



# 2023 | SELECTION GUIDE 2ND ED.

## Edge-Ready Platforms

Your Smart Computing Partner



## A Leader and Partner in Embedded Computing Platforms

We have a relentless drive for excellence and passion for unsurpassed service.



Established in 1992, AAEON is one of the leading designers and manufacturers of professional intelligent IoT solutions and advanced industrial computing platforms today. Committed to innovative engineering, AAEON provides integrated solutions including industrial motherboards and systems, industrial displays, rugged tablets, embedded controllers, network appliances and related accessories. We also work with premier OEM/ODMs and system integrators around the world. Offering x86-based platforms from Intel® Atom™ all the way to Intel® Xeon processors, and in desktop, 1U and 2U form factors, AAEON's team of experienced engineers has helped dozens of companies around the globe deploy reliable appliances with faster times to market and lower development costs based on state-of-the-art hardware platforms, unmatched service quality and long-term support.

As an Associate Member of the Intel® Internet of Things Solutions Alliance, AAEON offers customized end-to-end services from initial product conceptualization and board product development to mass manufacturing and after-sales service programs.

At AAEON, we take the environment seriously, and all of our products are compliant with RoHS regulations. We are dedicated to the sustainability of the Earth, and all of our products conform to applicable laws and regulations.

## AAEON Core Values

### Reliability:

Delivering dependable products in a timely manner

### Integrity:

Valuing business integrity and ethics

### Innovation:

Turning cutting-edge concepts into reality





# Operation Strength

**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.

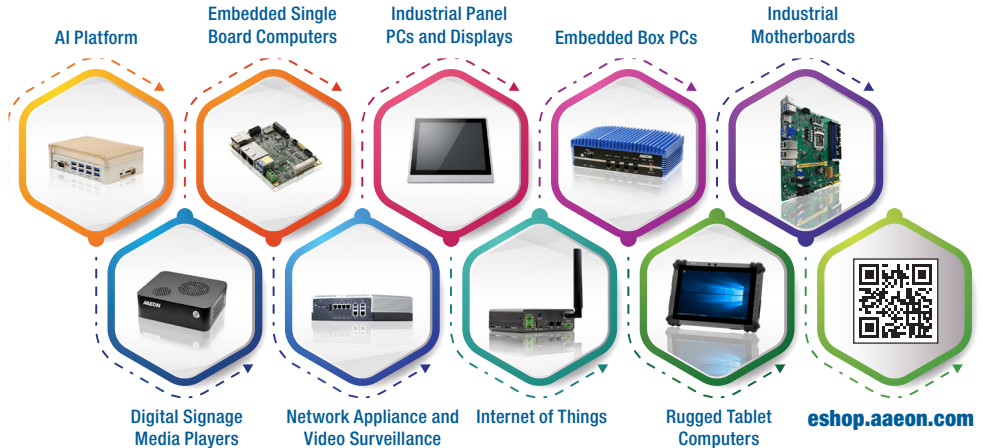
Market analysts have consistently pointed to expanded growth and deployment of Industry 4.0 technologies, especially AI edge computing, in various vertical markets. AAEON.ai collects all of AAEON's rugged, compact, industrial grade AI edge solutions in one convenient location. From boards and systems 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.



**Visit AAEON.ai today and explore the latest in AI Edge technology from AAEON!**

## Shop Online for Prompt Global Service

AAEON eShop offers customers a convenient way to quickly place orders from a selection of our latest and most popular IPC, AI and Edge Computing platforms. Orders are processed and shipped within two working days on all in stock items, with 50% off worldwide shipping on all orders over US\$500. Customers can also order any accessories or configurations listed on the AAEON.com product page through eShop. Registering an account on eShop allows customers access to benefits including managing multiple shipping addresses, order tracking, price drop and in stock notifications and more! Visit AAEON eShop today at [eshop.aaeon.com](http://eshop.aaeon.com).



## AAEON eShop Benefits

- 
**Fast Processing**  
 eShop brings you the convenience of fast order processing. Orders are processed and shipped within two working days for all in-stock items.
- 
**Easy Payment**  
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**50% off Shipping**  
 Save more when you shop more with eShop! Receive 50% off global shipping on all eShop orders over US\$500.
- 
**Official Warranty**  
 All products sold on eShop are backed by the same official warranty and industry leading support offered on every AAEON product.
- 
**Flexible Service**  
 Purchase any product accessory or configuration listed on the AAEON.com product page, including processor, memory, storage and more. Contact AAEON eShop service representatives for more details ([eshop@aaeon.com](mailto:eshop@aaeon.com)).



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<https://eshop.aaeon.com/>



# 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

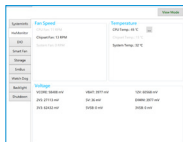
OS Family	Windows® Embedded Standard	Windows® Embedded POS Ready	Windows® Embedded Enterprise
Features	Full Customization	Simple Installation	Full Function
Windows® Product Sku	Windows® Embedded Standard 2009 Windows® Embedded Standard 7 Windows® Embedded Standard 8	WEPOS 1.1 POSReady 7 POSReady 2009 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



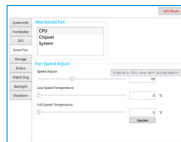
### Hardware Monitor:

Retrieves fan, temperature and voltage data

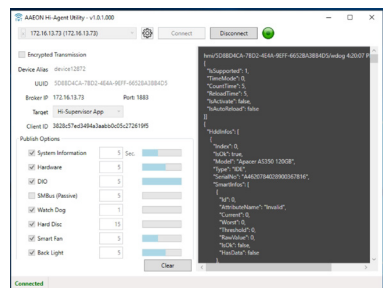
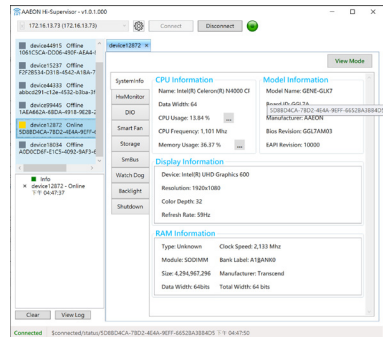


### Hard Disc:

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



### Remote Control Fan



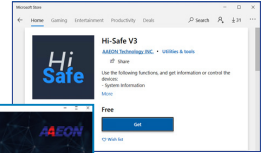



# AAEON Hi-Safe



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

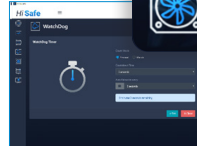
- ▶ **Modern and Flexible User Interface**
- ▶ **Easy and Friendly to Use**
- ▶ **Safe Operation Control for Windows**

**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

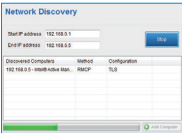



# AAEON Hi-Manager

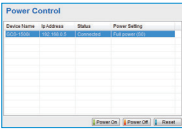
Hi-Manager is a tool based on the Intel® Active Management Technology 12.0 (iAMT 12.0) and has backward compatibility with earlier versions of iAMT. This allows users to locate all iAMT devices within the intranet, power On/Off target devices remotely, set power On/Off scheduling, arrange device groupings 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

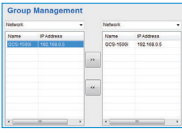
- ▶ Easy-to-use and build custom applications
- ▶ Supports AAEON products with iAMT
- ▶ In-depth technical support



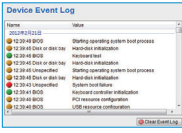
**Network Discovery:**  
AMT device discovery



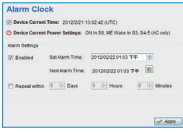
**Power Control:**  
Powers On/Off the target device



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



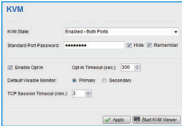
**Event Log:**  
Logs boot records of the selected device



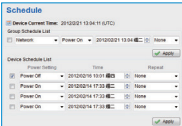
**Alarm Clock:**  
Sets timer to wake up a sleeping device



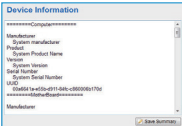
**Remote Recovery:**  
Mounts boot image or physical CD-ROM to target device



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



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



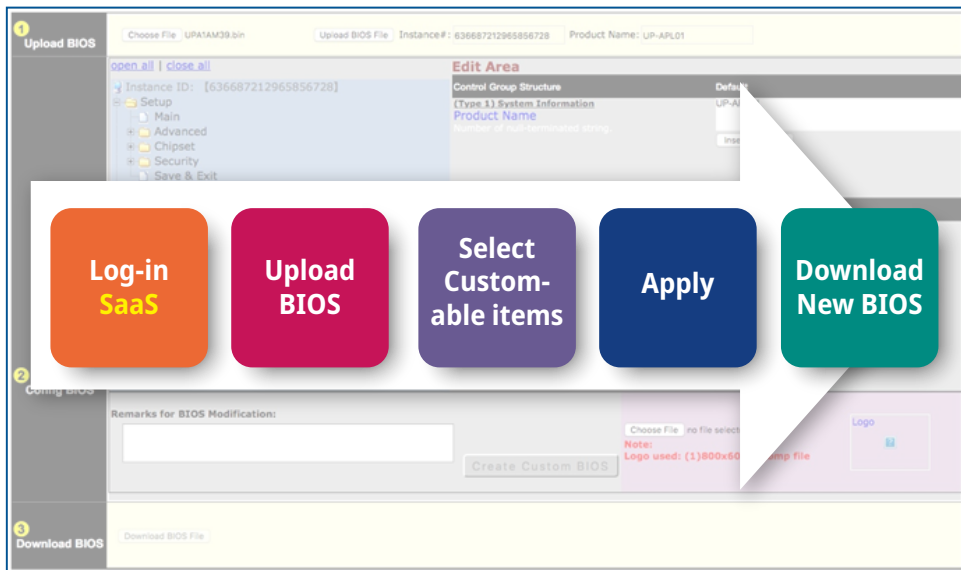
**Device Information:**  
Shows target device assets

## 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

01



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Site Web : [www.es-france.com](http://www.es-france.com)

## Board Level Products

## AI Edge Computing Solutions



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



# Board Level Products

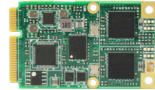
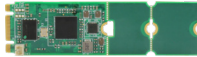
## AI Edge Computing Solutions

01

AI Edge Computing Solutions



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		

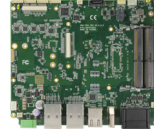




Model	SRT-3352	SRT-3352C
<b>System</b>		
<b>Processor</b>	ARM Cortex-A8 800 MHz RISC Processor	
<b>Memory</b>	Onboard DDR3L 1GB	
<b>Storage</b>	eMMC 16G	
<b>Real Time Clock</b>	RTC, with 3V CR2032 Lithium battery x 1	
<b>Security</b>	—	
<b>Indicators</b>	Programmable LED control x 4	
<b>Cellular</b>	Mini PCIe Connector x 1	
<b>Wireless Lan</b>	—	Onboard WiFi 802.11 b/g/n, Bluetooth4.2 / BLE
<b>Operating System</b>	Debian 9	Debian 10
<b>Support Protocol</b>	—	
<b>I/O Interfaces</b>		
<b>Serial Port</b>	RS-485, Phoenix Connector x 2	RS-485 x 2, wafer box
<b>Ethernet</b>	Gigabit Ethernet, RJ-45 x 2	
<b>USB</b>	USB 2.0, Type A x 1	USB 2.0, Type A x 2
<b>ADC</b>	—	
<b>DI/DO</b>	—	
<b>CAN Bus</b>	—	
<b>Display</b>	—	
<b>Power Connector</b>	3 Pin Phoenix Connector	Lockable DC Jack
<b>Debug Port</b>	Micro USB x 1	
<b>Expansion Slot</b>	SIM card slot x 1 Micro SD slot x 1	
<b>Other Interface</b>	NB-IoT connector x1	NB-IoT connector x1 Board to Board connector x 1
<b>Power Supply</b>		
<b>Power Requirement</b>	DC9-30V	
<b>Power Consumption</b>	2.28 W(Full Loading)	3.36 W (Full Loading)
<b>MTBF (Hours)</b>	855590	
<b>Environmental and Mechanical</b>		
<b>Dimension</b>	3.66" x 5.35"(93mm x 136mm)	3.94" x 3.78" (100 x 96mm)
<b>Weight</b>	1.94lb (88 g)	1.54lb (70 g)
<b>Mount Options</b>	—	
<b>Operation Temperature</b>	32 °F ~ 140 °F (0 °C ~ 60 °C)	
<b>Storage Temperature</b>	-40 °F ~ 176 °F (-40 °C ~ 80 °C)	
<b>Operation Humidity</b>	10% ~ 95% relative humidity, non-condensing	
<b>Note</b>		



## Gateway Board &amp; Expansion Board



Model	SRT-IMX8P	SRT-TG01
<b>System</b>		
<b>Processor</b>	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor (NPU Optional)	11th Generation Core Intel® i7-1185G7E SoC 11th Generation Core Intel® i5-1145G7E SoC 11th Generation Core Intel® i3-1115G4E SoC 11th Generation Core Intel® Celeron 6305E SoC TDP 12W Only
<b>Memory</b>	Onboard DDR4L 2GB (Optional 4GB)	DDR4 3200MHz, SO-DIMM x 2, Up to 64GB
<b>Storage</b>	eMMC 16GB (Optional 32GB)	M.2 2280 M Key slot x 1 (PCIe4) 2.5" SATA SSD/HDD bay x 1
<b>Real Time Clock</b>	RTC x 1, with 3V CR2032 Lithium battery	
<b>Security</b>	TPM 2.0	
<b>Indicators</b>	Programmable LED control x 7	—
<b>Cellular</b>	Mini PCIe Connector x 1 (USB signal)	M.2 3052 B Key slot x 1 (4G/5G)
<b>Wireless Lan</b>	Mini PCIe Connector x 1 (USB signal)	M.2 2230 E Key slot x 1 (Wifi 802.11 ac/b/g/n, BT 5.0)
<b>Operating System</b>	Debian 10	Windows 10 IoT Enterprise / Linux (by request)
<b>Support Protocol</b>	—	
<b>I/O Interfaces</b>		
<b>Serial Port</b>	RS-232/422/485 switchable x 2, Phoenix Connector	RS-232/422/485 x 4, Wafer Box
<b>Ethernet</b>	Gigabit Ethernet x 2, RJ-45	Intel®i211-LM,10/100/1000Base x 1,RJ45 Intel®i219-LM,10/100/1000Base x 1,RJ45 Intel®i225-LM,10/100/1000Base x 1,RJ45 (Support Vpro)
<b>USB</b>	USB 3.0 Type-A x 2	USB3.2 Gen 2 x 1, Type A USB3.2 Gen 1 x 3, Type A
<b>ADC</b>	—	
<b>DI/DO</b>	—	8 bit, Phoenix Connector
<b>CAN Bus</b>	CAN-FD x 2 CH, Phoenix Connector	CAN 2.0 B x 2 CH, Phoenix Connector
<b>Display</b>	HDMI x1 (Output)	HDMI 2.0b x 1
<b>Power Connector</b>	2 Pin 3.81mm Pitch Phoenix Connector	2 Pin 3.81mm Pitch Phoenix Connector
<b>Debug Port</b>	Micro USB x 1	—
<b>Expansion Slot</b>	SIM card slot x 1 Micro SD slot x 1	Micro SIM slot x 1
<b>Other Interface</b>	—	SATA 3.0 x 1 SATA Power connector x 1 (5V) 100 pin board to board connector x 2 PCIe, USB3.0, USB2.0, UART, GPIO, I2C, DDI, SPI
<b>Power Supply</b>		
<b>Power Requirement</b>	DC 9-36V	DC 9 ~ 36V (Optional DC12V), AT Type
<b>Power Consumption</b>	9.36W (Full Loading)	67 W (Full Loading)
<b>MTBF (Hours)</b>	479,374	306,575
<b>Environmental and Mechanical</b>		
<b>Dimension</b>	3.66" x 5.43" (93 x 138mm)	6.69" x 5.74" (170 x 146 mm)
<b>Weight</b>	0.7lb (350 g)	1.4lb (650g)
<b>Mount Options</b>	—	
<b>Operation Temperature</b>	-4 °F ~ 158 °F (-20 °C ~ 70 °C)	32 °F ~ 122 °F (0 °C ~ 50 °C)
<b>Storage Temperature</b>	-40 °F ~ 176 °F (-40 °C ~ 80 °C)	
<b>Operation Humidity</b>	10% ~ 95% relative humidity, non-condensing	
<b>Note</b>		

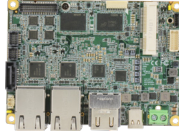






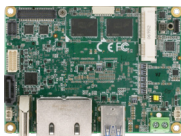
Model	SRT-APLC
<b>System</b>	
Processor	Intel Atom X5-E3940 Processor SoC / Intel HD 500 Graphics
Memory	Onboard LPDDR4 1866MHz 4GB / 8GB (Optional)
Storage	eMMC 5.1 32GB / 64GB (Optional)
Real Time Clock	RTC x 1, with 3V CR2032 Lithium battery
Security	—
Indicators	—
Cellular	—
Wireless Lan	—
Operating System	Windows 10 IoT Enterprise / Linux (by request)
Support Protocol	—
<b>I/O Interfaces</b>	
Serial Port	—
Ethernet	Gigabit Ethernet x 1, RJ-45
USB	USB 3.0 x 1, Type A
ADC	—
DI/DO	—
CAN Bus	—
Display	HDMI 1.4 x 1 (Output)
Power Connector	DC Jack
Debug Port	—
Expansion Slot	Micro SD slot x 1 100 pin board to board connector x 2 PCIe, USB3.0, USB2.0, UART, GPIO, I2C, DDI, SPI
Other Interface	Power switch button x 1 Reset switch button x 1
<b>Power Supply</b>	
Power Requirement	12V DC-In @ 3A-5A 5.5/2.5 mm
Power Consumption	20 W (Full Loading)
MTBF (Hours)	826,592
<b>Environmental and Mechanical</b>	
Dimension	3.54" x 2.9" x 0.85" (90 x 74 x 21.5 mm)
Weight	0.44lb (200 g)
Mount Options	—
Operation Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operation Humidity	10% ~ 95% relative humidity, non-condensing
Note	





Model	PICO-V2K4	PICO-V2K4-SEMI
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	PICO-ITX	PICO-SEMI
<b>CPU</b>		AMD RYZEN™ V2000 embedded Processor Family V2718 (8C/16T, 1.7–4.15 GHz, TDP 10-25W) V2516 (6C/12T, 2.1–3.95 GHz, TDP 10-25W)
<b>CHIPSET</b>		AMD RYZEN™ V2000 embedded Processor Family
<b>MEMORY TYPE</b>		LPDDR4x 3733 MHz onboard memory
<b>BIOS</b>		UEFI
<b>WAKE ON LAN</b>		Yes
<b>WATCHDOG TIMER</b>		255 Levels
<b>SECURITY</b>		TPM2.0
<b>RTC Battery</b>		Lithium Battery 3V/240mAh
<b>DIMENSION</b>	3.94" x 2.84" (100mm x 72mm)	4.80" x 3.18" x 2.13" (122mm x 80.8mm x 54 mm)
<b>Gross Weight</b>	0.18 lbs (0.08 kg)	0.84 lbs (0.38 kg)
<b>OS Support</b>		Windows 10 (64 bit), Linux Ubuntu 20.04.3/Kernel 5.11
<b>POWER</b>		
<b>POWER REQUIREMENT</b>		+12V
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	DC Jack Connector
<b>POWER CONSUMPTION</b>		V2718, LPDDR4x onboard 32GB, 4.24A @ +12V(TYPICAL) V2718, LPDDR4x onboard 32GB, 4.82A @ +12V(MAX)
<b>DISPLAY CONTROLLER</b>		AMD Radeon 6, 7 Graphics (Renoir)
<b>LVDS/eDP</b>	eDP or LVDS x 1 (eDP 1.4: 3840x2160, 60Hz; LVDS: 12V/3.3V, 18-24 bit, single channel)	—
<b>Display Interface</b>		Type C to DP x 1 HDMI 2.0b x 1, 4K x 2K 60Hz HDMI 1.4 x 1, 4K x 2K 30Hz (3840 x 2160)
<b>Multiple Display</b>	Up to 4 Simultaneous Displays	Up to 3 Simultaneous Displays
<b>AUDIO CODEC</b>		Realtek ALC269 (Optional)
<b>AUDIO INTERFACE</b>	High Definition Audio Interface, Line-in/Line-out/MIC (Optional)	Line-out (Optional)
<b>Speaker</b>	—	—
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>		Intel® i226, 10/100/2500Base x 1 Intel® i210, 10/100/1000Base x 1
<b>USB</b>	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)
<b>SERIAL PORT</b>	—	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)(Optional)
<b>VIDEO</b>		Type C to DP x 1 HDMI 2.0b x 1, 4K x 2K 60Hz HDMI 1.4 x 1, 4K x 2K 30Hz (3840 x 2160)
<b>INTERNAL I/O</b>		
<b>USB</b>	USB2.0 x 4	—
<b>SERIAL PORT</b>	COM1 – COM4 (RS232/422/485, supports 5V/12V/RI)	—
<b>VIDEO</b>	eDP or LVDS x 1 (eDP 1.4: 3840x2160, 60Hz; LVDS: 12V/3.3V, 18-24 bit, single channel)	—
<b>SATA</b>	SATA III x 1 +5V SATA Power Connector x 1 Onboard NVME SSD (Optional, up to 64GB, PCIe x 2, by BOM)	Onboard NVME SSD 64GB
<b>AUDIO</b>		Audio Header x 1 (Optional)
<b>DIO/GPIO</b>	8-bit	8-bit (Optional)
<b>SMBus/I2C</b>		SMBUS/I2C x 1 (SMBUS as default, I2C selected by HW BOM)
<b>Touch</b>		—
<b>FAN</b>		4pins Smart Fan x1
<b>SIM</b>		—
<b>Front Panel</b>		HDD LED, PWR LED, Power Button, Buzzer, Reset
<b>Others</b>		—
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>		mini-PCIe(Full) x 1 (PCIe [x1] x 1/USB2.0 as default, mSATA selected by HW BOM)
<b>M.2</b>	M.2 2280 M-key (PCIe Gen3 x 4 as default, SATA selected by BIOS) x 1	M.2 2280 M-key x 1 (PCIe Gen3 x 4 as default, SATA selected by BIOS)
<b>Others</b>		—
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C) with 0.2 m/s airflow
<b>STORAGE TEMP</b>		-40°F ~ 185°F (-40°C ~ 85°C)
<b>OPERATING HUMIDITY</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF (HOURS)</b>		407,784
<b>EMC</b>		CE/FCC Class A
<b>Note</b>		





Model	PICO-TGU4	PICO-TGU4-SEMI
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	PICO-ITX	PICO-SEMI
<b>CPU</b>		Intel® Core™/Celeron® Processor: i7-1185G7E (4C/8T, 1.8GHz, up to 4.4GHz, TDP up to 28W) i5-1145G7E (4C/8T, 1.5GHz, up to 4.1GHz, TDP up to 28W) i3-1115G4E (2C/4T, 2.2GHz, up to 3.9GHz, TDP up to 28W) Celeron® 6305E (2C/2T, 1.8GHz, TDP 15W)
<b>CHIPSET</b>		11th Generation Intel® Core™ i7/i5/i3/Celeron SoC
<b>MEMORY TYPE</b>		Onboard LPDDR4x 3200MHz, up to 32GB, In-Band ECC (select SKUs)
<b>BIOS</b>		UEFI
<b>WAKE ON LAN</b>		Yes
<b>WATCHDOG TIMER</b>		255 Levels
<b>SECURITY</b>		TPM2.0 (Optional)
<b>RTC Battery</b>		Lithium Battery 3V/240mAh
<b>DIMENSION</b>	3.94" x 2.84" (100mm x 72mm)	4.80" x 3.18" x 1.98" (122mm x 80.8mm x 50.4 mm)
<b>Gross Weight</b>	0.18 lbs. (0.08 kg)	0.84 lbs. (0.38 kg)
<b>OS Support</b>		Windows 10 (64bit) Linux Ubuntu 20.04.2/Kernel 5.8
<b>POWER</b>		
<b>POWER REQUIREMENT</b>	+12V	12V only
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	DC Jack Connector
<b>POWER CONSUMPTION</b>		Intel® i7-1185G7E, LPDDR4x onboard 32GB, 2.89A@ +12V (TYPICAL)
<b>DISPLAY</b>		
<b>CONTROLLER</b>		Intel® Iris® Xe (i5/i7 support) Intel® UHD Graphics (i3/Celeron support)
<b>LVDS/eDP</b>	eDP x 1 (up to HBR3, 8K x 4K 30Hz)	—
<b>Display Interface</b>		HDMI2.0b x 1 (4K x 2K 60Hz)
<b>Multiple Display</b>		Up to 2 Simultaneous Displays
<b>AUDIO</b>		
<b>CODEC</b>		Realtek ALC269 (Optional)
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC (Optional)	Line-out (Optional)
<b>Speaker</b>		—
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>		Intel® i225, 10/100/1000/2500Base, RJ45 x 1 Intel® i219, 10/100/1000Base, RJ45 x 1
<b>USB</b>		USB3.2 Gen 2 x 2
<b>SERIAL PORT</b>		—
<b>VIDEO</b>		HDMI2.0b x 1 (4K x 2K 60Hz)
<b>INTERNAL I/O</b>		
<b>USB</b>	USB3.2 Gen 1 x 2 USB2.0 x 4	—
<b>SERIAL PORT</b>	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)(Optional)
<b>VIDEO</b>	eDP x 1 (up to HBR3, 8Kx4K 30Hz)	—
<b>SATA</b>		SATA III x 1 +5V SATA Power Connector x 1
<b>AUDIO</b>		Audio Header x 1 (Optional)
<b>DIO/GPIO</b>	8-bit	—
<b>SMBus/I2C</b>		I2C/SMBus x1 (SMBUS as default, I2C select by BOM)
<b>Touch</b>		—
<b>FAN</b>		4pins Smart Fan x1
<b>SIM</b>		—
<b>Front Panel</b>		HDD LED, PWR LED, Power Button, Buzzer, Reset
<b>Others</b>		—
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>		Full-size mSATA/mPCIe or USB2.0 x 1 (PCIe as default, select by BIOS option)
<b>M.2</b>		M.2 M Key 2280 x 1 (PCIe Gen 4 [x4] as default, SATA select by HW BOM)
<b>Others</b>		SMBus/I2C/eSPI x 1
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP</b>	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)
<b>STORAGE TEMP</b>		-40°F ~ 185°F (-40°C ~ 85°C)
<b>OPERATING HUMIDITY</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF (HOURS)</b>		424,208
<b>EMC</b>		CE/FCC Class A
<b>Note</b>		





Model	PICO-WHU4	PICO-WHU4-SEMI
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	PICO-ITX	PICO-SEMI
<b>CPU</b>	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)	
<b>CHIPSET</b>	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC	
<b>MEMORY TYPE</b>	DDR4 up to 2400MHz SODIMM x 1, up to 32GB, Non-ECC	
<b>BIOS</b>	UEFI	
<b>WAKE ON LAN</b>	Yes	
<b>WATCHDOG TIMER</b>	255 Levels	
<b>SECURITY</b>	TPM2.0 (Optional by accessory card)	TPM2.0 (Optional)
<b>RTC Battery</b>	Lithium Battery 3V/240mAh	
<b>DIMENSION</b>	3.94" x 2.84" (100mm x 72mm)	5.90" x 3.94" x 2.36" (150mm x 100mm x 60mm)
<b>Gross Weight</b>	0.18 lbs. (0.08 kg)	1.41 lbs. (0.64 kg)
<b>OS Support</b>	Windows 10 (64 bit) Ubuntu 18.04.3/Kernel 5.0	
<b>POWER</b>		
<b>POWER REQUIREMENT</b>	+12V	+12V only
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	DC Jack Connector
<b>POWER CONSUMPTION</b>	Intel® i7-8665UE @ DDR4 16GB, 2.23A@ +12V(TYPICAL)	
<b>DISPLAY</b>		
<b>CONTROLLER</b>	Intel® UHD Graphics 610/620	
<b>LVDS/eDP</b>	—	
<b>Display Interface</b>	HDMI 1.4b x 2 (up to 3840 x 2160)	
<b>Multiple Display</b>	Up to 2 Simultaneous Displays	
<b>AUDIO</b>	—	
<b>CODEC</b>	—	
<b>AUDIO INTERFACE</b>	—	
<b>Speaker</b>	—	
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2	
<b>USB</b>	USB 3.2 Gen 2 x 2	USB 3.2 Gen 2 x 2 USB 2.0 x 2
<b>SERIAL PORT</b>	—	
<b>VIDEO</b>	HDMI 1.4b x 2 (up to 3840 x 2160)	
<b>INTERNAL I/O</b>		
<b>USB</b>	USB2.0 x 2	—
<b>SERIAL PORT</b>	COM1, COM2 (RS232/422/485, supports 5V/12V/R)	COM1, COM2 (RS232/422/485, supports 5V/12V/R)(Optional)
<b>VIDEO</b>	—	
<b>SATA</b>	SATA III x 1 +5V SATA Power Connector x 1	
<b>AUDIO</b>	—	
<b>DIO/GPIO</b>	4-bit	
<b>SMBus/I2C</b>	I2C/SMBus x1 (SMBUS as default)	
<b>Touch</b>	—	
<b>FAN</b>	4pins Smart Fan x1	
<b>SIM</b>	—	
<b>Front Panel</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset	
<b>Others</b>	—	
<b>EXPANSION</b>	Full size mSATA/mPCIe or USB2.0 x 1 (PCIe as default, mSATA selected by BIOS)	
<b>M.2</b>	M.2 E-Key 2230 x 1 (for WiFi/BT, PCIe/USB signal only) SMBUS/I2C/LPC/eSPI x 1	
<b>Others</b>	—	
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP</b>	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 SSD SKU
<b>STORAGE TEMP</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing	
<b>MTBF (HOURS)</b>	298,762	
<b>EMC</b>	CE/FCC Class A	
<b>Note</b>		



# Board Level Products

## Pico-ITX Boards



Model	PICO-KBU4	PICO-KBU4-SEMI
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	PICO-ITX	PICO-SEMI
<b>CPU</b>	Intel® 7th Generation Core™ /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)	
<b>CHIPSET</b>	Integrated with Intel® SoC	
<b>MEMORY TYPE</b>	DDR4 up to 2133MHz, SODIMM x 1, up to 16GB, Non-ECC	
<b>BIOS</b>	UEFI	
<b>WAKE ON LAN</b>	Yes	
<b>WATCHDOG TIMER</b>	255 Levels	
<b>SECURITY</b>	—	
<b>RTC Battery</b>	Lithium Battery 3V/240mAh	
<b>DIMENSION</b>	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)
<b>Gross Weight</b>	0.18 lbs (0.08 kg)	0.88 lb (0.4 kg)
<b>OS Support</b>	Windows 10 (64 bit)	
<b>POWER</b>		
<b>POWER REQUIREMENT</b>	+12V	12V only
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	Lockable DC Jack Connector
<b>POWER CONSUMPTION</b>	Intel® i7-7600, DDR4 16GB, 2.3A@ +12V(TYPICAL)	
<b>DISPLAY</b>		
<b>CONTROLLER</b>	Intel® HD Graphics 510/620	
<b>LVDS/eDP</b>	LVDS (18/24-bit 2CH) 1920 x 1200	—
<b>Display Interface</b>	HDMI 1.4b x 1 (up to 4096 x 2304) DDI (BIO, Optional)	HDMI 1.4b x 1 (up to 4096 x 2304)
<b>Multiple Display</b>	Up to 3 Simultaneous Displays	1 Simultaneous Display
<b>AUDIO</b>		
<b>CODEC</b>	Realtek ALC269	Realtek ALC269 (Optional)
<b>AUDIO INTERFACE</b>	Line-out	Line-out (Optional)
<b>Speaker</b>	—	
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
<b>USB</b>	USB 3.2 Gen 1 x 2	USB 3.2 Gen 1 x 2 COM1: RS-232 x 1 (Optional) COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V) (Optional)
<b>SERIAL PORT</b>	—	—
<b>VIDEO</b>	HDMI 1.4b x 1 (up to 4096 x 2304)	
<b>INTERNAL I/O</b>		
<b>USB</b>	USB 2.0 x 2	—
<b>SERIAL PORT</b>	COM1: RS-232 x 1 COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)	—
<b>VIDEO</b>	LVDS (18/24-bit 2CH) 1920 x 1200	—
<b>SATA</b>	SATA III x 1 +5V SATA Power Connector x 1	
<b>AUDIO</b>	Audio Header x 1	Audio Header x 1 (Optional)
<b>DIO/GPIO</b>	4-bit	4-bit (Optional)
<b>SMBus/I2C</b>	I2C/SMBus x1 (SMBUS as default)	I2C/SMBus x1 (SMBUS as default) (Optional)
<b>Touch</b>	—	
<b>FAN</b>	4pins Smart Fan x1	
<b>SIM</b>	—	
<b>Front Panel</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset	
<b>Others</b>	—	
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>	—	
<b>M.2</b>	M.2 B-Key 2242 x 1 (PCIe[x1]/SATA select by BIOS) M.2 E-Key 2230 x 1 (PCIe/USB)	
<b>Others</b>	BIO (Optional)	
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C)
<b>STORAGE TEMP</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing	
<b>MTBF (HOURS)</b>	163,000	
<b>EMC</b>	CE/FCC Class A	
<b>Note</b>		

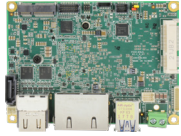




# Board Level Products Pico-ITX Boards

01

Pico-ITX Boards



Launching in Q3

Model	PICO-EHL4	PICO-EHL4-SEMI
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	PICO-ITX	PICO-SEMI
<b>CPU</b>	Intel® Atom™ x6000E series, Intel® Pentium and Celeron® N and J series processors, Intel® Atom™ x6425RE (4C, 1.9GHz, TDP 12W), Intel® Atom™ x6414RE (4C, 1.5GHz, TDP 9W), Intel® Atom™ x6212RE (2C, 1.2GHz, TDP 6W), Intel® Atom™ x6425E (4C, 2.0GHz, up to 3GHz, TDP 12W), Intel® Atom™ x6413E (4C, 1.5GHz, up to 3GHz, TDP 9W), Intel® Atom™ x6211E (2C, 1.2GHz, up to 3GHz, TDP 6W), Intel® Pentium® J6426 (4C, 1.8GHz, up to 3GHz, TDP 10W), Intel® Pentium® N6415 (4C, 1.2GHz, up to 3GHz, TDP-up 6.5W), Intel® Celeron® J6412 (4C, 1.8GHz, up to 3GHz, TDP 10W), Intel® Celeron® J6210 (2C, 1.2GHz, up to 3GHz, TDP 6.5W), (Intel® Atom™ x6427FE/x6200FE by request)	Intel® Atom™ x6000E series, Intel® Pentium®, and Celeron® N and J series processors; Intel® Atom™ x6425RE (4C, 1.9GHz, TDP-up 12W) Intel® Atom™ x6425E (4C, 2.0GHz, up to 3GHz, TDP-up 12W) Intel® Atom™ x6211E (2C, 1.2GHz, up to 3GHz, TDP-up 6W) Intel® Pentium® J6426 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® J6412 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® N6210 (2C, 1.2GHz, up to 3GHz, TDP-up 6.5W) (Intel® Atom™ x6414RE/x6413E/x6427FE/x6200FE/N6415 by customer's request)
<b>CHIPSET</b>		Intel® Elkhart Lake SoC Processor
<b>MEMORY TYPE</b>		LPDDR4x up to 3200MHz, up to 16GB
<b>BIOS</b>		UEFI
<b>WAKE ON LAN</b>		Yes
<b>WATCHDOG TIMER</b>		255Levels
<b>SECURITY</b>	Intel® PTT (Integrated TPM)	---
<b>RTC Battery</b>		Lithium Battery 3V/240mAh
<b>DIMENSION</b>	3.94" x 2.84" (100mm x 72mm)	TBD
<b>Gross Weight</b>	0.18 lbs. (0.08 kg)	TBD
<b>OS Support</b>		Windows 10 (64 bit), Ubuntu 20.04.3(OT)/Kernel 5.13
<b>POWER</b>		
<b>POWER REQUIREMENT</b>	+12V	12V only
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector (Default), Lockable DC Jack Connector (colay)	DC Jack Connector
<b>POWER CONSUMPTION</b>	Intel® Atom™ x6425E, LPDDR4x onboard 16GB, 2.48A@ +12V(TYPICAL) Intel® Atom™ x6425E, LPDDR4x onboard 16GB, 2.62A@ +12V(MAX)	Intel® Atom™ x6425E, LPDDR4x onboard 16GB, 2.48A@ +12V(TYPICAL) Intel® Atom™ x6425E, LPDDR4x onboard 16GB, 2.62A@ +12V(MAX)
<b>DISPLAY</b>		
<b>CONTROLLER</b>	Intel® Atom™ x6000E series, Intel® Pentium and Celeron® N and J series processors	Intel® UHD Graphics for 10th Gen Intel® Processors
<b>LVDS/eDP</b>	eDP (up to HBR3, 8K x 4K 30Hz)/LVDS (18/24bit 2CH) default: LVDS	---
<b>Display Interface</b>	HDMI 2.0b x 1 (4K x 2K 60Hz)	HDMI 2.0b x 2 (4K x 2K 60Hz)
<b>Multiple Display</b>	Up to 3 Simultaneous Displays	Up to 2 Simultaneous Displays
<b>AUDIO</b>		
<b>CODEC</b>		
<b>AUDIO INTERFACE</b>		
<b>Speaker</b>		
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Realtek RTL8111H-CG, 10/100/1000Base-TX, RJ-45 x 2	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
<b>USB</b>		USB 3.2 Gen 2 x 2
<b>SERIAL PORT</b>	RS-232/422/485 x 2	COM1, COM2 (RS232/422/485, supports 5V/12V/RJ)(Optional)
<b>VIDEO</b>		HDMI 2.0b x 2 (4K x 2K 60Hz)
<b>INTERNAL I/O</b>		
<b>USB</b>	USB2.0 x 2	---
<b>SERIAL PORT</b>	RS-232/422/485 x 2	---
<b>VIDEO</b>		
<b>SATA</b>	SATA III x 1, +5V SATA Power Connector x 1	eMMC 5.1, up to 128GB (Optional)
<b>AUDIO</b>		
<b>DIO/GPIO</b>	4-bit	4-bit (Optional)
<b>SMBus/I2C</b>	SMBus/I2C and eSPI x 1 (SMBus as default, I2C select by HW BOM)	SMBus x 1 (Optional)
<b>Touch</b>		
<b>FAN</b>		4 pins Smart Fan x 1
<b>SIM</b>		
<b>Front Panel</b>		HDD LED, PWR LED, Power Button, Buzzer, Reset
<b>Others</b>		
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>		Full size mPCIe/mSATA x 1 (SATA as default, PCIe selected by BIOS)
<b>M.2</b>		M.2 E key 2230 x 1 (PCIe x 1/USB2.0)
<b>Others</b>		CANBUS x 2 (optional, N6210/J6412 not support, support up to 5Mbit/s)
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C)
<b>STORAGE TEMP</b>	-40°F ~ 176°F (-40°C ~ 80°C)	-40°F ~ 185°F (-40°C ~ 85°C)
<b>OPERATING HUMIDITY</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF (HOURS)</b>		489,989
<b>EMC</b>		CE/FCC Class A
<b>Note</b>		



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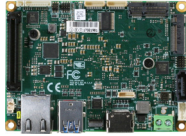
## Board Level Products

# Pico-ITX Boards



Model	PICO-APL1	PICO-APL1-SEMI	PICO-APL2
<b>SYSTEM FORM FACTOR</b>	PICO-ITX	PICO-SEMI	Pico-ITX
<b>CPU</b>	Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, TDP 6W), Celeron N3350 (2C/2T, 1.10GHz, up to 2.40GHz, TDP 6W), Atom E3950 (4C/4T, 1.60GHz, up to 2.00GHz, TDP 12W), Atom E3940 (4C/4T, 1.60GHz, up to 1.80GHz, TDP 9.5W), Atom E3930 (2C/2T, 1.30GHz, up to 1.80GHz, TDP 6.5W)	Intel® Celeron® Processor: Celeron N3350 (2C/2T, 1.10GHz, up to 2.40GHz, TDP 6W)	Intel Atom® x7-E3950 (4C, 1.6GHz, up to 2GHz, TDP 12W), Intel Atom® x5-E3940 (4C, 1.6GHz, up to 1.8GHz, TDP 9.5W), Intel® Pentium® N4200 (4C, 1.1GHz, up to 2.5GHz, TDP 6W), Intel® Celeron® N3350 (2C, 1.1GHz, up to 2.4GHz, TDP 6W)
<b>CHIPSET</b>	Integrated with Intel® SoC		Intel Atom® E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC
<b>MEMORY TYPE</b>	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)		
<b>BIOS</b>	UEFI		
<b>WAKE ON LAN</b>	Yes		
<b>WATCHDOG TIMER</b>	255 Levels		
<b>SECURITY</b>	TPM2.0 (Optional via LPC cable)		
<b>RTC Battery</b>	Lithium Battery 3V/240mAh		Lithium Battery 3V/240mAh
<b>DIMENSION</b>	3.94" x 2.84" (100mm x 72mm)	4.8" x 3.15" x 1.73" (122 x 80 x 44 mm)	3.94" x 2.84" (100mm x 72mm)
<b>Gross Weight</b>	0.18 lbs (0.08 kg)	0.59 lb (0.27 kg)	0.18 lbs. (0.08 kg)
<b>OS Support</b>	Windows 10 (64 bit) Linux Ubuntu 21.04.0/Kernel 5.10	Windows 10 (64 bit)	Windows 10 (64 bit) Ubuntu 20.04.4 / 5.13.0
<b>POWER REQUIREMENT</b>	+12V		
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX	AT/ATX (Pin header)
<b>CONNECTOR</b>	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	Lockable DC Jack Connector	2-pin Connector (Pin header)
<b>POWER CONSUMPTION</b>	Intel® N3350 Processor, DDR3L 8GB, 0.91A@+12V(TYPICAL)		Intel® Pentium® N4200, DDR3L 8GB x 1, 2.16A@+12V(TYPICAL), Intel® Pentium® N4200, DDR3L 8GB x 1, 2.28A@+12V(MAX)
<b>DISPLAY</b>	Intel® HD Graphics 500		Intel® HD Graphics 500/505
<b>CONTROLLER</b>	Intel® HD Graphics 500/505	Intel® HD Graphics 500	Intel® HD Graphics 500/505
<b>LVDS/eDP</b>	LVDS (18/24bit 2CH) 1920 x 1200 (Optional)	---	LVDS (18/24bit 2CH)
<b>Display Interface</b>	HDMI 1.4b x 1 (up to 3840 x 2160) DDI (BIO, Optional)	HDMI 1.4b x 1 (up to 3840 x 2160)	HDMI 1.4 x 1 (2K @30Hz) (Pin header type) DDI (BIO, Optional)
<b>Multiple Display</b>	Up to 3 Simultaneous Displays	1 Simultaneous Display	Up to 2 Simultaneous Displays
<b>AUDIO</b>	Realtek ALC897/892		Realtek 888/897
<b>CODEC</b>	Realtek ALC897/892	Realtek ALC897/892 (Optional)	Realtek 888/897
<b>AUDIO INTERFACE</b>	Line-out	Line-out (Optional)	Line out
<b>Speaker</b>	---		
<b>EXTERNAL I/O</b>	---		
<b>ETHERNET</b>	Intel® i210/i211, 10/100/1000Base, RJ-45 x 1	Intel® i210, 10/100/1000Base, RJ-45 x 1	Intel® i210AT/i210IT, 10/100/1000Base x 1 (Pin header) "LED in separated pin header"
<b>USB</b>	USB 3.2 Gen 1 x 2COM-TGH86		USB 3.2 Gen 1 x 2
<b>SERIAL PORT</b>	---	COM1: RS-232 x 1 (Optional) COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V) (Optional)	---
<b>VIDEO</b>	HDMI 1.4b x 1 (up to 3840 x 2160)		HDMI 1.4 x 1 (2K @30Hz) (Pin header type)
<b>INTERNAL I/O</b>	---		
<b>USB</b>	USB 2.0 x 1	---	USB2.0 x 1
<b>SERIAL PORT</b>	COM1: RS-232 x 1, COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)	---	COM1: RS-232 x 1 COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)
<b>VIDEO</b>	LVDS (18/24bit 2CH) 1920 x 1200 (Optional)	---	---
<b>SATA</b>	SATA III x 1, +5V SATA Power Connector x 1		SATA III x 1 +5 SATA Power Connector x 1
<b>AUDIO</b>	Line-out	Line-out (Optional)	Line-out x 1
<b>DIO/GPIO</b>	4-bit	4-bit (Optional)	4-bit
<b>SMBUS/I2C</b>	SMBUS/I2C x 1 (SMBUS as default)	SMBUS/I2C x 1 (SMBUS as default) (Optional)	SMBUS/I2C x 1 (SMBUS as default, I2C selected by HW BOM)
<b>Touch</b>	---		
<b>FAN</b>	---		
<b>SIM</b>	---		
<b>Front Panel</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset		
<b>Others</b>	---		
<b>EXPANSION</b>	---		
<b>Mini PCI-E/mSATA</b>	Half-size Mini Card (mPCIe as default) x 1, Full size mPCIe/mSATA or USB2.0 x 1 (SATA as default, PCIe selected by HW BOM)		Full size Mini Card mPCIe/ mSATA or USB2.0 x 1 (SATA as default, mPCIe selected by HW BOM) Half-size Mini Card x 1 (mPCIe as default)
<b>M.2</b>	---		
<b>Others</b>	BIO (Optional)	---	BIO x 1 (Optional) SMBUS/I2C x 1 (SMBUS as default, I2C selected by HW BOM)
<b>ENVIRONMENT &amp; CERTIFICATION</b>	---		
<b>OPERATING TEMP</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s airflow	32 °F~ 140 °F (0°C ~ 60°C)
<b>STORAGE TEMP</b>	---	-40°F ~ 185°F (-40°C ~ 85°C)	-40 °F ~ 176 °F (-40°C ~ 80°C)
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing		
<b>MTBF (HOURS)</b>	170,000		525,137
<b>EMC</b>	CE/FCC Class A		





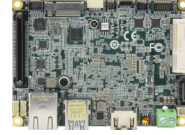
Model	PICO-APL3	PICO-APL3-SEMI
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	PICO-ITX	PICO-SEMI
<b>CPU</b>	Intel® Atom™/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, TDP 6W) Celeron N3350 (2C/2T, 1.10GHz, up to 2.40GHz, TDP 6W) Atom E3950 (4C/4T, 1.60GHz, up to 2.00GHz, TDP 12W) Atom E3940 (4C/4T, 1.60GHz, up to 1.80GHz, TDP 9.5W) Atom E3930 (2C/2T, 1.30GHz, up to 1.80GHz, TDP 6.5W)	Intel® 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)
<b>CHIPSET</b>		Integrated with Intel® SoC
<b>MEMORY TYPE</b>	Onboard DDR3L 2GB (Optional to 4GB)	Onboard DDR3L up to 4GB
<b>BIOS</b>		UEFI
<b>WAKE ON LAN</b>		Yes
<b>WATCHDOG TIMER</b>		255 Levels
<b>SECURITY</b>	TPM2.0 (Optional)	
<b>RTC Battery</b>		Lithium Battery 3V/240mAh
<b>DIMENSION</b>	3.94" x 2.84" (100mm x 72mm)	W/O heat sink: 4.8" x 3.15" x 1.18" (122 x 80 x 30 mm) W/ heat sink: 4.8" x 3.15" x 1.73" (122 x 80 x 44 mm)
<b>Gross Weight</b>	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)
<b>OS Support</b>		Windows 10 (64 bit)
<b>POWER</b>		+12V
<b>POWER REQUIREMENT</b>		ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector (Default), Lockable DC Jack Connector (colay)	DC Jack Connector
<b>POWER CONSUMPTION</b>	Intel® N4200 processor, DDR3L 4GB, 1.1A@12V	Intel® N4200 processor, DDR3L 4GB, eMMC 32GB, 1.1A@+12V(TYPICAL)
<b>DISPLAY</b>		Intel® HD Graphics 500/505
<b>CONTROLLER</b>		Intel® HD Graphics 500/505
<b>LVDS/eDP</b>	eDP x 1 (up to 3840x2160@60Hz, Optional)	
<b>Display Interface</b>	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz), DDI (BIO, Optional)	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
<b>Multiple Display</b>	Up to 3 Simultaneous Displays	1 Simultaneous Display
<b>AUDIO</b>		
<b>CODEC</b>	Realtek ALC269	Realtek ALC269 (Optional)
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	Line-out (Optional)
<b>Speaker</b>	Amplifier Header	Amplifier Header (Optional)
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>		Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 1
<b>USB</b>		USB 3.2 Gen 1 x 2
<b>SERIAL PORT</b>	—	COM1, COM2 (RS232) (Optional)
<b>VIDEO</b>		HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
<b>INTERNAL I/O</b>		
<b>USB</b>	USB 2.0 x 2 (Internal, co-use with FAN connector)	—
<b>SERIAL PORT</b>	COM1, COM2 (RS232)	—
<b>VIDEO</b>	eDP x 1 (up to 3840x2160@60Hz, Optional)	—
<b>SATA</b>	SATA III x 1 +5V SATA Power Connector x 1 eMMC 16GB (Optional to 32GB/64GB/128GB)	SATA III x 1 +5V SATA Power Connector x 1 eMMC 32GB
<b>AUDIO</b>	Audio Header x 1	—
<b>DIO/GPIO</b>	4-bit	4-bit (Optional)
<b>SMBus/I2C</b>	I2C/I2S x 1 (I2C as default)	I2C/I2S x 1 (I2C as default) (Optional)
<b>Touch</b>		—
<b>FAN</b>		—
<b>SIM</b>		—
<b>Front Panel</b>		HDD LED, PWR LED, Power Button, Buzzer, Reset
<b>Others</b>		—
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>		
<b>M.2</b>		M.2 E-Key 2230 x 1 (PCIe/USB), M.2 B-Key 2280 x 1 (SATA/USB)
<b>Others</b>	MIPI-CSI x 2 Lanes (Optional) MIPI-CSI x 4 Lanes (Optional) BIO (Optional)	—
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s airflow
<b>STORAGE TEMP</b>		-40°F ~ 185°F (-40°C ~ 85°C)
<b>OPERATING HUMIDITY</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF (HOURS)</b>		110,000
<b>EMC</b>		CE/FCC Class A
<b>Note</b>		







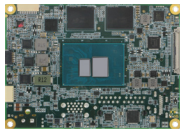
Model	PICO-APL4	PICO-APL4-SEMI
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	PICO-ITX	PICO-SEMI
<b>CPU</b>	Intel® Atom™/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, TDP 6W) Celeron N3350 (2C/2T, 1.10GHz, up to 2.40GHz, TDP 6W) Atom E3950 (4C/4T, 1.60GHz, up to 2.00GHz, TDP 12W) Atom E3940 (4C/4T, 1.60GHz, up to 1.80GHz, TDP 9.5W) Atom E3930 (2C/2T, 1.30GHz, up to 1.80GHz, TDP 6.5W)	Intel® 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)
<b>CHIPSET</b>		Integrated with Intel® SoC
<b>MEMORY TYPE</b>	Onboard DDR3L 2GB (Optional to 4GB)	Onboard DDR3L up to 4GB
<b>BIOS</b>		UEFI
<b>WAKE ON LAN</b>		Yes
<b>WATCHDOG TIMER</b>		255 Levels
<b>SECURITY</b>		—
<b>RTC Battery</b>		Lithium Battery 3V/240mAh
<b>DIMENSION</b>	3.94" x 2.84" (100mm x 72mm)	4.80" x 3.15" x 1.97" (122 mm x 72 mm x 50 mm)
<b>Gross Weight</b>	0.18 lbs. (0.08 kg)	0.88 lb (0.4 kg)
<b>OS Support</b>		Windows 10 (64 bit)
<b>POWER</b>		
<b>POWER REQUIREMENT</b>		+12V
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	DC Jack Connector
<b>POWER CONSUMPTION</b>		Intel®N4200 processor, DDR3L 4GB, 1.43A@12V
<b>DISPLAY</b>		
<b>CONTROLLER</b>		Intel® HD Graphics 500/505
<b>LVDS/eDP</b>	eDP x 1 (up to 3840x2160@60Hz, Optional)	—
<b>Display Interface</b>	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz) DDI (BIO, Optional)	HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
<b>Multiple Display</b>	Up to 3 Simultaneous Displays	1 Simultaneous Display
<b>AUDIO</b>		
<b>CODEC</b>		—
<b>AUDIO INTERFACE</b>		—
<b>Speaker</b>		—
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>		Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 2
<b>USB</b>		USB 3.2 Gen 1 x 2
<b>SERIAL PORT</b>		—
<b>VIDEO</b>		HDMI 1.4b x 1 (up to 3840 x 2160@30Hz)
<b>INTERNAL I/O</b>		
<b>USB</b>	USB 2.0 x 2 (Internal, co-use with FAN connector)	—
<b>SERIAL PORT</b>	COM1: RS-232 x 1, COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)	COM1: RS-232 x 1 (Optional) COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V) (Optional)
<b>VIDEO</b>	eDP x 1 (up to 3840x2160@60Hz, Optional)	—
<b>SATA</b>		SATA III x 1 +5V SATA Power Connector x 1 eMMC 32GB (Optional to 16GB/64GB/128GB)
<b>AUDIO</b>		
<b>DIO/GPIO</b>	4-bit	4-bit (Optional)
<b>SMBus/I2C</b>	I2C/SMBus x 1 (I2C as default)	I2C/SMBus x 1 (I2C as default) (Optional)
<b>Touch</b>		—
<b>FAN</b>		—
<b>SIM</b>		—
<b>Front Panel</b>		HDD LED, PWR LED, Power Button, Buzzer, Reset
<b>Others</b>		
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>		—
<b>M.2</b>		M.2 E-Key 2230 x 1 (PCIe/USB) M.2 B-Key 2280 x 1 (SATA/USB)
<b>Others</b>	BIO (Optional)	—
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s airflow
<b>STORAGE TEMP</b>	-40°F ~ 185°F (-40°C ~ 85°C)	-40°F ~ 185°F (-40°C ~ 85°C)
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing	0% ~ 90% relative humidity, non-condensing
<b>MTBF (HOURS)</b>	191,895	191,895
<b>EMC</b>	CE/FCC Class A	CE/FCC Class A
<b>Note</b>		





Model	PICO-BT01	PICO-EHL1
<b>SYSTEM FORM FACTOR</b>	PICO-ITX	
<b>CPU</b>	Intel® Atom™ / Celeron® Processor: Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, TDP 10W) 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)	Intel® Atom™ x6000E series, Intel® Pentium®, and Celeron® N and J series processors: Intel® Atom™ x6425RE (4C, 1.9GHz, TDP-up 12W) Intel® Atom™ x6425E (4C, 2.0GHz, up to 3GHz, TDP-up 12W) Intel® Atom™ x6211E (2C, 1.2GHz, up to 3GHz, TDP-up 6W) Intel® Pentium® J6426 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® J6412 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® N6210 (2C, 1.2GHz, up to 3GHz, TDP-up 6.5W) (Intel® Atom™ x6414RE/x6413E/x6427FE/x6200FE/N6415 by customer's request)
<b>CHIPSET</b>	Integrated with Intel® SoC	Intel® Elkhart Lake SoC Processor
<b>MEMORY TYPE</b>	DDR3L up to 2133MHz, SODIMM x 1, up to 8GB, Non-ECC	DDR4 up to 3200MHz, SODIMM x 1, up to 32GB, support IB ECC (select SKUs)
<b>BIOS</b>		UEFI
<b>WAKE ON LAN</b>		Yes
<b>WATCHDOG TIMER</b>		255 Levels
<b>SECURITY</b>		TPM2.0 (Optional)
<b>RTC Battery</b>		Lithium Battery 3V/240mAh
<b>Gross Weight</b>		3.94" x 2.84" (100mm x 72mm)
<b>OS Support</b>	Windows 10 (64 bit), Windows 7 (64 bit), Ubuntu 21.04.3/Kernel 5.11	Windows 10 (64 bit), Ubuntu 20.04.3(OT)/Kernel 5.13
<b>POWER</b>		+12V
<b>POWER REQUIREMENT</b>		AT/ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector (Default), Lockable DC Jack Connector (colay)	
<b>POWER CONSUMPTION</b>	Intel® J1900, DDR3L 1333MHz 8GB 1.14A@ +12V(TYPICAL)	TBD
<b>DISPLAY</b>		
<b>CONTROLLER</b>	Intel® HD Graphics for Intel Atom® Processor Z3700 Series	Intel® UHD Graphics for 10th Gen Intel® Processors
<b>LVDS/eDP</b>	LVDS (18/24-bit) up to 1400 x 900 @60Hz	eDP/LVDS (18/24bit 2CH) 1920 x 1200 (default: LVDS)
<b>VGA Interface</b>	VGA (up to 2048 x 1152 @60Hz) or DP (up to 2560 x 1400 @60Hz)	HDMI 1.4b x1 (up to 3840 x 2160), DDI (BI, Optional)
<b>Multiple Display</b>	Up to 2 Simultaneous Displays	Up to 3 Simultaneous Displays
<b>AUDIO</b>		
<b>CODEC</b>	Realtek ALC897/892	---
<b>AUDIO INTERFACE</b>	Line-out	---
<b>Speaker</b>		---
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Intel® i210, 10/100/1000Base, RJ-45 x 1	Realtek 8111 Gigabit Ethernet 10/100/1000Base, RJ-45 x 1
<b>USB</b>	USB 3.2 Gen 1 x 1 USB 2.0 x 1	USB 3.2 Gen 2 x 2
<b>SERIAL PORT</b>		---
<b>VIDEO</b>	VGA (up to 2048 x 1152 @60Hz) or DP (up to 2560 x 1400 @60Hz)	HDMI 1.4b x1 (up to 3840 x 2160)
<b>INTERNAL I/O</b>		
<b>USB</b>	USB 2.0 x 1	USB 2.0 x 2
<b>SERIAL PORT</b>	COM1: RS-232 x 1, COM2: RS-232/422/485 x 1 (Ring/+5V/+12V)	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
<b>VIDEO</b>	LVDS (18/24-bit) up to 1400 x 900 @60Hz	eDP/LVDS (18/24bit 2CH) 1920 x 1200 (default: LVDS)
<b>SATA</b>	SATA II (3.0Gb/s) x 1, +5V SATA Power Connector x 1	SATA III x 1, +5V SATA Power Connector x 1
<b>AUDIO</b>	Line-out	---
<b>DIO/GPIO</b>	4-bit	4-bit
<b>SMBus/I2C</b>	I2C/SMBus x1 (SMBUS as default)	SMBus/I2C x 1 (SMBUS as default)
<b>Touch</b>		
<b>FAN</b>	---	4pins Smart Fan x1
<b>SIM</b>		
<b>Front Panel</b>		HDD LED, PWR LED, Power Button, Buzzer, Reset
<b>Others</b>		---
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>	Full size mPCIe/mSATA or USB2.0 x 1 (SATA as default, PCIe selected by HW BOM)	Full size mPCIe/mSATA x 1 (SATA as default, PCIe selected by BIOS)
<b>M.2</b>		M.2 B key 2242 x 1 (PCIe(x2)/USB2.0)
<b>Others</b>		BIOS (Optional)
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP</b>		32°F ~ 140°F (0°C ~ 60°C), WITAS 2 -40°F ~ 185°F (-40°C ~ 85°C)
<b>STORAGE TEMP</b>		-40°F ~ 185°F (-40°C ~ 85°C)
<b>OPERATING HUMIDITY</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF (HOURS)</b>	80,000	TBD
<b>EMC</b>		CE/FCC Class A
<b>Note</b>	 	





Launching in Q3

Model	PICO-ADN4	PICO-RAP4
<b>SYSTEM</b>	PICO-ITX	
<b>FORM FACTOR</b>	PICO-ITX	
<b>CPU</b>	Intel Atom® x7000E Series, N-series, Core™ i3-N305 Processor (formerly Alder Lake N) N50 (2C, 1.00GHz, 6W) N97 (4C, 2.00GHz, 12W) Core™ i3-N305 (8C, 1.80GHz, 15W) Atom® x7425E (4C, 1.50GHz, 12W)	Intel® 13th Generation Core™ i7/i5/i3/Celeron SoC (TDP max: 28W)
<b>CHIPSET</b>	Integrated with Intel® SoC	
<b>MEMORY TYPE</b>	Onboard LPDDR5, Single Channel (Max.16GB)	DDR5 4800, SODIMM x 1, Non-ECC (Max. 32GB)
<b>BIOS</b>	UEFI	
<b>WAKE ON LAN</b>	Yes	
<b>WATCHDOG TIMER</b>	255 Levels	
<b>SECURITY</b>	TPM2.0	
<b>RTC Battery</b>	Lithium Battery 3V/240mAh	
<b>DIMENSION</b>	3.94" x 2.84" (100mm x 72mm)	
<b>Gross Weight</b>	0.18 lbs (0.08 kg)	
<b>OS Support</b>	Windows 10 (64 bit) Ubuntu 20.04/Kernel 5.15	Windows 10 (64 bit)/ Win11 Linux Ubuntu TBD
<b>POWER</b>	12V only	
<b>POWER REQUIREMENT</b>	AT/ATX	
<b>POWER SUPPLY TYPE</b>	Phoenix 2-pin Connector (Default) Lockable DC Jack Connector (colay)	
<b>CONNECTOR</b>	TBD	
<b>POWER CONSUMPTION</b>	TBD	TBD
<b>DISPLAY</b>	Intel® Iris Xe Graphics	
<b>CONTROLLER</b>	Intel® Gen 12 UHD Graphics	Intel® Iris Xe Graphics
<b>LVDS/eDP</b>	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz (Optional) eDP 1.4 x 1, 7680 x 4320 (Optional)	LVDS x 1 (18/24bit 2CH) 1920 x 1200 @60Hz eDP1.4 x 1, TBD (Optional)
<b>Display Interface</b>	HDMI 1.4 x 1, 3840 x 2160 @30Hz DDI (Via BIO, Optional)	HDMI 1.4 x 1, 3840 x 2160 @30Hz
<b>Multiple Display</b>	Up to 3 Simultaneous Displays	
<b>AUDIO</b>	Realtek ALC256 (Optional)	
<b>CODEC</b>	Line-out (Optional)	
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC (Optional)	
<b>Speaker</b>	---	
<b>EXTERNAL I/O</b>	---	
<b>ETHERNET</b>	Intel® i226 2.5GbE, RJ-45 x 1 Realtek, RTL8111H-CG, 1GbE, RJ-45 x 1,	Intel® i226 2.5GbE, RJ-45 x 1 Intel® i219, 1GbE, RJ-45 x 1
<b>USB</b>	USB 3.2 Gen2 x 2	
<b>SERIAL PORT</b>	---	
<b>VIDEO</b>	HDMI 1.4 x 1	
<b>INTERNAL I/O</b>	---	
<b>USB</b>	USB 2.0 x 2	
<b>SERIAL PORT</b>	COM1 ~2 (RS232/422/485, supports 5V/12V/RI)	
<b>VIDEO</b>	LVDS/eDP x 1(Default: LVDS) (Optional) Inverter x 1 (12V/2A)	LVDS/eDP x 1(Default: LVDS) Inverter x 1 (12V/2A)
<b>SATA</b>	SATA 6.0Gbps x 1 +5V SATA Power Connector x 1	
<b>AUDIO</b>	Line-out header x 1 (Optional)	Audio Header (Optional)
<b>DIO/GPIO</b>	GPIO 4-bit	GPIO 8-bit, Timed GPIO support
<b>SMBus/I2C</b>	SMBus/I2C x 1 (Default: SMBus)	
<b>Touch</b>	---	
<b>FAN</b>	4pins Smart Fan x1	
<b>SIM</b>	---	
<b>Front Panel</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset	
<b>Others</b>	---	
<b>EXPANSION</b>	---	
<b>Mini PCI-E/mSATA</b>	Full-Sized mSATA/mPCIe x 1 (default: mSATA, select with BIOS)	Half-Sized mSATA/mPCIe x 1 (default: mSATA, select with BIOS)
<b>M.2</b>	M.2 2230 E-Key 2230 x 1 (PCIe3.0 [x1] + USB2.0)	M.2 2280 M-Key x 1 (PCIe 4.0 [x4])
<b>Others</b>	BIO (Optional, PCIe [x1] x 2, USB2.0, SMBUS, DDI, LPC)	Mipi-CSJ 4 lane x2
<b>ENVIRONMENT &amp; CERTIFICATION</b>	---	
<b>OPERATING TEMP</b>	32°F ~ 140°F (0°C ~ 60°C)	
<b>STORAGE TEMP</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing	
<b>MTBF (HOURS)</b>	TBD	TBD
<b>EMC</b>	CE/FCC Class A	
<b>Note</b>	---	



# Board Level Products

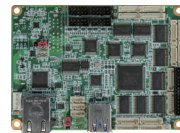
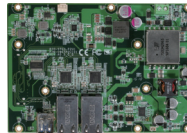
## Pico-ITX Boards - BIO

01

Pico-ITX Boards

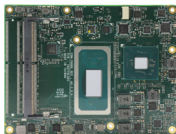


Model	BIO-ST01-L1U2	BIO-ST01-M1U1	BIO-ST02-C4M1
System			
Form Factor	2.5" Board		
BIO	80-Pin high speed board to board connector		
Power Requirement	Power Supplied from MB via board to board connector		
Dimension	3.94" x 2.84" (100mm x 72mm)		
Gross Weight	0.44 lb (0.2 kg)		
Operating Temperature	32°F ~ 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	—		
OS support	Windows 10 (64 bit)		
I/O			
Ethernet	Realtek 8111E, 10/100/1000Base-TX, RJ-45 x 1	—	—
USB	USB 2.0 x 2 on rear I/O	USB 2.0 x 1 on rear I/O	
Audio	Speaker Out with 2W Amp	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-ST03-P2U1	BIO-ST02-C14-D32
System		
Form Factor	2.5" Board	
BIO	80-Pin high speed 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	Realtek 8111E, 10/100/1000Base-TX, RJ-45 x 1	Intel® i211, 10/100/1000Base-TX x 1
USB	USB 2.0 x 2 on rear I/O	USB 3.2 Gen 1 x 1 & USB 2.0 x 3 or USB 2.0 x5(for PICO-BT01)
Audio	Speaker Out with 2W Amp	Speaker output with 2W Amp.
Expansion Interface	SMBus x 1	PCIe [x1] x1 (optional), LPT x1
PCIe	—	
Serial Port	—	COM x14, RS-232 by Pin Header
SIM	—	
DIO	—	32 bits

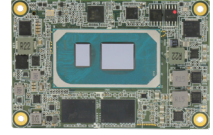




Model	COM-TGHB6	COM-CFHB6	COM-TGUC6
<b>System</b>	COM Express Basic Size, Type 6		
<b>Form Factor</b>	COM Express Compact Size, Type 6		
<b>CPU</b>	11th Generation Intel® Core™ Processors: Intel® Core™ i7-11850HE (8C/16T, 2.1 GHz, 35W) Intel® Core™ i5-11500HE (6C/12T, 2.1 GHz, 35W) Intel® Core™ i3-11100HE (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)	9th Generation Intel® Core™ Processors: Intel® Core™ i7-9850HL (6C/12T, 1.90 GHz, 25W) Intel® Core™ i7-9850HE (6C/12T, 2.70 GHz, 45W)  8th Generation Intel® Core™ Processors: Intel® Core™ i7-8850H (6C/12T, 2.60 GHz, 45W) Intel® Core™ i5-8400H (4C/8T, 2.50 GHz, 45W) Intel® Core™ i3-8100H (4C/4T, 3.00 GHz, 45W)	11th Generation Intel® Core™ Processors: Intel® Core™ i7-1185G7E (4C/8T, 1.8 GHz, 15W) Intel® Core™ i7-1185G9E (4C/8T, 1.80 GHz, 15W) Intel® Core™ i5-1145G7E (4C/8T, 1.5 GHz, 15W) Intel® Core™ i5-1145G9E (4C/8T, 1.50 GHz, 15W) Intel® Core™ i3-1115G4E (2C/4T, 2.20 GHz, 15W) Intel® Core™ i3-1115G9E (2C/4T, 2.20 GHz, 15W)
<b>Chipset</b>	Intel® QM580E Intel® RM590E	Intel® QM370 Intel® CM246	Integrated with Intel® SoC
<b>Memory</b>	DDR4 3200MHz SODIMM x 2, up to 64GB (ECC by SKU)	DDR4 2666MHz SODIMM x 3, up to 96GB (ECC by SKU)	DDR4 3200MHz SODIMM x 2, up to 64GB (In-Band ECC by SKU)
<b>Onboard Storage</b>	—		
<b>BIOS</b>	AMI UEFI		
<b>Wake on LAN</b>	Yes		
<b>Watchdog Timer</b>	255 Levels		
<b>Dimension</b>	4.92" x 3.75" (125mm x 95mm)		3.74" x 3.74" (95mm x 95mm)
<b>Security</b>	TPM 2.0		TPM 2.0 (Optional)
<b>Power</b>	+12V and +5VSB for ATX, +12V for AT		
<b>Power Requirement</b>	+12V and +5VSB for ATX, +12V for AT		
<b>Power Type</b>	AT/ATX		
<b>Power Consumption (Typical)</b>	Intel® Xeon® W-11865MRE, 5.26A @+12V	Intel® Xeon® E-2276ME, 4.65A @+12V	Intel® Core™ i7-1185G9E, 3.5A @+12V
<b>Display</b>	—		
<b>Graphics Controller</b>	Intel® UHD Graphics	Intel® UHD Graphics 630 Intel® UHD Graphics P630	Intel® Iris® Xe Graphics Intel® UHD Graphics
<b>Video Output</b>	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	3 Simultaneous Displays: 18/24-bit Single/Dual-Channel LVDS x 1, up to 1920 x 1080 DDI x 2, up to 3840 x 2160 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
<b>I/O</b>	—		
<b>Ethernet</b>	Intel® I225-LM 2.5GbE x 2	Intel® I219-LM GbE x 1	Intel® I225-LM 2.5GbE x 1
<b>Audio</b>	High Definition Audio Interface		
<b>USB Port</b>	USB 2.0 x 8, USB 3.2 Gen 2 x 4		
<b>Serial Port</b>	2-Wire UART x 2 (Tx/Rx)		
<b>HDD Interface</b>	SATA III x 4		SATA III x 2
<b>Expansion</b>	PEG 4.0 [x16] x 1 PCIe 3.0 [x1] x 8 LPC x 1	PEG 3.0 [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
<b>GPIO</b>	8-bit		
<b>SMBus/I2C</b>	I2C x 1, SMBus x 1		
<b>Environment</b>	—		
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)		
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)		
<b>Operating Humidity</b>	0% ~ 90% relative humidity, non-condensing		
<b>EMC</b>	CE/FCC Class A		
<b>OS Support</b>	Windows® 10 (64-bit) Linux Ubuntu 20.04.4/Kernel 5.13	Windows® 10 (64-bit) Linux Ubuntu 18.04.3/Kernel 5.0	Windows® 10 (64-bit) Linux Ubuntu 20.04.2/Kernel 5.8
<b>Weight</b>	0.33 lb. (0.15Kg)		0.44 lb. (0.20Kg)
<b>Note</b>	—		

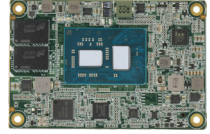
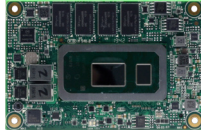






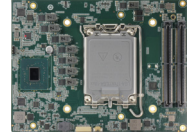
Model	COM-WHUC6	COM-ICDB7	NanoCOM-TGU
<b>System</b>			
<b>Form Factor</b>	COM Express Compact Size, Type 6	COM Express Basic Size, Type 7	COM Express Mini Size, Type 10
<b>CPU</b>	8th Generation Intel® Core™ Processors: Intel® Core™ i7-8665UE (4C/8T, 1.70 GHz, 15W) Intel® Core™ i5-8365UE (4C/8T, 1.60 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 Processors: Intel® Xeon® D-17461ER (10C/20T, 2.00 GHz, 67W) Intel® Xeon® D-1735TR (8C/16T, 2.20 GHz, 59W) Intel® Xeon® D-1732TE (8C/16T, 3.90 GHz, 52W) Intel® Xeon® D-1715TER (4C/4T, 2.40 GHz, 50W) Intel® Xeon® D-1712TR (4C/4T, 2.00 GHz, 40W)	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™ i3-1155G4E (2C/4T, 2.20 GHz, 15W) Intel® Core™ i7-1185G6E (4C/8T, 1.80 GHz, 15W) Intel® Core™ i5-1145G6E (4C/8T, 1.80 GHz, 15W) Intel® Core™ i3-1155G6E (2C/4T, 2.20 GHz, 15W)
<b>Chipset</b>		Integrated with Intel® SoC	
<b>Memory</b>	DDR4 2400MHz SODIMM x 2, up to 64GB (non-ECC)	DDR4 2400MHz SODIMM x 2, up to 64GB	Onboard LPDDR4 4267MHz, up to 16GB
<b>Onboard Storage</b>	eMMC, up to 64GB (Optional)	—	NVMe, up to 256GB (Optional)
<b>BIOS</b>		AMI UEFI	
<b>Wake on LAN</b>		Yes	
<b>Watchdog Timer</b>		255 Levels	
<b>Dimension</b>	3.74" x 3.74" (95mm x 95mm)	4.92" x 3.75" (125mm x 95mm)	3.31" x 2.17" (84mm x 55mm)
<b>Security</b>	TPM 2.0 (Optional)	TPM 2.0	fTPM
<b>Power</b>		+12V and +5VSB for ATX, +12V for AT AT/ATX	
<b>Power Requirement</b>			
<b>Power Type</b>			
<b>Power Consumption (Typical)</b>	Intel® Core™ i7-8665UE, 2.61A @+12V	Intel® Xeon® D-17461ER, 7.75A @+12V	Intel® Core™ i7-1185G7E, 2.75A @+12V
<b>Display</b>			
<b>Graphics Controller</b>	Intel® UHD Graphics 620 Intel® UHD Graphics 610	—	Intel® UHD Graphics for 11th Gen Intel® Processors Intel® Iris® Xe Graphics
<b>Video Output</b>	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
<b>I/O</b>			
<b>Ethernet</b>	Intel® I219-LM GbE x 1	Intel® I210-IT GbE x 1 10GbE x 4 (Base-KR to Carrier Board)	Intel® I225-LM 2.5GbE x 1
<b>Audio</b>	High Definition Audio Interface	—	High Definition Audio Interface
<b>USB Port</b>	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
<b>Serial Port</b>		2-Wire UART x 2 (Tx/Rx)	
<b>HDD Interface</b>		SATA III x 2	
<b>Expansion</b>	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 3.0 [x1] x 4 LPC x 1
<b>GPIO</b>		8-bit	
<b>SMBus/I2C</b>	I2C x 1, SMBus x 1	I2C x 1 (Windows® 10 Ready), SMBus x 1	I2C x 1, SMBus x 1
<b>Environment</b>			
<b>Operating Temperature</b>		32°F ~ 140°F (0°C ~ 60°C)	
<b>Storage Temperature</b>		-40°F ~ 185°F (-40°C ~ 85°C)	
<b>Operating Humidity</b>		0% ~ 90% relative humidity, non-condensing	
<b>EMC</b>		CE/FCC Class A	
<b>OS Support</b>	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 20.04.4/Kernel 5.13.0
<b>Weight</b>		0.44 lb. (0.20Kg)	0.15 lb. (0.07Kg)
<b>Note</b>			





Model	NanoCOM-WHU	NanoCOM-WHU Rev.B	NanoCOM-EHL
<b>System Form Factor</b>	COM Express Mini Size, Type 10		
<b>CPU</b>	8th Generation Intel® Core™ Processors: 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)	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 Atom® Processor X Series: Intel Atom® x6211E (2C/2T, 1.30 GHz, 6W) 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 Atom® x6212RE (2C/2T, 1.20 GHz, 6W)  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)
<b>Chipset</b>	Integrated with Intel® SoC		
<b>Memory</b>	Onboard LPDDR4 2400MHz, up to 8GB		Onboard LPDDR4 3733MHz, up to 16GB
<b>Onboard Storage</b>	eMMC, up to 64GB (Optional)	—	eMMC, up to 64GB (Optional)
<b>BIOS</b>	AMI UEFI		
<b>Wake on LAN</b>	Yes		
<b>Watchdog Timer</b>	255 Levels		
<b>Dimension</b>	3.31" x 2.17" (84mm x 55mm)		
<b>Security</b>	fTPM		
<b>Power</b>	+12V and +5VSB for ATX, +12V for AT		
<b>Power Requirement</b>	AT/ATX		
<b>Power Type</b>			
<b>Power Consumption (Typical)</b>	Intel® Core™ i5-8365UE, 2.23A @+12V	Intel® Core™ i7-8665UE, 2.10A @+12V	Intel Atom® x6425E, 1.44A @+12V
<b>Display</b>			
<b>Graphics Controller</b>	Intel® UHD Graphics 610 Intel® UHD Graphics 620		Intel® UHD Graphics for 10th Gen Intel® Processors
<b>Video Output</b>	Dual Display: eDP x 1, up to 1366 x 768 DDI x 1, up to 3840 x 2160	Dual Display: DDI x 1, up to 3840 x 2160 18/24-bit Single-Channel LVDS/eDP x 1	Dual Display: DDI x 1, up to 3840 x 2160 18/24-bit Single-Channel LVDS/eDP x 1, up to 1920 x 1080
<b>I/O</b>			
<b>Ethernet</b>	Intel® I219-LM GbE x 1		Intel® I226-IT 2.5GbE x 1
<b>Audio</b>	High Definition Audio Interface		
<b>USB Port</b>	USB 2.0 x 8, USB 3.2 Gen 2 x 2		
<b>Serial Port</b>	2-Wire UART x 2 (Tx/Rx)		
<b>HDD Interface</b>	SATA III x 2		
<b>Expansion</b>	PCIe 3.0 [x1] x 4, LPC x 1		
<b>GPIO</b>	8-bit		
<b>SMBus/I2C</b>	I2C x 1, SMBus x 1		
<b>Environment</b>			
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C), Optional: -40°F ~ 185°F (-40°C ~ 85°C)		
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)		
<b>Operating Humidity</b>	0% ~ 90% relative humidity, non-condensing		
<b>EMC</b>	CE/FCC Class A		
<b>OS Support</b>	Windows® 10 (64-bit) Linux Ubuntu 18.04.3/Kernel 5.0.0		Windows® 10 (64-bit) Linux Ubuntu 20.04.3/Kernel 5.13.0
<b>Weight</b>	0.15 lb. (0.07Kg)		
<b>Note</b>			

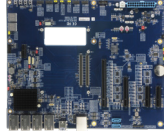
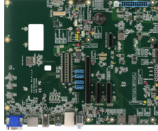




Model	NanoCOM-APL-B10	NanoCOM-APL	HPC-ADSC / HPC-RPSC
<b>System Form Factor</b>	COM Express Mini Size, Type 10		COM HPC Client Size C
<b>CPU</b>	Intel Atom® Processor X Series: Intel Atom® x7-E3950 (4C/4T, 1.60 GHz, 12W) Intel Atom® x5-E3940 (4C/4T, 1.60 GHz, 9.5W) Intel Atom® x5-E3930 (2C/2T, 1.30 GHz, 6.5W)  Intel® Celeron® Processor N Series: Intel® Celeron® Processor N3350 (2C/2T, 1.10 GHz, 6W)  Intel® Pentium® Processor N Series: Intel® Pentium® Processor N4200 (4C/4T, 1.10 GHz, 6W)	Intel Atom® Processor X Series: Intel Atom® x7-E3950 (4C/4T, 1.60 GHz, 12W) Intel Atom® x5-E3940 (4C/4T, 1.60 GHz, 9.5W) Intel Atom® x5-E3930 (2C/2T, 1.30 GHz, 6.5W)  Intel® Celeron® Processor N Series: Intel® Celeron® Processor N3350 (2C/2T, 1.10 GHz, 6W)  Intel® Pentium® Processor N Series: Intel® Pentium® Processor N4200 (4C/4T, 1.10 GHz, 6W)	13th Generation Intel® Core™ Processors: Intel® Core™ i9-13900E (24C/32T, 1.80 GHz, E-core 1.30 GHz, 65W) Intel® Core™ i9-13900 (24C/32T, 2.00 GHz, E-core 1.50 GHz, 65W) Intel® Core™ i7-13700E (16C/24T, 1.90 GHz, E-core 1.30 GHz, 65W) Intel® Core™ i5-13500E (14C/20T, 2.40 GHz, E-core 1.50 GHz, 65W)  12th Generation Intel® Core™ Processors: Intel® Core™ i9-12900E (16C/24T, 2.30 GHz, E-core 1.70 GHz, 65W) Intel® Core™ i7-12700E (12C/20T, 2.10 GHz, E-core 1.60 GHz, 65W) Intel® Core™ i7-12700 (12C/20T, 2.10 GHz, E-core 1.60 GHz, 65W)
<b>Chipset</b>	Integrated with Intel® SoC		
<b>Memory</b>	Onboard LPDDR4 1866MHz, up to 8GB		DDR5 4800MHz SODIMM x 2, up to 64GB (ECC)
<b>Onboard Storage</b>	eMMC, up to 64GB (Optional)		—
<b>BIOS</b>	AMI UEFI		
<b>Wake on LAN</b>	Yes		
<b>Watchdog Timer</b>	255 Levels		
<b>Dimension</b>	3.31" x 2.17" (84mm x 55mm)		6.30" x 4.72" (160mm x 120mm)
<b>Security</b>	fTPM		
<b>Power</b>	+12V and +5VSB for ATX, +12V for AT		
<b>Power Requirement</b>	AT/ATX		
<b>Power Consumption (Typical)</b>	Intel® Pentium® Processor N4200, 0.6A @+12V	Intel Atom® x7-E3950, 0.82A @12V	Intel® Core™ i9-13900E, 7.13A @+12V
<b>Display</b>	Intel® HD Graphics 500		
<b>Graphics Controller</b>	Intel® HD Graphics 500	Intel® HD Graphics 505	Intel® UHD Graphics 770
<b>Video Output</b>	Dual Display: DDI x 1, up to 3840 x 2160 18/24-bit Single-Channel LVDS/eDP x 1, up to 1920 x 1080	Dual Display: DDI x 1, up to 3840 x 2160 18/24-bit Single-Channel LVDS/eDP x 1, up to 1366 x 768	4 Simultaneous Displays: eDP x 1, up to 3840 x 2160 @60Hz DDI x 3, up to 3840 x 2160 @144Hz
<b>I/O</b>	Intel® I226-IT 2.5GbE x 1		
<b>Ethernet</b>	Intel® I211-AT GbE x 1		Intel® I226-LM 2.5GbE x 2
<b>Audio</b>	High Definition Audio Interface		
<b>USB Port</b>	USB 2.0 x 8, USB 3.2 Gen 1 x 2		USB 2.0 x 8, USB 3.2 Gen 2 x 8
<b>Serial Port</b>	2-Wire UART x 2 (Tx/Rx)		4-Wire UART x 2 (Tx/Rx)
<b>HDD Interface</b>	SATA III x 2		SATA III x 2
<b>Expansion</b>	PCIe 3.0 [x16] x 4 LPC x 1	PCIe 2.0 [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
<b>GPIO</b>	8-bit		12-bit
<b>SMBus/I2C</b>	I2C x 1, SMBus x 1		
<b>Environment</b>			
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)		
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)		
<b>Operating Humidity</b>	0% ~ 90% relative humidity, non-condensing		
<b>EMC</b>	CE/FCC Class A		
<b>OS Support</b>	Windows® 10 (64-bit) Linux Ubuntu 20.04.3/Kernel 5.13.0	Windows® 10 (64-bit) Linux Ubuntu 20.04.3/Kernel 5.11.0	Windows® 10 (64-bit) Linux Ubuntu 20.04.1/Kernel 5.15
<b>Weight</b>	0.15 lb. (0.07Kq)		0.66 lb. (0.30Kq)

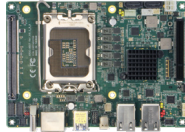


## COM Express Carrier Boards



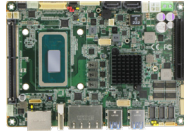
Model	ECB-920A-A11	ECB-927A	ECB-980A
<b>System</b>			
<b>Form Factor</b>	ATX	COM Express Basic Size Type 7 Carrier Board in ATX Form Factor	COM HPC Client Size A/B/C
<b>COM Express Connector</b>	x 2 (Row A,B & Row C,D)	x 2 (Row AB and Row CD, Type 7 pin-out)	x 2 (J1 and J2)
<b>I/O Chipset</b>	—		
<b>Front Panel Control</b>	10-pin Header (5x2)		10-pin Header (2x5P)
<b>Ethernet</b>	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)	2.5 GbE x 1 10 GbE x 1
<b>Expansion Interface</b>	PCIe [x4] x 2 PCIe [x16] x 1	PCIe [x4] x 2 PCIe [x8] x 1 PCIe [x16] x 1 (PEG port)	PCIe [x4] x 2 (Group 0, Lane 0 ~ 7) PCIe [x16] x 2 (one PCIe [x16] only supports PCIe [x4])
<b>Power Supply Type</b>	ATX	Standard 24-pin ATX + 4-pin 12V	Standard 24-pin ATX + 8-pin 12V
<b>CMOS Battery</b>	RTC Battery Socket x 1	CR2032 Holder x 1	CR2032 Holder x 1
<b>BIOS</b>	—		
<b>Board Size</b>	12" x 9.6" (305mm x 244mm)		
<b>Gross Weight</b>	1.32 lb. (0.6Kg)	1.54 lb. (0.7Kg)	
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)		
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)	-40°F ~ 176°F (-40°C ~ 80°C)	
<b>Operating Humidity</b>	0% ~ 90% relative humidity, non-condensing		
<b>MTBF (Hours)</b>	—		CE/FCC Class A
<b>Display</b>			
<b>DVT/CRT/VGA</b>	D-SUB15 Connector x 1	N/A. via PCIe Graphic card	HDMI x 1, DP x 2
<b>LVDS / eDP</b>	LVDS: 40-pin Dual-Channel LVDS Connector (20x2) eDP: 30-pin Board Wire Connector	N/A. via PCIe Graphic card	eDP x 1
<b>SDVO</b>	—	N/A. via PCIe Graphic card	—
<b>DDI</b>	Display Port x 3 (Dual x 1, Single x 1)	N/A. via PCIe Graphic card	—
<b>I/O</b>			
<b>Storage</b>	SATA III x 4	SATA x 2	SATA x 2 M.2 2280 M-Key x 2 (PCIe Gen 4 [x4] for NVMe)
<b>Serial Port</b>	COM Port x 2 (2-Wire UART Tx/Rx)	2-wire UART x 2 (TX/RX)	4-wire UART x 2
<b>USB</b>	USB 2.0 x 4 (Type-A), USB 3.2/2.0 x 4 (Type-A)	USB 3.2 x 4	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
<b>Audio</b>	Audio Jack, supports Line-in, Line-out, Microphone	N/A	—
<b>PS/2 Port</b>	—		
<b>GPIO</b>	8-bit Programmable	8-bit	12-bit
<b>Switch/Button</b>	Power Button x 1 / Reset Button x 1	Power Button x 1 / Reset Button x 1	Power Button x 1 / Reset Button x 1
<b>Debug LED</b>	80 PORT	7-SEG LED X2 80 PORT POST CODE INDICATOR	7-Segment Display LED x 2 (80 Port Post Code Indicator)
<b>I2C</b>	1		
<b>Expansion Interface</b>	LPC, SMBus, eSPI, CAN Bus, 4 pin fan connector, Micro SD Card Slot x 1	SMBus, LPC/eSPI slot	
<b>Note</b>			





Model	EPIC-ADS7	EPIC-ADS7-PUC
<b>System</b>		
<b>Form Factor</b>	4" EPIC Board	EPIC System
<b>CPU</b>	12th Generation Intel® Core™ Series Processor (TDP : 35W/65W)	12th Generation Intel® Core™ Series Processor, up to 65W
<b>CPU Frequency</b>	12C/20T (Up to 4.8 GHz)	Up to i7-12700E , up to 4.8GHz
<b>Chipset</b>	Intel® 600 Series Desktop Chipsets	Intel® 600 Series Desktop Chipset (R680E/Q670E/H610E)
<b>Memory Type</b>	DDR5 SODIMM x 2 , up to 4800MT/s	DDR5 4800 SODIMM x 2
<b>Max. Memory Capacity</b>	Up to 64GB	up to 32GB (Each SO-DIMM up to 16GB)
<b>BIOS</b>	AMI	UEFI
<b>Wake on LAN</b>	Yes	Yes (I219LM + I225LM RJ-45 support only)
<b>Watchdog Timer</b>		255 Levels
<b>Power Requirement</b>		+12V
<b>Power Supply Type</b>		AT/ATX
<b>Power Consumption (Typical)</b>	TBD	with i7-12700E CPU + R680E Chipset Peak : +12V@18.15A, 217.8W during 100% loading test Steady State : +12V@11.15A, 133.8W
<b>Dimension (L x W)</b>	4.53" x 6.50" (115mm x 165mm)	10.2" x 6.3" x 2.1" (260mm x 160mm x 55mm)
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s airflow
<b>Storage Temperature</b>		-40°F ~ 176°F (-40°C ~ 80°C)
<b>Operating Humidity</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF (Hours)</b>	TBD	380,264
<b>Certification</b>	CE/FCC ClassA	CE/FCC Class A, LVD
<b>Display</b>		
<b>VGA/LCD Controller</b>		Intel® UHD Graphics 770 / Intel® UHD Graphics 730 (by CPU sku)
<b>Video Output</b>	4 Display Simultaneously ; Dual Channel (24/48bit) LVDS or eDP x 1 DP++ x 1.4a x 2 HDMI 2.0b x 1	3 Simultaneous Displays DP 1.4a x 2, HDMI 2.1 x 1 (up to 3840 x 2160)
<b>Backlight Inverter Supply</b>	12V	—
<b>I/O</b>		
<b>Ethernet</b>	Intel® i225, 10/100/1000/2500Base, RJ-45 x 1 Intel® i219, 10/100/1000Base, RJ-45 x 1	Intel® I211AT, 10/100/1000Base, RJ-45 x 2 (No PXE & active LED function support) Intel® I219LM, 10/100/1000Base, RJ-45 x 1 Intel® I225LM, 10/100/2500Base, RJ-45 x 1
<b>Audio</b>	Line in / Line Out / Mic (Pin header)	—
<b>USB Port</b>	USB3.2 Gen2x2 (Type C) x 1 USB3.2 Gen2 (Type A) x 4 USB 2.0 (Pin Header) x 4	USB 3.2 Gen 2 x 2 (Type-C x 1, supported by SKU) USB 3.2 Gen 2 x 4 (Type-A, supported by sku) USB 2.0 x 2 (Type-A)
<b>Serial Port</b>	COM RS232/422/485 (Pin Header) x 4	COM RS232/422/485 x 2
<b>Parallel Port</b>		—
<b>HDD Interface</b>	SATA III x 2 , +5V SATA Power Connector x 2	—
<b>SSD</b>	The same as HDD Interface	SATA3 x 2 with +5V SATA power connector onboard
<b>Expansion Slot</b>	M.2 3052 B-key x 1 M.2 2280 M-key x 1 M.2 2230 E-key x 1 PCIe [x4] Gen3 FPC Connector x 1 PCIe [x8] Gen5 Slot x 1	M.2 3052 B-Key x 1 (PCIe 3.0 [x1] + USB 3.0 or PCIe [x2] Only) 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) 3-pin TCC x 1 (supported by SKU)
<b>DIO</b>	8 bit (Pin Header)	DIO 8 bit x 1
<b>TPM</b>		TPM2.0 (Optional)
<b>Touch</b>		—
<b>SIM</b>	Nano SIM (optional)	Nano SIM Slot x 1 (Supported by sku)
<b>Others</b>	SMBUS x 1, LPC	—
<b>Note</b>		





Model	EPIC-TGH7	EPIC-TGH7-PUC
<b>System</b>		
<b>Form Factor</b>	4" EPIC Board	4" EPIC System
<b>CPU</b>	11th Generation Intel® 11th Xeon™ / Core™ Processor	11th Generation Intel® Xeon / Core™ Processor Xeon W-11865MRE (8C/16T, 2.60GHz, up to 4.70GHz) i7-11850HE (8C/16T, 2.60GHz, up to 4.70GHz) i5-11500HE (6C/12T, 2.60GHz, up to 4.50GHz) i3-11100HE (4C/8T, 2.40GHz, up to 4.40GHz)
<b>CPU Frequency</b>	Xeon W-11865MRE (8C/16T, 2.60GHz, up to 4.70GHz) i7-11850HE (8C/16T, 2.60GHz, up to 4.70GHz) i5-11500HE (6C/12T, 2.60GHz, up to 4.50GHz) i3-11100HE (4C/8T, 2.40GHz, up to 4.40GHz) Celeron 6600HE (2C/2T, 2.60GHz)	Up to 4.70 GHz
<b>Chipset</b>	Intel® 500 Series Mobile Chipset (RM590E / HM570E)	Intel® 500 Series Chipsets
<b>Memory Type</b>	DDR4 3200 SODIMM x 2 (ECC supported by Xeon only)	DDR4 3200 SODIMM x 2
<b>Max. Memory Capacity</b>		Up to 64GB
<b>BIOS</b>	AMI	UEFI
<b>Wake on LAN</b>		Yes
<b>Watchdog Timer</b>		255 Levels
<b>Power Requirement</b>		+9-24V
<b>Power Supply Type</b>	AT/ ATX	AT/ATX, DC Jack Connector
<b>Power Consumption (Typical)</b>	12V@8.32A with Xeon W-11865MRE, with 100% full loading steady status.	TBD
<b>Dimension (L x W)</b>	4.53" x 6.50" (115mm x 165mm)	260 x 160 x 50 mm
<b>Operating Temperature</b>	32°F – 140°F (0°C – 60°C)	32°F – 122°F (-20°C – 55°C), with 0.5 m/sec air flow
<b>Storage Temperature</b>		-40°F – 176°F (-40°C – 80°C)
<b>Operating Humidity</b>	0% – 90% relative humidity, non-condensing	0% – 90% relative humidity, non-condensing
<b>MTBF (Hours)</b>	—	TBD
<b>Certification</b>	—	CE/FCC ClassA
<b>Display</b>		
<b>VGA/LCD Controller</b>		Intel® UHD Graphics for 11th Gen Intel® Processors
<b>Video Output</b>	Dual Channel 24/48bit LVDS (Default) or eDP x 1 HDMI2.0b x 1, DP 1.2a (DP++) x 2, VGA x 1	DP++ 1.2a x 2, HDMI 2.0b x 1, VGA x 1 4 Simultaneous Displays
<b>Backlight Inverter Supply I/O</b>	12V/5V (Default : 5V)	—
<b>Ethernet</b>	Intel® i225, 10/100/1000/2500Base, RJ-45 x 1 Intel® i219, 10/100/1000Base, RJ-45 x 1	Intel® i211AT, 10/100/1000Base, RJ45 x2 Intel® i219LM, 10/100/1000Base, RJ45 x1 Intel® i225LM, 10/100/2500Base, RJ45 x1
<b>Audio</b>	Realtek ALC269 (2W Amplifier)	—
<b>USB Port</b>	USB3.2 Gen 2 x 4 USB2.0 x 4	USB3.2 Gen 2 (Type A) x 4, USB2.0 (Type A) x 2
<b>Serial Port</b>	RS-232 x 4 RS-232/422/485 x 2	COM RS232/422/485 x 2
<b>Parallel Port</b>		—
<b>HDD Interface</b>	SATA III x 2 +5V SATA Power Connector x 1	—
<b>SSD</b>	Half size mSATA/mPCIe x 1 (Default mPCIe, select by BIOS)	SATA III x 2 (2.5" SSD x 2 containable) +5V SATA Power Connector x 1 ( Total up to +5V@2A limitation for 2 SATA SSD use)
<b>Expansion Slot</b>	M.2 B key 3052 x 1 (Default PCIe[x1]+USB3.0+USB2.0, PCIe[x2]+ USB2.0 by BOM change) M.2 M key 2280 x 1 (PCIe 4.0[x4]) PCIe 4.0[x8] slot x 1 (Supply maximum 25W to the PCIe peripheral ) Board to board FPC connector (PCIe[x4] x 1)	M.2 3052 B key x 1 M.2 2280 M key x 1 Mini Card (Half Size) x 1
<b>DIO</b>		16-bits
<b>TPM</b>	TPM2.0 (Optional)	TPM 2.0
<b>Touch</b>	Optional	—
<b>SIM</b>	Nano SIM	NanoSIM x 1
<b>Others</b>	SMBus / I2C (Supported by BOM Change)	—
<b>Note</b>		

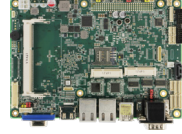
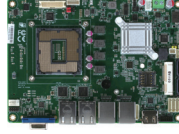


# Board Level Products

## EPIC Boards

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EPIC Boards

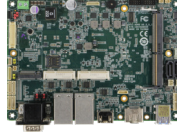


Model	EPIC-KBS9	EPIC-KBS7	EPIC-BT07
<b>System</b>			
<b>Form Factor</b>	4" EPIC Board		
<b>CPU</b>	CPU Socket Type	6th/7th Generation CPU (Socket Type, TDP 35W, 54W Only)	Intel® Atom™ E3845/Celeron® J1900/N2807
<b>CPU Frequency</b>	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron® (Support up to 65W SKU)	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron®	Up to 2.0 Ghz
<b>Chipset</b>	H110/Q170 (6W)	H110, Q170 (6W)	Intel® Atom™/ Celeron® SoC
<b>Memory Type</b>	DDR4 (Non-ECC) SODIMM x 2, 2133MHz, up to 32GB	DDR4 (Non-ECC), 2133MHz	DDR3L 1333, SODIMM x 1
<b>Max. Memory Capacity</b>	Up to 32GB	Up to 16GB	Up to 8GB
<b>BIOS</b>	AMI		
<b>Wake on LAN</b>	Yes		
<b>Watchdog Timer</b>	255 Levels		
<b>Power Requirement</b>	+12V, AT/ATX	12V or 9-24V (Default)	4 Pin Connector (Default) 2 Pin Phoenix Connector (Option)
<b>Power Supply Type</b>	AT/ ATX		
<b>Power Consumption (Typical)</b>	Power consumption : 12V@7.2A, total 86W (with i7-7700U, during 100% loading)	50W@Full loading	12W
<b>Dimension (L x W)</b>	4.53" x 6.50" (115 mm x 165 mm)		
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)		32°F ~ 140°F (0°C ~ 60°C) or WITAS 2 (E3845 sku , -40°C ~ 85°C)
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)		-40°F ~ 176°F (-40°C ~ 80°C)
<b>Operating Humidity</b>	0% ~ 90% relative humidity, non-condensing		
<b>MTBF (Hours)</b>	135,399	110,000	358,806 hrs
<b>Certification</b>	CE/FCC		
<b>Display</b>			
<b>VGA/LCD Controller</b>	6th/7th Generation Intel® Core™ i3/i5/i7/Celeron®		Intel® Atom™/ Celeron® SoC
<b>Video Output</b>	HDMI (Rear), VGA (Internal Only)	CRT/LVDS/HDMI	CRT, LVDS, HDMI
<b>Backlight Inverter Supply</b>	—	Max. 12V	Max. 12V
<b>I/O</b>			
<b>Ethernet</b>	Intel® i211 Gigabit Ethernet x 4	LAN x 2 (Real IO) (i211 x 2)	Intel® i211 Gigabit Ethernet, RJ-45 x 2
<b>Audio</b>	ALC269 (With Amp)	ALC892, no Amp	High Definition Audio Interface
<b>USB Port</b>	USB 3.2 Gen 1 x 2 (Real IO) USB2.0 x 2 (Internal)	USB 3.2 Gen 1 x 4 (Real IO) USB2.0 x 2 (Internal)	USB 2.0 x 5 USB 3.2 Gen 1 x 1
<b>Serial Port</b>	COM x 2 (All Internal), RS-232/422/485	COM x 4 (COM2: RS-232/422/485)	COM1, 4, 5, 6 : RS-232 x 4 COM2, 3 : RS-232/422/485 x 1 (Ring/ +5V/ +12V)
<b>Parallel Port</b>	—		
<b>HDD Interface</b>	SATA 3.0 x 2	SATA 3.0 x 2, SATA Power (5V)	SATA 2.0 x 1
<b>SSD</b>	mSATA x 1 (Full size)	mSATA x 1 (optional for mini-Card)	mSATA x 1 (Share with full-size Mini-Card by BOM)
<b>Expansion Slot</b>	Mini-card x 1 (Full Size) (No SIM) PCIe[x4] Slot x 1	Mini-card x 1, Micro SIM x 1 (Optional )	Full-size mPCIe x 1 Full-size mSATA/mPCIe x 1 (Default mSATA, select by BOM Change) Micro-SD x 1 (Optional, only E3800 series) PCI-104 x 1 (Optional, only E3800 series) 16-bit DIO or LPT SMBus x 1, I2C x 1 (optional), PS/2 x 1
<b>DIO</b>	8-bit		16-bit
<b>TPM</b>	—		
<b>Touch</b>	—		
<b>SIM</b>	—		Optional
<b>Others</b>	—		
<b>Note</b>			



# Board Level Products

## EPIC Boards



Model	EPIC-ADN9
<b>SYSTEM</b>	
<b>FORM FACTOR</b>	4" EPIC Board
<b>CPU</b>	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)
<b>CHIPSET</b>	Integrated with Intel® SoC
<b>MEMORY TYPE</b>	DDR4 3200MHz Single-Channel SODIMM x 1, up to 16GB
<b>BIOS</b>	UEFI
<b>WAKE ON LAN</b>	Yes
<b>WATCHDOG TIMER</b>	255 Levels
<b>SECURITY</b>	TPM 2.0 (Optional)
<b>RTC Battery</b>	Lithium Battery 3V/240mAh
<b>DIMENSION</b>	4.53" x 6.50" (115mm x 165mm)
<b>OS Support</b>	Windows® 10 (64-bit) Ubuntu 22.04.2 LTS/Kernel 5.19
<b>POWER</b>	
<b>POWER REQUIREMENT</b>	+9-24V or +12V
<b>POWER SUPPLY TYPE</b>	AT/ATX
<b>CONNECTOR</b>	2-Pin Phoenix Connector
<b>POWER CONSUMPTION</b>	Intel® Core™ i3-N305, DDR4 16GB, 1.87 A+24V (Typical) Intel® Core™ i3-N305, DDR4 16GB, 2.66A +24V (Max)
<b>DISPLAY</b>	
<b>CONTROLLER</b>	Intel® UHD Graphics
<b>LVDS/eDP</b>	24/48-bit Dual-Channel LVDS x 1, up to 1920 x 1080
<b>Display Interface</b>	HDMI 1.4 x 1, up to 3840 x 2160 @60Hz DP 1.2 or VGA x 1 DP 1.2 x 1, up to 3840 x 2160 @144Hz VGA x 1, up to 1920 x 1080
<b>Multiple Display</b>	Up to 3 Simultaneous Displays
<b>AUDIO</b>	
<b>CODEC</b>	Realtek ALC897
<b>AUDIO INTERFACE</b>	Line-In / Line-Out / MIC
<b>Speaker</b>	5W Amp. (Optional)
<b>EXTERNAL I/O</b>	
<b>ETHERNET</b>	RJ-45 for Intel® I226-V 2.5GbE x 2 (Standard: 2 Ports, Advanced: 4 Ports)
<b>USB</b>	USB 3.2 Gen 2 x 2
<b>SERIAL PORT</b>	COM 1, COM 2 (RS-232/422/485, support 5V/12V/RI)
<b>VIDEO</b>	HDMI 1.4 x 1 DP 1.2 x 1
<b>INTERNAL I/O</b>	
<b>USB</b>	USB 2.0 x 4
<b>SERIAL PORT</b>	COM 3, COM 4, COM 5, COM 6 (RS-232, support RI only)
<b>VIDEO</b>	LVDS x 1 Inverter x 1 (5V/12V@2A)
<b>SATA</b>	SATA 6.0Gbps x 1 (Default) (up to SATA x 2 shared with mSATA, BOM Optional)
<b>AUDIO</b>	Line-In / Line-Out / Mic
<b>DIO/GPIO</b>	GPIO 16-bits
<b>SMBus/I2C</b>	SMBUS / I2C (Default : SMBus)
<b>Touch</b>	—
<b>FAN</b>	4 Pin Smart Fan
<b>SIM</b>	Nano SIM x 1
<b>Front Panel</b>	Power Button, Reset Button, Power LED, SATA LED, Buzzer
<b>Others</b>	—
<b>EXPANSION</b>	
<b>Mini PCI-E/mSATA</b>	Full Sized mPCIe x 1 Full Sized mSATA x 1
<b>M.2</b>	M.2 2242 B-Key x 1 (PCIe 2.0 [x1] + USB 2.0)
<b>Others</b>	—
<b>ENVIRONMENT &amp; CERTIFICATION</b>	
<b>OPERATING TEMP</b>	32°F ~ 140°F (0°C ~ 60°C)
<b>STORAGE TEMP</b>	-40°F ~ 176°F (-40°C ~ 80°C)
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing
<b>MTBF (HOURS)</b>	TBD
<b>EMC</b>	CE/FCC Class A
<b>Note</b>	



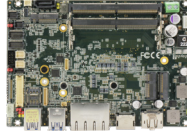


# Board Level Products

## SubCompact Boards/Systems

01

SubCompact Boards/Systems



Model	GENE-APD6	GENESYSM-ADP6
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	3.5" SubCompact Board	3.5" SubCompact Board System
<b>CPU</b>	Intel® 12th Generation Core™/Celeron CPU i7-1270PE (12C/16T, 3.30GHz, up to 4.50GHz, 28W, TDP-up 64W) i7-1265UE (10C/12T, 3.50GHz, up to 4.70GHz, 15W, TDP-up 55W) i5-1250PE (12C/16T, 3.20GHz, up to 4.40GHz, 28W, TDP-up 64W) i3-1220PE (8C/12T, 3.10GHz, up to 4.20GHz, 28W, TDP-up 64W) Celeron® 7305E (5C/5T, 1.00GHz, 15W)	Intel® 12th Generation Core™/Celeron CPU i7-1270PE (12C/16T, 3.30GHz, up to 4.50GHz, TDP 28W, up to 64W) i5-1250PE (12C/16T, 3.20GHz, up to 4.40GHz, TDP 28W, up to 64W) i3-1220PE (8C/12T, 3.10GHz, up to 4.20GHz, TDP 28W, up to 64W)
<b>CHIPSET</b>	Integrated with Intel® SoC	
<b>MEMORY TYPE</b>	DDR5 4800 MHz, Dual Channel SODIMM x 2, up to 64GB	
<b>BIOS</b>	UEFI	
<b>WAKE ON LAN</b>	Yes	
<b>WATCHDOG TIMER</b>	255 Levels	
<b>SECURITY</b>	TPM2.0 (NPCT750AABYX)	
<b>RTC BATTERY</b>	Lithium Battery 3V/240mAh	
<b>DIMENSION</b>	5.75" x 4" (146mm x 101.7mm)	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)
<b>OS SUPPORT</b>	Windows 10/11 (64bit), Linux Ubuntu 22.04/Kernel 5.15	
<b>POWER</b>		
<b>POWER REQUIREMENT</b>	+9-36V or +12V	+9-36V
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector	DC Jack Connector
<b>POWER CONSUMPTION</b>	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™ i7-1270 PE, DDR5 32GB x 2, 5.72A@ +12V(TYPICAL) Intel® Core™ i7-1270 PE, DDR5 32GB x 2, 7.95A@ +12V(MAX)
<b>DISPLAY CONTROLLER</b>	Intel® Iris® Xe Graphics, Intel® UHD Graphics	
<b>LVDS/eDP</b>	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080 eDP1.4b HBR3, up to 3840 x 2160	—
<b>DISPLAY INTERFACE</b>	HDMI 2.1 x 1, up to 8K x 4K@60Hz or 4K2K 120Hz DP1.4a x 1, up to 7680 x 4320 60Hz 30bpp	HDMI 2.1 x 1, up to 8K x 4K@60Hz or 4K2K 120Hz DP1.4a (Support DP+)+ x 1, up to 7680 x 4320 60Hz 30bpp Type C DP1.4a
<b>MULTIPLE DISPLAY</b>	Up to 4 Simultaneous Displays	Up to 3 Simultaneous Displays
<b>AUDIO CODEC</b>	Realtek ALC897	
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	
<b>SPEAKER</b>	—	
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Intel® i219, 10/100/1000Base Intel® i226, 10/100/1000/2500Base	Intel® i219, 10/100/1000Base Intel® i226, 10/100/2500Base
<b>USB</b>	USB3.2 Gen 2 x 3, USB Type C x 1 ( DP1.4a, PD 5V/3A)	USB3.2 Gen 2 x 3, USB Type C x 1 (USB4.0, DP1.4a, PD 5V/3A) USB2.0 x 2
<b>SERIAL PORT</b>	—	COM1, COM2 (RS232/422/485, supports 5V/12V/RI)
<b>VIDEO INTERNAL I/O</b>	—	HDMI 2.1 x 1, DP1.4a x 1
<b>USB</b>	USB2.0 x 4	—
<b>SERIAL PORT</b>	COM1, COM2 (RS232/422/485, supports 5V/12V/RI) COM3, COM4 (RS232/422/485)	—
<b>VIDEO</b>	LVDS/eDP x 1 Inverter x 1 (12V/2A)	—
<b>SATA</b>	SATA3.0 x 1, +5V SATA Power Connector x 1	
<b>AUDIO</b>	Audio Header x 1	
<b>DIO/GPIO</b>	8-Bit	
<b>SMBus/I2C</b>	SMBus/I2C x1 (Default: SMBus)	
<b>TOUCH</b>	—	
<b>FAN</b>	Smart Fan x 1	4pins Smart Fan x 1
<b>SIM</b>	Nano SIM x 1	
<b>FRONT PANEL</b>	PWR LED, HDD LED, PWR button, HW Reset	HDD LED, PWR LED, Power Button, Buzzer, Reset
<b>OTHERS</b>	—	
<b>EXPANSION</b>	—	
<b>Mini PCI-E/mSATA</b>	—	
<b>M.2</b>	M-Key 2280 x 1 (PCIe x4 Gen4) B-Key 3052/3042/2242 x 1 (PCIe x2, USB3.2+SATA, USB2.0, default: USB3.2+SATA) E-Key 2230 x 1 (PCIe, USB2.0)	M-Key 2280 x 1 (PCIe x4 Gen4) B-Key 3052/3042/2242 x 1 (PCIe x2, USB3.2+SATA, USB2.0, default: USB3.2+SATA) E-Key 2230 x 1 (PCIe, USB2.0)
<b>OTHERS</b>	FPC x1 (PCIe x4 Gen4, Only support Graphic or NVME)	—
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP.</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C) 0.5 m/s air flow
<b>STORAGE TEMP.</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing	



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Model	GENE-TGU6	GENESYSM-TGU6
<b>SYSTEM</b>	3.5" SubCompact Board	
<b>FORM FACTOR</b>	3.5" SubCompact Board System	
<b>CPU</b>	Intel® 11th Generation Core™/Celeron CPU: i7-1185G7E (4C, 1.80GHz, up to 4.4GHz, TDP-up 28W) i5-1145G7E (4C, 1.50GHz, up to 4.1GHz, TDP-up 28W) i3-1115G4E (2C, 2.20GHz, up to 3.90GHz, TDP-up 28W) Celeron® 6305E (2C, 1.80GHz, TDP 15W)	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)
<b>CHIPSET</b>	Integrated with Intel® SoC	
<b>MEMORY TYPE</b>	DDR4 3200MHz, Dual Channel SODIMM x 2, up to 64GB, Support IBEOCC (select SKUs)	DDR4 up to 3200MHz, Dual Channel SODIMM x 2, up to 64GB, Support IBEOCC(select SKUs)
<b>BIOS</b>	UEFI	
<b>WAKE ON LAN</b>	Yes	
<b>WATCHDOG TIMER</b>	255 Levels	
<b>SECURITY</b>	TPM2.0	
<b>RTC BATTERY</b>	Lithium Battery 3V/240mAh	
<b>DIMENSION</b>	5.75" x 4" (146mm x 101.7mm)	7.00" x 5.28" x 1.97" (178.0mm x 134.1mm x 50.0mm)
<b>OS SUPPORT</b>	Windows 10 (64bit) Linux Ubuntu 20.04.2/Kernel 5.8	Windows 10 (64bit) Linux Ubuntu 20.04.3(OT)/Kernel 5.13
<b>POWER</b>	+9-36V (Optional: +12V)	
<b>POWER REQUIREMENT</b>	+9-36V (Optional: +12V)	
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector	DC Jack Connector
<b>POWER CONSUMPTION</b>	Intel® i7-1185G7E, DDR4 3200MHz 32GB x2, 4.96A@ +12V(TYPICAL), Intel® i7-1185G7E, DDR4 3200MHz 32GB x2, 7.32A@ +12V(MAX)	
<b>DISPLAY</b>	—	
<b>CONTROLLER</b>	Intel® Iris® Xe Graphics, Intel® UHD Graphics	
<b>LVDS/eDP</b>	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080 (Option: eDP1.4b up to 3840 x 2160)	—
<b>DISPLAY INTERFACE</b>	HDMI 2.0b x 1, up to 4K x 2K 60Hz DP1.4 x 2, up to 4K x 2K 60Hz Type C DP1.4a x 1, up to 4K x 2K 60Hz	HDMI 2.0b x 1 DP1.4 x 2 Type-C DP1.4 x 1
<b>MULTIPLE DISPLAY</b>	Up to 4 Simultaneous Displays	
<b>AUDIO</b>	—	
<b>CODEC</b>	Realtek ALC897/892	
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	Line-in/Line-out/MIC (Optional)
<b>SPEAKER</b>	—	
<b>EXTERNAL I/O</b>	—	
<b>ETHERNET</b>	Intel® i219LM, 10/100/1000Base, RJ-45 x1 Intel® i225LM, 10/100/2500Base, RJ-45 x1	Intel® i219, 10/100/1000Base, RJ-45 x 1 Intel® i225/226, 10/100/2500Base, RJ-45 x 1
<b>USB</b>	USB3.2 Gen 2 x 4 USB3.2 Gen 2 Type C x 1 (PD 5V/3A)	USB3.2 Gen 2 x 4 USB3.2 Gen 2 Type C x 1 (PD 5V/3A) USB2.0 x 2
<b>SERIAL PORT</b>	COM1 (RS232/422/485), COM2 (RS232/422/485, supports 5V/12V/RI)	
<b>VIDEO</b>	HDMI 2.0b x 1, DP1.4 x 2, Type C DP1.4a x 1	
<b>INTERNAL I/O</b>	—	
<b>USB</b>	USB2.0 x 2	
<b>SERIAL PORT</b>	COM1, COM3, COM4 (RS232/422/485) COM2 (RS232/422/485, supports 5V/12V/RI)	
<b>VIDEO</b>	LVDS/eDP x 1 (Default: LVDS) eDP: up to 1080P@60Hz	
<b>SATA</b>	SATA III x 1, +5V SATA Power Connector x 1	
<b>AUDIO</b>	Audio Header x 1	
<b>DIO/GPIO</b>	8-Bit	
<b>SMBus/I2C</b>	SMBus/I2C x 1 (Default: SMBus)	
<b>TOUCH</b>	4/5/8-wire Touch Controller x 1 (optional)	
<b>FAN</b>	Smart Fan x 1	
<b>SIM</b>	Nano SIM x 1	
<b>FRONT PANEL</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset	
<b>OTHERS</b>	—	
<b>EXPANSION</b>	—	
<b>Mini PCI-E/mSATA</b>	Full-Sized mSATA/mPCIe x 1 (default: mSATA, select with BIOS)	
<b>M.2</b>	M-Key 2280 x 1 (PCIex4), E-Key 2230 x 1 (PCIe, USB2.0)	
<b>OTHERS</b>	—	
<b>ENVIRONMENT &amp; CERTIFICATION</b>	—	
<b>OPERATING TEMP.</b>	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)
<b>STORAGE TEMP.</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing	
<b>MTBF (HOURS)</b>	329,884	



# Board Level Products

## SubCompact Boards/Systems

01

SubCompact Boards/Systems



Model	GENE-CML5	GENESYS-CML5
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	3.5" SubCompact Board	3.5" SubCompact Board System
<b>CPU</b>		Intel® 10th Generation Core™/Pentium/Celeron processor: i7-10700TE (8C/16T, 2.00 GHz, up to 4.40 GHz, TDP-up 35W) i5-10500TE (6C/12T, 2.30 GHz, up to 3.70 GHz, TDP-up 35W) i3-10100TE (4C/8T, 2.30 GHz, up to 3.60 GHz, TDP-up 35W) G6400TE (2C/4T, 3.20 GHz, TDP-up 35W) G5900TE (2C/2T, 3.00 GHz, TDP-up 35W)
<b>CHIPSET</b>	Intel® Q470E / H420E / Q470	Integrated with Intel® SoC
<b>MEMORY TYPE</b>	DDR4 up to 2933MHz Dual Channel,SODIMM x 2,up to 64GB,Non-ECC	DDR4 up to 2933MHz Dual Channel,SODIMM x 2,up to 64GB,Non-ECC
<b>BIOS</b>		UEFI
<b>WAKE ON LAN</b>		Yes
<b>WATCHDOG TIMER</b>		255 Levels
<b>SECURITY</b>		TPM2.0
<b>RTC BATTERY</b>		Lithium Battery 3V/240mAH
<b>DIMENSION</b>	5.75" x 4" (146mm x 101.7mm)	8.27" x 5.28" x 3.23" (210mm x 134mm x 82mm)
<b>OS SUPPORT</b>		Windows 10 (64bit) Linux Ubuntu 20.04.1/Kernel 5.4
<b>POWER</b>		
<b>POWER REQUIREMENT</b>		+12V
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector	DC Jack Connector
<b>POWER CONSUMPTION</b>		Intel® i7-10700TE, DDR4 3200Mhz 32GB x2, 5.64A @ +12V(Typical) Intel® i7-10700TE, DDR4 3200Mhz 32GB x2, 10.63A @ +12V(Max)
<b>DISPLAY CONTROLLER</b>		Intel® HD Graphics 610/630
<b>LVDS/eDP</b>	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080	—
<b>DISPLAY INTERFACE</b>	DP++ x 1, up to 4K x 2K VGA x 1, up to 1920 x 1200	DP++ x 1 VGA x 1
<b>MULTIPLE DISPLAY</b>	3 Simultaneous Displays	2 Simultaneous Displays
<b>AUDIO</b>		
<b>CODEC</b>	Realtek ALC897/892	—
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	—
<b>SPEAKER</b>	—	—
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Intel® i210/i211,10/100/1000Base, RJ45 x1 Intel® i219,10/100/1000Base, RJ45 x1 (Support Vpro only with i5/i7 + Q470/Q470E variant)	Intel® i210,10/100/1000Base, RJ45 x1 Intel® i219,10/100/1000Base, RJ45 x1 (support vPro only with i5/i7 processors with Q470E)
<b>USB</b>	USB3.2 Gen 2 x 2 (Gen 2 for Q470/Q470E only)	USB3.2 Gen 2 x 2 (Q470E) USB3.2 Gen 1 x 2 (H420E)
<b>SERIAL PORT</b>	—	COM RS232/422/485 x 2 (Optional)
<b>VIDEO</b>	DP++ x 1,VGA x 1	DP++ x 1,VGA x 1
<b>INTERNAL I/O</b>		
<b>USB</b>	USB2.0 x 4	USB2.0 x 4 (Optional)
<b>SERIAL PORT</b>	COM1, COM2 (RS232/422/485, supports 5V/12V/Ri)	—
<b>VIDEO</b>	LVDS x 1	—
<b>SATA</b>		SATA III x 2 +5V SATA Power Connector x 1
<b>AUDIO</b>	Audio Header x 1	—
<b>DIO/GPIO</b>	8-bit	—
<b>SMBus/I2C</b>	I2C/SMBus x 1 (Default: I2C)	I2C/SMBus x 1 (Optional)
<b>TOUCH</b>		—
<b>FAN</b>		4pins Smart Fan x1
<b>SIM</b>		—
<b>FRONT PANEL</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset	PWR LED, Power Button
<b>OTHERS</b>	FPC x 1 (For Q470/Q 470E only)	FPC x 1 (Q470E only)
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>		—
<b>M.2</b>		M-Key 2280 x 1 (PCIe x4,SATA)
<b>OTHERS</b>		—
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP.</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C)
<b>STORAGE TEMP.</b>	-40°F ~ 176°F (-40°C ~ 80°C)	-40°F ~ 185°F (-40°C ~ 85°C)
<b>OPERATING HUMIDITY</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF (HOURS)</b>		380,571
<b>EMC</b>		CE/FCC Class A
<b>Note</b>		



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## Board Level Products

## SubCompact Boards/Systems



Model	GENE-WHU6	GENESYS-WHU6
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	3.5" SubCompact Board	3.5" SubCompact Board System
<b>CPU</b>	Intel® 8th Generation Core™ /Celeron Processor: Core i7-8665UE (4C/8T, 1.7GHz, up to 4.40GHz, TDP-up 25W) Core i5-8365UE (4C/8T, 1.6GHz, up to 4.10GHz, TDP-up 25W) Core i3-8145UE (2C/4T, 2.2GHz, up to 3.90GHz, TDP-up 25W) Celeron 4305UE (2C/2T, 2.00GHz, TDP-up 15W)	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)
<b>CHIPSET</b>		Integrated with Intel® SoC
<b>MEMORY TYPE</b>		DDR4 up to 2400MHz Dual Channel,SODIMM x 2, up to 64GB,Non-ECC
<b>BIOS</b>		UEFI
<b>WAKE ON LAN</b>		Yes
<b>WATCHDOG TIMER</b>		255 Levels
<b>SECURITY</b>		—
<b>RTC BATTERY</b>		Lithium Battery 3V/240mAh
<b>DIMENSION</b>	5.75" x 4" (146mm x 101.7mm)	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)
<b>OS SUPPORT</b>		Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10
<b>POWER</b>		
<b>POWER REQUIREMENT</b>	+9-36V (Optional: +12V)	+9-36V (Optional: +12V)
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector	DC Jack Connector
<b>POWER CONSUMPTION</b>	Intel® i7-8665UE, DDR4 2400MHz 16GB x2, 4.83A@ +12V(TYPICAL) Intel® i7-8665UE, DDR4 2400MHz 16GB x2, 7.3A@ +12V(MAX)	Intel® i7-8665UE, DDR4 2400 MHz 16GB, 2.8A@ +12V(Typical)
<b>DISPLAY</b>		
<b>CONTROLLER</b>		Intel® UHD Graphics 610/620
<b>LVDS/eDP</b>	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080 (Optional: eDP1.4, up to 1920x1200)	—
<b>DISPLAY INTERFACE</b>	HDMI2.0a x 1, up to 3840 x 2160 VGA x 1, up to 1920 x 1200	HDMI2.0a x 1 VGA x 1
<b>MULTIPLE DISPLAY</b>	Up to 3 Simultaneous Displays	Up to 2 Simultaneous Displays
<b>AUDIO</b>		
<b>CODEC</b>		Realtek ALC897/892
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	Line-in/Line-out/MIC(Optional)
<b>SPEAKER</b>		—
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>		Intel® i210/i211 & i219, 10/100/1000Base, RJ-45 x2
<b>USB</b>		USB 3.2 Gen2 x4
<b>SERIAL PORT</b>		—
<b>VIDEO</b>		HDMI2.0a x 1, VGA x 1
<b>INTERNAL I/O</b>		
<b>USB</b>		USB 2.0 x 2
<b>SERIAL PORT</b>		COM1 (RS232/422/485, supports Ri) COM2 (RS232/422/485, supports 5V/12V/Ri)
<b>VIDEO</b>	LVDS/eDP x 1 (Default: LVDS)	—
<b>SATA</b>		SATA III x 1, +5V SATA Power Connector x 1
<b>AUDIO</b>	Audio Header x 1	Audio Header x 1 (optional)
<b>DIO/GPIO</b>	8-bit	—
<b>SMBus/I2C</b>		I2C/ SMBus x 1 (Default: I2C)
<b>TOUCH</b>	4/5/8-wire Touch Controller x 1 (optional)	—
<b>FAN</b>	DC Fan x 1 (optional: Smart Fan)	DC Fan x 1 (optional: Smart Fan)
<b>SIM</b>		Nano SIM x 1
<b>FRONT PANEL</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset	PWR LED, Power Button
<b>OTHERS</b>		—
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>		Full-size mSATA/mPCIe x 1 (Default mSATA, select by BIOS)
<b>M.2</b>		B-Key 2280 x1 (PCIe x 2, SATA, USB2.0, selected by BIOS) E-Key 2230 x 1 (PCIe, USB2.0)
<b>OTHERS</b>		—
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP.</b>	32°F ~ 140°F (0°C ~ 60°C), WITAS2 -40°F ~ 185°F (-40°C ~ 85°C)	32°F ~ 122°F (0°C ~ 50°C)
<b>STORAGE TEMP.</b>		-40°F ~ 185°F (-40°C ~ 85°C)
<b>OPERATING HUMIDITY</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF (HOURS)</b>		354,194
<b>EMC</b>		CE/FCC Class A
<b>Note</b>		



# Board Level Products

## SubCompact Boards/Systems

01

SubCompact Boards/Systems



Model	GENE-KBU6	GENESYS-KBU6
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	3.5" SubCompact Board	3.5" SubCompact Board System
<b>CPU</b>	Intel® 7th Generation Core™ /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)	
<b>CHIPSET</b>	Integrated with Intel® SoC	
<b>MEMORY TYPE</b>	DDR4 up to 2133MHz, SODIMM x 1, up to 16GB, Non-ECC	
<b>BIOS</b>	UEFI	
<b>WAKE ON LAN</b>	Yes	
<b>WATCHDOG TIMER</b>	255 Levels	
<b>SECURITY</b>	TPM 2.0 (Optional)	
<b>RTC BATTERY</b>	Lithium Battery 3V/240mAh	
<b>DIMENSION</b>	5.75" x 4" (146mm x 101.7mm)	6.69" x 5.39" x 1.91" (170mm x 137mm x 48.5mm)
<b>OS SUPPORT</b>	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10	
<b>POWER</b>		
<b>POWER REQUIREMENT</b>	+9-36V (Optional: +12V)	+9-36V (Optional: +12V)
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector	DC Jack Connector
<b>POWER CONSUMPTION</b>	Intel® i7-7600U, DDR4 2666MHz 32GB, 3.26A@ +12V(TYPICAL) Intel® i7-7600U, DDR4 2666MHz 32GB, 4.22A@ +12V(MAX)	Intel® i7-7600U, DDR4 2400MHz 16GB, 1.85A@ +12V(Typical)
<b>DISPLAY</b>		
<b>CONTROLLER</b>	Intel® HD Graphics 610/620	
<b>LVDS/eDP</b>	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080	
<b>DISPLAY INTERFACE</b>	Default: DP1.2 x 1 (up to 3840 x 2160) + DVI-D x 1 Optional: DVI-I x 1 (with VGA signal)	DP1.2 x 1 + DVI-D x 1
<b>MULTIPLE DISPLAY</b>	Up to 3 Simultaneous Displays	
<b>AUDIO</b>		
<b>CODEC</b>	Realtek ALC897/892	
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	
<b>SPEAKER</b>	—	
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2	
<b>USB</b>	USB 3.2 Gen 1 x 4	
<b>SERIAL PORT</b>	—	
<b>VIDEO</b>	DP1.2 x 1, DVI-D x 1	
<b>INTERNAL I/O</b>		
<b>USB</b>	USB 2.0 x 2	
<b>SERIAL PORT</b>	COM1 (RS232), COM2, COM3, COM4 (RS232/422/485, support 5V/12V/RI)	
<b>VIDEO</b>	LVDS x 1	
<b>SATA</b>	SATA III x 1, +5V SATA Power Connector x 1	
<b>AUDIO</b>	Audio Header x 1	
<b>DIO/GPIO</b>	8-bit	
<b>SMBus/I2C</b>	SMBus x 1	
<b>TOUCH</b>	4/5/8-wire Touch Controller x 1 (optional)	
<b>FAN</b>	DC Fan x 1 (optional: Smart Fan)	
<b>SIM</b>	Micro SIM x 1 (Optional)	
<b>FRONT PANEL</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset	
<b>OTHERS</b>	—	
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>	Full-size mPCIe x 1, Half size mSATA/mPCIe x 1 (Default mSATA, select by BIOS)	
<b>M.2</b>	—	
<b>OTHERS</b>	BIO x 1	
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP.</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C)
<b>STORAGE TEMP.</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing	
<b>MTBF (HOURS)</b>	375,577	123,000
<b>EMC</b>	CE/FCC Class A	
<b>Note</b>		





Model	GENE-SKU6	GENE-SKU6 Rev. B
<b>SYSTEM FORM FACTOR</b>	3.5" SubCompact Board	
<b>CPU</b>	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)	
<b>CHIPSET</b>	Integrated with Intel® SoC	
<b>MEMORY TYPE</b>	DDR4 up to 2133MHz, SODIMM x 1, up to 16GB, Non-ECC	
<b>BIOS</b>	UEFI	
<b>WAKE ON LAN</b>	Yes	
<b>WATCHDOG TIMER</b>	255 Levels	
<b>SECURITY</b>	TPM 2.0 (Optional)	
<b>RTC BATTERY</b>	Lithium Battery 3V/240mAh	
<b>DIMENSION</b>	5.75" x 4" (146mm x 101.7mm)	
<b>OS SUPPORT</b>	Windows 7/10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10	
<b>POWER</b>		
<b>POWER REQUIREMENT</b>	+9-36V (Optional: +12V)	
<b>POWER SUPPLY TYPE</b>	AT/ATX	
<b>CONNECTOR</b>	Phoenix 2-pin Connector	
<b>POWER CONSUMPTION</b>	Intel® i7-6600U, DDR4 2666MHz 32GB, 3.42A@ +12V(TYPICAL) Intel® i7-6600U, DDR4 2666MHz 32GB, 4.24A@ +12V(MAX)	Intel® i7-6600U, 6600U, DDR4 2400MHz 16GB, 0.73A at +36V
<b>DISPLAY CONTROLLER</b>	Intel® HD Graphics 510/520	
<b>LVDS/eDP</b>	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080	
<b>DISPLAY INTERFACE</b>	Default: DP1.2 x 1 (up to 3840 x 2160)+ DVI-D x 1 Optional: DVI-I x 1 (with VGA signal)	VGA x1, Up to 1920 x 1200 HDMI 1.4 x1, up to 4096 x 2304
<b>MULTIPLE DISPLAY AUDIO</b>	Up to 3 Simultaneous Displays	
<b>CODEC</b>	Realtek ALC897/892	
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	
<b>SPEAKER</b>	3W Amplifier (Optional)	
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2	Intel® i210, 10/100/1000Base-TX, RJ-45 x 2
<b>USB</b>	USB 3.2 Gen 1 x 4	
<b>SERIAL PORT</b>	---	
<b>VIDEO</b>	DP1.2 x 1, DVI-D x 1	HDMI 1.4 x 1 VGA x 1
<b>INTERNAL I/O</b>		
<b>USB</b>	USB 2.0 x 2	
<b>SERIAL PORT</b>	COM1 (RS232), COM2, COM3, COM4 (RS232/422/485, support 5V/12V/RI)	
<b>VIDEO</b>	LVDS x 1	
<b>SATA</b>	SATA III x 1, +5V SATA Power Connector x 1	
<b>AUDIO</b>	Audio Header x 1	
<b>DIO/GPIO</b>	8-bit	
<b>SMBus/I2C</b>	SMBus x 1	I2C/SMBus x 1 (Default: SMBus)
<b>TOUCH</b>	4/5/8-wire Touch Controller x 1 (optional)	4/5/8-wire Touch Controller x 1 (optional)
<b>FAN</b>	DC Fan x 1 (optional: Smart Fan)/Micro SIM x 1 (Optional)	DC Fan x 1 (optional: Smart Fan)
<b>SIM</b>	Micro SIM x 1 (Optional)	---
<b>FRONT PANEL</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset	
<b>OTHERS</b>	---	
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>	Full-size mPCIe x 1 Half size mSATA/mPCIe x 1(Default mSATA, select by BIOS)	Full-size mSATA/mPCIe x 1 (Default mPCIe, select by BIOS) Half size mSATA/mPCIe x 1 (Default mSATA, select by BIOS)
<b>M.2</b>	---	
<b>OTHERS</b>	BIOS x 1	BIOS x 1 (optional)
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP.</b>	32°F ~ 140°F (0°C ~ 60°C), WITAS1 -4°F ~ 158°F (-20°C ~70°C)	32°F ~ 140°F (0°C ~ 60°C)
<b>STORAGE TEMP.</b>	-40°F ~ 185°F (-40°C ~ 85°C)	-40°F ~ 176°F (-40°C ~ 80°C)
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing	
<b>MTBF (HOURS)</b>	375,577	371,039
<b>EMC</b>	CE/FCC Class A	
<b>Note</b>		

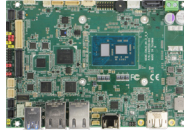


# Board Level Products

## SubCompact Boards/Systems

01

SubCompact Boards/Systems



Model	GENE-EHL5	GENESYSM-EHL5
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	3.5" SubCompact Board	3.5" SubCompact Board System
<b>CPU</b>	Intel® Atom™ x6000E series, Intel® Pentium®, and Celeron® N and J series processors: Intel® Atom™ x6425RE (4C, 1.9GHz, TDP-up 12W) Intel® Atom™ x6425E (4C, 2.0GHz, up to 3GHz, TDP-up 12W) Intel® Atom™ x6211E (2C, 1.2GHz, up to 3GHz, TDP-up 10W) Intel® Pentium® J6426 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® J6412 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® N6210 (2C, 1.2GHz, up to 3GHz, TDP-up 6.5W) (Intel® Atom™ x6414RE/x6413E/x6427FE/x6200FE/N6415 by customer's request)	Intel® Atom™ x6000E series, Intel® Pentium®, and Celeron® N and J series processors: Intel® Atom™ x6425E (4C, 2.0GHz, up to 3GHz, TDP-up 12W) Intel® Celeron® J6412 (4C, 2.0GHz, up to 3GHz, TDP-up 10W) Intel® Celeron® N6210 (2C, 1.2GHz, up to 3GHz, TDP-up 6.5W)
<b>CHIPSET</b>	Integrated with Intel® SoC	
<b>MEMORY TYPE</b>	DDR4 3200 MHz, SODIMM x 1, Up to 32GB, Support IB ECC (select SKUs)   DDR4 up to 3200 Hz, SODIMM x 1, up to 32GB, in band ECC	
<b>BIOS</b>	UEFI	
<b>WAKE ON LAN</b>	Yes	
<b>WATCHDOG TIMER</b>	255 Levels	
<b>SECURITY</b>	TPM 2.0	
<b>RTC BATTERY</b>	Lithium Battery 3V/240mAh	
<b>DIMENSION</b>	5.75" x 4" (146mm x 101.7mm)	7.00" x 5.28" x 2.08" (178mm x 134.1mm x 53mm)
<b>OS SUPPORT</b>	Windows 10 (64bit), Linux Ubuntu 20.04.3(OT)/Kernel 5.13	
<b>POWER</b>		
<b>POWER REQUIREMENT</b>	+9-36V (Optional: +12V)	+12V/+9-36V
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector	DC Jack Connector
<b>POWER CONSUMPTION</b>	Intel® Atom™ x6425E, DDR4 32GB, 3.26A@ +12V(balance), 3.26A@+12V(TYPICAL) Intel® Atom™ x6425E, DDR4 32GB, 3.26A@ +12V(balance), 3.42A@+12V(Max)	
<b>DISPLAY</b>		
<b>CONTROLLER</b>	Intel® UHD Graphics for 10th Gen Intel® Processors	
<b>LVDS/eDP</b>	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080 (Optional eDP 1.3, up to 1920X1200)	—
<b>DISPLAY INTERFACE</b>	HDMI2.0b x 1, up to 4K 60Hz DP1.4 x 1, up to 4K x 2K 60Hz (Optional: VGA x 1)	HDMI2.0b x 1, up to 4K 60Hz VGA x 1
<b>MULTIPLE DISPLAY</b>	3 Simultaneous Displays Up to 2 Simultaneous Displays	
<b>AUDIO</b>		
<b>CODEC</b>	REALTEK ALC269	Realtek ALC897
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	
<b>SPEAKER</b>	2W Speaker	
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Intel® i210, 10/100/1000Base x 2	
<b>USB</b>	USB3.2 Gen 2 x 2 USB3.2 Gen 2 x 2, USB2.0 x 2	
<b>SERIAL PORT</b>	—	
<b>VIDEO</b>	COM1, COM2 (RS232/422/485, supports 5V/12V/Rl) HDMI 2.0b x 1, VGA x 1	
<b>INTERNAL I/O</b>		
<b>USB</b>	USB2.0 x 4 —	
<b>SERIAL PORT</b>	RS-232/422/485 x 4 —	
<b>VIDEO</b>	LVDS/eDP x 1 —	
<b>SATA</b>	SATA3.0 x 1, +5V SATA Power Connector x 1 SATA III x 1, +5V SATA Power Connector x 1, eMMC5.1 32GB	
<b>AUDIO</b>	Audio Header x 1 —	
<b>DIO/GPIO</b>	16 Bits (8 In/8 Out) 16 Bits (Optional: with E-Base)	
<b>SMBus/I2C</b>	SMBus/I2C x 1 (Default: SMBus)	
<b>TOUCH</b>	4/5/8-wire Touch Controller x 1 (optional) —	
<b>FAN</b>	4 wire Smart Fan x 1 4pins Smart Fan x1	
<b>SIM</b>	Nano SIM x 1	
<b>FRONT PANEL</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset	
<b>OTHERS</b>	eMMC5.1 32GB, CANBUS x 2, TX/RX (Celeron J6412 and Celeron N6210) don't support CANBUS)	
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>	—	
<b>M.2</b>	E-Key 2230 x 1 (PCIe, USB2.0) B-Key 2242 x 1 (PCIe x 2/PCIe/SATA x 1, USB2.0) Default: PCIe x 2, PCIe x 1 select by BIOS, SATA select by BOM B-Key 2280 x 1 (PCIe x 1/PCIe x 2, USB2.0) Default: PCIe x 1, PCIe x 2 select by BIOS B-Key 3052 x 1 (USB3.2 Gen2)	
<b>OTHERS</b>	—	
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP.</b>	32°F ~ 140°F (0°C ~ 60°C), WITAS2 -40°F ~ 185°F (-40°C ~ 85°C)   32°F ~ 122°F (0°C ~ 50°C) with 0.5 m/s air flow	
<b>STORAGE TEMP.</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing	
<b>MTRF (HOURS)</b>	335.427	



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Site Web : www.es-france.com



Model	GENE-APL5	GENE-APL6
<b>SYSTEM FORM FACTOR</b>	3.5" SubCompact Board	
<b>CPU</b>	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, 1.60GHz, 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)	
<b>CHIPSET</b>	Integrated with Intel® SoC	
<b>MEMORY TYPE</b>	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)	
<b>BIOS</b>	UEFI	
<b>WAKE ON LAN</b>	Yes	
<b>WATCHDOG TIMER</b>	255 Levels	
<b>SECURITY</b>	TPM 2.0 (Optional)	
<b>RTC BATTERY</b>	Lithium Battery 3V/240mAh	
<b>DIMENSION</b>	5.75" x 4" (146mm x 101.7mm)	
<b>OS SUPPORT</b>	Windows 10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10	
<b>POWER</b>		
<b>POWER REQUIREMENT</b>	+12V (Optional: +9-19V)	+9-36V (Optional: +12V)
<b>POWER SUPPLY TYPE</b>	AT/ATX	
<b>CONNECTOR</b>	Phoenix 2-pin Connector	
<b>POWER CONSUMPTION</b>	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)
<b>DISPLAY CONTROLLER</b>	Intel® HD Graphics 500/505	
<b>LVDS/eDP</b>	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)	
<b>DISPLAY INTERFACE</b>	VGA x 1, up to 1920 x 1200	
<b>MULTIPLE DISPLAY</b>	Up to 3 Simultaneous Displays	
<b>AUDIO</b>		
<b>CODEC</b>	Realtek ALC897/892	
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	
<b>SPEAKER</b>	—	
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Intel® i210/i211, 10/100/1000Base, RJ-45 x 2	
<b>USB</b>	USB3.2 Gen 1 x 2	
<b>SERIAL PORT</b>	COM1 (RS232, supports RI)	COM1 (RS232)
<b>VIDEO</b>	VGA x 1	
<b>INTERNAL I/O</b>		
<b>USB</b>	USB2.0 x 4	USB 2.0 x 2
<b>SERIAL PORT</b>	COM2, COM3 (RS232/422/485, supports 5V/12V/RI), COM4 (RS232, supports RI)	COM2, COM3 (RS232/422/485, support 5V/12V/RI) COM4 (RS232)
<b>VIDEO</b>	LVDS1 x 1, LVDS2/HDMI x 1(Default: LVDS2)	
<b>SATA</b>	SATA III x 1, +5V SATA Power Connector x 1	
<b>AUDIO</b>	Audio Header x 1	
<b>DIO/GPIO</b>	8-bit	
<b>SMBus/I2C</b>	I2C x1, SMBus x 1	I2C/SMBus x 1 (Default: I2C)
<b>TOUCH</b>	4/5/8-wire Touch Controller x 1 (optional)	
<b>FAN</b>	DC Fan x 1 (optional: Smart Fan)	
<b>SIM</b>	Micro SIM x 1 (Optional)	
<b>FRONT PANEL</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset	
<b>OTHERS</b>	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)
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>	mSATA x 1 (Full-Size), Mini Card x 1 (Half-Size)	Full-size mPCIe x 1 Half-size mSATA x 1
<b>M.2</b>	—	
<b>OTHERS</b>	—	
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP.</b>	32°F ~ 140°F (0°C ~ 60°C), WITAS2 -40°F ~ 185°F (-40°C ~ 85°C)	
<b>STORAGE TEMP.</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing	
<b>MTBF (HOURS)</b>	365,976	374,567
<b>EMC</b>	CE/FCC Class A	
<b>Note</b>		

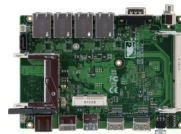






Model	GENE-APL7	GENESYS-APL7
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	3.5" SubCompact Board	3.5" SubCompact Board System
<b>CPU</b>	Intel® Atom™/Celeron®/Pentium® Processor: Pentium N4200 (4C/4T, 1.10GHz, up to 2.50GHz, 6W) Celeron N3350 (2C/2T, 1.10GHz, up to 2.40GHz, 6W) Atom E3950 (4C/4T, 1.66GHz, up to 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)
<b>CHIPSET</b>	Integrated with Intel® SoC	
<b>MEMORY TYPE</b>	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)	
<b>BIOS</b>	UEFI	
<b>WAKE ON LAN</b>	Yes	
<b>WATCHDOG TIMER</b>	255 Levels	
<b>SECURITY</b>	—	
<b>RTC BATTERY</b>	Lithium Battery 3V/240mAh	
<b>DIMENSION</b>	5.75" x 4" (146mm x 101.7mm)	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)
<b>OS SUPPORT</b>	Windows 10 (64bit), Linux Ubuntu 21.04.0/Kernel 5.10	
<b>POWER</b>		
<b>POWER REQUIREMENT</b>	12V Only	+12V
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector	DC Jack Connector
<b>POWER CONSUMPTION</b>	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)
<b>DISPLAY</b>		
<b>CONTROLLER</b>	Intel® HD Graphics 500/505	Intel® HD Graphics 500/505
<b>LVDS/eDP</b>	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	—
<b>DISPLAY INTERFACE</b>	VGA x 1, up to 1920 x 1200	VGA x 1
<b>MULTIPLE DISPLAY</b>	Up to 3 Simultaneous Displays	—
<b>AUDIO</b>		
<b>CODEC</b>	Realtek ALC897/892	
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	
<b>SPEAKER</b>	2W Amplifier(Optional)	
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Realtek RTL8119-CG,10/100/1000Base, RJ-45 x 2	
<b>USB</b>	USB 3.2 Gen1 x 2	USB 3.2 Gen1 x 2
<b>SERIAL PORT</b>	COM1 (RS232) COM2 (RS232/422/485, support 5V/12V/R)	COM1 (RS232)
<b>VIDEO</b>	VGA x 1	
<b>INTERNAL I/O</b>		
<b>USB</b>	USB2.0 x 8	USB2.0 x 2
<b>SERIAL PORT</b>	COM3~COM6 (RS232, COM3~COM5 support 5V/12V/R) Optional: COM3~COM12	Optional: COM3,COM4(RS232, COM3~COM5 support 5V/12V/R) Optional: COM9~COM12
<b>VIDEO</b>	LVDS1/eDP (Default: LVDS1) LVDS2	—
<b>SATA</b>	SATA III x 1 +5V SATA Power Connector x 1	
<b>AUDIO</b>	Audio Header x 1 Speaker Header x 2 (optional)	—
<b>DIO/GPIO</b>	8-bit	
<b>SMBus/12C</b>	I2C/SMBus x1 (Default: SMBus)	
<b>TOUCH</b>	—	
<b>FAN</b>	DC Fan x 1 (optional: Smart Fan)	
<b>SIM</b>	Micro SIM x 1 (Optional)	
<b>FRONT PANEL</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset	PWR LED, Power Button
<b>OTHERS</b>	—	
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>	Full-size mPCIe x 1 Full-Size mSATA/mPCIe x 1 (Default mSATA, BOM Option: mPCIe)	
<b>M.2</b>	—	
<b>OTHERS</b>	—	
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP.</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C)
<b>STORAGE TEMP.</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing	
<b>MTBF (HOURS)</b>	409,108	126,000
<b>EMC</b>	CE/FCC Class A	
<b>Note</b>		





Model	GENE-BSW5	GENE-BT04
<b>SYSTEM FORM FACTOR</b>	3.5" SubCompact Board	
<b>CPU</b>	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)
<b>CHIPSET</b>	Integrated with Intel® SoC	
<b>MEMORY TYPE</b>	DDR3L up to 1600MHz, SODIMM x 1, up to 8GB, Non-ECC	DDR3L up to 1333MHz, SODIMM x 1, up to 8GB, Non-ECC
<b>BIOS</b>	UEFI	
<b>WAKE ON LAN</b>	Yes	
<b>WATCHDOG TIMER</b>	255 Levels	
<b>SECURITY</b>		
<b>RTC BATTERY</b>	Lithium Battery 3V/240mAh	
<b>DIMENSION</b>	5.75" x 4" (146mm x 101.7mm)	
<b>OS SUPPORT</b>	Windows 7/10 (64bit) Linux Ubuntu 21.04.0/Kernel 5.10	Windows 7/10 (64bit) Linux Ubuntu 20.04.3/Kernel 5.11
<b>POWER</b>	+12-24V	
<b>POWER REQUIREMENT</b>	+12V Only	
<b>POWER SUPPLY TYPE</b>	AT/ATX	
<b>CONNECTOR</b>	Phoenix 2-pin Connector	DC Jack Connector
<b>POWER CONSUMPTION</b>	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)
<b>DISPLAY</b>		
<b>CONTROLLER</b>	Intel® HD Graphics for Intel® Celeron® Processor N3000 Series	Intel® HD Graphics for Intel Atom® Processor Z3700 Series
<b>LVDS/eDP</b>	LVDS1 Dual Channel 18/24bit x 1, up to 1920 x 1080 LVDS2 Dual Channel 18/24bit x 1 (Optional: HDMI.1.4b)	—
<b>DISPLAY INTERFACE</b>	VGA x 1, up to 1920 x 1200	HDMI x 2: HDMI 1(w/Audio), HDMI 2(w/o Audio)
<b>MULTIPLE DISPLAY</b>	Up to 3 Simultaneous Displays	Up to 2 Simultaneous Displays
<b>AUDIO</b>		
<b>CODEC</b>	Realtek ALC897/892	—
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	—
<b>SPEAKER</b>	—	
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Realtek RTL8119-CG, 10/100/1000Base-TX, RJ-45 x2	Intel® i210, 10/100/1000Base, RJ-45 x 4
<b>USB</b>	USB 3.2 Gen1 x 2	USB 2.0 x 2, USB 3.2 Gen 1 x 1
<b>SERIAL PORT</b>	COM1 (RS232)	
<b>VIDEO</b>	VGA x 1 HDMI x1(optional)	HDMI x2
<b>INTERNAL I/O</b>		
<b>USB</b>	USB2.0 x 3	—
<b>SERIAL PORT</b>	COM2,COM3 (RS232/422/485, supports 5V/12V/Rl) COM4, COM5, COM6 (RS232)	—
<b>VIDEO</b>	LVDS1 x 1 LVDS2/HDMI x 1(Default: LVDS2)	—
<b>SATA</b>	SATA III x 1 +5V SATA Power Connector x 1	
<b>AUDIO</b>	Audio Header x 1	—
<b>DIO/GPIO</b>	8-bit	4-bit
<b>SMBus/I2C</b>	I2C/SMBus x1 (Default: SMBus)	—
<b>TOUCH</b>	4/5/8-wire Touch Controller x 1 (optional)	—
<b>FAN</b>	DC Fan x 1 (optional: Smart Fan)	—
<b>SIM</b>	SIM X1	
<b>FRONT PANEL</b>	HDD LED, PWR LED, Power Button, Buzzer, Reset	
<b>OTHERS</b>	CFast™ x 1	
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>	Full-size mPCIe x 1 Half size mPCIe/mSATA x 1(Default mSATA, BOM Option: mPCIe)	Mini-Card x 1 (for USB only)
<b>M.2</b>	—	
<b>OTHERS</b>	—	
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP.</b>	32°F ~ 140°F (0°C ~ 60°C)	
<b>STORAGE TEMP.</b>	-40°F ~ 176°F (-40°C ~ 80°C)	
<b>OPERATING HUMIDITY</b>	0% ~ 90% relative humidity, non-condensing	
<b>MTBF (HOURS)</b>	325,391	155,000
<b>EMC</b>	CE/FCC Class A	
<b>Note</b>		



# Board Level Products

## SubCompact Boards/Systems

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SubCompact Boards/Systems



Model	GENE-BT05	GENESYS-BT05
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	3.5" SubCompact Board	3.5" SubCompact Board System
<b>CPU</b>		Intel® Atom™/ Celeron® Processor: Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, 10W) Celeron® N2930 (4C/4T, 1.83GHz, up to 2.16GHz, 7.5W) Celeron® N2807 (2C/2T, 1.58GHz, up to 2.16GHz, 4.3W) Atom™ E3845 (4C/4T, 1.91 GHz, 10W) Atom™ E3825 (2C/2T, 1.33 GHz, 6W)
<b>CHIPSET</b>		Integrated with Intel® SoC
<b>MEMORY TYPE</b>		DDR3L up to 1333MHz, SODIMM x 1, up to 8GB, Non-ECC
<b>BIOS</b>		UEFI
<b>WAKE ON LAN</b>		Yes
<b>WATCHDOG TIMER</b>		255 Levels
<b>SECURITY</b>		TPM 1.2(Optional)
<b>RTC BATTERY</b>		Lithium Battery 3V/240mAh
<b>DIMENSION</b>	5.75" x 4" (146mm x 101.7mm)	7.00" x 5.28" x 1.69" (178mm x 134.1mm x 43mm)
<b>OS SUPPORT</b>		Windows 7/10 (64bit) Linux Ubuntu 20.04.3/Kernel 5.11
<b>POWER</b>		
<b>POWER REQUIREMENT</b>		+12V Only
<b>POWER SUPPLY TYPE</b>	AT/ATX	ATX
<b>CONNECTOR</b>	Phoenix 2-pin Connector	DC Jack Connector
<b>POWER CONSUMPTION</b>		Intel® J1900, DDR3L 1600MHz 8GB, 1.73A @ +12V(TYPICAL) Intel® J1900, DDR3L 1600MHz 8GB, 1.88A @ +12V(MAX)
<b>DISPLAY</b>		
<b>CONTROLLER</b>		Intel® HD Graphics for Intel Atom® Processor Z3700 Series
<b>LVDS/eDP</b>	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080	
<b>DISPLAY INTERFACE</b>	HDMI 1.4a x 1, up to 3840 x 2160 VGA x 1, up to 1920 x 1200	HDMI 1.4a x 1 VGA x 1
<b>MULTIPLE DISPLAY</b>	Up to 3 Simultaneous Displays	Up to 2 Simultaneous Displays
<b>AUDIO</b>		
<b>CODEC</b>	Realtek ALC897/892	
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	
<b>SPEAKER</b>		
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Intel® i210/i211, 10/100/1000Base, RJ-45 x 2	Intel® i210, 10/100/1000Base, RJ-45 x 2
<b>USB</b>		USB 3.2 Gen 1 x 1 USB 2.0 x 1
<b>SERIAL PORT</b>		COM1 (RS232)
<b>VIDEO</b>		VGA x 1, HDMI 1.4a x 1
<b>INTERNAL I/O</b>		
<b>USB</b>	USB2.0 x 2	
<b>SERIAL PORT</b>	COM2, COM3 (RS232/422/485, supports 5V/12V/Ri), COM4 (RS232)	COM2, COM3 (RS232/422/485, supports 5V/12V/Ri)(Optional)
<b>VIDEO</b>	LVDS x 1	
<b>SATA</b>	SATA III x 1, +5V SATA Power Connector x 1	SATA III x 1 +5V SATA Power Connector x 1
<b>AUDIO</b>	Audio Header x 1	
<b>DIO/GPIO</b>	8-bit	
<b>SMBus/I2C</b>	I2C/SMBus x1 (Default: SMBus)	I2C/SMBus x1 (Optional)
<b>TOUCH</b>	4/5/8-wire Touch Controller x 1 (optional)	
<b>FAN</b>	DC Fan x 1 (optional: Smart Fan)	Heatsink x 1 (Optional: DC Fan)
<b>SIM</b>		SIM X1
<b>FRONT PANEL</b>		HDD LED, PWR LED, Power Button, Buzzer, Reset
<b>OTHERS</b>	CFast™ (option with mSATA by BOM, occupies one Mini Card location)	
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>	Full-Size mPCIe/ USB2.0 x 1 Half-Size mSATA/ mPCIe x 1 (BOM optional)	Full-Size mPCIe x 1 Half-Size mSATA/ mPCIe x 1
<b>M.2</b>		
<b>OTHERS</b>		CFast™(Optional)
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP.</b>	32°F ~ 140°F (0°C ~ 60°C) or WiTAS 2 (E3825)	32°F ~ 122°F (0°C ~ 50°C)
<b>STORAGE TEMP.</b>	-40°F ~ 176°F (-40°C ~ 80°C)	-40°F ~ 185°F (-40°C ~ 85°C)
<b>OPERATING HUMIDITY</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF (HOURS)</b>		344,859
<b>EMC</b>		CE/FCC Class A
<b>Note</b>		



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## Board Level Products

## SubCompact Boards/Systems



Model	GENE-BT06	GENE-5315 Rev. A
<b>SYSTEM FORM FACTOR</b>	3.5" SubCompact Board	
<b>CPU</b>	Intel® Atom™/ Celeron® Processor: Celeron® J1900 (4C/4T, 2.00GHz, up to 2.42GHz, 10W) Celeron® N2930 (4C/4T, 1.83GHz, up to 2.16GHz, 7.5W) Celeron® N2807 (2C/2T, 1.58GHz, up to 2.16GHz, 4.3W) Atom™ E3845 (4C/4T, 1.91 GHz, 10W) Atom™ E3825 (2C/2T, 1.33 GHz, 6W)	AMD Geode™ LX800 Processor AMD Geode™ LX 800(500MHz, 3.6W)
<b>CHIPSET</b>	Integrated with Intel® SoC	CSS536
<b>MEMORY TYPE</b>	On Board DDR3L 1066/1333MHz, up to 4GB, Non-ECC	DDR333 SODIMM x 1 (DDR400 optional), up to 1GB
<b>BIOS</b>	UEFI	Award 1MB
<b>WAKE ON LAN</b>		Yes
<b>WATCHDOG TIMER</b>		255 Levels
<b>SECURITY</b>	TPM 2.0 (BOM optional)	—
<b>RTC BATTERY</b>		Lithium Battery 3V/240mAh
<b>DIMENSION</b>	5.75" x 4" (146mm x 101.7mm)	
<b>OS SUPPORT</b>	Windows 7/10 (64bit) Linux Ubuntu 20.04.0/Kernel 5.11	Windows XP 32-bit
<b>POWER</b>		
<b>POWER REQUIREMENT</b>	+9~24V	+5V
<b>POWER SUPPLY TYPE</b>	AT/ATX	
<b>CONNECTOR</b>	Phoenix 2-pin Connector	4Pin Connector
<b>POWER CONSUMPTION</b>	Intel® E3845, DDR3L on board RAM 4GB, 2.10A @ +12V(TYPICAL) Intel® E3845, DDR3L on board RAM 4GB, 2.26A @ +12V(MAX)	LX 800 500 MHz, DDR400 1 GB, 1.17A@+5V(Typical)
<b>DISPLAY</b>		
<b>CONTROLLER</b>	Intel® HD Graphics for Intel Atom® Processor Z3700 Series	AMD Geode™
<b>LVDS/eDP</b>	LVDS Dual Channel 18/24bit x 1, up to 1920 x 1080	Up to 24-bit Single Channel LVDS/ TTL LCD
<b>DISPLAY INTERFACE</b>	HDMI 1.4a, up to 3840 x 2160 (Optional: DP1.1a) VGA x 1, up to 1920 x 1200	VGA x1, up to 1920 x 1200
<b>MULTIPLE DISPLAY</b>	Up to 3 Simultaneous Displays	Up to 2 Simultaneous Displays
<b>AUDIO</b>		
<b>CODEC</b>	Realtek ALC897/892	High Definition Audio Interface
<b>AUDIO INTERFACE</b>	Line-in/Line-out/MIC	Line-in/Line-out/MIC/CD-in
<b>SPEAKER</b>	2W Amplifier(Optional)	—
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Intel® i210, 10/100/1000Base, RJ-45 x 2	10/100Base-TX x 2, Realtek RTL 8139DL
<b>USB</b>	USB 3.2 Gen1 x 1, USB2.0 x 1	—
<b>SERIAL PORT</b>		COM1(RS232)
<b>VIDEO</b>	VGA x 1, HDMI 1.4a x 1 (Optional)	VGA x1
<b>INTERNAL I/O</b>		
<b>USB</b>	USB2.0 x 2	USB2.0 x 4
<b>SERIAL PORT</b>	COM2, COM3 (RS232/422/485, supports 5V/12V/Ri), COM4 (RS232)	COM2(RS-232/422/485)
<b>VIDEO</b>	LVDS x1	TTL LCD x1 LVDS LCD x1
<b>SATA</b>	SATA II x 1, +5V SATA Power Connector x 1	—
<b>AUDIO</b>		Audio Header x 1
<b>DIO/GPIO</b>		8-bit
<b>SMBus/I2C</b>	SMBus x 1	—
<b>TOUCH</b>	4/5/8 wire Touch Controller x 1 (Optional)	—
<b>FAN</b>	DC Fan x 1 (optional: Smart Fan)	System Fan x1
<b>SIM</b>	SIM x 1	—
<b>FRONT PANEL</b>		HDD LED, PWR LED, Power Button, Buzzer, Reset
<b>OTHERS</b>	—	SPP/EPP/ECP x 1, CompactFlash™ x1, UDMA33 x 1
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>	Full-size mPCIe/USB2.0 x 1 Half-size mSATA/mPCIe x 1(BOM optional)	—
<b>M.2</b>		—
<b>OTHERS</b>		Mini-PCI x1, PC/104 x1, Floppy Disk Drive x 1
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP.</b>	32°F ~ 140°F (0°C ~ 60°C) or WITAS 2 -40°F ~ 185°F (-40°C ~ 85°C)	32°F ~ 140°F (0°C ~ 60°C)
<b>STORAGE TEMP.</b>		-40°F ~ 176°F (-40°C ~ 80°C)
<b>OPERATING HUMIDITY</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF (HOURS)</b>	403,079	90,000
<b>EMC</b>		CE/FCC Class A
<b>Note</b>		



# Board Level Products

## SubCompact Boards/Systems

01

SubCompact Boards/Systems

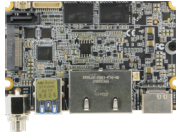


Model	GENE-5315 Rev. B
<b>SYSTEM</b>	
FORM FACTOR	3.5" SubCompact Board
CPU	AMD Geode™ LX800 Processor AMD Geode™ LX 800(500MHz, 3.6W)
CHIPSET	CS5536
MEMORY TYPE	DDR333 SODIMM x 1 (DDR400 optional), up to 1GB
BIOS	Award 1MB
WAKE ON LAN	Yes
WATCHDOG TIMER	255 Levels
SECURITY	—
RTC BATTERY	Lithium Battery 3V/240mAh
DIMENSION	5.75" x 4" (146mm x 101.7mm)
OS SUPPORT	Windows XP 32-bit
<b>POWER</b>	
POWER REQUIREMENT	+5V
POWER SUPPLY TYPE	AT/ATX
CONNECTOR	4Pin Connector
POWER CONSUMPTION	LX 800 500 MHz, DDR400 1 GB, 1.17A@+5V(Typical)
<b>DISPLAY</b>	
CONTROLLER	AMD Geode™
LVDS/eDP	Up to 24-bit Single Channel LVDS/ TTL LCD
DISPLAY INTERFACE	VGA x1, up to 1920 x 1200
MULTIPLE DISPLAY	Up to 2 Simultaneous Displays
<b>AUDIO</b>	
CODEC	High Definition Audio Interface
AUDIO INTERFACE	Line-in/Line-out/MIC/CD-in
SPEAKER	—
<b>EXTERNAL I/O</b>	
ETHERNET	10/100Base-TX x 2, Realtek RTL 8139DL
USB	—
SERIAL PORT	COM1 (RS-232)
VIDEO	VGA x 1
<b>INTERNAL I/O</b>	
USB	USB2.0 x 4
SERIAL PORT	COM2, COM3, COM4(RS-232/422/485)
VIDEO	TTL LCD x 1 LVDS LCD x 1
SATA	—
AUDIO	Audio Header x 1
DIO/GPIO	8-bit
SMBus/I2C	—
TOUCH	—
FAN	System Fan x 1
SIM	—
FRONT PANEL	HDD LED, PWR LED, Power Button, Buzzer, Reset
OTHERS	SPP/EPP/ECP x 1, CompactFlash. x 1, UDMA33 x 1
<b>EXPANSION</b>	
Mini PCI-E/mSATA	—
M.2	—
OTHERS	Mini-PCI x 1, Floppy Disk Drive x 1
<b>ENVIRONMENT &amp; CERTIFICATION</b>	
OPERATING TEMP.	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)	354,194
EMC	CE/FCC Class A
Note	



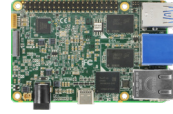
# Board Level Products

## de next



Model	de next-TGU8	de next-V2K8
<b>SYSTEM</b>		
<b>FORM FACTOR</b>	86mm x 55mm, Single board computer	
<b>CPU</b>	Onboard 11th Gen. Intel® Core™ Processor i7-1185G7E (4C/8T, 1.80GHz, up to 4.40GHz) i5-1145G7E (4C/8T, 1.50GHz, up to 4.10GHz) i3-1115G4E (2C/4T, 2.20GHz, up to 3.90GHz)	AMD Ryzen™ Embedded V2718 with Radeon™ Graphics , AMD Ryzen™ Embedded V2516 with Radeon™ Graphics
<b>CPU TDP</b>	15W, (TDP up to 28W)	10W TDP, up to 25W: V2718/V2516
<b>CHIPSET</b>	Integrated with Intel® SoC	Integrated with AMD Ryzen™ Embedded SoC
<b>MEMORY TYPE</b>	Onboard LPDDR4x, 3733, up to 16GB	Onboard LPDDR4x 3200MHz up to 16GB
<b>BIOS</b>		UEFI
<b>WAKE ON LAN</b>		Yes
<b>WATCHDOG TIMER</b>		255 Levels
<b>SECURITY</b>		fTPM
<b>RTC Battery</b>		Lithium Battery 3V/240mAh
<b>DIMENSION (L X W)</b>	3.38" x 2.17" (86 mm x 55 mm)	
<b>POWER</b>		
<b>POWER REQUIREMENT</b>		DC in +12V
<b>POWER SUPPLY TYPE</b>		AT/ATX
<b>CONNECTOR</b>		DC Jack (Optional: 2 Pin Phoenix Connector)
<b>POWER CONSUMPTION</b>	With i7-1185G7E + LPDDR4x 16GB : 12V@7A, 84W (Peak during full loading) With i7-1185G7E + LPDDR4x 16GB : 12V@4.58A, 55W (steady state during full loading )	AMD Ryzen™ V2718 Processor, LPDDR4 3200MHz 16GB, 3.92A @12V, 47.04W during full loading test (Peak) AMD Ryzen™ V2718 Processor, LPDDR4 3200MHz 16GB, 3.07A @12V, 36.84W during full loading test (Steady)
<b>DISPLAY</b>		
<b>CONTROLLER</b>	Intel® UHD Graphics for 11th Gen Intel® Processors	AMD Radeon™ Graphics
<b>LVDS/eDP</b>	eDP only, up to 3840 X 2160 Resolution	eDP only, up to 3840 x 2160 Resolution
<b>Display Interface</b>		eDP x 1, HDMI 1.4b x 1
<b>Multiple Display</b>		Up to 2 Simultaneous Displays
<b>AUDIO</b>		
<b>CODEC</b>		---
<b>AUDIO INTERFACE</b>		---
<b>Speaker</b>		---
<b>EXTERNAL I/O</b>		
<b>ETHERNET</b>	Intel® i219LM, 10/100/1000Base, RJ-45 x1 Intel® i225LM, 10/100/2500Base, RJ-45 x1	de next-V2K8-A10: Realtek RTL8111H, 10/100/1000Base, RJ-45 x 1 Intel® i225LM, 10/100/2500Base, RJ-45 x 1 de next-V2K8-A11: Realtek RTL8111H, 10/100/1000Base, RJ-45 x 1 Intel® i226LM, 10/100/2500Base, RJ-45 x 1
<b>USB</b>		USB 3.2 Gen 2 x 2 (Type-A)
<b>SERIAL PORT</b>		---
<b>VIDEO</b>		HDMI 1.4b x 1
<b>INTERNAL I/O</b>		
<b>USB</b>	USB2.0 x 4 (pin header) Note : USB2.0 x 2 shared with adapter card	USB 2.0 x 4 (via pin header)
<b>SERIAL PORT</b>	COM Port (RS232/422/485) x 2 (pin header)	COM Port x 2 (RS-232/422/485 via pin header)
<b>VIDEO</b>		eDP x 1
<b>SATA</b>		SATA3 x 1, +5V SATA Power Connector x 1
<b>AUDIO</b>		---
<b>DIO/GPIO</b>		8-Bit (pin header)
<b>SMBus/I2C</b>		Optional
<b>Touch</b>		---
<b>FAN</b>		Smart Fan x1
<b>SIM</b>		---
<b>Front Panel</b>		HDD LED, PWR LED, Power Button, Buzzer, Reset
<b>Others</b>		---
<b>EXPANSION</b>		
<b>Mini PCI-E/mSATA</b>		---
<b>M.2</b>		M.2 2280 M-Key x 1 (PCIe [x2])
<b>Others</b>		PCIe Gen 3 [x4] x 1 (via FPC)
<b>ENVIRONMENT &amp; CERTIFICATION</b>		
<b>OPERATING TEMP</b>		32°F ~ 140°F (0°C ~ 60°C)
<b>STORAGE TEMP</b>		-40°F ~ 176°F (-40°C ~ 80°C)
<b>OPERATING HUMIDITY</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF (HOURS)</b>	594,420	609,263
<b>EMC</b>		CE/FCC Class A



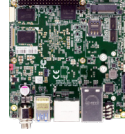


Model	UP Board	UP 4000
<b>System</b>		
<b>Processor</b>	Intel® Atom® x5-Z8350 Processor SoC	Intel® Celeron® N3350/ Intel® Pentium® N4200/ Intel Atom® x7-E3950 Processor SoC
<b>Graphics</b>	Intel® HD 400 Graphics, 12 EU GEN 8, up to 500MHz Support DX*11.1/12, Open GL*42, Open CL* 1.2 OGL ES3.0, H.264, HEVC(decode), VP8	Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264,VP8
<b>I/O</b>	HDMI x 1 I2S Audio port x 1	2 pin wafer for Fan ( 12V ) x 1 2 pin wafer for RTC Battery x 1 6 pin wafer for Audio (Line out + MIC in) x 1 10 pin wafer (2 USB2.0 + 1 HSUART) x 1 HAT 40 pin header x 1 4pin wafer power button for front panel x 1 41 pin FPC connector for high speed expend x 1 power button x 1
<b>Camera</b>	MIPI-CSI (4 MEGA pixel)	—
<b>USB</b>	USB 2.0 x4 USB 2.0 pin header (10 pins in total) x 2 USB3.0 OTG x 1	USB 3.2 Gen 1 (Type A) x 3 USB 2.0 pin header (10 pins in total) x 2 USB 3.2 Gen 1 OTG via USB Type-C x 1
<b>Expansion</b>	40 pin General Purpose bus, supported by Altera Max V. ADC 8-bit@188ksos	40 pin GPIO x 1  via carrier board: M.2 2230/2242/2280 x 1 M.2 3052 x 1
<b>RTC</b>		Yes
<b>Power</b>	5V DC-in @ 4A 5.5/2.1mm jack	12V DC-in @5A (phoenix Terminal co-lay)
<b>Dimension</b>		3.34" x 2.20" (85mm x 56mm)
<b>Memory</b>	1GB/ 2GB/ 4GB DDR3L-1600	onboard LPDDR4 max to 8GB
<b>Storage</b>		eMMC 16GB / 32GB/ 64GB
<b>Display Interface</b>	DSI/eDP	HDMI 1.4bx 1 DP 1.2 via USB TYPE C Connector
<b>Ethernet</b>	Gb Ethernet (full speed) RJ-45 x 1	1 Gb Ethernet (full speed) RJ-45 x 1
<b>OS Support</b>	Win 10 Linux (ublinux, Ubuntu, Yocto)	Microsoft Windows 10 (full), Windows IOT Core Yocto project 3.1 Kernel 5.4 Ubuntu 18.04
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
<b>Operation Humidity</b>		10% ~ 80% relative humidity, non-condensing
<b>Certification</b>		CE/FCC Class A, RoHS Compliant
<b>Note</b>		



# Board Level Products

## UP Boards



Model	UP Squared	UP Squared Pro	UP Squared 6000
<b>System</b>			
<b>Processor</b>	Intel® Pentium® N4200/ Celeron® N3350/ Atom™ E3940/ E3950 Processor SoC	Intel® Pentium® N4200/ Celeron® N3350/ Atom® E3950 Processor SoC	Intel® Atom® X6413E / X6425RE, Celeron® N6210 (no PSE), Pentium® J6426 Processor SoC
<b>Graphics</b>	Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264, VP8		Intel® UHD Graphics
<b>I/O</b>	HDMI x 1 DP x 1 I2S Audio Port	HDMI x 1 DP x 1 COM port (RS422/RS232/RS485) x 2 Audio Jack x 1	HDMI 2.0b x 1 DP 1.2 x 1 eDP x 1 (Limited to Atom series) Audio wafer x 1 RS-232/422 x 1 (Limited to Atom series)
<b>Camera</b>	CSI 2-Lane + CSI 4-Lane		
<b>USB</b>	USB 2.0 x 2 USB3.0 OTG x 1 USB3.0 (Type A) x 3	USB 2.0 x 2 USB 3.2 Gen 1 OTG x 1 USB 3.2 Gen 1 (Type A) x 3	USB 2.0 x 2 (from wafer x 1) USB 3.2 Gen 2 Type A x 2 USB 3.2 Gen 2 Type C (support OTG) x 1 (Limited to Atom series)
<b>Expansion</b>	40 pin GPIO x 1 Full-sized Mini-PCIe x 1 (PCIe & SATA + USB2.0) M.2 2230 x 1 SATA3 x 1 60 pin EXHAT x 1	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	40 pin GPIO x 1 M.2 2230 E-key x 1 M.2 2280 PCIe Gen3.0x2 M-key x 1 SATA3 x 1 M.2 3052 B-key x 1 Nano SIM slot x 1 100 pin high speed board-board connector x 1 (Limited to Atom series) TPM 2.0 (Limited to Atom series)
<b>RTC</b>	Yes		
<b>Power</b>	5V DC-in @ 4A-6A	12V-24V DC-in (Lockable plug)/ Phoenix connector (optional)	12V DC-in (Lockable plug)
<b>Dimension</b>	3.37" x 3.54" (85.6 mm x 90 mm)		4" x 4" (101.6mm x 101.6mm)
<b>Memory</b>	2GB (single channel) LPDDR4 4GB/8GB (dual channel) LPDDR4	2GB (single channel) LPDDR4 4GB/8GB (dual channel) LPDDR4	Up to 8GB DDR4
<b>Storage</b>	eMMC 32 GB / 64 GB / 128 GB		UP to 64GB eMMC
<b>Display Interface</b>	eDP	HDMI1.4 x 1 DP1.2 x 1 eDP x 1	HDMI 2.0b x 1 DP 1.2 x 1 eDP x 1 (Limited to Atom series)
<b>Ethernet</b>	Gb Ethernet (full speed) RJ-45 x 2		GbE x 1, 2.5GbE x 1 Atom: Intel® i210-IT, i225-IT PC Client: Intel® i211-AT, i225-V
<b>OS Support</b>	Microsoft Windows 10 (full), Windows IOT Core, Linux (ubilinux, Ubuntu, Yocto), Android Nougat	Microsoft Windows 10 (full), Windows IOT Core Linux: Ubuntu 18.04.5, Ubuntu 20.04.1, Yocto 3.1	Microsoft Windows 10 (full), Windows IOT Core Linux: Ubuntu 20.04 LTS, Yocto 3.1
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)	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)	With Heatsink: 32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow
<b>Operation Humidity</b>	0% ~ 90% relative humidity, non-condensing		
<b>Certification</b>	CE/FCC Class A, RoHS Compliant, REACH		
<b>Note</b>			







Model	UP Squared V2	UP Squared Pro 7000
<b>System</b>		
<b>Processor</b>	Intel® Celeron® N6210 Processor SoC Intel® Celeron® J6412 Processor SoC Intel® Pentium® J6426 Processor SoC	Intel® Core™ i3-N305 Intel Atom® x7425E Intel® Processor N97 Intel® Processor N50 (formerly Alder Lake-N)
<b>Graphics</b>	Intel® UHD Graphics	Intel® UHD Graphics for 12th Gen Intel® Processors
<b>Memory</b>	Up to 16GB LPDDR4	Up to 16GB LPDDR5
<b>Storage</b>		Up to 64GB eMMC
<b>I/O</b>	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 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 from 10 pin header x 2
<b>Camera</b>	—	MIPI-CSI via 61-Pin FPC Connector
<b>USB</b>	USB 2.0 x 2 (from 10 pin wafer x 1) USB 3.2 Gen 2 Type A x 3	USB 2.0 x 2 (via 10 Pin Header x 1) USB 3.2 Gen 2 x 2 (Type-A) USB 3.2 Gen 2 x 1 (Type-C)
<b>Expansion</b>	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 [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) SATA III x 1
<b>Display Interface</b>	HDMI 1.4b x 1 DP 1.2 x 1 eDP 1.3 x 1	HDMI 2.0b x 1 DP 1.2 x 1 DP 1.4a via USB Type C
<b>Ethernet</b>	Gb Ethernet (full speed) RJ-45 x 2	2.5GbE x 2 (Intel® I226-IT)
<b>Security</b>		Onboard TPM 2.0
<b>RTC</b>		Yes
<b>OS Support</b>	Microsoft Windows 10 (full) Windows IoT Core Ubuntu 20.04 LTS Yocto 3.1	Windows 10 IoT Enterprise Ubuntu 22.04 LTS Yocto 4
<b>Power Requirement</b>		
<b>Power</b>	12V DC-in, 5A	12V DC-in, 6A
<b>Power Supply Type</b>	AT/ATX	AT/ATX
<b>Power Consumption (Typical)</b>	30~38W	26W~35W
<b>Mechanical</b>		
<b>Dimension</b>	3.37" x 3.54" (85.6 mm x 90 mm)	4" x 4" (101.6mm x 101.6mm)
<b>Net Weight</b>	0.41 lbs (0.19kg)	0.44 lb. (0.20Kg)
<b>Gross Weight</b>	0.66 lbs (0.3kg)	0.77 lb. (0.35Kg)
<b>Environment</b>		
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow, WiTAS1 -4°F ~ 158°F (-20°C ~ 70°C)
<b>Operation Humidity</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF</b>	465,586	422,053
<b>Certification</b>		CE/FCC Class A, RoHS Compliant, REACH
<b>Note</b>		



# Board Level Products

## UP Boards



Model	UP Xtreme	UP Xtreme i11
<b>System</b>		
<b>Processor</b>	8th generation Intel® Core i7/i5/i3/Celeron® Processor SoC	11th Gen Intel® Core™ Processor SoC Core i7-1185G7E Core i7-1185GRE Core i5-1145 G7E Core i5-1145GRE Core i3-1115GRE Celeron® 6305E
<b>Graphics</b>	Intel® Graphics , GEN 9	Intel® Iris® Xe graphics
<b>I/O</b>	RJ45 Ethernet Connector x 2 HDMI/DP STACK Connector x 1 Power Button / LED x 1 Audio Jack (Line out + MIC) x 1 DC connector (Lockable) x 1 STM32 connector x 1 eDP with Backlight control Header x 1 10 pin 1xUSB2.0 x 1 / HUART (TTL) x 1 SATA Connector with power connector (5V, GND) x 1 4 pin Fan connector x 1 Power Button header x 1 Reset Pin header x 1 M.2 2230 E Key x 1 M.2 2280 M Key x 1 40 pin HAT connector x 1 mPCIe slot x 1 10 pin RS232/422/485 pin header x 2 100pin connector x 1	RJ45 Ethernet Connector x 2 HDMI/DP Stack Connector x 1 Power Button / LED x 1 DC Connector (Lockable) x 1 10-pin USB 2.0 x 2 / HUART x 1 SATA Connector with Power Connector (5V, GND) x 1 4pin Fan Connector x1 6pin Front Panel Header M.2 2230 E Key x 1 M.2 2280 M Key x 1 USB 4.0 40-pin HAT Connector x 1 M.2 3052 B Key x 1 with SIM 10-pin RS232/422/485 Pin Header x 2 Alternative 4pin ATX Connector Behind DC Connector
<b>Camera</b>	—	
<b>USB</b>	USB 3.2 Gen 2 STACK Connector for 2 ports (Front) x 1 USB 3.2 Gen 2 STACK Connector for 2 ports (Rear) x 1	USB 3.2 Gen 2 Type A x 3 USB 2.0 x 1 USB4.0 x 1 Type-C
<b>Expansion</b>	M.2 2230 E Key x 1 M.2 2280 M key x 1 mPCIe slot x 1 100pin connector x 1 40pin HAT	M.2 2230 E Key x 1 M.2 2280 M Key x 1 M.2 3052 B Key x 1 40-pin HAT Connector x 1 PCIe x 4 Slot
<b>RTC</b>	RTC battery, CR2032 x 1	
<b>Power</b>	12V - 60VDC	12V
<b>Dimension</b>	122 x 120 mm	120.35 x 122.5 mm
<b>Memory</b>	Onboard DDR4 memory, Max 16GB Single Channel: 4GB Dual Channel: 8GB, 16GB	DDR4 SO-DIMM Slot x 2 (up to 64GB 3200Mhz)
<b>Storage</b>	SATA3 (6Gb/s) x 3: a. SATA connector x 1 b. M.2 2280 SATA option (auto detect) x 1 c. minicard mSATA option (auto detect) x 1	SATA3 (6Gb/s) x 1: a. SATA Connector x 1 b. M.2 2280 M Key NVMe(PCIe [x2])
<b>Display Interface</b>	HDMI2.0 x 1 DP1.2 x 1 eDP x 1 CEC support with STM32 on HDMI x 1	HDMI 2.0 x 1 DP 1.4 x 1 + eDP x 1, 4K at 60hz internal panel
<b>Ethernet</b>	i7/i5 SKU LAN (i210 AT) x 1, LAN (i219 LM) x 1 i3/Celeron® LAN (i210 AT) x 1, LAN (i219 V) x 1	Intel® i225IT x 1, Intel® i219 (vPRO) x 1
<b>OS Support</b>	Win 10 Linux Ubuntu 18.04 with Kernel 5.0 Linux Yocto 2.7 with Kernel 4.19	Win 10/IT Linux Ubuntu 20.04.02 Linux Yocto 3.1
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)	
<b>Operation Humidity</b>	0% ~ 90% relative humidity, non-condensing	
<b>Certification</b>	CE/FCC Class A, RoHS Compliant, REACH	
<b>Note</b>		





Model	UP Xtreme i12
<b>System</b>	
<b>Processor</b>	12th Gen Intel® Core™ Processor SoC Core i7-1270PE Core i5-1250PE Core i3-1220PE Celeron® 7305E
<b>Graphics</b>	Intel® Iris® Xe graphics
<b>Memory</b>	Up to 32GB on board LPDDR5 4800MHz (Dual Channel)
<b>Storage</b>	M.2 2280 (PCIe Gen4.0 x 4) M-key x 2 SATA3 x 1
<b>I/O</b>	10-pin USB 2.0 x 2 / HSUART x 1 4pin Fan Connector x1 6pin Front Panel Header x 1 10-pin RS232/422/485 Pin Header x 2 DC Connector x 1 Power Button/LED x 1 Audio Jack x 1 ( Mic-in, Line out) RJ45 x 2
<b>Camera</b>	—
<b>USB</b>	USB 2.0 x 2 ( from wafer x 1), USB2.0 Type A x 1 USB 3.2 Gen 2 Type A x 3 USB4.0 Type C x 1
<b>Expansion</b>	40 pin GPIO x 1 M.2 2230 E-key x 1 M.2 2280 (PCIe Gen4.0 x 4) M-key x 2 SATA3 x 1 M.2 3052 B-key x 1 Nano SIM slot x 1
<b>Display Interface</b>	HDMI 2.0b x 1 DP 1.4a x 1 DP 1.4b via USB type C x 1 eDP1.4b x 1
<b>Ethernet</b>	Intel® i226IT (TSN) x 1, Intel® i219 (vPRO) x 1
<b>Security</b>	TPM 2.0
<b>RTC</b>	Yes
<b>OS Support</b>	Windows® 10 Enterprise 2021 LTSC Ubuntu 22.04 Yocto (TBD)
<b>Power Requirement</b>	
<b>Power</b>	12-36V DC input (AT/ATX mode)
<b>Power Supply Type</b>	Lockable
<b>Power Consumption (Typical)</b>	Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 5.86A@+ 12V (Typical) Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 8.05A@+ 12V (Max)
<b>Mechanical</b>	
<b>Dimension</b>	4.74" x 4.82" (120.35 x 122.5 mm)
<b>Net Weight</b>	0.88lb (0.4kg)
<b>Gross Weight</b>	1.32lb (0.6kg)
<b>Environment</b>	
<b>Operating Temperature</b>	With Heatsink: 32°F ~ 140°F (0°C ~ 60°) / 0.5 airflow
<b>Operation Humidity</b>	0% ~ 90% relative humidity, non-condensing
<b>MTBF</b>	362,068 Hours
<b>Certification</b>	CE/FCC Class A, RoHS Compliant, REACH
<b>Note</b>	



## Board Level Products

# UP Boards



Model	UP 7000	UP Squared i12
<b>System</b>		
<b>Processor</b>	Intel® Processor N97 Intel® Processor N100 Intel® Processor N50 (formerly Alder Lake-N)	12th Gen Intel® Core™ Processor SoC Intel® Core™ i7-1270PE (28W) Intel® Core™ i5-1250PE (28W) Intel® Core™ i3-1220PE (28W) Intel® Celeron® Processor 7305E (15W)
<b>Graphics</b>		Intel® UHD Graphics
<b>Memory</b>	Dual-Channel LPDDR5, up to 8GB	Up to 8GB Onboard LPDDR5
<b>Storage</b>	Up to 64GB eMMC	M.2 2280 M-Key x 1 (PCIe Gen 4.0 x 4) SATA III x 1
<b>I/O</b>	2-pin Fan Wafer x 1 (12V) 2-pin RTC Battery Wafer x 1 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 6-pin Audio Wafer x 1 (Line out + MIC in) SATA III Connector x 1 M.2 2280 M-Key x 1 M.2 2230 E-Key x 1 HDMI 1.4b/DP 1.2 STACK Connector x 1 DP 1.4a x 1 (via USB Type-C) USB 3.2 Gen 2 (Type-A) x 2, USB 3.2 Gen 2 (Type-C) x 1 10-pin USB 2.0 x 2/UART x 1 6-pin Front Panel x 1 HAT 40-pin Header x 1
<b>Camera</b>	—	MIPI-CSI via 61-Pin FPC connector
<b>USB</b>	USB 3.2 Gen 2 (Type-A) x 3 10-pin USB 2.0 x 2/UART x 1	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
<b>Expansion</b>	40-pin GPIO 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 x 1 (PCIe Gen 4.0 [x4]) SATA III x 1
<b>Display Interface</b>	HDMI 1.4b x 1	HDMI 1.4b/DP 1.2 STACK Connector x 1 DP 1.4a x 1 (via USB Type-C)
<b>Ethernet</b>	1GbE RJ-45 x 1 (Realtek RTL8111H CG)	1GbE RJ45 x 2 (Dual Stacked) (Realtek 8111H CG)
<b>Security</b>		Onboard TPM 2.0
<b>RTC</b>		Yes
<b>OS Support</b>	Windows® 10 Enterprise LTSC 2021 Linux: Ubuntu 22.04 LTS/Kernel 5.15, Yocto 4.0	Windows®10 IoT Enterprise LTSC 2021 Ubuntu 22.04 Yocto 4.0
<b>Power Requirement</b>		
<b>Power</b>	12V DC-in, 5A	12V DC-in
<b>Power Supply Type</b>	AT (default) /ATX	AT/ATX (AT as default)
<b>Power Consumption (Typical)</b>	30~36W	26W~39W
<b>Mechanical</b>		
<b>Dimension</b>	3.34" x 2.20" (85mm x 56mm)	3.37" x 3.54" (85.6mm x 90mm)
<b>Net Weight</b>	0.33 lb. (0.15Kg)	0.59 lbs (0.27kg)
<b>Gross Weight</b>	0.44 lb. (0.20Kg)	0.84 lbs (0.38kg)
<b>Environment</b>		
<b>Operating Temperature</b>		32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow
<b>Operation Humidity</b>		0% ~ 90% relative humidity, non-condensing
<b>MTBF</b>	685,218 Hours	522,716 Hours
<b>Certification</b>		CE/FCC Class A, RoHS Compliant, REACH
<b>Note</b>		



## UP Boards : UP Expansion Modules



Model	Connect Plus
<b>System</b>	
<b>VPU</b>	—
<b>Ethernet</b>	Intel I211-AT x 3 (A10-001) Intel I210-IT for wide temperature x 3 (A10-002)
<b>Power Requirement</b>	12V5A
<b>Power Supply Type</b>	12VDC from M/B
<b>Power Consumption (Typical)</b>	Max 13.5W w/o 5G module
<b>Dimensions (L x W)</b>	3.54" x 2.2" (90 mm x 56 mm)
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)
<b>Operation Humidity</b>	10 ~ 80% relative humidity, non-condensing
<b>Certification</b>	CE/FCC Class A
<b>OS Support</b>	Microsoft Windows 10 Linux: ubilinux, Ubuntu, Yocto Android-IA 9.0
<b>I/O</b>	
<b>Ethernet</b>	001: Intel® I211-AT x 3 002: Intel® I210-IT for wide temperature
<b>USB</b>	USB 3.0 Type A x 1
<b>SATA</b>	—
<b>Expansion Slot</b>	M.2 3042/3052 B-key DOCKING I DOCKING II UART x 1 SPI x 1
<b>Note</b>	

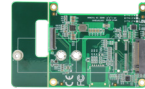
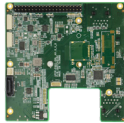
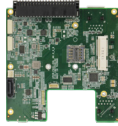
Model	UP-3G HAT
<b>System</b>	
<b>IC</b>	2-CH FULL-SPEED USB UART x 1 USB 2.0 Hub x 1 RS-232/RS-485/RS-422 transceiver x 2
<b>I/O Placements</b>	
<b>External Ports</b>	RS-232/422/485 Connector (DB9) x 1 USB wafer x 1 USB wafer x 1 Minicard x 1 uSIM Card Reader x 1 HAT 40 GPIO male (4x GPIO, 3.3V, 5V,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



Model	UP-POE HAT
<b>System</b>	
<b>IC</b>	LT43211 (PoE Ideal Diode Bridge Controller) x 1 LT4276B (PD Forward / Flyback Controller) x 1
<b>I/O Placements</b>	
<b>External Ports</b>	RJ45 input x 1 RJ45 output x 1
<b>Internal connector</b>	HAT 40 GPIO male (5V, GND) x 1
<b>Others</b>	
<b>Form Factor</b>	3.37" x 2.22" x 0.98" (85.6 mm x 56.5 mm x 25 mm)
<b>Certification</b>	CE / FCC Class A
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)
<b>OS Support</b>	No OS limitation
<b>Note</b>	



## UP Boards : UP Expansion Modules

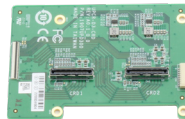


Model	UP Squared 6000 PSE Carrier Board	UP 4000 M.2 Plus
<b>System</b>		
<b>I/O</b>	<p>UPN-EHLCB-A10-001:            Gbe via Marvell Alaska x 2            Micro USB (PSE DEBUG PORT) x 1            40pin HAT2 PSE header x 1            (CAN x 2, QEP x 4, I2C x 1, PWM x 4, ADC x 4)            SATA with power connector x 1            100pin board-to-board high speed connector x 1            Full-sized Mini-PCIe (via USB2.0) x 1            SIM card slot x 1            SWD 10pin wafer (connect to MB) x 1            UART 10pin wafer (connect to MB) x 1            RS232 wafer x 1</p> <p>UPN-EHLCB-A10-002:            Micro USB (PSE DEBUG PORT) x 1            40pin HAT2 PSE header x 1            (CAN x 2, QEP x 4, I2C x 1, PWM x 4, ADC x 4)            SATA with power connector x 1            100pin board-to-board high speed connector x 1            SWD 10pin wafer (connect to MB) x 1            UART 10pin wafer (connect to MB) x 1            RS232 wafer x 1</p>	<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>
<b>Dimension</b>	4" x 4" (101.6mm x 101.6mm)	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)
<b>Net Weight</b>	0.08 kg	UP-APL03CB-A10-0001: 16g UP-APL03CB-A10-0002: 19g UP-APL03CB-A10-0003: 15g
<b>Gross Weight</b>	0.14 kg	UP-APL03CB-A10-0001: 55g UP-APL03CB-A10-0002: 58g UP-APL03CB-A10-0003: 54g
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
<b>Operation Humidity</b>	0% ~ 90% relative humidity, non-condensing	10% ~ 80% relative humidity, non-condensing
<b>Certification</b>	CE/FCC Class A	CE/FCC Class A, RoHS Compliant
<b>Note</b>		





Model	UP POE V2 Expansion Board	HDMI IN Carrier Board
<b>System</b>		
<b>I/O</b>	RJ-45 Input x 1 (10/100/1000M Gigabit Ethernet) USB 3.2 Gen 1 x 1 41-Pin FPC Connector x 1 10-Pin Wafer x 1	FPC 61-pin MIPI CSI x 1 (Lontium.LT6911UXC) 2-pin Power Wafer x 2 HDMI 2.0 x 1
<b>Dimension</b>	3.37" x 2.22" (85mm x 56mm)	1.9" x 0.9" (49mm x 23mm)
<b>Net Weight</b>	0.1 lb. (0.04Kg)	0.44 lb. (0.2Kg)
<b>Gross Weight</b>	0.13 lb. (0.06Kg)	0.88 lb. (0.4Kg)
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
<b>Operation Humidity</b>	10% ~ 80% relative humidity, non-condensing	10% ~ 80% relative humidity, non-condensing
<b>Certification</b>	—	—
<b>Note</b>		



Model	MIPI CSI Camera RVP Converter Kit
<b>System</b>	
<b>I/O</b>	Power: 5V/2A In from Wafer MIPI-CSI In: 4-Lane + Clock from Camera Module Connector x 2 MIPI-CSI Out: 61-pin FPC Connector x 1
<b>Dimension</b>	3.3" x 2.4" (85mm x 61mm)
<b>Net Weight</b>	0.1 lb. (0.04Kg)
<b>Gross Weight</b>	0.13 lb. (0.06Kg)
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C), 0.5m/s airflow
<b>Operation Humidity</b>	10% ~90% relative humidity, non-condensing
<b>Certification</b>	—
<b>Note</b>	



# Board Level Products

## Industrial Motherboards



Model	EMB-APL1	EMB-APL3
<b>System</b>		
<b>Processor</b>	N4200, (4C @ 2.50GHz CPU  Burst Mode), 750MHz GFX  Turbo), ~6W TDP) N3350, (2C @ 2.40GHz CPU  Burst Mode), 650MHz GFX  Turbo), ~6W TDP)	
<b>Chipset</b>	Integrated into SoC	
<b>Memory</b>	DDR3L 1866, Single Channel SODIMM x 2, Non-ECC (Max.8GB, up to 1600MHz)	
<b>I/O Chipset</b>	NCT6116D	
<b>Ethernet</b>	Realtek PCIe Gb LAN 8111H x 2	
<b>Audio</b>	Realtek® ALC897	
<b>TPM</b>	Nuoton NPCT652ABCYX TPM2.0 (default: No)	
<b>Expansion Slots</b>	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	
<b>BIOS</b>	128Mbit Flash ROM x 1, AMI BIOS	
<b>H/W Monitor</b>	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/SV12V, Fan Monitor on CPU/Chassis	
<b>WatchDog Timer</b>	1~255 steps by software program	
<b>Smart Fan Control</b>	Chassis Fan (Fanless)	
<b>Wake On LAN / PXE</b>	Yes (WOL/PXE)	
<b>Power State</b>	S3, S4, S5	
<b>Graphics</b>		
<b>Graphics Chipset</b>	Intel® HD Graphics	
<b>Graphics Multi Display</b>	Three Independent Display	
<b>VGA</b>	Up to 1920 x 1200 @60Hz	
<b>DVI</b>	---	
<b>HDMI</b>	Up to 3840 x 2160 @ 30Hz	Up to 3840 x 2160 @30 Hz(HDMI 1.4b)
<b>Display Port</b>	---	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz (Colay with VGA)
<b>LVDS</b>	Up to 1920 x 1200 @60Hz, dual-channel 18/24 bit (via PS8625) (colay with eDP)	
<b>eDP</b>	Up to 4096 x 2160 @60Hz	
<b>Backlight Control</b>	Voltage/PWM	
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>	Lithium battery	
<b>Power Requirement</b>	12V~24V wide-range voltage input back panel DC jack x 1; 4-pin ATX Power connector x 1	12V DC jack (screw type) 4-pin internal power connector
<b>Operation Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)	
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>Operation Humidity</b>	0% ~ 90% RH, non-condensing	
<b>Certificate</b>	CE & FCC Class A	
<b>Form Factor</b>	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
<b>Weight</b>	1.1 lb (0.5 Kg)	
<b>MTBF (Hours)</b>	263,080	
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	USB 3.2 Gen 1 (5 Gbps) x 2, USB 2.0 x 2	USB 3.2 Gen 1 (5 Gbps) x 4
<b>Display I/O</b>	HDMI 1, VGA x 1	VGA/DP x 1, HDMI x 1
<b>Audio I/O</b>	Mic-in, Line-out	Line-out x 1
<b>LAN I/O</b>	RJ-45 x 2	LAN (RJ-45) port x 2
<b>Serial Port</b>	---	
<b>PS/2 Port</b>	---	
<b>Others</b>	DC power jack x 1	
<b>Internal I/O Connectors</b>		
<b>Storage</b>	SATA 6.0Gb/s x 2(1 colay with M.2 M-key), M.2 M-key (22 x 42mm) x 1	
<b>USB</b>	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
<b>Display I/O</b>	40-pin LVDS/eDP connector x 1 (default LVDS)	
<b>Audio I/O</b>	AAFP	
<b>Serial Port</b>	RS-232/422/485 x 1, RS-232 x 5	
<b>PS/2 Port</b>	---	
<b>Parallel Port</b>	---	
<b>DIO</b>	8-bit x 1 (In/Out programmable)	
<b>FAN</b>	4-pin Chassis Fan x 1	
<b>Power</b>	---	
<b>Others</b>	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	
<b>OS</b>		
<b>OS Support</b>	Windows® 10 64bit, Ubuntu16.04.02/Kernel4.8.0	
<b>Note</b>		





# Board Level Products

## Industrial Motherboards

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Industrial Motherboards

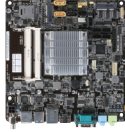


Model	EMB-BT1	EMB-BT2
<b>System</b>		
<b>Processor</b>	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP), Intel® Celeron® N2807 Processor (2C @ 1.50 GHz CPU, 313/750 MHz GFX, 4.3W TDP), Intel® Atom® E3845 Processor (4C @ 1.91 GHz CPU, 542/792 MHz GFX, 10W TDP)	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP)
<b>Chipset</b>		
<b>Memory</b>	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
<b>I/O Chipset</b>		Fintech 81866D
<b>Ethernet</b>		Realtek® PCIe Gb LAN 8111H x 2
<b>Audio</b>		Realtek® ALC897
<b>TPM</b>		Infineon SLB9635 TT 1.2 (default : No)
<b>Expansion Slots</b>	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
<b>BIOS</b>		64 M bit Flash ROM, AMI BIOS
<b>H/W Monitor</b>		Temperature Monitor on CPU/System, Voltage Monitor on Vcore/SV/3.3V/12V, Fan Monitor on CPU/Chassis
<b>WatchDog Timer</b>		1~255 steps by software program
<b>Smart Fan Control</b>		Chassis Fan (fanless)
<b>Wake On LAN/ PXE</b>		Yes (WOL/PXE)
<b>Power State</b>		S3, S4, S5
<b>Graphics</b>		
<b>Graphics Chipset</b>		Intel® HD Graphics
<b>Graphics Multi Display</b>	VGA+LVDS, VGA+HDMI, LVDS+HDMI	VGA+LVDS, Dual LVDS
<b>VGA</b>		Up to 1920 x 1200 @60 Hz
<b>DVI</b>		---
<b>HDMI</b>	Up to 1920 x 1200 @60 Hz	---
<b>Display Port</b>		---
<b>LVDS</b>	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)
<b>eDP</b>		---
<b>Backlight Control</b>		Voltage/PWM
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>		Lithium battery
<b>Power Requirement</b>	12VDC	ATX
<b>Operation Temperature</b>		32°F ~ 140°F (0°C ~ 60°C)
<b>Storage Temperature</b>		-40°F ~ -185°F (-40°C ~ -85°C)
<b>Operation Humidity</b>		0% ~ 90% R/H, non-condensing
<b>Certificate</b>		CE & FCC
<b>Form Factor</b>		Mini-ITX 6.7" x 6.7" (170mm x 170mm)
<b>Weight</b>		1.1 lb (0.5 Kg)
<b>MTBF (Hours)</b>	111,131	290,990
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	USB 3.2 Gen 1 (5 Gbps)/2.0 x 1, USB 2.0 x 2	USB 2.0 x 6
<b>Display I/O</b>	VGA x 1, HDMI x 1	VGA x 1
<b>Audio I/O</b>	Line-out x 1	Mic-in x 1, Line-out x 1
<b>LAN I/O</b>		LAN (RJ-45) port x 2
<b>Serial Port</b>	COM (RS-232) (optional) x 1	COM (RS-232/422/485) x 1, COM (RS-232) x 2
<b>PS/2 Port</b>		PS/2 Keyboard Mouse combo x 1
<b>Others</b>	DC port (12V) Screw type x 1	---
<b>Internal I/O Connectors</b>		
<b>Storage</b>	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
<b>USB</b>	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
<b>Display I/O</b>	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
<b>Audio I/O</b>	AAFP x 1	AAFP x 1, Speaker x 1
<b>Serial Port</b>	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
<b>PS/2 Port</b>	PS/2 Keyboard Mouse 6 PIN Connector x 1	---
<b>Parallel Port</b>	SPP/EPP Mode	---
<b>DIO</b>		DIO (4in/4out) x 1
<b>FAN</b>		Chassis Fan connector x 1
<b>Power</b>	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
<b>Others</b>	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
<b>OS Support</b>		Windows® 10 64-bit, Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Linux Fedora
<b>Note</b>		



# Board Level Products

## Industrial Motherboards



Model	EMB-BT4	MIX-EHLD1	MIX-TLUD1
<b>System</b>			
<b>Processor</b>	Intel®Celeron®U1900 Processor (4C@2.00GHz CPU, 688/654MHz GFX, 10W TDP)	Intel® Elkhart LAKE Processor Max. 12W TDPs	Intel® 11th Gen (Tiger Lake-UP3) Core™ Processors, up to 28W TDPs: I7-1135G7E, DC, Max Speed up to 4.4GHz; I5-1145G7E, DC, Max Speed up to 4.1GHz; I3-1115G4E, DC, Max Speed up to 3.9GHz; Celeron 6305E, DC, 1.8GHz
<b>Chipset</b>	—		
<b>Memory</b>	DDR3L 1333 MHz SODIMM x 2 up to 8 GB (for J1900), Non-ECC, un-buffered memory, Dual-channel memory architecture flat type	SO-DIMM, max. 32GB, DDR4 3200MTS x 2	DDR4 2666/3200 MHz SODIMM x 2, Up to 64GB
<b>I/O Chipset</b>	Fintech 81866D	NCT6126D	IT5121E
<b>Ethernet</b>	Realtek PCIe Gb LAN 8111Hx 1	RTL8111H x 2	Intel® PCIe Gb LAN 219LM x1, Intel® PCIe Gb LAN 225LM x1
<b>Audio</b>	Realtek® ALC897		
<b>TPM</b>	Infineon SLB9635 TT 1.2 (default: No)	Nuvoton NPCT750 TPM2.0 onboard	
<b>Expansion Slots</b>	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 , SIM socket x 1(default for B-key)	PCIe 3.0 [x4] x 1, mini-card x 1(PCIe/SATA, BOM Optional)
<b>BIOS</b>	64 M bit Flash ROM, AMI BIOS	256Mbit Flash ROM, AMI BIOS	256Mbit Flash ROM, AMI BIOS
<b>H/W Monitor</b>	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/SV/3, 3V/12V, Fan Monitor on CPU/Chassis	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/SV/12V, Fan Monitor on Chassis	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/SV/12V, Fan Monitor on CPU/Chassis
<b>WatchDog Timer</b>	1~255 steps by software program		
<b>Smart Fan Control</b>	Chassis Fan (fanless)	Chassis Fan	CPU Fan/Chassis Fan
<b>Wake On LAN/ PXE</b>	Yes (WOL/PXE)		
<b>Power State</b>	S3, S4, S5		
<b>Graphics</b>			
<b>Graphics Chipset</b>	Intel® HD Graphics	Intel® UHD Graphics	Intel® Xe(Gen12) Graphics
<b>Graphics Multi Display</b>	VGA+LVDS, VGA+HDMI, LVDS+HDMI	3 Independent Display(1xVGA+1x HDMI + 1x LVDS/eDP)	Quad Display
<b>VGA</b>	Up to 1920 x 1200 @60 Hz		
<b>DVI</b>	—		
<b>HDMI</b>	Up to 1920 x 1200 @60 Hz	Up to 4096 x 2160 @ 60Hz	HDMI 2.0
<b>Display Port</b>	—		
<b>LVDS</b>	Up to 1920 x 1080 @60Hz, dual-channel 18/24-bit (via CH7511)	Up to 1920 x 1080 @60Hz, Daul Channel 18/24 bit (via CH7513) co-layout eDP (default LVDS)	Up to 1920 x 1200 @60Hz, Dual Channel 18/24 bit (via CH7511b)
<b>eDP</b>	—	Up to 3840 x 2160 @ 30Hz	eDP1.4b
<b>Backlight Control</b>	Voltage/PWM	Voltage / PWM, use HW control	—
<b>Environment &amp; Power &amp; ME</b>			
<b>Battery</b>	Lithium battery		
<b>Power Requirement</b>	12VDC	12(+/-5%) DC	12(+/-5%) DC
<b>Operation Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)		
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)		
<b>Operation Humidity</b>	0% ~ 90% RH, non-condensing		
<b>Certificate</b>	CE & FCC	CE & FCC Class A	
<b>Form Factor</b>	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)		
<b>Weight</b>	1.1 lb (0.5 Kg)		
<b>MTBF (Hours)</b>	295,750	—	
<b>Rear Panel I/O Ports</b>			
<b>USB</b>	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)	USB 3.2 Gen2 x 2, USB2.0 x 4
<b>Display I/O</b>	HDMI x 1	HDMI x 1, VGA x 1	HDMI x 2, DP++ x 2
<b>Audio I/O</b>	Mic-in x 1, Line out x 1		
<b>LAN I/O</b>	LAN (RJ-45) port x 1	1GbE x 2	1GbE x 1, 2.5GbE x 1
<b>Serial Port</b>	COM (RS-232) x 1	RS232 by BOM Optional	—
<b>PS/2 Port</b>	—		
<b>Others</b>	DC port (12V) Screw type x 1	DC Jack x 1	—
<b>Internal I/O Connectors</b>			
<b>Storage</b>	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	M.2 M key (2280) for (NVMe;PCIex4) storage x 1 SATA 6.0Gb/s x 1
<b>USB</b>	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	USB 3.0 Box header x 1 (support additional USB3.2 Gen1 x 2ports)
<b>Display I/O</b>	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	40-pin LVDS connector x 1, 40-pin eDP connector x 1
<b>Audio I/O</b>	AAFP x 1	AAFP follow ASUS pin out x 1	AAFP follow ASUS pin out x 1
<b>Serial Port</b>	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)	Box header x 2 for COM (COM1/2: RS-232)
<b>PS/2 Port</b>	PS/2 Keyboard Mouse 6 PIN Connector x 1	—	
<b>Parallel Port</b>	SPP/EPP Mode	—	
<b>DIO</b>	DIO (4in/4out) x 1	Digital I/O box header x 1	Digital I/O box header x 1
<b>FAN</b>	Chassis Fan connector x 1	4-pin Chassis Fan connector x 1	4-pin CPU Fan connectorx14-pin Chassis Fan connector x 1
<b>Power</b>	12V AUX Power Connector x 1, AT/ATX mode select jumper (default: No) x 1	—	
<b>Others</b>	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	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; SIM socket x 1
<b>OS</b>			



# Board Level Products

## Industrial Motherboards

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Industrial Motherboards



Model	MIX-H310A1	MIX-H310A2
<b>System</b>		
Processor	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	
I/O Chipset	NCT6793D	
Ethernet	Intel® PCIe Gb LAN 219V x 1, Intel® PCIe Gb LAN i210AT x 3	Intel® PCIe Gb LAN 219V x 1, Intel® PCIe Gb LAN i210AT x 1
Audio	Realtek® ALC897 with Amp.	
TPM	Firmware TPM	
Expansion Slots	PCIe3.0 [x16] x 1, M.2 M-key(22x80mm) at bottom side x 1 for SATA, M.2 E-key(22x30mm)	PCIe3.0 [x16] x 1
BIOS	128Mbit Flash ROM, AMI 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		
Graphics Chipset	Intel® UHD Graphics	
Graphics Multi Display	HDMI+VGA	HDMI+VGA, HDMI+DP, HDMI+LVDS, VGA+DP, VGA+LVDS, DP+LVDS
VGA	Up to 1920 x 1200 @ 60 Hz	
DVI	---	
HDMI	Up to 4096 x 2160 @30Hz(HDMI 1.4)	Up to 3840 x 2160 @30 Hz(HDMI 1.4b)
Display Port	---	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz
LVDS	---	LVDS Up to 1920 x 1200 @60 Hz, Dual Channel 18/24 bit (1 x inverter)
eDP	---	
Backlight Control	---	
<b>Environment &amp; Power &amp; ME</b>		
Battery	Lithium battery	
Power Requirement	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	
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
Weight	1.1 lb (0.5 Kg)	
MTBF (Hours)	288,900	333,520
<b>Rear Panel I/O Ports</b>		
USB	USB 3.2 Gen 1 (5 Gbps) x 4, USB 2.0 x 2	USB 3.2 Gen 1 (5 Gbps) x 4
Display I/O	VGA x 1, HDMI x 1	VGA x 1, HDMI x 1, DP x 1
Audio I/O	---	Mic-in x 1, Line-out x 1
LAN I/O	LAN (RJ-45) port x 4	LAN (RJ-45) port x 2
Serial Port	---	1x COM(RS485/422/232)
PS/2 Port	---	---
Others	---	
<b>Internal I/O Connectors</b>		
Storage	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1 (SATA only)	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) x 1
USB	USB 2.0 (2 x 5-pin, 2.00mm) x 1	port support additional 2 USB.
Display I/O	---	LVDS x 1
Audio I/O	---	AAFP x 1, Speaker x 1
Serial Port	Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) 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-H310D1	MIX-H310D2
<b>System</b>		
<b>Processor</b>	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs	
<b>Chipset</b>	Intel® H310 Express Chipset	
<b>Memory</b>	DDR4 2666 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 64GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
<b>I/O Chipset</b>	NCT6793D	
<b>Ethernet</b>	Realtek® PCIe Gb LAN RTL8111H	Intel® GbE LAN i219V x 1, Intel® GbE LAN i210AT x 1
<b>Audio</b>	Realtek® ALC897	
<b>TPM</b>	Firmware TPM	NPCT750 TPM2.0 (default: No)
<b>Expansion Slots</b>	PCIe3.0 [x4] x 1 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) x 1 for Wireless-wifi module (PCIe+USB; CNVi)
<b>BIOS</b>	128Mbit Flash ROM, AMI BIOS	256Mbit Flash ROM, AMI BIOS
<b>H/W Monitor</b>	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	
<b>WatchDog Timer</b>	1~255 steps by software program	
<b>Smart Fan Control</b>	CPU Fan/ Chassis Fan	
<b>Wake On LAN/ PXE</b>	Yes (WOL / PXE)	
<b>Power State</b>	S3, S4, S5	
<b>Graphics</b>		
<b>Graphics Chipset</b>	Intel® UHD Graphics	
<b>Graphics Multi Display</b>	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+HDMI, HDMI+eDP, HDMI+VGA, VGA+eDP
<b>VGA</b>	Up to 1920 x 1200 @ 60 Hz (Optional)	
<b>DVI</b>	---	
<b>HDMI</b>	Up to 4096 x 2304@24Hz (HDMI 1.4b)	Up to 3840 x 2160 @30 Hz(HDMI 1.4)
<b>Display Port</b>	Up to 4096 x 2304@60Hz	---
<b>LVDS</b>	Up to 1920 x 1200 @ 60 Hz, dual-channel 18/24 bit (via CH 7511)	---
<b>eDP</b>	UP to 4096 x 2304 @ 60Hz	
<b>Backlight Control</b>	Voltage/PWM	Support eDP
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>	Lithium battery	
<b>Power Requirement</b>	12V DC	
<b>Operation Temperature</b>	32°F ~140°F (0°C ~ 60°C)	
<b>Storage Temperature</b>	-40°F ~185°F (-40°C ~85°C)	
<b>Operation Humidity</b>	0%~90%RH, non-condensing	
<b>Certificate</b>	CE & FCC	
<b>Form Factor</b>	Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)	
<b>Weight</b>	1.1 lb (0.5 kg)	
<b>MTBF (Hours)</b>	246,210	373,720
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	USB 3.2 Gen 1 (5 Gbps) x 4	USB 3.2 Gen 1 x 4, USB 2.0 x 4
<b>Display I/O</b>	HDMI x 2, DP x 1 + HDMI x 1 (Optional), DP x 2 (Optional)	HDMI x 2, VGA x 1 (Optional)
<b>Audio I/O</b>	Mic-in x 1, Line-out x 1	
<b>LAN I/O</b>	LAN (RJ-45) port x 2	
<b>Serial Port</b>	---	
<b>PS/2 Port</b>	---	
<b>Others</b>	DC Jack	12V DC Jack (max:192W)
<b>Internal I/O Connectors</b>		
<b>Storage</b>	SATA3.0 (6.0Gb/s) x 2 M.2 M-key (SATA) (22 x 42mm) x 1	SATA3.0 (6.0Gb/s) x 2 M.2 M-key (22 x 42/80mm; PCIe) x 1
<b>USB</b>	USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 5 USB.	USB 2.0 (2 x 5-pin, 2.00mm) x 1 port support additional 1 USB
<b>Display I/O</b>	eDP x 1	
<b>Audio I/O</b>	AAFP x 1	
<b>Serial Port</b>	Box header for COM (RS-232/422/485) x 1 Box header for COM (RS-232) x 1	Box header for COM (RS-232) x 1; RS-232/422/485 x 1
<b>PS/2 Port</b>	---	
<b>Parallel Port</b>	---	
<b>DIO</b>	Digital I/O box header x 1	
<b>FAN</b>	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1	
<b>Power</b>	---	
<b>Others</b>	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, 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
<b>OS</b>		
<b>OS Support</b>	Windows® 10 64-bit Linux Ubuntu 18.04 LTS	Windows® 10 64-bit, Linux Ubuntu 18.04.2



# Board Level Products

## Industrial Motherboards

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Industrial Motherboards



Model	MIX-Q370A1	MIX-Q370D1
<b>System</b>		
<b>Processor</b>	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs	8th/9th Generation Intel® Core™ i7 / i5 / i3, Pentium® LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs
<b>Chipset</b>	Intel® Q370 Express Chipset	
<b>Memory</b>	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, dual-channel memory architecture	SODIMM x 2, Max. 32GB, DDR4 2666/2400 MHz, Non-ECC, Un-buffered Memory, Dual channel
<b>I/O Chipset</b>	NCT6793D	
<b>Ethernet</b>	Intel® PCIe Gb LAN 219LM x 1, Intel® PCIe Gb LAN i210AT x 3	Intel® PHY i219LM Giga LAN (support Intel® AMT 12.0) x 1 Intel® i210AT Giga LAN x 1
<b>Audio</b>	Realtek® ALC897 with Amp.	Realtek® ALC897
<b>TPM</b>	Firmware TPM	Nuvoton TPM version 2.0
<b>Expansion Slots</b>	PCIe 3.0 [x16] x 1 M.2 E-key (22 x 30mm; Support CNVi)	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)
<b>BIOS</b>	256Mbit Flash ROM, AMI BIOS	
<b>H/W Monitor</b>	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
<b>WatchDog Timer</b>	1~255 steps by software program	
<b>Smart Fan Control</b>	CPU Fan/ Chassis Fan	
<b>Wake On LAN/ PXE</b>	Yes (WOL / PXE)	
<b>Power State</b>	S3, S4, S5	
<b>Graphics</b>	Intel® UHD Graphics	
<b>Graphics Chipset</b>	Intel® UHD Graphics	
<b>Graphics Multi Display</b>	HDMI+VGA	Three Independent Display
<b>VGA</b>	Up to 1920 x 1200 @ 60 Hz	—
<b>DVI</b>	—	—
<b>HDMI</b>	Up to 4096 x 2160 @30Hz (HDMI 1.4)	—
<b>Display Port</b>	—	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio, DP++ supported
<b>LVDS</b>	—	LVDS Up to 1920 x 1200 @ 60 Hz, dual-channel 18/24 bit (via Chronitel 7511)
<b>eDP</b>	—	eDP UP to 4096 x 2304 @ 60Hz
<b>Backlight Control</b>	—	Voltage/PWM
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>	Lithium battery	
<b>Power Requirement</b>	ATX	12V DC
<b>Operation Temperature</b>	32°F ~140°F (0°C ~ 60°C)	
<b>Storage Temperature</b>	-40°F ~185°F (-40°C ~85°C)	
<b>Operation Humidity</b>	0%~90%RH, non-condensing	
<b>Certificate</b>	CE & FCC	CE & FCC (Class A)
<b>Form Factor</b>	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
<b>Weight</b>	1.1 lb (0.5 kg)	
<b>MTBF (Hours)</b>	256,310	
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	USB 3.2 Gen 2 (10 Gbps) x 4, USB 2.0 x 2	USB 3.2 Gen 2 (10 Gbps) x 4
<b>Display I/O</b>	VGA x 1, HDMI x 1	DP x 2
<b>Audio I/O</b>	—	Mic-in x 1, Line-out x 1
<b>LAN I/O</b>	LAN (RJ-45) port x 4	LAN (RJ45) port x 2
<b>Serial Port</b>	—	—
<b>PS/2 Port</b>	—	—
<b>Others</b>	—	DC Jack
<b>Internal I/O Connectors</b>		
<b>Storage</b>	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1(SATA only)	SATA 6.0Gb/s x 4, M.2 M key (22 x 80 mm) x1 (Support Intel® NVMe M.2 SSD)
<b>USB</b>	USB 2.0 (2 x 5-pin, 2.00mm) x 1 ports support additional 2 USB	3 x USB 2.0 pin header support additional 6 USB ports
<b>Display I/O</b>	—	40-pin LVDS connector x 1, 40-pin eDP connector x 1 LCD backlight connector (inverter) x 1
<b>Audio I/O</b>	AAFP x 1, Speaker x 1	Speaker for 2W/4Ω x 1, AAFF follow ASUS pin out x 1
<b>Serial Port</b>	Box header for COM (RS-232/422/485) x 1 Box header for COM (RS-232) x 1	Box header x 1 for COM (COM1: RS-232/422/485 supports 5V/12V/RI)
<b>PS/2 Port</b>	—	—
<b>Parallel Port</b>	—	—
<b>DIO</b>	Digital I/O box header x 1	8-bit x 1 (In/Out programmable)
<b>FAN</b>	—	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
<b>Power</b>	—	12V DC Power jack x 1
<b>Others</b>	Front Panel connector x 1, Chassis Intrusion x 1 Buzzer onboard x 1, CMOS jumper x 1	Front panel header x 1, Clear CMOS jumper x 1 AT/ATX select jumper x 1, Chassis Intrusion x 1, 4-pin SATA power x 1
<b>OS</b>	—	—



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## Board Level Products

# Industrial Motherboards



Model	MIX-Q370D2	MIX-Q670A1
<b>System</b>		
<b>Processor</b>	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs	13th & 12th Gen Intel® Core™ Processors (Raptor Lake-S/Alder Lake-S)
<b>Chipset</b>	Intel® Q370 Express Chipset	Q670E
<b>Memory</b>	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 64GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture	Dual-Channel DDR5 4800MHz SODIMM x 2, Max. 64GB
<b>I/O Chipset</b>	NCT6793D	Intel® UHD Graphics
<b>Ethernet</b>	Intel® GbE LAN i219V x 1, Intel® GbE LAN i210AT x 1	Intel® GbE LAN 219LM x 1, Intel® GbE LAN 210AT x 1
<b>Audio</b>	Realtek® ALC897	Realtek® ALC897 with Amp
<b>TPM</b>	NPCT750 TPM2.0	Onboard TPM 2.0 IC
<b>Expansion Slots</b>	PCIe3.0 [x16] x 1 M.2 E-key(22 x 30 mm) x1 for Wireless-wifi module ( PCIe+USB; CNV)	PCIe Gen 5 [x16] x 1 A10: M.2 3042/3052 B-Key x 1 A11- EK: M.2 2230 E-Key x 1
<b>BIOS</b>	256Mbit Flash ROM, AMI BIOS	256Mbit Flash ROM, AMI BIOS
<b>H/W Monitor</b>	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	
<b>WatchDog Timer</b>	1~255 steps by software program	
<b>Smart Fan Control</b>	CPU Fan/Chassis Fan	
<b>Wake On LAN/ PXE</b>	Yes (WOL/PXE)	
<b>Power State</b>	S3, S4, S5	
<b>Graphics</b>		
<b>Graphics Chipset</b>	Intel® UHD Graphics	Intel® UHD Graphics
<b>Graphics Multi Display</b>	HDMI+VGA+eDP, HDMI+HDMI+VGA, HDMI+HDMI+eDP	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
<b>VGA</b>	Up to 1920 x 1200 @ 60 Hz	
<b>DVI</b>		
<b>HDMI</b>	Up to 3840 x 2160 @30 Hz(HDMI 1.4b)	Up to 4096 x 2160 @60Hz (HDMI 2.0)
<b>Display Port</b>	—	Up to 4096 x 2160 @60Hz
<b>LVDS</b>	—	Up to 1920 x 1080 @60Hz, Dual-Channel 18/24 bit
<b>eDP</b>	eDP UP to 4096 x 2304 @ 60Hz	Up to 1920 x 1080 @60Hz (via CH7513), co-layout LVDS
<b>Backlight Control</b>	Support eDP	PWM
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>		Lithium battery
<b>Power Requirement</b>	12V DC	ATX
<b>Operation Temperature</b>		32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C)
<b>Storage Temperature</b>		
<b>Operation Humidity</b>		0% ~ 90% R/H, non-condensing
<b>Certificate</b>		CE & FCC
<b>Form Factor</b>		Mini-ITX: 6.7" x 6.7" (170 mm x 170 mm)
<b>Weight</b>		1.1 lb (0.5 Kg)
<b>MTBF (Hours)</b>	319,160	—
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	USB 3.2 Gen2 x 6, USB2.0 x 4	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
<b>Display I/O</b>	VGA x 1, HDMI x 2	HDMI x 2, DP x 2
<b>Audio I/O</b>		Mic-in x 1, Line-out x 1
<b>LAN I/O</b>		LAN (RJ-45) port x 2
<b>Serial Port</b>		—
<b>PS/2 Port</b>		—
<b>Others</b>	12V DC Jack (max:192W)	SIM Socket x 1 (A10 only)
<b>Internal I/O Connectors</b>		
<b>Storage</b>	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 42/80mm; NVME/SATA) x 1	SATA III x 2 (6.0Gb/s), M.2 2280 M-Key
<b>USB</b>	USB 2.0 (2 x 5-pin, 2.00mm) x 1 port support additional 2 USB	USB 3.0 Pin Header x 1 (Supports additional USB 3.2 Gen 1 x 2)
<b>Display I/O</b>	eDP x 1	
<b>Audio I/O</b>	AAFP x 1	AAFP x 1, Speaker x 1
<b>Serial Port</b>	Box header for COM (RS-232) x 1; RS-232/422/485 x 1	Box Header for COM x 1 (RS-232/422/485) Box Header for COM x 1 (RS-232)
<b>PS/2 Port</b>		—
<b>Parallel Port</b>		—
<b>DIO</b>		Digital I/O box header x 1
<b>FAN</b>		4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1
<b>Power</b>	12V ATX Power Connector x 1	—
<b>Others</b>	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	Front Panel Connector x 1, Chassis Intrusion x 1, Onboard Buzzer x 1, CMOS Jumper x 1
<b>OS</b>		
<b>OS Support</b>	Windows® 10 64-bit, Linux Ubuntu 18.04.2	Windows® 10 64-bit, Windows® 11 64-bit

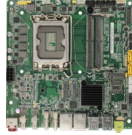


# Board Level Products

## Industrial Motherboards

01

Industrial Motherboards



Model	MIX-Q670D1	EMB-Q170A
<b>System</b>		
<b>Processor</b>	12th & 13th Gen Intel® Core™ Processors (Raptor Lake-S/Alder Lake-S)	6th/7th Generation Intel® Core™ i7/i5/i3, LGA1151 Socket Processor, Max. 65W TDPs
<b>Chipset</b>	Intel® Q670E	Intel® Q170
<b>Memory</b>	Dual-Channel DDR5 4800MHz SODIMM x 2 (Non-ECC, Max. 64GB)	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
<b>I/O Chipset</b>	Intel® UHD Graphics	NCT6791D
<b>Ethernet</b>	Intel® I219-LM GbE LAN x 1 Intel® I210-AT GbE LAN x 1	Intel® PCIe Gb LAN 219LM x 1, Intel® PCIe Gb LAN i210AT x 1
<b>Audio</b>	Realtek® ALC897 with Amp.	Realtek® ALC897
<b>TPM</b>	Onboard TPM 2.0 IC	Infineon SLB96XX TT 1.2/2.0 (default: No)
<b>Expansion Slots</b>	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)	PCIe3.0 [x16] x 1, M.2 M-key(22 x 80 mm) at bottom side x 1
<b>BIOS</b>	256Mbit Flash ROM, AMI BIOS	128M bit Flash ROM, AMI BIOS
<b>H/W Monitor</b>	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V, Fan Monitor on CPU/Chassis	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
<b>WatchDog Timer</b>	1~255 steps by software program	
<b>Smart Fan Control</b>	CPU Fan/ System Fan	
<b>Wake On LAN/ PXE</b>	Yes (WOL / PXE)	
<b>Power State</b>	S3, S4, S5	
<b>Graphics</b>		
<b>Graphics Chipset</b>	Intel® UHD Graphics	Intel® HD Graphics
<b>Graphics Multi Display</b>	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	DP+DP, DP+VGA, DP+DP+VGA, DP+DP+DP
<b>VGA</b>	—	Up to 1920 x 1200 @60 Hz
<b>DVI</b>	—	—
<b>HDMI</b>	HDMI 2.0, Up to 4096 x 2160 @60Hz	—
<b>Display Port</b>	DP 1.2, Up to 4096 x 2160 @60Hz	Up to 4096 x 2160 @24 Hz / 3840 x 2160 @60 Hz, with Digital Audio
<b>LVDS</b>	Dual-Channel 18/24 bit LVDS via CH7513, up to 1920 x 1080 @60Hz, colay eDP	—
<b>eDP</b>	Up to 1920 x 1080 @60Hz	—
<b>Backlight Control</b>	PWM	—
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>	Lithium battery	
<b>Power Requirement</b>	DC 12V	ATX
<b>Operation Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)	
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>Operation Humidity</b>	0%~90%RH, non-condensing	
<b>Certificate</b>	CE & FCC	
<b>Form Factor</b>	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
<b>Weight</b>	1.1 lb (0.5 Kg)	
<b>MTBF (Hours)</b>	221,850	
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	USB 3.2 Gen 2 x 4	USB 3.2 Gen 1 (5 Gbps) x 4, USB 2.0 x 2
<b>Display I/O</b>	HDMI x 2, DP x 2	VGA x 1, DP x 3
<b>Audio I/O</b>	Line-out x 1	Mic-in x 1, Line-out x 1
<b>LAN I/O</b>	RJ-45 LAN Port x 2	
<b>Serial Port</b>	—	
<b>PS/2 Port</b>	PS/2 for KB/MS x 1	
<b>Others</b>	—	
<b>Internal I/O Connectors</b>		
<b>Storage</b>	SATA III x 2 with SATA Power Connector x 2 (1A) M.2 2280 M-Key (PCIe [x4]/NVMe) x 1	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80 mm) at bottom side x 1
<b>USB</b>	USB 2.0 x 4 via 2x5P Header x 2	USB 2.0 (2 x 5-pin, 2.00mm) x 2 ports support additional 4 USB.
<b>Display I/O</b>	40-pin LVDS/eDP connector x 1 with Inverter	—
<b>Audio I/O</b>	HD Audio x 1 (via AAFP Header), Internal Speaker x 1 (2W/40hmΩ)	Speaker x 1
<b>Serial Port</b>	COM Box Header x 1 (RS-232/422/485) COM Box Header x 1 (RS-232)	
<b>PS/2 Port</b>	—	
<b>Parallel Port</b>	—	
<b>DIO</b>	Digital I/O box header x 1	
<b>FAN</b>	4-pin CPU Fan connector x 1, 4-pin System Fan connector x 1	
<b>Power</b>	ATX Power Connector x 2, AT/ATX mode select jumper (optional) x 1	
<b>Others</b>	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1	
<b>OS</b>	—	
<b>OS Support</b>	Windows® 10 64-bit, Windows® 11 64bit	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Ubuntu16.04.02/Kernel4.8.0



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# Board Level Products

## Industrial Motherboards



Model	EMB-Q170B	EMB-H110B
<b>System</b>		
<b>Processor</b>	6th/7th Generation Intel® Core™ i7/i5/i3, LGA1151 Socket Processor, Max. 65W TDPs	
<b>Chipset</b>	Intel® Q170	Intel® H110
<b>Memory</b>	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture	
<b>I/O Chipset</b>	NCT6791D	
<b>Ethernet</b>	Intel® PCIe Gb LAN 219LM for vPro x 1, Intel® PCIe Gb LAN 210AT x 1   Realtek® PCIe Gb LAN 8111H x 2	
<b>Audio</b>	Realtek® ALC897	
<b>TPM</b>	Infineon SLB96XX TT 1.2/2.0 (default: No)	
<b>Expansion Slots</b>	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	PCIe2.0 [x1] x 1, Full-size Mini-Card (mSATA default) (PCIe+USB optional)x 1, Half-size Mini-Card (PCIe+USB) x 1
<b>BIOS</b>	128M bit Flash ROM, AMI BIOS	
<b>H/W Monitor</b>	Temperature Monitor on CPU/Chassis, Voltage Monitor on VCore™ 5V/12V, Fan Monitor on CPU/Chassis	
<b>WatchDog Timer</b>	1~255 steps by software program	
<b>Smart Fan Control</b>	CPU Fan/ Chassis Fan	
<b>Wake On LAN/ PXE</b>	Yes (WOL/PXE)	
<b>Power State</b>	S3, S4, S5	
<b>Graphics</b>		
<b>Graphics Chipset</b>	Intel® HD Graphics	
<b>Graphics Multi Display</b>	2DP + LVDS, DP + eDP + LVDS, 2DP + eDP	HDMI1+HDMI2, HDMI1+DP2, DP1+HDMI2, HDMI1+LVDS, HDMI2+LVDS, HDMI1+eDP, HDMI2+eDP, DP1+DP2, DP1+LVDS, DP2+LVDS, DP1+eDP, DP2+eDP
<b>VGA</b>	—	
<b>DVI</b>	—	
<b>HDMI</b>	Up to 4096 x 2160 @24 Hz / 2560 x 1600 @60 Hz, with Digital Audio (HDMI/DP Combo)	
<b>Display Port</b>	Up to 4096 x 2160 @24 Hz / 3840 x 2160 @60 Hz, with Digital Audio	Up to 1920 x 1200 @60 Hz, with Digital Audio (HDMI/DP Combo)
<b>LVDS</b>	Up to 1920 x 1200 @60 Hz, dual-channel 18/24-bit	Up to 1920 x 1200 @60 Hz, dual-channel 18/24-bit colay
<b>eDP</b>	Up to 4096 x 2340 @60Hz	Up to 4096 x 2340 @60Hz
<b>Backlight Control</b>	Voltage/PWM	
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>	Lithium battery	
<b>Power Requirement</b>	12VDC	
<b>Operation Temperature</b>	32°F ~140°F (0°C ~ 60°C)	
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~85°C)	
<b>Operation Humidity</b>	0% ~ 90% RH, non-condensing	
<b>Certificate</b>	CE & FCC	
<b>Form Factor</b>	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
<b>Weight</b>	1.1 lb (0.5 Kg)	
<b>MTBF (Hours)</b>	292,450   315,210	
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	USB 3.2 Gen 1 x 4	
<b>Display I/O</b>	DP/HDMI (BOM Change) x 2	
<b>Audio I/O</b>	Mic-in x 1, Line-out x 1	
<b>LAN I/O</b>	LAN (RJ-45) port x 2	
<b>Serial Port</b>	—	
<b>PS/2 Port</b>	—	
<b>Others</b>	DC Jack x 1	
<b>Internal I/O Connectors</b>		
<b>Storage</b>	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	SATA3 (6.0Gb/s) x 2, Full Size Mini-Card (mSATA) x 1, SATA power connector x 1
<b>USB</b>	USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 6 USB.	
<b>Display I/O</b>	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	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
<b>Audio I/O</b>	AAFP x 1, Speaker x 1 (pin out refer to manual)	
<b>Serial Port</b>	Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) x 1	
<b>PS/2 Port</b>	—	
<b>Parallel Port</b>	—	
<b>DIO</b>	Digital I/O box header x 1	
<b>FAN</b>	4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1	
<b>Power</b>	12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1	
<b>Others</b>	Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard (pin header) x 1, CMOS jumper x 1	
<b>OS</b>	—	
<b>OS Support</b>	Windows® 7 32/64-bit   Windows® 8.1 32/64-bit   Windows® 10 64-bit   Ubuntu16.04 02/Kernel4.8.0	





# Board Level Products

## Industrial Motherboards

01

Industrial Motherboards



Model	MAX-Q470A	MAX-Q370A
<b>System</b>		
<b>Processor</b>	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 8 Core 95W
<b>Chipset</b>	Intel® Q470E Express Chipset	Intel® Q370 Express Chipset
<b>Memory</b>	DIMM x 4, DDR4 (2933/2666/2400 MHz, max. 128GB) Non-ECC, un-buffered memory Dual channel memory architecture	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB) Non-ECC, un-buffered memory Dual-channel memory architecture
<b>I/O Chipset</b>	IT5121E + F81216HD	NCT6793D+ F81216HD
<b>Ethernet</b>	Intel® PHY i219LM Giga LAN (supports Intel® AMT 12.0) x 1, Intel® i210AT Giga LAN x 1, RJ45 x 2	
<b>Audio</b>	Realtek® ALC897 6-Channel	High Definition Audio CODEC
<b>TPM</b>	Nuvoton NPCT750AADYX TPM2.0 onboard (optional; default: onboard)	Nuvoton NPCT750 TPM2.0 onboard
<b>Expansion Slots</b>	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, Micro SIM card Slot x 1 M.2 3042/3052/2242 B-key (PCIe/USB/SATA) 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
<b>BIOS</b>		256Mbit Flash ROM, AMI BIOS
<b>H/W Monitor</b>		Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/1.2V, Fan Monitor on CPU/Chassis
<b>WatchDog Timer</b>		1~255 steps by software program
<b>Smart Fan Control</b>		CPU Fan/ Chassis Fan x 2
<b>Wake On LAN/ PXE</b>		Yes (WOL / PXE)
<b>Power State</b>		S3, S4, S5
<b>Graphics</b>		
<b>Graphics Chipset</b>	Intel® Graphics Media Accelerator	Intel® UHD Graphics
<b>Graphics Multi Display</b>	HDMI+HDMI+VGA, HDMI+HDMI+LVDS, HDMI+VGA+LVDS, HDMI+HDMI+HDMI	HDMI+VGA+DP, HDMI+HDMI+VGA, HDMI+HDMI+DP
<b>VGA</b>		Up to 1920 x 1200 @60Hz (via IT6516B)
<b>DVI</b>		—
<b>HDMI</b>	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
<b>Display Port</b>	—	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
<b>LVDS</b>	Up to 1920 x 1200 @ 60 Hz, Dual Channel 18/24 bit	—
<b>eDP</b>		—
<b>Backlight Control</b>	Yes	—
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>		Lithium battery
<b>Power Requirement</b>		24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
<b>Operation Temperature</b>		32°F ~140°F (0°C ~ 60°C)
<b>Storage Temperature</b>		-40°F ~185°F (-40°C ~85°C)
<b>Operation Humidity</b>		0%~90%RH, non-condensing
<b>Certificate</b>		CE & FCC Class A
<b>Form Factor</b>		Micro-ATX Form Factor, 9.6"x9.6" (244 mm x 244 mm)
<b>Weight</b>		1.76 lb (0.8 Kg)
<b>MTBF (Hours)</b>	259,360 Hrs	264,820
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	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
<b>Audio I/O</b>	VGA x 1, HDMI x 3 (2.0 x 1, 1.4 x 2)	DP x 1, VGA x 1, HDMI x 2
<b>LAN I/O</b>		Audio Jack x 3: Line-in, Mic-in, Line-out
<b>Serial Port</b>		LAN (RJ45) ports x 2
<b>PS/2 Port</b>	DB-9 COM (supports RS-232/422/485, 5V/12V/RI) x 1	—
<b>Others</b>	—	PS/2 combo Port (Keyboard & Mouse) x 1
<b>Internal I/O Connectors</b>	BIOS recovery button	—
<b>Storage</b>	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
<b>USB</b>	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)
<b>Display I/O</b>	40-pin LVDS connector x 1	—
<b>Audio I/O</b>	speaker header (Line-out) x 1, AAFP x 1	—
<b>Serial Port</b>	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
<b>PS/2 Port</b>		—
<b>Parallel Port</b>		—
<b>DIO</b>		8-bit Digital I/O interface (In/Out programmable) x 1
<b>FAN</b>	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
<b>Power</b>	24-pin EATX Power header x 1, 8-pin EATX 12V Power connector x 1	—
<b>Others</b>	Chassis Intrusion x1, AT/ATX mode select jumper x1, Front panel header x1, Clear CMOS jumper x1, 3-pin ME lock header x1, Buzzer on board x1	—
<b>OS</b>		—



# Board Level Products

## Industrial Motherboards



Model	MAX-Q670A	MAX-C246A
<b>System</b>		
<b>Processor</b>	12th Generation Intel® Core™ LGA1700 Socket Processors (formerly Alder Lake/Raptor Lake), TDP Max 125W	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
<b>Chipset</b>	Intel® Q670 Express Chipset	Intel® C246 Express Chipset
<b>Memory</b>	DDR5 4000MHz DIMM x 4, Up to 128GB Non-ECC, Un-buffered Memory, Dual-Channel Memory Architecture	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB) ECC, un-buffered memory, Dual-channel memory architecture
<b>I/O Chipset</b>	NCT6126D	NCT6793D+ F81216HD
<b>Ethernet</b>	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)	Intel® PHY I219LM Gb LAN (supports Intel® AMT 12.0) x 1 Intel® I210AT Gb LAN x 1 RJ45 x 2
<b>Audio</b>	Realtek ALC897 6-Channel High Definition Audio CODEC	Realtek® ALC897 6-Channel High Definition Audio CODEC
<b>TPM</b>	TPM 2.0 onboard	Nuvoton NPCT750 TPM2.0 onboard
<b>Expansion Slots</b>	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)	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)
<b>BIOS</b>		256 Mbit Flash ROM, AMI BIOS
<b>H/W Monitor</b>		Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3V/12V, Fan Monitor on CPU/Chassis
<b>WatchDog Timer</b>		1~255 steps by software program
<b>Smart Fan Control</b>	CPU Fan x 1/Chassis Fan x 2 (3rd Chassis Fan is DC Fan)	CPU Fan/ Chassis Fan x 2
<b>Wake On LAN/ PXE</b>		Yes (WOL/PXE)
<b>Power State</b>		S3, S4, S5
<b>Graphics</b>		
<b>Graphics Chipset</b>	Intel® Graphics Media Accelerator	Intel® UHD Graphics
<b>Graphics Multi Display</b>	HDMI + VGA + DP + LVDS/eDP	HDMI+VGA+DP, HDMI+HDMI+VGA, HDMI+HDMI+DP
<b>VGA</b>		Up to 1920 x 1200 @60Hz (via IT67516B)
<b>DVI</b>		
<b>HDMI</b>	HDMI 2.0 x 1, 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
<b>Display Port</b>	DP 1.4 x 1, up to 4096 x 2160 @24 Hz or 3840 x 2160 @60 Hz, with Digital Audio	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
<b>LVDS</b>	M.2/24-bit Dual-Channel LVDS x 1, up to 1920 x 1080 @60 Hz	
<b>eDP</b>	eDP x 1, up to 3840 x 2160 @30 Hz	
<b>Backlight Control</b>	Yes	
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>	Lithium battery	Lithium battery
<b>Power Requirement</b>	24-pin ATX connector x 1, 8-pin 12V ATX Power Connector x 1	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
<b>Operation Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C)
<b>Storage Temperature</b>	-40°F ~ -185°F (-40°C ~ -85°C)	-40°F ~ -185°F (-40°C ~ -85°C)
<b>Operation Humidity</b>	0% ~ 90% relative humidity, non-condensing	0%~90%RH, non-condensing
<b>Certificate</b>	CE & FCC Class A	CE & FCC Class A
<b>Form Factor</b>	Micro-ATX Form Factor, 9.6" x 9.6" (244mm x 244mm)	Micro-ATX Form Factor, 9.6"x9.6" (244mmx244mm)
<b>Weight</b>	1.76 lb. (0.8Kg)	1.76 lb. (0.8 Kg)
<b>MTBF (Hours)</b>	267,950	264,820
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	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)	USB 3.2 Gen 2 ports (10 Gbps) x 6, USB 3.2 Gen 1 ports (5 Gbps) x 4
<b>Display I/O</b>	HDMI 2.0 x 1, VGA x 1, DP 1.4 x 1	DP x 1, VGA x 1, HDMI x 2
<b>Audio I/O</b>	Audio Jack x 3: Line-in, Mic-in, Line-out	Audio Jack x 3: Line-in, Mic-in, Line-out
<b>LAN I/O</b>	RJ-45 LAN x 2 (Optional: RJ-45 x 4)	LAN (RJ45) ports x 2
<b>Serial Port</b>	DB-9 x 1 (Supports RS-232/422/485, 5V/12V/RL)	
<b>PS/2 Port</b>		PS/2 combo port (Keyboard & Mouse) x 1
<b>Others</b>		
<b>Internal I/O Connectors</b>		
<b>Storage</b>	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)	SATA3 (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA3) x 1
<b>USB</b>	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 2.0 headers support additional 3 USB ports (2x5PIN, p=2.54mm)
<b>Display I/O</b>		
<b>Audio I/O</b>	Speaker header x 1 (Line-out), AAFP x 1	Speaker for 2W@4Ω x 1
<b>Serial Port</b>	RS-232 x 5 (via 1x9P Header)	RS-232 Box headers x 5 RS-232/422/485 Box header (COM1, Pin9 supports 5V/12V/RL optional) x 1
<b>PS/2 Port</b>		
<b>Parallel Port</b>		
<b>DIO</b>	8-bit Digital I/O Interface x 1	8-bit Digital I/O interface (In/Out programmable) x 1
<b>FAN</b>	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)	CPU Fan connector (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2
<b>Power</b>		
<b>Others</b>	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)	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



# Board Level Products

## Industrial Motherboards

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Industrial Motherboards

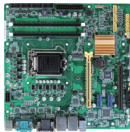


Model	MAX-H310A	IMBM-Q170A
<b>System</b>		
<b>Processor</b>	8th/9th Generation Intel® (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5/ i3, Pentium 14nm LGA 1151 socket Processor	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor
<b>Chipset</b>	Intel® H310 Express Chipset	Intel® Q170 Express Chipset
<b>Memory</b>	DIMM x 2, DDR4 (2666/2400/2133 MHz, max. 64GB) non-ECC, un-buffered memory Dual-channel memory architecture	288-pin DIMM x 4, max. 64GB, DDR4 2133/1867 MHz, non-ECC, un-buffered memory, dual-channel memory architecture
<b>I/O Chipset</b>	NCT6793D+ F81216HD	NCT6791D, F81216HD
<b>Ethernet</b>	Intel® PHY i219V Gb LAN x 1, Intel® i210AT Gb LAN x 1 RJ45 x 2	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
<b>Audio</b>	Realtek® ALC897 6-Channel	High Definition Audio CODEC
<b>TPM</b>	Nuvoton NPCT750 TPM2.0 onboard	Nuvoton NPCT750 TPM2.0 onboard (optional; default: not onboard)
<b>Expansion Slots</b>	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	PCIe 3.0/2.0(x16) Slot x 1, PCIe 3.0/2.0(x4) Slot (open edge) x 1, PCI x 1
<b>BIOS</b>	128Mbit Flash ROM, AMI BIOS	High Definition Audio CODEC
<b>H/W Monitor</b>	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis	
<b>WatchDog Timer</b>	1~255 steps by software program	
<b>Smart Fan Control</b>	CPU Fan x 1, Chassis Fan x 2	CPU Fan/ Chassis Fan x 2
<b>Wake On LAN/ PXE</b>	Yes (WOL / PXE)	
<b>Power State</b>	S3, S4, S5	
<b>Graphics</b>		
<b>Graphics Chipset</b>	Intel® UHD Graphics	Intel® HD Graphics
<b>Graphics Multi Display</b>	VGA+DP; VGA+HDMI; DP+HDMI	DVI-I+HDMI, HDMI+HDMI
<b>VGA</b>	Up to 1920 x 1200 @60Hz (via IT6516B)	Up to 1920 x 1200 @60Hz
<b>DVI</b>	—	Up to 1920 x 1200 @60Hz
<b>HDMI</b>	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio	HDMI 1.4 up to 4096 x 2304 @30Hz
<b>Display Port</b>	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio	—
<b>LVDS</b>	—	—
<b>eDP</b>	—	—
<b>Backlight Control</b>	—	—
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>	Lithium battery	
<b>Power Requirement</b>	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
<b>Operation Temperature</b>	32°F ~140°F (0°C ~ 60°C)	
<b>Storage Temperature</b>	-40°F ~185°F (-40°C ~85°C)	
<b>Operation Humidity</b>	0%~90%RH, non-condensing	
<b>Certificate</b>	CE & FCC Class A	
<b>Form Factor</b>	Micro-ATX Form Factor, 9.6"×9.6" (244 mm x 244 mm)	
<b>Weight</b>	1.76 lb (0.8 Kg)	
<b>MTBF (Hours)</b>	261,090	193,470
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	USB 3.2 Gen 1 ports (5 Gbps) x 4, USB 2.0 ports x 4	USB 3.2 Gen 1 port x 10
<b>Display I/O</b>	DP x 1, VGA x 1, HDMI x 1	DVI-I x 1, HDMI x 2
<b>Audio I/O</b>	Audio Jack x 3: Line-in, Mic-in, Line-out	
<b>LAN I/O</b>	LAN (RJ45) ports x 2	
<b>Serial Port</b>	—	RS-232/422/485 DB-9 connector x 1 (COM1, supports 5V/12V on RI pin)
<b>PS/2 Port</b>	PS/2 stack Port (Keyboard & Mouse) x 1	PS/2 Combo Port (Keyboard & Mouse) x 1
<b>Others</b>	—	—
<b>Internal I/O Connectors</b>		
<b>Storage</b>	SATA III (6.0Gb/s) ports x 3; BOM option: can support additional 2 SATA M.2 2280 M-key (BOM option: PCIe1 or SATA; default: SATA) x 1	SATA3 (6.0Gb/s) port x 6, supports RAID 0/1/5/10
<b>USB</b>	USB 2.0 header support additional 2 USB ports (2x5PIN, p=2.54mm) x 1	USB 2.0 header supports additional 2 USB ports x 2
<b>Display I/O</b>	—	—
<b>Audio I/O</b>	AAFP x 1	Speaker header x 1 (Line-out)
<b>Serial Port</b>	RS-232Box headers x 5 RS-232/422/485Box header (COM1, Pin9 supports 5V/12V/RI optional) x 1	RS-232 header x 5
<b>PS/2 Port</b>	—	—
<b>Parallel Port</b>	—	—
<b>DIO</b>	8-bit Digital I/O interface x 1 (In/Out programmable)	
<b>FAN</b>	CPU Fan connector (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2	
<b>Power</b>	—	—
<b>Others</b>	Chassis intrusion x 1, AT/ATX mode select jumper x 1 Front panel header x 1, Clear CMOS jumper x 1 LPC box header x 1, 3-pin ME lock header x 1, Buzzer on-board 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
<b>OS</b>	—	—
<b>OS Support</b>	Windows® 10 64bit, Windows® 11 64bit, Linux Ubuntu 64bit (18.04.1/Kernel4.8.0)	Windows® 7 32/64-bit, Windows® 8.1 64-bit, Windows® 10 64-bit, Linux Fedora 64bit



# Board Level Products

## Industrial Motherboards



Model	IMBM-H110A	ATX-Q670A
<b>System</b>		
<b>Processor</b>	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor	12th Generation Intel® Core™ LGA1700 Socket Processors (formerly Alder Lake/Raptor Lake), TDP Max 125W
<b>Chipset</b>	Intel® H110	Intel® Q670E Chipset
<b>Memory</b>	288-pin DIMM x 2, max. 32GB, DDR4 2400/2133/1867, dual-channel	DDR5 4000MHz DIMM x 4, up to 128GB Non-ECC, Unbuffered Memory, Dual-Channel Memory Architecture
<b>I/O Chipset</b>	NCT6791D, F81216HD	NCT6126D
<b>Ethernet</b>	Intel® i210AT Gb LAN x 2	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)
<b>Audio</b>	Realtek ALC897 6-Channel	High Definition Audio CODEC
<b>TPM</b>	Nuvoton NPCT650 TPM2.0 (default : No)	TPM 2.0 onboard
<b>Expansion Slots</b>	PCIe [x16] x 1, PCIe [x1] (open edge) x 2, PCI x 1, M.2 M key (22 x 42mm) x 1	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)
<b>BIOS</b>	128M bit Flash ROM x 1, AMI BIOS	256Mbit Flash ROM, AMI BIOS
<b>H/W Monitor</b>	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V/3VSB/VBAT, Fan Monitor on CPU/Chassis	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
<b>WatchDog Timer</b>		1~255 step by software program
<b>Smart Fan Control</b>	CPU Fan x 1, Chassis Fan x 2	1 CPU Fan x 1/Chassis Fan x 3
<b>Wake On LAN/ PXE</b>		Yes (WOL/PXE)
<b>Power State</b>		S3, S4, S5
<b>Graphics</b>		
<b>Graphics Chipset</b>	Intel® HD Graphics	Intel® Graphics Media Accelerator
<b>Graphics Multi Display</b>	DVI-D+HDMI, HDMI+HDMI, VGA+HDMI, DVI-D+VGA	HDMI+HDMI+DP+DP, HDMI+HDMI+DP+VGA, HDMI+VGA+DP+DP
<b>VGA</b>	Up to 1920 x 1200 @60Hz	Up to 1920 x 1200 @60Hz (via I76516B)
<b>DVI</b>	Up to 1920 x 1200 @60Hz	—
<b>HDMI</b>	HDMI 1.4 up to 4096 x 2304 @24Hz	HDMI 2.0, up to 4096 x 2160 @60/30Hz, with Digital Audio
<b>Display Port</b>	—	DP 1.4, up to 4096 x 2160 @24Hz or 3840 x 2160 @60 Hz, with Digital Audio
<b>LVDS</b>	—	—
<b>eDP</b>	—	—
<b>Backlight Control</b>	—	—
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>		Lithium battery
<b>Power Requirement</b>		24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
<b>Operation Temperature</b>		32°F ~ 140°F (0°C ~ 60°C)
<b>Storage Temperature</b>		-40°F ~ 185°F (-40°C ~ 85°C)
<b>Operation Humidity</b>		0% ~ 90% RH, non-condensing
<b>Certificate</b>		CE & FCC Class A
<b>Form Factor</b>	Micro-ATX, 9.6" x 9.6" (244mm x 244mm)	ATX Form Factor, 12" x 9.6" (305mm x 244mm)
<b>Weight</b>		1.76 lb (0.8 Kg)
<b>MTBF (Hours)</b>	245,250	281,760
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	USB 3.2 Gen 1 x 4	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)
<b>Display I/O</b>	HDMI x 2, VGA x 1, DVI-D x 1	HDMI 2.0 x 2, DP 1.4 x 2
<b>Audio I/O</b>	Line-in, Mic-in, Line-out	Audio Jack x 3, Line-in, Mic-in, Line-out
<b>LAN I/O</b>	RJ-45 x 2	RJ-45 LAN x 2 (Optional: RJ-45 x 3)
<b>Serial Port</b>	DB-9 COM x 1 (supports RS-232/422/485)	DB-9 COM x 1 (supports RS-232/422/485, 5V/12V/RI)
<b>PS/2 Port</b>	Stack Port (Keyboard & Mouse) x 1	—
<b>Others</b>		—
<b>Internal I/O Connectors</b>		
<b>Storage</b>	SATA 6.0Gb/s x 5, M.2 M key (22 x 42mm) x 1	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 2242/90 M-Key x 1 (PCIe Gen 3.0 1 Lane)
<b>USB</b>	USB 2.0 x 6	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)
<b>Display I/O</b>	—	VGA Header x 1
<b>Audio I/O</b>	—	Speaker Header (Line-out), AAFP x 1
<b>Serial Port</b>	—	RS-232 Header x 5
<b>PS/2 Port</b>	—	—
<b>Parallel Port</b>	—	—
<b>DIO</b>	8-bit x 1 (In/Out programmable)	8-bit Digital I/O Interface x 1 (In/Out Programmable)
<b>FAN</b>	4-pin CPU Fan x 1, 4-pin Chassis Fan x 2	4-pin CPU Fan Connector x 1 (PWM Mode) 4-pin Chassis Fan Connector x 3 (PWM Mode)
<b>Power</b>	—	—
<b>Others</b>	Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header [2x4]P p=1.27mm x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1	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
<b>OS</b>	Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used),	



# Board Level Products

## Industrial Motherboards

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Model	ATX-Q370A	ATX-C246A
<b>System</b>		
<b>Processor</b>	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	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
<b>Chipset</b>	Intel® Q370 Express Chipset	Intel® C246 Express Chipset
<b>Memory</b>	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 128GB) Non-ECC, un-buffered memory Dual channel memory architecture	
<b>I/O Chipset</b>	NCT6793D + F81216HD	
<b>Ethernet</b>	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)	
<b>Audio</b>	Realtek® ALC897 6-Channel High Definition Audio CODEC	
<b>TPM</b>	Nuvoton NPCT750 TPM2.0 onboard	
<b>Expansion Slots</b>	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 2230 E-key (PCIex1/USB2.0/CNVN) x 1, M.2 2280 M-key (PCIex4/SATA3) x 1	
<b>BIOS</b>	256Mbit Flash ROM x 1, AMI BIOS	
<b>H/W Monitor</b>	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis	
<b>WatchDog Timer</b>	1~255 steps by software program	
<b>Smart Fan Control</b>	CPU Fan/ Chassis Fan x 2	
<b>Wake On LAN/ PXE</b>	Yes (WOL / PXE)	
<b>Power State</b>	S3, S4, S5	
<b>Graphics</b>		
<b>Graphics Chipset</b>	Intel® Graphics Media Accelerator	
<b>Graphics Multi Display</b>	HDMI+VGA+DP (BOM option: USB 3.2 Gen 2-10Gbps Type-C connector (Alternate Mode: USB+DP) x 1)	
<b>VGA</b>	Up to 1920 x 1200 @60Hz (via IT6516B)	
<b>DVI</b>	—	
<b>HDMI</b>	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio	
<b>Display Port</b>	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio	
<b>LVDS</b>	—	
<b>eDP</b>	—	
<b>Backlight Control</b>	—	
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>	Lithium battery	
<b>Power Requirement</b>	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1	
<b>Operation Temperature</b>	32°F ~140°F (0°C ~ 60°C)	
<b>Storage Temperature</b>	-40°F ~185°F (-40°C ~ 85°C)	
<b>Operation Humidity</b>	0%~90%RH, non-condensing	
<b>Certificate</b>	CE & FCC Class A	
<b>Form Factor</b>	ATX Form Factor, 12"x9.6" (305mm x 244mm)	
<b>Weight</b>	1.76 lb (0.8 Kg)	
<b>MTBF (Hours)</b>	281,410	
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	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	
<b>Display I/O</b>	HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional)	
<b>Audio I/O</b>	Audio Jack x 3: Line-in, Mic-in, Line-out	
<b>LAN I/O</b>	LAN (RJ45) ports x 2 (BOM option: RJ45 x 3)	
<b>Serial Port</b>	—	
<b>PS/2 Port</b>	—	
<b>Others</b>	—	
<b>Internal I/O Connectors</b>		
<b>Storage</b>	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10 M.2 2280 M-key (PCIex4/SATA3) x 1	
<b>USB</b>	USB 2.0 headers x 1 support additional 2 USB ports (2x5PIN, p=2.54mm)	
<b>Display I/O</b>	—	
<b>Audio I/O</b>	—	
<b>Serial Port</b>	5 x RS-232 headers 1 x RS-232/422/485 (COM1, supports 5V/12V/RI optional)	
<b>PS/2 Port</b>	—	
<b>Parallel Port</b>	—	
<b>DIO</b>	8-bit Digital I/O interface (In/Out programmable) x 1	
<b>FAN</b>	CPU Fan connector(s) (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2	
<b>Power</b>	—	
<b>Others</b>	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	
<b>OS</b>	Windows® 10 64bit Windows® 11 64bit	Windows® 10 64bit Windows® 11 64bit

# Board Level Products

## Industrial Motherboards



Model	ATX-H310A	IMBA-Q170A
<b>System</b>		
<b>Processor</b>	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	Intel® 7th/ 6th Generation(Kaby Lake-S/ Skylake-S) Core™ i7/i5/i3/ Pentium®/ Celeron® 14nm LGA1151 Socket Processor
<b>Chipset</b>	Intel® H310 Express Chipset	Intel® Q170
<b>Memory</b>	DIMM x 2, DDR4 (2666/2400/2133 MHz, max. 64GB) non-ECC, un-buffered memory, Dual channel memory architecture	288-pin DIMM x 4, max. 64GB, DDR4 2400/2133/1867, dual-channel
<b>I/O Chipset</b>	NCT6793D+ F81216HD	NCT6791D, F81216HD
<b>Ethernet</b>	Intel® PHY i219V Giga LAN x 1, Intel® i210AT Giga LAN x 1 RJ45 x 2	LAN1: Intel® PHY i219LM Gb LAN (supports iAMT 11.0), LAN2: Intel® i210AT Gb LAN
<b>Audio</b>	Realtek® ALC897 6-Channel High Definition Audio CODEC	
<b>TPM</b>	Nuvoton NPCT750 TPM2.0 onboard (optional, default: on-board)	Nuvoton NPCT750AADYX TPM2.0 onboard (optional; default: onboard)
<b>Expansion Slots</b>	PCIe 3.0[x16] Slot x 1, PCIe 2.0[x4] Slot (open edge) x 2 (#1: 1Lane #2: Default: 2Lanes, only support 1Lane when Mini PCIe slot is installed.), PCI x 3, M.2 2280/2242 M-key (PClex1/SATA3) x 1, Mini PCIe + Micro SIM card Slot (optional, default: N/A)	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 SKU2: 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 & PClex4) x 1
<b>BIOS</b>	128Mbit Flash ROM x 1, AMI BIOS	
<b>H/W Monitor</b>	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis	
<b>WatchDog Timer</b>	1~255 steps by software program	
<b>Smart Fan Control</b>	CPU Fan/ Chassis Fan x 2	CPU Fan x1, Chassis Fan x 2
<b>Wake On LAN/ PXE</b>	Yes (WOL / PXE)	
<b>Power State</b>	S3, S4, S5	
<b>Graphics</b>		
<b>Graphics Chipset</b>	Intel® Graphics Media Accelerator	Intel® HD Graphics
<b>Graphics Multi Display</b>	HDMI+VGA, HDMI+DP, VGA+DP	VGA+HDMI, HDMI+HDMI, VGA+HDMI+HDMI
<b>VGA</b>	Up to 1920 x 1200 @60Hz (via IT6516B)	Up to 1920 x 1200 @60Hz
<b>DVI</b>	—	—
<b>HDMI</b>	Up to 4096 x 2160 @ 30 Hz	HDMI 1.4 up to 4096 x 2304 @24Hz
<b>Display Port</b>	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio	—
<b>LVDS</b>	—	—
<b>eDP</b>	—	—
<b>Backlight Control</b>	—	—
<b>Environment &amp; Power &amp; ME</b>		
<b>Battery</b>	Lithium battery	
<b>Power Requirement</b>	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
<b>Operation Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)	
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>Operation Humidity</b>	0% ~ 90%RH, non-condensing	
<b>Certificate</b>	CE & FCC Class A	
<b>Form Factor</b>	ATX Form Factor, 12" x 9.6" (305mm x 244mm)	
<b>Weight</b>	1.76 lb (0.8 Kg)	
<b>MTBF (Hours)</b>	285,600	219,970
<b>Rear Panel I/O Ports</b>		
<b>USB</b>	USB 3.2 Gen 1 ports x 2, USB 2.0 ports x 4	USB 3.2 Gen 1 x 10
<b>Display I/O</b>	HDMI x 1, VGA x 1, DP x 1	HDMI x 2, VGA x 1
<b>Audio I/O</b>	Audio Jack x 3: Line-in, Mic-in, Line-out	Line-in, Mic-in, Line-out
<b>LAN I/O</b>	LAN (RJ45) ports x 2	RJ-45 x 2
<b>Serial Port</b>	DB-9 COM x 1 (supports RS-232/422/485, 5V/12V/1R)	
<b>PS/2 Port</b>	—	Stack Port (Keyboard & Mouse) x 1
<b>Others</b>	—	
<b>Internal I/O Connectors</b>		
<b>Storage</b>	SATA III (6.0Gb/s) ports x 3 M.2 2280/2242 M-key (PClex1/SATA3) x 1	Supports RAID 0/1/5/10, SKU1: SATA 6.0Gb/s x 3, M.2 M key (SATA) x 1 SKU2: SATA 6.0Gb/s x 4, M.2 M key (PClex4) x 1
<b>USB</b>	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	USB 2.0 x 3
<b>Display I/O</b>	—	
<b>Audio I/O</b>	AAFP x 1	Speaker header x 1 (Line-out)
<b>Serial Port</b>	RS-232 header x 5	
<b>PS/2 Port</b>	—	
<b>Parallel Port</b>	—	
<b>DIO</b>	8-bit Digital I/O interface (In/Out programmable) x 1	8-bit DIO x 1 (In/Out programmable)
<b>FAN</b>	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
<b>Power</b>	—	
<b>Others</b>	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	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
<b>OS</b>	Windows® 10 64-bit/Windows® 11 64-bit/ Linux Ubuntu 64 bit (18.04.2)	
	Windows® 7 32/64-bit (not supported when a Kaby Lake processor	



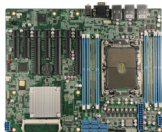


Model	IMBA-H110A
<b>System</b>	
Processor	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor
Chipset	Intel® H110
Memory	288-pin DIMM x 2, max. 32GB, DDR4 2400/2133/1867, dual-channel
I/O Chipset	NCT6791D, F81216HD
Ethernet	LAN1: Intel® PHY I219V Gb LAN, LAN2: Intel® i210AT Gb LAN
Audio	Realtek® ALC897
TPM	Nuvoton NPCT750 TPM2.0
Expansion Slots	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 x 1, Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
<b>Graphics</b>	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, VGA+DP, HDMI+DP
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	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	—
<b>Environment &amp; Power &amp; ME</b>	
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)	244,580
<b>Rear Panel I/O Ports</b>	
USB	USB 3.2 Gen 1 x 4, USB 2.0 x 2
Display I/O	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)
PS/2 Port	Stack Port (Keyboard & Mouse) x 1
Others	—
<b>Internal I/O Connectors</b>	
Storage	SATA 6.0Gb/s x 3, M.2 M key (22 x 80mm) x 1
USB	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 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
<b>OS</b>	
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
<b>Note</b>	



## Board Level Products

# Industrial Server Board



Launching in Q3

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





# Board Level Products

## Industrial Server Board

01

Industrial Server Board



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



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# 02



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# ► System Level Products



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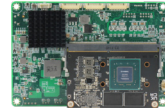


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Model	BOXER-8221AI	BOXER-8222AI
<b>System</b>		
<b>AI Accelerator</b>	NVIDIA® Jetson Nano™	
<b>CPU</b>	Quad Core Arm® Cortex®-A57 MPCore Processor	
<b>System Memory</b>	4GB LPDDR4	
<b>Storage Device</b>	32GB Micro-SD (A version) or 16GB eMMC (B version)	32 GB MicroSD Card (Version A) 16 GB eMMC (Version B) Mini-Card (Full Size) x 1 (PCIe+SATA+USB)
<b>Display Interface</b>	HDMI 2.0	HDMI 2.0 x 1
<b>Ethernet</b>	10/100/1000Base-TX x 1	10/100/1000Base-TX x 2
<b>I/O</b>	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	USB 3.2 Gen 1 x 4 LAN x 1 PD x1 (Powered Device) 40-pin I/O x 1 (GPIO/I2S/I2C/Audio/SPI/UART) RS-232 x 1 HDMI x 1 Micro-USB x 1 for Flash OS DC Power Input x 1 Recovery Button x 1 Micro-USB for Flash OS x 1
<b>Expansion</b>	M.2 E-Key 2230 x 1(for WiFi)	Antenna x 2 M.2 2230 E Key x 1 (for Wi-Fi)
<b>Indicator</b>	Power LED x 1	Power LED x 1
<b>OS Support</b>	Linux (AAEON ACLinux 4.9), Linux (NVIDIA Jetpack 4.5)	
<b>Power Supply</b>		
<b>Power Requirement</b>	12Vdc w/ 2-pin terminal block	DC 12V~24V 2-pin terminal
<b>Mechanical</b>		
<b>Mounting</b>	Wallmount	
<b>Dimensions (W x D x H)</b>	3.39" x 2.87" x 1.3" (88mm x 75mm x 39mm)	6.92" x 3.94" x 1.54" (175.8 mm x 100.0 mm x 39.0 mm)
<b>Gross Weight</b>	1.10 lb (0.5 Kg)	2.31 lbs (1.05 kg)
<b>Net Weight</b>	0.66 lb (0.3 Kg)	1.28 lbs (0.58 kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-4°F ~ 122°F (-20°C ~ 50°C, according to IEC60068-2 with 0.5 m/s AirFlow)	
<b>Storage Temperature</b>	-49°F ~176°F (-45°C ~ 80°C)	
<b>Storage Humidity</b>	95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	3 Grms/ 5 ~ 500Hz/ operation – MicroSD or eMMC	Random, 3.5Grm, 5~500Hz
<b>Anti-Shock</b>	—	
<b>Certification</b>	CE/FCC class A	
<b>Note</b>	 <b>TAIWAN EXCELLENCE 2021</b>	





Model	BOXER-8223AI	BOXER-8224AI
<b>System</b>		
<b>AI Accelerator</b>	NVIDIA® Jetson Nano	
<b>CPU</b>	Quad Core ARM® Cortex®-A57 MPCore Processor	ARM® Cortex® -A57 Quad-Core Processor
<b>System Memory</b>	4GB LPDDR4	4GB 64-Bit LPDDR4x 25.6GB/s
<b>Storage Device</b>	16GB eMMC + Micro SD card slot 2.5" SATA drive bay x 1	16GB eMMC 5.1 x 1 MicroSD slot x 1
<b>Display Interface</b>	HDMI Type A 2.0 *1 (Output) HDMI Type A 1.4 *1 (Input)	Wafer connector for HDMI 2.0 x 1
<b>Ethernet</b>	POE PSE LAN x2 (802.3at)	Pin header for 10/100/1000 Base-T LAN x 2
<b>I/O</b>	USB Type A x 4 for USB 3.2 Gen1 GbE LAN with LED Indicator POE PSE LAN x2 (802.3at) DB-9 x 1 for RS-232/485 DB15 x 1 Female for 13 Channel DIO 0.S Flash port x 1 Recovery port x1 Antenna opening x 2 HDMI Type A 2.0 *1 (Output) HDMI Type A 1.4 *1 (Input via MIPI CSI) Power bottom *1	Wafer connector for Dual USB 3.2 Gen 1 x 2 Wafer connector for HDMI 2.0 x 1 Wafer connector for Dual RS-232/485 (by switch) x 2 Wafer connector for UART TX/ RX +GPIO x 6 (5V) x 1 Wafer connector for 5V and GND x 1 Wafer connector for I2C x2 (I2C_1_SDA+I2C_1_SCL) x 1 MicroSD slot x 1 MIPI connector for four MIPI camera x 2 M.2 E key (for Wifi) x 1 Micro USB for flashing x 1 Recovery bottom x 1 Debug port / reset pin header x 1
<b>Expansion</b>	Minicard*1 w/ SIM slot M.2 E-Key 2230 x 1(for WiFi)	M.2 E key (for Wifi) x 1 Mini-Card (for 4G LTE) x 1 SIM card slot x 1
<b>Indicator</b>	Power LED x 1	TBD
<b>OS Support</b>	Nvidia Jetpack 4.5 or above	Linux (NVIDIA Jetpack 4.6 and above)
<b>Power Supply</b>		
<b>Power Requirement</b>	DC 12V~24V with 2-pin terminal block ATX mode	12V ~ 24V DC with Wafer connector
<b>Mechanical</b>		
<b>Mounting</b>	Wall mount kit (default)	---
<b>Dimensions (W x D x H)</b>	7.09" x 5.35" x 2.41" (180.0 mm x 136.0 mm x 61.1 mm)	TBD
<b>Gross Weight</b>	4.63 lbs. (2.1 kg)	TBD
<b>Net Weight</b>	2.87 lbs. (1.3 kg)	TBD
<b>Environmental</b>		
<b>Operating Temperature</b>	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)
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)	-49°F ~ 176°F (-40°C ~ 70°C)
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	Random, 3 Grms, 5~500Hz	5Grm / 5~500Hz / X/Y/Z axis, random (by M.2 storage)
<b>Anti-Shock</b>	50G peak acceleration (11 msec. duration,eMMC)	TBD
<b>Certification</b>	CE / FCC class A / UKCA	TBD
<b>Note</b>		







Model	BOXER-8230AI	BOXER-8231AI
<b>System</b>		
<b>AI Accelerator</b>	NVIDIA® Jetson™ TX2 NX	
<b>CPU</b>	NVIDIA® Denver 2 (Dual-Core) Processor & ARM® Cortex® -A57 MPCore (Quad-Core) Processor	4 Core ARM A57 Complex and 2 core NVIDIA Denver2 64-bit CPU
<b>System Memory</b>	4GB 128-bit LPDDR4 @ 1600 MHz	4GB LPDDR4
<b>Storage Device</b>	eMMC 5.1 16GB MicroSD card slot x 1 2.5" SATA drive bay x 1 (A4/JP46E-A2 only)	16GB eMMC + MicroSD
<b>Display Interface</b>	HDMI Type A x 1 for HDMI 2.0	HDMI 2.0
<b>Ethernet</b>	RJ-45 x 5 for GbE LAN	10/100/1000Base-TX x 1
<b>I/O</b>	USB Type A x 4 for USB 3.2 Gen 1 DB-9 x 2 for RS-232 HDMI Type A x 1 for HDMI 2.0 MicroSD slot x 1 Micro USB x 1 for O.S Flash Recovery button x 1 Power button with power LED x 1	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
<b>Expansion</b>	SATA III Port x 1 for 2.5" SATA drive (A4/JP46E-A2 only)	M.2 E-Key 2230 x 1(for WiFi)
<b>Indicator</b>		Power LED x 1
<b>OS Support</b>	Linux (NVIDIA Jetpack 4.5 or above)	Linux (AAEON ACLinux 4.9) Linux (NVIDIA Jetpack 4.5 and above)
<b>Power Supply</b>		
<b>Power Requirement</b>	DC-in 10V~24V with 2-pin terminal block ATX mode	12Vdc w/ 2-pin terminal block
<b>Mechanical</b>		
<b>Mounting</b>	Wall mount kit	Wallmount
<b>Dimensions (W x D x H)</b>	A3/JP46E-A1 : 6.92" x 3.94" x 1.54"(175.8mm x 100.0mm x 39.0mm) A4/JP46E-A2 : 6.92" x 3.94" x 2.41"(175.8mm x 100.0mm x 61.3mm)	3.46" x 2.95" x 1.53" (88mm x 75mm x 39mm)
<b>Gross Weight</b>	A3/JP46E-A1 : 2.91lbs (1.3kg) A4/JP46E-A2 : 3.5lbs (1.6kg)	1.10 lb (0.5 kg)
<b>Net Weight</b>	A3/JP46E-A1 : 1.51lbs (0.67kg) A4/JP46E-A2 : 2.0lbs (0.91kg)	0.66 lb (0.3 kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	A3/JP46E-A1 : -13°F ~ 149°F(-25°C ~ 65°C, according to IEC60068-2 with 0.5 m/s AirFlow) A4/JP46E-A2 : -13°F ~ 167°F(-25°C ~ 75°C, according to IEC60068-2 with 0.5 m/s AirFlow)	-25°C ~ 45°C, according to IEC60068-2 with 0.5 m/s AirFlow
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)	
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	3.5Grm / 5~500Hz / operation (eMMC, MicroSD, or SSD)	3.5 Grms/ 5 ~ 500Hz/ operation – eMMC
<b>Anti-Shock</b>	50G peak acceleration (11 msec. duration, eMMC, microSD, or SSD)	50G peak acceleration (11 msec. duration) – eMMC
<b>Certification</b>	CE / FCC class A	
<b>Note</b>		





Model	BOXER-8233AI	BOXER-8240AI
<b>System</b>		
<b>AI Accelerator</b>	NVIDIA® Jetson™ TX2 NX	NVIDIA® AGX Xavier
<b>CPU</b>	NVIDIA® Denver 2 (Dual-Core) Processor & ARM® Cortex® -A57 MPCore (Quad-Core) Processor	8-core ARM v8.2 64bit CPU, 8MB L2 + 4MB L3
<b>System Memory</b>	4GB 128-bit LPDDR4	32GB 256-Bit LPDDR4x 137GB/s
<b>Storage Device</b>	eMMC 16GB MicroSD slot x 1 Full-size mSATA (sharing slot with Full-size minicard module) 2.5" SATA drive bay x 1	32GB eMMC 5.1 Micro SD card slot 2.5" SATA drive bay M.2 Key M 2280
<b>Display Interface</b>	HDMI Type A x 1 for HDMI 2.0	HDMI 2.0 x 1
<b>Ethernet</b>	RJ-45 x 2 for GbE PoE/PSE (802.3at) RJ-45 x 1 for GbE LAN	10/100/1000 Base-TX with IEEE 802.11 at PoE LAN x 4
<b>I/O</b>	USB Type A x 4 for USB 3.2 Gen 1 , USB Micro A/B x 1 for OS Flash, RJ45 x 2 for GbE PoE/PSE x 2 (802.3at) (Total 60W), RJ-45 x 1 for GbE LAN, DB-9 x 1 for RS-232/485 & CANbus, DB15 x 1 for Digital I/O 13-Channel (programmable), Recovery port x1, MicroSD slot x1, 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,	PoE x 4 (IEEE 802.af, 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 x 1 , 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)
<b>Expansion</b>	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	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
<b>Indicator</b>		Power LED x 1
<b>OS Support</b>	Linux (NVIDIA Jetpack 4.5.1)	Linux (NVIDIA Jetpack 4.5 and above) Linux (AAEON AClinux 4.9)
<b>Power Supply</b>		
<b>Power Requirement</b>	DC 12V~24V with 2-pin terminal block ATX mode	DC 12V~24V 2-pin terminal
<b>Mechanical</b>		
<b>Mounting</b>	Wall mount kit	Wallmount
<b>Dimensions (W x D x H)</b>	7.09" x 5.35" x 2.41" (180.0 mm x 136.0 mm x 61.1 mm)	8.26" x 6.46" x 2.32" (210mm x 164.2mm x 59mm)
<b>Gross Weight</b>	4.63 lbs. (2.1kg)	6 lbs (2.72kg)
<b>Net Weight</b>	2.87 lbs. (1.3kb)	4.23 lbs (1.92kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	5°F ~ 131°F (-15°C ~ 55°C, according to IEC60068-2 with 0.5 m/s airflow)	14°F ~ 131°F (-10°C ~ 55°C, according to IEC60068-2 with 0.5 m/s AirFlow)
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)	-40 °F ~ 158°F(-40°C ~ 70°C)
<b>Storage Humidity</b>		5 ~ 95% @ 40°C, non-condensing
<b>Anti-Vibration</b>	3.5Grms / 5~500Hz / operation (eMMC, MicroSD, mSATA, or SSD)	Random, 3 Grms, 5 ~ 500Hz
<b>Anti-Shock</b>	50G peak acceleration (11 msec. duration, eMMC, microSD, mSATA, or SSD)	—
<b>Certification</b>	CE / FCC class A / UKCA	CE/FCC class A
<b>Note</b>		 






Model	BOXER-8250AI	BOXER-8251AI
<b>System</b>		
<b>AI Accelerator</b>	NVIDIA Jetson Xavier NX	
<b>CPU</b>	6-core NVIDIA Carmel ARM® v8.2 64-bit CP	6 Core ARM® Carmel®V8.2 64bit CPU 6MB L2 + 4MB L3
<b>System Memory</b>	8GB LPDDR4x	
<b>Storage Device</b>	16 eMMC and MicroSD card slot (A1, A3) 16 eMMC and MicroSD card slot and 2.5" HDD drive(A4)	16GB eMMC + MicroSD
<b>Display Interface</b>	HDMI 2.0	
<b>Ethernet</b>	10/100/1000Base-TX x 5	10/100/1000Base-TX x 1
<b>I/O</b>	USB Type A x 4 for USB 3.2 Gen 1 RJ-45 x 5 for GbE LAN DB-9 x 2 for RS-232 HDMI Type A x 1 for HDMI 2.0 MicroSD slot x 1 Micro USB x 1 for O.S Flash Recovery button x 1 Power button with power LED x 1	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
<b>Expansion</b>	—	M.2 E-Key 2230 x 1(for WiFi)
<b>Indicator</b>	Power LED x 1	
<b>OS Support</b>	Linux (AAEON ACLinux 4.9) Linux (NVIDIA Jetpack 4.5)	Linux (AAEON ACLinux 4.9) Linux (NVIDIA Jetpack 4.5) Ubuntu18.04
<b>Power Supply</b>		
<b>Power Requirement</b>	10 ~ 24V DC with 2-pin terminal block	12Vdc w/ 2-pin terminal block
<b>Mechanical</b>		
<b>Mounting</b>	Wallmount	
<b>Dimensions (W x D x H)</b>	A1, A3 : 6.92" x 3.94" x 1.54"(175.8mm x 100.0mm x 39.0mm) A4 : 6.92" x 3.94" x 2.41"(175.8mm x 100.0mm x 61.3mm)	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)
<b>Gross Weight</b>	A1, A3 : 2.48 lbs (1.12 kg) A4 : 3.5lbs (1.6kg)	Standard: 1.10 lb (0.5 kg) High heatsink: 1.76lb(0.8kg)
<b>Net Weight</b>	A1, A3 : 1.46 lbs (0.66 kg) A4 : 2.0lbs (0.91kg)	Standard: 0.66 lb (0.3 kg) High heatsink: 1.3lb(0.6kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	A1, A3 : 14°F ~ 149°F (-10°C ~ 65°C, according to IEC60068-2 with 0.5 m/s AirFlow) A4 : -13°F ~ 140°F (-10°C ~ 60°C, according to IEC60068-2 with 0.5 m/s AirFlow)	TBD
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)	
<b>Storage Humidity</b>	95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	3.5Grms / 5~500Hz / operation (eMMC, MicroSD, or SSD)	
<b>Anti-Shock</b>	—	
<b>Certification</b>	CE/FCC class A	
<b>Note</b>		







Model	BOXER-8253AI	BOXER-8256AI
<b>System</b>		
<b>AI Accelerator</b>	NVIDIA® Jetson Xavier™ NX	
<b>CPU</b>	6 Core ARM® Carmel@V8.2 64bit CPU 6MB L2 + 4MB L3	6-core NVIDIA Carmel Arm@v8.2 64-bit CPU
<b>System Memory</b>	8GB LPDDR4x	
<b>Storage Device</b>	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
<b>Display Interface</b>	HDMI Type A for HDMI 2.0 x 1	HDMI 2.0 x 2
<b>Ethernet</b>	RJ-45 x 2 For GbE PoE/PSE (802.3at) RJ-45 x 1 For GbE LAN	RJ-45 x 1 for GbE LAN
<b>I/O</b>	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
<b>Expansion</b>	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)
<b>Indicator</b>	Power LED x 1	
<b>OS Support</b>	Linux (AAEON AClinux4.9) Linux (NVIDIA Jetpack 4.5)	Linux (NVIDIA Jetpack 4.6.2 or above)
<b>Power Supply</b>		
<b>Power Requirement</b>	12~24V DC with 2-pin terminal block	
<b>Mechanical</b>		
<b>Mounting</b>	Wall mount kit	
<b>Dimensions (W x D x H)</b>	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 )
<b>Gross Weight</b>	4.63 lbs. (2.1 kg)	4.23 lb (1.92 kg)
<b>Net Weight</b>	2.87 lbs. (1.3 kg)	2.87 lb (1.3 kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	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)
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)	
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	3.5Grm / 5~500Hz / operation-eMMC, MicroSD or mSATA	3.5 Grms/ 5 ~ 500Hz/ operation – eMMC
<b>Anti-Shock</b>	50G peak acceleration (11 msec. duration,eMMC,microSD,or mSATA)	50G, IEC 60068-2-27, half sine, 11 ms duration – eMMC
<b>Certification</b>	CE / FCC class A	
<b>Note</b>	 <p>TAIWAN EXCELLENCE 2022</p>	





Model	BOXER-8621AI	BOXER-8622AI	BOXER-8623AI
<b>System</b>			
<b>AI Accelerator</b>	NVIDIA® Jetson Orin Nano™		
<b>CPU</b>	6-core Arm® Cortex®-A78AE ARMv8.2 64-bit CPU	6-core Arm® Cortex®-A78AE v8.2 64-bit CPU	6-core Arm® Cortex®-A78AE ARMv8.2 64-bit CPU
<b>System Memory</b>	4GB LPDDR5	4GB 64-Bit LPDDR5	4GB LPDDR5
<b>Storage Device</b>	mSATA x 1, M.2 2230 E Key x 1	M.2 M Key x 1	M.2 2230 E Key x 1, 2.5" SATA drive bay x 1
<b>Display Interface</b>	HDMI 1.4 type A x 1		
<b>Ethernet</b>	RJ-45 x 1 for GbE LAN	RJ-45 x 2 for 10/100/1000 Base-T	RJ-45 x 1 for GbE LAN RJ-45 x 2 for GbE PoE/PSE 802.3af/each (Max.30W)
<b>I/O</b>	USB 3.2 Gen 1 type A x 3 USB 2.0 type A x 1 DB-9 for RS232( Rx/Tx/CTS/RTS )/RS485 x 1 and CANbus FD x 1 RS232(Rx/Tx)/RS485 x 1 and DIO x 9 HDMI 1.4 type A x 1 Micro USB x 1 for OS Flash Power button x 1 Recovery button x 1 Antenna x 2	RJ-45 x 2 for 10/100/1000 Base-T USB Type A x 2 for USB 3.2 Gen 1 USB Type A x 2 for USB 2.0 HDMI type A for HDMI v2.0 x 1 DB-9 x 1 for CANbus DB-9 x 1 for RS-232/422/485 DB-15 x 1 for 13 DIO 2-pin terminal block for 12-24V power input Power ON/OFF switch x 1 Antenna hole x 4	USB 3.2 Gen 1 type A x 3 USB 2.0 type A x 1 DB-9 for RS232( Rx/Tx/CTS/RTS )/RS485 x 1 and CANbus FD x 1 RS232(Rx/Tx)/RS485 x 1 and DIO x 9 HDMI 1.4 type A x 1 Micro USB OTG x 1 for OS Flash Power button x 1 Recovery button x 1 Antenna x 4
<b>Expansion</b>	Full size Mini-PCIe slot x 1 ( USB + PCIe + SATA ), Default: PCIe M.2 2230 E Key ( Wifi/BT/Storage) x 1 SIM Slot x 1	M.2 E-Key 2230 x 1 for WiFi/Bluetooth M.2 B-Key 3042/3052 x1 for 4G/5G M.2 M-Key 2280 x1	Full size mini-PCIe slot x 1 ( USB + PCIe + SATA ), Default: PCIe M.2 2230 E Key x 1 2.5" SATA Drive Bay x 1 SIM Slot x 1
<b>Indicator</b>	Power LED x 1		
<b>OS Support</b>	Linux ( NVIDIA Jetpack 5.0 up )		
<b>Power Supply</b>			
<b>Power Requirement</b>	12V DC in with 2 pins terminal block x 1	DC-in 12-24V with 2-pin terminal block	12V~24V DC in with 2 pins terminal block x 1
<b>Mechanical</b>			
<b>Mounting</b>	Wall Mount (default)	Wall mount kit	Wall Mount (default)
<b>Dimensions (W x D x H)</b>	TBD	TBD	TBD
<b>Gross Weight</b>	TBD	TBD	TBD
<b>Net Weight</b>	TBD	TBD	TBD
<b>Environmental</b>			
<b>Operating Temperature</b>	-13°F ~ 131°F (-25°C ~ 55°C), according to IEC60068-2 with 0.5 m/s AirFlow	-13°F ~ 149°F (-25°C ~ 65°C with 0.5 m/s airflow)	-13°F ~ 158°F (-25°C ~ 70°C), according to IEC60068-2 with 0.5 m/s AirFlow
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)	-40°F ~ 158°F (-40°C ~ 70°C)	-40°F ~ 185°F (-40°C ~ 85°C)
<b>Storage Humidity</b>		5% ~ 95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>		3.5Grms / 5~500Hz / Operation	
<b>Anti-Shock</b>		50G peak acceleration	
<b>Certification</b>		CE/FCC class A	
<b>Note</b>			





Model	BOXER-8640AI	BOXER-8641AI	BOXER-8645AI
<b>System</b>			
<b>AI Accelerator</b>	NVIDIA® Jetson AGX Orin™		
<b>CPU</b>	8-core ARM v8.2 64bit CPU, 2MB L2 + 4MB L3	8-core ARM v8.2 64bit CPU, 2MB L2 + 4MB L3	8-core ARM v8.2 64bit CPU, 2MB L2 + 4MB L3
<b>System Memory</b>	32GB 256-Bit LPDDR5 205GB/s		
<b>Storage Device</b>	64GB eMMC 5.1 Micro SD Card Slot x 1 2.5" SATA Drive Bay x 1 M.2 2280 M-Key x 1	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
<b>Display Interface</b>	HDMI 2.0 x 1 (Type-A)		
<b>Ethernet</b>	RJ-45 for GbE PoE/PSE 802.3af x 4 (Max. 60W)	RJ-45 for GbE LAN x 2	RJ-45 for 10G x 1 RJ-45 for Giga LAN x 1 Additional LAN x 8 (Optional)
<b>I/O</b>	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)	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 2 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 2 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 1 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
<b>Expansion</b>	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	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 1 MicroSD Slot x 1
<b>Indicator</b>	Power LED x 1		
<b>OS Support</b>	Linux (NVIDIA Jetpack™ 5.0 or above)		
<b>Power Supply</b>			
<b>Power Requirement</b>	DC 12V ~ 24V 2-pin terminal	12V DC with lockable DC Jack	3-pin Terminal Block x 1 for 9V ~ 36V ACC Ignition Delay On/Off
<b>Mechanical</b>			
<b>Mounting</b>	Wallmount	Wall mount kit	Wall mount
<b>Dimensions (W x D x H)</b>	8.26" x 6.46" x 2.91" (210mm x 164.2mm x 74mm)	7.09" x 5.35" x 2.41" (180.0 mm x 136.0 mm x 61.1 mm)	11.26" x 7.95" x 3.54" (286mm x 202mm x 90mm)
<b>Gross Weight</b>	8.3 lb. (3.76Kg)	7.8lb ( 3.55kg )	TBD
<b>Net Weight</b>	6.4 lb. (2.9Kg)	5.5lb ( 2.5kg )	TBD
<b>Environmental</b>			
<b>Operating Temperature</b>	-4°F ~ 131°F (-20°C ~ 55°C, according to IEC60068-2 with 0.5 m/s AirFlow)	-4°F ~ 131°F (-20°C ~ 55°C with 0.5 m/s airflow)	-13°F ~ 158°F (-25°C ~ 70°C with 0.5 m/s airflow)
<b>Storage Temperature</b>	-40 °F ~ 158°F (-40°C ~ 70°C)		
<b>Storage Humidity</b>	95% @ 40°C, non-condensing	5 ~ 95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	Random, 3.5 Grms, 5 ~ 500Hz	3.5Grm / 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)
<b>Anti-Shock</b>	50G Peak Acceleration	50G peak acceleration (11 msec. duration, eMMC, microSD, or SSD)	MIL-STD-810G, Method 516.6, Procedure 1, flight vehicle equipment
<b>Certification</b>	CE/FCC Class A	CE / FCC Class B	E-Mark, CE/FCC Class A
<b>Note</b>			





Launching in Q3

Model	BOXER-8646AI	BOXER-8650AI
<b>System</b>		
<b>AI Accelerator</b>	NVIDIA® Jetson AGX Orin™	NVIDIA Jetson Orin NX
<b>CPU</b>	8-core ARM v8.2 64bit CPU, 2MB L2 + 4MB L3	6-core Arm® Cortex®-A78AE ARMv8.2 64-bit CPU
<b>System Memory</b>	32GB LPDDR5	8GB LPDDR5
<b>Storage Device</b>	64GB eMMC 5.1 x 1 M.2 2280 NVMe M Key x 1	M.2 2230 E Key x 1, 2.5" SATA Drive Bay x 1
<b>Display Interface</b>	HDMI Type A x 1 for HDMI 2.0	HDMI 1.4 type A x 1
<b>Ethernet</b>	RJ-45 x 12 for GbE PoE/PSE (802.3af/at, MAX.:120W) RJ-45 x 1 for 10G LAN RJ-45 x 1 for Giga LAN	RJ-45 x 5 for GbE LAN
<b>I/O</b>	USB Type A for USB 3.2 Gen 1 x 2 USB Type A for USB 2.0 x 2 Micro USB x 1 for OS Flash Mic-in x 1 Line-out x 1 DB-9 x 1 for CANbus FD x 2 DB-9 x 2 for RS-232/422/485 DB-9 x 1 for DIO x 8 3-pin terminal block x 1 for power input Power button x 1 Recovery button x 1 Antenna hole x 6	USB 3.2 Gen 1 type A x 3 USB 2.0 type A x 1 DB-9 for RS232( Rx/Tx/CTS/RTS )/RS485 x 1 and CANBus FD x 1 RS232(Rx/Tx)/RS485 x 1 and DIO x 9 HDMI 1.4 type A x 1 Micro USB x 1 for OS Flash Power button x 1 Recovery button x 1 Antenna x 2
<b>Expansion</b>	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 SIM Slot x 1	Full size Mini-PCIe slot x 1 ( USB + PCIe ) 2.5" SATA Drive Bay x 1 M.2 2230 E Key x 1 SIM Slot x 1
<b>Indicator</b>	Power LED x 1	
<b>OS Support</b>	Linux (NVIDIA Jetpack 5.0 or above)	
<b>Power Supply</b>		
<b>Power Requirement</b>	3-pin terminal block x 1 for 19V~24V	12V ~ 24V DC in with 2 pins terminal block x 1
<b>Mechanical</b>		
<b>Mounting</b>	Wall mount kit	Wall Mount (default)
<b>Dimensions (W x D x H)</b>	10.42 " x 7.24 " x 3.67" (264.76 mm x 184.00 mm x 93.30 mm)	TBD
<b>Gross Weight</b>	12.13lb (5.5kg)	TBD
<b>Net Weight</b>	9.92lb (4.5kg)	TBD
<b>Environmental</b>		
<b>Operating Temperature</b>	-4°F ~ 122°F (-20°C ~ 50°C with 0.5 m/s airflow)	-13°F ~ 158°F ( -25°C ~ 70°C ), according to IEC60068-2 with 0.5 m/s AirFlow
<b>Storage Temperature</b>	-40°F ~ 158°F (-40°C ~ 70°C)	-40°F ~ 185°F ( -40°C ~ 85°C )
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	3.5Grm / 5~500Hz	
<b>Anti-Shock</b>	50G peak acceleration	
<b>Certification</b>	CE / FCC class A	
<b>Note</b>		





Model	BOXER-8651AI	BOXER-8652AI
<b>System</b>		
<b>AI Accelerator</b>	NVIDIA® Jetson Orin™ NX	
<b>CPU</b>	6-core Arm® Cortex®-A78AE ARMv8.2 64-bit CPU	6-core Arm® Cortex®-A78AE v8.2 64-bit CPU
<b>System Memory</b>	8GB LPDDR5	8GB LPDDR5
<b>Storage Device</b>	M.2 3052 B Key x 1 for M.2 2242 B+M Key SSD ( PCIe ) M.2 2230 E Key x 1	M.2 2280 M-Key x 1
<b>Display Interface</b>	HDMI 2.1 type A x 1	HDMI 2.0 (Type-A) x 1
<b>Ethernet</b>	RJ-45 x 1 for GbE LAN	RJ-45 x 2 for 10/100/1000 Base-T
<b>I/O</b>	USB 3.2 Gen 2 type A x 2 USB 2.0 type A x 2 DB-9 for RS232(Rx/Tx/CTS/RTS )/RS485 x 1 and CANBus FD x 1 DB-15 for RS232(Rx/Tx)/422/RS485 x 1 and DIO x 8 HDMI 2.1 type A x 1 Micro USB x 1 for OS Flash Power button x 1 Recovery button x 1 Antenna x 2	RJ-45 x 2 for 10/100/1000 Base-T USB 3.2 Gen 1 (Type-A) x 2 USB 2.0 (Type-A) x 2 HDMI 2.0 (Type-A) x 1 DB-9 x 1 for CANbus DB-9 x 1 for RS-232/422/485 DB-15 x 1 for 13-bit DIO 2-pin Terminal Block for 12 ~ 24V Power Input Power ON/OFF Switch x 1 Antenna Hole x 6
<b>Expansion</b>	M.2 3042/3052 B Key x 1 (4G/5G/M.2 2242 B+M Key storage) M.2 2230 E Key ( Wifi/BT/Storage) x 1 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
<b>Indicator</b>	Power LED x 1	
<b>OS Support</b>	Linux (NVIDIA Jetpack™ 5.0 and up)	
<b>Power Supply</b>		
<b>Power Requirement</b>	12V DC in with 2 pins terminal block x 1	DC-in 12-24V with 2-pin terminal block
<b>Mechanical</b>		
<b>Mounting</b>	Wall Mount (default)	Wall mount kit
<b>Dimensions (W x D x H)</b>	TBD	TBD
<b>Gross Weight</b>	TBD	TBD
<b>Net Weight</b>	TBD	TBD
<b>Environmental</b>		
<b>Operating Temperature</b>	-13°F ~ 131°F ( -25°C ~ 55°C ), according to IEC60068-2 with 0.5 m/s AirFlow	-4°F ~ 140°F (-20°C ~ 60°C with 0.5 m/s airflow)
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)	-40°F ~ 176°F (-40°C ~ 85°C)
<b>Storage Humidity</b>	5% ~ 95% @ 40C, non-condensing	
<b>Anti-Vibration</b>	3.5Grm / 5~500Hz / Operation	3.5 Grm / 5~500Hz
<b>Anti-Shock</b>	50G peak acceleration	50G peak acceleration
<b>Certification</b>	CE/FCC class A	
<b>Note</b>		





Launching in Q3

Model	BOXER-8653AI	BOXER-8658AI
<b>System</b>		
<b>AI Accelerator</b>	NVIDIA® Jetson Orin™ NX	
<b>CPU</b>	6-core Arm® Cortex®-A78AE ARMv8.2 64-bit CPU	
<b>System Memory</b>	8GB LPDDR5	
<b>Storage Device</b>	M.2 2230 E Key x 1, 2.5" SATA Drive Bay x 1	2.5" SATA Driver Bay x 1, M.2 2280 NVMe M Key x 1
<b>Display Interface</b>	HDMI 1.4 type A x 1	
<b>Ethernet</b>	RJ-45 x 1 for GbE LAN RJ-45 x 2 for GbE PoE/PSE 802.3af/each ( Max.30W )	RJ-45 x 8 for GbE PoE/PSE (802.3af/at, MAX.:120W) RJ-45 x 2 for Giga LAN
<b>I/O</b>	USB 3.2 Gen 1 type A x 3 USB 2.0 type A x 1 DB-9 for RS232( Rx/Tx/CTS/RTS )/RS485 x 1 and CANBus FD x 1 RS232(Rx/Tx)/RS485 x 1 and DIO x 9 HDMI 1.4 type A x 1 Micro USB x 1 for OS Flash Power button x 1 Recovery button x 1 Antenna x 4	USB 3.2 Gen 2 type A x 1 USB 2.0 type A x 3 DB-9 x 1 for CANBus FD x 1 DB-9 x 1 for RS232/422/485 x 1 and DIO x 8 HDMI 2.1 type A x 1 Line out x 1 Micro USB OTG x 1 for OS Flash Power button x 1 Recovery button x 1 Antenna x 7 Power input x 1 Antenna x 7 TPM Support GNSS Support 9-Axis Sensor Support
<b>Expansion</b>	Full size mini-PCIe slot x 1 ( USB + PCIe ) 2.5" SATA Drive Bay x 1 M.2 2230 E Key x 1 SIM Slot x 1	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 1
<b>Indicator</b>	Power LED x 1	
<b>OS Support</b>	Linux (NVIDIA JetPack™ 5.0 and above)	
<b>Power Supply</b>		
<b>Power Requirement</b>	12V~24V DC in with 2 pins terminal block x 1	3-pin Terminal Block x 1 for 9V ~ 36V ACC Ignition Delay On/Off
<b>Mechanical</b>		
<b>Mounting</b>	Wall Mount ( default )	Wall Mount Kit
<b>Dimensions (W x D x H)</b>	TBD	
<b>Gross Weight</b>	TBD	
<b>Net Weight</b>	TBD	
<b>Environmental</b>		
<b>Operating Temperature</b>	-13°F ~ 158°F ( -25°C ~ 70°C ), according to IEC60068-2 with 0.5 m/s AirFlow	13°F ~ 140°F (-25°C ~ 60°C with 0.5 m/s airflow)
<b>Storage Temperature</b>	-40°F ~ 185°F ( -40°C ~ 85°C )	
<b>Storage Humidity</b>	5% ~ 95% @ 40C, non-condensing	
<b>Anti-Vibration</b>	3.5Grm / 5~500Hz / Operation	MIL-STD-810G, 514.6C Procedure 1, Category 4 Trucker/ Semitrailer on US highway (Figure 514.6C-1-Category 4-Common carrier)
<b>Anti-Shock</b>	50G peak acceleration	MIL-STD-810G, Method 516.6, Procedure I, flight vehicle equipment
<b>Certification</b>	CE/FCC class A	
<b>Note</b>		



## AI@Edge Solutions : Edge AI Server



Model	BOXER-8301AI-CML	BOXER-8332AI-CFL
<b>System</b>		
<b>AI Accelerator</b>	10th Generation Intel® Core™ Desktop Processors	Intel® Xeon® E-2124G Intel® Core™ i7-9700TE Intel® Core™ i7-8700T Intel® Core™ i5-8500T Intel® Core™ i3-8100T Intel® Pentium® G5400T Intel® Celeron® G4900T Intel® Xeon® E-2278GEL Note: Support max. TPD 71W Processor
<b>CPU</b>	Intel® Q470E	C246, No H310 downward support
<b>System Memory</b>	DDR4 2933Mhz Long-DIMM x 4, up to 128GB	DDR4 SO-DIMM socket x4 (double deck) Support max. 2666MHz up to 128GB Support un-buffered and ECC / non-ECC type SODIMM
<b>Storage Device</b>	Hot Swappable 3.5" SATA HDD/SSD Bay x 4 M.2 2242/2260/2280 M-Key x 1	2.5" SATA Drive Bay x2 (4 SATA Port w/ RAID Function) Half-size Minicard x1 for mSATA (optional) M.2 2280 NVMe slot x1
<b>Display Interface</b>	HDMI 2.0a x 1, 4096 x 2160 @60Hz DP 1.2 x 1, 4096 x 2160@60Hz VGA x 1, 1920 x 1200@60Hz	HDMI 1.4 x2 Support Dual Independent Display, 4K Ultra HD displays
<b>Ethernet</b>	Intel® I225LM with 10/100/1000/2500 Mbps Intel® I219LM with 10/100/1000 Mbps, support AMT / vPro Intel® X550-T2 with 10GbE/5GbE/2.5GbE/1GbE/100Mb	RJ-45 x3 for GbE LAN (Intel i211AT x2, i219LM x1)
<b>I/O</b>	USB 3.2 Gen 2 x 4 USB 3.2 Gen 1 x 2 (Front Panel) USB 2.0 x 2 RJ-45 x 4 for LAN (i225 x 1, i219 x 1, X550-T2 x 1) DB-9 x 2 for RS-232/422/485 Audio for Line-in, Line-out, Mic-in PS2 x 1 Power Button x 1 Reset Button x 1 Alarm Mute x 1	USB Type-A x6 for USB3.2 Gen1 DB9 x4 For RS-232/422/485 Mic-in x1, Line-out x1 Power ON/OFF switch x1 Remote power on/off connector x1 Reset switch x1 SMA Antenna Holes x3
<b>Expansion</b>	PCIe Gen 3 [x16] x 1 PCIe Gen 3 [x4] x 2 M.2 2230 E-Key x 1 (PCIe [x1]/USB 2.0) M.2 3042/3052 B-Key w/SIM Slot (PCIe [x1]/USB 3.0/USB 2.0) Built in NVIDIA RTX™ A4000 x 1	Full-size Minicard x1 (PCIe + USB with 1 SIM Slot) Half-size Minicard x1 (PCIe + USB, optional for mSATA) M.2 M key (2280) x1 (PCIe x4) Built in NVIDIA A2 x1 PCIe [x4] x1
<b>Indicator</b>	Power Status x 1 HDD Activity x 1 LAN Activity x 2 Fan Failure and Overheat x 1	System Power LED x1 (Green) Storage Active LED x1 (Red)
<b>OS Support</b>	Windows® 10 IoT Enterprise (LTSC 2019 Multi-Language English)	Windows® 10 Enterprise 64 bit Ubuntu 20.04.3/Kernel 5.4.0-72
<b>Power Supply</b>		
<b>Power Requirement</b>	600W ATX Power Supply Input Voltage: 90 ~ 264Vac Input Frequency: 47 ~ 63Hz Input Current: 115Vac @6A, 230Vac @3A	DC In 12~24V x1 for 3-pin Terminal block
<b>Mechanical</b>		
<b>Mounting</b>	—	Wallmount
<b>Dimensions (W x D x H)</b>	18.3" x 7.8" x 16.7" (465mm x 198mm x 425mm)	8.66" x 5.91" x 11.02" (220 mm x 150 mm x 280 mm)
<b>Gross Weight</b>	39.68 lb. (18Kg)	17.64 lb (8 kg)
<b>Net Weight</b>	33.07 lb. (15.5Kg)	15.43 lb (7 kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	32°F ~ 104°F (0°C ~ 40°C), IEC68-2 with 0.5 m/s AirFlow	
<b>Storage Temperature</b>	-49°F ~ 176°F (-45°C ~ 80°C)	
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	Random, 1Grms, 5~500Hz, Anti-vibration design	SSD : Random, 1Grms, 5~500Hz
<b>Anti-Shock</b>	SSD: 5G @Half-sine, 11ms	SSD : 5G @ wallmount, Half-sine, 11ms
<b>Certification</b>	CE/FCC Class B, VCCI Class B	CE/FCC class A , UKCA
<b>Note</b>		





Model	SRG-3352	SRG-3352C	SRG-IMX8P
<b>System</b>			
<b>Processor</b>	ARM Cortex-A8 800 MHz RISC Processor		ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor (NPU Optional)
<b>Memory</b>	Onboard DDR3L 1GB		Onboard DDR4L 2GB (Optional 4GB)
<b>Storage</b>	eMMC 16GB		eMMC 16GB (Optional 32GB)
<b>Real Time Clock</b>	RTC, with 3V CR2032 Lithium battery x 1		RTC x 1, with 3V CR2032 Lithium battery
<b>Security</b>	—		TPM 2.0
<b>Indicators</b>	Programmable LED control x 4		Programmable LED control x 7
<b>Cellular</b>	Mini PCIe Connector x 1		Mini PCIe Connector x 1 (USB signal)
<b>Wireless Lan</b>	—	Onboard WiFi 802.11 b/g/n, Bluetooth4.2/ BLE	Mini PCIe Connector x 1 (USB signal)
<b>Operating System</b>	Debian 9		Debian 10
<b>Support Protocol</b>	Modbus / MQTT Library(by request)		
<b>I/O Interfaces</b>			
<b>Serial Port</b>	RS-485, Phoenix Connector x 2	RS-485, DB9 Connector x 2	RS-232/422/485 switchable x 2, Phoenix Connector
<b>Ethernet</b>	Gigabit Ethernet, RJ-45 x 2		Gigabit Ethernet x 2, RJ-45
<b>USB</b>	USB 2.0, Type A x 1	USB 2.0, Type A x 2	USB 3.0, Type-A x 2
<b>ADC</b>	—		
<b>DI/DO</b>	—		
<b>CAN Bus</b>	—		CAN-FD x 2 CH, Phoenix Connector
<b>Display</b>	—		HDMI x1 (Output)
<b>Power Connector</b>	3 Pin Phoenix Connector	Lockable DC Jack	2 Pin 3.81mm Pitch Phoenix Connector
<b>Debug Port</b>	Micro USB x 1		
<b>Expansion Slot</b>	SIM card slot x 1		
<b>Other Interface</b>	Micro SD slot x 1		
<b>Power Supply</b>	—		
<b>Power Requirement</b>	DC9-30V		DC 9-36V
<b>Power Consumption</b>	2.28 W (Full Loading)	3.36 W (Full Loading)	9.36W (Full Loading)
<b>MTBF (Hours)</b>	855590		479,374
<b>Environmental and Mechanical</b>			
<b>Dimension</b>	5.67" x 3.94" x 1.73"(144 x 100 x 44mm)	4.3" x 4.33" x 1.54" (109 x 110 x 39 mm)	5.54" x 3.86" x 1.89" (140.76 x 98.2 x 48 mm)
<b>Weight</b>	512 g	430 g	2.6lb (1.18kg)
<b>Mount Options</b>	Wallmount, Din Rail (Optional)		
<b>Operation Temperature</b>	32 °F ~ 140 °F (0 °C ~ 60 °C)		-4 °F ~ 158 °F (-20 °C ~ 70 °C)
<b>Storage Temperature</b>	-40 °F ~ 176 °F (-40 °C ~ 80 °C)		
<b>Operation Humidity</b>	10% ~ 95% relative humidity, non-condensing		
<b>Note</b>			





## IoT Gateway Solutions – IoT Gateway &amp; Expansion



Model	SRG-ADIO	SRG-ACAN	SRG-TG01
<b>System</b>			
<b>Processor</b>	ARM Cortex-A8 800 MHz RISC Processor		11th Generation Core Intel® i7-1185G7E SoC 11th Generation Core Intel® i5-1145G7E SoC 11th Generation Core Intel® i3-1115G4E SoC 11th Generation Core Intel® Celeron 6305E SoC TDP 12W Only
<b>Memory</b>	Onboard DDR3L 1GB		DDR4 3200MHz, SO-DIMM x 2, Up to 64GB
<b>Storage</b>	eMMC 16GB		M.2 2280 M Key slot x 1 (PCIe4) 2.5" SATA SSD/HDD bay x 1
<b>Real Time Clock</b>	RTC x 1, with 3V CR2032 Lithium battery		RTC x 1, with 3V CR2032 Lithium battery
<b>Security</b>	TPM 2.0		TPM 2.0
<b>Indicators</b>	Programmable LED control x 4		—
<b>Cellular</b>	Mini PCIe Connector x 1		M.2 3052 B Key slot x 1 (4G/5G)
<b>Wireless Lan</b>	Onboard WiFi 802.11 b/g/n, Bluetooth 4.2 / BLE		M.2 2230 E Key slot x 1 (Wi-Fi 802.11 ac/b/g/n, BT 5.0)
<b>Operating System</b>	Debian 10		Windows 10 IoT Enterprise / Linux (by request)
<b>Support Protocol</b>	Modbus / MQTT Library (by request)		—
<b>I/O Interfaces</b>			
<b>Serial Port</b>	—	Switchable RS232/422/485 x 2, DB9 Connector (Optional)	RS-232/422/485 x 4, DB9 (Optional)
<b>Ethernet</b>	Gigabit Ethernet x 2, RJ-45		Intel® i211-LM, 10/100/1000Base x 1, RJ45 Intel® i219-LM, 10/100/1000Base x 1, RJ45 Intel® i225-LM, 10/100/1000Base x 1, RJ45 (Support Vpro)
<b>USB</b>	USB 2.0 x 2, Type A		USB3.2 Gen 2 x 1, Type A USB3.2 Gen 1 x 3, Type A
<b>ADC</b>	Differential x 2 CH or Single-End x 4 CH, Phoenix Connector Input Range: 0~15V, 0~20mA Resolution: 16 bit	Differential x 2 CH or Single-End x 4 CH, DB9 Connector (Optional) Input Range: 0~15V, 0~20mA Resolution: 16 bit	—
<b>DI/DO</b>	Isolation DI x 4 CH, Phoenix Connector Voltage Level: ON:9~24V, OFF:0~8V Isolation DO x 4 CH, Phoenix Connector Load Voltage: DC 24V Max Load Current: 100mA/ channel	—	8 bit, Phoenix Connector
<b>CAN Bus</b>	—	CAN Bus x 2 CH, DB9 Connector (Optional)	CAN 2.0 B x 2 CH, Phoenix Connector
<b>Display</b>	—		HDMI 2.0b x 1
<b>Power Connector</b>	Lockable DC jack		2 Pin 3.81mm Pitch Phoenix Connector
<b>Debug Port</b>	Micro USB x 1		—
<b>Expansion Slot</b>	SIM card slot x 1 Micro SD slot x 1		Micro SIM slot x 1 Micro SIM slot x 2 (Optional)
<b>Other Interface</b>	—		SATA 3.0 x 1 (Internal) SATA Power connector x 1 (5V) (Internal)
<b>Power Supply</b>			
<b>Power Requirement</b>	DC9-30V		DC 9 ~ 36V (Optional DC12V), AT Type
<b>Power Consumption</b>	3.36 W (Full Loading)		67 W (Full Loading)
<b>MTBF (Hours)</b>	855590		306,575
<b>Environmental and Mechanical</b>			
<b>Dimension</b>	4.3" x 4.33" x 1.54" (109 x 110 x 39 mm)		8.1" x 6.1" x 2.8" (207 x 155 x 72 mm)
<b>Weight</b>	430 g		3.3lb (1500g)
<b>Mount Options</b>	Wallmount, Din Rail (Optional)		Wall Mount (Optional)
<b>Operation Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)		32°F ~ 122°F (0°C ~ 50°C)
<b>Storage Temperature</b>	-40 °F ~ 176 °F (-40 °C ~ 80 °C)		
<b>Operation Humidity</b>	10% ~ 95% relative humidity, non-condensing		
<b>Note</b>			





Model	SRG-APL	SRG-CM4	SRG-4858P
<b>System</b>			
<b>Processor</b>	Intel Atom X5-E3940 Processor SoC / Intel HD 500 Graphics	Broadcom BCM2711 quad-core Cortex-A72 SoC @ 1.5GHz	ARM Cortex-A8 800 MHz RISC Processor
<b>Memory</b>	Onboard LPDDR4 1866MHz 4GB / 8GB (Optional)	Onboard DDR4L 1GB (Optional 2GB)	Onboard DDR3L 1GB
<b>Storage</b>	eMMC 5.1 32GB / 64GB (Optional)	eMMC 8G (Optional 16GB)	eMMC 16GB
<b>Real Time Clock</b>	RTC x 1, with 3V CR2032 Lithium battery	RTC x 1, with 3V CR2032 Lithium battery	RTC, with 3V CR2032 Lithium battery x 1
<b>Security</b>	—	TPM 2.0	—
<b>Indicators</b>	—	Programmable LED control x 3	Programmable LED control x 4
<b>Cellular</b>	Mini PCIe Connector x 1	M.2 3042/3052 B Key x1 (USB Signal)	Mini PCIe Connector x 1 (USB signal)
<b>Wireless Lan</b>	M.2 2230 E Key slot x 1	Onboard Wifi 802.11 b/g/n/ac, BT 5.0 (Optional)	—
<b>Operating System</b>	Windows 10 IoT Enterprise / Linux (by request)	Raspberry Pi OS / Debian 10 (by request)	Debian 10
<b>Support Protocol</b>	—	Modbus / MQTT	Library (by request)
<b>I/O Interfaces</b>			
<b>Serial Port</b>	—	RS-232/422/485 switchable x 2, phoenix connector RS-485 with isolation x 2, wafer box (Optional)	RS-485 x 10, Phoenix Connector
<b>Ethernet</b>		Gigabit Ethernet x 2, RJ-45	
<b>USB</b>	USB 3.0 x 4, Type A	USB 3.0 Type-A x 2 Micro USB 2.0 OTG x 1	USB 2.0 x 1, Type A
<b>ADC</b>		—	
<b>DI/DO</b>	—	Dix1 / DOx 1 with Isolation, wafer box (Optional)	—
<b>CAN Bus</b>	—	CAN-FD x 1, phoenix connector	—
<b>Display</b>	HDMI 1.4 x 1	HDMI x 1 (Output)	—
<b>Power Connector</b>	DC Jack	2 pin 3.81mm pitch phoenix connector	3 Pin 3.81mm Phoenix Connector
<b>Debug Port</b>	—	UART x1 (Pin Header)	Micro USB x 1
<b>Expansion Slot</b>	SIM card slot x 1 Micro SD slot x 1	SIM card slot x 1 Micro SD slot x 1(Optional)	Micro SIM slot x1 Micro SD slot x 1
<b>Other Interface</b>	Power switch button x 1 Reset switch button x 1 Antenna x3 (Optional)	Software button x 1 (Share with DI) Reset button x 1 Hardware watchdog	Antenna x2 (Optional)
<b>Power Supply</b>			
<b>Power Requirement</b>	12V DC-In @ 3A-5A 5.5/2.5 mm	DC 9-24V	DC9-30V
<b>Power Consumption</b>	20 W (Full Loading)	TBD	6.36 W (Full Loading)
<b>MTBF (Hours)</b>	516,789	TBD	855590
<b>Environmental and Mechanical</b>			
<b>Dimension</b>	3.16" x 3.7" x 2.5" (80.28 x 95 x 63.6 mm)	5.51" x 4.13" x 1.96" (140x105x50mm)	5.67" x 3.94" x 1.73"(144 x 100 x 44mm)
<b>Weight</b>	1.94lb (880g)	0.99 lb (450g)	512 g
<b>Mount Options</b>		Wallmount, Din Rail (Optional)	
<b>Operation Temperature</b>	32 °F ~ 140 °F (0 °C ~ 60 °C)	-4 °F ~ 158 °F (-20 °C ~ 70 °C)	32 °F ~ 140 °F (0 °C ~ 60 °C)
<b>Storage Temperature</b>		-40 °F ~ 176 °F (-40 °C ~ 80 °C)	
<b>Operation Humidity</b>		10% ~ 95% relative humidity, non-condensing	
<b>Note</b>			



## IoT Gateway Solutions – Industrial Fieldbus Gateways

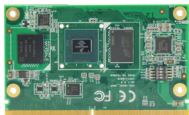


Model	SPG-M041
<b>System</b>	
CPU/MCU	ARM Cortex M4F
External flash	128 M-bit flash
Storage	External Micro SD slot, Max. 32GB
Operating system	Embedded real-time OS: Zephyr Version: 3.0.99
LED indicator(s)	10
Real time clock	Yes
<b>I/O Interfaces</b>	
Ethernet	10/100Mbps Ethernet x 2, RJ45
Serial Port	RS232, 3W-RS485 or 2W-RS485 x 2, Terminal Block (Software selectable)
Digital Input	4, Terminal Block
Relay Output	1, Terminal Block
SD card	Micro SD card slot x 1
Power Input	12/24 VDC Power input x 2, Terminal Block
<b>Power Supply</b>	
Ports/Channels	Dual DC power inputs for power redundancy
Power supply rated voltage	12 / 24 VDC
Power supply voltage range	9.6 ~ 31.2 VDC
Input current	12V/2.29W, 24V/3.14W, Normal used
Reverse polarity protection	Yes
Voltage variation protection	Yes
<b>Mechanical</b>	
Enclosure	Metal housing
Dimension	6.29 x 4.17 x 1.06 (160 x 106 x 27mm)
Weight	1.11 lb (504g)
Mounting/Installation	DIN mount
<b>Environmental</b>	
Operating Temperature	-20 to 70°C (-4 to 158°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Operating Humidity	5% to 95% Non-condensing
<b>Certification</b>	
Regulations	CE, FCC
Note	



# 0 2 System Level Products

## IoT Gateway & Expansion - Accessories




Launching in Q3

IoT Gateway & Expansion - Accessories

Model	iEC-SIM8	iEC-SI35
<b>System</b>		
<b>Form Factor</b>	SMARC (82 x 50 mm) with MXM3 connector	200-pin SO-DIMM
<b>Processor</b>	NXP i.MX8M Plus Cortex-A53, Quad-core, 1.6GHz NXP i.MX8M Plus Cortex-A53, Dual-core, 1.6GHz (model variant)	MediaTek Genio 350/MT8365 ARM Cortex-A53, Quad-core, 2.0GHz
<b>RAM</b>	2GB/4GB LPDDR4 (model variant)	
<b>Storage</b>	16GB/32GB eMMC (model variant)	
<b>Network</b>	Gigabit Ethernet x 2	RMII x 1
<b>Display</b>	HDMI 2.0a x 1 dual channel 24-bit LVDS x 1 MIPI-DSI 4-lane shared with second LVDS channel x 1	LVDS x 1 DPI x 1
<b>Video input</b>	2-lane MIPI-CSI x 1 4-lane MIPI-CSI x 1	MIPI-CSI x 2
<b>Connectivity</b>	UART x 2 CAN bus x 2 I <sup>2</sup> C x 3 SD/SDIO x 1 JTAG x 1	UART x 1 SPI x 1 I <sup>2</sup> C x 3 SD/SDIO x 1 JTAG x 1
<b>USB</b>	USB 3.0 x 2	USB 2.0 OTG x 1 USB 2.0 host x 1
<b>PCIe</b>	PCIe Gen3 x 1	—
<b>Audio</b>	I <sup>2</sup> S x 1	—
<b>Power Supply</b>		
<b>SD card</b>		5V DC
<b>Environmental and Mechanical</b>		
<b>Power Input</b>		67.6 x 31.0 mm
<b>Serial Port</b>		0°C ~ 60°C
<b>Digital Input</b>		5% ~ 95% relative humidity, non-condensing
<b>Note</b>		

## Compact Fanless BOX PC Solutions




Model	BOXER-6614	BOXER-6615	BOXER-6616
<b>System</b>			
<b>CPU</b>	Intel® Celeron® N2930, 1.83 GHz Intel® Celeron® N2807, 1.58GHz	Intel® Pentium® N3710 1.6GHz	Intel® Pentium® N4200, 2.5 GHz Intel® Pentium® N3350, 2.4 GHz
<b>Chipset</b>	Intel® System on Chip		
<b>System Memory</b>	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	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
<b>Display Interface</b>	VGA, HDMI		
<b>Storage Device</b>	CFast™, HDD/SSD	mSATA, 2.5" HDD/SSD	mSATA, HDD/SSD
<b>Ethernet</b>	Intel® I210/I211, 10/100/1000 Base-TX x 2	Realtek® RTL-8111E, 10/100/1000 Base x2	Intel® I211, 10/100/1000 Base-TX x 2
<b>I/O</b>	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	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
<b>Expansion</b>	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)	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)
<b>Indicator</b>	Power LED, HDD active LED		
<b>OS support</b>	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	Windows® 10 IoT Ent LTSC 2019 64 bit Ubuntu 16.04 above
<b>Power Supply</b>			
<b>Power Requirement</b>	9 - 30V with 3-pin terminal block, 12V with lockable DC jack	9-24V with 3-pin terminal block	
<b>Mechanical</b>			
<b>Mounting</b>	Wallmount, DIN Rail (Mounting kit is optional)		
<b>Dimensions (W x H x D)</b>	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)	
<b>Gross Weight</b>	6.6 lb (2.8 kg)		
<b>Net Weight</b>	4.4 lb (2 kg)		
<b>Environmental</b>			
<b>Operating Temperature</b>	-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)	-4°F ~ 158°F (-20°C ~ 70°C) with W.T. SSD/HDD/mSATA (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)
<b>Storage Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C)		
<b>Storage Humidity</b>	95% @ 40°C, non-condensing		
<b>Anti-Vibration</b>	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	3 Grms/ 5 ~ 500Hz/ operation – mSATA/ SSD 1 Grms/ 5 ~ 500Hz/ operation –HDD
<b>Anti-Shock</b>	—		
<b>Certification</b>	CE/FCC class A, UL		CE/FCC class A
<b>Note</b>			



## Compact Fanless BOX PC Solutions



Model	BOXER-6617-ADN	BOXER-6639
<b>System</b>		
<b>CPU</b>	Intel® Processor N50 Intel® Processor N97 Intel® Core™ i3-N305 Intel Atom® x7211E	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
<b>Chipset</b>	Intel® SoC	Q170
<b>System Memory</b>	DDR5 4800MHz SODIMM x 1, up to 32GB	DDR4 1866/2133 SODIMM slot x 2, up to 32 GB, ECC or Non-ECC support
<b>Display Interface</b>	HDMI x 2	VGA, HDMI
<b>Storage Device</b>	M.2 2280 M-Key x 1 (PCIe [x2]) 2.5" SATA HDD/SSD x 1	CFast, SATA HDD/SSD (Optional: x2)
<b>Ethernet</b>	RJ-45 x 2 for 2.5GbE LAN (Intel® I226)	Intel® i210, 10/100/1000Base-TX x 3
<b>I/O</b>	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	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
<b>Expansion</b>	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	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)
<b>Indicator</b>	Sys LED Storage active LED	Power LED HDD active LED
<b>OS support</b>	Windows® 10 IoT Enterprise Linux Ubuntu 22.04	Windows® 7 (32/64-bit), Windows® 8/8.1 (64-bit), Windows® 10 (64-bit)
<b>Power Supply</b>		
<b>Power Requirement</b>	DC-in 9-36V x 1 for 3-Pin Terminal Block	9 - 36V with 3-pin terminal block
<b>Mechanical</b>		
<b>Mounting</b>	Wall Mount	Wallmount, DIN Rail (Mounting Kit is optional)
<b>Dimensions (W x H x D)</b>	8.42" x 4.54" x 2.59" (214mm x 115.5mm x 65.8mm) without brackets	10.4" x 2.6" x 6.1" (264.2mm x 66.5mm x 156.2mm)
<b>Gross Weight</b>	6.17 lb. (2.8Kg)	7.7 lb (3.5 kg)
<b>Net Weight</b>	4.4 lb. (2Kg)	6.6 lb (3 kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C), according to IEC68-2 with 0.5 m/s AirFlow (w/ Industrial wide Temp. SSD/RAM)	-4°F ~ 131°F (-20°C ~ 55°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)
<b>Storage Temperature</b>		-40°F ~ 176°F (-40°C ~ 80°C)
<b>Storage Humidity</b>		5 ~ 95% @ 40°C, non-condensing
<b>Anti-Vibration</b>	3 Grms/ 5 ~ 500Hz/ operation (with SSD)	2 Grms/ 5 ~ 500Hz/ operation –CFast™ card 1 Grms/ 5~ 500Hz/ operation – HDD
<b>Anti-Shock</b>	50G, IEC 68-2-27, half sine, 11 ms duration (with SSD)	—
<b>Certification</b>		CE/FCC Class A
<b>Note</b>		




## Compact Fanless BOX PC Solutions



Model	BOXER-6639M	BOXER-6640
<b>System</b>		
<b>CPU</b>	<b>7th Generation Intel® Core™ Processor family:</b> 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 <b>6th Generation Intel® Core™ Processor family:</b> 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® 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
<b>Chipset</b>	Intel® Q170	Intel® H110
<b>System Memory</b>	DDR4 1866/2133 SODIMM slot x 2, up to 32GB	DDR4 SODIMM socket (double deck) x 2 Supports 1866/2133MHz DDR4 and up to 32GB Supports un-buffered and ECC / non-ECC type SODIMM
<b>Display Interface</b>	HDMI, VGA	VGA x 1, HDMI x 2 (Combo DP x 2) - A1 Sku VGA x 1 - A2 Sku
<b>Storage Device</b>	CFast™, HDD/SSD	mSATA, SATA HDD/SSD
<b>Ethernet</b>	Intel® I210, 10/100/1000 Base-TX x 3	Intel® I211AT x 1, I219LM x 1
<b>I/O</b>	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)	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)
<b>Expansion</b>	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 (mSATA + USB) LPC x 1
<b>Indicator</b>	Power LED, HDD active LED	
<b>OS support</b>	<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	Windows® 10 64-bit (KabyLake, Skylake CPU) Windows® 8.1 64-bit (Skylake CPU only) Windows® embedded 8 standard 64-bit (Skylake CPU only)
<b>Power Supply</b>		
<b>Power Requirement</b>	12 - 36V with 3-pin terminal block	3-pin Phoenix DC Input 9-36V
<b>Mechanical</b>		
<b>Mounting</b>		Wallmount
<b>Dimensions (W x H x D)</b>	10.4" x 3.8" x 6.1" (264.2mm x 96.4mm x 154.2mm)	10.39" x 3.8" x 7.33" (264mm x 96.4mm x 186.2mm)
<b>Gross Weight</b>	13.0 lb (5.9 kg)	12.76 lb (5.8 kg)
<b>Net Weight</b>	8.8 lb (4.0 kg)	9.9 lb (4.5 kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-13°F ~ 131°F (-25°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) (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)
<b>Storage Temperature</b>		-49°F ~ 176°F (-45°C ~ 80°C)
<b>Storage Humidity</b>		5~95% @ 40°C, non-condensing
<b>Anti-Vibration</b>	5 Grms/ 5 ~ 500Hz/ operation - SSD/CFast™ card 1 Grms/ 5~ 500Hz/ operation - HDD	2 Grms/ 5 ~ 500Hz/ operation - SSD 1 Grms/ 5 ~ 500Hz/ operation - HDD
<b>Anti-Shock</b>		
<b>Certification</b>		CE/FCC class A
<b>Note</b>		





Model	BOXER-6641	BOXER-6641-PRO
<b>System</b>		
<b>CPU</b>	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
<b>Chipset</b>	Intel® C246/H310	
<b>System Memory</b>	DDR4-2666 SO-DIMM slot x 2, Up to 64GB, ECC or Non-ECC Support	
<b>Display Interface</b>	HDMI x 2	
<b>Storage Device</b>	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
<b>Ethernet</b>	Intel® i211 x 3, i219 x 1	
<b>I/O</b>	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
<b>Expansion</b>	Full-size Mini PCIe x 1 Full-size Mini PCIe x 1 (PCIe/mSATA switch by BIOS, Default: mSATA)	
<b>Indicator</b>	SIM slot x 1 HDD LED x 1 SYS LED x 1	
<b>OS support</b>	Windows® 10 64-bit Linux Ubuntu 20.04	Windows® 10 64-bit Linux Ubuntu 20.04.2
<b>Power Supply</b>	3-pin DC Input 10~35V	
<b>Power Requirement</b>	3-pin DC Input 10~35V	
<b>Mechanical</b>		
<b>Mounting</b>	Wallmount	
<b>Dimensions (W x H x D)</b>	10.4" x 3.19" x 6.15" (264.2mm x 80.92mm x 156.2mm)	
<b>Gross Weight</b>	10.4 lb (4.7 kg)	
<b>Net Weight</b>	8.2 lb (3.7 kg)	
<b>Environmental</b>		
<b>Operating Temperature</b>	-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
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)	
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	2 Grms/ 5 ~ 500Hz/ operation – SSD/mSATA 1 Grms/ 5 ~ 500Hz/ operation – HDD	2 Grms/ 5 ~ 500Hz/ operation (with SSD)
<b>Anti-Shock</b>		
<b>Certification</b>	CE/FCC class A	
<b>Note</b>		





## Compact Fanless BOX PC Solutions



Model	BOXER-6642-CML	BOXER-6643-TGU
<b>System</b>		
<b>CPU</b>	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
<b>Chipset</b>	Intel® Q470E	Intel® SoC
<b>System Memory</b>	DDR4 SO-DIMM x 2, up to 64GB	DDR4 3200MHz SO-DIMM x 2, max 64GB
<b>Display Interface</b>	HDMI 1.4 x 1	HDMI 2.0 x 2
<b>Storage Device</b>	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
<b>Ethernet</b>	Intel® i211-AT x 1, i219-LM x 1	RJ-45 x 2 for 1G/2.5GbE LAN (i219x1, i225x1)
<b>I/O</b>	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
<b>Expansion</b>	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
<b>Indicator</b>	Power LED	Power / System LED
<b>OS support</b>	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
<b>Power Supply</b>		
<b>Power Requirement</b>	10-35V DC-in with 3-pin terminal block	DC-in 9-36V x1 for 3-pin Terminal Block
<b>Mechanical</b>		
<b>Mounting</b>		Wallmount
<b>Dimensions (W x H x D)</b>	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
<b>Gross Weight</b>	8.4lb (3.8kg)	4.4 lb (2.0 kg)
<b>Net Weight</b>	6.2lb (2.8kg)	3.3 lb (1.5 kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	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)
<b>Storage Temperature</b>		-40°F ~ 176°F (-40°C ~ 80°C)
<b>Storage Humidity</b>		5 ~ 95% @ 40°C, non-condensing
<b>Anti-Vibration</b>	2 Grms/5 ~ 500Hz/operation (with SSD)	3 Grms/5 ~ 500Hz/ operation (with SSD)
<b>Anti-Shock</b>	50G peak acceleration (11msec) (with SSD)	50G, IEC 68-2-27, half sine, 11 ms duration (with SSD)
<b>Certification</b>		CE/FCC class A
<b>Note</b>		



## Compact Fanless BOX PC Solutions



Model	BOXER-6645-ADS	BOXER-6646-ADP
<b>System</b>		
<b>CPU</b>	i9-12900E i7-12700TE i7-12700E i5-12500TE i5-12500E i3-12100TE i3-12100E G6900TE G6900E	Intel® Core™ i7-1270PE Intel® Core™ i5-1250PE Intel® Core™ i3-1220PE
<b>Chipset</b>	Intel H610E/Q670E	Intel® System on Chip
<b>System Memory</b>	DDR5 4800MHz Slot x2, max up to 64GB	DDR5 SODIMM slot x 2
<b>Display Interface</b>	HDMI Type A x2 for HDMI 1.4b DisplayPort x2 for DP1.4a *A2 model supports four display outputs at the same time	HDMI x2, Display Port x 2
<b>Storage Device</b>	2.5" SATA-III Drive Bay x 2 (A2 sku supports RAID 0/1) M.2 2280 M key for NVMe SSD x 1 (extra heatsink is needed, refer to optional accessories) (A2 sku only)	Removable 2.5" SATA Drive Bay x 1 M.2 2280 M Key NVMe Slot x 1
<b>Ethernet</b>	Intel® I210AT, 10/100/1000 Base-TX x 2 Intel® I219LM, 10/100/1000 Base-TX x 1 Intel® I226LM, 2.5GbE Base-TX x 1	RJ-45 x 2 for 2.5GbE LAN i225-LM x 2 RJ-45 x 1 for GbE LAN i219-LM x 1
<b>I/O</b>	USB 3.2 Gen2 5Gbps x 4 (A1 sku) USB 3.2 Gen2 10Gbps x 8 (A2 sku) USB2.0 x 4 (A1 sku) Audio x 1 (MIC-in, Line-out) DB-9 x 6 for RS-232/422/485 SMA Antenna Hole x6 DIO x 8	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 DB-9 for DIO 8 bit x 1 Power Button with LED indicator x 1 Remote Power on/off 2pin connector x 1
<b>Expansion</b>	M.2 2230 E-Key x 1 for WiFi module M.2 3052 B-Key x 1 for 4G / 5G module	M.2 E key 2230 x 1 M.2 B Key 3052 x 1 (for 5G/LTE module)
<b>Indicator</b>	System LED x 1 HDD LED x 1	System Power LED x 1
<b>OS support</b>	Windows® 10 IoT Enterprise 64-bit Windows® 11 PRO 64-bit Linux Ubuntu 20.04 (Kernel 15.5 or above)	Windows® 10 IoT Ent LTSC, Windows® 11 PRO, Ubuntu 22.04
<b>Power Supply</b>		
<b>Power Requirement</b>	3-pin DC Input 12~24V	DC-in 10~35V in 3pin Terminal block connector
<b>Mechanical</b>		
<b>Mounting</b>		Wallmount
<b>Dimensions (W x H x D)</b>	10.39" x 3.8" x 7.33" (264mm x 80.92mm x 186.2mm)	8.66" x 6.06" x 2.42" (220 mm x 154 mm x 61.6 mm)
<b>Gross Weight</b>	11.7 lb (5.3 kg)	6.6 lbs. (3.0 kg)
<b>Net Weight</b>	9.5 lb (4.3 kg)	4.9 lbs. (2.2 kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-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. 32G)/ Storage (TDP 35W CPU)	-4°F ~140°F (-20°C ~ 60°C), IEC68-2 with 0.5 m/s AirFlow, with wide temperature Memory/Storage
<b>Storage Temperature</b>		-40°F ~176°F (-40°C ~ 80°C)
<b>Storage Humidity</b>		5 ~ 95% @ 40°C, non-condensing
<b>Anti-Vibration</b>	3 Grms/ 5 ~ 500Hz/ operation – SSD 1 Grms/ 5 ~ 500Hz/ operation – HDD	SSD: Random, 3Grms, 5~500Hz
<b>Anti-Shock</b>	50G, IEC68-2-27, half sine, 11ms duration (with SSD)	SSD: 50G @ wallmount, Half-sine, 11ms
<b>Certification</b>		CE/FCC class A
<b>Note</b>		



## Ultra Slim Fanless BOX PC Solutions



Model	BOXER-6404U	BOXER-6404
<b>System</b>		
<b>CPU</b>	Intel® Celeron® J1900, 2.0 GHz Intel® Celeron® N2807, 1.58 GHz	
<b>Chipset</b>	Intel® System on Chip	
<b>System Memory</b>	DDR3L 1333 SODIMM slot x 1, up to 8 GB (J1900) or 4 GB (N2807)	
<b>Display Interface</b>	VGA	HDMI (max. 1920 x 1080)
<b>Storage Device</b>	mSATA, HDD/SSD	CFast™
<b>Ethernet</b>	Intel® I211-AT x 2	Intel® I210AT, 10/100/1000Base-TX x 4
<b>I/O</b>	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
<b>Expansion</b>	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
<b>Indicator</b>	Power LED HDD active LED	Power LED on power button
<b>OS support</b>	Windows® 10, Windows® 8.1, Windows® 7, Windows® Embedded 8, Windows® Embedded 7, Linux Fedora	
<b>Power Supply</b>		
<b>Power Requirement</b>	12 - 24V with 3-pin terminal block	12V - 24V with lockable DC jack
<b>Mechanical</b>		
<b>Mounting</b>	Wallmount VESA (Mounting kit is optional) DIN rail (Mounting kit is optional)	VESA (Mounting kit is optional) DIN rail (Mounting kit is optional)
<b>Dimensions (W x H x D)</b>	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)
<b>Gross Weight</b>	3.6 lb (1.6 kg)	2.9 lb (1.3 kg)
<b>Net Weight</b>	1.76 lb (0.8 kg)	1.9 lb (0.86 kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-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)
<b>Storage Temperature</b>	-22°F ~ 176°F (-30°C ~ 80°C)	
<b>Storage Humidity</b>	95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	5 Grms/ 5 ~ 500Hz/ operation –mSATA	5 Grms/ 5 ~ 500Hz/ operation –CFast™ card
<b>Anti-Shock</b>	—	
<b>Certification</b>	CE/FCC class A	
<b>Note</b>		





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



## Ultra Slim Fanless BOX PC Solutions



Model	BOXER-6405	BOXER-6405M
<b>System</b>		
<b>CPU</b>	Intel® Celeron®/Pentium® processor	
<b>Chipset</b>	Intel® System on Chip	
<b>System Memory</b>	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)	
<b>Display Interface</b>	HDMI (max. 1920 x 1080)	HDMI type A x 1 for HDMI v1.4b VGA x 1
<b>Storage Device</b>	mSATA	HDD/SSD, (mSATA BOM option)
<b>Ethernet</b>	Intel® i211-AT x 2	
<b>I/O</b>	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	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
<b>Expansion</b>	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)
<b>Indicator</b>	Power LED x1, HDD active LED x1	
<b>OS support</b>	Windows® 10, Windows® 10 IoT, Linux	
<b>Power Supply</b>		
<b>Power Requirement</b>	9-24V with 3-pin terminal block	3-pin Phoenix DC Input 9~24V without power protection
<b>Mechanical</b>		
<b>Mounting</b>	Wallmount	
<b>Dimensions (W x H x D)</b>	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)
<b>Gross Weight</b>	3.6 lb (1.6kg)	
<b>Net Weight</b>	1.76 lb (0.8 kg)	1.7 lb (0.8 kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-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)	
<b>Storage Temperature</b>	-22°F ~ 140°F (-30°C ~ 60°C)	
<b>Storage Humidity</b>	95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	3 Grms/ 5 ~ 500Hz/ operation – mSATA 1 Grms/ 5 ~ 500Hz/ operation - HDD	
<b>Anti-Shock</b>	—	
<b>Certification</b>	CE/FCC class A	
<b>Note</b>		





Model	BOXER-6406-ADN	BOXER-6450-TGU
<b>System</b>		
<b>CPU</b>	Intel® Processor N200 Intel® Processor N50 Intel Atom® x7211E (formerly Alder Lake-N)	Intel® Core™ i7-1185G7E, 1.80 GHz Intel® Core™ i5-1145G7E, 1.50 GHz Intel® Core™ i3-1115G4E, 2.20 GHz Intel® Celeron® 6305E Processor, 1.80 GHz
<b>Chipset</b>	Intel® SoC	Intel® System on Chip
<b>System Memory</b>	DDR5 4800MHz SODIMM x 1, up to 32GB	LPDDR4x max 3200 MHz on board memory. Default 4GB or 8GB, max. up to 32GB by customization
<b>Display Interface</b>	HDMI x 2	HDMI2.0b x 1, 4Kx2K 60Hz
<b>Storage Device</b>	M.2 2280 M-Key x 1 (PCIe Gen 3 x 2) 2.5" SATA HDD/SSD x 1	2.5" SATA Drive Bay x 1 Full-size Minicard x 1 for mSATA (optional) M.2 2280 NVMe Slot x 1
<b>Ethernet</b>	RJ-45 x 2 for 2.5GbE LAN (Intel® I226-LM)	RJ-45 x 1 for 2.5GbE LAN I225-LM x 1 RJ-45 x 1 for GbE LAN I219-LM x 1
<b>I/O</b>	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 DB15 x 1 Male for Digital I/O 8-Channel 3-pin Terminal Block for DC In x 1 Power Button with LED x 1	USB Type-A x 2 for USB3.2 Gen2 USB Type-A x 4 for USB 2.0 DB-9 x 2 for RS-232/422/485 SMA Antenna Holes x 2 DB-9 for DIO 4 bit x 1 Power Button x 1
<b>Expansion</b>	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	M.2 M key 2280 x 1 (PCIe + SATA, PCIe Gen4 default) Full-size Minicard x 1 (PCIe + USB + SATA)
<b>Indicator</b>	—	System Power LED x 1 (Green)
<b>OS support</b>	Windows® 10 IoT Enterprise Windows® 11 Pro Linux Ubuntu 22.04	Windows® 10, Windows® 10 IoT, Ubuntu 20.04.2
<b>Power Supply</b>		
<b>Power Requirement</b>	9 ~ 36V DC-In x 1 for 3-pin Terminal Block	DC-in 12V x 1 for Lockable DC Jack
<b>Mechanical</b>		
<b>Mounting</b>		Wallmount
<b>Dimensions (W x H x D)</b>	TBD	6.54" x 4.65" x 2.2" (166 mm x 118 mm x 56 mm)
<b>Gross Weight</b>	TBD	3,3 lb (1.5Kg)
<b>Net Weight</b>	TBD	2.20 lb (1Kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-4°F ~ 140°F (-20°C ~ 60°C), according to IEC68-2 with 0.5 m/s AirFlow (w/ Industrial wide Temp. SSD/RAM)	14°F ~ 131°F (-10°C ~ 55°C), IEC68-2 with 0.5 m/s AirFlow (Turbo boost off)
<b>Storage Temperature</b>		-40°F ~ 176°F (-40°C ~ 80°C)
<b>Storage Humidity</b>		5 ~ 95% @ 40°C, non-condensing
<b>Anti-Vibration</b>	3 Grms/ 5 ~ 500Hz/ operation (with SSD)	SSD: Random, 3.5Grms, 5~500Hz
<b>Anti-Shock</b>	50G, IEC 68-2-27, half sine, 11 ms duration (with SSD)	SSD: 50G @ wallmount, Half-sine, 11ms
<b>Certification</b>	CE/FCC Class A	CE/FCC Class A
<b>Note</b>		



## Ultra Slim Fanless BOX PC Solutions



Model	BOXER-6451-ADP
<b>System</b>	
<b>CPU</b>	Intel® Core™ i7-1265UE Intel® Core™ i5-1245UE Intel® Core™ i3-1215UE Intel® Celeron® 7305E
<b>Chipset</b>	Intel® SoC
<b>System Memory</b>	DDR4 SODIMM x1, up to 32GB
<b>Display Interface</b>	HDMI Type A x 2 for HDMI 1.4b
<b>Storage Device</b>	2.5" SATA-III Drive Bay x1 M.2 2280 M Key x1 (PCIEx4)
<b>Ethernet</b>	RJ-45 x 1 for 2.5GbE LAN i226-LM x 1 RJ-45 x 1 for GbE LAN i219-LM x 1
<b>I/O</b>	USB Type-A x 3 for USB3.2 Gen2 USB Type-A x 1 for USB 2.0 DB-9 x 4 for RS-232/422/485 HDMI x2 for HDMI 1.4b Power Button x 1 DC Jack 12V input Antenna opening x 6
<b>Expansion</b>	M.2 E-Key 2230 x1 (For WiFi/Bluetooth Module) M.2 B-Key 3052 x1 w/ SIM (For LTE/5G Module) M.2 M-Key 2280 NVMe x1
<b>Indicator</b>	Power Button with LED
<b>OS support</b>	Windows® 10 IoT Ent LTSC Windows® 11 PRO Ubuntu 22.04
<b>Power Supply</b>	
<b>Power Requirement</b>	DC-in 12V x 1 for Lockable DC Jack
<b>Mechanical</b>	
<b>Mounting</b>	Wallmount
<b>Dimensions (W x H x D)</b>	7.68" x 4.37" x 2.5" (195 mm x 111 mm x 63.5 mm) w/o bracket
<b>Gross Weight</b>	4.4 lb (2Kg)
<b>Net Weight</b>	3.3 lb (1.5Kg)
<b>Environmental</b>	
<b>Operating Temperature</b>	-4°F ~140°F (-20°C ~ 60°C), IEC68-2 with 0.5 m/s AirFlow with wide temperature Memory/Storage
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing
<b>Anti-Vibration</b>	SSD: Random, 3Grms, 5~500Hz
<b>Anti-Shock</b>	SSD: 50G @ wallmount, Half-sine, 11ms
<b>Certification</b>	CE/FCC class A
<b>Note</b>	



## DIN Rail Fanless BOX PC



Model	BOXER-6751-ADP	BOXER-6750
<b>System</b>		
<b>CPU</b>	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
<b>Chipset</b>	Intel® SoC	Intel® System on Chip
<b>System Memory</b>	DDR4 SODIMM x 1, up to 32GB	DDR4 2133MHz SODIMM slot x 1, up to 16GB
<b>Display Interface</b>	HDMI 1.4b (Type-A) x 2	HDMI x 1, VGA x 1
<b>Storage Device</b>	2.5" SATA III Drive Bay x 1 M.2 2280 M-Key x 1 (PCIe [x4])	mSATA, HDD/SSD
<b>Ethernet</b>	RJ-45 x 1 for Intel® I226-LM, 2.5GbE RJ-45 x 1 for Intel® I219-LM, GbE	Intel® i211-AT x 2
<b>I/O</b>	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
<b>Expansion</b>	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)
<b>Indicator</b>		Power Button with LED
<b>OS support</b>	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
<b>Power Supply</b>		
<b>Power Requirement</b>	DC 9 - 36V with 3-pin terminal block	9 - 30V with 3-pin terminal block
<b>Mechanical</b>		
<b>Mounting</b>		DIN Rail Mount Wallmount (Mounting kit is optional)
<b>Dimensions (W x H x D)</b>	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)
<b>Gross Weight</b>	5.3 lb (2.41 Kg)	6.1 lb (2.8kg)
<b>Net Weight</b>	3.9 lb (1.77 Kg)	3.9 lb (1.8kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-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)
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)	-49°F ~ 176°F (-45°C ~ 80°C)
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing	95% @ 40°C, non-condensing
<b>Anti-Vibration</b>	With SSD: Random, 3 Grms, 5~500Hz	3 Grms/ 5 ~ 500Hz/ operation – mSATA/SSD 1 Grms/ 5~ 500Hz/ operation – HDD
<b>Certification</b>		CE/FCC class A
<b>Note</b>		





# System Level Products

## DIN Rail Fanless BOX PC

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DIN Rail Fanless BOX PC

Launching in Q3



Model	BOXER-6711-ADN	BOXER-6710
<b>System</b>		
<b>CPU</b>	Intel Atom® X7211E Intel® Processor N200 Intel® Processor N50	Intel® Pentium® processor N4200 Intel® Celeron® processor N3350
<b>Chipset</b>	Intel® SoC	Intel® System on Chip
<b>System Memory</b>	DDR5 4800 MT/s SO-DIMM slot x 1, up to 32GB	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)
<b>Display Interface</b>	HDMI x 2 / Display Port x 1	HDMI, VGA
<b>Storage Device</b>	M.2 2280 M Key Slot x1 (PCIex2) 2.5" SATA HDD/SSD x1	HDD/SSD, optional mSATA
<b>Ethernet</b>	RJ-45 x 2 for 2.5GbE LAN (Intel® I226)	Intel® i211-AT x 2
<b>I/O</b>	HDMI x 2 RJ-45 x 2 for 2.5GbE LAN (Intel® I226) USB Type-A x2 for USB3.2 Gen2 USB Type-A x2 for USB 2.0 DB-9 x 3 for RS-232/422/485 DB15 x 1 for 8-bit DIO 3pin 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
<b>Expansion</b>	M.2 2280 M Key x 1 (PCIex2) M.2 2230 E Key x 1 Full-Size Minicard x1 (PCIe + USB) SIM Slot x 1	Full-size Minicard x 1 w/ SIM Slot Half-size Minicard x 1 (optional for mSATA)
<b>Indicator</b>	—	Power LED on power button
<b>OS support</b>	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
<b>Power Supply</b>		
<b>Power Requirement</b>	DC-in 9-36V x1 for 3-pin Terminal Block	9 - 24V with 3-pin terminal block
<b>Mechanical</b>		
<b>Mounting</b>	DIN Rail Mount	DIN Rail Mount
<b>Dimensions (W x H x D)</b>	TBD	1.73" x 6.54" x 4.17" (44mm x 166mm x 106mm)
<b>Gross Weight</b>	TBD	3.08lb (1.4kg)
<b>Net Weight</b>	TBD	1.32lb (0.6kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-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)
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)	-49°F ~ 176°F (-45°C ~ 80°C)
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing	95% @ 40°C, non-condensing
<b>Anti-Vibration</b>	3 Grms/ 5 ~ 500Hz/ operation (with SSD)	3 Grms/ 5 ~ 500Hz/ operation – mSATA/SSD 1 Grms/ 5 ~ 500Hz/ operation – HDD
<b>Certification</b>		CE/FCC class A
<b>Note</b>		





Model	BOXER-6839	BOXER-6839-CFL
<b>System</b>		
<b>CPU</b>	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® i7-8700TE Intel® i7-8700T Intel® i5-8500T Intel® i3-8100T Pentium® G5400T Celeron® G4900T
<b>Chipset</b>	Intel® Q170	C246
<b>System Memory</b>	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
<b>Display Interface</b>	HDMI, VGA	HDMI x 2
<b>Storage Device</b>	CFast™, HDD/SSD	2.5" SATA HDD/SSD Bay x 2
<b>Ethernet</b>	Intel® i210, 10/100/1000 Base-TX x 3	RJ-45 x 4 for GbE LAN (i211-AT x 3, i219-LM x 1)
<b>I/O</b>	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
<b>Expansion</b>	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)	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
<b>Indicator</b>	Power LED HDD active LED	HDD LED x 1 System LED x 1
<b>OS support</b>	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
<b>Power Supply</b>		
<b>Power Requirement</b>	9 - 36V with 3-pin terminal block	3-pin Phoenix DC Input 10~35V
<b>Mechanical</b>		
<b>Mounting</b>		Wallmount
<b>Dimensions (W x H x D)</b>	10.40" x 4.90" x 6.15" (264.2mm x 124.5mm x 156.2mm)	264mm x 156mm x 125mm
<b>Gross Weight</b>		13.2 lb (6.0 kg)
<b>Net Weight</b>		9.9 lb (4.5 kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-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)
<b>Storage Temperature</b>		-49°F ~ 176°F (-45°C ~ 80°C)
<b>Storage Humidity</b>		5~95% @ 40°C, non-condensing
<b>Anti-Vibration</b>	5 Grms/ 5 ~ 500Hz/ operation -- SSD/CFast™ card 1 Grms/ 5~ 500Hz/ operation -- HDD	5 Grms/ 5 ~ 500Hz/ operation --SSD
<b>Anti-Shock</b>	—	SSD: 50G @ wallmount, Half-sine, 11ms
<b>Certification</b>		CE/FCC class A
<b>Note</b>		



## Expandable Fanless BOX PC Solutions



Model	BOXER-6840-CFL	BOXER-6841M-A1
<b>System</b>		
<b>CPU</b>	Intel® Xeon® E-2124G Intel® Core™ i9-9900T Intel® Core™ i7-8700T Intel® Core™ i5-8500T Intel® Core™ i3-8100T Intel® Pentium® G5400T Intel® Celeron® G4900T Note: Support max. TPD 71W Processor	6th / 7th Generation Intel® Core™-i desktop Processor -Intel® Core™ i7-6700TE, 2.4 GHz -Intel® Core™ i5-6500TE, 2.3 GHz -Intel® Core™ i3-6100TE, 2.7 GHz -Intel® Core™ i7-7700, 3.6 GHz -Intel® Core™ i7-7700T, 2.9 GHz -Intel® Core™ i3-7101TE, 3.4 GHz
<b>Chipset</b>	C246, No H310 downward support	Intel® H110 PCH
<b>System Memory</b>	DDR4 SO-DIMM socket x4 (double deck) Support max. 2666MHz up to 128GB Support un-buffered and ECC / non-ECC type SODIMM	DDR4 ECC or Non-ECC SODIMM, up to 32GB
<b>Display Interface</b>	HDMI 1.4 x2 Support Dual Independent Display, 4K Ultra HD displays	HDMI type A x 2 for HDMI v1.4b
<b>Storage Device</b>	2.5" SATA Drive Bay x2 (4 SATA Port w/ RAID Function) Half-size M.2 SATA x1 for mSATA (optional) M.2 2280 NVMe slot x1	2.5" Drive Bay x 2
<b>Ethernet</b>	RJ-45 x3 for GbE LAN (Intel i211AT x2, i219LM x1)	RJ-45 x 5 for GbE (Intel i211AT x 4, i219LM x 1)
<b>I/O</b>	USB Type-A x6 for USB3.2 Gen1 DB9 x4 For RS-232/422/485 Mic-in x1, Line-out x1 Power ON/OFF switch x1 Remote power on/off connector x1 Reset switch x1 SMA Antenna Holes x3	2 pin Remote Power on/off connector Power ON/OFF Switch x 1 HDMI 1.4b x 2 Audio x 2 (MIC-in, Line-out) USB 3.2 Gen 1 x 4 DB-9 x 1 for RS-232/422/485 3 pin DC Power input x 1 (+, -, GND)
<b>Expansion</b>	Full-size M.2 SATA x1 (PCIe + USB with 1 SIM Slot) Half-size M.2 SATA x1 (PCIe + USB, optional for mSATA) M.2 M key (2280) x1 (PCIe x4) PCIe [x4] x1 PCIe [x16] x1 - Max. Power Consumption of GPU card 250W - Max. Size of GPU card 250mm x 125mm x 20mm Note: If the GPU card dimension is 250mm x 125mm x 40mm, we can change the riser card inside to support.	Full-size Mini card x 2 (USB, w/ 1 SIM slot) PCIe [x1] x 1 PCIe [x16] x 1 - Power Consumption of GPU card max. 180W - Max. size of GPU card 312 x 113 x 40 mm (Option) Max. size of GPU card 312 x 113 x 60 mm (Riser Card: 9697T50300)
<b>Indicator</b>	System Power LED x1 (Green) Storage Active LED x1 (Red)	Power LED x 1, HDD active LED x 1
<b>OS support</b>	Windows® 10 Enterprise 64 bit Ubuntu 20.04.1/Kernel 5.4	Skylake S Windows® 10, Windows® 10 IoT, Windows® 8.1, Windows® Embedded Standard 8, Windows® 7, Windows® Embedded Standard 7, Ubuntu 16.04.2 Kabylake Windows® 10, Windows® 10 IoT, Ubuntu 16.04.2
<b>Power Supply</b>		
<b>Power Requirement</b>	DC In 12~24V x1 for 3-pin Terminal block	DC-In 12~24V - CPU < 65W, No Graphic Card: 120W Adapter - CPU ≤ 65W, 180W Graphic Card: 330W Adapter
<b>Mechanical</b>		
<b>Mounting</b>		Wallmount
<b>Dimensions (W x H x D)</b>	8.66" x 5.91" x 12.6" (220 mm x 150 mm x 320 mm)	6.10" x 7.87" x 15.75" (155mm x 200mm x 400mm)
<b>Gross Weight</b>	17.64 lb (8 kg)	18.29 lb (8.3 Kg)
<b>Net Weight</b>	15.43 lb (7 kg)	14.53 lb (7 Kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-4°F~140°F (-20°C ~ 60°C) IEC68-2 with 0.5 m/s AirFlow	-4°F ~ 131°F (-20°C ~ 55°C) according to IEC60068-2 with 0.5m/s airflow (TDP 35W Processor)
<b>Storage Temperature</b>	-49°F ~ 176°F (-45°C ~ 80°C)	-4°F ~ 176°F (-40°C ~ 80°C)
<b>Storage Humidity</b>		5 ~ 95% @ 40°C, non-condensing
<b>Anti-Vibration</b>	SSD: Random, 1Grms, 5~500Hz	Random, 1 Grms, 5~500Hz, Anti-vibration design
<b>Anti-Shock</b>	SSD: 50G @ wallmount, Half-sine, 11ms	—
<b>Certification</b>	CE/FCC class A, UKCA	CE/FCC class A
<b>Note</b>		



## Expandable Fanless BOX PC Solutions



Model	BOXER-6841M-A2	BOXER-6841M-A3
<b>System</b>		
<b>CPU</b>	6th / 7th Generation Intel® Core™-i desktop Processor -Intel® Core™ i7-6700TE, 2.4 GHz -Intel® Core™ i5-6500TE, 2.3 GHz -Intel® Core™ i3-6100TE, 2.7 GHz -Intel® Core™ i7-7700, 3.6 GHz -Intel® Core™ i7-7700T, 2.9 GHz -Intel® Core™ i3-7101TE, 3.4 GHz	6th / 7th Generation Intel® Core™-i desktop and Xeon® server grade processor -Intel® Core™ i7-6700TE, 2.4 GHz -Intel® Core™ i5-6500TE, 2.3 GHz -Intel® Core™ i3-6100TE, 2.7 GHz -Intel® Core™ i7-7700, 3.6 GHz -Intel® Core™ i7-7700T, 2.9 GHz -Intel® Core™ i3-7101TE, 3.4 GHz -Intel® Xeon® E3-1268L v5, 2.40 GHz -Intel® Xeon® E3-1275 v6, 3.80 GHz
<b>Chipset</b>	Intel® H110 PCH	Intel® C236 PCH
<b>System Memory</b>	DDR4 ECC or Non-ECC SODIMM, up to 32GB	
<b>Display Interface</b>	HDMI type A x 2 for HDMI v1.4b	
<b>Storage Device</b>	2.5" Drive Bay x 2	
<b>Ethernet</b>	RJ-45 x 5 for GbE (Intel® i211AT x 4, i219LM x 1)	
<b>I/O</b>	2 pin Remote Power on/off connector Power ON/OFF Switch x 1 HDMI 1.4b x 2 Audio x 2 (MIC-in, Line-out) USB 3.2 Gen 1 x 4 DB-9 x 1 for RS-232/422/485 3 pin DC Power input x 1 (+, -, GND)	
<b>Expansion</b>	Full-size Mini card x 2 (USB, w/ 1 SIM slot) PCIe [x1] x 1 PCIe [x16] x 1 - Power Consumption of GPU card max. 250W - Max. size of GPU card 312 x 113 x 40 mm (Option) Max. size of GPU card 312 x 113 x 60 mm (Riser Card: 9697T50300)	Full-size Mini card x 2 (USB, w/ 1 SIM slot) PCIe [x1] x 1 PCIe [x16] x 1 - Power Consumption of GPU card max. 180W - Max. size of GPU card 312 x 113 x 40 mm (Option) Max. size of GPU card 312 x 113 x 60 mm (Riser Card: 9697T50300)
<b>Indicator</b>	Power LED x 1, HDD active LED x 1	
<b>OS support</b>	Skylake S Windows® 10, Windows® 10 IoT, Windows® 8.1, Windows® Embedded Standard 8, Windows® 7, Windows® Embedded Standard 7, Ubuntu 16.04.2 Kabylake Windows® 10, Windows® 10 IoT, Ubuntu 16.04.2	
<b>Power Supply</b>		
<b>Power Requirement</b>	DC-In 12–24V For System power, 12V only for Graphic Card - CPU < 65W, No Graphic Card: 120W Adapter - CPU ≤ 65W, 180W < Graphic Card < 250W: 240W Adapter x 2	DC-In 12–24V - CPU < 73W, No Graphic Card: 120W Adapter - CPU ≤ 73W, 180W Graphic Card: 330W Adapter
<b>Mechanical</b>		
<b>Mounting</b>	Wallmount	
<b>Dimensions (W x H x D)</b>	6.10" x 7.87" x 15.75" (155mm x 200mm x 400mm)	
<b>Gross Weight</b>	18.29 lb (8.3 Kg)	
<b>Net Weight</b>	14.53 lb (7 Kg)	
<b>Environmental</b>		
<b>Operating Temperature</b>	-4°F ~ 131°F (-20°C ~ 55°C) according to IEC60068-2 with 0.5m/s airflow (TDP 35W Processor)	-4°F ~ 131°F (-20°C ~ 55°C) according to IEC60068-2 with 0.5m/s airflow (TDP 35W Processor) -4°F ~ 113°F (-20°C ~ 45°C) according to IEC60068-2 with 0.5m/s airflow (TDP 73W Processor)
<b>Storage Temperature</b>	-4°F ~ 176°F (-40°C ~ 80°C)	
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	Random, 1 Grms, 5–500Hz, Anti-vibration design	
<b>Anti-Shock</b>	—	
<b>Certification</b>	CE/FCC class A	
<b>Note</b>		



## Expandable Fanless BOX PC Solutions



Model	BOXER-6841M-A4	BOXER-6841M-A5
<b>System</b>		
<b>CPU</b>	6th / 7th Generation Intel® Core™-i desktop and Xeon® server grade processor -Intel® Core™ i7-6700TE, 2.4 GHz -Intel® Core™ i5-6500TE, 2.3 GHz -Intel® Core™ i3-6100TE, 2.7 GHz -Intel® Core™ i7-7700, 3.6 GHz -Intel® Core™ i7-7700T, 2.9 GHz -Intel® Core™ i3-7101TE, 3.4 GHz -Intel® Xeon® E3-1268L v5, 2.40 GHz -Intel® Xeon® E3-1275 v6, 3.80 GHz	
<b>Chipset</b>	Intel® C236 PCH	
<b>System Memory</b>	DDR4 ECC or Non-ECC SODIMM, up to 32GB	
<b>Display Interface</b>	HDMI type A x 2 for HDMI v1.4b	
<b>Storage Device</b>	2.5" Drive Bay x 2	
<b>Ethernet</b>	RJ-45 x 5 for GbE (Intel i211AT x4, i219LM x 1)	
<b>I/O</b>	2 pin Remote Power on/off connector Power ON/OFF Switch x 1 HDMI 1.4b x 2 Audio x 2 (MIC-in, Line-out) USB 3.2 Gen 1 x 4 DB-9 x 1 for RS-232/422/485 3 pin DC Power input x 1 (+, -, GND)	
<b>Expansion</b>	Full-size Mini card x 2 (USB, w/ 1 SIM slot) PCIe [x1] x 1 PCIe [x16] x 1 - Power Consumption of GPU card max. 250W - Max. size of GPU card 312 x 113 x 40 mm (Option) Max. size of GPU card 312 x 113 x 60 mm (Riser Card: 9697150300)	Full-size Mini card x 2 (USB, w/ 1 SIM slot) PCIe [x8] x 2 Extension card size limit: 114.55mm(H) x 192mm (L) PCIe [x1] x 1
<b>Indicator</b>	Power LED x1, HDD active LED x1	
<b>OS support</b>	Skylake S Windows® 10, Windows® 10 IoT, Windows® 8.1, Windows® Embedded Standard 8, Windows® 7, Windows® Embedded Standard 7, Ubuntu 16.04.2 Kabylake Windows® 10, Windows® 10 IoT, Ubuntu 16.04.2	
<b>Power Supply</b>		
<b>Power Requirement</b>	DC-In 12–24V For System Power, 12V only for Graphic Card - CPU < 73W, No Graphic Card: 120W Adapter - CPU ≤ 73W, 250W Graphic Card: 240W Adapter x 2	DC-In 12–24V - CPU = 35W: 120W Adapter - 35W < CPU ≤ 73W: 240W Adapter
<b>Mechanical</b>		
<b>Mounting</b>	Wallmount	
<b>Dimensions (W x H x D)</b>	6.10" x 7.87" x 15.75" (155mm x 200mm x 400mm)	6.10" x 7.87" x 10.24" (155mm x 200mm x 260mm)
<b>Gross Weight</b>	18.29 lb ( 8.3 Kg)	12.75 lb (5.8 kg)
<b>Net Weight</b>	14.53 lb ( 7 Kg)	9.9 lb (4.5 Kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-4°F ~ 131°F (-20°C ~ 55°C) according to IEC60068-2 with 0.5m/s airflow (TDP 35W Processor) -4°F ~ 113°F (-20°C ~ 45°C) according to IEC60068-2 with 0.5m/s airflow (TDP 73W Processor)	
<b>Storage Temperature</b>	-4°F ~ 176°F (-40°C ~ 80°C)	
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	Random, 1Grm, 5~500Hz, Anti-vibration design	
<b>Anti-Shock</b>	—	
<b>Certification</b>	CE/FCC class A	
<b>Note</b>		



## Expandable Fanless BOX PC Solutions




Model	BOXER-6841M-A6	BOXER-6841M-A7
<b>System</b>		
<b>CPU</b>	6th / 7th Generation Intel® Core™-i desktop and Xeon® server grade processor -Intel® Core™ i7-6700TE, 2.4 GHz -Intel® Core™ i5-6500TE, 2.3 GHz -Intel® Core™ i3-6100TE, 2.7 GHz -Intel® Core™ i7-7700, 3.6 GHz -Intel® Core™ i7-7700T, 2.9 GHz -Intel® Core™ i3-7101TE, 3.4 GHz -Intel® Xeon® E3-1268L v5, 2.40 GHz -Intel® Xeon® E3-1275 v6, 3.80 GHz	
<b>Chipset</b>	Intel® C236 PCH	
<b>System Memory</b>	DDR4 ECC or Non-ECC SODIMM, up to 32GB	
<b>Display Interface</b>	HDMI type A x 2 for HDMI v1.4b VGA x 1	HDMI 1.4b
<b>Storage Device</b>	2.5" Drive Bay x 2	
<b>Ethernet</b>	RJ-45 x 5 for GbE (Intel® i211AT x4, i219LM x1)	
<b>I/O</b>	2 pin Remote Power on/off connector Power ON/OFF Switch x 1 HDMI 1.4b x 2 VGA x 1 Audio x 2 (MIC-in, Line-out) USB 3.2 Gen 1 x 4 DB-9 x 1 for RS-232/422/485 DB-9 x 4 for RS-232 3 pin DC Power input x 1 (+, -, GND)	Audio x 2 (MIC-in, Line-out) RJ-45 x 5 for GbE LAN USB Type A x 4 for USB 3.2 Gen 1 DB-9 x 1 for RS-232/422/485 HDMI type A x 2 for HDMI v1.4b Power ON/OFF Switch x 1 2 pin Remote Power on/off connector x1 Power input x 1
<b>Expansion</b>	Full-size Mini card x 2 (USB, w/ 1 SIM slot) PCIe[x8] x 2 Extension card size limit: 114.55mm(H) x 192mm (L) PCIe[x1] x 1	Full-size Mini card x2 (USB, w/ 1 SIM slot) PCIe [x1] x 1 PCIe [x16] x 1 - Power Consumption of GPU card max. 180W - Max. size of GPU card 190 x 113 x 40 mm (Option) Max. size of GPU card 190 x 113 x 60 mm (Riser Card: 9697T50300)
<b>Indicator</b>	Power LED x 1, HDD active LED x 1	
<b>OS support</b>	Skylake S Windows® 10, Windows® 10 IoT, Windows® 8.1, Windows® Embedded Standard 8, Windows® 7, Windows® Embedded Standard 7, Ubuntu 16.04.2 Kabylake Windows® 10, Windows® 10 IoT, Ubuntu 16.04.2	
<b>Power Supply</b>		
<b>Power Requirement</b>	DC-In 12~24V - CPU = 35W: 120W Adapter - 35W < CPU ≤ 73W: 240W Adapter	DC-In 12~24V - CPU < 73W, No Graphic Card: 120W Adapter - CPU ≤ 73W, 180W Graphic Card: 330W Adapter
<b>Mechanical</b>		
<b>Mounting</b>	Wallmount	
<b>Dimensions (W x H x D)</b>	6.10" x 7.87" x 10.24" (155mm x 200mm x 260mm)	
<b>Gross Weight</b>	12.75 lb (5.8 kg)	
<b>Net Weight</b>	9.9 lb (4.5 Kg)	
<b>Environmental</b>		
<b>Operating Temperature</b>	-4°F ~ 131°F (-20°C ~ 55°C) according to IEC60068-2 with 0.5m/s airflow (TDP 35W Processor) -4°F ~ 113°F (-20°C ~ 45°C) according to IEC60068-2 with 0.5m/s airflow (TDP 73W Processor)	
<b>Storage Temperature</b>	-4°F ~ 176°F (-40°C ~ 80°C)	
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing	
<b>Anti-Vibration</b>	Random, 1 Grms, 5~500Hz, Anti-vibration design	
<b>Anti-Shock</b>	—	
<b>Certification</b>	CE/FCC class A	
<b>Note</b>		



## Expandable Fanless BOX PC Solutions



Model	BOXER-6842M	BOXER-6843-ADS
<b>System</b>		
<b>CPU</b>	Intel® Xeon® E-1214G; 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. 1PD 71W Processor	12th Generation Intel® Core™/Celeron® Processor G Series, LGA-1700 Socket Type (formerly Alder Lake) TDP Max. 65W (LGA 6+0, LGA 8+8) Intel® Core™ i9-12900TE/i9-12900E Intel® Core™ i7-12700TE/i7-12700E Intel® Core™ i5-12500TE/i5-12500E Intel® Core™ i3-12100TE/i3-12100E Intel® Celeron® Processor G6900TE/G6900E
<b>Chipset</b>	C246, No H310 downward support	Q670E
<b>System Memory</b>	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 x 4, up to 128GB
<b>Display Interface</b>	HDMI x 2 Support Dual Independent Display, 4K Ultra HD displays	HDMI x 2 (Type-A) Display Port x 2
<b>Storage Device</b>	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)
<b>Ethernet</b>	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)
<b>I/O</b>	HDMI x 2, Audio (Mic-in, Line-out), USB 3.2 Gen1 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 (Auto-flow, 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
<b>Expansion</b>	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 (PCIe4) - Max. Power Consumption of GPU card 250W - Max. Size of GPU card 280mm x150mm x 40mm A2: PCIe [x4] x 1 + PCIe [x16] x 1 A3: PCIe [x4] x 1 + PCIe [x8] (in x16 slot) x 2 A4: PCIe [x4] x 1 + PCIe [x8] (in x16 slot) x 2, 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+M-Key x 2 Full-Size Mini Card x 1 (PCIe + USB)
<b>Indicator</b>	System Power LED x 1 (Green), Storage Active LED x 1 (Red)	—
<b>OS support</b>	Windows® 10 Enterprise 64 bit, Ubuntu 18.04.4	Windows® 10 IoT Enterprise LTSC 2021 Windows® 11 Pro Linux Ubuntu 22.04
<b>Power Supply</b>		
<b>Power Requirement</b>	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
<b>Mechanical Mounting</b>		Wallmount
<b>Dimensions (W x H x D)</b>	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)	TBD
<b>Gross Weight</b>	A2/A3: 18.52 lb (8.4 Kg); A4: 20.72 lb (9.4 Kg); A5: 20.5 lb (9.3 Kg)	TBD
<b>Net Weight</b>	A2/A3: 15.65 lb (7.1 Kg); A4: 17.86 lb (8.1 Kg); A5: 17.64 (8 Kg)	TBD
<b>Environmental</b>		
<b>Operating Temperature</b>	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 ~ 131°F (-20°C ~ 55°C), according to IEC68-2 with 0.5 m/s AirFlow (w/ Industrial wide Temp. SSD/RAM)
<b>Storage Temperature</b>	-49°F ~ 176°F (-45°C ~ 80°C)	-40°F ~ 176°F (-40°C ~ 80°C)
<b>Storage Humidity</b>		5 ~ 95% @ 40°C, non-condensing
<b>Anti-Vibration</b>	HDD: Random, 1Grm, 5~500Hz	3 Grms/ 5 ~ 500Hz/ operation (with SSD)
<b>Anti-Shock</b>	—	50G, IEC 68-2-27, half sine, 11 ms duration (with SSD)
<b>Certification</b>		CE / FCC class A
<b>Note</b>	 TAIWAN EXCELLENCE 2021	



## Expandable Fanless BOX PC Solutions : Frame Grabber Card



Model	PER-T479
<b>System</b>	
<b>Bus Interface</b>	PCI-Express® [x4], Gen 2 PCI-Express Specification Revision 2.1 at 5GT/s
<b>USB</b>	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)
<b>USB Connector</b>	4 USB 3.2 Gen 1 Type-A connectors with lockable screw threads
<b>OS Support</b>	Windows® 10, Windows® 8.1 (32/64-bit), Windows® 7(32/64-bit) Linux
<b>Power Supply</b>	
<b>Power Requirement</b>	12V from external IDE 4-pin power connector
<b>Mechanical</b>	
<b>Dimensions (W x D)</b>	4.72" x 4.21" (120mm x 107mm)
<b>Environmental</b>	
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C) (according to IEC68-2-14 with 0.5 m/s AirFlow ; with industrial devices)
<b>Storage Temperature</b>	-49°F ~ 176°F (-45°C ~ 80°C)
<b>Storage Humidity</b>	5 ~ 95% @ 40°C, non-condensing





Model	PER-T481	PER-T514
<b>System</b>		
<b>Bus Interface</b>	PCI-Express® [x4], Gen 2 PCI-Express Specification Revision 2.0 at 5GT/s	PCI-Express® [x4], Gen 2 PCI-Express Specification Revision 2.1 at 5GT/s
<b>USB</b>		
<b>USB Connector</b>		
<b>Ethernet</b>	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)
<b>OS Support</b>	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
<b>Power Supply</b>		
<b>Power Requirement</b>	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
<b>Mechanical</b>		
<b>Dimensions (W x D)</b>	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)
<b>Environmental</b>		
<b>Operating Temperature</b>	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)
<b>Storage Temperature</b>		-49°F ~ 176°F (-45°C ~ 80°C)
<b>Storage Humidity</b>		5 ~ 95% @ 40°C, non-condensing







Model	VPC-3350S	VPC-5600S
<b>System</b>		
<b>Form Factor</b>	Multi-PoE & Fanless Appliance	
<b>Processor</b>	Intel® Pentium®/ Celeron®/ Atom® Processor (Default: E3940; Project base: N4200/N3350, or E3950 w/ customized chassis)	Intel® 7th Gen. Core™ i3/i5/i7 Processor (Default: i3-7100U; Project base: i5-7300U, i7-7600U)
<b>Chipset</b>	—	
<b>Main Memory</b>	Up to 8GB, DDR3L 204-pin SODIMM	Up to 32GB, DDR4 260-pin SODIMM
<b>Display</b>	HDMI x 1, DP x 1	
<b>Ethernet</b>	Intel® i211 (colay i210)	LAN x 2 + 4 PoE Ports, RTL8111E 10/100/1000 Base
<b>Smart PoE</b>	4 ports, sharing 60W of power budget for every four PoE ports	
<b>RAID support</b>	—	
<b>Expansion Slot</b>	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 slot x 3 (USB2.0 x 2 + PCIe + USB 2.0 x 1) Built-in CAN 2.0B x 1
<b>GPS, G-Sensor</b>	Built-in GPS & G-Sensor (In-vehicle platform)	On board (GPS/GLONASS), G Sensor
<b>Front I/O Panel</b>	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 GbE port (RJ-45) x 2 PoE LAN x 4 (IEEE 802.3 at/af) DP x 1 Reset Button x 1
<b>Rear I/O Panel</b>	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 3,000 VDC), 4-ch digital output (Compatible 5 V/TTL, 31 mA max. per channel) DC 12V/1A Output x 1 RS-232/422/485 x 2 HDMI x 1 CanBus connector x 1, Audio Line-out x 1, Mic-In x 1 SIM slot x 2
<b>Storage</b>		
<b>HDD Tray</b>	2.5" HDD/SSD Bay x 1	2.5" SSD x 2
<b>CF/CFast/mSATA Slot</b>	—	mSATA Slot x 1 (If mSATA x 1 used, then only one SATA available)
<b>Environmental</b>		
<b>Operating Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C)	
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>Storage Humidity</b>	10%~80% @40°C, non-condensing	
<b>Vibration/Shock</b>	MIL-STD-810G	
<b>Certification</b>	CE & FCC Class A, eMark Compliance Available Per Project Basis	CE & FCC Class A, EMARK
<b>Power Requirement</b>		
<b>Power Supply</b>	DC 12-24V; DC9-36V with power ignition (In-vehicle platform)	DC 10-36V, with ignition pin
<b>Mechanical</b>		
<b>Removable HDD Tray</b>	—	Hot swappable 2.5" SSD x 2 (Project base) via extension module
<b>Internal System HDD Bay</b>	—	2.5" HDD x 2
<b>Dimension</b>	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)
<b>Gross Weight</b>	3.96 lb (1.8 kg)	5.7 lb (2.6 kg)
<b>Note</b>	 	





Model	VPC-5620S	VPC-5640S
<b>System Form Factor</b>	Multi-PoE & Fanless Appliance	Multi-PoE & Fanless Appliance
<b>Processor</b>	Intel® Whisky Lake Processor (Default: i7-8665UE; Project base: i5-8365UE, i3-8145UE or 4305UE)	Default: 12th Generation Intel® Core™ i7-1265UE Processor Project Based: Intel® Core™ i5-1245UE Intel® Core™ i3-1215UE
<b>Chipset</b>		
<b>Main Memory</b>	Up to 64GB, DDR4 260-pin SODIMM	DDR5 SODIMM x 2, up to 64GB
<b>Display</b>	HDMI x 1, DP x 1	HDMI x 2
<b>Ethernet</b>	1x GbE, Intel i211, support Wake on LAN and PXE supported	2.5GbE x 1 (Intel® I226-LM)
<b>Smart PoE</b>	4 ports, IEEE 802.3 at/af, sharing 60W of power budget for every four PoE ports. Able to power management in each independent PoE port (SDK available)	2.5GbE x 4 (IEEE802.3 at/af, sharing 60W of power budget for every four PoE ports)
<b>RAID support</b>	0/1	—
<b>Expansion Slot</b>	IS: mPCIe Full-Size (USB+PCIe) x 1 mPCIe Full-Size (USB+SATA) colay SATA x 1 M.2 2280 (USB+PCIe), support NVME PCIe [x4] SSD x 1 VS: mPCIe Full-Size (USB+PCIe) x 3 mPCIe Full-Size (USB+SATA) colay SATA x 1 M.2 2280 (USB+PCIe), support NVME PCIe [x4] SSD 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)
<b>GPS, G-Sensor</b>	VS:Built-in GPS, Gyro & G-Sensor	VS:Built-in GPS, NEO-M9V & G-Sensor
<b>Front I/O Panel</b>	RJ45 Smart PoE Port (60W) x 4, USB 3.2 Gen 1 x 4, Giga LAN x 1, DP x 1, Power button, Status LED, HDD LED, Wireless LED, Micro SIM slots(IS) x 2, Micro SIM slots(VS) x 4, Antenna holes x 2, CANbus (VS) x 1, RS-232 (VS) x 3	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
<b>Rear I/O Panel</b>	jack for Line out & MIC in x 1 HDMI x 1 RS-232/422/485 (Isolated by BOM option) x 2 HW Reset x 1, 3pin Power input x 1 8 bits DIO (Isolated 4DI & 4DO / 8DI/ 8DO by BOM option) Antenna holes 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
<b>Storage</b>		
<b>HDD Tray</b>	IS:2.5" HDD/SSD Bay x 2 VS:2.5" HDD/SSD Bay x 1	2.5" HDD/SSD Bay x 1
<b>CF/CFast/mSATA Slot</b>		—
<b>Environmental</b>		
<b>Operating Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C)	-40°F ~ 158°F (-40°C ~ 70°C), IEC68-2 with 0.5 m/s AirFlow
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)	-40°F ~ 176°F (-40°C ~ 80°C)
<b>Storage Humidity</b>	10%~80% @40°C, non-condensing	5 ~ 95% @ 40°C, non-condensing
<b>Vibration/Shock</b>		MIL-STD-810G
<b>Certification</b>	CE & FCC Class A	CE/FCC class A, UKCA, E-Mark
<b>Power Requirement</b>		
<b>Power Supply</b>	IS:DC 12-24V; VS:DC10-36V with power ignition	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
<b>Mechanical</b>		
<b>Removable HDD Tray</b>		—
<b>Internal System HDD Bay</b>	IS:2.5" HDD/SSD Bay x 2 VS:2.5" HDD/SSD Bay x 1	2.5" HDD/SSD Bay x 1
<b>Dimension</b>	IS:6.3" x 5.87" x 2.16" (180mm x 149mm x 55mm) VS:6.3" x 5.87" x 2.95" (180mm x 149mm x 75mm)	9.06" x 6.54" x 2.99" (230mm x 166.2mm x 76mm)
<b>Gross Weight</b>	TBD	TBD
<b>Note</b>		





Model	UP-GWS01	UPS-GWS01
<b>System</b>		
<b>CPU</b>	Intel Atom® x5-Z8350 Processor (2M Cache, 1.44 GHz up to 1.92 GHz)	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC/ Atom® E3950
<b>Memory</b>	Onboard DDR3L memory	Onboard Single/ Dual Channel LPDDR4 memory, Max. 8GB
<b>Graphics</b>	Intel® HD Graphics 400, 12 EU Gen 8, up to 500MHz Support DX**11.1/12, Open GL*4.2, Open CL*1.2 OGL ES3.0, H.264, HEVC (decode), VP8	Intel® Graphics, GEN 9
<b>Storage</b>	Onboard eMMC	eMMC ver 5.0 x 1, Max. 128G Optional: Full-sized Mini-PCIe x 1 SATA3 x 1
<b>Ethernet</b>	GbE LAN x 1	Realtek® 8111G x 2
<b>WIFI/BT</b>	Wi-Fi (Optional)	Optional: M.2 2230 x 1
<b>Audio</b>	HDMI x 1	HDMI x 1, DP x 1
<b>USB</b>	USB 2.0 x 4, USB 3.0 x 1 (OTG)	USB3.0 x 3
<b>Expansion Slot</b>	—	Full-sized Mini-PCIe x 1 (PCIe & SATA + USB2.0) M.2 2230 x 1
<b>I/O Placements</b>		
<b>Power</b>	DC-in Jack x 1	DC-in Jack x 1, Power Button x 1
<b>USB</b>	USB 2.0 x 4, USB 3.0 x 1 (OTG)	USB3.0 x 2, USB3.0 OTG x 1/ USB3.0 x 1
<b>Display Port</b>	HDMI x 1	HDMI x 1, DP x 1
<b>Ethernet</b>	GbE LAN x 1	Realtek® 8111G x 2
<b>COM</b>		—
<b>Environment</b>		
<b>Power</b>	5V/4A DC Only	5V DC Only
<b>Form Factor</b>	3.74" x 3.58" x 1.46" (95mm x 91mm x 37mm)	3.74" x 3.74" x 1.97" (95mm x 95mm x 50mm)
<b>Gross Weight</b>		—
<b>Operating Temperature</b>	32°F ~ 104°F (0°C ~ 40°C)	32°F ~ 113°F (0°C ~ 45°C)
<b>Operating Humidity</b>		0% ~ 90% relative humidity non-condensing
<b>Certification</b>	CE/FCC Class A	CE, FCC Class A, UL
<b>OS Support</b>	Windows® 10, Linux, Windows® 10 IoT Core	Windows® 10, Linux, Android 7.0, Windows® 10 IoT core
<b>Note</b>		



Model	UP 4000 Edge	UP Squared V2 Edge
<b>System</b>		
<b>CPU</b>	Intel® Pentium® N4200/ Celeron® N3350/ Atom® E3950	Intel® Celeron® N6210 Processor SoC Intel® Celeron® J6412 Processor SoC Intel® Pentium® J6426 Processor SoC
<b>Memory</b>	Onboard LPDDR4 Memory up to 8GB	Up to 16GB LPDDR4
<b>Graphics</b>	Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264, VP8	Intel® UHD Graphics
<b>Storage</b>	Onboard eMMC Storage up to 64GB	Up to 64GB eMMC
<b>Ethernet</b>	Gb Ethernet (full speed) RJ-45 x 1	Gb Ethernet (full speed) RJ-45 x 2
<b>WiFi/BT</b>		—
<b>Expansion Slot</b>	—	M.2 2230 E-Key x 1 (PCIe x2, USB2.0 x1) M.2 2280 M-key x 1 (PCIe x2) SATA3 x 1
<b>Security</b>	TPM 2.0	Onboard TPM 2.0
<b>OS Support</b>	Microsoft Windows 10 (full), Windows IOT Core Yocto project 3.1 Kernel 5.4 Ubuntu 18.04	Microsoft Windows 10 (full) Windows IOT Core Ubuntu 20.04 LTS Yocto 3.1
<b>I/O Placements</b>		
<b>USB</b>	USB 3.2 Gen 1 (Type A) x 3 USB 3.0 OTG via USB type C x1	USB 2.0 x 2 (from 10 pin wafer x 1) USB 3.2 Gen 2 Type A x 3
<b>Display Port</b>	HDMI 1.4b DP via USB type C	HDMI 1.4b x 1 DP 1.2 x 1
<b>Ethernet</b>	RJ45 x1	Gb Ethernet (full speed) RJ-45 x 2
<b>COM</b>	—	RS-232/422 x 1
<b>Audio</b>	Line out x 1 Mic in x 1	Line out x 1 Mic in x 1
<b>GPIO</b>		—
<b>POWER Supply</b>		
<b>Power requirement</b>		12V DC-in @5A
<b>Power supply type</b>	DC Jack, 5.5-2.1mm /phoenix co-lay	AT/ATX
<b>Power Consumption (Typical)</b>	12V @ 1.25A (15Watt)	30~38W
<b>MECHANICAL</b>		
<b>Mounting</b>		VESA Mounting
<b>Dimensions (WxHxD)</b>	3.62" x 2.52" x 1.78" (92 x 64 x 45.2 mm)	3.74" x 3.74" x 2.16" (95 x 95 x 55 mm)
<b>Net Weight</b>	0.64lb (290g)	0.99lb (450g)
<b>Gross Weight</b>	1.21lb (549g)	1.32lb (600g)
<b>Environment</b>		
<b>Operating Temperature</b>		32°F ~ 140°F (0°C ~ 60°C) with air flow 0.5m/s
<b>Operating Humidity</b>	10% ~ 80% relative humidity, non-condensing	0% ~ 90% relative humidity, non-condensing
<b>Storage Temperature</b>		-4°F ~ 158°F (-20°C~70°C)
<b>MTBF</b>	538,629 hrs @ 30°C	465,586
<b>Certification</b>		CE/FCC Class A, RoHS Compliant, REACH
<b>Note</b>		





Model	UPN-Edge Pro	UP Squared 6000 Edge
<b>System</b>		
<b>CPU</b>	Intel® Apollo Lake N4200/N3350/E3950 Processor SoC	Intel® Atom® X6413E / X6425RE, Celeron® N6210 (no PSE), Pentium® J6426 Processor SoC
<b>Memory</b>		Onboard DDR4, Max 8GB Single Channel: 2 GB Dual Channel: 4 GB, 8 GB
<b>Graphics</b>	Intel® Graphic ,Gen 9	Intel® UHD Graphics
<b>Storage</b>	Emmc 32G/64G	Onboard eMMC 32G/64G Optional with M.2 2280 M-key x 1, SATA3 x 1
<b>Ethernet</b>	Intel i210 x2	GbE x 1, 2.5GbE x 1 Atom: Intel® i210-IT, i225-IT PC Client: Intel® i211-AT, i225-V
<b>WIFI/BT</b>	Optional	Optional with M.2 2230 E-key x 1
<b>Audio</b>	Line out+mic in x1	Line out x 1 Mic in x 1
<b>USB</b>	USB 3.2 Gen 1 OTG x 1 USB 3.2 Gen 1 (Type A) x 3	USB 3.2 Gen 2 Type A x 2 USB 3.2 Gen 2 Type C (support OTG) x 1 (Limited to Atom series)
<b>Expansion Slot</b>	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)	40 pin GPIO x 1 M.2 2230 E-key x 1 M.2 2280 PCIe Gen3.0x2 M-key x 1 SATA3 x 1 M.2 3052 B-key x 1 Nano SIM slot x 1 TPM 2.0 (Limited to Atom series)
<b>I/O Placements</b>		
<b>Power</b>		DC-in Jack x 1, Power Button x 1
<b>USB</b>	USB3.2 Gen1 OTG x 1 USB3.2 Gen1 (Type A) x 3	USB 3.2 Gen 2 Type A x 2 USB 3.2 Gen 2 Type C (support OTG) x 1 (Limited to Atom series)
<b>Display Port</b>	HDMIx1, DP x1	HDMI 2.0b x 1 DP 1.2 x 1
<b>Ethernet</b>	Gb Ethernet (full speed) RJ-45 x 2 ( Intel i210)	RJ45 x 2
<b>COM</b>	RS422/RS232/RS485 x 2	RS232/RS422 x 1 (Limited to Atom series)
<b>Environment</b>		
<b>Power</b>	12-24VDC	12V DC-in (Lockable plug)
<b>Form Factor</b>	4.61" x4.19" x3.5" (117mm x 106.5mm x 88.8mm)	4.6" x 4.2" x 2.8" (11.7 x 10.6 x 7 cm)
<b>Gross Weight</b>	2.17 lb (982.5g)	2.31lb (1.05Kg)
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 55°C) with air flow 0.5m/s	With Heatsink: 32°F ~ 140°F (0°C ~ 60°) with air flow 0.5m/s
<b>Operating Humidity</b>		0% ~ 90% relative humidity, non-condensing
<b>Certification</b>		CE/FCC Class A, RoHS Compliant, REACH
<b>OS Support</b>	Microsoft Windows 10 (full), Windows IOT Core Linux: Ubuntu 18.04.5 & Ubuntu 20.04.1 Yocto 3.1	Microsoft Windows 10 (full), Windows IOT Core Linux: Ubuntu 20.04 LTS, Yocto 3.1
<b>Note</b>		





Model	UP Squared 6000 Edge Computing Kit	UPX-Edge
<b>System</b>		
<b>CPU</b>	Intel® Atom® X6425RE Processor SoC	8th generation Intel® Core™ i7/i5/i3/Celeron Processor SoC
<b>Memory</b>	Onboard 8GB DDR4	Onboard DDR4 memory, Max 16GB Single Channel: 4GB Dual Channel: 8GB, 16GB
<b>Graphics</b>	Intel® UHD Graphics	Intel® Graphics, GEN 9
<b>Storage</b>	Onboard eMMC 64G	eMMC 64GB
<b>Ethernet</b>	GbE x 3 (Intel® i210-IT x 1, Marvell Alaska x 2 from PSE), 2.5GbE x 1 (i225-IT)	i7/i5 SKU LAN (i210 AT) x 1, LAN (i219 LM) x 1 i3/Celeron® LAN (i210 AT) x 1, LAN (i219 V) x 1
<b>WiFi/BT</b>	Optional with M.2 2230 E-key x 1	Optional
<b>Audio</b>	Line out x 1 Mic in x 1	Line out + MIC x 1
<b>USB</b>	USB 3.2 Gen 2 Type A x 2 USB 3.2 Gen 2 Type C (support OTG) x 1 Micro USB (PSE debug port) x 1	USB 3.2 Gen 2 x 4
<b>Expansion Slot</b>	40 pin GPIO x 2 (1x from MB, 1x from CB(PSE)) M.2 2230 E-key x 1 M.2 2280 PCIe Gen3.0x2 M-key x 1 SATA3 x 2 (1x from MB, 1x from CB) M.2 3052 B-key x 1 Mini PCIe slot x 1 (via USB only) Nano SIM slot x 2 TPM 2.0	M.2 2230 E Key x 1 M.2 2280 M Key x 1 mPCIe slot x 1 100pin connector x 1 40 pin HAT x 1 SATA3 connector x 1 (support 2.5" HDD/SSD expansion)
<b>I/O Placements</b>		
<b>Power</b>	DC-in Jack x 1, Power Button x 1	
<b>USB</b>	USB 3.2 Gen 2 Type A x 2 USB 3.2 Gen 2 Type C (support OTG) x 1 Micro USB (PSE debug port) x 1	USB 3.2 Gen 2 STACK Connector for 2 ports (Front) x 1 USB 3.2 Gen 2 STACK Connector for 2 ports (Rear) x 1
<b>Display Port</b>	HDMI 2.0b x 1 DP 1.2 x 1	HDMI 2.0 x 1 (Support 4K at 60 Hz), DP 1.2 x 1, 16pin GPIO connectors (1 x GPIO for SMT32, 1 x GPIO for 40pin HAT)
<b>Ethernet</b>	RJ45 x 4	RJ45 connector x 2
<b>COM</b>	RS232/RS422 x 1 (From MB) RS232 x 1 (From CB(PSE))	RS-232/422/485 x 2
<b>Environment</b>		
<b>Power</b>	12V DC-in (Lockable plug)	12V - 60VDC
<b>Form Factor</b>	4.6" x 4.2" x 3.2" (11.7 x 10.6 x 8.2 cm)	7.48" x 5.12" x 3.1" (190mm x 130mm x 78.6mm)
<b>Gross Weight</b>	2.65lb (1.2Kg)	6.61lbs (3kg)
<b>Operating Temperature</b>	32°F ~ 122°F (0°C ~ 50°C)	eMMC: 32°F ~ 140°F (0°C ~ 60°C) SATA: -4°F ~ 158°F (-20°C ~ 70°C) With AI module: 32°F ~ 140°F (0°C ~ 60°C)
<b>Operating Humidity</b>	0% ~ 90% relative humidity, non-condensing	
<b>Certification</b>	CE/FCC Class A, RoHS Compliant, REACH	
<b>OS Support</b>	Preinstalled Software, Ubuntu 20.04 LTS and 5.13 Kernel Intel® Distribution of OpenVINO™ toolkit 2021 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	Win 10, Linux Ubuntu 18.04 with Kernel 5.0, Linux Yocto 2.7 with Kernel 4.19
<b>Note</b>		





Model	UP Xtreme i11 Edge	UP Xtreme i11 Edge Compute Enabling Kit
<b>System</b>		
<b>CPU</b>	11th Gen Intel® Core™ Processor SoC Core i7-1185G7E , Core i7-1185GRE, Core i5-1145G7E, Core i5-1145GRE, Core i3-1115GRE, Celeron® 6305E	11th Gen Intel® Core™ Processor SoC Core i7-1185GRE Core i5-1145GRE
<b>Memory</b>	DDR4 SO-DIMM Slot x 2 (up to 64GB 3200Mhz)	
<b>Graphics</b>	Intel® Iris® Xe graphics	
<b>Storage</b>	SATA CONN x 1 with POWER CONN (2.5" SSD) M.2 2280 M Key NVMe(Pcie [x2])	128GB 2.5" SSD x 1
<b>Ethernet</b>	Intel® i225IT x 1, Intel® i219 (vPRO) x 1	Intel® i225IT (TSN) x 1, Intel® i219 (vPRO) x 1
<b>WIFI/BT</b>	Optional	
<b>Audio</b>	Realtek ALC888s x 1 (Mic in /Line out)	
<b>USB</b>	USB 3.2 Gen2 x 3, USB 2.0 x 1 (Type A), USB 4.0 via USB type C	
<b>Expansion Slot</b>	M.2 2230 E-Key x 1 M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 with Micro-SIM SATA3.0 with power connector x 1 (2.5" SSD) Pcie x 4 slot (Optional)	M.2 2230 E-Key x 1 M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 with SIM
<b>I/O Placements</b>		
<b>Power</b>	12V DC-in (Lockable plug)/ Phoenix connector	
<b>USB</b>	USB3.2 Gen2 x 3, USB2.0 x 1 (Type A), USB4.0 via USB type C	
<b>Display Port</b>	HDM 2.0 x 1 /DP 1.4 x 1 eDP x 1, 4K at 60hz panel	
<b>Ethernet</b>	Intel® i225IT x 1, Intel® i219 (vPRO) x 1	
<b>COM</b>	RS232/422/485 x 2	
<b>Environment</b>		
<b>Power</b>	12V (AT & ATX)	
<b>Form Factor</b>	4.88" x 5.98" x 2.62" (124mm x 152mm x 66.5mm)	
<b>Gross Weight</b>	5.07 lb (2.3kg)	
<b>Operating Temperature</b>	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	32°F ~ 140°F (0°C ~ 60°C)
<b>Operating Humidity</b>	0% ~ 90% relative humidity, non-condensing	
<b>Certification</b>	CE,FCC Class A	
<b>OS Support</b>	Windows 10 /IOT, Yocto 3.1, Ubuntu 20.04.02	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
<b>Note</b>		





Model	UP Xtreme i12 Edge	UP Element i12 Edge
<b>System</b>		
<b>CPU</b>	Intel Core i7-1270PE/i5-1250PE/i3-1220PE/Celeron-7305E	Intel® Core™ i3-1215U / i5-1235U / i7-1255U / Celeron® 7305 Processor SoC
<b>Memory</b>	Onboard LPDDR5 Dual Channel up to 32GB	Onboard LPDDR5, 4GB / 8GB / 16GB / 32GB
<b>Graphics</b>	Intel® Iris® Xe graphics	Intel® Iris® Xe Graphics
<b>Storage</b>	M.2 2280 (PCIe Gen4.0 x 4) M-key x2 SATA3 x1	Optional with M.2 2280 M-key x 2
<b>Ethernet</b>	Intel i226IT (TSN) x1/ Intel i219 (vPRO) x1	GbE x 2 / 2.5GbE x 1 (All three support PXE function) Intel® i225-IT for 2.5G Gigabit Ethernet Intel® i219-LM for 1G Gigabit Ethernet Realtek RTL8111H for 1G Gigabit Ethernet
<b>WIFI/BT</b>	Optional via M.2 2230	Intel® AX211 Wi-Fi 6E (802.11ax)
<b>Expansion Slot</b>	M.2 2230 E-key x1 M.2 2280 (PCIe Gen4.0 x 4) M-key x2 SATA3 x1 M.2 3052 B-key x1 Nano SIM slot x1	M.2 3052 USB3.0/PCIe B-key x 1 (with Nano SIM slot) M.2 2280 SATA/PCIe Gen3.0 x2 M-key x 1 M.2 2280 PCIe Gen4.0 x4 M-key x 1
<b>Security</b>		TPM 2.0
<b>OS Support</b>	Windows* 10 Enterprise 2021 LTSC Ubuntu 22.04 Yocto 4.0	Microsoft Windows 10 Linux: Ubuntu 22.04 LTS
<b>I/O Placements</b>		
<b>USB</b>	USB3.2 Gen2 Type A x3 USB2.0 Type A x1 USB4.0 Type C x1	USB 3.2 Gen 2 Type A x 2 USB 2.0 Type A x 2 USB 3.2 Gen 1 Type C (support DP 1.4a) x 1
<b>Display Port</b>	HDMI 2.0b x1 DP 1.4a x1 DP 1.4a via USB type C x1 eDP1.4b x1	HDMI 2.0b x 1 DP 1.4a x 1
<b>Ethernet</b>	RJ45 x 2 for 1G/2.5GbE LAN	RJ45 x 3
<b>COM</b>	x 2 (RS232/422/485)	RS232/422/485 x 2 (pin header type)
<b>Audio</b>	Audio Jack x 1 ( Mic-in, Line out)	Mic x 1 / Line out x 1
<b>GPIO</b>	16 Pin terminal block connector x1	Isolation GPIO x 8in/8out (pin header type)
<b>POWER Supply</b>		
<b>Power requirement</b>	12-36V DC input (AT/ATX mode)	9-36V
<b>Power supply type</b>	Lockable	Ø2.5 Lockable connector
<b>Power Consumption (Typical)</b>	Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 5.86A@+12V (Typical)	Power Consumption (Typical): Intel® Core™ i7-1255U, LPDDR5 5200MHz 32GB, 4.47A@ 12V
<b>Power Consumption (Maximum)</b>	Intel® Core™ i7-1270PE, LPDDR5 4800MHz 16GB, 8.05A@+12V (Max)	Power Consumption (Maximum): Intel® Core™ i7-1255U, LPDDR5 5200MHz 32GB, 9.6A@ 12V
<b>MECHANICAL</b>		
<b>Mounting</b>	VESA Mount/Wall Mount	75mm x 75mm VESA mount, optional Wall mount kit
<b>Dimensions (WxHxD)</b>	152 x 123.8 x 71.5 mm	5.98" x 4.9" x 1.8" (152 x 125 x 48 mm)
<b>Net Weight</b>	1.34kg	2.21lb (1.0Kg)
<b>Gross Weight</b>	1.76kg	3.31lb (1.5Kg)
<b>Environment</b>		
<b>Operating Temperature</b>	0°C - 60°C degree with air flow 0.5m/s	With Heatsink: 32°F ~ 140°F (0°C ~ 60°) with air flow 0.5m/s (According Industrial wide temp. M.2 SSD)
<b>Operating Humidity</b>		0% ~ 90% relative humidity, non-condensing
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)	—
<b>MTBF</b>	366,810	—
<b>Certification</b>	CE/FCC Class A, RoHS Compliant, REACH	CE-RED/FCC Class A, RoHS Compliant, REACH Shock: MIL-STD-202G Method 213B, Table 213-I Condition A (with Absorber) Vibration: IEC 60068-2-6: 1G, 5-500Hz, 3 axes IEC 60068-2-64: Operating 5Grms, 5-500 Hz, 3 axes
<b>Note</b>		







Model	UP Squared Pro 7000 Edge
<b>System</b>	
<b>CPU</b>	Intel® Core™ i3-N305 Intel Atom® x7425E Intel® Processor N97 Intel® Processor N50 (formerly Alder Lake-N)
<b>Memory</b>	Up to 16GB LPDDR5
<b>Graphics</b>	Intel® UHD Graphics for 12th Gen Intel® Processors
<b>Storage</b>	Up to 64GB eMMC
<b>Ethernet</b>	2.5GbE x 2 (Intel® i225/i226)
<b>WIFI/BT</b>	Optional: M.2 2230 E-Key
<b>Expansion Slot</b>	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) SATA III x 1
<b>Security</b>	Onboard TPM 2.0
<b>OS Support</b>	Windows® 10 IoT Enterprise Ubuntu 22.04 LTS Yocto 4
<b>I/O Placements</b>	
<b>USB</b>	USB 3.2 Gen 2 x 2 (Type-A) USB 3.2 Gen 2 x 1 (Type-C)
<b>Display Port</b>	HDMI 2.0b x 1 DP 1.2 x 1 DP 1.4a via USB Type C
<b>Ethernet</b>	2.5GbE x 2 (Intel®i226-IT)
<b>COM</b>	RS-232/422/485 x 2
<b>Audio</b>	Audio Jack (Line out + MIC in) x 1
<b>GPIO</b>	40 pin GPIO x 1
<b>POWER Supply</b>	
<b>Power requirement</b>	12V DC-in, 6A
<b>Power supply type</b>	AT/ATX
<b>Power Consumption (Typical)</b>	26W~35W
<b>MECHANICAL</b>	
<b>Mounting</b>	VESA Mounting
<b>Dimensions (WxHxD)</b>	5.27" x 4.13" x 2.56" (134mm x 105mm x 65mm)
<b>Net Weight</b>	2 lbs (0.95kg)
<b>Gross Weight</b>	2.8 lbs (1.3kg)
<b>Environment</b>	
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C) / 0.5 airflow
<b>Operating Humidity</b>	0% ~ 90% relative humidity, non-condensing
<b>Storage Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C)
<b>MTBF</b>	422,053
<b>Certification</b>	CE/FCC Class A, RoHS Compliant, REACH
<b>Note</b>	



# System Level Products

## Turn-Key Chassis Solutions



Model		ACS-1U01-BT4
<b>System</b>		
<b>CPU</b>	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)	
<b>Chipset</b>	—	
<b>System Memory</b>	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	
<b>I/O Chipset</b>	Fintech 81866D	
<b>Display Interface</b>	<b>Chipset</b>	Intel® Graphics Media Accelerator
	<b>DP</b>	VGA x 1, Up to 1920 x 1200 @60 Hz ; HDMI x 1, Up to 1920 x 1200 @60 Hz
<b>Storage Devices</b>	2.5" HDD, Full-Size Mini-Card (optional)	
<b>Network</b>	<b>LAN</b>	Realtek® PCIe Gb LAN 8111G x 1
<b>I/O</b>		
<b>Front I/O</b>	<b>USB</b>	USB 2.0 port x 4
	<b>Audio</b>	—
	<b>Display</b>	VGA x 1
	<b>Others</b>	On/Off Button x 1, Power LED + HD LED x 1, (COM port optional if not use VGA port)
<b>Rear I/O</b>	<b>USB</b>	USB 3.2 Gen 1/2.0 port x 1, USB 2.0 port x 2
	<b>Audio</b>	Line-out (green) x 1, Line-in (blue) x 1
	<b>Display</b>	HDMI x 1
	<b>LAN</b>	RJ-45 connector x 1
	<b>Power</b>	DC Power x 1
	<b>Others</b>	RS-232 connector x 1
<b>Expansion</b>	<b>Mini PCIe</b>	Full-size Mini-Card (PCIe +USB or mSATA) + SIM Card (mSATA default) x 1, Half-size Mini-Card (PCIe +USB) x 1
	<b>Storage</b>	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
	<b>Others</b>	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
<b>Indicator</b>	<b>Front</b>	Power LED x 1, HDD Active LED x 1
	<b>Rear</b>	—
<b>Power</b>		
<b>Battery</b>	Lithium battery	
<b>Power Requirement</b>	DC: 12V	
<b>Mechanical</b>		
<b>Dimension (WxHxD)</b>	8" x 8" x 1.75" (203.20mm x 203.20mm x 44.45mm)	
<b>VESA Mounting</b>	Wallmount	
<b>Anti-Vibration</b>	0.5 Grms/ 5~ 500Hz/ operation – HDD	
<b>Anti-Shock</b>	10 G peak acceleration (11 msec. duration)	
<b>Environmental</b>		
<b>Operating temperature</b>	32°F ~ 122°F (0°C ~ 50°C)	
<b>Certificate</b>	CE & FCC Class A	
<b>Operating System</b>		
<b>MS Windows</b>	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit	
<b>Linux</b>	Fedora	
<b>Note</b>		





Model		ACS-1U01-H110B
<b>System</b>		
<b>CPU Board</b> EMB-H110B-A10-HH		
<b>CPU</b> Intel® Skylake 14nm LGA 1151 socket Processor, Max. 65W TDPs (follow thin mini-ITX)		
<b>Chipset</b> Intel® H110		
<b>System Memory</b> 2 x SODIMM, Max. 32GB, DDR4 2133/1867 MHz, Non-ECC, Un-buffered		
<b>I/O Chipset</b> NCT6791D		
<b>Display Interface</b> 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 coloy eDP: Up to 4096 x 2304 @60Hz		
<b>Storage Devices</b> 2.5" HDD x 1, Full-Size Mini-Card(mSATA default, PCIe + USB optional) x 1		
<b>LAN</b> Realtek® PCIe Gb LAN 8111G x 2		
<b>I/O</b>		
<b>Front I/O Ports</b> USB 2.0 port x 4 Power S/W x 1 COM port x 1 HDD LED x 1 POWER LED x 1		
<b>Rear I/O Ports</b> 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		
<b>Expansion</b>	<b>Mini PCIe</b>	Half-Size Mini-Card slot (PCIe + USB) x 1, Full-Size Mini-Card (Default mSATA, PCIe + USB optional) x 1
	<b>Storage</b>	Full-size Mini-Card slot (mSATA default) x 1, SATA3(6.0Gb/s) x 1, SATA power connector x 1
	<b>Others</b>	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
<b>Power</b>		
<b>Battery</b> Lithium battery		
<b>Power Requirement</b> DC: 12V		
<b>Mechanical</b>		
<b>Dimension (WxHxD)</b> 8" x 8" x 1.75" (203.20mm x 203.20mm x 44.45mm)		
<b>VESA Mounting</b> Wallmount		
<b>Anti-Vibration</b> 0.5 Grms/ 5~ 500Hz/ operation – HDD		
<b>Anti-Shock</b> 10 G peak acceleration (11 msec. duration)		
<b>Environmental</b>		
<b>Operating temperature</b> 32°F ~ 122°F (0°C ~ 50°C)		
<b>Certificate</b> CE & FCC Class A		
<b>Operating System</b>		
<b>MS Windows</b> Windows® 7 32 / 64-bit, Windows® 8.1 32 / 64-bit, Windows® 10 32 / 64-bit		
<b>Linux</b> Ubuntu 16.04.02/Kernal 4.8.0		
<b>Note</b>		

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





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



# System Level Products

## Edge Robot Processor



Model	RBX-I2000
<b>System</b>	
<b>Processor</b>	Intel® 11th Generation Core™ i7/i5/i3/Celeron SoC i7-1185G7E (4C, 1.7GHz, up to 4.4GHz, TDP-up 28W) i5-1145G7E (4C, 1.5GHz, up to 4.1GHz, TDP-up 28W) i3-1115G4E (2C, 2.2GHz, up to 3.9GHz, TDP-up 28W)
<b>Memory</b>	Max. up to 64G DDR4 3200MHz, SO-DIMM x 2, non-ECC type
<b>Storage</b>	M.2 2280 M Key slot x 1 (PCIe4x4), up to 2TB NVMe SSD 2.5" SATA SSD/HDD bay 3.0 x 1
<b>Real Time Clock</b>	RTC x 1, with 3V CR2032 Lithium battery
<b>Security</b>	TPM 2.0
<b>Indicators</b>	—
<b>Cellular</b>	—
<b>Wireless Lan</b>	M.2 2230 E Key slot x 1 (Wifi 802.11 ac/b/g/n, BT 5.0)
<b>Operating System</b>	Windows 10 IoT Enterprise / Linux (by request)
<b>Robot Framework&amp;Script</b>	ROS 1/ ROS 2, LiDAR-base SLAM script (*NDT algorithm)
<b>I/O Interfaces</b>	
<b>HDMI</b>	HDMI 2.0 x 1, support 3840 x 2160 @ 30Hz)
<b>Ethernet</b>	10/100/1GBase-T(X) Ethernet port x 3 2.5Gigabit Ethernet port x 1
<b>USB</b>	USB 3.0 Gen1 x 4
<b>Multi-I/O</b>	8-bit DIO, 2-channel CAN interface
<b>SyncOut</b>	1pps + time date output x4 for robot external sensors *note (*note Support Velodyne VLP-16, Xsens MTI-670, stereo camera)
<b>DB-9</b>	RS232/485 x 2 CAN-FD x 2 PM&GPIO interface x1
<b>Antenna</b>	FAKRA Z code for Wi-Fi x 2 FAKRA C code for GPS x 1
<b>Expansion Slot</b>	Mini PCIe slot x 1, 3026 for GPS module Mini PCIe slot x 1, 3052 for PEAK CANbus
<b>Power Connector</b>	2 Pin 3.81mm Pitch Phoenix Connector
<b>Other Interface</b>	—
<b>Power Supply</b>	
<b>Power Requirement</b>	DC 9 ~ 36V (Optional DC12V), AT Type
<b>Power Consumption</b>	67 W (Full Loading)
<b>Power Mode</b>	Support system auto-power on
<b>Environmental and Mechanical</b>	
<b>Dimension</b>	6.88" x 5.9" x 2.8" (175 x 150 x 72mm)
<b>Weight</b>	4.4lb (2kg)
<b>Mount Options</b>	Wall Mount
<b>Operation Temperature</b>	32 °F ~ 122 °F (0 °C ~ 50 °C)
<b>Storage Temperature</b>	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
<b>Operation Humidity</b>	10% ~ 90% relative humidity, non-condensing
<b>Vibration</b>	3Grms/ operation – eMMC, MicroSD (IEC68-2-64)
<b>Shock</b>	30G peak acceleration (11 msec. duration, eMMC, microSD, or SSD) IEC 68-2-27
<b>EMI</b>	CE & FCC class A
<b>Note</b>	

Model	AMR-TSMC
<b>Platform</b>	
<b>Processor</b>	High speed FPGA/VHDL
<b>GPS module</b>	Support SyncBotic's GPS module. (Use U-blox M9N, F9P module)
<b>IMU module</b>	Xsens MTI-670 9-axis IMU
<b>Board to board connector</b>	PPS (packet per second) + ToD (Time of Day) output x7 PPS (packet per second) output x4 I2C + PPS for controller side to update the time information x1 RS-232 output (Xsens sync raw data output) x1
<b>Xsens MTI670 9-axis IMU Specification</b>	
<b>Support list</b>	Gyroscope, Accelerometer, Magnetometer, Barometer, orthogonality
<b>Roll/Pitch</b>	Static: 0.2° Dynamic: 0.5°
<b>Yaw</b>	Dynamic: 1°
<b>Position</b>	Horizontal: 1.0m Vertical: 2.0m
<b>Velocity</b>	3D: 0.05m/s
<b>U-Blox GPS Specification</b>	
<b>Module type</b>	L1/L2 or RTK U-blox GPS high precision module
<b>Receiver type</b>	GPS L1C/A, SBAS L1C/A, QZSS L1C/A, QZSS L1 SAIF, GLONASS L10F, BeiDou B1, Galileo E1B/C, GPS/QZSS L2C, GLONASS L20F, Galileo E5b, BeiDou B2I, RTK
<b>Acquisition</b>	Cold start: 26s Hot start: 2s Aided start: 3s
<b>Re-convergence time</b>	RTK ≤ 10S (* Only on RTK module card)
<b>Power</b>	
<b>Storage Temperature</b>	9-55V DC ±5%
<b>Operation Humidity</b>	1.2W at 12VDC input
<b>Physical Characteristics</b>	
<b>Vibration</b>	75 x 50 x 23mm (2.95 x 1.968 x 0.917 inch)
<b>Shock</b>	M2 screw x4
<b>Environmental</b>	
<b>Operating Temperature</b>	-40°C to 75°C (-40°F to 167°F)
<b>Operating Humidity</b>	Approx. 95% @40 (non-condensing)
<b>Storage Temperature</b>	-40°C to 85°C (-40°F to 185°F)
<b>Vibration</b>	IEC 60068-2-64: 5Grms, 5-500Hz, 3 axes
<b>Shock</b>	Operating: 3G, half sine, 11ms duration
<b>EMI</b>	CE (EN 55032, EN 55035) & FCC class A (ANSI C63.4, 4a)
<b>Note</b>	





Model	iRSU
<b>System</b>	
Processor	Intel® Atom® x7-E3950 Processor
Memory	SO-DIMM DDR3L 8 GB
Storage	Onboard eMMC 64 GB mSATA via M.2 2242 B Key slot x 1
Indicators	LED Power Light x 1
Operating System	Windows 10/ Linux (by request)
<b>RF &amp; AI</b>	
Cellular	4G LTE CAT 4, Mini PCIe slot
Wireless Lan	WiFi 802.11 b/g/n/ac, M.2 2230 E key
VPU (Optional)	Intel Movidius Myriad X VPU, MA2485, M.2 2280 M key
C-V2X / DSRC (Optional)	3GPP Rel.14 Compliant LTE-V2X direct communications
<b>External I/O</b>	
Power Input	AC input x 1, waterproof connector Male type
Serial Port	RS-232 x 1, M12 waterproof connector Male type
SDI-12 (Optional)	SDI-12 port x 1, M12 waterproof connector Male type
Antenna	Internal 4G LTE antenna x 1 Internal Wi-Fi antenna x 2
Expansion Slot	Mini PCIe slot x 2, for 3G/4G LTE M.2 2230 E key x 1, for WiFi M.2 2280 M key x 1, for Myriad X VPU Micro SIM slot x 1
Other Interface	—
<b>Power Supply</b>	
Power Requirement	80-264 VAC
<b>Physical Characteristics</b>	
Enclosure	Plastic and Metal enclosure
Dimension	11.4" x 16.14" x 8.2" (290 x 410 x 209 mm)
Weight	TBD
Mounting/Installation	Pole mount, Wall mount (Optional)
<b>Environmental</b>	
Operating Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operating Humidity	10% ~ 90% relative humidity, non-condensing
Note	



**Focus • Agility • Competitiveness**



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# ► Network Platform Solutions

# 03



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# Network Platform Solutions

## Desktop Network Appliances



Model	FWS-2365	FWS-2360
<b>System</b>	Desktop Network Appliance	
<b>Form Factor</b>	Desktop Network Appliance	
<b>Processor</b>	Intel® Atom® Processor C3000 series (4–16 cores)	Intel® Atom™ Processor C3000 Series supports dual and quad core
<b>Chipset</b>	SoC	
<b>System Memory</b>	DDR4 SODIMM ECC x 2, up to 64GB	DDR4 SODIMM ECC DIMM (Dual core 1 slot Quad core 2 Slot) Up to 32GB
<b>Network</b>		
<b>Ethernet</b>	1GbE RJ-45 x 6 (2 ports co-lay SFP) 10G SFP+ x 4 (4 cores only support 2 port)	Intel® X553 (Marvell 88E1543) RJ45 x 4 Default Intel® i211 GbE x 2 (Intel® i210 SFP x 2 Optional)
<b>Bypass</b>	Supports 1 pairs on LAN 3-4	Supports up to 2 pairs bypass function
<b>Display</b>		
<b>Graphic Controller</b>		
<b>Connector</b>		
<b>Storage</b>		
<b>HDD</b>	SATA III port x 2, 2.5" HDD/SSD up to 2	2.5" HDD Bay x 1
<b>CF/CFast/MSATA</b>	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)
<b>Internal/ Expansion Interface</b>		
<b>PCIe Slot</b>		
<b>Mini-PCIe Slot</b>	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)
<b>Keyboard and Mouse</b>	Reserved pin-header	
<b>USB</b>	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
<b>Miscellaneous</b>		
<b>RTC</b>	Internal RTC	
<b>Watchdog Timer</b>	1~255 steps by software programmable	
<b>Software Button</b>	GPIO programmable push button x 1	—
<b>TPM</b>	TPM v2.0 9665	(TPM v1.2 9660/TPM2.0 9665 Optional)
<b>GPIO</b>	4 bits input/ 4 bits output	(4 bits input, 4bits output optional)
<b>Fan</b>	System fan x 1	
<b>MTBF (Hours)</b>	TBD	149683 Hours
<b>Color</b>	Black	
<b>Environmental Parameters and Dimension</b>		
<b>Power Requirement</b>	12V DC Power in connector 4 Cores: 40W Power Adapter 8 Cores and above: 60W Power Adapter	12V DC Power in connector
<b>Operating Temperature</b>	32°F ~ 104°F (0°C ~ 40°C)	
<b>Storage Temperature</b>	-4°F ~ 140°F (-20°C ~ 60°C)	
<b>Operating Humidity</b>	10%~80% relative humidity, non-condensing	
<b>Storage Humidity</b>	10%~80% @40°C; non-condensing	
<b>Vibration</b>	0.5 Grms/ 5 ~ 500Hz / operation (2.5" HDD) 1.5 Grms/ 5 ~ 500Hz / non operation	
<b>Shock</b>	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation	
<b>Dimension (W X D X H)</b>	260mm x 178mm x 44mm	8.66" x 4.13" x 1.73" (220mm x 105mm x 44mm)
<b>I/O</b>		
<b>Front Panel</b>	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)
<b>Rear Panel</b>	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)
<b>Note</b>		




# Network Platform Solutions

## Desktop Network Appliances

03

Expandable Fanless BOX PC Solutions



Model	FWS-2280	FWS-2276
<b>System</b>	Desktop Network Appliance	
<b>Form Factor</b>	Desktop Network Appliance	
<b>Processor</b>	Intel Elkhart lake SoC Processor 2~4 cores	Intel® Celeron® Processor N3350 SoC
<b>Chipset</b>	SoC	
<b>System Memory</b>	260-pin DDR4 SO-DIMM x 1, 3200MHz	Onboard LPDDR4 2GB optional DDR3L 1866, Single Channel SODIMM x 1 (Max.8GB, up to 1600MHz)
<b>Network</b>		
<b>Ethernet</b>	Intel® i211, Gigabit Ethernet x 4 Intel® i210, SFP x 1	Intel® i211 GbE x 4
<b>Bypass</b>	—	1 pair bypass function
<b>Display</b>	—	
<b>Graphic Controller</b>	Intel® UHD Graphics	Intel® HD graphics integrated
<b>Connector</b>	HDMI x 1	—
<b>Storage</b>		
<b>HDD</b>	—	2.5" HDD Bay x 1
<b>CF/CFast/MSATA</b>	mSATA slot x 1 SATA III port x 1	Onboard 8GB eMMC, SATA 6.0 Gb/s port x 1
<b>Internal/ Expansion Interface</b>		
<b>PCIe Slot</b>	—	
<b>Mini-PCIe Slot</b>	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)	—
<b>Keyboard and Mouse</b>	—	
<b>USB</b>	USB 2.0 Type A x 2	USB 3.2 Gen 1 x 2
<b>Miscellaneous</b>		
<b>RTC</b>	Internal RTC	
<b>Watchdog Timer</b>	1~255 steps by software programmable	
<b>Software Button</b>	GPIO Programmable push button x 1	—
<b>TPM</b>	(TPM SLB9670 V02.0 FW7.85 Optional)	(TPM v1.2 9660/TPM2.0 9665 Optional)
<b>GPIO</b>	4 bits input, 4bits output optional	
<b>Fan</b>	Smart fan x 1	1
<b>MTBF (Hours)</b>	TBD	166,000
<b>Color</b>	Black	
<b>Environmental Parameters and Dimension</b>		
<b>Power Requirement</b>	2 x 12V DC Power Input Connector Lockable, 40W power adapter	12V DC Power
<b>Operating Temperature</b>	32°F ~ 104°F (0°C ~ 40°C)	
<b>Storage Temperature</b>	-4°F ~ 140°F (-20°C ~ 60°C)	
<b>Operating Humidity</b>	10%~80% relative humidity, non-condensing	
<b>Storage Humidity</b>	10%~80% @40°C; non-condensing	
<b>Vibration</b>	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
<b>Shock</b>	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non-operation	
<b>Dimension (W X D X H)</b>	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)
<b>I/O</b>		
<b>Front Panel</b>	3 x LEDs (Power, Status, Storage) 1 x Micro-SIM 2 x Antenna Hole	Power LED x 1 Status LED x 1 HDD Active LED x 1 Bypass LED x 1 LAN LEDs x 8
<b>Rear Panel</b>	2 x DC Power Input Connector Lockable 1 x Power Button 2 x USB2.0 Ports 4 x 1GbE RJ45 Ports,1 SFP 1 x RJ-45 console 1 x Reset Button 3 x Antenna Hole	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
<b>Note</b>		



# Network Platform Solutions

## Desktop Network Appliances



Model	FWS-2275	FWS-2273
<b>System</b>	Desktop Network Appliance	
<b>Form Factor</b>	Intel® Celeron® Processor N3350 SoC	
<b>Processor</b>	Intel® Celeron® N3350 Processor	
<b>Chipset</b>	SoC	DDR3L 1866, Single Channel SODIMM x 1 (Max.8GB, up to 1600MHz)
<b>System Memory</b>	Onboard LPDDR4, 2GB	DDR3L 1866, Single Channel SODIMM x 1 (Max.8GB, up to 1600MHz)
<b>Network</b>	Intel® i211, Gigabit Ethernet x 4 Intel® i210, SFP x 2 Supports up to 2 pairs bypass function	
<b>Ethernet</b>	Intel® i211 GbE x 3	Intel® i211, Gigabit Ethernet x 4 Intel® i210, SFP x 2
<b>Bypass</b>	—	Supports up to 2 pairs bypass function
<b>Display</b>	Intel® HD Graphics 505 Intergrated	
<b>Graphic Controller</b>	Intel® HD graphics integrated	Intel® HD Graphics 505 Intergrated
<b>Connector</b>	(HDMI Connector x1 Optional )	HDMI x 1
<b>Storage</b>	2.5" HDD Bay x 1	
<b>HDD</b>	—	2.5" HDD Bay x 1
<b>CF/CFast/MSATA</b>	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-layer for BOM Optional CFast™ socket x 1) SATA 6.0 Gb/s port x 1
<b>Internal/ Expansion Interface</b>	—	
<b>PCIe Slot</b>	—	
<b>Mini-PCIe Slot</b>	Mini-Card Full Size Slot with SIM Socket x 1 (USB 2.0; PCIe co-layer with LAN 3)	Mini-Card socket (full-size) with SIM socket x 2
<b>Keyboard and Mouse</b>	—	Reserved pin-header
<b>USB</b>	USB 3.2 Gen 1 x 2	
<b>Miscellaneous</b>	Internal RTC	
<b>RTC</b>	1~255 steps by software programmable	
<b>Watchdog Timer</b>	GPIO Programmable push button x 1	
<b>Software Button</b>	GPIO Programmable push button x 1	—
<b>TPM</b>	(TPM2.0 9665 Optional)	(TPM v1.2 9660/TPM2.0 9665 Optional)
<b>GPIO</b>	4 bits input, 4bits output	Reserved internal pin-header 8-bit Digital I/O interface (4-in /4-out)
<b>Fan</b>	—	Fanless, reserved pin-header for system fan
<b>MTBF (Hours)</b>	550,521 Hours	109,725
<b>Color</b>	Black	
<b>Environmental Parameters and Dimension</b>	—	
<b>Power Requirement</b>	9~24 V DC Power	12V DC Power in connector
<b>Operating Temperature</b>	32°F ~ 122°F (0°C ~ 50°C)	32°F ~ 104°F (0°C ~ 40°C)
<b>Storage Temperature</b>	-4°F ~ 140°F (-20°C ~ 60°C)	
<b>Operating Humidity</b>	10%~80% relative humidity, non-condensing	
<b>Storage Humidity</b>	10%~80% @40°C; non-condensing	
<b>Vibration</b>	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
<b>Shock</b>	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation	
<b>Dimension (W X D X H)</b>	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)
<b>I/O</b>	—	
<b>Front Panel</b>	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
<b>Rear Panel</b>	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
<b>Note</b>	—	



# Network Platform Solutions

## Desktop Network Appliances

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Expandable Fanless BOX PC Solutions



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



# Network Platform Solutions

## Desktop Network Appliances



Launching in Q4

Model	FWS-2277	FWS-2290
<b>System</b>	Desktop Network Appliance	
<b>Form Factor</b>	Desktop Network Appliance	
<b>Processor</b>	Intel® Celeron® Processor N3350 SoC	Intel Alder lake N SoC Processor 2~8 cores
<b>Chipset</b>	SoC	
<b>System Memory</b>	Onboard LPDDR4, 4GB	On board 4G LPDDR5 up to 16GB
<b>Network</b>		
<b>Ethernet</b>	Intel® i211, Gigabit Ethernet x 2	Intel® i226V, Gigabit Ethernet x 4
<b>Bypass</b>	—	1 Pair
<b>Display</b>		
<b>Graphic Controller</b>	Intel® UHD Graphics	Intel® UHD Graphics
<b>Connector</b>	HDMI x 1	HDMI x 1 Optional
<b>Storage</b>		
<b>HDD</b>	—	
<b>CF/CFast/MSATA</b>	eMMC 16G	16G eMMC SATA III port x 1
<b>Internal/ Expansion Interface</b>		
<b>PCIe Slot</b>	—	
<b>Mini-PCIe Slot</b>	Mini-Card Full Size Slot x1	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)
<b>Keyboard and Mouse</b>		
<b>USB</b>	USB 3.2 Gen 1 x 2	USB 3.1 Type A x2 (one only have 2.0 ,share to M.2 for LTE)
<b>Miscellaneous</b>		
<b>RTC</b>	Internal RTC	
<b>Watchdog Timer</b>	1~255 steps by software programmable	
<b>Software Button</b>	GPIO Programmable push button x 1	
<b>TPM</b>	(TPM SLB9670 VQ2.0 FW7.85 Optional)	
<b>GPIO</b>	(4 bits input, 4bits output optional)	
<b>Fan</b>	Fan-less	Fan x1
<b>MTBF (Hours)</b>	TBD	TBD
<b>Color</b>	Black	
<b>Environmental Parameters and Dimension</b>		
<b>Power Requirement</b>	12V DC Power Input Connector non-lock, 24W power adapter	1 x 12V DC Power Input Connector Lockable, 40W power adapter
<b>Operating Temperature</b>	32°F ~ 104°F (0°C ~ 40°C)	
<b>Storage Temperature</b>	-4°F ~ 140°F (-20°C ~ 60°C)	
<b>Operating Humidity</b>	10%~80% relative humidity, non-condensing	
<b>Storage Humidity</b>	10%~80% @40°C; non-condensing	
<b>Vibration</b>	0.5 Grms/ 5 ~ 500Hz / operation (mSATA) 1.5 Grms/ 5 ~ 500Hz / non-operation	
<b>Shock</b>	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non-operation	
<b>Dimension (W X D X H)</b>	4.53" x4.53" x 1.26"(115mm x115mm x 32mm)	6.5" x 3.62" x 1.57" (165mm x 92mm x 40mm)
<b>I/O</b>		
<b>Front Panel</b>	USB 3.2 Gen 1 x 2 Power Button x 1 Reset Button x 1	3 x LEDs (Power, Status, Storage) 1 x Micro-SIM 2 x Antenna Hole
<b>Rear Panel</b>	DC Power Input Connector non-lock x 1 1GbE RJ45 Ports x 2 HDMI x 1	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
<b>Note</b>		



# Network Platform Solutions

## Rackmount Network Appliances

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Rackmount Network Appliances



Model	FWS-8600	FWS-7541
<b>System</b>		
<b>Form Factor</b>	2U Rackmount Network Platform	1U Rackmount ICE-Lake-D LCC Platform Network Appliance
<b>Processor</b>	Dual 2nd Gen Intel® Xeon® Scalable Processors, up to 56 cores, 112 threads	Intel® Xeon® ICE-Lake-D LCC Processors
<b>Chipset</b>	Intel® C621 Chipset	SoC
<b>System Memory</b>	DDR4 2133/2400/2666 R-DIMM x 16 (8 DIMM per CPU), Up to 512 GB	Upto DDR4 SO-DIMM ECC DIMM slots x 2
<b>Network</b>		
<b>Ethernet</b>	Intel® i211 Gigabit Ethernet x 2	1Gb RJ45 (i350 AM4 x 3) x 12 + Upto 4 x 10Gb SFP+ (SKU optional)
<b>Bypass</b>	Depend on NIM module	2 Pairs LAN Bypass 3.1
<b>NIM Slot</b>	NIM x 4 (Project based up to 8 slots)	NIM Slot x 1 (Optional)
<b>Display</b>		
<b>Graphic Controller</b>	Optional support via Mini-PCIe module or IPMI	—
<b>Connector</b>	Optional VGA port via module	VGA from IPMI x 1 (Optional by BOM SKU)
<b>Storage</b>		
<b>HDDs</b>	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 presence)
<b>CF/CFast/mSATA</b>	M.2 2260 M-key x 1 mSATA slot x 1 (share same slot with Mini-Card)	—
<b>Internal/ Expansion Interface</b>		
<b>PCIe slot</b>	Optional PCIe [x16] slots x 2, via riser card	—
<b>Mini-Card slot</b>	Mini Card slot (full-size) x 1 (PCIe/SATA, USB2.0)	M.2 (B key 3052) for 4G/5G (USB3.0 + PCIe) x 1 with SIM M.2 (E key 2230) (PCIe) x 1
<b>IPMI</b>	Optional IPMI via AAEON Module (Project based)	Optional by BOM SKU
<b>Keyboard and Mouse</b>		
<b>USB</b>	USB 3.2 Gen1 x 2 (Optional 2*10 pin USB 3.2 Gen1 x 2 Box Header 2.0mm)	USB3.2 GEN1 x 2
<b>Miscellaneous</b>		
<b>RTC</b>		Internal RTC
<b>Watchdog Timer</b>	1~255 steps by software programmable	1~255
<b>Software Button</b>	GPIO Programmable push button x 1	1
<b>TPM</b>	(Optional TPM2.0 9665 on board)	TPM2.0 SPI
<b>GPIO</b>	(4 bits input, 4 bits output optional)	N/A, DIO pin header x 1 (4-in/4-out), optional by BOM SKU
<b>FAN</b>	5 x Hotswappable FAN	System Fan x 1
<b>MTBF (Hours)</b>	192,691 Hours	TBD
<b>Color</b>		Black
<b>Environmental Parameters and Dimension</b>		
<b>Power Requirement</b>	550 ~ 600W Redundant Power	220W Power
<b>Operating Temperature</b>		32°F ~ 104°F (0°C ~ 40°C)
<b>Storage Temperature</b>		-4°F ~ 140°F (-20°C ~ 60°C)
<b>Operating Humidity</b>		10% ~ 80% relative humidity, non-condensing
<b>Storage Humidity</b>	10% ~ 80% @40°C; non-condensing	0%~80% @40°C; non-condensing
<b>Vibration</b>	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
<b>Shock</b>		10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation
<b>Dimension (W X D X H)</b>	17.48" x 22.83" x3.46" (444mm x 580mm x 88mm)	16.93" x 7.87" x1.73" (430mm x 200mm x 44mm)
<b>I/O Interfaces</b>		
<b>Front Panel</b>	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)	12 x 1Gb RJ45 + upto 4 x 10Gb SFP+ (Optional by BOM SKU) Power LED x 1 Status LED x 1 HDD Active LED x 1 USB 3.2 GEN1 Ports x 2 RJ-45 Console x 1 LCM display with keypad x 1 Software Programmable Button x 1
<b>Rear Panel</b>	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 x1
<b>Note</b>		



## Network Platform Solutions

## Rackmount Network Appliances



Model	FWS-7840	FWS-7830
<b>System</b>	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
<b>Network</b>	Intel® I350 AM2 Gigabit Ethernet x 2	
Ethernet	8 x 1Gb RJ45 Port or 6 x 1Gb RJ45 + 2 x 1Gb SFP, with 2 xi350AM4 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
<b>Display</b>	Intel® HD graphics integrated	
Graphic Controller	Intel® UHD Graphics	Intel® HD graphics integrated
Connector	(HDMI x1 Optional)	VGA cable (Optional)
<b>Storage</b>	Internal 2.5" SATA HDD x 2 or 3.5" SATA HDD x 1 (Optional)	
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)
<b>Internal/Expansion Interface</b>	Optional PCIe [x8] slot x 1, via riser card	
PCIe slot	Mini Card x 1	
Mini-Card slot	—	
IPMI	—	
Keyboard and Mouse	—	Pin-header
USB	USB 3.2 Gen1 x 2	USB 3.2 Gen 1 x 2, Box Header (2.0mm)
<b>Miscellaneous</b>	Internal RTC	
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	
<b>Environmental Parameters and Dimension</b>	220W ATX PSU or 250W ATX PSU	
Power Requirement	32°F ~ 104°F (0°C ~ 40°C)	
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	
Storage Temperature	10% ~ 80% relative humidity, non-condensing	
Operating Humidity	10% ~ 80% @ 40°C, non-condensing	
Storage Humidity	0.5 Grms/ 5 ~ 500Hz/ operation (3.5" H.O.D.) 1.5 Grms/ 5 ~ 500Hz/ no operation	
Vibration	10G peak acceleration (11 m sec. duration), operation 20G peak acceleration (11 m sec. duration), non-operation	
Shock	16.93" x 18.7" x 1.73" (430mm x 475mm x 44mm)	
Dimension (W X D X H)	430mm x 305mm x 44mm	16.93" x 18.7" x 1.73" (430mm x 475mm x 44mm)
<b>I/O Interfaces</b>	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	
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 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		







Model	FWS-7831	FWS-7821
<b>System</b>	1U Rackmount Network Platform	
<b>Form Factor</b>	1U Rackmount Network Platform	
<b>Processor</b>	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
<b>Chipset</b>	Intel®C246/H310	Intel® C236
<b>System Memory</b>	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
<b>Network</b>		
<b>Ethernet</b>	Intel® i211 Gigabit Ethernet x 8 or Intel® i211 Gigabit Ethernet x 6 + SFP Ethernet ports x2 (C246) Intel® i211 Gigabit Ethernet x 6 (H310)	Intel® i211 GbE x 6 + Intel® i210 GbE x 2 (SFP) + NIM x 1 (Or i211 GbE x8 + NIMx1)UDIMM/ECC
<b>Bypass</b>	2 Pairs	Onboard 2 pairs bypass, others depend on NIM module
<b>NIM Slot</b>	Need to configure riser card	1
<b>Display</b>		
<b>Graphic Controller</b>	Intel® UHD Graphics 630	Intel® HD graphics integrated
<b>Connector</b>	(HDMI x1 Optional)	VGA cable (Optional)
<b>Storage</b>		
<b>HDDs</b>	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)
<b>CF/CFast/mSATA</b>	mSATA	Optional BOM CFast™ socket or mSATA slot or CF™ socket (optional)
<b>Internal/ Expansion Interface</b>		
<b>PCIe slot</b>	—	Up to PCIe[x8] slot x 2
<b>Mini-Card slot</b>	Mini-Card x 1 (PCIe[x1] + mSATA)	Mini Card x 1
<b>IPMI</b>	—	—
<b>Keyboard and Mouse</b>	—	Pin-header
<b>USB</b>	USB 3.2 Gen 1 x 2	USB 3.2 Gen 1 x 2, Box Header (2.0mm)
<b>Miscellaneous</b>		
<b>RTC</b>	Internal RTC	
<b>Watchdog Timer</b>	1~255 steps by software programmable	1~255 steps by software programmable, 1 sec per step
<b>Software Button</b>	—	GPIO Programmable push button x 1
<b>TPM</b>	(TPM2.0 9665/TPM v1.2 9660 optional)	TPM v1.2 9660 (TPM2.0 9665 optional)
<b>GPIO</b>	—	4 bits input, 4 bits output
<b>FAN</b>	—	2
<b>MTBF (Hours)</b>	362,825 Hours	94,241
<b>Color</b>	Black	
<b>Environmental Parameters and Dimension</b>		
<b>Power Requirement</b>	220W ATX PSU	250W ATX PSU or 220W ATX PSU
<b>Operating Temperature</b>	32°F ~ 104°F (0°C ~ 40°C)	
<b>Storage Temperature</b>	-4°F ~ 140°F (-20°C ~ 60°C)	
<b>Operating Humidity</b>	10%~80% relative humidity, non-condensing	
<b>Storage Humidity</b>	10%~80% @40°C; non-condensing	
<b>Vibration</b>	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
<b>Shock</b>	TBD	10G peak acceleration (11 m sec. duration), operation 20G peak acceleration (11 m sec. duration), non-operation
<b>Dimension (W X D X H)</b>	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)
<b>I/O Interfaces</b>		
<b>Front Panel</b>	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
<b>Rear Panel</b>	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)
<b>Note</b>		



Launching in Q3

Model	FWS-7360	FWS-7850
<b>System</b>	1U Rackmount Network Platform	
<b>Form Factor</b>	1U Rackmount Network Platform	
<b>Processor</b>	Intel® C3758 processor SoC, optional support up to 16 core	Intel® Alder Lake-S Processors
<b>Chipset</b>	SoC	W680
<b>System Memory</b>	DDR4 Slot x 4, Support ECC UDIMM/RDIMM upto 256GB	288-pin UDIMM DDR5 ECC x 4, up to 128GB
<b>Network</b>		
<b>Ethernet</b>	Intel®X553 RJ45 x 2, Intel® i211 GbE x 3, SFP+ x 2 from CPU	RJ45 /SFP Ethernet ports x 2 (Intel i350-AM2 x 1)
<b>Bypass</b>	Onboard 2 pairs bypass, others depend on NIM module	Depend on NIM module expansion
<b>NIM Slot</b>	1	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)
<b>Display</b>		
<b>Graphic Controller</b>		
<b>Connector</b>	HDMI port x 1	
<b>Storage</b>		
<b>HDDs</b>	2.5" HDD Bay x 2	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)
<b>CF/CFast/mSATA</b>	Default SATA III port x 2 (MSATA Slot X 2 Optional)	
<b>Internal/ Expansion Interface</b>		
<b>PCIe slot</b>	PCIe [x8] slot x 1, cannot use w/ NIM	
<b>Mini-Card slot</b>	Default Mini-Card socket (full-size) x1 (Mini-Card socket (full-size) with SIM socket x 1 Optional)	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
<b>IPMI</b>	IPMI port x 1	
<b>Keyboard and Mouse</b>		
<b>USB</b>	USB 3.2 Gen 1 x 2	
<b>Miscellaneous</b>		
<b>RTC</b>	Internal RTC	
<b>Watchdog Timer</b>	1~255 steps by software programmable	
<b>Software Button</b>	GPIO Programmable Button x 1	1
<b>TPM</b>	Optional TPM v1.2 / TPM v2.0	TPM2.0 SPI
<b>GPIO</b>	4 bits input, 4bits output	Reserve internal pin header 8-bit Digital I/O interface (4-in /4-out)
<b>FAN</b>	System Fan x 1	Smart Fan x 3
<b>MTBF (Hours)</b>	142,412	TBD
<b>Color</b>	Black	
<b>Environmental Parameters and Dimension</b>		
<b>Power Requirement</b>	150W Flex ATX PSU	Single AC/DC 1U Flex ATX 220W x 1 or 1U 300W Redundant PSU(optional) x 1
<b>Operating Temperature</b>	32°F ~ 104°F (0°C ~ 40°C)	
<b>Storage Temperature</b>	-4°F ~ 140°F (-20°C ~ 60°C)	
<b>Operating Humidity</b>	10%~80% relative humidity, non-condensing	
<b>Storage Humidity</b>	10%~80% @40°C; non-condensing	0%~80% @40°C; non-condensing
<b>Vibration</b>	0.5 Grms/ 5 ~ 500Hz / operation (2.5" HDD) 1.5 Grms/ 5 ~ 500Hz / non operation	
<b>Shock</b>	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation	
<b>Dimension (W X D X H)</b>	16.93" x 12.01" x 1.73" (430mm x 305mm x 44mm)	16.93" x 15.75" x 1.73"(430mm x 400 mm x 44mm)
<b>I/O Interfaces</b>		
<b>Front Panel</b>	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	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
<b>Rear Panel</b>	Power Switch x 1 AC Power Input x 1 Rear Expansion Slot x 1	AC Power Input x 1 Power Switch x1 Rear expansion slot x 1 (PCIe [x8]): Optional
<b>Note</b>		



# Network Platform Solutions

## Rackmount Network Appliances

03

Rackmount Network Appliances



Model	FWS-7851
<b>System</b>	
Form Factor	1U Rackmount ICE-Lake-D LCC Platform Network Appliance
Processor	Intel® Xeon® ICE-Lake-D LCC Processors
Chipset	SoC
System Memory	Upto DDR4 S0-DIMM ECC DIMM slots x 2
<b>Network</b>	
Ethernet	1Gb RJ45 (I350 AM4 x 3) x 12 + Upto 4 x 10Gb SFP+ (SKU optional)
Bypass	2 Pairs LAN Bypass 3.1
NIM Slot	NIM Slot x 1 (Optional)
<b>Display</b>	
Graphic Controller	—
Connector	VGA from IPMI x 1 (Optional by BOM SKU)
<b>Storage</b>	
HDDs	2.5" HDD x 2 (default) or 3.5" HDD x 1 (if no NIM module presence)
CF/CFast/mSATA	—
<b>Internal/ Expansion Interface</b>	
PCIe slot	—
Mini-Card slot	M.2 (B key 3052) for 4G/5G (USB3.0 + PCIe) x 1 with SIM M.2 (E key 2230) (PCIe) x 1
IPMI	Project base
Keyboard and Mouse	—
USB	USB3.2 GEN1 x 2
<b>Miscellaneous</b>	
RTC	Internal RTC
Watchdog Timer	1~255
Software Button	1
TPM	TPM2.0 SPI
GPIO	N/A, DIO pin header x 1 (4-in/4-out), optional by BOM SKU
FAN	System Fan x 1
MTBF (Hours)	TBD
Color	Black
<b>Environmental Parameters and Dimension</b>	
Power Requirement	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	0%~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
Dimension (W X D X H)	16.93" x 7.87" x1.73"(430mm x 200mm x 44mm)
<b>I/O Interfaces</b>	
Front Panel	12 x 1Gb RJ45 + upto 4 x 10Gb SFP+ (Optional by BOM SKU) Power LED x 1 Status LED x 1 HDD Active LED x 1 USB 3.2 GEN1 Ports x 2 RJ-45 Console x 1 LCM display with keypad x 1 Software Programmable Button x 1
Rear Panel	AC Power Input x 1 Power Switch x1
Note	



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	Intel® 82580EB (i350-AM4; Optional by request) Ethernet Controller x 1	
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)		
Note			



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)		
Note			



# Rackmount Network Appliances : Network Interface Modules



Launching in Q3

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



Model	ICS-6270	ICS-6280
<b>System</b>		
<b>Form Factor</b>	DIN Rail/ Desktop	
<b>Processor</b>	Intel® Celeron® Processor N3350 SoC	Intel Atom® x6000E Series Processor, 2~4 cores
<b>System Memory</b>	DDR3L 1866, Single Channel SODIMM x 1 (Max.8GB, up to 1600MHz)	260-pin DDR4 3200Mhz SODIMM with IBECC support x 1
<b>Chipset</b>	—	SoC
<b>Ethernet</b>	Intel® i210AT, Gigabit Ethernet x 6	Intel® i210AT Gigabit Ethernet x 4
<b>Bypass</b>	Supports up to 2 pairs	Supports upto 2 Pairs LAN Bypass (Optional)
<b>BIOS</b>	AMI SPI Flash BIOS	
<b>Serial ATA</b>	SATA 6.0 Gb/s port x 1, for 2.5" HDD/SSD	SATA III port x 1 for 2.5"SSD support
<b>CFast/mSATA</b>	CFast™ socket x 1	mSATA (Full size) socket colay SATAIII port x 1
<b>Expansion Interface</b>	Supports Mini-Card slot x 1 with SIM socket	Supports Mini-card slot x 1 with Micro SIM socket
<b>USB</b>	USB 3.2 Gen 1 x 2	
<b>Serial Port</b>	Supports up to RS-232/422/485 COM Port x 2	Supports up to RS-232/422/485 COM Port x 2
<b>Watchdog Timer</b>	1~255 steps by software programmable	
<b>RTC</b>	Internal RTC	
<b>System Fan</b>	Fanless	
<b>Color</b>	Dark Grey	Black
<b>Power Supply</b>	2 Pin Terminal Block	Dual 2-Pin Phoenix terminal block
<b>Dimension</b>	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)
<b>Power Requirement</b>	+9 ~ 36V, 2-pin terminal block	Redundant 9~48Vdc power input
<b>MTBF (Hours)</b>	101,292	TBD
<b>Display</b>		
<b>Chipset</b>	Intel® HD Graphics 500	Intel® HD Graphics
<b>Interface</b>	VGA port x 1	HDMI port x 1, VGA port x 1
<b>I/O</b>		
<b>Front I/O Panel</b>	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
<b>Rear I/O Panel</b>	DIN Rail/ Wallmount Lock	
<b>Top Panel</b>	2-Pin Terminal Block +9~36VDC x 1	2-Pin Terminal Block +9~46VDC x 2
<b>Environmental Parameters and Dimension</b>		
<b>Operating Temperature</b>	-40°F ~ 156°F (-40°C ~ 75°C)	
<b>Storage Temperature</b>	-40°F ~ 185°F (-40°C ~ 85°C)	
<b>Operating Humidity</b>	10% ~ 80% relative humidity, non-condensing	
<b>Storage Humidity</b>	10% ~ 80% @40°C; non-condensing	
<b>Vibration</b>	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
<b>Shock</b>	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation	
<b>Note</b>		



## Focus • Agility • Competitiveness



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# 04



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► **Rugged Mobile and  
Panel PC Solutions**

04



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## Rugged Mobile and Panel PC Solutions

## Rugged Tablet Computers



Model	RTC-710RK	RTC-710AP
<b>System Architecture</b>		
<b>Processor</b>	Rockchip RK3399K Processor (Quad-Core A53 1.6GHz & Dual-Core A72 2.0GHz)	Intel® Celeron® N3350 1.1GHz Dual core up to 2.4GHz Intel® Pentium® N4200 1.1GHz Quad core up to 2.5GHz
<b>Operating System</b>	Android 8.1	Windows® 10 IOT Enterprise SAC
<b>Memory</b>	Onboard LPDDR4 2GB (Default) / 4GB	Onboard LPDDR4 4GB (Default) / 8GB
<b>Storage</b>	eMMC 16GB (Default) / 32GB / 64GB	eMMC 64GB (Default) / 128GB
<b>Display</b>	7" WXGA (1280x800) 300-nit / 700-nit TFT LCD With Projected Capacitive Multi-Touch Screen	7" WXGA (1280x800) 300-nit / 700-nit TFT LCD With Projected Capacitive Multi-Touch Screen
<b>I/O Port</b>	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 Micro-SD card slot x 1 USB 2.0 Type-A x 1 RS-232 COM Port x 1 (Via I/O Module) 10/100/1000 Base-T RJ45 x 1 (Via I/O Module)
<b>Communication</b>	Wi-Fi 802.11 b/g/n, Bluetooth v4.2 (EDR + BLE)	Wi-Fi 802.11 b/g/n, Bluetooth v5.1
<b>Navigation</b>	GPS + GLONASS (Default), BeiDou (Optional), External Antenna (Optional)	Up to 3 GNSS, GPS + Galileo (Default), GLONASS, BeiDou (Optional) External Antenna (Optional)
<b>WWAN(optional)</b>	LTE via M.2 slot (Optional) Hot-swappable Battery can not be used when LTE module is installed.	LTE via M.2 slot (Optional) Hot-swappable Battery can not be used when LTE module is installed.
<b>Camera</b>	8MP front camera 8MP rear camera with flash	2MP front camera, 8MP rear camera with flash
<b>Sensor</b>		G-sensor, E-compass, Gyro-sensor, Light-sensor
<b>Expansion Slot</b>		M.2 slot x 1, Docking connector: USB 3.2 Gen 1 x 1
<b>Barcode Scanner (Optional)</b>		2D Barcode scanner, OPTICON MDI-4100-USB via I/O module (Optional)
<b>HF RFID (Optional)</b>	ISO 15693 (R/W), ISO 18092 (R/W), ISO 14443-A (R/W), ISO 14443-B (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 (R/W), Depend on card type
<b>Audio</b>		Speaker x 1
<b>Physical Key</b>	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
<b>Mechanical</b>		
<b>Color</b>		Dark Gray
<b>Dimension (W x H x D)</b>		8.65" x 5.46" x 0.94" (219.8 x 138.8 x 23.9 mm)
<b>Gross Weight</b>		1.54 lb (0.7 Kg) based on configurations
<b>Environmental</b>		
<b>Operating Temperature</b>	-4°F ~ 140°F (-20°C ~ 60°C) for high-brightness version	-4°F ~ 122°F (-20°C ~ 50°C) for high-brightness version
<b>Storage Temperature</b>		-22°F ~ 158°F (-30°C ~ 70°C)
<b>Humidity</b>		MIL-STD-810G Method 507.5
<b>Environmental Sealing</b>		IP65
<b>Vibration</b>		MIL-STD-810G Method 514.6
<b>Drop</b>		MIL-STD-810G Method 516.6 Procedure IV, Height of Drop: 122 cm (48 inch; 4 ft)
<b>Shock</b>	MIL-STD-810G	—
<b>ESD</b>		Air charge: +/- 8KV, Contact charge: +/- 4KV
<b>Certifications and Standards</b>	UL62368-1, CE, FCC, IC	CE, FCC
<b>Power Supply</b>		
<b>AC / DC Adapter</b>		AC 100 ~ 240 V, 50 ~ 60 Hz, Output: 12V / 3.34A / 40W
<b>Battery Life</b>		Li-ion Battery 8-hour battery life based on test configurations
<b>Master Battery</b>		7.2V, 4540mAh, 32.7W
<b>Slave Battery</b>		Hot-swappable battery: 7.4V, 1530mAh, 11.3W (Optional)
<b>Display</b>		
<b>LCD</b>		7" TFT-LCD / 16:10, with LED backlight
<b>Resolution</b>		1280 x 800
<b>Maximum Color</b>		—
<b>Dot Size</b>		0.03925(H) x 0.11775(V) mm
<b>Brightness</b>		700 / 300 nits
<b>Viewing Angle</b>		Horizontal: 178° (Typ.), Vertical: 178° (Typ.)
<b>Touch Screen</b>		
<b>Touch Type</b>		7" Projected Capacitive Multi-Touch Screen (700 nits with 10 points / 300 nits with 5 points)
<b>Light Transmission</b>		Min. 85%
<b>Note</b>		



## Rugged Tablet Computers




Model	RTC-1010	RTC-1010M
<b>System Architecture</b>		
<b>Processor</b>	Intel® Celeron® N3350 1.1GHz Dual core up to 2.4GHz	Intel® Pentium® N4200 1.1GHz Quad core up to 2.5GHz
<b>Operating System</b>		Windows® 10 IOT Enterprise SAC
<b>Memory</b>		Onboard DDR3L 4GB (Default) / 8GB
<b>Storage</b>		eMMC 64GB (Up to 256GB, Optional)
<b>Display</b>	10.1" WXGA (1280x800) 800-nit / 300-nit TFT LCD With Projected Capacitive Multi-Touch Screen	10.1" WXGA (1280x800) 300-nit TFT LCD With Projected Capacitive Multi-Touch Screen
<b>I/O Port</b>	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 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 Smart card reader x 1 (Optional, Without IP protection)	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 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 (Optional) 10/100/1000 Base-T RJ45 x 1 (Optional) Smart card reader x 1 (Optional, Without IP protection) MSR reader x 1 (Optional, Without IP protection)
<b>Communication</b>		Wi-Fi 802.11 b/g/n, Bluetooth v5.1 (EDR + BLE), Intel AC9260
<b>Navigation</b>		Up to 3 GNSS, GPS + Galileo (Default), GLONASS, BeiDou (Optional)
<b>WWAN(optional)</b>		LTE via mini-card slot (Optional)
<b>Camera</b>		2MP front camera, 8MP rear camera with flash
<b>Sensor</b>		G-sensor, E-compass, Gyro-sensor, Light-sensor
<b>Expansion Slot</b>		Inside M.2 slot x 1 (For WiFi module), Mini-card slot x 1 (For LTE module), Docking connector: USB 2.0 x 1
<b>Barcode Scanner (Optional)</b>		2D Barcode scanner, OPTICON MDI-4100-USB (Optional)
<b>HF RFID (Optional)</b>		ISO 15693 (R/W), ISO 18092 (R/W), ISO 14443-A (R/W), ISO 14443-B (Only Read UID), Depend on card type
<b>Audio</b>		Speaker x 1
<b>Physical Key</b>		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)
<b>Mechanical</b>		
<b>Color</b>		Black & Dark Grey
<b>Dimension (W x H x D)</b>		10.71" x 7.48" x 0.80" (272.0 x 190.0 x 20.4 mm)
<b>Gross Weight</b>	1.0 Kg (2.2 lb) based on configurations	2.1 lb (0.95 Kg) based on configurations
<b>Environmental</b>		
<b>Operating Temperature</b>		-4°F ~ 122°F (-20°C ~ 50°C)
<b>Storage Temperature</b>		-22°F ~ 158°F (-30°C ~ 70°C)
<b>Humidity</b>	0% ~ 90% relative humidity, non-condensing	0% ~ 90% relative humidity, non-condensing
<b>Environmental Sealing</b>	IP65	IP54
<b>Vibration</b>	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)	—
<b>Drop</b>	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	Drop height: 76 cm Condition: Based on 2" plywood over concrete
<b>Shock</b>		—
<b>ESD</b>		Air charge: +/- 8KV, Contact charge: +/- 4KV
<b>Certifications and Standards</b>		UL60950-1, CE, FCC
<b>Power Supply</b>		
<b>AC / DC Adapter</b>		AC 100 ~ 240 V, 50 ~ 60 Hz, Output: 12V/ 3A/ 36W
<b>Battery Life</b>		Li-ion Battery 8-hour battery life based on test configurations
<b>Master Battery</b>		Hot-swappable battery: 14.4V, 2270mAh, 32.7Wh
<b>Slave Battery</b>		7.4V, 1530mAh, 11.3Wh
<b>Display</b>		
<b>LCD</b>		10.1" TFT-LCD Display
<b>Resolution</b>		1280 x 800
<b>Maximum Color</b>		16.7M
<b>Dot Size</b>		0.1692 (H) x 0.1692 (V) mm
<b>Brightness</b>		300 nits (800 nits, Optional)
<b>Viewing Angle</b>		Horizontal: 170°, Vertical: 170° (Typical)
<b>Touch Screen</b>		
<b>Touch Type</b>		Projected Capacitive Multi-Touch Screen (PCT)
<b>Light Transmission</b>		Min. 85%
<b>Note</b>		



## Rugged Mobile and Panel PC Solutions

## Rugged Tablet Computers



Model	RTC-1020	RTC-1200
<b>System Architecture</b>		
<b>Processor</b>	11th Gen Intel® Core™/Celeron® Processor SoC Intel® Core™ i5-1145G7E, Intel® Core™ i3-1115G4E, Intel® Celeron® 6305E	Intel® Core™ i 7100U / 7300U Dual Core up to 3.9GHz Intel® Celeron® 3965U Dual Core 2.2GHz Processor
<b>Operating System</b>	Windows® 10 IoT Enterprise SAC (Default)	Windows® 10 IoT Enterprise 64bit (Default)
<b>Memory</b>	Onboard LPDDR4X, 8GB (Default)/16GB/32GB	DDR4 SO-DIMM Socket x 1, up to 16GB
<b>Storage</b>	M.2 SSD, 64GB/128GB/256GB (Default: 64GB)	M.2 (NGFF) SSD, 64GB (Default) / 128GB / 256GB
<b>Display</b>	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
<b>I/O Port</b>	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
<b>Communication</b>	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
<b>Navigation</b>	Up to 3 GNSS, GPS + Galileo (Default), GLONASS, BeiDou (Optional)	GPS, GLONASS => Located in I/O board, PER-T407 143NEOM80Q: u-blox NEO-M8Q-0
<b>WWAN(optional)</b>	LTE via M.2 slot (Optional)	LTE via mini-card slot (Optional)
<b>Camera</b>	5MP front camera, 8MP rear camera with flash	2MP front camera, 5MP auto-focus rear camera with flash
<b>Sensor</b>	G-sensor, E-compass, Gyro-sensor, Light-sensor	G-sensor, E-compass, Gyro-sensor, Light-sensor
<b>Expansion Slot</b>	M.2 M-Key for SSD (PCIe (x4) / SATA III) 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
<b>Barcode Scanner (Optional)</b>	2D Barcode scanner, OPTICON MDI-4100-USB (Optional)	2D Barcode scanner, OPTICON MDI-4100-USB (Optional)
<b>HF RFID (Optional)</b>	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
<b>Audio</b>	Speaker x 1	Speaker x 1
<b>Physical Key</b>	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)
<b>Mechanical</b>		
<b>Color</b>	Black & Dark Grey	Gray & Black
<b>Dimension (W x H x D)</b>	10.71" x 7.48" x 0.94" (272.0 x 190.0 x 24.0 mm)	12.36" x 7.87" x 0.96" (310.4 mm x 200.0 mm x 24.5 mm)
<b>Gross Weight</b>	3.3 lb. (1.5Kg) based on configurations	3.3 lbs (1.5 Kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	-4°F ~ 122°F (-20°C ~ 50°C)	-4°F ~ 140°F (-20°C ~ 60°C)
<b>Storage Temperature</b>		-22°F ~ 158°F (-30°C ~ 70°C)
<b>Humidity</b>		0% ~ 90% relative humidity, non-condensing
<b>Environmental Sealing</b>		IP65
<b>Vibration</b>	MIL-STD-810H: 2019, 514.8 Procedure I, Table 514.8C-1 Category 4 common carrier	MIL-STD-810G-514.6 Procedure I Cat.24, Fig 514.6E-1 & 514.6E-2
<b>Drop</b>	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
<b>Shock</b>	MIL-STD-810H: 2019, 516.8 Procedure I	—
<b>ESD</b>	Air charge: +/- 8KV, Contact charge: +/- 4KV	Air charge: +/- 8KV, Contact charge: +/- 4KV
<b>Certifications and Standards</b>	CE, FCC	UL60950-1, CE/LVD: EN60950-1, CE, FCC
<b>Power Supply</b>		
<b>AC / DC Adapter</b>		AC 100 ~ 240 V, 50 ~ 60 Hz, Output: 19V/ 3.42A/ 65W
<b>Battery Life</b>		Li-ion Battery 6-hour battery life based on test configurations
<b>Master Battery</b>	Hot-swappable battery: 14.4V, 2270mAh, 32.7W 14.8V, 3450mAh, 51.1W (Optional)	Hot-swappable battery: 14.4V, 2270mAh, 32.7W
<b>Slave Battery</b>	Hot-swappable battery: 14.4V, 2270mAh, 32.7W 14.8V, 3450mAh, 51.1W (Optional)	Hot-swappable battery: 14.4V, 2270mAh, 32.7W
<b>Display</b>		
<b>LCD</b>	10.1" TFT-LCD Display	11.6" TFT-LCD Display
<b>Resolution</b>	1920 x 1200	1920 x 1080
<b>Maximum Color</b>		16.7M
<b>Dot Size</b>	—	0.117 (H) x 0.117 (V) mm
<b>Brightness</b>	450 nits (800 nits, Optional)	500 nits (850 nits, Optional)
<b>Viewing Angle</b>		Horizontal: 178° (Typical), Vertical: 178° (Typical)
<b>Touch Screen</b>		
<b>Touch Type</b>	Projected Capacitive Multi-Touch Screen (PCT)	Projected Capacitive Multi-Touch Screen (PCT) Gloves / Finger mode Switchable by F2
<b>Light Transmission</b>	Min. 87%	Min. 87% (ASTM D1003; Wavelength = 550 nm)
<b>Note</b>		



# Rugged Mobile and Panel PC Solutions

## Rugged Tablet Computers

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Rugged Tablet Computers



Model	RTC-1010RK
<b>System Architecture</b>	
<b>Processor</b>	Rockchip RK3399 Processor (Quad-Core A53 1.6GHz & Dual-Core A72 2.0GHz)
<b>Operating System</b>	Android 10.0 (Will start from Android 8.1 for samples)
<b>Memory</b>	Onboard LPDDR4 2GB (Default) / 4GB
<b>Storage</b>	eMMC 16GB (Default) / 32GB
<b>Display</b>	10.1" WXGA (1280x800) 800-nit / 300-nit TFT LCD With Projected Capacitive Multi-Touch Screen
<b>I/O Port</b>	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 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
<b>Communication</b>	Wi-Fi 802.11 b/g/n, Bluetooth v5.0 (EDR + BLE)
<b>Navigation</b>	Up to 3 GNSS, GPS + Galileo (Default), GLONASS, BeiDou (Optional)
<b>WWAN(optional)</b>	LTE via M.2 slot (Optional)
<b>Camera</b>	8MP front camera, MIPI I/F 8MP rear camera with flash, MIPI I/F
<b>Sensor</b>	G-sensor, Gyro-sensor, Light-sensor
<b>Expansion Slot</b>	Inside M.2 slot x 1, M Key (For storage or others) M.2 slot, B Key 3042 (For LTE module) Docking connector: USB 2.0 x 1
<b>Barcode Scanner (Optional)</b>	2D Barcode scanner, OPTICON MDI-4100-USB (Optional)
<b>HF RFID (Optional)</b>	ISO 15693 (R/W), ISO 18092 (R/W), ISO 14443-A (R/W) ISO 14443-B (Only Read UID), Depend on card type
<b>Audio</b>	Speaker x 1
<b>Physical Key</b>	F0 or Windows (TBD), F1 (BCR Trigger Button (When BCR is enabled)), F2 (Screenprint), F3 (Audio On/Off), Volume Up (Speaker Volume Up), Volume Down (Speaker Volume Down)
<b>Mechanical</b>	
<b>Color</b>	Black & Dark Grey
<b>Dimension (W x H x D)</b>	272.0 x 190.0 x 20.4 mm (10.71" x 7.48" x 0.80")
<b>Gross Weight</b>	2.2 lb (1.0 Kg) based on configurations
<b>Environmental</b>	
<b>Operating Temperature</b>	-20°C ~ 50°C (-4°F ~ 122°F)
<b>Storage Temperature</b>	-30°C ~ 70°C (-22°F ~ 158°F)
<b>Humidity</b>	0% ~ 90% relative humidity, non-condensing
<b>Environmental Sealing</b>	IP65
<b>Vibration</b>	MIL-STD-810G-514.6 Procedure I Cat.24, Fig 514.6E-1 & 514.6E-2 (Unit is non-operating)
<b>Drop</b>	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
<b>Shock</b>	TBC
<b>ESD</b>	Air charge: +/- 8KV, Contact charge: +/- 4KV
<b>Certifications and Standards</b>	UL62368-1, CE, FCC, IC
<b>Power Supply</b>	
<b>AC / DC Adapter</b>	AC 100 ~ 240 V, 50 ~ 60 Hz, Output: 12V/ 3A/ 36W
<b>Battery Life</b>	Li-ion Battery 8-hour battery life based on test configurations
<b>Master Battery</b>	Hot-swappable battery: 14.4V, 2270mAh, 32.7W
<b>Slave Battery</b>	7.4V, 1530mAh, 11.3W
<b>Display</b>	
<b>LCD</b>	10.1" TFT-LCD Display
<b>Resolution</b>	1280 x 800
<b>Maximum Color</b>	16.7M
<b>Dot Size</b>	0.1692 (H) x 0.1692 (V) mm
<b>Brightness</b>	300 nits (800 nits, Optional)
<b>Viewing Angle</b>	Horizontal: 170°, Vertical: 170° (Typical)
<b>Touch Screen</b>	
<b>Touch Type</b>	Projected Capacitive Multi-Touch Screen (PCT)
<b>Light Transmission</b>	Min. 85%
<b>Note</b>	





Model	RDS-0710	RDS-411	RDS-241V
<b>System</b>			
<b>I/O</b>	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	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
<b>DC Input</b>	Phoenix connector: DINKLE ECH381H-03P Wide Voltage Input: DC 9V to 36V Mating connector: DINKLE EC381V-03P		M12 5P Female (DC 9V to 36V)
<b>LED Indicator</b>	Orange: DC in w/o Tablet Blue: DC in w/ Tablet		
<b>Others</b>	Anti-theft lock with key & VESA mount support (75x75)	Anti-theft lock with key & VESA mount support	Anti-theft lock with key & VESA mount support
<b>Mechanical</b>			
<b>Color</b>	Black		
<b>Construction</b>	Metal		PC
<b>Dimensions (W x H x D)</b>	8.07" x 4.96" x 2.96" (205 x 126 x 75 mm)	10.08" x 7.28" x 2.96" (256 x 185 x 75 mm)	10.28" x 6.50" x 2.96" (261 x 165 x 75 mm)
<b>Gross Weight</b>	1.8 lb (820g)	6.17 lb (2.8 Kg)	6.44 lb (2.92 Kg)
<b>Environmental</b>			
<b>Operating Temperature</b>	-4°F ~ 140°F (-20°C ~ 60°C)	32°F ~ 122°F (0°C ~ 50°C)	32°F ~ 104°F (0°C ~ 40°C)
<b>Storage Temperature</b>	-22°F ~ 158°F (-30°C ~ 70°C)	14°F ~ 140°F (-10°C ~ 60°C)	14°F ~ 122°F (-10°C ~ 50°C)
<b>ESD</b>		Air charge: +/- 8KV Contact charge: +/- 4KV	
<b>EMC/ Safety</b>	CE / FCC Class A / UL	CE / FCC Class B / UL	CE / FCC Class B / UL
<b>Power Supply</b>			
<b>AC/DC Adapter</b>	AC 100 ~ 240 V, 50 ~ 60 Hz, Output: 12V/ 3.34A/ 40W DC connector: DINKLE EC381V-03P		AC 100 ~ 240 V, 47 ~ 63 Hz Output: 19V/ 4.74A/ 90W
<b>DC/DC Adapter</b>	—		
<b>Note</b>			



# Rugged Mobile and Panel PC Solutions

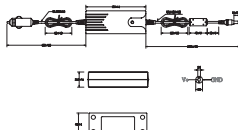
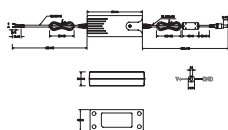
## Rugged Tablet Computers : Accessories

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Rugged Tablet Computers : Accessories



Model	RTC-1010-HS-000	RTC-1010-SB-000	RTC-1010-VMP-000
<b>Mechanical</b>			
<b>Color</b>	Black	Black	Black
<b>Dimensions (W x H x D)</b>	232 x 92 x 30 mm	1050 x 65 x 5 mm	275.6 x 191.7 x 25 mm
<b>Note</b>	Hand Strap for RTC-1010/ RTC-1010M	Shoulder Belt for RTC-1010/ RTC-1010M	VESA Mount Plate for RTC-1010M



Model	1255900363	1255900364	RTC-1200HSP01-000
<b>Mechanical</b>			
<b>Color</b>	Black	Black	Black
<b>Dimensions (W x H x D)</b>	Adapter case: 40 x 105 x 26.5 mm Plug side length: 1200 ± 30 mm Flying Wires side length: 600 ± 30 mm Total length: 1905 ± 60 mm	Adapter case: 40 x 105 x 26.5 mm Plug side length: 1200 ± 30 mm Cigarette Plug side length: 600 ± 50 mm Total length: 1905 ± 50 mm	260 x 92 x 30 mm
<b>Note</b>	DC-To-DC Power Adapter, Flying Wires for RTC-1010/ RTC-1010M	DC-To-DC Power Adapter, Cigarette Plug for RTC-1010/ RTC-1010M	Hand Strap for RTC-1200



Model	RTC-1200BLT01-000	RTC-1200BLT02-000
<b>Mechanical</b>		
<b>Color</b>	Black	Black
<b>Dimensions (W x H x D)</b>	1050 x 65 x 5 mm	450 x 350 x 50 mm
<b>Note</b>	Shoulder Belt for RTC-1200	Shoulder Belt for RTC-1200



Model	RTC-1200BKT01-000	RTC-1010BKT-000
<b>Mechanical</b>		
<b>Color</b>	Black	Black
<b>Dimensions (W x H x D)</b>	180 x 203.3 x 45.4 mm	103.1 x 228.4 x 49 mm
<b>Note</b>	VESA Mount Bracket for RTC-1200	Bracket for RTC-1010 / RTC-1010M





# Rugged Mobile and Panel PC Solutions

## Rugged Tablet Computers : Accessories

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Rugged Tablet Computers : Accessories

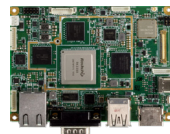


Model	RBC-1200-000	RTC-1200BAT01-000
<b>Mechanical</b>		
<b>Color</b>	Black	Black
<b>Dimensions (W x H x D)</b>	140.5 x 68.4 x 121.87 mm	71.5 x 110 x 13.3 mm
<b>Power Supply</b>		
<b>AC/DC Adapter</b>	AC power input:100-240V, 50Hz-60Hz, 65W, DC power output: 19V/3.42A	14.4V, 2270mAh, 32.7W
<b>Note</b>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



Model	RTC-1010-SBG-000
<b>Mechanical</b>	
<b>Color</b>	Black
<b>Dimensions (W x H x D)</b>	Bag: 330 x 245 x 50 mm Shoulder strap: Length: 710 mm (Min) ~ 1310 mm (Max)
<b>Note</b>	Shoulder Bag for RTC-1010 / RTC-1020 /RTC-1200





Model	RICO-3288	RICO-3288MINI	RICO-3399
<b>System Form Factor</b>	Pico-ITX (100mm x 72mm)		
<b>CPU</b>	Rockchip RK3288 ARM Cortex™-A17 Quad-core 1.6 GHz	Rockchip RK3288 ARM Cortex™-A17 Quad-core 1.6 GHz	Rockchip RK3399 Cortex™-A72 Dual-core 1.8GHz and Cortex™-A53 Quad-core 1.4GHz
<b>GPU</b>	Mali-T764		Mali-T864
<b>Graphics</b>	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, 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
<b>Memory Capacity</b>	Onboard DDR3L 2GB/4GB (Optional)	Onboard DDR3L 2GB	Onboard LPDDR3 2GB/4GB (Optional)
<b>Storage/SSD</b>	16GB eMMC and Micro-SD card	16GB eMMC	16GB eMMC and Micro-SD card
<b>Operating System</b>	Android 9.0 / Debian		Android 8.1 / Debian
<b>Kernel</b>	Kernal 4.4		
<b>Watchdog Timer</b>	Integrated		
<b>Power Requirement</b>	+12V DC input, Optional 7.4V battery		+12V DC input
<b>Power Consumption (Typical)</b>	0.6A@12V, full load, Quad-core CPU		0.6A@12V, full load, Hexa-core CPU
<b>Dimension</b>	3.94" x 2.84" (100mm x 72mm)		
<b>Gross Weight</b>	0.44 lb (0.2 Kg)	0.22 lb (0.1 Kg)	0.44 lb (0.2 Kg)
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)(-20°C~60°C: Optional)		32°F ~ 140°F (0°C ~ 60°C)
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)		
<b>Operating Humidity</b>	0% ~ 90% relative humidity, non-condensing		
<b>MTBF (Hours)</b>	80,000		
<b>Certification</b>	CE/FCC		
<b>Display</b>			
<b>HDMI</b>	HDMI (1.4) up to 4K x 2K @60Hz		HDMI (2.0) up to 4K x 2K @60Hz
<b>eDP</b>	Up to 2560 x 1440 @60Hz		Up to 4K x 2K @60Hz
<b>LVDS</b>	Support 18/24-bit up to 1920 x 1080 @60Hz		—
<b>MIPI</b>	Up to 2560 x 1440 @60Hz		—
<b>RF Function</b>			
<b>WiFi</b>	802.11 a/b/g/n/ac		802.11 a/b/g/n/ac
<b>BT</b>	Bluetooth V4.2 + EDR		Bluetooth V4.2 + EDR
<b>I/O</b>			
<b>Ethernet</b>	GbE x 1		
<b>USB Port</b>	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	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)
<b>Serial Port</b>	RS-232/422/485 x 1 RS-232 Pin header x 1 Debug port pin header x 1	—	RS-232/422/485 x 1 RS-232 Pin header x 1 Debug port pin header x 1
<b>Audio</b>	2.5W (by 4Ω) Speaker/ Microphone/ Earphone		2.5W (by 4Ω) Speaker/ Microphone/ Earphone
<b>GPIO</b>	8-bit (4-in, 4-out)		
<b>Expansion Slot</b>	Full-size mini-PCIe slot x 1 (For 3G/4G card)	—	Full-size mini-PCIe slot x 1 (For 3G/4G card)
<b>SIM Slot</b>	Nano-SIM		Nano-SIM
<b>SD Socket</b>	Support Micro-SD card		Support Micro-SD card
<b>Camera</b>	—		
<b>Note</b>			





Model	RICO-3568	RICO-MX8P
<b>System</b>		
<b>Form Factor</b>	Pico-ITX Plus (100mm x 80mm)	
<b>CPU</b>	Rockchip RK3568 Quad-Core Arm® Cortex®-A55 Processor NPU: 0.8 TOPS	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)
<b>GPU</b>	Arm® Mali™-G52 GPU	GC7000 UltraLite: 3D GPU (2 shaders) OpenGL ES 3.1, Vulkan, OpenCL 1.2 GC520L: 2D GPU
<b>Graphics</b>	Video Encode: 1080P @60fps H.264/H.265 Video Decode: 4K@60fps H.264/H.265/AV1 4KP60 AVS2/VP9 1080P MPEG1/VP8	Video Processing Unit (VPU): • 1080p60 H.265, VP9 decoder • 1080p60 H.264, VP8 decoder • 1080p60 H.265, H.264 encoder
<b>Memory Capacity</b>	Onboard LPDDR4 2GB/4GB/8GB (Optional)	
<b>Storage/SSD</b>	16GB eMMC and Micro-SD card Full-size mini-PCIe slot x 1 (mSATA / USB)	16GB eMMC and Micro-SD card
<b>Operating System</b>	Android™ 12 Debian® 10	Debian 10
<b>Kernel</b>	TBD	Kernel 4.19 (Debian 10)
<b>Watchdog Timer</b>	Integrated	Integrated
<b>Power Requirement</b>	+12V DC input AT: Default, ATX: Optional	+12V DC Input
<b>Power Consumption (Typical)</b>	TBD	TBD
<b>Dimension</b>	3.94" x 3.15" (100mm x 80mm)	
<b>Gross Weight</b>	0.44 lb (0.2 Kg)	
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C): Normal -4°F ~ 140°F (-20°C ~ 60°C): Optional	32°F ~ 140°F (0°C ~ 60°C)
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)	
<b>Operating Humidity</b>	0% ~ 90% relative humidity, non-condensing	
<b>MTBF (Hours)</b>	TBD	TBD
<b>Certification</b>	CE/FCC	
<b>Display</b>		
<b>HDMI</b>	HDMI 2.0, up to 4K x 2K @60Hz	HDMI 2.0 (Type-A)
<b>eDP</b>	eDP 1.3, up to 2560 x 1600 @60Hz	N/A
<b>LVDS</b>	18/24-bit LVDS, up to 1280 x 800 @60Hz JP2, 3.3V/5V: LVDS Power Selection JP3, 5V/12V: Backlight Power Selection LCD Backlight connector	4-Lane/8-Lane LVDS Interface JP2, 5V/12V: Backlight Power Selection JP3, 3.3V/5V: LVDS Power Selection LCD Backlight Connector
<b>MIPI</b>	Up to 2048 x 1536 @60Hz for Dual-MIPI Mode	4-Lane MIPI DSI Interface
<b>RF Function</b>		
<b>WiFi</b>	Onboard 802.11 a/b/g/n/ac ANT1 for Antenna	Supported via M.2 2230 E-Key (Optional, PCIe 3.0 [x1] I/F)
<b>BT</b>	Bluetooth V5.0 + EDR	Supported via M.2 2230 E-Key (Optional, PCIe 3.0 [x1] I/F)
<b>I/O</b>		
<b>Ethernet</b>	GbE x 2 RJ-45 x 2 (Onboard x 1 + T650 Daughter Board RJ-45 Port or T650 Wide-Voltage Board RJ-45 Port)	Onboard RJ45 GbE Port x 1 RJ45 GbE Port x 1 (via Daughter Board, T650 or T668)
<b>USB Port</b>	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)	USB 3.2 Gen 1 x 2 (Type-C OTG x 1, Type-A x 1) USB 2.0 x 1 (Type-A)
<b>Serial Port</b>	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	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)
<b>Audio</b>	Microphone/ Earphone (3.5mm)	Audio Combo Jack x 1 (3.5mm)
<b>GPIO</b>	GPIO x 8, 2x6P Wafer x 1	
<b>Expansion Slot</b>	Full-size mini-PCIe slot x 1 (mSATA / USB) Connect to Daughter board: 40-pin FPC connector x 1	Full Size Mini-PCIe Slot x 1 (For LTE, USB I/F) 40-Pin FPC Connector x 1 (Connect to Daughter Board)
<b>SIM Slot</b>	Nano-SIM, Push-Push type with tray	Push-Push Nano-SIM Slot with Tray
<b>SD Socket</b>	Micro-SD card, Push-Push type	Push-Push Micro-SD Card Slot x 1
<b>Camera</b>	—	4-Lane MIPI CSI Interface
<b>Note</b>		

Model	PER-T650
<b>Description</b>	I/O Module with 9V ~ 36V Input, PoE x 1, CANBus x 2, USB 2.0 x 2
<b>Features</b>	PDE: 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)
<b>Note</b>	



## Rugged Mobile and Panel PC Solutions

## RISC Boxes



Model	BOXER-RK88	BOXER-RK99
<b>System</b>		
<b>CPU</b>	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
<b>GPU</b>	Mali-T764	Mali-T864
<b>Chipset</b>	—	
<b>Graphics</b>	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
<b>System Memory</b>	DDR3L 2GB/4GB (Optional)	LPDDR3 2GB/4GB (Optional)
<b>Display Interface</b>	HDMI (1.4)	HDMI (2.0) up to 4K x 2K @ 60Hz
<b>Storage/SSD</b>	16GB eMMC and Micro-SD card	
<b>I/O</b>	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)
<b>Expansion</b>	mPCIe Slot x 1 for LTE module	
<b>Indicator</b>	Power LED x 1	
<b>OS Support</b>	Android 9.0	Android 8.1
<b>Power Supply</b>		
<b>Power Requirement</b>	+12V DC input	
<b>Mechanical</b>		
<b>Mounting</b>	VESA mount, 75mm x 75mm	
<b>Dimension (W x D x H)</b>	4.07" x 3.78" x 1.97" (103.4 mm x 96 mm x 50 mm)	
<b>Gross Weight</b>	1.1 lb (0.5 Kg)	
<b>Net Weight</b>	0.66 lb (0.3 Kg)	
<b>Environmental</b>		
<b>Operating Temperature</b>	32°F ~ 140°F (0°C ~ 60°C)	
<b>Storage Temperature</b>	-40°F ~ 176°F (-40°C ~ 80°C)	
<b>Storage Humidity</b>	0% ~ 90% relative humidity, non-condensing	
<b>Anti-Vibration</b>	—	
<b>Certification</b>	CE/FCC/IC	
<b>Note</b>		



# Rugged Mobile and Panel PC Solutions

## All in One Panel PC Solutions : ACP Series

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All in One Panel PC Solutions : ACP Series



Launching in Q3

Model	ACP-1108	ACP-1106	ACP-1105
<b>System</b>			
<b>Processor</b>	RockChipRK3568 ARM Cortex™-A55 Quad-core	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
<b>System Memory</b>	LPDDR4 2GB/4GB (Optional)	DDR3L 1866, Single Channel SODIMM x 1, Non-ECC (Max.8GB, up to 1600MHz)	LPDDR4 2GB/4GB (Optional)
<b>LCD/CRT controller</b>	—	Integrated in processor	—
<b>Ethernet</b>	10/100/1000 Base TX x2	10/100/1000 Base-TX, RJ-45 x 2	10/100/1000 Base TX x1
<b>I/O Port</b>	LAN x2 COM x2 USB 3.2 Gen 1 Type C OTG x 1 (For System Recovery) USB 3.2 Gen 1 x2 USB 2.0 x2 HDMI x1 Audio x1	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 Power Button x 1 Type A USB 2.0 x 1 Expansion I/O Slot	LAN x1 COM x1 USB 3.2 Gen 1 x2 USB 2.0 x1 HDMI x1
<b>Storage Disk Drive</b>	16GB eMMC and Micro-SD card	Full Size mSATA x 1	Onboard 32GB eMMC(16 GB/64GB Optional)
<b>Expansion Slot</b>	Full-size mini-PCIe slot x 1 (PCIe 3.0 x 1 or mSATA)	Half size mini card x 1(Internal)	M.2 B Key (2280) x 1, M.2 E Key (2230) x 1
<b>OS support</b>	Android 12 / Debian	Windows® 10, Linux Kernal 4.4.0 or higher	Windows 10(64 Bit)
<b>Mechanical Construction</b>	Aluminum Front Bezel + Metal Chassis	Aluminum Front Bezel + Metal Chassis	SECC
<b>Mounting</b>	VESA / Panel Mount	VESA 75, Panel Mount	—
<b>Dimension</b>	TBD	10.47" x 7.24 x 1.89" (266 x 184 x 48mm)	TBD
<b>Carton Dimension</b>	TBD	13.38" x 7.64 x 9.96" (340 x 194 x 253mm)	TBD
<b>Gross Weight</b>	TBD	6.38 lb (2.9 kg)	TBD
<b>Environmental</b>			
<b>Operating Temperature</b>	23°F ~131°F (-5°C ~ 50°C) with 0.5 m/s airflow	23°F ~ 122°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
<b>Storage Temperature</b>	-4°F ~ 140°F (-20°C ~ 60°C)	-4°F ~ 158°F (-20°C ~ 70°C)	32°F~113°F(0°C~45°C)
<b>Storage Humidity</b>		90% @40°C; non-condensing	
<b>Vibration</b>	1Grms / 5~ 500Hz / operation	1 Grms/ 5~ 500Hz/ operation – with HDD	—
<b>Shock</b>	15 G peak acceleration (11 msec. duration)		—
<b>EMC</b>	CE/FCC Class A Compatible	CE/FCC Class A	—
<b>Power Supply</b>			
<b>DC Input</b>	DC 9~36V	DC 9~30V	DC 12V
<b>LCD</b>			
<b>Display Type</b>	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
<b>Max Resolution</b>	1280 x 800	1280 x 800	1280 x 800
<b>Max. Colors</b>	262K colors (6 bit for R,G,B)	262K colors (6 bit for R,G,B)	262K colors (6 bit for R,G,B)
<b>Luminance</b>	300 nits	300 cd/m2	300 nits
<b>Viewing Angle</b>		170° (H) ; 170° (V)	
<b>Back Light</b>		LED	
<b>Back Light MTBF (Hours)</b>	25,000 Hrs	—	25,000 Hrs
<b>Touchscreen</b>			
<b>Type</b>	Projected Capacitive Multi-Touch	P-CAP Touchscreen	Projected Capacitive Multi-Touch
<b>Light Transmission</b>	90%		
<b>Note</b>			

# 0 4 Rugged Mobile and Panel PC Solutions

## All in One Panel PC Solutions : ACP Series

All In One Panel PC Solutions : ACP Series



Launching in Q3



Model	ACP-1104	ACP-1078	ACP-1076
<b>System</b>			
<b>Processor</b>	Intel® Celeron® J1900 processor, 2 GHz Intel® N2807 processor, 1.58 GHz	RockChipRK3568 ARM Cortex™-A55 Quad-core	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
<b>System Memory</b>	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)
<b>LCD/CRT controller</b>			Integrated in processor
<b>Ethernet</b>	10/100/1000 Base-TX, RJ-45 x 2	10/100/1000 Base TX x2	10/100/1000 Base-TX, RJ-45 x 2
<b>I/O Port</b>	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 x2 COM x2 USB 3.2 Gen 1 Type C OTG x 1 (For System Recovery) USB 3.2 Gen 1 x2 USB 2.0 x2 HDMI x1 Audio x1	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 Power Button x 1 Type A USB 2.0 x 1 Expansion I/O Slot
<b>Storage Disk Drive</b>	Half size mSATA x 1 (Installation by AAEON recommended)	16GB eMMC and Micro-SD card	Full Size mSATA x 1
<b>Expansion Slot</b>	Full size Mini-Card x 1	Full-size mini-PCIe slot x 1 (PCIe 3.0 x 1 or mSATA)	Half size mini card x 1(Internal)
<b>OS support</b>	Windows® 7, Windows® 8.1, Windows® 10, Linux kernel 2.6.3 or higher, Android 4.4.4	Android 12 / Debian	Windows® 10, Linux Kernal 4.4.0 or higher
<b>Mechanical</b>			
<b>Construction</b>	Aluminum Design	Aluminum Front Bezel + Metal Chassis	Aluminum Front Bezel + Metal Chassis
<b>Mounting</b>	YESA 75/ Panel mount/ Stand	VESA / Panel Mount	YESA 75, Panel Mount
<b>Dimension</b>	10.47" x 7.22" x 1.81" (266 x 183.5 x 30mm)	TBD	7.72" x 5.28" x 1.89" (196 x 134 x 48 mm)
<b>Carton Dimension</b>	13.58" x 7.87" x 9.65" (345 x 200 x 245mm)	TBD	10.87" x 9.41" x 6.69" (276 x 239 x 170 mm)
<b>Gross Weight</b>	5.5 lb (2.5 kg)	TBD	4.62 lb (2.1 Kg)
<b>Environmental</b>			
<b>Operating Temperature</b>	32°F ~ 113°F (0°C ~ 45°C) without airflow 32°F ~ 122°F (0°C ~ 50°C) with airflow	-5°C ~ 50°C with 0.5 m/s airflow	23°F ~ 122°F (-5°C ~ 50°C) with 0.5 m/s airflow
<b>Storage Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C)	-20°C~60°C	-4°F ~ 158°F (-20°C ~ 70°C)
<b>Storage Humidity</b>	5%~90% @40°C, non-condensing	90% @40°C, non-condensing	90% @40°C, non-condensing
<b>Vibration</b>	1 Grms/ 5~ 500Hz/ operation	1Grms / 5~ 500Hz / operation	1 Grms/ 5~ 500Hz/ operation -- with HDD
<b>Shock</b>	15 G peak acceleration (11 msec. duration)	15 G peak acceleration (11 msec. duration)	15 G peak acceleration (11 msec. duration) -- with HDD
<b>EMC</b>	CE/FCC class A	CE/FCC Class A Compatible	CE/FCC Class A
<b>Power Supply</b>			
<b>DC Input</b>	DC 12V with lockable power adapter	DC 9~36V	DC 9~30V
<b>LCD</b>			
<b>Display Type</b>	10.1" TFT-LCD, LED	7" WSVGA (1024 x 600) Color TFT LCD Display	7" TFT-LCD, LED
<b>Max Resolution</b>	1280 x 800		1024 x 600
<b>Max. Colors</b>	262k		16.7M
<b>Luminance</b>	300 cd/m2	320 nits	320 cd/m2
<b>Viewing Angle</b>	170° (H), 170° (V)	145° (H) ; 150° (V)	150° (H), 145° (V)
<b>Back Light</b>		LED	
<b>Back Light MTBF (Hours)</b>			20,000
<b>Touchscreen</b>			
<b>Type</b>		Projected Capacitive Multi-Touch	P-CAP Touchscreen
<b>Light Transmission</b>			90%
<b>Note</b>			



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## All in One Panel PC Solutions : ACP Series



Model	ACP-1075	ACP-1074
<b>System</b>		
<b>Processor</b>	Intel® Pentium® N4200/ Celeron® N3350/ Atom™ Processor SoC	Intel® N2807 processor, 1.58 GHz Intel® Celeron® J1900 processor, 2 GHz
<b>System Memory</b>	LPDDR4 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)
<b>LCD/CRT controller</b>	—	Integrated in processor
<b>Ethernet</b>	10/100/1000 Base TX x1	10/100/1000 Base-TX, RJ-45 x 2
<b>I/O Port</b>	LAN x1 COM x1 USB 3.2 Gen 1 x2 USB 2.0 x1 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
<b>Storage Disk Drive</b>	Onboard 32GB eMMC(16 GB/64GB Optional)	Half size mSATA storage x 1 (Installation by AAeon recommended)
<b>Expansion Slot</b>	M.2 B Key (2280) x 1, M.2 E Key (2230) x 1	Full size Mini-Card x 1
<b>OS support</b>	Windows 10(64 Bit)	Windows® 7, Windows® 8.1, Windows® 10, Linux kernel 2.6.3 or higher
<b>Mechanical</b>		
<b>Construction</b>	SECC	Aluminum Design
<b>Mounting</b>	—	VESA 75/ Panel mount/ Stand
<b>Dimension</b>	TBD	7.71" x 5.27" x 1.18" (196mm x 134mm x 30mm)
<b>Carton Dimension</b>	TBD	13.58" x 7.87" x 9.64" (345mm x 200mm x 245mm)
<b>Gross Weight</b>	TBD	5.5 lb (2.5 kg)
<b>Environmental</b>		
<b>Operating Temperature</b>	32°F~104°F (0°C ~ 40°C) with 0.5 m/s airflow	32°F ~ 122°F (0°C ~ 50°C) without airflow
<b>Storage Temperature</b>	32°F~113°F(0°C~45°C)	23°F ~ 131°F (-5°C ~ 55°C) with airflow
<b>Storage Humidity</b>	90% @40°C; non-condensing	-4°F ~ 158°F (-20°C ~ 70°C)
<b>Vibration</b>	—	5%~90% @40°C, non-condensing
<b>Shock</b>	—	1 Grms/ 5~ 500Hz/ operation – with HDD
<b>EMC</b>	—	15G peak acceleration (11 msec. duration) – with HDD CE/FCC class A
<b>Power Supply</b>		
<b>DC Input</b>	DC 12V	DC12V, with lockable power adapter
<b>LCD</b>		
<b>Display Type</b>	7" WSVGA (1024 x 600) Color TFT LCD Display	7" TFT-LCD, LED
<b>Max Resolution</b>		1024 x 600
<b>Max. Colors</b>		16.7M
<b>Luminance</b>	320 nits	320 cd/m <sup>2</sup>
<b>Viewing Angle</b>	145° (H) ; 150° (V)	150° (H), 145° (V)
<b>Back Light</b>		LED
<b>Back Light MTBF (Hours)</b>		20,000
<b>Touchscreen</b>		
<b>Type</b>	Projected Capacitive Multi-Touch	Projected capacitive multi-touch (2-point)
<b>Light Transmission</b>		90%
<b>Note</b>		



# 04 Rugged Mobile and Panel PC Solutions

## All in One Panel PC Solutions : OMNI Series

All In One Panel PC Solutions : OMNI Series



Model	OMNI-2155-CML
<b>System</b>	
<b>Processor</b>	Intel® Core™ i9-10900TE Intel® Core™ i7-10700TE Intel® Core™ i5-10500TE Intel® Core™ i3-10100TE Intel® Celeron® G5900TE
<b>System Memory</b>	DDR4 SO-DIMM x 2, up to 64GB
<b>LCD/CRT controller</b>	—
<b>Ethernet</b>	Intel® i211 x 1, i219 x 1
<b>I/O Port</b>	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
<b>Storage Disk Drive</b>	M.2 2280 slot x 1 (PCIex4), 2.5" SATA SSD/HDD bay x 1
<b>Expansion Slot</b>	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
<b>OS support</b>	Windows® 10 IoT Enterprise 64-bit, Linux Ubuntu 20.04
<b>Mechanical</b>	
<b>Construction</b>	Aluminum Design (IP65 Front Frame)
<b>Mounting</b>	VESA 100 / Panel Mount
<b>Dimension</b>	420.14mm x 264.47mm x 73.2 mm
<b>Carton Dimension</b>	530mm x 445mm x 200mm
<b>Gross Weight</b>	6.75 kg
<b>Environmental</b>	
<b>Operating Temperature</b>	32°F ~ 113°F (0°C ~ 45°C) (35W CPU), according to IEC68-2-14 with 0.5 m/s AirFlow
<b>Storage Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C)
<b>Storage Humidity</b>	90% @40°C; non-condensing
<b>Vibration</b>	1 Grms/ 5~500Hz/random operation
<b>Shock</b>	15 G peak acceleration (11 msec. duration)
<b>EMC</b>	CE/FCC class A
<b>Power Supply</b>	
<b>DC Input</b>	10-35V DC-in with 3-pin terminal block
<b>LCD</b>	
<b>Display Type</b>	15.6" TFT-LCD, LED
<b>Max Resolution</b>	1366 (H) x 768 (V)
<b>Max. Colors</b>	16.7M (8 bit/color)
<b>Luminance</b>	400 cd/m <sup>2</sup>
<b>Viewing Angle</b>	170° (H), 130° (V)
<b>Back Light</b>	LED
<b>Back Light MTBF (Hours)</b>	50,000
<b>Touchscreen</b>	
<b>Type</b>	Flat 5-wire Resistive / P-CAP Multi Touch
<b>Light Transmission</b>	80% ± 3% / 88%± 2%
<b>Note</b>	





## 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	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	15.6" TFT-LCD, LED	21.5" TFT-LCD, LED	10.4" TFT-LCD, LED
Max Resolution	1366 x 768	1920 x 1080	800 x 600
Max. Colors	16.2M colors	16.7M colors	16.2M colors
Luminance	400 cd/m2	250 cd/m2	230 cd/m2
Viewing Angle	160° (H), 140° (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			



Model	OMNI-312D	OMNI-315D	OMNI-317D
<b>Mechanical</b>			
<b>Construction</b>	Aluminum Front Bezel		
<b>Mounting</b>	Panel Mount		
<b>Dimension</b>	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)	16.14" x 14.57" x 1.1" (410mm x 370mm x 28mm)
<b>Carton Dimension</b>	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)	20.47" x 10.32" x 19.29" (522mm x 262mm x 490mm)
<b>Gross Weight</b>	4.4 lb (2 kg)	11.66 lb (5.3 kg)	8.8 lb(4 kg)
<b>Environmental</b>			
<b>Operating Temperature</b>	14°F ~ 131°F (-10°C ~ 55°C) with 0.5 m/s airflow		
<b>Storage Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C)		
<b>Storage Humidity</b>	90% @40°C; non-condensing		
<b>Vibration</b>	1 Grms/ 5 ~ 500Hz/ operation – with HDD		
<b>Shock</b>	15G peak acceleration (11 msec. duration) – with HDD		
<b>EMC</b>	CE/FCC Class A		
<b>Power Supply</b>			
<b>DC input</b>	—		
<b>LCD</b>			
<b>Display Type</b>	12.1" TFT-LCD, LED	15" TFT-LCD, LED	17" TFT-LCD, LED
<b>Max Resolution</b>	1024 x 768		1280 x 1024
<b>Max. Colors</b>	16.2M colors	16.2M (8bit/color)	16.7M colors
<b>Luminance</b>	500 cd/m2	300 cd/m2	350 cd/m2
<b>Viewing Angle</b>	160° (H), 160° (V)	176° (H), 176° (V)	170° (H), 160° (V)
<b>Back Light</b>	LED		
<b>Back Light MTBF (hours)</b>	50,000	70,000	50,000
<b>Touch Screen</b>			
<b>Type</b>	P-CAP/ Full-flap resistive		
<b>Light Transmission</b>	90%		
<b>Others</b>	1. Connect with OMNI-Box Kit 2. Connect with LVDS/USB Type Touch		
<b>Note</b>			



## OMNI Series : Modular Builder - Panel Kit



Model	OMNI-319D
<b>Mechanical</b>	
Construction	Aluminum Front Bezel
Mounting	Panel Mount
Dimension	16.54" x 10.39" x 1.14" (420mm x 264mm x 29mm)
Carton Dimension	20.47" x 17.13" x 7.09" (520mm x 435mm x 180mm)
Gross Weight	11 lb (5 kg)
<b>Environmental</b>	
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
<b>Power Supply</b>	
DC input	—
<b>LCD</b>	
Display Type	15.6" TFT-LCD, LED
Max Resolution	1366 x 768
Max. Colors	16.2M colors
Luminance	400 cd/m2
Viewing Angle	160° (H), 140° (V)
Back Light	LED
Back Light MTBF (hours)	50,000
<b>Touch Screen</b>	
Type	P-CAP/ Full-flap resistive
Light Transmission	90%
Others	1. Connect with OMNI-Box Kit 2. Connect with LVDS/USB Type Touch
Note	

# 0 4 Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Builder - BOX Kit

OMNI Series : Modular Builder - BOX Kit



Model	OMNI-BT CPU BOX Kit	OMNI-SKU CPU-BOX Kit
<b>System</b>	Integrated in processor	
<b>Processor</b>	Intel® N2807 processor, 1.58 GHz Intel® Celeron® J1900 processor, 2 GHz	Intel® Core™ i7-6600U, i5-6300U, i3-6100U, Celeron® 3995 Processor
<b>System Memory</b>	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
<b>LCD CRT Controller</b>	Integrated in processor	
<b>Ethernet</b>	Intel® I211, 10/100/1000 Base-TX x 2	Gigabit Ethernet, RJ-45 x 1
<b>I/O Port</b>	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
<b>Storage Disk Drive</b>	CFast™ x 1, 2.5" SATA HDD bay x 1	2.5" SATA HDD bay x 1
<b>Expansion Slot</b>	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>OS Support</b>	Windows® 7, Windows® 8, Windows® 10, Linux Kernel 2.6.x or higher	Windows® 10 (64-bit), Linux kernel 2.6.3 or above
<b>Construction</b>	Aluminum design	
<b>Mounting</b>	Wallmount	Wallmount (with optional Bottom cover: M0421550A0) / with OMNI-Panel Kits
<b>Dimension</b>	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)
<b>Gross Weight</b>	3.96 lb (1.8 kg)	3.96 lb (1.8 kg)
<b>Operating Temperature</b>	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)
<b>Storage Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C)	
<b>Storage Humidity</b>	90% @40°C; non-condensing	
<b>Anti Vibration</b>	1 Grms/ 5~ 500Hz/ operation – with HDD	
<b>Anti-Shock</b>	15 G peak acceleration (11 msec. duration) – HDD	
<b>Certification</b>	CE/FCC class A	
<b>DC Input</b>	DC 9 (min.) ~ 30 (max.) V w/3-pin terminal block, ATX Power function	
<b>Display Type</b>	HDMI x 1, VGA	HDMI x 1
<b>Others</b>	Box Bottom Chassis Cover (optional): M0421550A0	
<b>Note</b>		

## OMNI Series : Modular Builder - BOX Kit



Model	OMNI-ADP-KIT CPU BOX
<b>System</b>	
<b>Processor</b>	Intel® Alder Lake-P i7/i5/i3/Celeron CPU
<b>System Memory</b>	DDR5 4800 MHz, Dual Channel SODIMM x 2
<b>LCD CRT Controller</b>	—
<b>Ethernet</b>	Intel® i210/i211, 10/100/1000Base Intel® i225, 10/100/1000/2500Base
<b>I/O Port</b>	LAN x2 USB Type A x3 USB Type C x1 HDMI x1 Audio x1 COM x2
<b>Storage Disk Drive</b>	2.5" SATA-III x1 (6 Gb/s, for 2.5" SATA drive bay) M.2 2280 NVMe x1 (For PCIe4 NVMe Storage)
<b>Expansion Slot</b>	B-Key 3052 x 1 (BOM Optional: PCIe x 2), default: USB3.2 Gne2+SATA E-Key 2230 x 1 (PCIe, USB2.0)
<b>OS Support</b>	Windows 10/Windows 11/Linux
<b>Construction</b>	Aluminum design
<b>Mounting</b>	TBD
<b>Dimension</b>	TBD
<b>Gross Weight</b>	TBD
<b>Operating Temperature</b>	23°F~122°F(-5°C ~ 50°C) with 0.5 m/s airflow
<b>Storage Temperature</b>	-4°F~140°F(-20°C~60°C)
<b>Storage Humidity</b>	90% @40°C; non-condensing
<b>Anti Vibration</b>	1Grms / 5~ 500Hz / operation
<b>Anti-Shock</b>	15 G peak acceleration (11 msec. duration)
<b>Certification</b>	CE/FCC Class A Compatible
<b>DC Input</b>	DC 9~36V
<b>Display Type</b>	OMNI Series Panel Kit from 12.1 inches to 21.5 inch
<b>Others</b>	Flat 5-Wire Resistive / PCAP multitouch (Support Gloves)
<b>Note</b>	

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



# 04 Rugged Mobile and Panel PC Solutions

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

OMNI Series : Modular Builder - I/O Modules

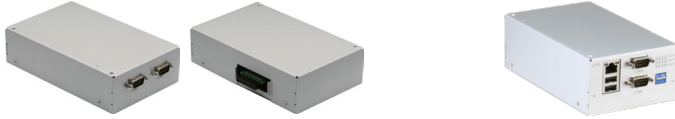


Model	9741215502 - Dual LAN Module	9741215506 - DIO Module
<b>System</b>		
<b>Product Description</b>	Gigabit Ethernet x 2, for OMNI Panel PC only	DIO without Isolation x 8, for OMNI Panel PC only
<b>Features</b>	Gigabit Ethernet x 2 Intel® i211 Chipset OS support: Windows® 7, Windows® 10, Linux Kernal 2.6.x or above	DIO x 8 (3.3 Vac) OS support: Windows® 7, Windows® 10, Linux Kernal 2.6.x or above
<b>Dimension</b>	161 x 80 x 31 mm	
<b>Note</b>		



Model	9741215508 - Audio Module	9741215512
<b>System</b>		
<b>Product Description</b>	MIC-In x 1, Line-out x 1, for OMNI Panel PC only	WiFi 802.11 b/g/n Module
<b>Features</b>	Mic in x 1 Line out x 1 OS support: Windows® 7, Windows® 10, Linux Kernal 2.6.x or above	Supports 802.11b/g/n Supports BT 4.0 OS support: Windows® 7, Windows® 10, Linux Kernal 2.6.x or above
<b>Dimension</b>	161 x 80 x 31 mm	
<b>Note</b>		

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



Model	9741215513	9741215515
<b>System</b>		
<b>Product Description</b>	RS-485/422/232 Module	OMNI USB/COM/LAN Module
<b>Features</b>	RS-232/422/485 x 2 Selection by Jumper OS support: Windows® 7, Windows® 10, Linux Kernal 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 Kernal 2.6.x or above
<b>Dimension</b>	161x 99 x 42 mm	161x 99 x 56 mm
<b>Note</b>		



Model	9741215517	
<b>System</b>		
<b>Product Description</b>	OMNI Isolated COM Module	
<b>Features</b>	Isolated RS-232/422/485 x 4 2K VDC Isolation Selection by internal jumper OS support: Windows® 7, Windows® 10, Linux Kernal 2.6.x or above	
<b>Dimension</b>	161 x 99 x 56 mm	
<b>Note</b>		



# 0 4 Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Touch Panel Solutions

OMNI Series : Modular Touch Panel Solutions



Processor	OMNI-2155-BT	OMNI-3105-BT	OMNI-3125-BT
<b>System</b>			
<b>Processor</b>	Intel® Celeron® J1900, 2.0 GHz/ N2807, 1.58 GHz	Intel® N2807 processor, 1.58 GHz, Intel® Celeron® J1900 processor, 2 GHz	
<b>System Memory</b>	204-pin DDR3L 1333MHz SODIMM x 1, up to 8 GB (J1900), 4 GB (N2807)	204-pin DDR3L 1333MHz SODIMM x 1, up to 8 GB, (J1900) 204-pin DDR3L 1333MHz SODIMM x 1, up to 4 GB, (N2807)	
<b>LCD/CRT Controller</b>	Integrated in Processor		
<b>Ethernet</b>	10/100/1000Base-TX, RJ-45 x 2	Intel® I211, 10/100/1000 Base-TX x 2	
<b>I/O Port</b>	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)
<b>Storage Disk Drive</b>	CFast™ socket x 1, SATA 2.5" HDD bay x 1	CFast™ x 1, 2.5" SATA HDD bay x 1	CFast™ x 1, 2.5" SATA HDD bay x 1
<b>Expansion Slot</b>	Mini-Card x 2 (Full Size), OMNI I/O Connector x 1, SIM x 2	Full Size Mini card x 2, SIM card x 1, OMNI I/O connector x 1	
<b>OS support</b>	Windows® 7, Windows® 8, Windows® 10, Linux kernel 2.6.x or higher	Windows® 7, Windows® 8, Windows® 10, Linux Kernel 2.6.x or higher	Windows® 7, Windows® 8, Windows® 10, Linux kernel 2.6.x or higher
<b>Mechanical</b>	Aluminum front bezel + metal chassis		
<b>Construction</b>	Aluminum design (IP65 Front Frame)		
<b>Mounting</b>	VESA 100/ Panel mount		
<b>Dimension</b>	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)
<b>Carton Dimension</b>	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)
<b>Gross Weight</b>	14.1 lb (6.4kg)	7.92 lb (3.6 kg)	11 lb (5.0 kg)
<b>Environmental</b>			
<b>Operating Temperature</b>	-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 )	
<b>Storage Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C)		
<b>Storage Humidity</b>	90% @40°C, non-condensing		
<b>Vibration</b>	1 Grms/ 5- 500Hz/ operation – with HDD		
<b>Shock</b>	15 G peak acceleration (11 msec. duration)	15 G peak acceleration (11 msec. duration) – with HDD	15 G peak acceleration (11 msec. duration) – with HDD
<b>EMC</b>	CE/FCC class A		
<b>Power Supply</b>			
<b>DC input</b>	DC 9 (min.) – 30 (max.) V w/ 3-pin terminal block, ATX Power function		
<b>LCD</b>			
<b>Display Type</b>	15.6" TFT-LCD, LED backlight	10.4" TFT-LCD, LED	12.1" TFT-LCD, LED
<b>Max Resolution</b>	1366 x 768	800 (H) x 600 (V)	1024 (H) x 768 (V)
<b>Max. Colors</b>	16.7M colors (8-bit for R,G,B)	16.2M colors	
<b>Luminance</b>	400 cd/m2	230 cd/m2	500 cd/m2
<b>Viewing Angle</b>	160° (H), 140° (V)	120° (H), 100° (V)	160° (H), 160° (V)
<b>Back Light</b>	LED		
<b>Back Light MTBF (Hours)</b>	50,000		
<b>Touchscreen</b>			
<b>Type</b>	P-CAP/ 5-wire resistive		
<b>Light Transmission</b>	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)		
<b>Note</b>			





## OMNI Series : Modular Touch Panel Solutions



Processor	OMNI-3155-BT	OMNI-3175-BT	OMNI-3195-BT
<b>System</b>			
<b>Processor</b>	Intel® N2807 processor, 1.58 GHz Intel® Celeron® J1900 processor, 2 GHz		
<b>System Memory</b>	204-pin DDR3L 1333MHz SODIMM x 1, up to 8 GB, (J1900) 204-pin DDR3L 1333MHz SODIMM x 1, up to 4 GB, (N2807)		
<b>LCD/CRT Controller</b>	Integrated in processor		
<b>Ethernet</b>	Intel® I211, 10/100/1000 Base-TX x 2		
<b>I/O Port</b>	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)	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)	
<b>Storage Disk Drive</b>	CFast™ x 1, 2.5" SATA HDD bay x 1		
<b>Expansion Slot</b>	Full Size Mini card x 2, SIM card x 1, OMNI I/O connector x 1	Mini card x 2, SIM card x 1, OMNI I/O connector x 1	Full Size Mini card x 2, SIM card x 2, OMNI I/O connector x 1
<b>OS support</b>	Windows® 7, Windows® 8, Windows® 10, Linux kernel 2.6.x or higher		
<b>Mechanical</b>			
<b>Construction</b>	Aluminum design (IP65 Front Frame)		
<b>Mounting</b>	VESA 100 / Panel Mount		
<b>Dimension</b>	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)
<b>Carton Dimension</b>	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)
<b>Gross Weight</b>	13.97 lb (6.35 kg)	15.84 lb (7.2 kg)	19.36 lb (8.8 kg)
<b>Environmental</b>			
<b>Operating Temperature</b>	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)		
<b>Storage Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C)		
<b>Storage Humidity</b>	90% @40°C; non-condensing		
<b>Vibration</b>	1 Grms/ 5~ 500Hz/ operation – with HDD		
<b>Shock</b>	15 G peak acceleration (11 msec. duration) – with HDD		
<b>EMC</b>	CE/FCC class A		
<b>Power Supply</b>			
<b>DC input</b>	DC 9 (min.) – 30 (max.) V w/3-pin terminal block, ATX Power function		
<b>LCD</b>			
<b>Display Type</b>	15" TFT-LCD, LED	17" TFT-LCD, LED	19" TFT-LCD, LED
<b>Max Resolution</b>	1024 (H) x 768 (V)		1280 (H) x 1024 (V)
<b>Max. Colors</b>	16.2M (8bit/color)	16.7M colors (RGB 6-bits + Hi-FRC data)	16.7M colors
<b>Luminance</b>	300 cd/m2		350 cd/m2
<b>Viewing Angle</b>	176° (H), 176° (V)		170° (H), 160° (V)
<b>Back Light</b>	LED		
<b>Back Light MTBF (Hours)</b>	70,000		50,000
<b>Touchscreen</b>			
<b>Type</b>	P-CAP/ 5-wire resistive		
<b>Light Transmission</b>	P-CAP (90%± 2%), 5-wire Resistive (80% ± 2%)	P-CAP (>85%), 5-wire Resistive (80% ± 5%)	
<b>Note</b>			



# 0 4 Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Touch Panel Solutions

OMNI Series : Modular Touch Panel Solutions



Processor	OMNI-2155-SKU	OMNI-2215-SKU	OMNI-3125-SKU
<b>System</b>			
<b>Processor</b>	Intel® i5-6300U processor, 2.4 GHz Intel® Celeron® 3955U processor, 2.0 GHz	Intel® Core™ i5-6300U processor, 2.4 GHz Intel® Celeron® 3955U processor, 2.0 GHz	Intel® i5-6300U processor, 2.4 GHz Intel® Celeron® 3955U processor, 2.0 GHz
<b>System Memory</b>	260-pin DDR4 SODIMM x 1, up to 16 GB		
<b>LCD/CRT Controller</b>	Integrated in processor		
<b>Ethernet</b>	Intel® I211, 10/100/1000 Base-TX x 1		
<b>I/O Port</b>	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)		
<b>Storage Disk Drive</b>	2.5" SATA HDD bay x 1		
<b>Expansion Slot</b>	Full Size Mini card x 1 SIM card x 1 OMNI I/O connector x 1		
<b>OS support</b>	Windows® 8.1 Windows® 10 (64 bit) Linux Kernel 2.6.x or higher		
<b>Mechanical</b>			
<b>Construction</b>	Aluminum design (IP65 Front Frame)		
<b>Mounting</b>	VESA 100 / Panel Mount		
<b>Dimension</b>	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 289mm x 69 mm)
<b>Carton Dimension</b>	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)
<b>Gross Weight</b>	14.96 lb (6.8 kg)	20.02 lb (9.1 Kg)	12.34 lb (5.6 kg)
<b>Environmental</b>			
<b>Operating Temperature</b>	-4°F ~ 131°F (-20°C ~ 55°C) with 0.5 m/s airflow (Industrial Grade HDD)		
<b>Storage Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C)		
<b>Storage Humidity</b>	90% @40°C; non-condensing		
<b>Vibration</b>	1 Grms/ 5~ 500Hz/ operation – with HDD		
<b>Shock</b>	15 G peak acceleration (11 msec. duration) – with HDD		
<b>EMC</b>	CE/FCC class A		
<b>Power Supply</b>			
<b>DC input</b>	DC 9 (min.) ~ 30 (max.) V w/3-pin terminal block, ATX Power function		
<b>LCD</b>			
<b>Display Type</b>	15.6" TFT-LCD, LED	21.5" TFT-LCD, LED	12.1" TFT-LCD, LED
<b>Max Resolution</b>	1366 (H) x 768 (V)	1920 (H) x 1080 (V)	1024 (H) x 768 (V)
<b>Max. Colors</b>	16.7M (8 bit/color)	16.7M colors	16.2M colors
<b>Luminance</b>	400 cd/m2	250 cd/m2	500 cd/m2
<b>Viewing Angle</b>	160° (H), 140° (V)	178° (H), 178° (V)	160° (H), 160° (V)
<b>Back Light</b>	LED		
<b>Back Light MTBF (Hours)</b>	50,000		
<b>Touchscreen</b>			
<b>Type</b>	P-CAP/ 5-wire resistive		
<b>Light Transmission</b>	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%)
<b>Note</b>			



## OMNI Series : Modular Touch Panel Solutions



Processor	OMNI-3155-SKU	OMNI-3175-SKU	OMNI-3195-SKU
<b>System</b>			
<b>Processor</b>	Intel® i5-6300U processor, 2.4 GHz Intel® Celeron® 3955U processor, 2.0 GHz		
<b>System Memory</b>	260-pin DDR4 SODIMM x 1, up to 16 GB		
<b>LCD/CRT Controller</b>	Integrated in processor		
<b>Ethernet</b>	Intel® i211, 10/100/1000 Base-TX x 1		
<b>I/O Port</b>	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)		
<b>Storage Disk Drive</b>	2.5" SATA HDD bay x 1		
<b>Expansion Slot</b>	Full Size Mini card x 1, SIM card x 1, OMNI I/O connector x 1		
<b>OS support</b>	Windows® 8.1, Windows® 10 (64 bit), Linux kernel 2.6.x or higher		
<b>Mechanical</b>			
<b>Construction</b>	Aluminum design (IP65 Front Frame)		
<b>Mounting</b>	VESAs 100/ Panel Mount		
<b>Dimension</b>	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)
<b>Carton Dimension</b>	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)
<b>Gross Weight</b>	14.3 lb (6.5 kg)	16.28 lb (7.4 kg)	20.06 lb (9.1 kg)
<b>Environmental</b>			
<b>Operating Temperature</b>	-4°F ~ 131°F (-20°C ~ 55°C) with 0.5 m/s airflow (Industrial Grade HDD)		
<b>Storage Temperature</b>	-4°F ~ 158°F (-20°C ~ 70°C)		
<b>Storage Humidity</b>	90% @40°C; non-condensing		
<b>Vibration</b>	1 Grms/ 5~ 500Hz/ operation – with HDD		
<b>Shock</b>	15 G peak acceleration (11 msec. duration) – with HDD		
<b>EMC</b>	CE/FCC class A		
<b>Power Supply</b>			
<b>DC input</b>	DC 9 (min.) ~ 30 (max.) V w/3-pin terminal block, ATX Power function		
<b>LCD</b>			
<b>Display Type</b>	15" TFT-LCD, LED	17" TFT-LCD, LED	17" TFT-LCD, LED
<b>Max Resolution</b>	1024 (H) x 768 (V)		1280 (H) x 1024 (V)
<b>Max. Colors</b>	16.2M (8bit/color)		16.7M colors (RGB 6-bits + Hi-FRC data)
<b>Luminance</b>	300 cd/m <sup>2</sup>		350 cd/m <sup>2</sup>
<b>Viewing Angle</b>	176° (H), 176° (V)		170° (H), 160° (V)
<b>Back Light</b>		LED	
<b>Back Light MTBF (Hours)</b>	70,000		50,000
<b>Touchscreen</b>			
<b>Type</b>	P-CAP/ 5-wire resistive		
<b>Light Transmission</b>	P-CAP (90%± 2%), 5-wire Resistive (80% ± 2%)	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)	
<b>Note</b>			



# 0 4 Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Touch Panel Solutions

OMNI Series : Modular Touch Panel Solutions



Processor		OMNI-2155-ADP	OMNI-2215-ADP	OMNI-3125-ADP
<b>System</b>				
<b>Processor</b>		Intel® Alder Lake-P i7/i5/i3/Celeron CPU		
<b>System Memory</b>		DDR5 4800 MHz, Dual Channel SODIMM x 2		
<b>LCD/CRT Controller</b>		—		
<b>Ethernet</b>		Intel® i210/i211, 10/100/1000Base Intel® i225, 10/100/1000/2500Base		
<b>I/O Port</b>		RJ45 LAN x2 USB Type A USB 3.2 Gen2 x3 USB Type C x1 HDMI 2.0b x1 Audio x1 DB9 COM RS-232/422/485 x2		
<b>Storage Disk Drive</b>		2.5" SATA-III x1 (6 Gb/s, for 2.5" SATA drive bay) M.2 2280 NVMe x1 (For PCIe4 NVMe Storage)		
<b>Expansion Slot</b>		B-Key 3052 x 1 (BOM Optional: PCIe x2), default: USB3.2 Gne2+SATA E-Key 2230 x 1 (PCIe, USB2.0)		
<b>OS support</b>		Windows 10/Windows 11/Linux		
<b>Mechanical</b>				
<b>Construction</b>		Aluminum Front Bezel + Metal Chassis		
<b>Mounting</b>		VESA / Panel Mount		
<b>Dimension</b>	TBD	TBD		TBD
<b>Carton Dimension</b>	TBD	TBD		TBD
<b>Gross Weight</b>	TBD	TBD		TBD
<b>Environmental</b>				
<b>Operating Temperature</b>		-4°F~122°F (-20°C~50°C) with airflow		
<b>Storage Temperature</b>		-4°F~140°F(-20°C~60°C)		
<b>Storage Humidity</b>		90% @40°C; non-condensing		
<b>Vibration</b>		1Grms / 5~ 500Hz / operation		
<b>Shock</b>		15 G peak acceleration (11 msec. duration)		
<b>EMC</b>		CE/FCC Class A Compatible		
<b>Power Supply</b>				
<b>DC input</b>		DC 9~36V		
<b>LCD</b>				
<b>Display Type</b>	15.6" TFT-LCD, LED	21.5" TFT-LCD, LED		12.1" TFT-LCD, LED
<b>Max Resolution</b>	1366 (H) x 768 (V)	1920 x 1080		1024(H) x 768 (V)
<b>Max. Colors</b>	16.7M (8 bit/color)	16.7M colors		16.2M colors
<b>Luminance</b>	400 cd/m <sup>2</sup>	250 cd/m <sup>2</sup>		500 cd/m <sup>2</sup>
<b>Viewing Angle</b>	170° (H) ; 130° (V)	178° (H) ; 178° (V)		160° (H) ; 160° (V)
<b>Back Light</b>		LED		
<b>Back Light MTBF (Hours)</b>		50,000 Hrs		
<b>Touchscreen</b>				
<b>Type</b>		P-CAP/ 5-wire resistive		
<b>Light Transmission</b>	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)	P-CAP (≥85%), 5-wire Resistive (80% ± 5%)		P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)
<b>Note</b>				



## OMNI Series : Modular Touch Panel Solutions



Processor	OMNI-3155-ADP	OMNI-3175-ADP	OMNI-3195-ADP
<b>System</b>			
Processor		Intel® Alder Lake-P i7/i5/i3/Celeron CPU	
System Memory		DDR5 4800 MHz, Dual Channel SODIMM x 2	
LCD/CRT Controller		—	
Ethernet		Intel® i210/i211, 10/100/1000Base Intel® i225, 10/100/1000/2500Base	
I/O Port		RJ45 LAN x2 USB Type A USB 3.2 Gen2 x3 USB Type C x1 HDMI 2.0b x1 Audio x1 DB9 COM RS-232/422/485 x2	
Storage Disk Drive		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		B-Key 3052 x 1 (BOM Optional: PCIe x2), default: USB3.2 Gne2+SATA E-Key 2230 x 1 (PCIe, USB2.0)	
OS support		Windows 10/Windows 11/Linux	
<b>Mechanical</b>			
Construction		Aluminum Front Bezel + Metal Chassis	
Mounting		VESA / Panel Mount	
Dimension	TBD	TBD	TBD
Carton Dimension	TBD	TBD	TBD
Gross Weight	TBD	TBD	TBD
<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 9~36V		
<b>LCD</b>			
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 (8 bit/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		50,000
<b>Touchscreen</b>			
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%)	
Note			





Model	OMNI-215M	OMNI-221M	OMNI-310M
<b>System</b>			
<b>Input Signal</b>	VGA/HDMI		
<b>On Screen Display Control</b>	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)		
<b>Os Support</b>	Windows® 7 32/64-bit, Windows® 8 32/64-bit, Windows® 10 64-bit, Linux Ubuntu 16.04		
<b>Mechanical</b>			
<b>Construction</b>	IP65 aluminum front bezel & SGCC chassis		
<b>Mounting</b>	Panel Mount / VESA 100 x 100 / Stand		
<b>Dimension</b>	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)
<b>Carton Dimension</b>	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)
<b>Gross Weight</b>	14.1 lbs (6.4 kg)	18.5 lbs (8.4 kg)	7.9 lbs (3.6 kg)
<b>Net Weight</b>	11.2 lbs (5.1 kg)	15.4 lbs (7.0 kg)	1.1 lbs (2.4 kg)
<b>Environmental</b>			
<b>Operating Temperature</b>	14°F ~ 131°F (-10°C ~ 55°C) With 0.5m/s Airflow		
<b>Storage Temperature</b>	-4°F ~ 140°F (-20°C ~ 60°C)		
<b>Storage Humidity</b>	10%~90% @104°F (40°C); non-condensing		
<b>Vibration</b>	1 Grms / 5~500Hz/random Operation		
<b>Shock</b>	—		
<b>EMC</b>	CE/FCC, Class A		
<b>Power Supply</b>			
<b>Dc Input</b>	DC 12~30V Power Input with 3 Pin Terminal Block		
<b>LCD</b>			
<b>Display Type</b>	15.6" TFT-LCD	21.5" TFT-LCD	10.4" TFT-LCD
<b>Max. Resolution</b>	1366 x 768	1920 x 1080	800 x 600
<b>Max. Colors</b>	16.7M		16.2M
<b>Luminance</b>	400 cd/m2	250 cd/m2	230 cd/m2
<b>Viewing Angle</b>	170° (H), 160° (V)	178° (H), 178° (V)	160° (H), 130° (V)
<b>Back Light</b>	LED		
<b>Back Light MTBF (Hours)</b>	50,000		30,000
<b>Touchscreen</b>			
<b>Type</b>	Projective Capacitive Multi Touch or 5 Wire Resistive Touch Screen (By Model)		
<b>Light Transmission</b>	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)		
<b>Life Time</b>	—		
<b>Note</b>			



# Rugged Mobile and Panel PC Solutions

## OMNI Series : Modular Display Solutions

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OMNI Series : Modular Display Solutions



Model	OMNI-312M	OMNI-315M	OMNI-317M
<b>System</b>			
<b>Input Signal</b>	VGA / HDMI		
<b>On Screen Display Control</b>	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)		
<b>Os Support</b>	Windows® 7 32/64-bit, Windows® 8 32/64-bit, Windows® 10 64-bit, Linux Ubuntu 16.04		
<b>Mechanical</b>			
<b>Construction</b>	IP65 aluminum front bezel & SGCC chassis		
<b>Mounting</b>	Panel Mount / VESA 100 x 100 / Stand		
<b>Dimension</b>	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)
<b>Carton Dimension</b>	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)
<b>Gross Weight</b>	10.4 lbs (4.7 kg)	14 lbs (6.35 kg)	14.8 lbs (6.7 kg)
<b>Net Weight</b>	7.7 lbs (3.5 kg)	11.2 lbs (5.1 kg)	11.7 lbs (5.3 kg)
<b>Environmental</b>			
<b>Operating Temperature</b>	14°F ~ 131°F (-10°C ~ 55°C) With 0.5m/s Airflow		
<b>Storage Temperature</b>	-4°F ~ 140°F (-20°C ~ 60°C)		
<b>Storage Humidity</b>	10%~90% @104°F (40°C); non-condensing		
<b>Vibration</b>	1 Grms / 5~500Hz/random Operation		
<b>Shock</b>	—		
<b>EMC</b>	CE/FCC, Class A		
<b>Power Supply</b>			
<b>Dc Input</b>	DC 12~30V Power Input with 3 Pin Terminal Block		
<b>LCD</b>			
<b>Display Type</b>	12.1" TFT-LCD	15" TFT-LCD	17" TFT-LCD
<b>Max. Resolution</b>	1024 x 768		1280 x 1024
<b>Max. Colors</b>	16.2M	16.2M (8bit/color)	16.7M
<b>Luminance</b>	500 cd/m2	300 cd/m2	350 cd/m2
<b>Viewing Angle</b>	160° (H), 160° (V)	176° (H), 176° (V)	160° (H), 140° (V)
<b>Back Light</b>	LED		
<b>Back Light MTBF (Hours)</b>	50,000	70,000	50,000
<b>Touchscreen</b>			
<b>Type</b>	Projective Capacitive Multi Touch or 5 Wire Resistive Touch Screen (By Model)		
<b>Light Transmission</b>	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)		
<b>Life Time</b>	—		
<b>Note</b>			





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





## Focus • Agility • Competitiveness



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