT LCD Display
Max Resolution	1280 x 800	1280 x 800	1280 x 800
Max. Colors	262K colors (6 bit for R,G,B)	262K colors (6 bit for R,G,B)	262K colors (6 bit for R,G,B)
Luminance	300 nits	300 cd/m2	300 nits
Viewing Angle	170° (H) ; 170° (V)		
Back Light	LED		
Back Light MTBF (Hours)	25,000 Hrs	—	25,000 Hrs
Touchscreen			
Type	Projected Capacitive Multi-Touch	P-CAP Touchscreen	Projected Capacitive Multi-Touch
Light Transmission	90%		
Note			





# Rugged Mobile and Panel PC Solutions

## All in One Panel PC Solutions: ACP Series

04

All in One Panel PC Solutions - ACP Series



Model	ACP-1104	ACP-1078	ACP-1076
System			
Processor	Intel® Celeron® J1900 processor, 2 GHz Intel® N2807 processor, 1.58 GHz	Rockchip™ RK3568 Quad-Core Arm® Cortex®-A55 Processor	Intel® Pentium®N4200 processor, 1.1 GHz (Quad-Core), Burst frequency 2.5GHz Intel® Celeron® N3350 processor, 1.1 GHz (Dual-Core), Burst frequency 2.4GHz
System Memory	204-pin DDR3L 1333MHz SODIMM x 1, default 2 GB, up to 8 GB (J1900) 204-pin DDR3L 1333MHz SODIMM x 1, default 2 GB, up to 4 GB (N2807)	LPDDR4 2GB/4GB (Optional)	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
LCD/CRT controller	—	—	Integrated in processor
Ethernet	10/100/1000 Base-TX, RJ-45 x 2	10/100/1000 Base TX x2	10/100/1000 Base-TX, RJ-45 x 2
I/O Port	RS-232/422/485 x 2 ( RJ-45 connector ) USB 2.0 type A x 3 USB 3.2 Gen 1 type A x 1 HDMI x 1 DI/O (4 DI, 2 DO) BIOS selection Power button x 1 Lockable power connector x 1	LAN x 2 COM x 2 USB 3.2 Gen 1 (Type C OTG) x 1 (For System Recovery) USB 3.2 Gen 1 x 2 USB 2.0 x 2 HDMI x 1 Audio x 1	Bottom I/O Port: DB9 Type RS-232 x 1 USB 3.2 Gen 1 x 2 HDMI x 1 RJ-45 10/100/1000 LAN x 2 2 Pin terminal block for power input Top I/O Port: Power Button x 1 Type A USB 2.0 x 1 Expansion I/O Slot
Storage Disk Drive	Half size mSATA x 1 (Installation by AAEON recommended)	16GB eMMC and Micro-SD card	Full Size mSATA x 1
Expansion Slot	Full size Mini-Card x 1	Full-size mini-PCIe slot x 1 (PCIe 3.0 x1) or mSATA)	Half size mini card x 1(Internal)
OS support	Windows® 7, Windows® 8.1, Windows® 10, Linux kernel 2.6.3 or higher, Android 4.4.4	Android™ 12 / Debian	Windows® 10, Linux Kernel 4.4.0 or higher
Mechanical			
Construction	Aluminum Design	Aluminum Front Bezel + Metal Chassis	Aluminum Front Bezel + Metal Chassis
Mounting	VESA 75/ Panel mount/ Stand	VESA / Panel Mount	VESA 75, Panel Mount
Dimension	10.47" x 7.22" x 1.81" (266 x 183.5 x 30mm)	7.7" x 5.3" x 1.5" (196.5mm x 135mm x 40mm)	7.72" x 5.28" x 1.89" (196 x 134 x 48 mm)
Carton Dimension	13.58" x 7.87" x 9.65" (345 x 200 x 245mm)	11.0" x 8.7" x 6.1" (280mm x 220mm x 154mm)	10.87" x 9.41" x 6.69" (276 x 239 x 170 mm)
Gross Weight	5.5 lb (2.5 kg)	2.2 lb. (1.0Kg)	4.62 lb (2.1 Kg)
Environmental			
Operating Temperature	32°F ~ 113°F (0°C ~ 45°C) without airflow 32°F ~ 122°F (0°C ~ 50°C) with airflow	23°F ~131°F (-5°C ~ 50°C) with 0.5 m/s airflow	
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	-4°F ~ 140°F (-20°C ~ 60°C)	-4°F ~ 158°F (-20°C ~ 70°C)
Storage Humidity	5%~90% @40°C, non-condensing	90% @40°C; non-condensing	
Vibration	1 Grms/ 5~ 500Hz/ operation	1Grms/ 5~ 500Hz / operation	1 Grms/ 5~ 500Hz/ operation – with HDD
Shock	15 G peak acceleration (11 msec. duration)	15 G peak acceleration (11 msec. duration)	15 G peak acceleration (11 msec. duration) – with HDD
EMC	CE/FCC class A	CE/FCC Class A Compatible	CE/FCC Class A
Power Supply			
DC Input	DC 12V with lockable power adapter	DC 12~24V	DC 9~30V
LCD			
Display Type	10.1" TFT-LCD, LED	7" WSVGA (1024 x 600) Color TFT LCD Display	7" TFT-LCD, LED
Max Resolution	1280 x 800	1024 x 600	
Max. Colors	262k	16.7M	
Luminance	300 cd/m2	320 cd/m2	
Viewing Angle	170° (H), 170° (V)	145° (H) ; 150° (V)	
Back Light	LED	LED	
Back Light MTBF (Hours)	—	20,000 Hrs	
Touchscreen			
Type	Projected capacitive multi-touch	Projected Capacitive Multi-Touch	P-CAP Touchscreen
Light Transmission	—	90%	



Model	ACP-1075	ACP-1074	OMNI-2155-CML
System			
Processor	Intel® Pentium® Processor N4200 Intel® Celeron® Processor N3350	Intel® N2807 processor, 1.58 GHz Intel® Celeron® J1900 processor, 2 GHz	Intel® Core™ i9-10900TE Intel® Core™ i7-10700TE Intel® Core™ i5-10500TE Intel® Core™ i3-10100TE Intel® Celeron® G5900TE
System Memory	LPDDR3L 2GB/4GB (Optional)	204-Pin DDR3L SODIMM x 1, default 2GB, up to 8 GB (J1900) 204-Pin DDR3L SODIMM x 1, default 2GB, up to 4 GB (N2807)	DDR4 SO-DIMM x 2, up to 64GB
LCD/CRT controller	—	Integrated in processor	—
Ethernet	GbE x 1	10/100/1000 Base-TX, RJ-45 x 2	Intel® i211 x 1, i219 x 1
I/O Port	LAN x 1 COM x 2 USB 3.2 Gen 1 x 2 USB 2.0 x 1 HDMI x 1	RJ-45 type RS-232/422/485 x 2 USB 2.0 x 3 USB 3.2 Gen 1 x 1 HDMI x 1 RJ-45 10/100/1000 LAN x 2 DI/O (4DI, 2DO) BIOS Selection Lockable power input connector Power switch x 1	USB 3.2 Gen 2 x 4 RJ-45 x 2 for GbE LAN (i211-AT x 1, i219-LM x 1) HDMI x 1 Line out x 1 DB-9 x 2 for RS-232/422/485 3 pin 10~35V Power Input x 1 Power Button with LED x 1
Storage Disk Drive	Onboard 64GB eMMC (Optional: 16GB/32GB)	Half size mSATA storage x 1 (Installation by AAEON recommended)	M.2 2280 slot x 1 (PCIex4), 2.5" SATA SSD/HDD bay x 1
Expansion Slot	M.2 2280 B-Key x 1, M.2 2230 E-Key x 1	Full size Mini-Card x 1	M.2 2230 E Key x 1, M.2 2280 B Key x 1 Full-Size Mini Card x 1 (mSATA/PCIe switch by BIOS, default PCIe), SIM x 1
OS support	Windows® 10 (64-bit)	Windows® 7, Windows® 8.1, Windows® 10, Linux kernel 2.6.3 or higher	Windows® 10 IoT Enterprise 64-bit, Linux Ubuntu 20.04
Mechanical			
Construction	SECC	Aluminum Design	Aluminum Design (IP65 Front Frame)
Mounting	—	VESA 75/ Panel mount/ Stand	VESA 100 / Panel Mount
Dimension	7.18" x 4.73" x 2.09" (182.3mm x 120.1mm x 53.04mm)	7.71" x 5.27" x 1.18" (196mm x 134mm x 30mm)	420.14mm x 264.47mm x 73.2 mm
Carton Dimension	14.17" x 9.65" x 4.65" (360mm x 245mm x 118mm)	13.58" x 7.87" x 9.64" (345mm x 200mm x 245mm)	530mm x 445mm x 200mm
Gross Weight	1.9 lb. (0.88Kg)	5.5 lb (2.5 kg)	6.75 kg
Environmental			
Operating Temperature	32°F ~ 131°F (0°C ~ 55°C) with 0.5 m/s airflow	32°F ~ 122°F (0°C ~ 50°C) without airflow 23°F ~ 131°F (-5°C ~ 55°C) with airflow	32°F ~ 113°F (0°C ~ 45°C) (35W CPU), according to IEC68-2-14 with 0.5 m/s AirFlow
Storage Temperature	32°F ~ 149°F (0°C ~ 65°C)		-4°F ~ 158°F (-20°C ~ 70°C)
Storage Humidity	90% @40°C; non-condensing	5%~90% @40°C, non-condensing	90% @40°C; non-condensing
Vibration	1 Grms/ 5~ 500Hz/ operation –with HDD	1 Grms/ 5~ 500Hz/ operation – with HDD	1 Grms/ 5~500Hz/random operation
Shock	15 G peak acceleration (11 msec. duration) –with HDD		15 G peak acceleration (11 msec. duration)
EMC		CE/FCC Class A	
Power Supply			
DC Input	DC 12V	DC12V, with lockable power adapter	10-35V DC-in with 3-pin terminal block
LCD			
Display Type	7" WSVGA Color TFT LCD Display	7" TFT-LCD, LED	15.6" TFT-LCD, LED
Max Resolution		1024 x 600	1366 (H) x 768 (V)
Max. Colors		16.7M	16.7M (8 bit/color)
Luminance	320 nits	320 cd/m2	400 cd/m2
Viewing Angle	145° (H) ; 150° (V)	150° (H), 145° (V)	170° (H), 130° (V)
Back Light		LED	
Back Light MTBF (Hours)		20,000	50,000
Touchscreen			
Type	Projected Capacitive Multi-Touch	Projected capacitive multi-touch (2-point)	Flat 5-wire Resistive / P-CAP Multi Touch



# Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Builder - Panel Kit

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OMNI Series : Modular Builder - Panel Kit



Model	OMNI-215D	OMNI-221D	OMNI-310D
Mechanical			
Construction	Aluminum Front Bezel		
Mounting	Panel Mount		
Dimension	16.54" x 10.39" x 1.14" (420mm x 264mm x 29mm)	21.61" x 14.65" x 0.87" (549mm x 372mm x 22mm)	11.02" x 9.41" x 1.1" (280mm x 239mm x 28mm)
Carton Dimension	20.47" x 17.13" x 7.09" (520mm x 435mm x 180mm)	26.38" x 7.87" x 20.67" (670mm x 200mm x 525mm)	16.34" x 7.05" x 15.39" (415mm x 179mm x 391mm)
Gross Weight	11 lb (5 kg)		3.08 lb (1.4 kg)
Environmental			
Operating Temperature	-4°F ~ 122°F (-20°C ~ 50°C) with 0.5 m/s airflow	14°F ~ 131°F (-10°C ~ 55°C) with 0.5 m/s airflow	
Storage Temperature	-4°F~140°F(-20°C~60°C)	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C; non-condensing		
Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD		
Shock	15G peak acceleration (11 msec. duration) – with HDD		
EMC	CE/FCC Class A		
Power Supply			
DC input	—		
LCD			
Display Type	15.6" TFT-LCD, LED	21.5" TFT-LCD, LED	10.4" TFT-LCD, LED
Max Resolution	Regular 1366 (H) x 768 (V) Full HD 1920 (H) x 1080 (V)	1920 x 1080	800 x 600
Max. Colors	Regular :16.7M (8 bit/color) Full HD: 16.2M	16.7M colors	16.2M colors
Luminance	Regular : 400 cd/m2 Full HD : 450 cd/m2	250 cd/m2	230 cd/m2
Viewing Angle	Regular : 170° (H) ; 130° (V) Full HD: 178° (H) ; 178° (V)	178° (H), 178° (V)	120° (H), 100° (V)
Back Light	LED		
Back Light MTBF (hours)	50,000		
Touch Screen			
Type	P-CAP/ Full-flap resistive		
Light Transmission	90%		
Others	1. Connect with OMNI-Box Kit 2. Connect with LVDS/USB Type Touch		
Note			



## OMNI Series : Modular Builder - Panel Kit



Model	OMNI-312D	OMNI-315D
Mechanical		
Construction	Aluminum Front Bezel	
Mounting	Panel Mount	
Dimension	12.95" x 11.34" x 0.98" (329mm x 288mm x 25mm)	14.53" x 12.36" x 1.06" (369mm x 314mm x 27mm)
Carton Dimension	20.87" x 17.52" x 7.87" (530mm x 445mm x 200mm)	20.08" x 9.84" x 18.11" (510mm x 250mm x 460mm)
Gross Weight	4.4 lb (2 kg)	11.66 lb (5.3 kg)
Environmental		
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) with 0.5 m/s airflow	
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C; non-condensing	
Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD	
Shock	15G peak acceleration (11 msec. duration) – with HDD	
EMC	CE/FCC Class A	
Power Supply		
DC input	—	
LCD		
Display Type	12.1" TFT-LCD, LED	15" TFT-LCD, LED
Max Resolution	1024 x 768	
Max. Colors	16.2M colors	16.2M (8bit/color)
Luminance	500 cd/m2	300 cd/m2
Viewing Angle	160° (H), 160° (V)	176° (H), 176° (V)
Back Light	LED	
Back Light MTBF (hours)	50,000	70,000
Touch Screen		
Type	P-CAP/ Full-flap resistive	
Light Transmission	90%	
Others	1. Connect with OMNI-Box Kit 2. Connect with LVDS/USB Type Touch	
Note		



# Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Builder - Panel Kit

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OMNI Series : Modular Builder - Panel Kit



Model	OMNI-317D	OMNI-319D
Mechanical		
Construction	Aluminum Front Bezel	
Mounting	Panel Mount	
Dimension	16.14" x 14.57" x 1.1" (410mm x 370mm x 28mm)	18.13" x 16.12" x 1.1" (460.4mm x 409.4mm x 28mm)
Carton Dimension	20.47" x 10.32" x 19.29" (522mm x 262mm x 490mm)	26.02" x 8.11" x 19.53" (661mm x 206mm x 496mm)
Gross Weight	8.8 lb(4 kg)	11 lb (5 kg)
Environmental		
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) with 0.5 m/s airflow	
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C; non-condensing	
Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD	
Shock	15G peak acceleration (11 msec. duration) – with HDD	
EMC	CE/FCC Class A	
Power Supply		
DC input	—	
LCD		
Display Type	17" TFT-LCD, LED	19" TFT-LCD, LED
Max Resolution	1280 x 1024	
Max. Colors	16.7M colors	
Luminance	350 cd/m2	
Viewing Angle	170° (H), 160° (V)	
Back Light	LED	
Back Light MTBF (hours)	50,000	
Touch Screen		
Type	P-CAP/ Full-flap resistive	
Light Transmission	90%	
Others	1. Connect with OMNI-Box Kit 2. Connect with LVDS/USB Type Touch	
Note		



## OMNI Series : Modular Builder - BOX Kit



Model	OMNI-BT CPU BOX Kit	OMNI-SKU CPU-BOX Kit	OMNI-ADP CPU-BOX Kit
System	Integrated in processor		
Processor	Intel® N2807 processor, 1.58 GHz Intel® Celeron® J1900 processor, 2 GHz	Intel® Core™ i7-6600U, i5-6300U, i3-6100U, Celeron® 3995 Processor	Intel® Alder Lake-P i7/i5/i3/Celeron CPU
System Memory	204-pin DDR3L 1333MHz SODIMM x 1, up to 8 GB, (J1900) 204-pin DDR3L 1333MHz SODIMM x 1, up to 4 GB, (N2807)	260-pin DDR4 SODIMM x 1, Max. 16GB	DDR5 4800 MHz, Dual Channel SODIMM x 2
LCD CRT Controller	Integrated in processor		
Ethernet	Intel® I211, 10/100/1000 Base-TX x 2	Gigabit Ethernet, RJ-45 x 1	Intel® i219, 10/100/1000Base Intel® i226, 10/100/1000/2500Base
IO Port	USB 2.0 Type A x 3 USB 3.2 Gen 1 Type A x 1 SMA Antenna hole x 1 HDMI x 1 CFAST™ x 1 DB-9 x 1 for RS-232/422/485 RJ-45 x 2 for 10/100/1000 Base-TX DB-15 x 1 for VGA 3-pin terminal block x 1 for 9~30 Vdc power input LED Power on/off switch x 1 (Power on = Orange, Power off =N/A)	USB Type A x 4 for USB 3.2 Gen 1 RJ-45 x1 for GbE LAN DB-9 x 2 for RS-232, DB-9 x 1 for RS-232/422/485 Power input connector, Power ON/OFF Switch x 1, antenna hole HDMI x 1 3-pin terminal Power input x 1	LAN x2 USB Type A x3 USB Type C x1 HDMI x 1 Audio x1 COM x2
Storage Disk Drive	CFAST™ x 1, 2.5" SATA HDD bay x 1	2.5" SATA HDD bay x 1	2.5" SATA-III x1 (6 Gb/s, for 2.5" SATA drive bay) M.2 2280 NVMe x1 (For PCIe4 NVMe Storage)
Expansion Slot	Mini card x 2 (Full size x 2) SIM card x 1 OMNI I/O connector x 1	Full size mini card x 1 SIM card x 1 OMNI I/O connector x 1	B-Key 3052 x 1 (BOM Optional: PCIe x 2), default: USB3.2 Gne2+SATA E-Key 2230 x 1 (PCIe, USB2.0)
OS Support	Windows® 7, Windows® 8, Windows® 10, Linux Kernel 2.6.x or higher	Windows® 10 (64-bit), Linux kernel 2.6.3 or above	Windows 10/Windows 11/Linux
Construction	Aluminum design		
Mounting	Wallmount	Wallmount (with optional Bottom cover: M0421550A0) / with OMNI-Panel Kits	TBD
Dimension	7.2" x 6.38" x 1.1" (183mm x 162mm x 28mm)	7.2" x 6.38" x 1.77" (183mm x 162mm x 45mm)	TBD
Gross Weight	3.96 lb (1.8 kg)		TBD
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) (J1900) 14°F ~ 140°F (-10°C ~ 60°C) (N2807) with 0.5 m/s airflow (CF & HDD)	-4°F ~ 131°F (-20°C ~ 55°C)	23°F~122°F(-5°C ~ 50°C) with 0.5 m/s airflow
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)		-4°F~140°F(-20°C~60°C)
Storage Humidity	90% @40°C; non-condensing		
Anti Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD		1Grms / 5~ 500Hz / operation
Anti-Shock	15 G peak acceleration (11 msec. duration) – HDD		15 G peak acceleration (11 msec. duration)
Certification	CE/FCC class A	CE/FCC class A	CE/FCC Class A Compatible
DC Input	DC 9 (min.) ~ 30 (max.) V w/3-pin terminal block, ATX Power function		DC 9~36V
Display Type	HDMI x 1, VGA	HDMI x 1	OMNI Series Panel Kit from 12.1 inches to 21.5 inch
Others	Box Bottom Chassis Cover (optional): M0421550A0		Flat 5-Wire Resistive / PCAP multitouch (Support Gloves)
Note			



# Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Builder - BOX Kit



Model	OMNI-ADB-KIT
<b>System</b>	
Input Signal	VGA / HDMI
On Screen Display Control	5 keys OSD keypad (Up, Down, Menu, Auto, Power)
I/O Port	DB-15 x 1 for VGA HDMI x 1 USB Type A x 1 (For Enable T/S Function) Line in x 1 (For optional internal Speaker) Power Input x 1(Default Terminal Block 3pin)
OS Support	Windows® 7 32/64-bit, Windows® 8 32/64-bit, Windows® 10 64-bit, Linux Ubuntu 16.04
<b>Mechanical</b>	
Construction	Metal chassis
Mounting	Must be assembled with OMNI-Series Modules-Panels
Dimension	5.1" x 6.4" x 1.2" (128.6mm x 161.5mm x 30.7mm)
Carton Dimension	12.3" x 10.1" x 7.6" (312mm x 257mm x 194mm)
Gross Weight	5.5 lb (2.5 kg)
Net Weight	2.6 lb (1.2 kg)
<b>Environmental</b>	
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) With 0.5m/s Airflow
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)
Storage Humidity	10%~90% @104°F (40°C); non-condensing
Vibration	1 Grms / 5~500Hz/random Operation
Shock	—
EMC	CE/FCC, Class A
<b>Power Supply</b>	
DC Input	DC 12~30V Power Input with 3 Pin Terminal Block
<b>LCD</b>	
Display Type	Depends on your OMNI Panel Modules
Max. Resolution	
Max. Colors	
Luminance	
Viewing Angle	
Back Light	
Back Light MTBF (Hours)	
<b>Touchscreen</b>	
Type	Depends on your OMNI Panel Modules
Light Transmission	
Life Time	
Note	



## Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Builder - I/O Modules



Model	9741215502 - Dual LAN Module	9741215506 - DIO Module
System		
Description	Gigabit Ethernet x 2, for OMNI Panel PC only	DIO without Isolation x 8, for OMNI Panel PC only
Features	Gigabit Ethernet x 2 Intel® i211 Chipset OS support: Windows® 7, Windows® 10, Linux Kernel 2.6.x or above	DIO x 8 (3.3 Vac) OS support: Windows® 7, Windows® 10, Linux Kernel 2.6.x or above



Model	9741215508 - Audio Module	9741215512
System		
Description	MIC-In x 1, Line-out x 1, for OMNI Panel PC only	WiFi 802.11 b/g/n Module
Features	Mic in x 1 Line out x 1 OS support: Windows® 7, Windows® 10, Linux Kernel 2.6.x or above	Supports 802.11b/g/n Supports BT 4.0 OS support: Windows® 7, Windows® 10, Linux Kernel 2.6.x or above



Model	9741215513	9741215515
System		
Description	RS-485/422/232 Module	OMNI USB/COM/LAN Module
Features	RS-232/422/485 x 2 Selection by Jumper OS support: Windows® 7, Windows® 10, Linux Kernel 2.6.x or above	USB 2.0 x 2 RS-232/422/485 x 2 (Selection by External Switch) Gigabit Ethernet x 1 OS support: Windows® 7, Windows® 10, Linux Kernel 2.6.x or above



Model	9741215517
System	
Description	OMNI Isolated COM Module
Features	Isolated RS-232/422/485 x 4 2K VDC Isolation Selection by internal jumper OS support: Windows® 7, Windows® 10, Linux Kernel 2.6.x or above





# Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Touch Panel Solutions

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OMNI Series : Modular Touch Panel Solutions



Model	OMNI-2155-BT	OMNI-3105-BT	OMNI-3125-BT
System			
Processor	Intel® N2807 processor, 1.58 GHz Intel® Celeron® J1900 processor, 2 GHz		
System Memory	204-pin DDR3L 1333MHz SODIMM x 1, up to 8 GB, (J1900) 204-pin DDR3L 1333MHz SODIMM x 1, up to 4 GB, (N2807)		
LCD/CRT Controller	Integrated in Processor		
Ethernet	10/100/1000Base-TX, RJ-45 x 2	Intel® I211, 10/100/1000 Base-TX x 2	
I/O Port	USB Type A x 1 for USB 3.2 Gen 1, USB Type A x 3 for USB 2.0 SMA antenna hole x 1, HDMI x 1 CFast™ x 1, DB-9 for RS-232/422/485 x 1 RJ-45 x 2 for 10/100/1000Base-TX DB-15 x 1 for VGA 3-pin terminal block x 1 for 9~30 V DC power input LED Power On/Off Switch x 1 (Power on = orange, Power off =N/A)	USB 2.0 Type A x 3 USB 3.2 Gen 1 Type A x 1 SMA Antenna hole x 1 HDMI x 1 CFast™ x 1 DB-9 x 1 for RS-232/422/485 RJ-45 x 2 for GbE LAN DB-15 x 1 for VGA 3-pin terminal block x1 for 9~30 Vdc power input LED Power on/off switch x 1 (Power on = Orange, Power off =N/A)	USB 2.0 Type A x 3 USB 3.2 Gen 1 Type A x 1 SMA Antenna hole x 1 HDMI x 1, CFast™ x 1 DB-9 Type RS-232/422/485 x 1 RJ-45 Type for 10/100/1000Base-TX x 2 DB-15 x 1 for VGA 3-pin terminal block x1 for 9~30 Vdc power input LED Power on/off switch x1 (Power on = Orange, Power off =N/A)
Storage Disk Drive	CFast™ x 1, 2.5" SATA HDD bay x 1		
Expansion Slot	Full Size Mini card x 2, SIM card x 1, OMNI I/O connector x 1		
OS support	Windows® 7, Windows® 8, Windows® 10, Linux kernel 2.6.x or higher		
Mechanical			
Construction	Aluminum front bezel + metal chassis	Aluminum design (IP65 Front Frame)	
Mounting	VESA 100/ Panel mount		
Dimension	16.54" x 10.43" x 2.36" (420mm x 265mm x 60mm)	11.02" x 9.41" x 2.32" (280 mm x 239 mm x 59 mm)	12.95" x 11.34" x 2.2" (329 mm x 288 mm x 56 mm)
Carton Dimension	20.87" x 17.52" x 7.87" (530mm x 445mm x 200mm)	16.34" x 7.05" x 15.39" (415mm x 179mm x 391mm)	20.87" x 17.52" x 7.87" (530mm x 445mm x 200mm)
Gross Weight	14.1 lb (6.4kg)	7.92 lb (3.6 kg)	11 lb (5.0 kg)
Environmental			
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C) with industrial grade device (with 0.5 m/s air flow, according to IEC68-2-14, CPU: N2807) -4°F ~ 131°F (-20°C ~ 55°C) with industrial grade device (with 0.5 m/s air flow, according to IEC68-2-14, CPU: J1900)	14°F ~ 131°F (-10°C ~ 55°C) (J1900), 14°F ~ 140°F (-10°C ~ 60°C) (N2807) with 0.5 m/s airflow ( CF & HDD )	14°F ~ 131°F (-10°C ~ 55°C) (J1900), 14°F ~ 140°F (-10°C ~ 60°C) (N2807) with 0.5 m/s airflow ( CF & HDD )
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)		
Storage Humidity	90% @40°C, non-condensing		
Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD		
Shock	15 G peak acceleration (11 msec. duration)	15 G peak acceleration (11 msec. duration) – with HDD	
EMC	CE/FCC class A		
Power Supply			
DC input	DC 9 (min.) ~ 30 (max.) V w/ 3-pin terminal block, ATX Power function		
LCD			
Display Type	15.6" TFT-LCD, LED backlight	10.4" TFT-LCD, LED	12.1" TFT-LCD, LED
Max Resolution	1366 x 768	800 (H) x 600 (V)	1024 (H) x 768 (V)
Max. Colors	16.7M colors (8-bit for R,G,B)	16.2M colors	
Luminance	400 cd/m2	230 cd/m2	500 cd/m2
Viewing Angle	160° (H), 140° (V)	120° (H), 100° (V)	160° (H), 160° (V)
Back Light	LED		
Back Light MTBF (Hours)	50,000		
Touchscreen			
Type	P-CAP/ 5-wire resistive		
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)		
Note			

## OMNI Series : Modular Touch Panel Solutions



Model	OMNI-3155-BT	OMNI-3175-BT	OMNI-3195-BT
System			
Processor	Intel® N2807 processor, 1.58 GHz Intel® Celeron® J1900 processor, 2 GHz		
System Memory	204-pin DDR3L 1333MHz SODIMM x 1, up to 8 GB, (J1900) 204-pin DDR3L 1333MHz SODIMM x 1, up to 4 GB, (N2807)		
LCD/CRT Controller	Integrated in processor		
Ethernet	Intel® I211, 10/100/1000 Base-TX x 2		
I/O Port	USB 2.0 Type A x 3 USB 3.2 Gen 1 Type A x 1 SMA Antenna hole x 1 HDMI x 1 CFast™ x 1 DB-9 Type RS-232/422/485 x 1 RJ-45 Type for 10/100/1000Base-TX x 2 DB-15 x 1 for VGA 3-pin terminal block x1 for 9-30 Vdc power input LED Power on/off switch x1 (Power on = Orange, Power off =N/A)		
Storage Disk Drive	CFast™ x 1, 2.5" SATA HDD bay x 1		
Expansion Slot	Full Size Mini card x 2, SIM card x 1, OMNI I/O connector x 1		
OS support	Windows® 7, Windows® 8, Windows® 10, Linux kernel 2.6.x or higher		
Mechanical			
Construction	Aluminum design (IP65 Front Frame)		
Mounting	VESA 100 / Panel Mount		
Dimension	14.53" x 12.36" x 2.28" (369 mm x 314 mm x 58 mm)	16.14" x 14.57" x 2.32" (410mm x 370mm x 59mm)	18.15" x 16.14" x 2.32" (461 mm x 410 mm x 59 mm)
Carton Dimension	20.08" x 9.84" x 18.11" (510mm x 250mm x 460mm)	20.55" x 10.31" x 19.29" (522mm x 262mm x 490mm)	26.02" x 8.11" x 19.53" (661mm x 206mm x 496mm)
Gross Weight	13.97 lb (6.35 kg)	15.84 lb (7.2 kg)	19.36 lb (8.8 kg)
Environmental			
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) (J1900), 14°F ~ 140°F (-10°C ~ 60°C) (N2807) with 0.5 m/s airflow ( CF & HDD)		
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)		
Storage Humidity	90% @40°C; non-condensing		
Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD		
Shock	15 G peak acceleration (11 msec. duration) – with HDD		
EMC	CE/FCC class A		
Power Supply			
DC input	DC 9 (min.) ~ 30 (max.) V w/3-pin terminal block, ATX Power function		
LCD			
Display Type	15" TFT-LCD, LED	17" TFT-LCD, LED	19" TFT-LCD, LED
Max Resolution	1024 (H) x 768 (V)		1280 (H) x 1024 (V)
Max. Colors	16.2M (8bit/color)	16.7M colors (RGB 6-bits + Hi-FRC data)	16.7M colors
Luminance	300 cd/m <sup>2</sup>		350 cd/m <sup>2</sup>
Viewing Angle	176° (H), 176° (V)		170° (H), 160° (V)
Back Light	LED		
Back Light MTBF (Hours)	70,000		
Touchscreen			
Type	P-CAP/ 5-wire resistive		
Light Transmission	P-CAP (90%± 2%), 5-wire Resistive (80% ± 2%)	P-CAP (≥85%), 5-wire Resistive (80% ± 5%)	
Note			



# Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Touch Panel Solutions

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OMNI Series : Modular Touch Panel Solutions



Model	OMNI-2155-SKU	OMNI-2215-SKU	OMNI-3125-SKU
System			
Processor		Intel® Core™ i5-6300U processor, 2.4 GHz Intel® Celeron® 3955U processor, 2.0 GHz	
System Memory		260-pin DDR4 SODIMM x 1, up to 16 GB	
LCD/CRT Controller		Integrated in processor	
Ethernet		Intel® I211, 10/100/1000 Base-TX x 1	
I/O Port		USB 3.2 Gen 1 Type A x 4 SMA Antenna hole x 1 HDMI x 1 DB-9 Type RS-232/422/485 x 2 RJ-45 Type 10/100/1000 Base-TX x 1 3-pin terminal block x1 for 9-30 Vdc power input LED Power on/off switch x1 (Power on = Orange, Power off =N/A)	
Storage Disk Drive		2.5" SATA HDD bay x 1	
Expansion Slot		Full Size Mini card x 1 SIM card x 1 OMNI I/O connector x 1	
OS support		Windows® 8.1 Windows® 10 (64 bit) Linux Kernel 2.6.x or higher	
Mechanical			
Construction	Aluminum design (IP65 Front Frame)		
Mounting	VESA 100 / Panel Mount		
Dimension	16.54" x 10.43" x 2.87" (420 mm x 265 mm x 73 mm)	21.7" x 14.7" x 2.6" (550mm x 373mm x 66mm)	12.95" x 11.34" x 2.72" (329mm x 28mm x 69 mm)
Carton Dimension	20.87" x 17.52" x 7.87" (530mm x 445mm x 200mm)	26.38" x 7.87" x 20.67" (670mm x 200mm x 525mm)	20.87" x 17.52" x 7.87" (530mm x 445mm x 200mm)
Gross Weight	14.96 lb (6.8 kg)	20.02 lb (9.1 Kg)	12.34 lb (5.6 kg)
Environmental			
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C) with 0.5 m/s airflow (Industrial Grade HDD)		
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)		
Storage Humidity	90% @40°C; non-condensing		
Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD		
Shock	15 G peak acceleration (11 msec. duration) – with HDD		
EMC	CE/FCC class A		
Power Supply			
DC input	DC 9 (min.) ~ 30 (max.) V w/3-pin terminal block, ATX Power function		
LCD			
Display Type	15.6" TFT-LCD, LED	21.5" TFT-LCD, LED	12.1" TFT-LCD, LED
Max Resolution	1366 (H) x 768 (V)	1920 (H) x 1080 (V)	1024 (H) x 768 (V)
Max. Colors	16.7M (8 bit/color)	16.7M colors	16.2M colors
Luminance	400 cd/m <sup>2</sup>	250 cd/m <sup>2</sup>	500 cd/m <sup>2</sup>
Viewing Angle	160 (H), 140 (V)	178 (H), 178 (V)	160° (H), 160° (V)
Back Light		LED	
Back Light MTBF (Hours)		50,000	
Touchscreen			
Type	P-CAP/ 5-wire resistive		
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 2%)	P-CAP (≥85%), 5-wire Resistive (80% ± 5%)	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)
Note			



## OMNI Series : Modular Touch Panel Solutions



Model	OMNI-3155-SKU	OMNI-3175-SKU	OMNI-3195-SKU
System			
Processor		Intel® i5-6300U processor, 2.4 GHz Intel® Celeron® 3955U processor, 2.0 GHz	
System Memory		260-pin DDR4 SODIMM x 1, up to 16 GB	
LCD/CRT Controller		Integrated in processor	
Ethernet		Intel® I211, 10/100/1000 Base-TX x 1	
I/O Port		USB 3.2 Gen 1 Type A x 4 SMA Antenna hole x 1 HDMI x 1 DB-9 Type RS-232/422/485 x 2 RJ-45 Type 10/100/1000 Base-TX x 1 3-pin terminal block x1 for 9~30 Vdc power input LED Power on/off switch x1 (Power on = Orange, Power off =N/A)	
Storage Disk Drive		2.5" SATA HDD bay x 1	
Expansion Slot		Full Size Mini card x 1, SIM card x 1, OMNI I/O connector x 1	
OS support		Windows® 8.1, Windows® 10 (64 bit), Linux kernel 2.6.x or higher	
Mechanical Construction		Aluminum design (IP65 Front Frame)	
Mounting		VESA 100/ Panel Mount	
Dimension	14.53" x 12.36" x 2.79" (369mm x 314mm x 71 mm)	16.14" x 14.57" x 2.32" (410mm x 370mm x 59mm)	18.14" x 16.14" x 2.83" (460.8mm x 410mm x 72 mm)
Carton Dimension	20.08" x 9.84" x 18.11" (510mm x 250mm x 460mm)	20.55" x 10.31" x 19.29" (522mm x 262mm x 490mm)	26.02" x 8.11" x 19.53" (661mm x 206mm x 496mm)
Gross Weight	14.3 lb (6.5 kg)	16.28 lb (7.4 kg)	20.06 lb (9.1 kg)
Environmental			
Operating Temperature		-4°F ~ 131°F (-20°C ~ 55°C) with 0.5 m/s airflow (Industrial Grade HDD)	
Storage Temperature		-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity		90% @40°C; non-condensing	
Vibration		1 Grms/ 5~ 500Hz/ operation – with HDD	
Shock		15 G peak acceleration (11 msec. duration) – with HDD	
EMC		CE/FCC class A	
Power Supply			
DC input		DC 9 (min.) ~ 30 (max.) V w/3-pin terminal block, ATX Power function	
LCD			
Display Type	15" TFT-LCD, LED	17" TFT-LCD, LED	17" TFT-LCD, LED
Max Resolution	1024 (H) x 768 (V)		1280 (H) x 1024 (V)
Max. Colors	16.2M (8bit/color)		16.7M colors (RGB 6-bits + Hi-FRC data)
Luminance	300 cd/m2		350 cd/m2
Viewing Angle	176° (H), 176° (V)		170 (H), 160 (V)
Back Light		LED	
Back Light MTBF (Hours)		70,000	
Touchscreen			
Type		P-CAP/ 5-wire resistive	
Light Transmission	P-CAP (90%± 2%), 5-wire Resistive (80% ± 2%)	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)
Note			



# Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Touch Panel Solutions

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OMNI Series : Modular Touch Panel Solutions



Model	OMNI-2155-ADP	OMNI-2215-ADP	OMNI-3105-ADP
System			
Processor	12th Generation Intel® Core™/Celeron® Processors		
System Memory	DDR5 4800 MHz, Dual Channel SODIMM x 2, up to 64GB		
LCD/CRT Controller	—		
Ethernet	Intel® i219, 10/100/1000Base Intel® i226, 10/100/1000/2500Base	Intel® Ethernet Connection I219, 10/100/1000Base Intel® Ethernet Controller I226, 10/100/1000/2500Base	Intel® Ethernet Connection I219, 10/100/1000Base Intel® Ethernet Controller I226, 10/100/1000/2500Base
I/O Port	RJ-45 LAN x 2 USB 3.2 Gen 2 (Type-A) x 3 USB 2.0 x 1 (Type-C) HDMI 2.0b x 1 DB-9 x 2 (RS-232/422/485)	RJ-45 LAN x 2 USB 3.2 Gen 2 (Type-A) x 3 USB 2.0 (Type-C) x 1 HDMI 2.0b x 1 Audio x 1 DB-9 x 2 (RS-232/422/485)	RJ-45 LAN x 2 USB 3.2 Gen 2 (Type-A) x 3 USB (Type-C) x 1 HDMI 2.0b x 1 Audio x 1 DB-9 x 2 (RS-232/422/485)
Storage Disk Drive	2.5" HDD Bay for SATA 6Gb/s x 1 M.2 2280 M-Key x 1 (PCIe [x4] NVMe Storage)		
Expansion Slot	M.2 3052 B-Key x 1 (Default: USB 3.2 Gen 2 + SATA, PCIe [x2] optional by BOM) M.2 2230 E-Key x 1 (PCIe, USB 2.0)	M.2 3052 B-Key x 1 (Default: USB 3.2 Gen 2 + SATA, PCIe [x2] optional by BOM) M.2 2230 E-Key x 1 (PCIe, USB 2.0)	M.2 3052 B-Key x 1 (BOM Optional: PCIe [x2], default: USB 3.2 Gen 2 + SATA) M.2 2230 E-Key x 1 (PCIe, USB 2.0)
OS support	Windows® 10/Windows® 11	Windows® 10 IoT Enterprise LTSC 2021 Windows® 10/11	Windows® 10 IoT Enterprise LTSC 2021 Windows® 10/11
Mechanical			
Construction	Aluminum Front Bezel + Metal Chassis		
Mounting	VESA / Panel Mount		
Dimension	16.5" x 10.41" x 2.9" (420.2mm x 264.5mm x 73.8mm)	21.63" x 14.66" x 2.64" (549.4mm x 372.4mm x 67mm)	11" x 9.4" x 2.8" (280mm x 239.3mm x 72.8mm)
Carton Dimension	20.86" x 17.51" x 7.87" (530 mm x 445 mm x 200mm)	26.38" x 7.87" x 20.67" (670mm x 200mm x 525mm)	16.3" x 7" x 15.4" (415mm x 180mm x 392mm)
Gross Weight	11.46 lb (5.2kg)	14.9 lb. (6.8Kg)	6.2 lb. (2.84Kg)
Environmental			
Operating Temperature	-4°F ~ 122°F (-20°C ~ 50°C) with 0.5 m/s Airflow	-4°F~122°F (-20°C~50°C) with airflow	
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)		
Storage Humidity	90% @40°C; non-condensing		
Vibration	1Grms / 5~ 500Hz / operation		
Shock	15 G peak acceleration (11 msec. duration)		
EMC	CE/FCC Class A	CE/FCC Class A Compatible	
Power Supply			
DC input	DC 9~30V		
LCD			
Display Type	15.6" TFT-LCD, LED	21.5" TFT-LCD, LED	10.4" TFT-LCD, LED
Max Resolution	Regular 1366 (H) x 768 (V) Full HD 1920 (H) x 1080 (V)	1920 x 1080	1024 (H) x 768 (V)
Max. Colors	Regular : 16.7M (8 bit/color) Full HD: 16.2M	16.7M colors	262K/16.7M
Luminance	Regular : 400 cd/m2 Full HD : 450 cd/m2	250 cd/m <sup>2</sup>	500 cd/m <sup>2</sup>
Viewing Angle	Regular : 170° (H) ; 130° (V) Full HD: 178° (H) ; 178° (V)	178° (H) ; 178° (V)	176° (H) x 176° (V)
Back Light	LED		
Back Light MTBF (Hours)	50,000		
Touchscreen			
Type	P-CAP/ 5-wire resistive		
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)	P-CAP (≥85%), 5-wire Resistive (80% ± 3%)	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)
Note			



## OMNI Series : Modular Touch Panel Solutions



Model	OMNI-3125-ADP	OMNI-3155-ADP	OMNI-3175-ADP
System			
Processor	12th Generation Intel® Core™/Celeron® Processors		
System Memory	DDR5 4800 MHz, Dual Channel SODIMM x 2		
LCD/CRT Controller	—		
Ethernet	Intel® Ethernet Connection I219, 10/100/1000Base Intel® Ethernet Controller I226, 10/100/1000/2500Base		
I/O Port	RJ-45 LAN x 2 USB 3.2 Gen 2 (Type-A) x 3 USB (Type-C) x 1 HDMI 2.0b x 1 Audio x 1 DB-9 x 2 (RS-232/422/485)		
Storage Disk Drive	2.5" HDD Bay for SATA 6Gb/s x 1 M.2 2280 M-Key x 1 (PCIe [x4] NVMe Storage) M.2 3052 B-Key x 1 (BOM Optional: PCIe [x2], default: USB 3.2 Gen 2 + SATA) M.2 2230 E-Key x 1 (PCIe, USB 2.0)		
Expansion Slot	Windows® 10 IoT Enterprise LTSC 2021 Windows® 10/11		
OS support			
Mechanical			
Construction	Aluminum Front Bezel + Metal Chassis		
Mounting	VESA / Panel Mount		
Dimension	12.9" x 11.3" x 2.7" (328.5mm x 288mm x 69.7mm)	14.52" x 12.35" x 2.83" (368.9mm x 313.7mm x 72mm)	16.14" x 14.56" x 2.87" (409.9mm x 369.9mm x 73mm)
Carton Dimension	20.9" x 17.5" x 7.9" (530mm x 445mm x 200mm)	20.1" x 9.8" x 18.1" (510mm x 250mm x 460mm)	20.1" x 9.8" x 18.1" (510mm x 250mm x 460mm)
Gross Weight	7.6 lb. (3.48Kg)	8.5 lb. (3.9Kg)	12.4 lb. (5.63Kg)
Environmental			
Operating Temperature	-4°F~-122°F (-20°C~-50°C) with airflow		
Storage Temperature	-4°F~-140°F(-20°C~-60°C)		
Storage Humidity	90% @40°C; non-condensing		
Vibration	1Grms / 5~ 500Hz / operation		
Shock	15 G peak acceleration (11 msec. duration)		
EMC	CE/FCC Class A Compatible		
Power Supply			
DC input	DC 9~30V		
LCD			
Display Type	12.1" TFT-LCD, LED	15" TFT-LCD, LED	17" TFT-LCD, LED
Max Resolution	1024(H) x 768(V)	1024(H) x 768(V)	1280(H) x 1024(V)
Max. Colors	16.2M colors	16.2M (8 bit/color)	16.7M colors (RGB 6-bits + Hi-FRC data)
Luminance	500 cd/m <sup>2</sup>	300 cd/m <sup>2</sup>	350 cd/m <sup>2</sup>
Viewing Angle	160° (H) ; 160° (V)	176° (H), 176° (V)	170° (H), 160° (V)
Back Light	LED		
Back Light MTBF (Hours)	50,000 Hrs	70,000	50,000
Touchscreen			
Type	P-CAP/5-wire resistive		
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)	P-CAP (90% ± 2%), 5-wire Resistive (80% ± 2%)	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)
Note			



# Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Touch Panel Solutions

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OMNI Series : Modular Touch Panel Solutions



Model	OMNI-3195-ADP
<b>System</b>	
Processor	12th Generation Intel® Core™/Celeron® Processors
System Memory	DDR5 4800 MHz, Dual Channel SODIMM x 2
LCD/CRT Controller	—
Ethernet	Intel® Ethernet Connection I219, 10/100/1000Base Intel® Ethernet Controller I226, 10/100/1000/2500Base
I/O Port	RJ-45 LAN x 2 USB 3.2 Gen 2 (Type-A) x 3 USB (Type-C) x 1 HDMI 2.0b x 1 Audio x 1 DB-9 x 2 (RS-232/422/485)
Storage Disk Drive	2.5" HDD Bay for SATA 6Gb/s x 1 M.2 2280 M-Key x 1 (PCIe [x4] NVMe Storage)
Expansion Slot	M.2 3052 B-Key x 1 (BOM Optional: PCIe [x2], default: USB 3.2 Gen 2 + SATA) M.2 2230 E-Key x 1 (PCIe, USB 2.0)
OS support	Windows® 10 IoT Enterprise LTSC 2021 Windows® 10/11
<b>Mechanical</b>	
Construction	Aluminum Front Bezel + Metal Chassis
Mounting	VESA / Panel Mount
Dimension	18.15" x 16.14" x 2.87" (460.8mm x 410mm x 72.8mm)
Carton Dimension	26.02" x 8.11" x 19.53" (661mm x 206mm x 496mm)
Gross Weight	13.9 lb. (6.34Kg)
<b>Environmental</b>	
Operating Temperature	-4°F~-122°F (-20°C~-50°C) with airflow
Storage Temperature	-4°F~-140°F(-20°C~-60°C)
Storage Humidity	90% @40°C; non-condensing
Vibration	1Grms / 5~ 500Hz / operation
Shock	15 G peak acceleration (11 msec. duration)
EMC	CE/FCC Class A Compatible
<b>Power Supply</b>	
DC input	DC 9~30V
<b>LCD</b>	
Display Type	19" TFT-LCD, LED
Max Resolution	1280(H) x 1024(V)
Max. Colors	16.7M colors
Luminance	350 cd/m <sup>2</sup>
Viewing Angle	170° (H), 160° (V)
Back Light	LED
Back Light MTBF (Hours)	50,000
<b>Touchscreen</b>	
Type	P-CAP/ 5-wire resistive
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)
Note	



## OMNI Series : Modular Display Solutions



Model	OMNI-215M	OMNI-221M	OMNI-310M
System			
Input Signal	VGA/HDMI		
On Screen Display Control	5 keys OSD keypad (Up, Down, Menu, Auto, Power)		
I/O Port	DB-15 VGA x 1 HDMI x 1 USB x 1 (For Enable T/S Function) Line in x 1 (For optional internal Speaker) Power Input x 1(Terminal Block 3pin)		
Os Support	Windows® 7 32/64-bit, Windows® 8 32/64-bit, Windows® 10 64-bit, Linux Ubuntu 16.04		
Mechanical			
Construction	IP65 aluminum front bezel & SGCC chassis		
Mounting	Panel Mount / VESA 100x100 / Stand		
Dimension	16.5" x 10.4" x 2.4" (420.2mm x 264.5mm x 60.2mm)	21.6" x 14.6" x 2.1" (549mm x 372mm x 53mm)	11.0" x 9.4" x 2.33" (280mm x 239.3mm x 59.1mm)
Carton Dimension	20.9" x 17.5" x 7.9" (530mm x 445mm x 200mm)	26.4" x 20.7" x 7.9" (670mm x 525mm x 200mm)	16.3" x 15.4" x 7.04" (415mm x 391mm x 179mm)
Gross Weight	14.1 lbs (6.4 kg)	18.5 lbs (8.4 kg)	7.9 lbs (3.6 kg)
Net Weight	11.2 lbs (5.1 kg)	15.4 lbs (7.0 kg)	1.1 lbs (2.4 kg)
Environmental			
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) With 0.5m/s Airflow		
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)		
Storage Humidity	10%~90% @104°F (40°C); non-condensing		
Vibration	1 Grms / 5~500Hz/random Operation		
Shock	—		
EMC	CE/FCC, Class A		
Power Supply			
Dc Input	DC 12~30V Power Input with 3 Pin Terminal Block		
LCD			
Display Type	15.6" TFT-LCD	21.5" TFT-LCD	10.4" TFT-LCD
Max. Resolution	1366 x 768	1920 x 1080	800 x 600
Max. Colors	16.7M		16.2M
Luminance	400 cd/m2	250 cd/m2	230 cd/m2
Viewing Angle	170° (H), 160° (V)	178° (H), 178° (V)	160° (H), 130° (V)
Back Light	LED		
Back Light MTBF (Hours)	50,000		30,000
Touchscreen			
Type	Projective Capacitive Multi Touch or 5 Wire Resistive Touch Screen (By Model)		
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)		
Life Time	—		
Note			





# Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Display Solutions

04

OMNI Series : Modular Display Solutions



Model	OMNI-312M	OMNI-315M	OMNI-317M
System			
Input Signal	VGA / HDMI		
On Screen Display Control	5 keys OSD keypad (Up, Down, Menu, Auto, Power)		
I/O Port	DB-15 VGA x 1 HDMI x 1 USB x 1 (For Enable T/S Function) Line in x 1 (For optional internal Speaker) Power Input x 1(Terminal Block 3pin)		
Os Support	Windows® 7 32/64-bit, Windows® 8 32/64-bit, Windows® 10 64-bit, Linux Ubuntu 16.04		
Mechanical			
Construction	IP65 aluminum front bezel & SGCC chassis		
Mounting	Panel Mount / VESA 100 x 100 / Stand		
Dimension	12.9" x 11.3" x 2.2" (328.5mm x 288.1mm x 55.9mm)	14.5" x 12.4" x 2.3" (369mm x 314mm x 58mm)	16.1" x 14.6" x 2.3" (410mm x 370mm x 59.1mm)
Carton Dimension	20.9" x 17.5" x 7.9" (530mm x 445mm x 200mm)	20.1" x 18.1" x 9.8" (510mm x 460mm x 250mm)	20.6" x 19.3" x 10.3" (522mm x 490mm x 262mm)
Gross Weight	10.4 lbs (4.7 kg)	14 lbs (6.35 kg)	14.8 lbs (6.7 kg)
Net Weight	7.7 lbs (3.5 kg)	11.2 lbs (5.1 kg)	11.7 lbs (5.3 kg)
Environmental			
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) With 0.5m/s Airflow		
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)		
Storage Humidity	10%~90% @104°F (40°C); non-condensing		
Vibration	1 Grms / 5~500Hz/random Operation		
Shock	—		
EMC	CE/FCC, Class A		
Power Supply			
Dc Input	DC 12~30V Power Input with 3 Pin Terminal Block		
LCD			
Display Type	12.1" TFT-LCD	15" TFT-LCD	17" TFT-LCD
Max. Resolution		1024 x 768	1280 x 1024
Max. Colors	16.2M	16.2M (8bit/color)	16.7M
Luminance	500 cd/m2	300 cd/m2	350 cd/m2
Viewing Angle	160° (H), 160° (V)	176° (H), 176° (V)	160° (H), 140° (V)
Back Light	LED		
Back Light MTBF (Hours)	50,000	70,000	50,000
Touchscreen			
Type	Projective Capacitive Multi Touch or 5 Wire Resistive Touch Screen (By Model)		
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)		
Life Time	—		
Note			





Model	OMNI-319M
<b>System</b>	
Input Signal	VGA / HDMI
On Screen Display Control	5 keys OSD keypad (Up, Down, Menu, Auto, Power)
<b>I/O Port</b>	
	DB-15 VGA x 1 HDMI x 1 USB x 1 (For Enable T/S Function) Line in x 1 (For optional internal Speaker) Power Input x 1(Terminal Block 3pin)
Os Support	Windows® 7 32/64-bit, Windows® 8 32/64-bit, Windows® 10 64-bit, Linux Ubuntu 16.04
<b>Mechanical</b>	
Construction	IP65 aluminum front bezel & SGCC chassis
Mounting	Panel Mount / VESA 100 x 100 / Stand
Dimension	18.1" x 16.1" x 2.3" (460.8mm x 410mm x 59.1mm)
Carton Dimension	26.0" x 19.5" x 8.1" (661mm x 496mm x 206mm)
Gross Weight	18.1 lbs (8.2 kg)
Net Weight	15.2 lbs (6.9 kg)
<b>Environmental</b>	
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) With 0.5m/s Airflow
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)
Storage Humidity	10%~90% @104°F (40°C); non-condensing
Vibration	1 Grms / 5~500Hz/random Operation
Shock	—
EMC	CE/FCC, Class A
<b>Power Supply</b>	
Dc Input	DC 12~30V Power Input with 3 Pin Terminal Block
<b>LCD</b>	
Display Type	19" TFT-LCD
Max. Resolution	1280 x 1024
Max. Colors	16.7M
Luminance	350 cd/m2
Viewing Angle	170° (H), 160° (V)
Back Light	LED
Back Light MTBF (Hours)	50,000
<b>Touchscreen</b>	
Type	Projective Capacitive Multi Touch or 5 Wire Resistive Touch Screen (By Model)
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)
Life Time	—
Note	



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