AAEON an ASUS assoc. co.
www.aaeon.com

2021 Selection Guide 2nd Ed.

Focus • Agility • Competitiveness

AAEON
EDGE READY PLATFORMS
Your Smart Computing Partner

About Us

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

Table of Contents

About AAEON 1
Table of Contents 2
AAEON AI Website 5
AAEON eShop 6
AAEON's Embedded OS Solution 7
AAEON Hi-Supervisor 8
AAEON Hi-Safe 9
AAEON Hi-Manager 10
AAEON HERO Software Solutions 11
AAEON BIOX 13

BOARD LEVEL PRODUCTS

AI Edge Computing Solutions

AI Core XM 2280 17
AI Core X 17
AI Core XP4/XP8 17
AI Core KM 2280 17
AI Core KP3 17
M2AI-2242-520 18
M2AI-2280-520 18
Mini-AI-520 18
M2AI-2242-720 18
M2AI-2280-720 18
Mini-AI-720 18
PICO-APL3-A10-FAI1 19

Gateway Board & Expansion Board

AIOT-ILND01 20
AIOT-MSSP01 20
SRT-3352 21
SRT-3352C 21
SRT-IMX8P 22
SRT-TG01 22
SRT-APL01 22

Pico-ITX Boards

PICO-EHL4 23
PICO-TGU4 23
PICO-WHU4 24
PICO-KBU4 24
PICO-APL1 25
PICO-APL3 25
PICO-APL4 26
PICO-BSW1 26
PICO-BT01 27
PICO-WHU4-SEMI 28
PICO-KBU4-SEMI 28
PICO-APL1-SEMI 29
PICO-APL3-SEMI 29
PICO-APL4-SEMI 29

Pico-ITX Boards-BIO

BIO-ST01-L1U2 30
BIO-ST01-M1U1 30
BIO-ST02-C4M1 30
BIO-ST03-P2U1 30
BIO-ST02-C14D32 30

COM Express CPU Modules

COM-CFHB6 31
COM-KBHB6 31
COM-SKHB6 31
COM-TGUC6 32
COM-WHUC6 32
COM-SKUC6/KBUC6 32
COM-BT 33
COM-BYTC2 33
NanoCOM-TGU 34
NanoCOM-WHU 34
NanoCOM-KBU-A20 34
NanoCOM-SKU 35
NanoCOM-APL 35
NanoCOM-BT 35
COM-TGHB6 36
COM-ICDB7 36
NANOCOM-WHU Rev.B 36

COM Carrier Boards

ECB-916M Rev.B11 37
ECB-920A-A11 37

EPIC Boards

EPIC-CFS7 38
EPIC-KBS9 38
EPIC-KBS7 38
EPIC-SKH7 39
EPIC-BT07 39
EPIC-SKU7 40
EPIC-CFS7-PUC 41
EPIC-TGH7 42

SubCompact Boards

GENE-TGU6 43
GENE-CML5 44
GENE-WHU6 45
GENE-KBU6 45
GENE-SKU6 Rev. B 46
GENE-SKU6 46
GENE-APL5 47
GENE-APL6 47
GENE-APL7 47
GENE-BSW5 48
GENE-BT04 48
GENE-BT05 49
GENE-BT06 49
GENE-BT07 49
GENE-5315 Rev.A 50
GENE-5315 Rev.B 50
GENESYS-WHU6 51

Table of Contents

SYSTEM LEVEL PRODUCTS

GENESYS-KBU6 52
GENESYS-APL7 52
GENESYS-CML5 53
GENE-EHL5 54

Compact Board
PCM-CFS 55

PC/104 Modules
PFM-540I Rev.A 56

Smart Display Modules
ASDM-L-CFS 57
ASDM-CRB-A12 57

UP Boards
UP Xtreme 58
UP Xtreme Lite 58
UP Core Plus 59
UP Core 59
UP Squared 59
UP Squared Pro 60
UP Squared 6000 60
UP Board 60
UP 4000 61
UP Xtreme i11 61

UP Expansion Modules
Vision Plus X 62
Net Plus 62
Connect Plus 62
UP-3G HAT 63
UP-POE HAT 63
UPC-CRST02 63
UPC-CRST01 63

Industrial Motherboards
EMB-APL1 64
EMB-APL3 64
EMB-BT1 65
EMB-BT2 65
EMB-BT4 66
MIX-EHLD1 67
MIX-KLUD1 67
MIX-TLUD1 68
MIX-H310A1 69
MIX-H310A2 69
MIX-H310D1 70
MIX-H310D2 70
MIX-Q370A1 71
MIX-Q370A2 71
MIX-Q370D1 72
MIX-Q370D2 72
EMB-Q170A 73
EMB-Q170B 73
EMB-Q170C 74
EMB-H110B 74
MAX-Q470A 75
MAX-Q370A 75
MAX-Q370C 76
MAX-C246A 76
MAX-H310A 77
IMBM-Q170A 78
IMBM-H110A 78
ATX-Q370A 79
ATX-C246A 79
ATX-H310A 80
IMBA-Q170A 81
IMBA-H110A 82
ARES-WHI0 83

Half-size SBC - ISA
HSB-800I-A11 84

AI@Edge Solutions
BOXER-8110AI 87
BOXER-8120AI 87
BOXER-8130AI 87
BOXER-8150AI 88
BOXER-8170AI 88
BOXER-8220AI 88
BOXER-8221AI 89
BOXER-8222AI 89
BOXER-8223AI 89
BOXER-8240AI 90
BOXER-8250AI 90
BOXER-8251AI 90
BOXER-8253AI 91
BOXER-8254AI 91
BOXER-8310AI 91
BOXER-8320AI 92
BOXER-8521AI 93
BOXER-8255AI 94
BOXER-8230AI 94
BOXER-8231AI 95
BOXER-8233AI 95
BOXER-8241 95
VPC-3350AI 96
VPC-5620AI 96

IoT Gateway &Protocol Expansion
AIOT-IP6801 97
AIOT-AIVD 97
SRG-3352 98
SRG-3352C 98
SRG-IMX8P 98
SRG-TG01 99
SRG-APL01 99
SRG-4858P 100
SRG-ADIO 100
SRG-ACAN 101
SRG-I485 101
SPG-MG22 102
SPG-P2020-00 102
SPG-P2020-WF 102

Vision System BOX PCs & Frame Grabber Cards
BOXER-6405M 103
BOXER-6404M 103
BOXER-6841M-A1 104

Table of Contents

BOXER-6841M-A2 104
BOXER-6841M-A3 105
BOXER-6841M-A4 105
BOXER-6841M-A5 105
BOXER-6841M-A6 106
BOXER-6841M-A7 106
BOXER-6842M 107
BOXER-6639M 108

Compact Fanless BOX PC Solutions

BOXER-6616 109
BOXER-6615 109
BOXER-6614 109
BOXER-6643-TGU 110
BOXER-6642-CML 110
BOXER-6641 111
BOXER-6640 111
BOXER-6639 112
BOXER-6638U 112

Ultra Slim Fanless BOX PC Solutions

BOXER-6405 113
BOXER-6404U 113
BOXER-6404 114
BOXER-6404WT 114
BOXER-6450-TGU 115

Din Rail Fanless BOX PCs

BOXER-6750 116
BOXER-6710 116
ICS-6270 117
ICS-6280 117

Expandable Fanless BOX PC Solutions

BOXER-6839 118
BOXER-6839-CFL 119
BOXER-6840-CFL 120

Transportation BOX PC Solutions

BOXER-6313U 121
VPC-3350VS 122
VPC-5620VS 122
VPC-5600S 123
VPC-3300S 123

Multi-PoE & Fanless Appliance

VPC-3350IS 124
VPC-5620IS 124

All in One Panel PC Solutions

ACP-1106 125
ACP-1104 125
ACP-1076 126
ACP-1074 126
OMNI-5155L 127
OMNI-2155-CML 127

OMNI Series: Modular Builder - Panel Kits

OMNI-215D 128
OMNI-221D 128
OMNI-310D 128
OMNI-312D 129
OMNI-315D 129
OMNI-317D 129
OMNI-319D 130
OMNI-312OPD 130
OMNI-315OPD 130

OMNI Series: Modular Builder - BOX Kits

OMNI-BT CPU BOX 131
OMNI-SKU CPU BOX 131
OMNI-ADB-KIT 131

OMNI Series: Modular Builder - I/O Modules

9741215501 132
9741215502 132
9741215506 132
9741215508 132
9741215510 132
9741215512 132
9741215513 133
9741215515 133
9741215516 133
9741215517 133
9741215518 133

OMNI Series: Modular Touch Panel Solutions

OMNI-2155-BT 134
OMNI-3105-BT 134
OMNI-3125-BT 135
OMNI-3155-BT 135
OMNI-3175-BT 136
OMNI-3195-BT 136
OMNI-2155-SKU 137
OMNI-2215-SKU 137
OMNI-3125-SKU 138
OMNI-3155-SKU 138
OMNI-3175-SKU 139
OMNI-3195-SKU 139

OMNI Series: Modular Display Solutions

OMNI-215M 140
OMNI-221M 140
OMNI-310M 141
OMNI-312M 141
OMNI-315M 142
OMNI-317M 142
OMNI-319M 142

UP Systems

UP-GWS01 143
UPS-GWS01 143
UPC-GWS01 143
UPX-Edge 144
UPX-Edge Lite 144
UPX-Edge i11 145
UPN-Edge Pro 145
UPN-Edge Pro 2 145
UP-Edge Pro 146

Turn-Key Chassis Solutions

Nano-002N 147
Nano-002F 147
ACS-1U01-BT4 148
ACS-1U01-H110B 148
ACS-1U01 149
ACS-4U01-Q470A 150

Industrial Chassis: Rackmount

ARC-645 151
ARC-645M 151
ARC-625M 151

Industrial Chassis: Wallmount

AMC-280M 152
AEC-206 152

AAEON AI Website

Introduction

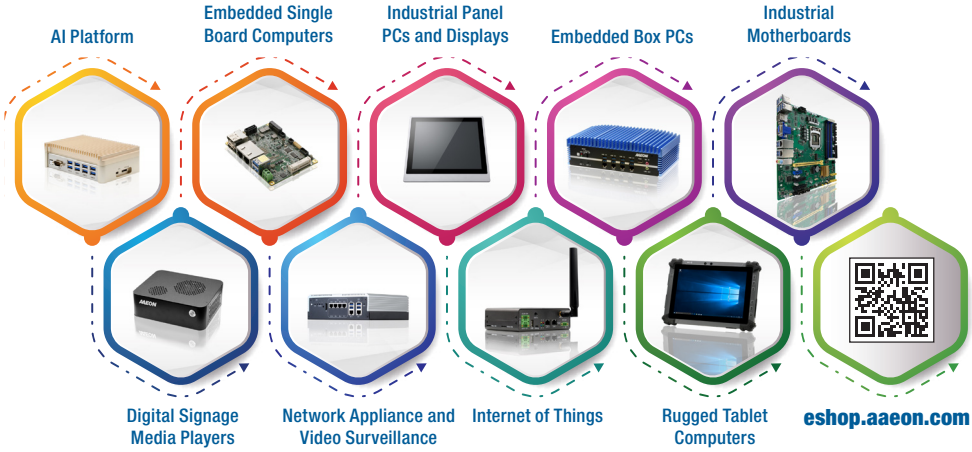
To keep ahead of the ever-growing markets and demand for AI hardware solutions, AAEON is pleased to announce our new webpage, AAEON.ai. AAEON.ai offers developers and systems integrators a centralized resource for finding the latest AI edge computing technology from AAEON.

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.



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

eShop supports payment options including credit card, PayPal™ and even wire transfer. (Advanced notification is needed when using wire transfer.)

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)

Join Us Now, Enjoy Regular Promotions.
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 Hasewell (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

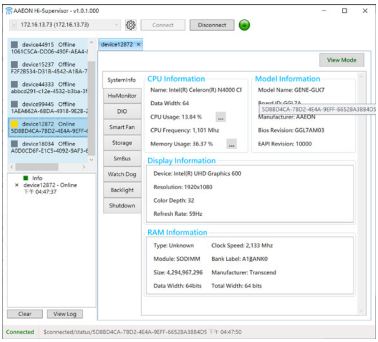
AAEON's Embedded OS Solution/Hi-Supervisor

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
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

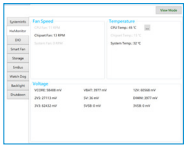
AAEON Hi-Supervisor

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.



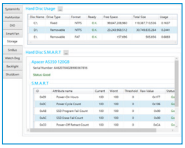
Hi-Supervisor Advantages

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



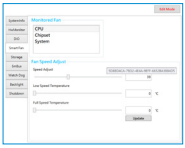
Hardware Monitor:

Retrieves fan, temperature and voltage data

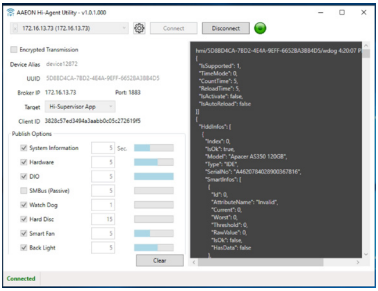


Hard Disc:

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

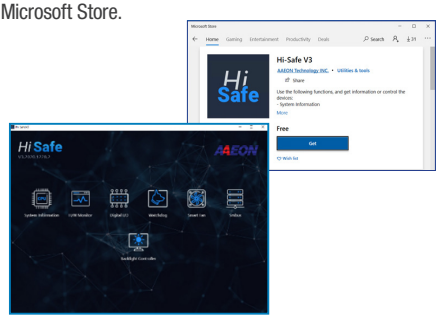


Remote Control Fan



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

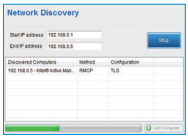
Watchdog:
Sets the system reboot timer

AAEON Hi-Manager

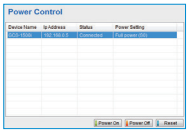
Hi-Manager is a tool based on the Intel® Active Management Technology 12.0 (iAMT 12.0) and has backward compatibility with earlier versions of iAMT. This allows users to locate all iAMT devices within the intranet, power On/Off target devices remotely, set power On/Off scheduling, arrange device groupings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

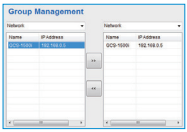
- Easy-to-use and build custom applications
- Supports AAEON products with iAMT
- In-depth technical support



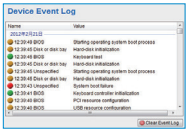
Network Discovery:
AMT device discovery



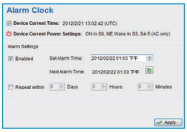
Power Control:
Powers On/Off the target device



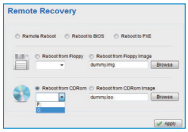
Group Management:
Arrange devices in this function



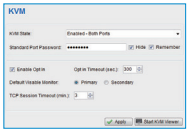
Event Log:
Logs boot records of the selected device



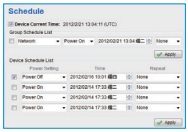
Alarm Clock:
Sets timer to wake up a sleeping device



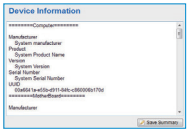
Remote Recovery:
Mounts boot image or physical CD-ROM to target device



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	QM67/ Q77/ QM77/ HM76/ B75A/ Q87/ QM87/QM170/Q370/C246
Intel® AMT Version	AMT 7.0/8.0/9.0/10.0/11.0/12.0
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 HERO Software Solutions

AAEON continues to innovate in providing end-to-end solutions for industrial computing and network applications with our High Efficiency, Reliable and Optimal (HERO) software solutions. HERO software solutions leverage our expertise and experience with our containerized web app, the HERO Device Management Center (HERO DMC), and native edge device software, the HERO Agent, HERO SDK, and HERO Gateway. Available pre-loaded on a selection of AAEON platforms, this software infrastructure allows users to monitor several devices and sensors from anywhere thanks to cloud-based technology and edge computing.

Benefits

- Easy to use Web Based Client Dashboard Graphic Interface
- Account Management support
- Device and Group Management support
- MQTT protocol and RESTful API for reliable cloud connectivity
- Event based alerts sent out by email or messenger service
- Easy to deploy and manage
- Factory Configured to work with your devices from Day 1
- Transport Encryption with TLS/SSL
- Remote Device Control Support
- On-Line Device Status Report
- Export Report Support

HERO Agent and SDK

At the center of the AAEON HERO Device Management Center, HERO Agent and SDK is the software powering HERO Gateway, providing the link between edge and cloud. HERO Agent provides data collection from edge devices and external sensors connected with the gateway and sends that information securely to the HERO DMC service. AAEON offers the HERO Agent and SDK software pre-loaded on specially selected AAEON embedded platforms as the HERO Gateway solution, configurable to work with the devices and sensors your facility uses. HERO Agent and SDK software is also available separately to be installed by the user.

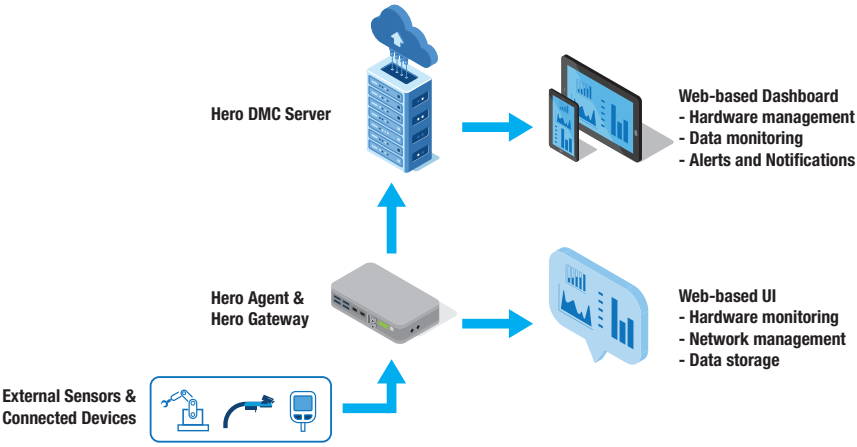
HERO Gateway

AAEON HERO Gateway is the total hardware solution utilizing AAEON embedded hardware with HERO Agent pre-installed. HERO Gateway utilizes protocols such as MQTT and OPC UA to send data securely to HERO DMC, and integrates easily with public cloud services including Microsoft Azure and AWS IoT Core. HERO Gateway devices are 4G-LTE compatible, allowing flexible connectivity with HERO DMC. With HERO Agent, the device is easily managed through the Dashboard, a web-based interface which features tools such as Device Map and Data Visualization, node device management, database and network management. Data stored on HERO Gateway can also be accessed and managed securely through the Dashboard. AAEON can also provide service for adding customized RESTful API to assist customers who wish to implement an app to manage their HERO Gateway.

HERO Device Management Center

The AAEON HERO Device Management Center (DMC) is a dockerized web application which can be deployed on Linux-based and Windows-based environments. Receiving information from HERO Agent and the HERO Gateway, HERO DMC provides a feature-rich web-based dashboard for managing devices, sensors and nodes connected to HERO Gateway as well as managing the gateway itself. Utilizing M2M technology such as MQTT, HERO DMC allows users to monitor conditions live, or set up event alerts sent out via email or messenger services to stay ahead of any situation. If you want to keep your data on your local storage device, HERO Device Management Center can also be deployed to your private cloud without problem.

AAEON HERO Software Solutions



Use Case: Smart Manufacturing

AAEON's HERO DMC and HERO Gateway are real world proven technologies, having been deployed in applications such as Smart Factory Monitoring. Connecting with machine controllers and environmental monitors, the HERO Gateway can provide raw data locally, while the web-based monitor provides a simple interface to check the status of manufacturing equipment as well as provide alerts for temperature and humidity abnormalities, helping to maintain a controlled environment for sensitive processes.

Supported OS

HERO Agent and SDK: Debian 9, Ubuntu 16.04, CentOS 7, OpenSUSE Leap, Fedora 21 and above

HERO Gateway: Debian 9 and above

HERO DMC: Linux-based server with container support, Windows Server 2016 and above

Supported Products

COM Express Modules

- COM-KBUC6, COM-WHUC6, GENE-WHU6, PI-CO-WHU4

Industrial Motherboards

- MIX-Q370A, MAX-Q370A, MIX-H310A1, MAX-H310A, ATX-Q370A, ATX-C246A, MIX-H310D1, MIX-KLUW1, MIX-KLUD1, NPS-WLU

Embedded Box PCs

- BOXER-6405, BOXER-6841M, BOXER-6842M

UP Boards

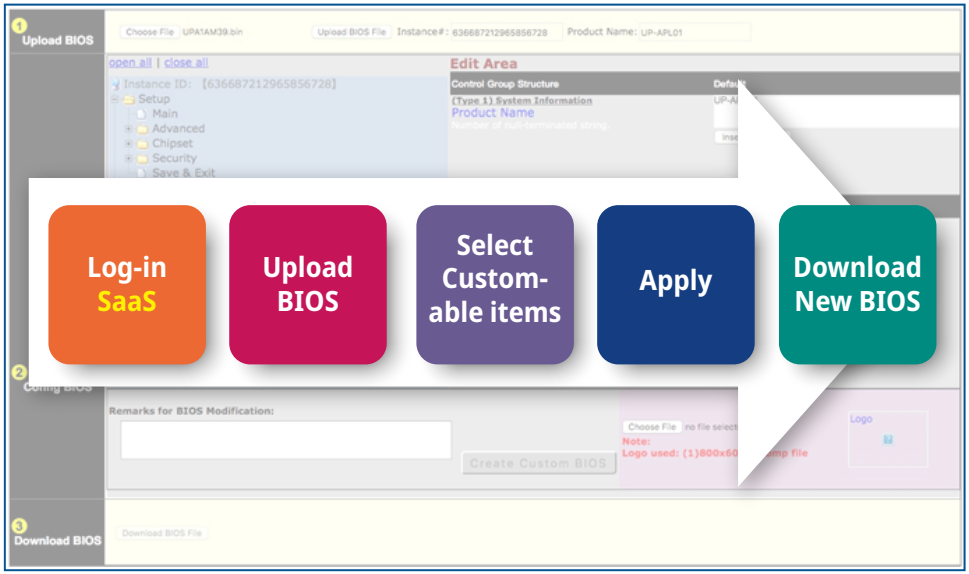
- UP Xtreme, UP Xtreme Lite, UPX-Edge

IOT Gateways

- SRT-3352

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/

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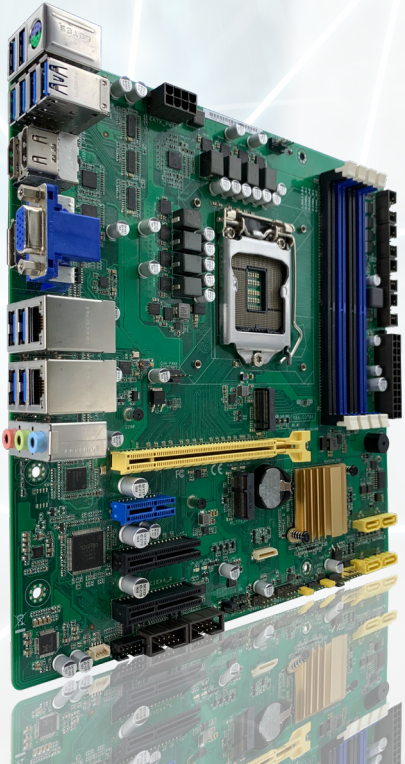
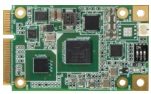
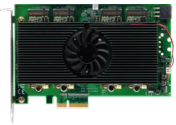
Board Level Products



AI Edge Computing Solutions



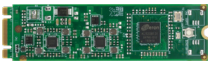


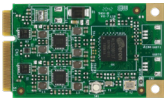
Model	AI Core XM 2280	AI Core X	AI Core XP4/XP8
System			
IC	Intel® Movidius™ Myriad™ X VPU x 2, MA2485	Intel® Movidius™ Myriad™ X VPU, MA2485	Asmedia PCIe switch, Intel® Movidius™ Myriad™ X VPU
Support frame work	Tensorflow, Caffe, MXNET		
Others			
Form Factor	M.2 2280 B+M KEY	Mini PCIe	PCIe x 4 card, full length, low profile
Dimension	3.15" x 0.87" (80 mm x 22 mm)	2.01" x 1.18" (51 mm x 30 mm)	4.37" x 6.57" (111 mm x 167 mm)
Certification	CE/FCC Class A		
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)	32 °F ~ 140 °F (0 °C ~ 60 °C)	32°F ~ 122°F (0°C ~ 50°C)
Operating Humidity	10%~80%RH, non-condensing		
Note			

Model	AI Core KM 2280	AI Core KP3
System		
IC	The Gen 3 Intel® Movidius™ VPU x 1	Asmedia PCIe switch, The Gen 3 Intel® Movidius™ VPU
Support frame work	Tensorflow, Caffe, MXNET, PyTorch	
Others		
Form Factor	M.2 2280 B+M key and M-key	PCIe x 4 card, full length, low profile
Dimension	3.15" x 0.87" (80 mm x 22 mm)	4.37" x 6.57" (111 mm x 167 mm)
Certification	CE/FCC Class A	
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)	
Operating Humidity	10% ~ 80% relative humidity, non-condensing	
Note		

Note: All specifications are subject to change without notice.

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	0.5W		
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		
Note			

Launching in Q3 Launching in Q3 Launching in Q3

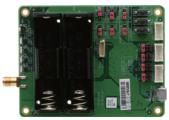
Model	M2AI-2242-720	M2AI-2280-720	Mini-AI-720
System			
IC	Kneron KL720		
Type	ARM CM & DSP		
Support Framework	Pytorch, ONNX, TensorFlow 1.6, Tensorflow lite, Keras, Caffe		
Support Model	Resnet, GoogleNet, YOLO, Tiny YOLO, MobileNet-SSD, DenseNet, RNN, LSTM		
Memory Type	LPDDR3		
NPU Performance	1.4 TOPS		
Overall Power Consumption	0.9 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		
Note			

AI Edge Computing Solutions

Model	PICO-APL3-A10-FAI1
System	
Form Factor	Pico-ITX
CPU	Intel® Atom™ Processor SoC
CPU Frequency	Up to 2.4 GHz
Chipset	Intel® Atom™ Processor SoC
Memory Type	Onboard DDR3L 4GB
Max. Memory Capacity	4GB
BIOS	AMI/SPI
Wake On LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V, AT/ATX
Power Supply Type	Lockable
Power Consumption (Typical)	Intel® N4200 processor, DDR3L 4GB, 1.1A@12V
System Cooling	Heatsink
Dimension	3.94" x 2.84" (100 mm x 72 mm)
Gross Weight	0.55 lb (0.25 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
MTBF (Hours)	110,000
Certification	CE,FCC
Display	
Chipset	Intel® Atom™ Processor SoC
Resolution	HDMI 1.4b: 3840 x 2160@30Hz
LCD Interface	—
I/O	
Storage/SSD	SATA 6.0Gb/s x 1, 5V/12V Power reserved M.2 2280 (B Key) x 1 eMMC 32GB
Ethernet	Realtek 8111G x 1
USB Port	USB 3.2 Gen 1 x 2 Rear IO USB 2.0 x 2 (Internal, co-use with FAN connector)
Serial Port	COM1: RS-232
Audio	—
DIO	4-bit
Expansion Slot	M.2 2230 x 1 (E-Key) I2C, Smbus
SIM	—
TPM	—
Touch	—
Note	

Note: All specifications are subject to change without notice.

Gateway Board & Expansion Board



Model	AIOT-ILND01
System	
SIZE	3.35" x 2.56" (85 mm x 65 mm)
MCU	ST STM32L Semtech SX1276
I/O Placements	GROVE connectors x 3 - UART1 (RS-232/RS-485) x 1 - UART2 (TX/RX) x 1 - I2C x 1 Temperature & humidity sensor x 1 3-axis Accelerometer (2G/4G/8G/16G) x 1 Micro USB2.0 type B for power supply x 1 JTAG-debug port x 1 Battery connector x 2 for 14500 Lithium-ion battery x 2
Others	LED (GPIO control) x 4 3 buttons - boot select x 1 - User defined x 2 - Reset button x 1 SMA antenna connector x 1 IPEX antenna connector (Optional) x 1
Power Input	+5V (via Micro USB) 14500 Lithium-ion battery for external power x 2
Operating Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE
Note	COMPUTEX d&i awards 2019

Model	AIOT-MSSP01
External Connector	
USB	USB 2.0 type A connector x 5 (via USB HUB) USB 2.0 type B connector x 1 (USB HUB Host)
Internal Connector	
MDB	MDB x 1
1-Wire	1-WIRE x 1
DEX	DEX x 1
Protocol A	Protocol A (EXE) x 1
Keypad	8 Bit Keypad x 1 (subject to support 4 x 4 keypad)
LCD	LCD x 1
ADC	4-channel ADC x 1
Relay GPIO	4-channel Relay GPIO for 12V & 5V by switch x 1
GPIO	16 Bit GPIO x 2
24V GPI	8 Bit 24V GPI x 1
24V Analog Voltage Sense	24V Analog voltage sense x 1
Power Input	24V AC/DC Power Input x 1
Motor Switch	Select motor 24Vdc or 12Vdc switch (Motor supports GPIO, DC, PWM type) x 1
Full Bridge Motor	Full bridge motor control x 5
Low Side Motor	Low side motor control x 16
Expansion Header	2* 20 PIN header x 2
Others	
Form Factor	5.91" x 5.51" (150 mm x 140 mm)
Power Source	24V AC @ 50Hz, 24V DC
Operating Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE, FCC
Note	

Note: All specifications are subject to change without notice.

Board Level Products

Gateway Board & Expansion Board

Model	SRT-3352	SRT-3352C
System		
Processor	ARM Cortex-A8 800 MHz RISC Processor	
System Memory	Onboard DDR3L 1GB	
RTC	Serial real time clock x 1	
Expansion Interface	3G/4G LTE mini PCIe connector; NB-IoT connector; SIM card socket	3G/4G LTE mini PCIe connector; NB-IoT connector; SIM card socket x 1
Battery	3V CR2032 Lithium battery for RTC 3V CR2032 Lithium battery for RTC	
Power Requirement	DC9-30V	DC10-30V
Power Consumption (Typical)	2.28 W	1.8 W
Board Size	3.66" x 5.35"(93mm x 136mm)	3.94" x 3.78" (100 x 96mm)
Gross Weight	88 g	70 g
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	
MTBF (Hours)	855,890	
I/O		
Storage	eMMC 8G; Micro SD slot	
Serial Port	RS-485 x 2	
LAN	Gigabit Ethernet, RJ-45 x 2	
Universal Serial Bus	USB 2.0 x 2	
GPIO	4 LED control	
Note		

Note: All specifications are subject to change without notice.

Gateway Board & Expansion Board

	Launching in Q3	Launching in Q3	Launching in Q3
Model	**SRT-IMX8P**	**SRT-TG01**	**SRT-APL01**
System			
Processor	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor	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) Celeron® 6305E (2C, 1.80GHz,TDP 15W)	Intel Atom X5-E3940, 1.6GHz
System Memory	Onboard DDR4L 2GB (Optional 4GB)	Support DDR4 3200MHz SODIMM x2	Onboard LPDDR4 1866MHz 8GB
RTC	Serial real time clock x 1 Serial real time clock x 1 Serial real time clock x 1		
Expansion Interface	3G/4G LTE mini PCIe connector x 2 (USB signal); M.2 3042/3052 connector x 1 (PCIe signal, USB 3.0)	M.2 E key 2230 x 1 (For WIFI/BT, PCIe/USB signal only) M.2 M key 2280 x1 (SSD, PCIe GEN4 x 4) M.2 B key 3042 x1 (5G, PCIe x1, USB3.2 Gen2 x1)"	—
Battery	3V CR2032 Lithium battery for RTC		
Power Requirement	DC 9-36V	DC9 ~ 36V (Optional: +12V)	DC12V
Power Consumption (Typical)	TBD		
Board Size	5.33" x 4.33" x 1.81"(135.5 x 110 x 46 mm)	TBD	95.00 x 80.28 x 40.60 mm
Gross Weight	TBD		
Operation Temperature	-4 °F ~ 158 °F (-20 °C ~ 70 °C)	32 °F ~ 140 °F (0 °C ~ 60 °C)	32 °F ~ 140 °F (0 °C ~ 60 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)	-4 °F ~ 176 °F (-20 °C ~ 80 °C)	-40 °F ~ 176 °F (-40 °C ~ 80 °C)
Operation Humidity	10% ~ 95% relative humidity, non-condensing	0~90% @ 40°C, non-condensing	10% ~ 80% relative humidity, non-condensing
MTBF (Hours)	TBD	TBD	TBD
I/O			
Storage	eMMC 16G (Optional 32GB) ; Micro SD slot	SATA 3.0 x 1 (Up to 64GB) SATA Power connector (12V/5V)	eMMC 5.1 32GB, Micro SD slot x 1
Serial Port	RS-485 x 2	RS-232/422/485 x 4	—
LAN	Gigabit Ethernet, RJ-45 x 2	Intel ®i219-LM,10/100/1000Base, RJ45 x 2 (Support Vpro) Intel ®i225-LM,10/100/1000Base, RJ45 x 1 (Support Vpro)	Gigabit Ethernet, RJ-45 x 1
Universal Serial Bus	USB 3.0 x1, USB 2.0 x3	"USB3.2 GEN2 x 1 (Rear I/O) USB3.2 GEN1 x 3 (Rear I/O)"	USB 3.0 x 1
GPIO	7 LED control	8 bit	—
Note	CAN-FD x2 2 channels Isolated DI, OFF:0~8V, ON:9~24V, 1 channel Isolated DO, DC 24V (100mA/channel)	CAN 2.0 x2	

Note: All specifications are subject to change without notice.

Board Level Products

Pico-ITX Boards

Model	PICO-EHL4	PICO-TGU4
System		
Form Factor	PICO-ITX	
CPU	Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors SoC	Intel® 11th Generation Core™ i7/i5/i3/Celeron SoC i7-1185G7E (4C, 1.8GHz, 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) Celeron® 6305E (2C, 1.8GHz,TDP 15W) (i7-1185GRE/i5-1145GRE/i3-1115GRE by customer's request)
CPU Frequency	Up to 1.9GHz	Up to 4.4GHz
Chipset	Intel® Elkhart Lake SoC Processor	Intel® Tiger Lake-UP3 SoC Processor
Memory Type	LPDDR4x 4267 MHz on board memory, In-Band ECC (select SKUs)	LPDDR4x 3200 MHz on board memory, In-Band ECC (select SKUs)
Max. Memory Capacity	Up to 16 GB	Up to 32GB
BIOS	AMI UEFI	
Wake On LAN	Yes	
Watchdog Timer	255 Levels	
Power Requirement	+12V AT/ATX (default)	
Power Supply Type	Lockable & phoenix Terminal co-lay	
Power Consumption(Typical)	TBD	Intel® i7-1185G7E, LPDDR4x on board 32GB, 2.89A@ +12V
System Cooling	Heat-spreader, heatsink & cooler optional	Heat-spreader and cooler optional
Dimension	3.94" x 2.84" (100mm x 72mm)	
Gross Weight	TBD	0.55 lb (0.25 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	
MTBF (Hours)	TBD	424,208
Certification	CE/FCC Class A	
OS support	Windows 10 (64bit), Linux Ubuntu 21.04.1/Kernel 5.4	Windows 10 (64bit), Linux Ubuntu 20.04.2/Kernel 5.8
Display		
Chipset	Intel Atom® x6000E Series, and Intel® Pentium® and Celeron® N and J Series Processors SoC	11th Generation Intel® Core™ i7/i5/i3/Celeron SoC
Resolution	HDMI2.0b x 2, 4K, 60Hz Single channel 12V/3.3V, 18-24 bit LVDS/ eDP 1.3 (Default: LVDS)	HDMI2.0b x 1, 4Kx2K 60Hz eDP x 1, up to HBR3, 8Kx4K 30Hz
LCD Interface	18/24bit Single LVDS	—
I/O		
Storage/SSD	eMMC x 1, SATA x 1, SATA Power (5V) x 1	SATA x 1, SATA Power (5V) x 1
Ethernet	RTL8111G, 10/100/1000Base, RJ45 x 2 (Compatible with RJ45 x 1)	Intel® i225, 10/100/1000/2500Base, RJ45 x1 Intel® i219, 10/100/1000Base, RJ45 x1
USB Port	2 x USB 3.2 GEN2/rear IO 2 x USB 2.0/header	2 x USB3.2 Gen 2/rear IO, 2 x USB3.2 Gen 1/header, 4 x USB2.0/ header
Serial Port	RS-232/422/485 x 2	RS-232/422/485 x 2
Audio	—	High Definition Audio Interface, Line-in/Line-out/MIC (optional)
DIO	4-bit	8-bit
Expansion Slot	M.2 2230 E key x 1 (For WIFI/BT, PCIe/USB signal only), mini-PCIe(Full) x 1 (Default mSATA or USB 2.0, PCIe[x1]x1 by BIOS), SMBUS/I2C + eSPI x 1, CANBUS x 1	M.2 M key 2280 x 1 (PCIE GEN4 as default, SATA select by HW BOM), Full size mPCIe/mSATA or USB2.0 x 1 (PCIe as default, SATA select by BIOS), SMBUS/I2C and eSPI x 1 (SMBUS as default, I2C select by HW BOM)
SIM	—	—
TPM	—	2.0

Note: All specifications are subject to change without notice.

Pico-ITX Boards

Model	PICO-WHU4	PICO-KBU4
System		
Form Factor	PICO-ITX	
CPU	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC i7-8665UE (4C, 1.7GHz, up to 4.4GHz) i5-8365UE (4C, 1.6GHz, up to 4.1GHz) i3-8145UE (2C, 2.2GHz, up to 3.9GHz) 4305UE (2C, 2GHz)	7th Generation Intel® Core™ i processor U series, Intel® i7-7600U, i5-7300U, i3-7100U series & Celeron® 3965U(opt.)
CPU Frequency	Up to 4.4GHz	Up to 3.9/2.8 GHz
Chipset	Intel® Whiskey-U SoC Processor	7th Generation Intel® Core™ i processor U series, Intel® i7-7600U, i5-7300U, i3-7100U series & Celeron® 3965U(opt.)
Memory Type	DDR4 2400MHz SODIMM x 1, Max. 32 GB	DDR4 1866/2133MHz SODIMM x 1, Max. 16 GB
Max. Memory Capacity	Up to 32 GB	Up to 16GB
BIOS	UEFI only	AMI/SPI
Wake On LAN	Yes	
Watchdog Timer	255 Levels	
Power Requirement	+12V AT/ATX (default)	
Power Supply Type	Lockable & phoenix Terminal co-lay	AT/ATX (default)
Power Consumption(Typical)	TBD	i7-7600@DDR4 16GB, 12V@2.3A
System Cooling	Heat-spreader, heatsink & cooler optional	Heat-spreader, heatsink & cooler (Smart FAN) optional
Dimension	3.94" x 2.84" (100mm x 72mm)	
Gross Weight	TBD	0.55 lb (0.25 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	
MTBF (Hours)	TBD	163,000
Certification	CE, FCC	
OS support	Windows 10 (64 bit) Ubuntu 18.04.3/Kernel 5.0	Windows 10 (64 bit)
Display		
Chipset	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC i7-8665UE (4C, 1.7GHz, up to 4.4GHz) i5-8365UE (4C, 1.6GHz, up to 4.1GHz) i3-8145UE (2C, 2.2GHz, up to 3.9GHz) 4305UE (2C, 2GHz)	7th Generation Intel® Core™ i processor U series, Intel® i7-7600U, i5-7300U, i3-7100U series & Celeron® 3965U(opt.)
Resolution	HDMI 1.4b up to 3840 x 2160 x 2	LVDS (18/24-bit 2CH) 1920 x 1200, HDMI 1.4b up to 4096 x 2304 (4K), DDI (BIO)
LCD Interface	—	18/24-bit 2CH LVDS
I/O		
Storage/SSD	Full size mSATA/mPCIe or USB2.0 x 1 (PCIe as default, mSATA selected by BIOS) SATA 6.0Gb/s x 1, (5V Power)	SATA 6.0 Gb/s x 1, M.2 B-key (2242)
Ethernet	Realtek 8111 x 2 10/100/1000Mbps	Realtek 8111 Gigabit Ethernet 10/100/1000Base-TX, RJ-45 x 2
USB Port	USB 3.2 Gen 2 x 2 (Rear), USB 2.0 x 2 Pin header	USB 3.2 Gen 1 x 2 Rear I/O, USB 2.0 x 2 Pin header
Serial Port	RS-232/422/485 x 2	COM1: RS-232 x 1, COM2: RS-232/422/485 x 1(Ring/ +5V/ +12V)
Audio	—	Line-out x1
DIO	4-bit	4-bit (2-in, 2-out)
Expansion Slot	M.2 2230 E key x 1 (For WIFI/BT, PCIe/USB signal only) SMBUS/I2C/LPC/eSPI x 1	M.2 E-Key (2230), BIO (optional), Smbus x 1
SIM	—	
TPM	TPM2.0 (Optional via LPC cable)	—

Note: All specifications are subject to change without notice.

Board Level Products

Pico-ITX Boards

Model	PICO-APL1	PICO-APL3
System		
Form Factor	Pico-ITX	
CPU	Intel® Atom™ E3900 series/ Pentium® N4200/ Celeron® N3350 Processor SoC	Intel® Atom™ Processor SoC
CPU Frequency	Up to 2.0GHz	Up to 2.4 GHz
Chipset	Intel® Atom™ E3900 series/ Pentium® N4200/ Celeron® N3350 Processor SoC	Intel® Atom™ Processor SoC
Memory Type	204-pin DDR3L SODIMM x 1,DDR3L 1867MHz, Max. 8GB	Onboard DDR3L 2G (Optional to 4G)
Max. Memory Capacity	Up to 8GB	Up to 4GB
BIOS	AMI/SPI	
Wake On LAN	Yes	
Watchdog Timer	255 Levels	
Power Requirement	+12V AT/ATX (default)	+12V, AT/ATX
Power Supply Type	AT/ATX (default)	Lockable & phoenix Terminal co-lay
Power Consumption (Typical)	Intel® N3350 Processor, DDR3L 8GB 0.91A@+12V	Intel® N4200 processor, DDR3L 4GB, 1.1A@12V
System Cooling	Heat-spreader/ heatsink optional	Heat-spreader, heatsink & cooler (Optional)
Dimension	3.94" x 2.84" (100mm x 72mm)	
Gross Weight	0.55 lb (0.25 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	
MTBF (Hours)	170,000	110,000
Certification	CE, FCC	
OS support	Windows 10 (64 bit)	
Display		
Chipset	Intel® Atom™ E3900/ Pentium® N4200/ Celeron® N3350 Processor SoC	Intel® Atom™ Processor SoC
Resolution	LVDS (18/24bit 2CH) 1920 x 1200(opt.), HDMI 1.4b up to 3840 x 2160, DDI (BIO)	HDMI 1.4b: 3840 x 2160@30Hz Internal eDP: 3840 x 2160@60Hz(opt.) DDI (Optional from BIO)
LCD Interface	18/24-bit 2CH LVDS	eDP
I/O		
Storage/SSD	SATA 6.0Gb/s x 1, mSATA or Mini-PCIe by BOM (Full size) x 1	SATA 6.0Gb/s x 1, 5V/12V Power reserved M.2 2280 (B Key) x 1 eMMC 16GB (opt. to 32GB/64GB/128GB)
Ethernet	Intel® Gigabit Ethernet i210AT, 10/100/1000Base-TX, RJ-45 x 1	Realtek 8111 x 1
USB Port	USB 3.2 Gen 1 x 2, Rear IO, USB 2.0 x 1	USB 3.2 Gen 1 x 2 Rear IO USB 2.0 x 2 (Internal, co-use with FAN connector)
Serial Port	COM1: RS-232 x 1, COM2: RS-232/422/485 x 1(Ring/ +5V/ +12V)	COM1: RS-232 COM2: RS-232
Audio	Line-out x1	ALC269 (Included Amp)
DIO	4-bit (2-in, 2-out)	4-bit
Expansion Slot	Mini Card (Half-size) x 1, BIO (optional) x 1, I2C or SMBus x 1	M.2 2230 x 1 (E-Key), BIO x 1(opt.), I2C, Smbus, I2S, MIPI-CSI x 2 Lanes(opt.), MIPI-CSI x 4 Lanes(opt.)
SIM	—	
TPM	—	TPM2.0 (Optional)
Note		

Note: All specifications are subject to change without notice.

Pico-ITX Boards

Model	PICO-APL4	PICO-BSW1
System		
Form Factor	Pico-ITX	
CPU	Intel® Pentium® N4200 (4C. 1.1 GHz, up to 2.5 GHz, TDP 6W) Intel® Celeron® N3350 (2C. 1.1 GHz, up to 2.4 GHz, TDP 6W) Intel® Atom® x7-Series (4C. 1.6GHz, up to 2.00 GHz, TDP 12W)	Intel® N3160 Quad Core 1.6GHz (6W), Intel® N3060 Dual Core 1.6GHz (6W), Intel® X5-E8000 Quad Core 1.04GHz (5W)
CPU Frequency	Up to 2.4 GHz	Up to 2.24 GHz
Chipset	Intel® SoC	Intel® N3160 Quad Core 1.6GHz (6W), Intel® N3060 Dual Core 1.6GHz (6W), Intel® X5-E8000 Quad Core 1.04GHz (5W)
Memory Type	Onboard DDR3L 2G (Optional to 4G)	204-pin DDR3L SODIMM x 1, DDR3L 1600, Max. 8GB
Max. Memory Capacity	Up to 4GB	Up to 8GB
BIOS	AMI/SPI	
Wake On LAN	Yes	
Watchdog Timer	255 Levels	
Power Requirement	+12V, AT/ATX	+12V DC
Power Supply Type	Lockable & phoenix Terminal co-lay	AT/ATX (default) optional lockable connector
Power Consumption (Typical)	Intel®Pentium®N4200@1.1GHz,DDR3L 4GB 1.43A@+12V	Intel® Pentium® N3160@ DDR3L-1600MHz 8GB, 0.91A@+12V
System Cooling	Heat-spreader, heatsink & cooler (Optional)	
Dimension	3.94" x 2.84" (100mm x 72mm)	
Gross Weight	0.55 lb (0.25 kg)	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	
MTBF (Hours)	191,895	100,000
Certification	CE,FCC	
OS support	Windows 10 (64 bit)	
Display		
Chipset	Intel® Atom™ Processor SoC	Intel® N3160 Quad Core 1.6GHz (6W), Intel® N3060 Dual Core 1.6GHz (6W), Intel® X5-E8000 Quad Core 1.04GHz (5W)
Resolution	HDMI 1.4b: 3840 x 2160@30Hz Internal eDP: 3840 x 2160@60Hz(opt.) DDI (Optional from BIO)	LVDS (18/24bit 2CH) 1920 x 1200 HDMI up to 3840 x 2160 (4K) DDI (optional by BIO board)
LCD Interface	eDP	18/24-bit 2CH LVDS
I/O		
Storage/SSD	SATA 6.0Gb/s x 1, 5V Power reserved, M.2 2280 (B Key) x 1, eMMC 32GB (Optional to 16GB/64GB/128GB)	SATA 6.0Gb/s x 1, mSATA/MiniCard (Full size) x 1
Ethernet	Realtek 8111 x 2	Realtek RTL 8111E, 10/100/1000Base-TX, RJ-45 x 1
USB Port	USB 3.2 Gen 1 x 2 Rear IO USB 2.0 x 2 (Internal, co-use with FAN connector)	USB 3.2 Gen 1 x 2 Rear I/O
Serial Port	COM1: RS-232 x 1, COM2: RS-232/422/485 x 1	COM1: RS-232 x 1, COM2: RS-232/422/485 x 1 (Ring/ +5V/ +12V)
Audio	—	Line-out x 1
DIO	4-bit	4-bit (2-in, 2-out)
Expansion Slot	M.2 2230 x 1 (E-Key), BIO x 1 (optional), I2C, Smbus	Mini Card(Half-size) x 1, BIO x 1, I2C x 1 or Smbus x 1, LPC
SIM	—	
TPM	—	
Note		

Note: All specifications are subject to change without notice.

Board Level Products

Pico-ITX Boards

Model	PICO-BT01
System	
Form Factor	Pico-ITX
CPU	Onboard Intel® Atom™ E3845/ Celeron® J1900/N2807 Processor SoC
CPU Frequency	Up to 2.0 GHz
Chipset	Intel® E3845/J1900/N2807
Memory Type	204-pin DDR3L SODIMM x 1, DDR3L 1066/1333, Max. 8GB
Max. Memory Capacity	Up to 8GB
BIOS	AMI/SPI
Wake On LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V DC
Power Supply Type	AT/ATX (default) optional lockable connector
Power Consumption (Typical)	Intel® Celeron® J1900 2.0GHz ,DDR3L 1333 MHz 8 GB, 1.14A@+12V
System Cooling	Heat-spreader, heat-sink & cooler (optional)
Dimension	3.94" x 2.84" (100mm x 72mm)
Gross Weight	0.88lb (0.4 kg)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) or WiTAS 2 (-40˚C ~ 85˚C)
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	80,000
Certification	CE,FCC
OS support	Windows 10 (64 bit)
Display	
Chipset	Intel® E3845/J1900/N2807
Resolution	VGA up to 2048 x 1152 @60Hz or DP up to 2560 x 1400 @60Hz LVDS (18/24-bit) up to 1400 x 900 @60Hz
LCD Interface	18/24-bit Single LVDS
I/O	
Storage/SSD	SATA 3.0Gb/s x 1, Mini-Card(Full size)/mSATA(default) x 1
Ethernet	Intel Gigabit Ethernet, 10/100/1000Base-TX x 1 (Atom E series with I210IT, Celeron J/N series with I211AT)
USB Port	USB 3.2 Gen 1 x 1 Rear IO, USB 2.0 x 1 Rear IO and x 1 Pin header
Serial Port	RS-232 x 1, RS-232/422/485 x 1 (Ring /+5V/+12V)
Audio	Line-out x 1
DIO	4-bit (2-in, 2-out)
Expansion Slot	Mini-Card (Half-size) x 1, BIO x 1
SIM	Option by BIO Board
TPM	—
Note	TAIWAN EXCELLENCE 2015

Pico-ITX Boards

Model	PICO-WHU4-SEMI	PICO-KBU4-SEMI
System		
Form Factor	PICO-ITX	
Processor	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC i7-8665UE (4C, 1.7GHz, up to 4.4GHz) i5-8365UE (4C, 1.6GHz, up to 4.1GHz) i3-8145UE (2C, 2.2GHz, up to 3.9GHz) Celeron® 4305UE (2C, 2GHz)	7th Gen Intel® Core™ i processor U series
System Memory	DDR4 2400MHz SODIMM x 1, Max. 32 GB	DDR4 SODIMM Slot x 1, up to 16 GB
Chipset	Intel® SOC	
Ethernet	Realtek 8111 Gigabit Ethernet 10/100/1000Mbps, RJ-45 x2	Realtek 8111 Gigabit Ethernet 10/100/1000Mbps, RJ-45 x 2
BIOS	UEFI only	AMI BIOS
Wake on LAN	Yes	
Watchdog Timer	255 Level	
Expansion Interface	2230 M.2 E-Key x 1 (for WIFI/BT, PCIe/USB signal only) SMBUS/I2C/LPC/eSPI x 1	M.2 2230 E key (For WIFI/BT Module)
Power Requirement	Normal: +12V	
Power Supply Type	Lockable	
Power Consumption	i7-8665UE @ DDR4 16GB, 12V@2.23A	I7-7600 @ DDR4 16GB, 12V@2.3A
System Size	5.9" x 3.94" x 2.36" (150mm x 100mm x 60mm)	4.8" x 3.15" x 2" (122mm x 72mm x 50mm)
Gross Weight	982g (including packing) 635g (excluding packing)	0.88 lb (0.4 kg)
Operation Temp.	32°F ~ 140°F (0°C ~ 60°C) without airflow 0.5m/s for SSD SKU	32°F~ 122°F (0°C ~ 50°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	
Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF	298,762	163,000
OS support	Windows 10 (64 bit) Ubuntu 18.04.3/Kernel 5.0	Windows 10 (64 bit)
Display		
Chipset	Intel® SoC	
Video Output	HDMI 1.4	
I/O		
Storage	Full size mSATA/mPCIe or USB2.0 x 1 (PCIe as default, mSATA selected by BIOS) SATA 6.0Gb/s x 1, (5V Power)	M.2 2242 B key
USB	USB 3.2 Gen 2 x 2 (Rear IO) USB 2.0 x 2 (Via cable to Rear IO)	USB 3.2 Gen 1 x 2 (Rear IO)
Audio	RS-232/422/485 x 2 (Optional)	Optional
TPM	—	
Serial Port	—	RS-232 x 1, RS-232422/485 x1 (Optional)
Certification		
Certification	CE, FCC	CE, FCC
Note		

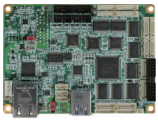
Board Level Products

Pico-ITX Boards

Model	PICO-APL1-SEMI	PICO-APL3-SEMI	PICO-APL4-SEMI
System			
Form Factor	PICO-ITX		
Processor	Intel® Pentium® N4200 (4C, 1.1 GHz, up to 2.5 GHz, TDP 6W) (optional) Intel® Celeron® N3350 (2C, 1.1 GHz, up to 2.4 GHz, 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® Atom™ x5-E3930 (2C, 1.3GHz, up to 1.8GHz, TDP 6.5W)	Intel® Pentium® N4200 (4C. 1.1 GHz, up to 2.5 GHz, TDP 6W) Intel® Celeron® N3350 (2C. 1.1 GHz, up to 2.4 GHz, TDP 6W) *Wait for E3900 series in 2019 within ATRF according	Intel Apollo Lake N Series Pentium N4200 (4C): 1.1GHz, up to 2.5GHz, TDP 6W Celeron N3350 (2C): 1.1GHz, up to 2.4GHz, TDP 6W *Wait for E3900 series in 2019 within ATRF according
System Memory	DDR3L SODIMM Slot x 1 ,Up to 8GB	DDR3L, memory down, up to 4GB	
Chipset	Intel® SOC	Intel® SOC	
Ethernet	Intel® Gigabit Ethernet i211AT, 10/100/1000Base, RJ-45 x1	Realtek 8111 x 1 10/100/1000Mbps, RJ-45 x1	Realtek 8111 x 2 10/100/1000Mbps, RJ-45 x2
BIOS	AMI BIOS		
Wake on LAN	Yes		
Watchdog Timer	255 Level		
Expansion Interface	miniCard (Half-Size) x 1	M.2 2230 E key (For WIFI/BT Module)	
Power Requirement	Normal: +12V		
Power Supply Type	Lockable		
Power Consumption	N4200 @ 4GB DRAM/eMMC 32GB, 12V @1.1A (Full Loading)		Intel®Pentium®N4200@ 1.1GHz,DDR3L 4GB 1.43A@+12V
System Size	4.8" x 3.15" x 1.73" (122 x 80 x 44 mm)	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)	4.8" x 3.15" x 2" (122mm x 72mm x 50mm)
Gross Weight	0.59 lb (0.27 kg)	W/O heat sink: 0.4 lb (165g) W/ heat sink: 0.89 lb (407g)	0.88 lb (0.4 kg)
Operation Temp.	32°F~ 122°F (0°C ~ 50°C), 0.5 m/s airflow		32°F~ 122°F (0°C ~ 50°C)
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)		
Humidity	0% ~ 90% relative humidity, non-condensing		
MTBF	170,000	110,000	191,000
OS support	Windows 10 (64 bit)		
Display			
Chipset	Intel® SOC		
Video Output	HDMI 1.4		
I/O			
Storage	mSATA(Full size)x1	M.2 2280 x 1 (B-Key) eMMC 32GB, up to 128GB (optional)	
USB	USB 3.2 Gen 1 x 2 (Rear IO) USB2.0 x 1 (Internal option)	USB 3.2 Gen 1 x 2 (Rear IO) USB2.0 x 2 (Internal option)	
Audio	Optional		—
TPM	—	Optional	—
Serial Port	RS-232 x 1, RS-232/422/485 x1 (Optional)		
Certification			
Certification	CE, FCC		
Note			

Note: All specifications are subject to change without notice.

Pico-ITX Boards-BIO

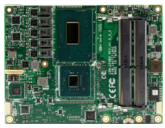
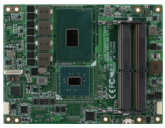
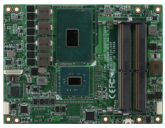


Model	BIO-ST01-L1U2	BIO-ST01-M1U1	BIO-ST02-C4M1	BIO-ST03-P2U1	BIO-ST02-C14D32
System					
Form Factor	2.5" Board			3.5" Board	2.5" Board
BIO	80 Pin high speed board to board connector			—	BIO Pin high speed board to baord connector
Power Requirement	Power Supplied from MB via board to board connector			12V or +9 ~ 36V input (external power supply)	Power Supplied from MB via board to board connector
Board Size	3.94" x 2.84" (100mm x 72mm)			5.75" x 4" (146mm x 101.6mm)	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® i210/i211, 10/100/1000Base-TX x 2 (support PoE 802.3af)	Intel® i211, 10/100/1000Base-TX x 1
USB	USB 2.0 x 2 on rear I/O	USB 2.0 x 1 on rear I/O		USB 3.2 Gen 1 x 1	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	—	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	—	COM x14,RS-232 by Pin Header
SIM	—	SIM Slot x 1	—		
DIO	—				32 bits
Note	TAIWAN EXCELLENCE 2015				

Note: All specifications are subject to change without notice.

Board Level Products

COM Express CPU Modules

Model	COM-CFHB6	COM-KBHB6	COM-SKHB6
System			
Form Factor	COM Express Basic Size, Type 6	COM Express Basic Size	
CPU	8th/9th Gen Intel® Core™ / Xeon™-E Series Processor (i7-8850H / i5- 8400H / i3-8100H / Xeon™-E2176M)	Onboard 7th Gen. Intel® XEON E3 v6 Series Processors, E3-1505M v6 4c/3.0 GHz	Onboard 6th Gen Intel® Core™ i-series Processor i7-6820EQ 4c/2.8 GHz i3-6100E 2c/2.7 GHz
CPU Frequency	Up to Xeon-E2176M, 6c/ 2.7GHz	Up to E3-1505M v6, 4.0 GHz	Up to i7-6820EQ 3.50 GHz
Chipset	Intel® QM370/CM246 PCH	Intel® PCH CM238	PCH QM170 or CM236 (by sku)
Memory Type	SODIMM DDR4 2666 Socket x 3	DDR4, SO-DIMMx2, ECC support, up to 2400	DDR4, SODIMM x 2, ECC Supports with CM236 sku only, up to 2133
Max. Memory Capacity	Up to 96GB, Non-ECC/ECC Support (only with CM246PCH)	32GB	
BIOS	AMI BIOS, Legacy free BIOS	AMI BIOS, Legacy Free	
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Power Requirement	Standard: +12V		
Power Supply Type	AT/ATX Selection		
Power Consumption (Typical)	Intel® Xeon® E-2176M CPU @2.70GHz, DDR4 16GB x3, Full load: 62.4W, 5.2A@12V	E3-1505M v6 3.0 GHz, DDR4 16GB, 3.7A@12V (during full loading mode)	i7-6820EQ 2.8GHz, DDR4 16GB, 3.08A@12V (during full-loading mode)
Dimension (L x W)	4.92" x 3.75" (125mm x 95mm)		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -4°F ~ 158°F (-20°C ~ 70°C) by screening	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)		
Operating Humidity	10% ~ 95% relative humidity, non-condensing	10% ~90% relative humidity, non-condensing	
MTBF (hours)	80,000		
Certification	CE/FCC Class A		
Display			
VGA/LCD Controller	Intel® GT2-P630 (E2176M) / GT2-630 (I7/I5/I3 Series)	Intel® HD Graphics P630	Intel® HD Graphics P530 / 530
Video Output	VGA, 18/24b 2ch LVDS/eDP, DDI x2 (3rd one can be added if VGA not require)	VGA, LVDS or eDP, DDI x2 (3rd DDI could be added if VGA no required)	
LVDS Interface	Supports 18bit and 24bit dual channel	—	
I/O			
Ethernet	Intel® Ethernet I219 GbE x 1	Intel® I219, Gigabit Ethernet	
Audio	HD Audio		
USB Port	USB 2.0 x 8, USB 3.2 Gen 2 x 4	USB 2.0 x 8, USB 3.2 Gen 2 x 4	
Serial Port	2-wire UART(TX/RX) x 2	2-Wire UART (Tx/Rx) x 2	
HDD Interface	SATA III x 4	SATA 3 x 4	
Onboard Storage	—		
Expansion Slot	PCIe [x1] x 8 PCIe[x16] x1 LPC x1 SMBUS x 1 2-wire UART x2	PCIe[x16] x 1 PCIe[x1] x 8 I2C LPC SMBus	
GPIO	8-bit	GPIO 8-bit	
TPM	Support 1.2 / 2.0(Optional)	Optional	
Note			

Note: All specifications are subject to change without notice.

COM Express CPU Modules

Model	COM-TGUC6	COM-WHUC6	COM-SKUC6/KBUC6
System			
Form Factor	COM Express Compact size, 95mm x 95mm		COM Express Compact Size, Type 6
CPU	11th Generation Intel® Core™ Processor Family (formerly Tiger Lake UP3)	8th Generation Intel® Core™ ULT Series Processor	Onboard 6th/7th Generation Intel® Core™/Celeron™ i3/i5/i7 U-series SoC Processor
CPU Frequency	—		Up to i7-7600U 2C/ 2.8 GHz
Chipset	SoC	Onboard 8th Generation Intel® Core™ SoC	Onboard 6th/7th Generation Intel® Core™/Celeron™ U-series SoC
Memory Type	DDR4 3200 MHz SODIMM x2 (Dual Channel) in-band ECC supported by SoC	SO-DIMM DDR4 2400 Socket x2	DDR3L 1600, SODIMM x 1
Max. Memory Capacity	Up to 64GB		8 GB
BIOS	AMI UEFI	AMI BIOS, Legacy free BIOS	AMI BIOS, Legacy Free
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Power Requirement	Standard: +12V		
Power Supply Type	—	AT/ ATX Mode	AT/ATX
Power Consumption (Typical)	12Vin, TDP up to 15~36W with i7 @ max loading, stable status	12V, estimate 18W with i7-8655UE @ 100% loading	i7-7600U, 8GB DDR3L, full loading 1.32A@12V during 100% loading burn in test
Dimension (L x W)	3.75" x 3.75" (95mm x 95mm)		
Operating Temperature	32°F~ 140°F (0°C ~ 60°C) Option : -40°C ~ +85°C (-40°C ~ +85°C)	32°F~ 140°F (0°C ~ 60°C)	32°F~ 140°F (0°C ~ 60°C)
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	-4°F ~ 158°F (-20°C ~ 70°C)	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing		10% ~80% relative humidity, non-condensing
MTBF (hours)	TBD		80,000
Certification	CE/FCC	CE/FCC Class A	
Display			
VGA/LCD Controller	Intel® Iris® Xe Graphics Intel® UHD Graphics for 11th Gen Intel® Processors	Intel® UHD Graphics 620 / 610	Onboard 6th Gen Intel® Core U-Series Processor, GT2-520/510 Onboard 7th Gen Intel® Core U-Series Processor, GT2-620/610
Video Output	LVDS/eDP x 1 (Default : LVDS) , DDI x 3, VGA x 1	DDI0: LVDS, (eDP by BOM change) DDI1: Display Port DDI2: Default VGA, (DP by SW1&2 selected)	VGA, LVDS (eDP Optional), DDI x 1 (up to 2)
LVDS Interface	—	Support 18-bit and 24-bit dual channel	
I/O			
Ethernet	Intel® I225LM Gigabit Ethernet x 1	Intel® I219 GbE x 1	Intel®PHY I219LM
Audio	High Definition Audio Interface x 1	HD Audio x 1	High Definition Audio Interface
USB Port	USB3.2 Gen 2 x 4, USB2.0 x 8	USB 2.0 x 8, USB 3.2 Gen 2 x 4	USB 2.0 x 8, USB 3.2 Gen 1 x 4
Serial Port	2-wire UART x 2 (TX/RX)	2-wire UART x 2 (TX/RX)	2-Wire UART (Tx/Rx) x 2
HDD Interface	SATA 3.0 x 2	SATA3 x 2 as default (up to 3)	SATA3 x 2 ; i5 & i7 up to 3
Onboard Storage	—	eMMC x 1 (up to 64GB)	—
Expansion Slot	PCIe 5 lanes, [x1] x 5, PEG[x4], I2C, LPC, SMBus	PCIe[x1] x 4 + PCIe[x4] x 1 (default), I2C, LPC, SMBus	PCIe[x1] x8, I2C, LPC, SMBus
GPIO	8-bit		GPIO 8-bit
TPM	TPM 2.0 Optional		Optional
Note			

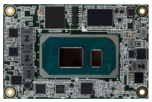
Note: All specifications are subject to change without notice.

COM Express CPU Modules

Model	COM-BT	COM-BYTC2
System		
Form Factor	COM Express, Compact, Pin-out Type 6	COM Express Compact Size
CPU	Onboard Intel® Atom™ SoC	
CPU Frequency	Intel® Atom™N2930 (1.83 GHz), N2807 (1.58 GHz), E3845 (1.91 GHz), E3827 (1.75 GHz), E3825 (1.33 GHz), J1900 (2.0 GHz)	Up to J1900 1.91 GHz, Quad core
Chipset	Intel® Atom™ SoC	
Memory Type	DDR3L 1066/1333 MHz SODIMM x 1	
Max. Memory Capacity	8 GB	
BIOS	AMI BIOS	AMI BIOS, Legacy Free
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Power Requirement	Standard: +12V	
Power Supply Type	AT/ ATX	AT/ATX Selection
Power Consumption (Typical)	0.92A@12V, full load, J1900 0.48A@12V, full load, N2807	1A@ 12V with J1900, full load
Dimension (L x W)	3.74" x 3.74" (95mm x 95mm)	3.75" x 3.75" (95mm x 95mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) optional	32˚F ~ 140˚F (0˚C ~ 60˚C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	-4˚F ~ 158˚F (-20˚C ~ 70˚C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing	10% ~90% relative humidity, non-condensing
MTBF (hours)	80,000	
Certification	CE/FCC	CE/FCC Class A
Display		
VGA/LCD Controller	Intel® Atom™ SoC	
Video Output	CRT, LVDS LCD, DDI	VGA, LVDS, eDP
LVDS Interface	—	
I/O		
Ethernet	Intel® I211, Gigabit Ethernet	Intel® I210IT, Gigabit Ethernet
Audio	High Definition Audio Interface	HD Audio
USB Port	USB 2.0 x 7, USB 3.2 Gen 1 x 1	USB 2.0 x 7
Serial Port	Tx/Rx x 2	—
HDD Interface	SATA x 2	SATA x 1, PATA x 1
Onboard Storage	—	
Expansion Slot	PCI-Express[x1] x 3 (Gen 2.0), LPC Bus x 1, SMbus x 1	PCIe[x1] x 2, PCI x 4, I2C, LPC, SMBus
GPIO	GPIO 8-bit	
TPM	—	Optional
Note		

Note: All specifications are subject to change without notice.

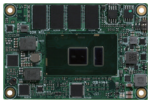
COM Express CPU Modules



Model	NANOCOM-TGU	NanoCOM-WHU	NanoCOM-KBU-A20
System			
Form Factor	COM Express Mini size, 84mm x 55mm		COM Express Mini size, Type 10
CPU	11th Generation Intel® Core™ Processor Family (formerly Tiger Lake UP3)	8th Generation Intel® Core™ ULT Series Processor	Onboard 7th Generation Intel® Core™ U- Series SoC Processor
CPU Frequency	—		Up to i7-7600U 2C / 2.8 GHz
Chipset	SoC	Onboard 8th Generation Intel® Core™ SoC	Onboard 7th Generation Intel® Core™ U-series SoC
Memory Type	Onboard LPDDR4x 3733 MHz memory in-band ECC supported by SoC	Onboard DDR4-2400/2133, non ECC support.	Onboard Non-ECC DDR4-2133
Max. Memory Capacity	Up to 16 GB	Up to 8GB	8GB DDR4
BIOS	AMI UEFI	AMI BIOS, Legacy free BIOS	AMI BIOS, Legacy free
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Power Requirement	Standard: +12V		
Power Supply Type	—	AT Mode	AT/ATX
Power Consumption (Typical)	12Vin, TDP up to 15~36W with i7 @ max loading, stable status	TBD	i7-7600U, Onboard 8GB DDR4, full loading 1.83A@12V during 100% loading burn in test
Dimension (L x W)	3.31" x 2.17" (84 mm x 55 mm)		
Operating Temperature	32°F~ 140°F (0°C ~ 60°C) Option : -40°C ~ +85°C (-40°C ~ +85°C)	32°F~ 140°F (0°C ~ 60°C)	32 °F ~ 140 °F (0 °C ~ 60 °C) -40 °F ~ 185 °F (-40 °C ~ 85 °C) Option for NANOCOM-SKU series
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)		-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
MTBF (hours)	TBD	717,282	80,000
Certification	CE/FCC	CE/FCC Class A	
Display			
VGA/LCD Controller	Intel® Iris® Xe Graphics Intel® UHD Graphics for 11th Gen Intel® Processors	Intel® UHD Graphics 620 / 610	Intel® HD Graphics 620/610
Video Output	eDP x 1, DDI x 1		LVDS LCD (eDP Optional), DDI x 1
LVDS Interface	—		Supports 18-bit and 24-bit Single channel
I/O			
Ethernet	Intel® I219LM Gigabit Ethernet x 1	Intel® I219 GbE x 1	Intel® I219-LM
Audio	High Definition Audio Interface x 1	HD Audio x 1	High Definition Audio Interface
USB Port	USB3.2 Gen 2 x 2, USB2.0 x 8	USB 2.0 x 8, USB 3.2 x 2	USB 2.0 x 8, USB 3.2 Gen 1 x 2
Serial Port	2-wire UART x 2 (TX/RX)		2-Wire UART (TX/RX) x 2
HDD Interface	SATA 3.0 x 2		
Onboard Storage	Onboard PCIe NVMe SSD x1, up to 256GB	eMMC	eMMC Optional
Expansion Slot	PCIe [x1] x 4 I2C, LPC, SMBus		PCIe [x1] x 4 (up to 4 devices) LPC SMBus I2C
GPIO	8-bit		
TPM	—	fTPM	fTPM Supported
Note			

Note: All specifications are subject to change without notice.

COM Express CPU Modules

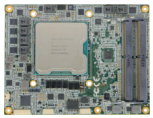


Model	NanoCOM-SKU	NanoCOM-APL	NanoCOM-BT
System			
Form Factor	COM Express Mini size, Type 10		
CPU	6th generation Intel® Core™ ULT SeriesProcessor	Onboard Intel® Atom™/Celeron®/ Pentium® SoC	Intel® Atom™/ Celeron® Processor SoC (M/I)
CPU Frequency	Up to i7-6600U, 2c/4t, 2.6GHz up to 3.4GHz	Up to 2.5 GHz	Up to E3845, 1.91 GHz
Chipset	Onboard 6th Generation Intel® Core™ U-series SoC	Intel® Atom™/Celeron®/Pentium® SoC	Intel® Atom™/ Celeron® Processor SoC
Memory Type	Onboard Non-ECC DDR4-2133	Onboard LPDDR4 4GB (Default) / 8GB (Optional)	Non-ECC DDR3L-1333
Max. Memory Capacity	4GB DDR4	8GB LPDDR4 Onboard	2 GB DDR3L Onboard (up to 4 GB)
BIOS	AMI BIOS, Legacy Free		
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Power Requirement	Standard: +12V	Standard : +12V, AT/ATX	Standard : +12V, AT/ATX Optional: +5V, AT/ATX
Power Supply Type	AT/ATX		
Power Consumption (Typical)	i7-6600U, Onboard12V@1.5A during 100% loading burn in test.	Up to use E3950 TDP 12W CPU	0.7A@12V, full load, E3845
Dimension (L x W)	3.31" x 2.17" (84mm x 55mm)		
Operating Temperature	32°F~ 140°F (0°C ~ 60°C) -40°F~ 185°F (-40°C ~ 85°C)	32 °F ~ 140 °F (0 °C ~ 60 °C)	32°F ~ 140°F (0°C ~ 60°C) -40°F ~ 185°F (-40°C ~ 85°C) by E3800, 2GB SKU
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)		-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
MTBF (hours)	80,000		90,000
Certification	CE/FCC Class A		
Display			
VGA/LCD Controller	Intel® HD Graphics 520/510	Intel® HD Graphics 500 / 505	Intel® HD Graphic
Video Output	LVDS LCD (eDP Optional), DDI x 1	LVDS LCD/eDP, DDI x 1	
LVDS Interface	Supports 18-bit and 24-bit Single channel		
I/O			
Ethernet	Intel® I219-LM	Intel® I210IT	
Audio	High Definition Audio Interface		
USB Port	USB 2.0 x 8, USB 3.2 Gen 1 x 2		USB 2.0 x 7, USB 3.2 Gen 1 x 1
Serial Port	2-Wire UART (TX/RX) x 2	TX/RX x 2	
HDD Interface	SATA3 x 2	SATA III x 2	SATA 2 x 2
Onboard Storage	—	Optional onboard eMMC	Optional for 8GB/16GB eMMC
Expansion Slot	PCIe[x1] x4 (up to 4 devices) LPC, SMBus, I2C	PCI Express [x1], max 3 device, up to 4 lane available LPC Bus SM Bus I2C	PCI Express [x1], max. 3 device, LPC Bus, Smbus, I2C
GPIO	8-bit	GPIO 8-bit	
TPM	fTPM optional	—	
Note			

Note: All specifications are subject to change without notice.

COM Express CPU Modules

Launching in Q3



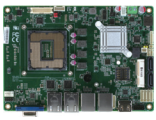
Model	COM-TGHB6	COM-ICDB7	NANOCOM-WHU Rev.B
System			
Form Factor	COM Express Basic Size 125mm x 95mm		COM Express Mini size 84mm x 55mm
CPU	"11th Generation Intel® Xeon/Core™ Tiger Lake-H Processor Up to 8 Core, TDP 45W (form XEON to i3)"	Intel® XEON-D, LCC, up to 10c/20t, CPU TDP up to 75W	8th Generation Intel® Core™ ULT Series Processor
CPU Frequency	—		
Chipset	Intel 500 series PCH	SoC	Onboard 8th Generation Intel® Core™ SoC
Memory Type	DDR4 Socket x4, up to 128GB, ECC supported by sku	DDR4 Socket x4, up to 128GB, ECC supported	Onboard DDR4-2400/2133, non ECC support.
Max. Memory Capacity	up to 128GB		Up to 8GB
BIOS	AMI UEFI		AMI BIOS, Legacy free BIOS
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Power Requirement	Normal: +12V		Standard: +12V
Power Supply Type	AT/ATX	—	AT Mode
Power Consumption (Typical)	TBD		
Dimension (L x W)	125mm x 95mm		3.31" x 2.17" (84 mm x 55 mm)
Operating Temperature	"32°F~ 140°F (0°C ~ 60°C) Option : -40°C ~ +85°C (-40°C ~ +85°C)"	32°F~ 140°F (0°C ~ 60°C)	
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)		
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
MTBF (hours)	TBD		717,282
Certification	CE/FCC		CE/FCC Class A
Display			
VGA/LCD Controller	Intel Xe Graphic	N/A	Intel® UHD Graphics 620 / 610
Video Output	LVDS or eDP x1 ,VGA x1, DDI x3	N/A	LVDS or eDP (selected by BOM change) , DDI x1
LVDS Interface	—	—	—
I/O			
Ethernet	Intel® I225LM Gigabit Ethernet x 1	"1GbE: Intel® I210 GbE 10GbE: via carrier board 10GbE Phy"	Intel® I219 GbE x 1
Audio	High Definition Audio Interface	N/A	HD Audio x 1
USB Port	USB 2.0 x 8, USB 3.2 x 4 (Up to Gen2 support)	USB3.2 / USB2.0 x 4	USB 2.0 x 8 USB 3.2 Gen2 x 2
Serial Port	2-wire UART x 2 (TX/RX)		
HDD Interface	SATA3.0 x 4	SATA 3.0 x 2	
Onboard Storage	PEG[x16] x1 (Gen4) , PCIe [x1] x 8, LPC/ e-SPI, I2C, SMBus	PCIe [x16] x1, PCIe [x8] x1, PCIe [x1] x8, I2C, LPC, SMBus, NCSI	—
Expansion Slot	Onboard PCIe Gen4 [x4] NVMe SSD x 1	8 bit	PCIe [x1] x4 I2C, LPC, SMBus
GPIO	NVMe	N/A	8 bit
TPM	2.0 (Optional)	—	fTPM
Note			

Note: All specifications are subject to change without notice.

COM Carrier Boards

Model	ECB-916M Rev. B11	ECB-920A-A11
System		
Form Factor	Micro-ATX	ATX
COM Express Connector	x 2	x 2 (Row A,B & Row C,D)
I/O Chipset	Winbond W83627DHG	—
Front Panel Control	10-pin (5x2) header	10-pin (5x2) header
Ethernet	Intel® 82573L, 10/100/1000Base-TX, RJ-45 x 1 10/100 Base-TX or 10/100/1000Base-TX, RJ-45 x 1 (From CPU module)	10/100/1000/2500 Base-TX, RJ45 x 1 (From CPU Module)
Expansion Interface	PCI-Express [x1] slot x 1 (additional 2 for test only) PCI-Express [x16] slot x 1 ==> Add a 3-pin header for SDVO enabled or disabled PCI slot x 1 Mini-PCI slot x 1 Mini-Card slot x 1 Express Card slot x 1	PCIe[x4] slot x 2 PCIe[x16] slot x 1
Power Supply Type	AT/ATX	ATX
CMOS Battery	RTC battery socket x 1	
BIOS	SPI x 1 Firmware Hub x 1 (with DIP Switch for BIOS Selection)	—
Board Size	9.6" x 9.6"(243.84mm x 243.84mm)	12" x 9.6"(304mm x 244mm)
Gross Weight	1.32 lb (0.6 kg)	
Operating Temperature	32˚F ~ 140˚F (0˚C ~ 60˚C)	
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)	-40°F ~ 185°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	77,000	—
Display		
DVI/CRT/VGA	DVI 29-pin + DB 15-pin stack-type connector	D-SUB15 connector x 1
LVDS/eDP	30-pin (15 x 2) Dual-Channel LVDS connector x 1	LVDS : 40pin (20x2) Dual Channel LVDS connector eDP : 30pin board wire connector
SDVO	40pin (20 x 2) SDVO connector x 1	—
DDI	—	Display Port x 3 (Dual x1, Single x 1)
I/O		
Storage	40-pin PATA connectorx1 SATA 3.0 Gb/s x 3 CompactFlash™ Type 2 slot x 1	SATA3 x 4
Serial Port	RS-232 Port x 1 RS-232/422/485 Port x 1	COM Port (2-Wire UART Tx/Rx) x 2
USB	Type-A connector x 4	Type A connector x 8 (USB2.0 x 4 , USB 3.2/2.0 x 4)
Audio	Audio jack x 6, Supports 7.1 channel audio Audio Codec: Realtek ALC888 Buzzer x 1	Audio Jack, supports Line-in, Line-out, Microphone
PS/2 Port	x 1	—
GPIO	Supports 8-bit (Programmable)	GPIO 8bit
Switch/Button	Power Button x 1 / Reset Button x 1	
Debug LED	—	80 PORT
I2C	—	1
Expansion Interface		LPC, I2C, SMBus, eSPI, CAN Bus, 4 pin fan connector, Mini SD card slot x 1
Note		

EPIC Boards

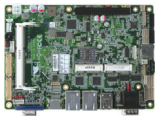


Model	EPIC-CFS7	EPIC-KBS9	EPIC-KBS7
System			
Form Factor	4" EPIC Board		
CPU	8th Generation Intel® Core™ Processor family	6th/7th Generation Intel® Core™ i3/i5/ i7/Celeron® (Support up to 65W SKU)	6th/7th Generation Intel® Core™ i3/i5/ i7/Celeron®
CPU Frequency	Up to 4.6GHz	Up to 4.2GHz	
Chipset	Intel® H310/Q370 (TDP: 6W)	H110/H170/Q170 (6W)	H110/Q170 (6W)
Memory Type	DDR4 2666 MHz SODIMM x 2 (Dual Channel, Non-ECC)	DDR4 2133MHz SODIMM x 2 (Dual Channel, Non-ECC)	DDR4 2133MHz SODIMM x 1 (Non-ECC)
Max. Memory Capacity	Up to 32GB	Up to 32GB	Up to 16GB
BIOS	AMI UEFI	AMI	
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Power Requirement	+12V	+12V, AT/ATX	12V or 9-24V (Default)
Power Supply Type	AT/ATX (ATX mode for system level)	AT/ ATX	
Power Consumption (Typical)	TBD	—	50W@Full loading
Dimension (L x W)	4.53" x 6.5" (115mm x 165mm)		
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-4°F ~ 176°F (-20°C ~ 80°C)	-40°F ~ 176°F (-40°C ~ 80°C)	
Operating Humidity	0 ~ 90% @ 40°C, non-condensing	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	TBD	—	110,000
Certification	CE/FCC Class A	CE/FCC	
Display			
VGA/LCD Controller	8th Generation Intel® Core™ Processor family	6th/7th Generation Intel® Core™ i3/i5/ i7/Celeron®	6th/7th Generation Intel® Core™ i3/i5/ i7/Celeron®
Video Output	HDMI x 2	HDMI (Rear), VGA (Internal Only)	CRT/LVDS/HDMI
Backlight Inverter Supply	—	—	Max. 12V
I/O			
Ethernet	Intel® I211, 10/100/1000Base, RJ45 x 2 (Support PoE 802.3af)	Intel® i211 Gigabit Ethernet x 4	LAN x 2 (Real IO) (i211 x 2)
Audio	—	ALC269 (With Amp)	ALC892, no Amp
USB Port	USB 3.2 Gen 2/ USB2.0 x 4 (Rear I/O) USB 2.0 x 2 (Internal header)	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)
Serial Port	RS-232/422/485 x 2 (Internal header)	COM x 2 (All Internal), RS-232/422/485	COM x 4 (COM2: RS-232/422/485)
Parallel Port	—	—	
HDD Interface	SATA 3.0 x 1	SATA 3.0 x 2	SATA 3.0 x 2, SATA Power (5V)
SSD	—	mSATA x 1 (Full size)	mSATA x 1 (optional for mini-Card)
Expansion Slot	PCIe[x4] FPC slot (For PoE card) Full Size mSATA/mPCIe slot x 1 LPC Bus SMBus (default) / I2C (option)	Mini-card x 1 (Full Size) (No SIM) PCIe[x4] Slot x 1	Mini-card x 1, Micro SIM x 1 (Optional)
DIO	Isolated DIO 32 bits (16 bits in/16 bits out) *optional function from daughter board	8-bit	
TPM	—		
Touch	—		
SIM	—		
Note			

Note: All specifications are subject to change without notice.

Board Level Products

EPIC Boards



Model	EPIC-SKH7	EPIC-BT07
System		
Form Factor	4" EPIC Board	
CPU	6th/7th Generation Intel® Core™ i-H series Processor	Intel® Atom™ E3845/Celeron® J1900/N2807
CPU Frequency	i7-6822EQ (4C, 2GHz, up to 2.8GHz) i7-7820EQ (4C, 3.0GHz, up to 3.7GHz)	Up to 2.0 GHz
Chipset	Intel® QM170 (TDP: 2.6W)	Intel® Atom™/ Celeron® SOC
Memory Type	SODIMM DDR4 Memory slot x 2	DDR3L 1333, SODIMM x 1
Max. Memory Capacity	Up to 32GB	Up to 8GB
BIOS	UEFI/Legacy	AMI
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Power Requirement	+9V ~ 36V	+12V or 9-24V AT/ATX (default)
Power Supply Type	AT/ATX	AT/ ATX
Power Consumption (Typical)	CPU 45W TDP	11.8W
Dimension (L x W)	4.53" x 6.5" (115 x 165 mm)	
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	TBD	110,000
Certification	CE/FCC Class A	CE/FCC
Display		
VGA/LCD Controller	Intel® HD Graphics 530 Intel® HD Graphics 630	Intel® Atom™/ Celeron® SOC
Video Output	LVDS x 2 HDMI 1.4 x 2	CRT, LVDS, HDMI
Backlight Inverter Supply	18/24bit (2CH)	Max. 12V
I/O		
Ethernet	Intel GbE i211	Intel® i211 Gigabit Ethernet, RJ-45 x 2
Audio	ALC269 (With 2W Amp)	High Definition Audio Interface
USB Port	USB 3.2 Gen 1/2.0 x 2 (Rear I/O) USB 2.0 x 5 (Internal header)	USB2.0 x 5 USB 3.2 Gen 1 x 1
Serial Port	RS-232/422/485 x 2 (Internal header) RS-232 x 2 (Internal header)	COM1, 4, 5, 6 : RS-232 x 4 COM2, 3 : RS-232/422/485 x 1 (Ring/ +5V/ +12V)
Parallel Port	—	SPP/EPP/ECP x 1
HDD Interface	SATA x 2	SATA 2.0 x 1
SSD	—	mSATA x 1 (Share with half-size Mini-Card by BOM)
Expansion Slot	M.2 2280 Slot (B Key) x 1 M.2 2230 Slot (E Key) x 1 Mini-PCIe Slot (PCIe/USB2.0) x 1 Micro-SIM slot LPC Bus SMBus (default) / I2C (option)	Mini-Card x 1 Micro-SD x 1 (Only E3800 series) PCI-104 x 1 (optional) 16-bit DIO or LPT SMbus x 1 I2C x 1 (optional) PS/2 x 1
DIO	8-bit	16-bit
TPM	—	Optional
Touch	—	Optional
SIM	Micro SIM	**SIM**
Note		

EPIC Boards

Model	EPIC-SKU7
System	
Form Factor	4" EPIC Board
CPU	Intel® 6/7th Generation Core™ i5/Celeron SoC i5-6200U(15W) Celeron-3855U(15W)
CPU Frequency	Up to 2.8GHz
Chipset	Integrated SoC
Memory Type	DDR4-1866/2133 Dual Channel DDR4 (Non-ECC) onboard
Max. Memory Capacity	Up to 8GB
BIOS	UEFI only
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+9V ~ 36V
Power Supply Type	AT/ATX (Default: AT)
Power Consumption (Typical)	23.4W (Full loading mode)
Dimension (L x W)	6.89" x 4.45" (175mm x 113mm)
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)
Storage Temperature	-4°F ~ 176°F (-20°C ~ 80°C)
Operating Humidity	0-90% @ 40°C, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	Intel® HD Graphics 510 Intel® HD Graphics 520
Video Output	LVDS/eDP x 1 (Default: LVDS) HDMI1.4 x 1
Backlight Inverter Supply	Max 12V, 2A
I/O	
Ethernet	i210IT, 10/100/1000 Base, RJ45 x 2
Audio	High Definition Audio Interface,Line-in/Line-out/MIC (w/ 3W, 4 Ohm Amplifier)
USB Port	USB 3.0 x 4 (Rear I/O) USB 2.0 x 5 (Header x 1, rests in EXT I/O)
Serial Port	RS-232/422/485 x 2 (Rear I/O x 2) RS-232 x 4 (In EXT I/O)
Parallel Port	—
HDD Interface	—
SSD	1. SATA3 x 1 (7+15P connector) 2. Full size mSATA/mPCIe x 1 with Micro-SIM (mSATA as default) -Celeron 3855U: mSATA/mPCIe selected by BOM -I5-6200U: mSATA/mPCIe selected by BIOS 3. M.2 2280 M key x 1 (PCIe[x4] as default)
Expansion Slot	External port: USB2.0 x 4 COM x 4 PCIex1 x 3
DIO	—
TPM	—
Touch	Yes (co-lay with USB2.0)
SIM	Micro SIM
Others	SMBUS x 1, LPC
Note	

Note: All specifications are subject to change without notice.

Board Level Products

EPIC Boards

Model	EPIC-CFS7-PUC
System	
Form Factor	4" EPIC Board
CPU	8th Generation Intel® Core™ Processor family
CPU Frequency	Up to 4.6GHz
Chipset	Intel® H310/Q370 (TDP: 6W)
Memory Type	DDR4 2666 MHz SODIMM x 2 (Dual Channel, Non-ECC)
Max. Memory Capacity	Up to 32GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ATX (ATX mode for system level)
Power Consumption (Typical)	95.04W (System level)
Dimension (L x W)	4.53" x 6.5" (115mm x 165mm)
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)
Storage Temperature	-4°F ~ 176°F (-20°C ~ 80°C)
Operating Humidity	0 ~ 90% @ 40°C, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	8th Generation Intel® Core™ Processor family
Video Output	HDMI x 2
Backlight Inverter Supply	—
I/O	
Ethernet	Intel® I211, 10/100/1000Base, RJ45 x 4 (Support PoE 802.3af)
Audio	—
USB Port	USB 3.2 Gen 2/ USB2.0 x 4 (Rear I/O) USB 2.0 x 2 (Internal header)
Serial Port	RS-232/422/485 x 2 (Internal header)
Parallel Port	—
HDD Interface	SATA 3.0 x 1
SSD	—
Expansion Slot	PCIe[x4] FPC slot (For PoE card) Full Size mSATA/mPCIe slot x 1 LPC Bus SMBus (default) / I2C (option)
DIO	Isolated DIO 32 bits (16 bits in/16 bits out) *optional function from daughter board
TPM	—
Touch	—
SIM	—
Note	

Launching in Q3

Model	EPIC-TGH7
System	
Form Factor	4" EPIC board
CPU	Intel® 11th Generation Core™ i9/i7/i5/i3 (TDP max: 45W)
CPU Frequency	Up to 4.4 GHz
Chipset	Intel® 500 series
Memory Type	SODIMM DDR4 3200 MHz x2
Max. Memory Capacity	up to 64GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	9~24V
Power Supply Type	AT/ATX
Power Consumption (Typical)	CPU 45W TDP
Dimension (L x W)	115mm x 165mm
Operating Temperature	32°F~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	Intel® 11th Generation Core™
Video Output	eDP1.4b/LVDS x 1 (default eDP) HDMI 2.0 x 1 DPx1 DPx1 (colay VGA)
Backlight Inverter Supply	Support 18/24bit dual channel
I/O	
Ethernet	Intel® i225 2.5GbE + i219 GbE, RJ45 x2
Audio	High Definition Audio Interface
USB Port	USB3.2 Gen2 x 4 USB2.0 x 4
Serial Port	RS-232 x 4, RS-232/422/485 x 2
Parallel Port	—
HDD Interface	SATAIII x2
SSD	M.2 2280 M key (PCIex4, Gen4)
Expansion Slot	PCIe [x8] x1 Minicard half size (mPCIe as default) M.2 3052 B key (PCIe/SATA) FPC slot (PCIex4) I2C, LPC, SMBus
DIO	16-bit
TPM	TPM2.0 (option)
Touch	Option
SIM	Nano SIM
Note	—

Note: All specifications are subject to change without notice.

SubCompact Boards

Model	GENE-TGU6
System	
Form Factor	3.5" SubCompact Board
CPU	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) Celeron® 6305E (2C, 1.80GHz,TDP 15W)
CPU Frequency	Up to 4.4GHz
Chipset	Integrated SoC
Memory Type	DDR4 3200MHz SODIMM x2 (Dual Channel ,Non-ECC)
Max. Memory Capacity	Up to 64GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+9 ~ 36V (Optional: +12V)
Power Supply Type	AT/ATX (Default: AT)
Power Consumption (Typical)	TBD
Dimension (L x W)	5.75" x 4" (146mm x 101.7mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-4°F-176°F (-20°C ~ 80°C)
Operating Humidity	0-90% @ 40°C, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	Intel® Iris® Xe Graphics Intel® UHD Graphics for 11th Gen Intel® Processors
Video Output	DP 1.4a x 2 HDMI 2.0b x 1 Dual Channel 18/24bit LVDS/eDP x 1 (Default: LVDS)
Backlight Inverter Supply	Max 12V, 2A
I/O	
Ethernet	Intel ®i219-LM,10/100/1000Base,RJ45 x 1 (Support Vpro) Intel ®i225-LM, 10/100/1000/2500Base,RJ45 x 1(Support Vpro)
Audio	High Definition Audio Interface,Line-in/Line-out/MIC (Without Amplifier)
USB Port	USB3.2 GEN2 x 4 (Rear I/O) USB3.2 GEN2 Type C x 1 (Rear I/O) USB2.0 x 2 (Pin header)
Serial Port	RS-232/422/485 x 4 (COM2 support 5V/12V/RI)
Parallel Port	—
HDD Interface	—
FDD Interface	—
SSD	SATA 3.0 x 1, SATA power connector x 1(+5V)
Expansion Slot	Full size mSATA/mPCIe x 1 With Nano-SIM (mSATA as default, select by BIOS), M.2 E key 2230x 1 (For WIFI/BT, PCIe/USB signal only), M.2 M key 2280 PCIe x 4
DIO	8bit
SIM	x1(NANO-SMI)
TPM	TPM 2.0
Touch	x1
Others	SMBUS x1, I2C x1 (Optional)
Note	

SubCompact Boards

Model	GENE-CML5
System	
Form Factor	3.5" SubCompact Board
CPU	Intel® 10th Generation Core™ i7/i5/i3/Pentium/Celeron SoC i7-10700TE (8C, 2.0 GHz, up to 4.4 GHz) i5-10500TE (6C, 2.3 GHz, up to 3.7 GHz) i3-10100TE (4C, 2.3 GHz, up to 3.6 GHz) G6400TE (2C, 3.2 GHz) G5900TE (2C, 3.0 GHz)
CPU Frequency	Up to 4.4GHz
Chipset	Intel® Q470E / H420E / Q470
Memory Type	DDR4 2933/2666/2400 MHz SODIMM x 2 (Dual Channel ,Non-ECC)
Max. Memory Capacity	Up to 64GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ATX (Default: AT)
Power Consumption (Typical)	Intel® i7-10700TE, DDR4 3200Mhz 32GB, 4.47A at +12V
Dimension (L x W)	5.75" x 4" (146mm x 101.7mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)
Operating Humidity	0-90% @ 40°C, non-condensing
MTBF (Hours)	380,571
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	Chrontel CH7517A
Video Output	DP++ x 1, VGA x 1, LVDS x 1
Backlight Inverter Supply	Max 12V, 2A
I/O	
Ethernet	Intel® i210/i211,10/100/1000Base, RJ45 x1 Intel® i219,10/100/1000Base, RJ45 x1 (Support Vpro only with i5/i7 + Q470/Q470E variant)
Audio	High Definition Audio Interface,Line-in/Line-out/MIC
USB Port	USB3.2 Gen 2 x 2 (Rear I/O, Gen 2 for Q470/Q470E only), USB2.0 x 4 (Pin header)
Serial Port	RS-232/422/485 x 2
Parallel Port	—
HDD Interface	—
FDD Interface	—
SSD	SATA 3.0 x 2, SATA power connector x 1 (+5V)
Expansion Slot	M.2 M Key 2280 PCIe[x4]/SATA[x1] x 1 PCIe[x4] x 1 (through Flexible Printed Circuit interface, Q470/Q470E only) I2C, SMBUS (Default as I2C, SMBUS selected by board)
DIO	8bit
SIM	—
TPM	TPM 2.0
Touch	—
Others	—
Note	

Note: All specifications are subject to change without notice.

Board Level Products

SubCompact Boards

Model	GENE-WHU6	GENE-KBU6
System		
Form Factor	3.5" SubCompact Board	
CPU	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC i7-8665UE (4C, 1.7GHz, up to 4.4GHz); i5-8365UE (4C, 1.6GHz, up to 4.1GHz); i3-8145UE (2C, 2.2GHz, up to 3.9GHz); 4305UE (2C, 2GHz)	7th Generation Intel® Core™ i7-7600U Processor SoC
CPU Frequency	Up to 4.4GHz	Up to 3.9GHz
Chipset	8th Generation Intel® Processor SoC	7th Generation Intel® Processor SoC
Memory Type	2400MHz Dual Channel DDR4 (Non-ECC) SODIMM x 2	DDR4 1866/2133, SODIMM x 1
Max. Memory Capacity	Up to 64GB	Up to 16GB
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Power Requirement	+9-36V (Optional: +12V)	+9 ~ 36V or +12V
Power Supply Type	AT/ATX	AT/ ATX
Power Consumption (Typical)	Intel® i7-8665UE, DDR4 2400 MHz 16GB, 2.8A@ +12V	Intel® i7-7600U, DDR4 2400MHz 16GB, 1.85A@ +12V
Dimension (L x W)	5.75" x 4" (146mm x 101.7mm)	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	TBD	123,000
Certification	CE/FCC	
Display		
VGA/LCD Controller	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC	7th Generation Intel® Processor SoC
Video Output	LVDS/eDP x 1 (Default: LVDS), VGA x 1, HDMI 2.0 x 1	Default: DP+LVDS+DVI-D Option: LVDS+DVI-I(include VGA signal)
Backlight Inverter Supply	Yes	
I/O		
Ethernet	Intel® i210/i211 & i219, 10/100/1000Base, RJ 45 x 2	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2
Audio	High Definition Audio Interface	
USB Port	USB 3.2 Gen 2 x 4/2.0 x 2 (Up to Gen2)	USB 3.2 Gen 1 x 4, USB 2.0 x 2
Serial Port	RS-232/422/485 x 2	RS-232 x 1, RS-232/422/485 x 3
Parallel Port	—	
HDD Interface	SATA 3.0 x 1, +5V SATA power connector x 1	
FDD Interface	—	
SSD	Full size mSATA/mPCIe x 1 with NANO-SIM (mSATA as default, select by BIOS) M.2 2280 B key (PCI-e as default, SATA select by BIOS)	mSATA (Shared with half-size MiniCard and Selected by BIOS)
Expansion Slot	M.2 2230 E key x 1 (For WIFI/BT, PCIe/USB signal only) SMBUS/I2C/LPC/eSPI x 1	BIO x 1 Mini-Card x 2 and default is mSATA x 1 (Half-size), Mini-Card x 1 (Full-size)
DIO	8 Bit	
SIM	x 1(NANO-SIM)	x 1
TPM	—	TPM 2.0 x 1
Touch	x 1	
Note		

Note: All specifications are subject to change without notice.

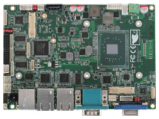
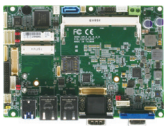
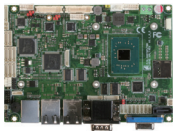
SubCompact Boards

Model	GENE-SKU6 Rev. B	GENE-SKU6
System		
Form Factor	3.5'' SubCompact Board	
CPU	6th Generation Intel® Core™ Processor SoC i7-6600U, i5-6300U, i3-6100U, Celeron® 3955U	6th Generation Intel® Core™ i7-6600U/i5-6300U Processor SoC
CPU Frequency	Up to 3.0GHz	
Chipset	6th Generation Intel® Core™ Processor SoC i7-6600U, i5-6300U, i3-6100U, Celeron® 3955U	6th Generation Intel® Core™ i7-6600U/i5-6300U Processor SoC
Memory Type	DDR4 1866/2133, SODIMM x 1	
Max. Memory Capacity	Up to 16 GB	
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Power Requirement	+9~36V or +12V	
Power Supply Type	AT/ ATX	
Power Consumption (Typical)	Intel® i7-6600U, 6600U, DDR4 2400MHz 16GB, 0.73A at +36V	Intel® i7-6600U, DDR4 2133MHz 16GB, 1.75A@ +12V
Dimension (L x W)	5.75" x 4" (146 mm x 101.7 mm)	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	371,039	123,000
Certification	CE/FCC Class A	CE/FCC
Display		
VGA/LCD Controller	6th Generation Intel® Core™ Processor U Series	6th Generation Intel® Core™ Processor SoC
Video Output	VGA x 1, HDMI x 1, LVDS (18/24 bit) x 1	Default: DP+LVDS+DVI-D Option: LVDS+DVI-I(include VGA signal)
Backlight Inverter Supply	Yes	
I/O		
Ethernet	Intel® i210IT, 10/100/1000Base, RJ-45 x 2 (Rear I/O)	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2
Audio	Audio x 1 (Line-in/Line-Out/Mic, pin header) Speaker 3W x 2 (2 pin)	High Definition Audio Interface
USB Port	USB 3.2 Gen 1 x 4 (Rear I/O) USB 2.0 x 2 (Pin header)	USB 3.2 Gen 1 x 4, USB 2.0 x 2
Serial Port	RS-232 x 1, RS-232/422/485 x 3	
Parallel Port	—	
HDD Interface	SATA 3.0 x 1 +5V SATA power connector x 1	
FDD Interface	—	
SSD	mSATA x 1 (Shared with Half-size Mini-Card, selected by BIOS)	
Expansion Slot	BIO x 1 (Optional) Mini-Card x 1 (shared with full-size mSATA, selected by BIOS)	BIO x 1, mSATA x 1(Half-size), Mini-Card x 1(Full-size)
DIO	8-bit	
SIM	—	x 1
TPM	TPM2.0	
Touch	Yes	x 1
Note		

Note: All specifications are subject to change without notice.

Board Level Products

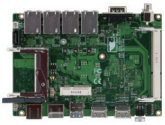
SubCompact Boards

Model	GENE-APL5	GENE-APL6	GENE-APL7
System			
Form Factor	3.5" SubCompact Board		
CPU	Intel® Pentium® N4200/ Celeorn® N3350 Processor SoC		
CPU Frequency	Up to 2.5 GHz		
Chipset	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC		
Memory Type	DDR3L 1866MHz, SODIMM x 1		
Max. Memory Capacity	Up to 8GB		
BIOS	UEFI		
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Power Requirement	+12V OR +9~19V (optional)	+9~36V or +12V	12V Only
Power Supply Type	AT/ ATX	AT/ ATX	AT/ ATX
Power Consumption (Typical)	Intel® N4200, DDR3L 1600MHz 8GB, 1.57A@ +12V	Intel® N4200, DDR3L 1600MHz 8G, 1.55A@ +12V	Intel® N4200,DDR3L 1600MHz 8GB,1.61A@+12V
Dimension (L x W)	5.75" x 4" (146mm x 101.7mm)	5.75" x 4" (146mm x 101.7mm)	5.75" x 4" (146 mm x 101.7 mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)	-40°F ~ 176°F (-40°C ~ 81°C)	-40°F ~ 176°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
MTBF (Hours)	128,000	128,793	126,000
Certification	CE/FCC		
Display			
VGA/LCD Controller	Intel® Atom™ N4200/ N3350 Processor SoC integrate	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
Video Output	VGA/LVDS/ LVDS2 (co-layout with HDMI, optional)	LVDS, LVDS2, VGA (HDMI is option, co-layout with LVDS2)	VGA/LVDS1 (Option: LVDS2/eDP)
Backlight Inverter Supply	Yes		Max 12V, 2A
I/O			
Ethernet	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2		Realtek RTL-8111E, RJ-45 x 2
Audio	High Definition Audio Interface		High Definition Audio Interface (Option 2W Amp)
USB Port	USB 3.2 Gen 1 x 2, USB 2.0 x 4	USB 3.2 Gen 1 x 2, USB 2.0 x 2	Rear I/O: USB 3.2 Gen 1 x 2, Internal: USB2.0 x 8
Serial Port	RS-232 x 2 , RS-232/422/485 x 2		Rear I/O: COM x 2 (COM2 is RS-232/422/485), Internal: COM x 4 (Option to COM x 10), COM2-5 support 5V/12V/RI
Parallel Port	SPP/EPP/ECP x 1 (Option, Shared with DIO)	SPP/EPP/ECP x 1 (Option, Shared with DIO)	—
HDD Interface	SATA 3.0 x 1 +5V SATA power connector x 1		SATA 3.0 x 1
FDD Interface	—		
SSD	mSATA	eMMC 16G/32G/64G (optional)	mSATA x 1 (Full, optioal for mini-card)
Expansion Slot	mSATA x 1 (Full-size) MiniCard x 1 (Half-size)	Mini Card x 1 (Full-size) mSATA x 1 (Half-size)	Mini-card x 1 (Full size)
DIO	8-bit		
SIM	x 1 (uSIM) (Optional)	x 1 (uSIM)	Micro SIM x 1 (Option)
TPM	TPM2.0 x 1 (Optional)		—
Touch	x 1 (Optional)		—
Note			

Note: All specifications are subject to change without notice.

SubCompact Boards

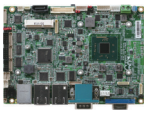


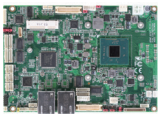
Model	GENE-BSW5	GENE-BT04
System		
Form Factor	3.5" SubCompact Board	
CPU	Intel® Pentium® & Celeron® M/D Processor SoC	Intel® Celeron® J1900/ N2807 Processor SoC
CPU Frequency	Up to 2.6 GHz	Up to 2.0GHz
Chipset	Intel® Pentium® & Celeron® M/D Processor SoC	Intel® Celeron® J1900/ N2807 Processor SoC
Memory Type	DDR3L 1600, SODIMM x 1	DDR3L 1333, SODIMM x 1
Max. Memory Capacity	Up to 8GB	
BIOS	UEFI	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Power Requirement	+12V	+12V ~ +24V
Power Supply Type	AT/ ATX	ATX mode
Power Consumption (Typical)	Intel® Celeron® N3160 (2M Cache, up to 2.24 GHz, DDR3L 1600MHz, 8GB, 0.65A@ + 12V)	Intel® N2807, DDR3L 1600MHz 4G, 0.65A@ +12V
Dimension (L x W)	5.75" x 4" (146 mm x 101.7 mm)	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~ 176°F (-40°C ~ 85°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	81,000	155,000
Certification	CE/FCC	
Display		
VGA/LCD Controller	Intel® Pentium® & Celeron® M/D SoC	Intel® Celeron® J1900/ N2807 Processor SoC
Video Output	LVDS x 2 + VGA, LVDS + HDMI + VGA	HDMI x 2: HDMI 1(w/Audio), HDMI 2(w/o Audio)
Backlight Inverter Supply	Up to 24-bit dual-channel LVDS	—
I/O		
Ethernet	Realtek RTL-8111E, 10/100/1000Base-TX, RJ-45 x2	Intel® I211AT(or 210), 10/100/1000Base-TX, RJ-45 x 4
Audio	High Definition Audio Interface	
USB Port	USB 3.2 Gen 1 x 2 , USB2.0 x 3	USB2.0 x 2 , USB 3.2 Gen 1 x 1
Serial Port	RS-232/422/485 x 2, RS-232 x 4	RS-232 x 1
Parallel Port	SPP/EPP/ECP x 1 (Option, Shared with DIO)	—
HDD Interface	SATA 3.0 x 1	SATA 2.0 x 1
FDD Interface	—	
SSD	mSATA x 1 (Half-size)	CFast™ x 1
Expansion Slot	Mini-card x 1 (Full size)	Mini-Card x 1 (for USB only)
DIO	8-bit	4 Bit
SIM	x 1	
TPM	—	x 1
Touch	x 1 (USB interface)	—
Note		

Note: All specifications are subject to change without notice.

Board Level Products

SubCompact Boards





Model	GENE-BT05	GENE-BT06	GENE-BT07
System			
Form Factor	3.5" SubCompact Board		
CPU	Intel® N2930/N2807/J1900/E3845/ E3825	Intel® Atom™ E3845/E3825	Intel® Celeron® J1900 Processor SoC
CPU Frequency	Up to 2.0GHz		
Chipset	Intel® N2930/N2807/J1900/E3845/ E3825	Intel® Atom™ series Processor SoC	Intel® Celeron® J1900 Processor SoC
Memory Type	DDR3L 1066/1333, SODIMM x 1	Onboard DDR3L 1066/1333	DDR3L 1333MHz SODIMM x 1
Max. Memory Capacity	Up to 8G	Up to 4GB	Up to 8GB
BIOS	UEFI		
Wake on LAN	Yes		
Watchdog Timer	255 Levels		
Power Requirement	+12V	Wide DC support 9~24V	+12V
Power Supply Type	AT/ATX		AT/ ATX Mode
Power Consumption (Typical)	Intel® N2930, DDR3L 1600MHz 8G, 0.65A@+12V	Intel® E3845, Onboard DDR3L 1600MHz 4G, 0.64A@+12V	Intel® Celeron® J1900, DDR3L 1600MHz 8G, 1.06A@+12V
Dimension (L x W)	5.75" x 4" (146mm x 101.6mm)		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C) or WiTAS 2 (E3825)	32°F ~ 140°F (0°C ~ 60°C) or WiTAS 2 (TBD)	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)		
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
MTBF (Hours)	111,000	110,000	204,000
Certification	CE/FCC		
Display			
VGA/LCD Controller	Intel® N2930/N2807/J1900/E3845/ E3825	Intel® Atom™ Processor SoC	Intel® Celeron® J1900 Processor SoC
Video Output	CRT+LVDS, HDMI+LVDS , CRT+HDMI	CRT+LVDS, HDMI+LVDS , CRT+HDMI	VGA, LVDS, eDP (optional, support by BOM change)
Backlight Inverter Supply	Up to 24-bit dual-channel LVDS x 1	18/24-bit dual-channel LVDS LCD	18/24-bit dual channel LVDS LCDs
I/O			
Ethernet	Intel® I211 (or 210), 10/100/1000Base-TX, RJ-45 x 2		RTL8111E, RJ-45 x 2
Audio	High definition audio interface		Realtek ALC892 CODEC, MIC-In AMP TI3113, Support 8ohm/4W speaker
USB Port	USB2.0 x 3 , USB 3.2 Gen 1 x 1		USB2.0 x 9
Serial Port	RS-232 x 2 , RS-232/422/485 x 2		RS-232 x 6
Parallel Port	—	SPP/EPP/ECP x 1	—
HDD Interface	SATA 2.0 x 1		—
FDD Interface	—		
SSD	CFast™ (alternative with mSATA by BOM and also occupy one Mini-Card location)	mSATA (Half-size, shared with Mini-Card)	mSATA x 1 (half size)
Expansion Slot	Mini-Card x 2(Full-size x 1, Half-size x 1)	Mini-Card x 1 (Full-size)	
DIO	8-bit		—
SIM	x 1		—
TPM	x 1		—
Touch	x 1		Reserve USB2.0 x 1 connector to expand
Note			

Note: All specifications are subject to change without notice.

SubCompact Boards

Model	GENE-5315 Rev. A	GENE-5315 Rev. B
System		
Form Factor	3.5" SubCompact Board	
CPU	Onboard AMD Geode™ LX 800	
CPU Frequency	500 MHz	
Chipset	AMD Geode™ LX	
Memory Type	DDR333 SODIMM x 1 (DDR400 optional)	
Max. Memory Capacity	1 GB	
BIOS	Award 1 MB	
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Power Requirement	+5V	
Power Supply Type	AT/ ATX	
Power Consumption (Typical)	LX 800 500 MHz, DDR400 1 GB, 1.17A@+5V	
Dimension (L x W)	5.75" x 4" (146mm x 101.6mm)	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C), -4°F ~ 158°F (-20°C ~ 70°C) for WiTAS 1	
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	90,000	
Certification	CE/FCC	
Display		
VGA/LCD Controller	AMD Geode™	
Video Output	CRT, TTL LCD, LVDS LCD	
Backlight Inverter Supply	Up to 24-bit single channel TTL/LVDS	
I/O		
Ethernet	10/100Base-TX x 2, Realtek RTL 8139DL	
Audio	High Definition Audio Interface	
USB Port	USB2.0 x 4	
Serial Port	RS-232 x 1, RS-232/422/485 x 1	RS-232 x 4 & TTL UART x 1, RS-232/422/485 x 1
Parallel Port	SPP/EPP/ECP x 1	
HDD Interface	UDMA33 x 1	
FDD Interface	FDD x 1	
SSD	CompactFlash™	
Expansion Slot	Mini-PCI, PC/104	Mini-PCI
DIO	8-bit	
SIM	—	
TPM	—	
Touch	—	
Note		

Note: All specifications are subject to change without notice.

SubCompact Boards

Model	GENESYS-WHU6
System	
Form Factor	3.5" SubCompact Board System
CPU	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC i7-8665UE (4C, 1.7GHz, up to 4.4GHz) i5-8365UE (4C, 1.6GHz, up to 4.1GHz) i3-8145UE (2C, 2.2GHz, up to 3.9GHz) 4305UE (2C, 2GHz)
CPU Frequency	Up to 4.4GHz
Chipset	8th Generation Intel® Processor SoC
Memory Type	DDR4 2400 MHz SODIMM x 2 (Dual Channel, Non-ECC)
Max. Memory Capacity	Up to 64GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+9 ~ 36V (Optional: +12V)
Power Supply Type	ATX
Power Consumption (Typical)	Intel® i7-8665UE, DDR4 2400 MHz 16GB, 2.8A@ +12V
Dimension (L x W)	5.75" x 4" (146mm x 101.7mm)
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 85°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	354,194
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® 8th Generation Core™ i7/i5/i3/Celeron SoC
Video Output	VGA x 1, HDMI 2.0 x 1
Backlight Inverter Supply	—
I/O	
Ethernet	Intel® i210/i211 & i219, 10/100/1000Base, RJ 45 x2
Audio	High Definition Audio Interface (Optional)
USB Port	USB 3.2 Gen 2 x 4/2.0 x 2 (Up to Gen2)
Serial Port	RS-232/422/485 x 2
Parallel Port	—
HDD Interface	SATA 3.0 x 1 SATA power connector x 1 (+5V)
FDD Interface	—
SSD	Full size mSATA/mPCIe x 1 with NANO-SIM (mSATA as default, select by BIOS) M.2 2280 B key (PCI-e as default, SATA select by BIOS)
Expansion Slot	M.2 2230 E key x 1 (For WIFI/BT, PCIe/USB signal only) SMBUS/I2C/LPC/eSPI x 1
DIO	—
SIM	x 1(NANO-SIM)
TPM	—
Touch	—
Note	

SubCompact Boards

Model	GENESYS-KBU6	GENESYS-APL7
System		
Form Factor	3.5" SubCompact Board System	
CPU	7th Generation Intel® Core™ i7/i5/i3/Celeron® Processor SoC	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
CPU Frequency	Up to 3.9GHz	Up to 2.5 GHz
Chipset	7th Generation Intel® Processor SoC	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
Memory Type	DDR4 1866/2133, SODIMM x 1	DDR3L 1866MHz, SODIMM x 1
Max. Memory Capacity	Up to 16GB	Up to 8GB
BIOS	AMI UEFI	AMI
Wake on LAN	Yes	
Watchdog Timer	255 Levels	
Power Requirement	+9 ~ 36V or +12V	12V Only
Power Supply Type	ATX	
Power Consumption (Typical)	Intel® i7-7600U, DDR4 2400MHz 16GB, 1.85A@ +12V	Intel® N4200,DDR3L 1600MHz 8GB,1.61A@+12V
Dimension (L x W)	170mm x 137mm x 44.5mm	178mm x 134.1mm x 50mm
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)	
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)	
Operating Humidity	0% ~ 90% relative humidity, non-condensing	
MTBF (Hours)	123,000	126,000
Certification	CE/FCC	
Display		
VGA/LCD Controller	7th Generation Intel® Processor SoC	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC
Video Output	DVI-D, DP (Default)	VGA
Backlight Inverter Supply	—	—
I/O		
Ethernet	Intel® i210/i211, 10/100/1000Base-TX, RJ-45 x 2	Realtek RTL-8111E, RJ-45 x 2
Audio	—	
USB Port	USB 3.2 Gen 1 x 4, USB 2.0 x 2	Rear I/O: USB 3.2 Gen 1 x 2 Internal: USB2.0 x 2
Serial Port	RS-232 x 1, RS-232/422/485 x 1	Rear I/O: COM x 1 (RS-232) Internal: COM x 6 (RS-232)
Parallel Port	—	
HDD Interface	SATA 3.0 x 1, +5V SATA power connector x 1	SATA 3.0 x 1
FDD Interface	—	
SSD	mSATA (Shared with half-size MiniCard and Selected by BIOS)	mSATA x 1 (Full, optioal for mini-card)
Expansion Slot	Mini-Card mSATA x 1 (Half-size, default), Mini-Card x 1 (Full-size)	mSATA x 1 (Full size), Mini Card x 1 (Full size) with uSIM
DIO	—	
SIM	x 1	—
TPM	TPM 2.0 x 1	—
Touch	—	
Note		

SubCompact Boards

Model	GENESYS-CML5
System	
Form Factor	3.5" SubCompact Board System
CPU	Intel® 10th Generation Core™ i7/i5/i3/Pentium/Celeron SoC i7-10700TE (8C, 2.0 GHz, up to 4.4 GHz) i5-10500TE (6C, 2.3 GHz, up to 3.7 GHz) i3-10100TE (4C, 2.3 GHz, up to 3.6 GHz) G6400TE (2C, 3.2 GHz) G5900TE (2C, 3.0 GHz)
CPU Frequency	Up to 4.4GHz
Chipset	Intel® Q470E / H420E / Q470
Memory Type	DDR4 2933/2666/2400 MHz SODIMM x 2 (Dual Channel, Non-ECC)
Max. Memory Capacity	Up to 64GB
BIOS	AMI UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+12V
Power Supply Type	AT/ATX (Default: AT)
Power Consumption (Typical)	Intel® i7-10700TE, DDR4 3200Mhz 32GB, 4.47A at +12V
Dimension (L x W)	210mm x 134mm x 82mm
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)
Operating Humidity	0-90% @ 40°C, non-condensing
MTBF (Hours)	380,571
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	Chrontel CH7517A
Video Output	DP++ x 1, VGA x 1
Backlight Inverter Supply	Max 12V, 2A
I/O	
Ethernet	Intel® i210/i211 x 1 (10/100/1000Base) Intel® i219 x 1 (10/100/1000Base, Support Vpro only with i5/i7 + Q470/Q470E variant)
Audio	—
USB Port	USB3.2 x 2 (Rear I/O, Gen 2 for Q470/Q470E only) USB2.0 x 2 (Optional)
Serial Port	RS-232/422/485 x 2 (optional)
Parallel Port	—
HDD Interface	—
FDD Interface	—
SSD	SATA 3.0 x 2 SATA power connector x 1 (+5V)
Expansion Slot	M.2 M Key 2280 x 1 PCIe[x4] x 1 (through Flexible Printed Circuit interface, Q470/Q470E only)
DIO	—
SIM	—
TPM	TPM 2.0
Touch	—
Note	

Note: All specifications are subject to change without notice.

SubCompact Boards

Model	GENE-EHL5
System	
Form Factor	3.5" SubCompact Board
CPU	Intel® Elkhart Lake Platform Atom x6000 Series SoC (2C/4C, 1.3GHz~3.0GHz) Celeron N6000 Series SoC (2C/4C, 1.2GHz~3.0GHz) Pentium J6000 Series SoC (4C, 2.0GHz~3.0GHz)
CPU Frequency	Up to 3.0GHz
Chipset	Integrated in Intel® SoC
Memory Type	DDR4 3200 Hz, SODIMM x 1
Max. Memory Capacity	Up to 32GB
BIOS	UEFI
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+9-36V (Optional: +12V)
Power Supply Type	AT/ATX
Power Consumption (Typical)	TBD
Dimension (L x W)	5.75" x 4" (146mm x 101.7mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 81°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC
Display	
VGA/LCD Controller	Intel® UHD Graphics for 10th Gen Intel® Processors
Video Output	HDMI 2.0b x 1, DP1.4a x 1 (Optional VGA x 1), LVDS/eDP x 1 (Default: LVDS)
Backlight Inverter Supply	Yes
I/O	
Ethernet	Intel® i210/i211, 10/100/1000Base, RJ 45 x2
Audio	High Definition Audio Interface (LINE IN/LINE Out/Mic)
USB Port	USB 3.2 Gen2 x 2 USB 2.0 x 4
Serial Port	RS-232/422/485 x 4
Parallel Port	—
HDD Interface	SATA 3.0 x 1, +5V SATA power connector x 1 eMMC5.1 32GB
FDD Interface	—
SSD	—
Expansion Slot	E-Key 2230 x 1 (PCIe, USB2.0) B-Key 2242 x 1 (PCIex2, SATA, USB2.0) B-Key 2280 x 1 (PCIe x1/PCIe x 2, USB2.0) B-Key 3052 x 1 (USB3.0) SMBUS/I2C/LPC/eSPI x 1
DIO	8 Bit
SIM	x 1(NANO-SIM)
TPM	TPM2.0
Touch	x 1
Note	CANbus x 2 (TX/RX)

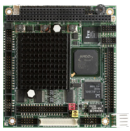
Note: All specifications are subject to change without notice.

Compact Boards

Model	PCM-CFS
System	
Form Factor	5.25" Compact Board
CPU	8th/9th Generation Intel® Core™ i7/i5/i3/Celeron® Socket Type (Up to 65W)
CPU Frequency	Up to 5.0GHz
Chipset	Intel® Q370 (TDP: 6W)
Memory Type	SODIMM DDR4 Memory slot x 2
Max. Memory Capacity	Up to 32GB
BIOS	UEFI only
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	ATX
Power Supply Type	ATX
Power Consumption (Typical)	CPU 65W TDP
Dimension (L x W)	203mm x 146mm
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)
Storage Temperature	-4°F ~ 176°F (-20°C ~ 80°C)
Operating Humidity	0 ~ 90% @ 40°C, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC Class A
Display	
VGA/LCD Controller	8th Generation Intel® Core™ Processor family
Video Output	LVDS x 2, CRT x 1, DVI x 1
Backlight Inverter Supply	18/24bit (2CH)
I/O	
Ethernet	Intel® GbE i219 x 1, Intel® GbE i211 x 1
Audio	ALC269 (With Amplifier)
USB Port	USB 3.2 Gen 1 x 4, USB2.0 x 4 (All headers)
Serial Port	RS232 x 8 RS232/422/485 x 2 (All headers)
Parallel Port	—
HDD Interface	SATA 6.0 Gb/s x 3
FDD Interface	—
SSD	—
Expansion Slot	M.2 3042/2280 Slot (B key) x 1 M.2 2280 Slot (M key) x 1 Half size mPCIe x 1 SMBus/I2C/LPC x 1
DIO	16-bit
SIM	—
TPM	TPM 2.0
Touch	—
Note	

Note: All specifications are subject to change without notice.

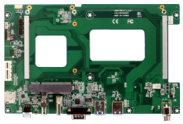
PC/104 Modules



Model	PFM-540I Rev. A
System	
Form Factor	PC/104
CPU	Onboard AMD Geode™ LX 800
CPU Frequency	500 MHz
Chipset	AMD Geode™ LX 800 + CS5536
Memory Type	DDR333/400, SODIMM x 1, (512 MB for DDR400)
Max. Memory Capacity	1 GB
BIOS	Award 512 KB
Wake on LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	+5V
Power Supply Type	AT
Power Consumption (Typical)	AMD Geode™ LX 800 500 MHz, DDR400 512 MB, 1.53A@+5V
Dimension (L x W)	3.55" x 3.77" (90mm x 96mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	100,000
Certification	CE/FCC
Display	
VGA/LCD Controller	AMD Geode™ LX 800
Video Output	CRT, TTL LCD
Backlight Inverter Supply	—
I/O	
Ethernet	10/100Base-TX x 1, Realtek RTL 8139DL
Audio	—
USB Port	USB2.0 x 4
Serial Port	RS-232 x 1, RS-232/422/485 x 1
Parallel Port	SPP/EPP/ECP x 1
HDD Interface	UDMA33 x 1
FDD Interface	FDD x 1
SSD	CompactFlash™
Expansion Slot	PC/104
PWM LCD Support	—
DIO	—
TPM	—
Touch	—
Note	

Note: All specifications are subject to change without notice.

Smart Display Modules



Model	ASDM-L-CFS
System	
Form Factor	Intel SDM-L Module
CPU	8th/9th Generation Intel® Core™, Pentium®, and Celeron® processors (Coffee Lake S, Coffee Lake Refresh), TDP up to 35W
CPU Frequency	Up to 4.0 GHz
Chipset	Intel® Chipsets H310/ Q370
Memory Type	DDR4 2666 SO-DIMM x 2 (Non-ECC Support)
Max. Memory Capacity	Up to 32GB
BIOS	AMI BIOS
Wake On LAN	Yes
Watchdog Timer	255 Levels
Power Requirement	12V DC from the Docking Board through the Edge Connector
Power Supply Type	AT/ATX
Power Consumption (Typical)	In12V, 6.08A, estimate 72.96W with i7-9700TE at 100% loading
Dimension (L x W x H)	100mm x 175mm x 20mm
Operating Temperature	32°F ~ 131°F (0°C ~ 55°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	TBD
Certification	CE/FCC (Class B)
Display	
Controller	Intel® UHD Graphics 630/620/610
Video Output	HDMI 2.0 x 1 (through edge connector) DP1.2 x 1 (through Edge connector)
Audio	Through HDMI, DP by edge connector
I/O	
Ethernet	Intel® I219 GbE x 1
USB Port	USB3.2 Gen 1 x 2 / USB 3.2 Gen 2 support by Q370
Storage	M.2 2242 B-Key
Expansion Slot	M.2 2230 (E-Key) TPM2.0(option)
Note	Follow the Intel® SDM SPEC 2.0

Model	ASDM-CRB-A12
System	
Form Factor	AAEON SDM carrier board
Power Supply Type	AT (ATX is option)
Dimension (L x W x H)	5.51" x 8.86" (140 mm x 225 mm)
Operating Temperature	32°F ~ 131°F (0°C ~ 55°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (Hours)	TBD
Certification	—
Display	
Display Interface	HDMI, DP (support version depends on SDM module boards' chipset original signal)
Audio	Through HDMI, DP by edge connector
I/O	
Switch/ Button	Power button x 1 Reset button x 1
Power input	DC Jack x 1 (co-layout with phoenix connector, by option)
USB Port	USB3.1 x 3
Serial Port	RS-232 x 1 (Only Tx/Rx)
Expansion Slot	Intel SDM socket slot I2C GSPI Smart fan PCIE[x1] Slot x 1 Micro SD 3.0 x 1
Note	

Note: All specifications are subject to change without notice.

UP Boards

Model	UP Xtreme	UP Xtreme Lite
System		
Processor	8th generation Intel® Core i7/i5/i3/Celeron Processor SoC	
Graphics	Intel® Graphics , GEN 9	
I/O	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 USB2.0 x 1 / HSUART (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, Audio Jack (Line out + MIC) x 1, DC Connector (Lockable) x 1, 10-pin USB 2.0 x 2 / HSUART 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 (PCIe [x2]), 40-pin HAT Connector x 1, M.2 3042/3052 B Key x 1, 10-pin RS232/422/485 Pin Header x 2
Camera	—	
USB	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 2 (Front) USB 3.2 Gen 2 Type-A x 2 (Rear) 10-pin USB 2.0 x 2
Expansion	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 (PCIe [x2]) M.2 3042/3052 B Key x 1 40-pin HAT Connector x 1
RTC	RTC battery, CR2032 x 1	
Power	12V - 60VDC	12V - 24VDC
Dimension	4.8" x 4.72" (122 mm x 120 mm)	
Memory	Onboard DDR4 memory, Max 16GB Single Channel: 4GB Dual Channel: 8GB, 16GB	DDR4 SO-DIMM Slot x 1 (up to 16GB)
Storage	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 eMMC 64GB	SATA3 (6Gb/s) x 1: a. SATA Connector x 1 b. M.2 2280 M Key NVMe(PCIe [x2])/SATA (auto-detect) x 1
Display Interface	HDMI2.0 x 1 DP1.2 x 1 eDP x 1 CEC support with STM32 on HDMI x 1	HDMI 1.4 x 1 DP 1.2 x 1
Ethernet	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® i211 GbE port x 2
TPM	—	
OS Support	Win 10 Linux Ubuntu 18.04 with Kernel 5.0 Linux Yocto 2.7 with Kernel 4.19	
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Operation Humidity	0% ~ 90% relative humidity, non-condensing	
Certification	CE/FCC class A, RoHS Compliant, REACH	
Note		

Note: All specifications are subject to change without notice.

UP Boards

Model	UP Core Plus	UP Core	UP Squared
System			
Processor	Intel® Atom™ x5-E3930/x5-E3940/x7-E3950 Processor SoC	Intel® Atom™ x5-Z8350 Processor SoC	Intel® Pentium® N4200/ Celeron® N3350/ Atom™ E3940/ E3950 Processor SoC
Graphics	Intel® HD 500 Graphics / x5-3900 Series Intel® HD 505 Graphics / x7-3900 Series	Intel® HD 400 Graphics	Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264, VP8
I/O	eDP x 1 DP x 1 Audio Port via HDMI and I2S (from docking)	Full eDP x 1 HDMI x 1 Audio via HDMI and I2C (from docking)	HDMI x 1 DP x 1 I2S Audio Port
Camera	CSI 2-Lane x 1, CSI 4-Lane x 1	MIPI-CSI (2 Lane) MIPI-CSI (4 Lane)	CSI 2-Lane + CSI 4-Lane
USB	USB 2.0 pin header x 2, USB 3.2 Gen 1 OTG x 1, USB 3.2 Gen 1 x 1	USB 3.2 Gen 1 Host x 1 USB 2.0 pin header x 2	USB 2.0 x 2 USB3.0 OTG x 1 USB3.0 (Type A) x 3
Expansion	100pin docking connector x 2, including: USB 2.0, USB 3.2 Gen 1, 6 PCI-E Lane, SATA, I2C, I2S, SPI, PWM, LPC, SDIO, HSUART, ISH, GPIO	100 pin docking connector	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
RTC	Yes		
Power	12V DC-in @ 3A -5A 5.5/2.1mm jack	5V DC-in @ 4A 5.5/2.1mm jack	5V DC-in @ 4A-6A
Dimension	2.4" x 3.54" (56 mm x 90 mm)	2.22" x 2.6" (56.5 mm × 66 mm)	3.37" x 3.54" (85.6 mm × 90 mm)
Memory	2GB (single channel) LPDDR4 4GB/8GB (dual channel) LPDDR4	2GB/ 4GB DDR3L-1600	2GB (single channel) LPDDR4 4GB/8GB (dual channel) LPDDR4)
Storage	eMMC 32 GB / 64 GB/ 128GB	eMMC 16GB / 32GB/ 64GB	eMMC 32 GB / 64 GB / 128 GB
Display Interface	eDP x 1, DP x 1	DSI/eDP x 1	eDP
Ethernet	—		Gb Ethernet (full speed) RJ-45 x 2
TPM	—		
OS Support	Microsoft Windows 10 Professional, Microsoft Windows 10, IoT Core, Linux (Ubuntu, Yocto), Android 7.0	Win 10 Linux (ubilinux, Ubuntu, Yocto) Android Marshmallow	Microsoft Windows 10 (full), Windows IOT Core, Linux (ubilinux, Ubuntu, Yocto), Android Nougat
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)		32°F ~ 140°F (0°C ~ 60°C)
Operation Humidity	10% ~ 80% relative humidity, non-condensing		0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC class A, RoHS Compliant, REACH		
Note			

UP Boards

Model	UP Squared Pro	UP Squared 6000	UP Board
System			
Processor	Intel® Pentium® N4200/ Celeron® N3350/ Atom™ E3950 Processor SoC	Intel® Atom™ X6000E Series and Intel Pentium® and Celeron® N and J Series Processor(formerly Elkhart Lake)	Intel® Atom™ x5-Z8350 Processor SoC
Graphics	Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264, VP8	Intel® Graphics, GEN 11	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
I/O	HDMI x 1 DP x 1 COM port (RS422/RS232/RS485) x 2 Audio Jack x 1	HDMI x 1 DP x 1 COM port(RS232/422/485) x 1 DC connector x 1 Audio Jack x1 on carrier board mPCIE x1 on carrier board	HDMI x 1 I2S Audio port x 1
Camera	—		MIPI-CSI (4 MEGA pixel)
USB	USB 2.0 x 2 USB 3.2 Gen 1 OTG x 1 USB 3.2 Gen 1 (Type A) x 3	2 x USB3.2 Gen1 Connector 1 x USB3.2 Gen1 TYPE C Connector for 1 ports (OTG support)	USB 2.0 x 4 USB 2.0 pin header (10 pins in total) x 2 USB 3.2 Gen 1 OTG x 1
Expansion	40 pin GPIO x 1 M.2 2230 E-key x 1 M.2 2280 M-key x 1 SATA3 x 1 M.2 3042/3052 B-key x 1	1 x M.2 2230 E Key (1x PCIex1, 1x USB2.0) bottom 1 x M.2 2242/2280 M Key (1 x PCIe) 1 x M.2 3042/3052 B Key (1xUSB3.0)	40 pin General Purpose bus, supported by Altera Max V. ADC 8-bit@188ksos
RTC	Yes		
Power	12V-24V DC-in (Lockable plug)/ Phoenix connector (optional)	12V	5V DC-in @ 4A 5.5/2.1mm jack
Dimension	10.16cm x 10.16cm		3.37"x 2.22"(85.6mm x 56.5mm)
Memory	2GB (single channel) LPDDR4 4GB/8GB (dual channel) LPDDR4	up to 16G	1GB/ 2GB/ 4GB DDR3L-1600
Storage	eMMC 32 GB / 64 GB	eMMC up to 64GB	eMMC 16GB / 32GB/ 64GB
Display Interface	HDMI2.0 x 1 DP1.2 x 1 eDP x 1	HDMI x 1 DP 1.2 x 1 eDP x 1	DSI/eDP
Ethernet	Gb Ethernet (full speed) RJ-45 x 2	Gb Ethernet (full speed) RJ-45 x 2 Gb Ethernet (full speed) RJ-45 x 2 on carrier board	Gb Ethernet (full speed) RJ-45 x 1
TPM	—	TPM2.0	—
OS Support	Microsoft Windows 10 (full), Windows IOT Core Linux: Ubuntu 18.04.5, Ubuntu 20.04.1	Win 10/ 10 IoT Core Linux: Ubuntu 18.04 and 20.04, Yocto 3.1	Win 10 Linux (ubilinux, Ubuntu, Yocto) Android Marshmallow
Operating Temperature	with Fan: 32°F ~ 140°F (0°C ~ 60°C) with Heatsink: 32°F ~ 122°F (0°C ~ 50°C)	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 60°C)
Operation Humidity	0% ~ 90% relative humidity, non-condensing		10% ~ 80% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant, REACH		CE/FCC Class A, RoHS Compliant
Note			

Note: All specifications are subject to change without notice.

Board Level Products

UP Boards

Model	UP 4000	UP Xtreme i11
System		
Processor	Intel® Pentium® N4200/ Celeron® N3350/ Atom™ E3950 Processor SoC	11th Gen Intel® Core™ Processor SoC Core i7-1185GRE Core i5-1145GRE Core i3-1115GRE Celeron® 6305E
Graphics	Intel® Gen 9 HD, supporting 4K Codec Decode and Encode for HEVC4, H.264, VP8	Intel® Iris® Xe graphics
I/O	HDMIx1 6 pin wafer for HDMI Audio 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 / HSUART 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
Camera	—	
USB	USB 3.2 Gen1x3 USB 2.0 pin header (10 pins in total) x 2 USB 3.2 Gen 1 OTG x 1(vis Type C)	USB 3.2 Gen 2 Type A x 3 USB 2.0 x 1 USB4.0 x 1 Type-C
Expansion	M.2 2230 E Key x 1 40-pin HAT Connector x 1	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
RTC	Yes	RTC battery, CR2032 x 1
Power	12V DC-In 5A/ Phoenix connector (optional)	12V
Dimension	3.37"x 2.22"(85.6mm x 56.5mm)	120.35 x 122.5 mm
Memory	2GB (single channel) LPDDR4 4GB/8GB (dual channel) LPDDR4)	DDR4 SO-DIMM Slot x 2 (up to 64GB 3200Mhz)
Storage	eMMC 32 GB / 64 GB	SATA3 (6Gb/s) x 1: a. SATA Connector x 1 b. M.2 2280 M Key NVMe(PCIe [x2])
Display Interface	HDMI x 1 DP x 1 via type C	HDMI 2.0 x 1 DP 1.4 x 1 + eDP x 1, 4K at 60hz internal panel
Ethernet	Gb Ethernet (full speed) RJ-45 x 1	Intel® i225IT (TSN) x 1, Intel® i219 (vPRO) x 1
TPM	Yes	—
OS Support	Windows* 10 IOT Enterprise/Yocto project 3.1 Kernel 5.4 Ubuntu 20.04 Kernel 5.4	Win 10/IOT Linux Ubuntu 20.04 with Kernel 5.4 Linux Yocto 3.0 with Kernel 5.4
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Operation Humidity	10% ~ 80% relative humidity, non-condensing	0% ~ 90% relative humidity, non-condensing
Certification	CE/FCC Class A, RoHS Compliant	CE/FCC class A, RoHS Compliant, REACH
Note		

Note: All specifications are subject to change without notice.

UP Expansion Modules

Model	Vision Plus X	Net Plus	Connect Plus
System			
VPU	Intel® Movidius™ Myriad™ X VPU x 3 , MA2485	—	
Ethernet	Intel® WGI211AT PCI-E Gigabit Ethernet x 1	Intel I211-AT x 4 (A10-001) Intel I210-IT for wide temperature x 4 (A10-002)	Intel I211-AT x 3 (A10-001) Intel I210-IT for wide temperature x 3 (A10-002)
Power Requirement	12V5A		
Power Supply Type	12VDC from M/B		
Power Consumption (Typical)	Max 25W	Max 10W	Max 13.5W w/o 5G module
Dimensions (L x W)	3.54" x 2.2" (90 mm x 56 mm)		
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)		
Operation Humidity	10 ~ 80% relative humidity, non-condensing		
Certification	CE/FCC Class B		CE/FCC Class A
OS Support	Microsoft Windows 10 Linux: ubilinux, Ubuntu, Yocto Android-IA 9.0		
I/O			
Ethernet	RJ45 x 1 (Intel WGI211AT PCI-E Gigabit Ethernet)	001: Intel® I211-AT x 4 002: Intel® I210-IT x 4 for wide temperature	001: Intel® I211-AT x 3 002: Intel® I210-IT for wide temperature
USB	USB 3.2 Gen 1 Type A x 2	USB 3.2 Gen 1 Type A x 1	USB 3.0 Type A x 1
SATA	—	SATA x 1 (vertical)	—
Expansion Slot	mPCIe Slot (Full Size) (SATA/USB/PCIE) x 1 SIM Card Slot x 1 DOCKING I (2x I2C) DOCKING II (3x PCIe.G2, 1x USB 3.2 Gen 1, 1x SATA, 2x USB 2.0)	mPCIe Slot (Full Size) x 1 (SATA/USB/PCIE) SIM Card Slot x 1 DOCKING I DOCKING II	M.2 3042/3052 B-key DOCKING I DOCKING II UART x 1 SPI x 1
Note			

Note: All specifications are subject to change without notice.

UP Expansion Modules

Model	UP-3G HAT	UP-POE HAT	UPC-CRST02	UPC-CRST01
System				
IC	2-CH FULL-SPEED USB UART x 1 USB 2.0 Hub x 1 RS-232/RS-485/RS-422 transceiver x 2	LT4321I (PoE Ideal Diode Bridge Controller) x 1 LT4276B (PD Forward / Flyback Controller) x 1	MAX10 FPGA for 40pin setting x 1 2-CH FULL-SPEED USB UART x 1 RS-232/485/422 transceiver x 1 EEPROM on I2C0 4Kb with Jumper for A0~A2 address x 1	2 channel PCIe Switch x 1 Realtek RTL8111G-CG x 1 HSIC to USB to 3 USB ports (1 x minicard, 2 x connector) x 1 EEPROM on I2C0 4Kb with Jumper for A0~A2 address x 1
I/O Placements				
External Ports	RS-232/422/485 Connector (DB9) x 1	RJ45 input x 1 RJ45 output x 1	RS-232/422/485 Connector (DB9) x 1 12-24V Power input (+-10%) x 1	RJ45 Ethernet port x 1 USB 2.0 x 2 SD Card (Pluggable at back side) x 1
Internal connector	RS-232 wafer (RS-232/422/485) x 1 USB wafer x 1 Minicard x 1 uSIM Card Reader x 1 HAT 40 GPIO male (4x GPIO, 3.3V, 5V, GND) x 1 WIFI LED x 1 3G LED x 1 Power LED x 1	HAT 40 GPIO male (5V, GND) x 1	Jumper for RS-232/422/485 x 1 Power LED x 1 100PIN board-board connector(M) x 1 100PIN board-board connector(F) x 1 30 pin wafer box header for HAT 40 IO pins x 1 20 pin wafer box header for FPGA MAX10 reserved pins x 1	Power LED x 1 Minicard x 1 uSIM Card Reader x 1 100PIN board-board connector(M) x 1 100PIN board-board connector(F) x 1
Others				
Form Factor	2.56" x 2.2" (65 mm × 56 mm)	3.37" x 2.22" x 0.98" (85.6 mm x 56.5 mm x 25 mm)	2.22" x 2.6" (56.5 mm × 66 mm)	
Certification	CE/FCC Class A			
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)			
Operating Humidity	10%~80% RH, non-condensing	—	10%~80% RH, non-condensing	
OS Support	—	No OS limitation	—	
Optional				
WiFi Module	UP-WIFIMD-A20-7001 (WiFi module: 7M02) UP-WIFIMD-A20-4001 (WiFi module: 4M02)	—		
BT Module	UP-BTMD-A20-0001	—		
3G Module	9741UC20G0 (3G module: UC20-G)	—		
Note				

Note: All specifications are subject to change without notice.

Industrial Motherboards

Model	EMB-APL1	EMB-APL3
System		
Processor	N4200, (4C @ 2.50GHz CPU [Burst Mode], 750MHz GFX [Turbo], ~6W TDP) N3350, (2C @ 2.40GHz CPU [Burst Mode], 650MHz GFX [Turbo], ~6W TDP)	
Chipset	Intergrated into SoC	
Memory	DDR3L 1333/1600/1867MHz SODIMM x 2, max. 8GB, non-ECC, un-buffered memory	
I/O Chipset	NCT6116D	
Ethernet	Realtek PCIe Gb LAN 8111G x 2	Realtek PCIe Gb LAN 8111H x 2
Audio	Realtek® ALC3236-CG	
TPM	Nuvoton NPCT652ABCYX TPM2.0 (default: No)	
Expansion Slots	PCIe2.0 [x1] x 1 M.2 M key (22 x 42mm) x 1, for SATA M.2 E Key (22 x 30mm) x 1, for PCIe	
BIOS	128Mbit Flash ROM x 1, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	Chassis Fan (Fanless)	
Wake On LAN/ PXE	Yes (WOL/PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® HD Graphics	
Graphics Multi Display	Three Independent Display	
VGA	Up to 1920 x 1200 @60Hz	
DVI	—	
HDMI	Up to 3840 x 2160 @ 30Hz	Up to 3840 x 2160 @30 Hz(HDMI 1.4b)
Display Port	—	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz (Colay with VGA)
LVDS	Up to 1920 x 1200 @60Hz, dual-channel 18/24 bit (via PS8625) (colay with eDP)	
eDP	Up to 4096 x 2160 @60Hz	
Backlight Control	Voltage/PWM	
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	12V~24V wide-range voltage input back panel DC jack x 1; 4-pin ATX Power connector x 1	12V DC jack (screw type), 4-pin internal power connector
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Operation Humidity	0% ~ 90% RH, non-condensing	
Certificate	CE & FCC class A	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
Weight	1.1 lb (0.5 Kg)	
MTBF (Hours)	263,080	230,820
I/O		
Rear Panel I/O Ports	USB 3.2 Gen 1 (5 Gbps) x 2, USB 2.0 x 2, HDMI x 1, VGA x 1 Mic-in, Line-out, RJ-45 x 2, DC power jack x 1	USB 3.2 Gen 1 (5 Gbps) x 4, VGA/DP x 1, HDMI x 1, Line-out x 1, LAN (RJ-45) port x 2, DC power jack x 1
Internal I/O Connectors	SATA 6.0Gb/s x 2 (1 colay with M.2 M-key),M.2 M-key (22 x 42mm) x 1, USB 2.0 headers support additional 3 USB ports (2*5-pin, p=2.00mm) x 2, 40-pin LVDS/eDP connector x 1 (default LVDS), RS-232/422/485 x 1, RS-232 x 5, 8-bit x 1 (In/Out programmable), 4-pin Chassis Fan x 1, 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	SATA 6.0Gb/s x 2(1 colay with M.2 M-key), M.2 M-key (22 x 42mm) x 1 USB 2.0 headers support additional 6 USB ports (2*5-pin, p=2.00mm) x 3 40-pin LVDS/eDP connector x 1(default LVDS), AAFP, RS-232/422/485 x 1, RS-232 x 5, 8-bit x 1 (In/Out programmable), 4-pin Chassis Fan x 1, Front panel header x 1, Clear CMOS jumper x 1, AT/ATX mode select jumper (optional) x 1, SATA power connector x 1, M.2 E key (22 x 30mm) for PCIe x 1
OS		
OS Support	WIndows® 10 64-bit, Ubuntu16.04.02/ Kernel4.8.0	
Note		

Note: All specifications are subject to change without notice.

Board Level Products

Industrial Motherboards

Model	EMB-BT1	EMB-BT2
System		
Processor	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP), Intel® Celeron® N2807 Processor (2C @ 1.58 GHz CPU, 313/750 MHz GFX, 4.3W TDP), Intel® Atom™ E3845 Processor (4C @ 1.91 GHz CPU, 542/792 MHz GFX, 10W TDP), Intel® Atom™ E3825 Processor (2C @ 1.33 GHz CPU, 533 MHz GFX, 6W TDP)	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP)
Chipset	—	
Memory	DDR3L 1333 MHz SODIMM x 2 up to 8 GB (for J1900 / E3845), DDR3L 1333 MHz SODIMM x 1 up to 4 GB (for N2807), DDR3L 1067 MHz SODIMM x 1 up to 4 GB (for E3825), Non-ECC, un-buffered memory, Dual-channel memory architecture flat type	DDR3L 1333 MHz SODIMM x 1 up to 8 GB, Non-ECC, un-buffered memory
I/O Chipset	Fintech 81866D	
Ethernet	Realtek PCIe Gb LAN 8111G x 2	
Audio	Realtek® ALC887	Realtek® ALC887 (colay ALC892/886)
TPM	Infineon SLB9635 TT 1.2 (default : No)	
Expansion Slots	Full-size Mini-Card (mSATA default) (PCIe+USB optional) + SIM Card (default: No) x 1, Half-size Mini-Card (PCIe+USB) x 1, PCIe [x1] x 1	Full-size Mini-Card (mSATA default PCIe+USB optional) x 1, PCIe [x1] x 1
BIOS	64 M bit Flash ROM, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	Chassis Fan (fanless)	
Wake On LAN/ PXE	Yes (WOL/PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® HD Graphics	
Graphics Multi Display	VGA+LVDS, VGA+HDMI, LVDS+HDMI	VGA+LVDS, Dual LVDS
VGA	Up to 1920 x 1200 @ 60 Hz	
DVI	—	
HDMI	Up to 1920 x 1200 @60 Hz	—
Display Port	—	
LVDS	Up to 1920 x 1080 @60Hz, Dual Channel 18/24-bit (via CH7511)	Dual LVDS, Up to 1920 x 1080 @60Hz, Dual Channel 18/24-bit (via CH7511)
eDP	—	
Backlight Control	Voltage/PWM	
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	12VDC	ATX
Operation Temperature	32°F ~140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~185°F (-40°C ~85°C)	
Operation Humidity	0%~90% 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)	111,131	290,990
I/O		
Rear Panel I/O Ports	USB 3.2 Gen 1/2.0 x 1, USB 2.0 x 2, VGA x 1, HDMI x 1, Line-out x 1 LAN (RJ-45) port x 2, COM (RS-232)(optional) x 1, DC port (12V) Screw type x 1	USB 2.0 x 6, VGA x 1, Mic-in x 1, Line-out x 1, LAN (RJ-45) port x 2, COM (RS-232/422/485) x 1, COM (RS-232) x 2, PS/2 Keyboard Mouse combo x 1
Internal I/O Connectors	SATA3 (6.0Gb/s) x 2, SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), SATA power connector x 1, Ful Size Mini-Card slot (mSATA) x 1, 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, 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, AAFP x 1, Box header for COM (RS-232) x 4, Box header for COM (RS-232/422/485) x 1, PS/2 Keyboard Mouse 6 PIN Connector x 1, SPP/EPP Mode, DIO (4in/4out) x 1, Chassis Fan connector x 1, 12V AUX Power Connector x 1, AT/ATX mode select jumper (default : No) x 1, 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	SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), Ful Size Mini-Card slot (mSATA) x 1, USB 2.0 (2 x 5-pin, 2.54mm) x 2 ports support additional 4 USB, 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, AAFP x 1, Speaker x 1, Box header for COM (RS-232) x 3, DIO (4in/4out) x 1 Chassis Fan connector x 1, 24PIN ATX power connector x 1, AT/ATX mode select jumper (default : No) x 1, Front Panel connector x 1, CMOS jumper x 1
OS		
OS Support	Windows® 10 64-bit, Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Linux Fedora	
Note		

Note: All specifications are subject to change without notice.

Industrial Motherboards

Model	EMB-BT4
System	
Processor	Intel® Celeron® J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP), Intel® Celeron® N2807 Processor (2C @ 1.58 GHz CPU, 313/750 MHz GFX, 4.3W TDP)
Chipset	—
Memory	DDR3L 1333 MHz SODIMM x 2 up to 8 GB (for J1900), DDR3L 1333 MHz SODIMM x 1 up to 4 GB (for N2807), Non-ECC, un-buffered memory, Dual-channel memory architecture flat type
I/O Chipset	Fintech 81866D
Ethernet	Realtek PCIe Gb LAN 8111G x 1
Audio	Realtek® ALC887 (colay ALC892/886)
TPM	Infineon SLB9635 TT 1.2 (default : No)
Expansion Slots	Full-size Mini-Card (mSATA default) (PCIe+USB optional) + SIM Card (default: No) x 1, Half-size Mini-Card (PCIe+USB) x 1
BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Chassis Fan (fanless)
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+LVDS, VGA+HDMI, LVDS+HDMI
VGA	Up to 1920 x 1200 @60 Hz
DVI	—
HDMI	Up to 1920 x 1200 @60 Hz
Display Port	—
LVDS	Up to 1920 x 1080 @60Hz, Dual Channel 18/24-bit (via CH7511)
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12VDC
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	295,750
I/O	
Rear Panel I/O Ports	USB 3.2 Gen 1/2.0 x 1, USB 2.0 x 2, HDMI x 1, Line in x 1, Line-out x 1 LAN (RJ-45) port x 1, COM (RS-232) x 1, DC port (12V) Screw type x 1
Internal I/O Connectors	SATA3 (6.0Gb/s) x 2, SATA2 (3.0Gb/s) x 2 (1 colay with mSATA), SATA power connector x 1, Ful Size Mini-Card slot (mSATA) x 1, 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, 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 AAFP x 1, Box header for COM (RS-232) x 4, Box header for COM (RS-232/422/485) x 1, PS/2 Keyboard Mouse 6 PIN Connector x 1, SPP/EPP Mode, DIO (4in/4out) x 1, Chassis Fan connector x 1, 12V AUX Power Connector x 1, AT/ATX mode select jumper (default : No) x 1, 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
OS	
OS Support	Windows® 10 64-bit, Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Linux Fedora
Note	

Note: All specifications are subject to change without notice.

Board Level Products

Industrial Motherboards

Model	MIX-EHLD1	MIX-KLUD1
System		
Processor	Intel® Elkhart LAKE Processor Max. 12W TDPs	Intel® 7th gen. 14nm KabyLake U, FCBGA1356 Core™ i7-7600U, 2C/4C, 2.8/3.9(turbo)GHz, 4M, 300MHz/1.15GHz (Turbo) GFX, ~15W TDP (Optional); Core™ i5-7300U, 2C/4C, 2.6/3.5(turbo)GHz, 3M, 300MHz/1.10GHz (Turbo) GFX, ~15W TDP(Optional); Core™ i3-7100U, 2C/4C, 2.4GHz, 3M, 300MHz/1.00GHz (Turbo) GFX, ~15W TDP; Celeron® 3965U, 2C, 2.2GHz, 2M, 300MHz/900MHz (Turbo) GFX, ~15W TDP (Optional)
Chipset	—	
Memory	SO-DIMM, max. 32GB , DDR4 3200MTS x 2	SODIMM x 2, max. 32GB, DDR4-2133 non-ECC, un-buffered memory
I/O Chipset	NCT6126D	NCT6793D
Ethernet	RTL8111H x 2	Intel® PCIe Gb LAN 219LM for vPro (i7-7600U/i5-7300U) x 1 Intel® PCIe Gb LAN 211AT x 1
Audio	Realtek® ALC887	Realtek® ALC887 with Amp.
TPM	Nuvoton NPCT750 TPM2.0 onboard	NPCT650ABBYX TPM2.0 onboard (default: No)
Expansion Slots	M.2 M-key (2280;PCIex2) x 1 mini-PCIe(Full/Half) (1 x SIM socket) x 1	PCIe 3.0 [x1] x 1, M.2 M key (22 x 80mm) x 1, SATA & PCIe [x4], M.2 E key (22 x 30mm) x 1 for Wireless-wifi module (PCIe+USB)
BIOS	128Mbit Flash ROM, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan/Chassis Fan	
Wake On LAN/ PXE	Yes (WOL/PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® UHD Graphics	
Graphics Multi Display	3 Independent Display(1xVGA+1x HDMI + 1x LVDS/eDP)	HDMI x 2, eDP x 1 or LVDS x 1
VGA	Up to 1920 x 1200 @60 Hz	—
DVI	—	
HDMI	Up to 4096 x 2160 @ 60Hz	HDMI 1.4 up to 4096 x 2340 @24Hz
Display Port	—	
LVDS	Up to 1920 x 1080 @60Hz, Daul Channel 18/24 bit (via CH7511) co-layout eDP (default LVDS)	Up to 1920 x 1200 @ 60 Hz, Dual Channel 18/24 bit
eDP	Up to 4096 x 2160 @60Hz co-layout LVDS)	UP to 4096 x 2304 @ 60Hz
Backlight Control	Voltage / PWM, use HW control	Voltage/PWM; Max 1A
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	12(+/-5%) DC	12V DC
Operation Temperature	32°F ~140°F (0°C ~ 60°C)	32°F ~ 131°F (0°C ~ 55°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)	
Operation Humidity	0%~90%RH, non-condensing	
Certificate	CE & FCC Class A	CE & FCC (Class A)
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
Weight	1.1 lb (0.5 Kg)	
MTBF (Hours)	—	400,330
I/O		
Rear Panel I/O Ports	USB 3.2(Gen2) ports x 2, USB 2.0 ports x 4 (upper 2 ports by BOM Optional), HDMI x 1, VGA x 1, Mic-in x 1, Line out x 1, 1GbE x 2, RS232 by BOM Optional, DC Jack x 1	USB 3.2 Gen 1 (5 Gbps) x 4, HMDI x 2, Mic-in x 1, Line-out x 1, LAN (RJ-45) port x 2, DC Power Jack x 1
Internal I/O Connectors	SATA 6Gb/s (co-layout mini-card) x 1, SATA power connector (5V / 12V @1A) x 1, USB 3.2(Gen1) ports x 2, 40-pin LVDS connector x 1 or 40-pin eDP connector x 1, AAFP follow ASUS pin out x 1, Box header x 4 for COM (COM1: RS-232/422/485 supports 5V/12V/ RI;COM2~4: RS-232), Digital I/ O box header x 1, 4-pin Chassis Fan connector 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,	M.2 M key (22 x 80mm) for PCIe [x4]/SATA storage x 1, SATA 6.0Gb/s x 2, 4-pin SATA power x 1, USB 2.0 pin header x 2 support additional 4 USB ports, 40-pin LVDS connector x 1, 40-pin eDP connector x 1, LCD backlight connector(inverter) x 1, Speaker for 2W@4Ω x 1, AAFP follow ASUS pin out x 1, Box header x 2 for COM (COM1: RS-232/422/485 supports 5V/12V/RI), 8-bit programmable (4-in/4-out) x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1, Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS		
OS Support	Windows® 10 64-bit, Linux Ubuntu 64 bit (20.04.0/Kernel 5.4)	Windows® 10 64-bit

Note: All specifications are subject to change without notice.

Industrial Motherboards

Model	MIX-TLUD1
System	
Processor	Intel® 11th Gen (Tiger Lake-UP3) Core™ Processors, up to 28W TDPs - i7-1185G7E, QC, Max Speed up to 4.4GHz - i5-1145G7E, QC, Max Speed up to 4.1GHz - i3-1115G4E, DC, Max Speed up to 3.9GHz - Celeron 6305E, DC, 1.8GHz
Chipset	—
Memory	DDR4 2666/3200 MHz SODIMM x 2, Up to 64GB
I/O Chipset	IT5121E
Ethernet	Intel® PCIe Gb LAN 219LM x 1 Intel® PCIe Gb LAN 225LM x 1
Audio	Realtek® ALC897
TPM	Nuvoton NPCT750 TPM2.0 onboard
Expansion Slots	PCIe 3.0 [x4] x 1, mini-card x 1(PCIe/SATA; BOM Optional)
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 step by software program
Smart Fan Control	CPU Fan/ Chassis Fan
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® Xe(Gen 12) Graphics
Graphics Multi Display	Quad Display
VGA	—
DVI	—
HDMI	HDMI 2.0
Display Port	DP1.4
LVDS	Up to 1920 x 1200 @60Hz, Dual Channel 18/24 bit (via CH7511B)
eDP	eDP1.4b
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	12(+/-5%) DC
Operation Temperature	32°F ~122°F (0°C ~ 50°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)
Weight	1.1 lb (0.5 Kg)
MTBF (Hours)	—
I/O	
Rear Panel I/O Ports	USB 3.2 Gen2 x 2, USB2.0 x 4, HDMI x 2, DP++ x 2, Mic-in x 1, Line out x 1, 1GbE x 1, 2.5GbE x 1, DC Jack x 1, BIOS recovery button x 1
Internal I/O Connectors	M.2 M key (2280) for (NVMe;PCIex4) storage x 1, SATA 6.0Gb/s x 1, USB 3.0 Box header x 1 (support additional USB3.2 Gen1 x 2ports), 40-pin LVDS connector x 1, 40-pin eDP connector x 1, AAFP follow ASUS pin out x 1, Box header x 2 for COM (COM1/2: RS-232) , Digital I/O box header x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector 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
OS	
OS Support	Windows® 10 64-bit, 20.04.2/Kernel 5.8

Note: All specifications are subject to change without notice.

Board Level Products

Industrial Motherboards

Model	MIX-H310A1	MIX-H310A2
System		
Processor	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDP	
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 i211AT x 3	Intel® PCIe Gb LAN 219V x 1, Intel® PCIe Gb LAN i211AT x 1
Audio	Realtek® ALC887 with Amp.	
TPM	NPCT650ABBYX TPM2.0 (default: No)	
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+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 @60Hz, Daul Channel 18/24 bit (via CH7511)	LVDS Up to 1920 x 1200 @60 Hz, Dual Channel 18/24 bit (1 x inverter)
eDP	eDP UP to 4096 x 2304 @ 60Hz	—
Backlight Control	Voltage/PWM; Max 1A	—
Environment & Power & ME		
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% R/H, non-condensing	
Certificate	CE & FCC	
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
Weight	1.1 lb (0.5 Kg)	
MTBF (Hours)	288,900	333,520
I/O		
Rear Panel I/O Ports	USB 3.2 Gen 1 (5 Gbps) x 4, USB 2.0 x 2, VGA x 1, HDMI x 1, Mic-in x 1, Line-out x 1, LAN (RJ-45) port x 4	USB 3.2 Gen 1 (5 Gbps) x 4, VGA x 1, HDMI x 1, DP x 1, Mic-in x 1, Line-out x 1, LAN (RJ-45) port x 2, 1x COM(RS485/422/232)
Internal I/O Connectors	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1 USB 2.0 (2 x 5-pin, 2.00mm) x 1 ports support additional 2 USB, AAFP x 1, Speaker x 1, Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) x 1, Digital I/O box header x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1, Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) x 1, USB 2.0 (2 x 5-pin, 2.00mm) x 1 port support additional 2 USB, LVDS x 1, AAFP x 1, Speaker x 1, Box header for COM (RS-232) x 1, Digital I/O box header x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1, Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS		
OS Support	Windows® 10 64-bit, ,Linux Ubuntu 18.04 LTS	
Note		

Industrial Motherboards

Model	MIX-H310D1	MIX-H310D2
System		
Processor	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs	
Chipset	Intel® H310 Express Chipset	
Memory	DDR4 2400/2133 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
I/O Chipset	NCT6793D	
Ethernet	Realtek ® PCIe Gb LAN RTL8111H	Intel® GbE LAN i219V x 1, Intel® GbE LAN i211AT x 1
Audio	Realtek® ALC887 with Amp.	Realtek® ALC887
TPM	NPCT650ABBYX TPM2.0 (default: No)	NPCT750AABYX TPM2.0 (default: No)
Expansion Slots	PCIe3.0 [x4] x 1 M.2 M-key(22 x 42mm) x1, SATA M.2 E-key(22 x 30 mm) x1 for Wireless-wifi module (PCIe+USB)	PCIe3.0 [x16] x 1 M.2 E-key(22 x 30 mm) x1 for Wireless-wifi module (PCIe+USB; CNVi)
BIOS	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	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
VGA	—	Up to 1920 x 1200 @ 60 Hz (Optional)
DVI	—	
HDMI	Up to 4096x2304@24Hz(HDMI 1.4b)	Up to 3840 x 2160 @30 Hz(HDMI 1.4)
Display Port	Up to 4096x2304@60Hz	—
LVDS	Up to 1920 x 1200 @ 60 Hz, Dual Channel 18/24 bit (via CH 7511)	—
eDP	UP to 4096 x 2304 @ 60Hz	UP to 4096 x 2304 @ 60Hz
Backlight Control	Voltage/PWM	Support eDP
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	12V DC	
Operation Temperature	32°F ~140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~185°F (-40°C ~85°C)	
Operation Humidity	0%~90%RH, non-condensing	
Certificate	CE & FCC	
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
Weight	1.1 lb (0.5 Kg)	
MTBF (Hours)	—	373,720
I/O		
Rear Panel I/O Ports	USB 3.2 Gen 1 (5 Gbps) x 4, DP x 1, HDMI x 1, Mic-in x 1, Line-out x 1, LAN (RJ-45) port x 2, DC Jack	USB 3.2 Gen 1 x 4, USB 2.0 x 4, HDMI x 2, VGA x 1 (Optional), Mic-in x 1, Line-out x 1, LAN (RJ-45) port x 2, 12V DC Jack (max:192W)
Internal I/O Connectors	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 42mm) x 1, USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 5 USB, AAFP x 1, Speaker header x 1 , Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) x 1, Digital I/O box header x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1, Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 42/80mm; PCIe) x 1, USB 2.0 (2 x 5-pin, 2.00mm) x 1 port support additional 1 USB, eDP x 1, AAFP x 1, Box header for COM (RS-232) x 1; RS-232/422/485 x 1, Digital I/O box header x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector 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
OS		
OS Support	Windows® 10 64-bit, Linux Ubuntu 18.04 LTS	Windows® 10 64-bit, Linux Ubuntu 18.04.2
Note		

Note: All specifications are subject to change without notice.

Board Level Products

Industrial Motherboards

Model	MIX-Q370A1	MIX-Q370A2
System		
Processor	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S), Max. 65W TDPs	
Chipset	Intel® Q370 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 219LM x 1, Intel® PCIe Gb LAN i211AT x 3	Intel® PCIe Gb LAN 219LM x 1, Intel® PCIe Gb LAN i211AT x 1
Audio	Realtek® ALC897 with Amp.	Realtek® ALC887 with Amp.
TPM	NPCT650ABBYX TPM2.0 (default: No)	
Expansion Slots	PCIe3.0 [x16] x 1 M.2 E-key (22 x 30mm; Support CNVi)	PCIe3.0 [x16] x 1
BIOS	256Mbit Flash ROM, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	
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+DP+LVDS
VGA	Up to 1920 x 1200 @ 60 Hz	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	No	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz
LVDS	No	Up to 1920 x 1200 @60 Hz, Dual Channel 18/24 bit (1 x inverter)
eDP	No	—
Backlight Control	—	
Environment & Power & ME		
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)	—	329,280
I/O		
Rear Panel I/O Ports	USB 3.2 Gen 2 (10 Gbps) x 4, USB 2.0 x 2, VGA x 1, HDMI x 1, Mic-in x 1, Line-out x 1, LAN (RJ-45) port x 4	USB 3.2 Gen 2 (10 Gbps) x 4, USB2.0 x 4, VGA x 1, HDMI x 1, DP x 1, Mic-in x 1, Line-out x 1, LAN (RJ-45) port x 2, 1x COM(RS485/422/232)
Internal I/O Connectors Others	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1(SATA only), USB 2.0 (2 x 5-pin, 2.00mm) x 1 ports support additional 2 USB, AAFP x 1, Speaker x 1, Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) x 1, Digital I/O box header x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1, Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) x 1, USB 2.0 (2 x 5-pin, 2.00mm) x 1 port support additional 2 USB, LVDS x 1, AAFP x 1, Speaker x 1, Box header for COM (RS-232) x 1, Digital I/O box header x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1, Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1
OS		
OS Support	Windows® 10 64-bit, Linux Ubuntu 18.04 64bit	Windows® 10 64-bit, Linux Ubuntu 18.04 LTS
Note		

Note: All specifications are subject to change without notice.

Industrial Motherboards

Model	MIX-Q370D1	MIX-Q370D2
System		
Processor	8th/9th Generation Intel® Core™ i7/ i5 /i3, Pentium® LGA 1151 socket Processor (Coffeelake-S), Max. 65W TDPs	8th/9th Gen. Intel® Core™ LGA 1151 socket Processor (formerly Coffee Lake-S),Max. 65W TDPs
Chipset	Intel® Q370 Express Chipset	
Memory	SODIMM x 2, Max. 32GB, DDR4 2666/2400 MHz, Non-ECC, Un-buffered Memory, Dual channel	DDR4 2666/2400/2133 MHz SODIMM x 2, Up to 64GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture
I/O Chipset	NCT6793D	
Ethernet	Intel® PHY i219LM Giga LAN (support Intel® AMT 12.0) x 1 Intel® i210AT Giga LAN x 1	Intel® GbE LAN i219V x 1, Intel® GbE LAN i211AT x 1
Audio	Realtek® ALC887	
TPM	Nuvoton TPM version 2.0	NPCT750AAAYX TPM2.0
Expansion Slots	PCIe 3.0 [x4] x 1, M.2 M key (22 x 80mm) x 1 at Bottom side, SATA & PCIe [x4], M.2 E key (22 x 30mm) x 1 for Wireless-wifi module (PCIe+USB)	PCIe3.0 [x16] x 1 M.2 E-key(22 x 30 mm) x1 for Wireless-wifi module (PCIe+USB; CNVi)
BIOS	256Mbit Flash ROM, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on Chassis	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 step by software program	
Smart Fan Control	CPU Fan/ Chassis Fan	
Wake On LAN/ PXE	Yes (WOL / PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® UHD Graphics	
Graphics Multi Display	Three Independent Display	HDMI x 2 + VGA + eDP
VGA	—	Up to 1920 x 1200 @ 60 Hz
DVI	—	
HDMI	—	Up to 3840 x 2160 @30 Hz(HDMI 1.4b)
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio, DP++ supported	—
LVDS	LVDS Up to 1920 x 1200 @ 60 Hz, Dual Channel 18/24 bit (via Chrontel 7511)	—
eDP	eDP UP to 4096 x 2304 @ 60Hz	eDP UP to 4096 x 2304 @ 60Hz
Backlight Control	Voltage/PWM	Support eDP
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	12V DC	
Operation Temperature	32°F ~140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~185°F (-40°C ~85°C)	
Operation Humidity	0%~90%RH, non-condensing	
Certificate	CE & FCC (Class A)	CE & FCC
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
Weight	1.1 lb (0.5 kg)	
MTBF (Hours)	256,310	319,160
I/O		
Rear Panel I/O Ports	USB 3.2 Gen 2 (10 Gbps) x 4, DP x 2, Mic-in x 1, Line out x 1, LAN (RJ45) port x 2, DC Jack	USB 3.2 Gen2 x 6, USB 2.0 x 4, VGA x 1, HDMI x 2, Mic-in x 1, Line-out x 1, LAN (RJ-45) port x 2, 12V DC Jack (max:192W)
Internal I/O Connectors Others	SATA 6.0Gb/s x4 M.2 M key (22x80mm) x1 (Support Intel® NVMe M.2 SSD), 4-pin SATA power x 1, 3 x USB 2.0 pin header support additional 6 USB ports, 40-pin LVDS connector x 1, 40-pin eDP connector x 1, LCD backlight connector (inverter) x 1, Speaker for 2W/4Ω x 1, AAFP follow ASUS pin out x 1, Box header x 1 for COM (COM1: RS-232/422/485 supports 5V/12V/RI), 8-bit x 1 (In/Out programmable), 4-pin Chassis Fan connector x 1, 4-pin CPU Fan connector x 1,12V DC Power jack x 1, Front panel header x 1, Clear CMOS jumper x 1, AT/ATX select jumper x 1, Chassis Intrusion x 1	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 42/80mm; NVME/SATA) x 1, USB 2.0 (2 x 5-pin, 2.00mm) x 1 port support additional 2 USB, eDP x 1, AAFP x 1, Box header for COM (RS-232) x 1; RS-232/422/485 x 1, Digital I/O box header x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1, 12V ATX Power Connector x 1, Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1, SATA Power connector x 1, SPI ROM programming header x 1, ATX/AT mode jumper x 1, eDP backlight power jumper x 1, eDP T-con IC power jumper x 1
OS		
OS Support	Windows® 10 64-bit, Linux Ubuntu 18.04 LTS	Windows® 10 64-bit, Linux Ubuntu 18.04 64bit
Note		

Note: All specifications are subject to change without notice.

Board Level Products

Industrial Motherboards

Model	EMB-Q170A	EMB-Q170B
System		
Processor	6th/7th Generation Intel® Core™ i7/i5/i3, LGA1151 Socket Processor, Max. 65W TDPs	
Chipset	Intel® Q170	
Memory	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture	
I/O Chipset	NCT6791D	
Ethernet	Intel® PCIe Gb LAN 219LM x 1, Intel® PCIe Gb LAN i211AT x 1	Intel® PCIe Gb LAN 219LM for vPro x 1, Intel® PCIe Gb LAN 211AT x 1
Audio	Realtek® ALC887	
TPM	Infineon SLB96XX TT 1.2/2.0 (default: No)	
Expansion Slots	PCIe3.0 [x16] x 1, M.2 M-key (22x80mm) at bottom side x 1	PCIe 3.0 [x4] 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
BIOS	128M bit Flash ROM, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis	Temperature Monitor on CPU/Chassis, Voltage Monitor on VCore™ 5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan/Chassis Fan	
Wake On LAN/ PXE	Yes (WOL/PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® HD Graphics	
Graphics Multi Display	DP+DP, DP+VGA, DP+DP+VGA, DP+DP+DP	2DP + LVDS, DP + eDP + LVDS, 2DP + eDP
VGA	Up to 1920 x 1200 @60 Hz	—
DVI	—	
HDMI	—	
Display Port	Up to 4096 x 2160 @24 Hz / 3840 x 2160 @60 Hz, with Digital Audio	
LVDS	—	Up to 1920 x 1200 @60 Hz, Dual Channel 18/24-bit
eDP	—	UP to 4096 x 2340 @60Hz
Backlight Control	—	Voltage/PWM
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	ATX	12VDC
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Operation Humidity	0% ~ 90% R/H, non-condensing	
Certificate	CE & FCC	
Form Factor	Mini-ITX: 6.7" x 6.7" (170mm x 170mm)	
Weight	1.1 lb (0.5 Kg)	
MTBF (Hours)	221,850	292,450
I/O		
Rear Panel I/O Ports	USB 3.2 Gen 1 (5 Gbps) x 4, USB 2.0 x 2, VGA x 1, DP x 3, Mic-in x 1, Line-out x 1, LAN (RJ-45) port x 2, PS/2 for KB/MS x 1	USB 3.2 Gen 1 (5 Gbps) x 4, DP x 2, Mic-in x 1, Line-out x 1, LAN (RJ-45) port x 2, DC Jack x 1
Internal I/O Connectors Others	SATA3.0 (6.0Gb/s) x 2, M.2 M-key (22 x 80mm) at bottom side x 1, USB 2.0 (2 x 5-pin, 2.00mm) x 2 ports support additional 4 USB, Speaker x 1, Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) x 1, Digital I/O box header x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1, ATX Power Connector x 2, AT/ATX mode select jumper (optional) x 1, Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard x 1, CMOS jumper x 1	SATA3 (6.0Gb/s) x 4, SATA power connector x 1, M.2 M key (22 x 80mm) at Bottom side x 1, M.2 E key (22 x 30mm) at Top side x 1, USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 6 USB, 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, AAFP x 1, Speaker x 1 (pin out refer to manual), Box header for COM (RS-232/422/485) x 1, Digital I/O box header x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1, 12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1, Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard (pin header) x 1, CMOS jumper x 1
OS		
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Ubuntu16.04.02/Kernel4.8.0	
Note		

Note: All specifications are subject to change without notice.

Industrial Motherboards

Model	EMB-Q170C	EMB-H110B
System		
Processor	6th/7th Generation Intel® Core™ i7/i5/i3, LGA1151 Socket Processor, Max. 65W TDPs	
Chipset	Intel® Q170	Intel® H110
Memory	DDR4 2133/1867 MHz SODIMM x 2, Up to 32GB, Non-ECC, Un-buffered Memory, Dual channel memory architecture	
I/O Chipset	NCT6791D	
Ethernet	Intel® PCIe Gb LAN 219LM for vPro x 1, Intel® PCIe Gb LAN 211AT x 1	Realtek PCIe Gb LAN 8111G x 2
Audio	Realtek® ALC887 with Amp.	Realtek® ALC887
TPM	Infineon SLB9665 TT 2.0 (optional)	Infineon SLB96XX TT 1.2/2.0 (default: No)
Expansion Slots	PCIe 3.0 [x8] x 1, M.2 E-key (22x30mm) for PCIe 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
BIOS	128M bit Flash ROM, AMI BIOS	64 M bit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on VCore™ 5V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan/ Chassis Fan	
Wake On LAN/ PXE	Yes (WOL/PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® HD Graphics	—
Graphics Multi Display	VGA + HDMI + HDMI	HDMI1+HDMI2, HDMI1+DP2, DP1+HDMI2, HDMI1+LVDS, HDMI2+LVDS, HDMI1+eDP, HDMI2+eDP, DP1+DP2, DP1+LVDS, DP2+LVDS, DP1+eDP, DP2+eDP
VGA	Up to 1920 x 1200 @ 60 Hz	—
DVI	—	
HDMI	Up to 4096 x 2160 @24 Hz ; 3840 x 2160 @60 Hz, with Digital Audio	Up to 4096 x 2160 @24 Hz / 2560 x 1600 @60 Hz, with Digital Audio (HDMI/DP Combo)
Display Port	—	Up to 1920 x 1200 @60 Hz, with Digital Audio (HDMI/DP Combo)
LVDS	—	Up to 1920 x 1200 @60 Hz, Dual Channel 18/24-bit colay
eDP	—	UP to 4096 x 2340 @60Hz
Backlight Control	—	Voltage/PWM
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	ATX	12VDC
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)	282,880	315,210
I/O		
Rear Panel I/O Ports	USB 3.2 Gen 1 (5 Gbps) x 4, VGA x 1, HDMI x 2, Mic-in x 1, Line out x 1, LAN (RJ45) port x 2	USB 3.2 Gen 1 (5 Gbps) x 4, DP/HDMI (BOM Change) x 2, Mic-in x 1, Line-out x 1, LAN (RJ-45) port x 2, DC Jack x 1
Internal I/O Connectors Others	SATA3 (6.0Gb/s) x 2, Full Size Mini-Card (mSATA) x 1, SATA power connector x 1, USB 2.0 (2 x 5-pin, 2.00mm) x 2 ports support additional 4 USB, 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, AAFP x 1, Speaker x 1, Box header for COM (RS-232/422/485) x 1, Box header for COM (RS-232) x 1, Digital I/O box header x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1, 12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1, Front Panel connector x 1, Chassis Intrusion x 1, Buzzer onboard (pin header) x 1, CMOS jumper x 1	SATA3 (6.0Gb/s) x 4, SATA power connector x 1, Full Size Mini-Card (mSATA) x 1 ,USB 2.0 (2 x 5-pin, 2.00mm) x 3 ports support additional 6 USB VGA x 1, LVDS 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, AAFP x 1, Speaker x 1, DMIC (optional) x 1, Box header for COM (RS-232) x 2, PS/2 Keyboard Mouse 6 PIN Connector x 1, Digital I/O header x 1, 4-pin CPU Fan connector x 1, 4-pin Chassis Fan connector x 1, 12V AUX Power Connector x 1, AT/ATX mode select jumper (optional) x 1, Front Panel connector x 1, Chassis Intrusion x 1, CMOS jumper x 1
OS		
OS Support	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Ubuntu16.04.02/Kernel4.8.0	Windows® 7 32/64-bit, Windows® 8.1 32/64-bit, Windows® 10 64-bit, Linux Fedora
Note		

Note: All specifications are subject to change without notice.

Industrial Motherboards

Model	MAX-Q470A	MAX-Q370A
System		
Processor	Intel® 10th Generation (Comet Lake-S) Core™ i9 /i7/ i5 /i3, Pentium 14nm LGA 1200 socket Processor, Max. 10 Core 80W	8th/9th Generation Intel® (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/ i7/ i5 /i3, Pentium™ 14nm LGA 1151 socket Processor, max. TDP 8 Core 95W
Chipset	Intel® Q470E Express Chipset	Intel® Q370 Express Chipset
Memory	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
I/O Chipset	IT5121E + F81216HD	NCT6793D+ F81216HD
Ethernet	Intel® PHY i219LM Giga LAN (supports Intel® AMT 12.0) x 1, Intel® i211AT Giga LAN x 1, RJ45 x 2	
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC	Realtek® ALC887 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750AADYX TPM2.0 onboard (optional; default: onboard)	Nuvoton NPCT750AABYX TPM2.0 onboard
Expansion Slots	PCIe 3.0[x16] Slot (16 lanes) (8 lanes when dual use PCIe[x16]) x 1, PCIe 3.0[x16] (8 lanes) x 1,PCIe 3.0[x4] Slot x 1, PCIe 3.0[x4] Slot (2 lanes) x 1, M.2 2230 E-key (PCIe/CNVI) x 1, M.2 2280/2242 M-key (PCIex4) x 1, M.2 3042/3052/2242 B-key (PCIe/USB/SATA) x 1, Micro SIM card Slot x 1	PCIe 3.0[x16] Slot x 1, PCIe 3.0[x4] Slot (open edge) x 2, PCIe 3.0[x1] Slot (open edge) x 1, M.2 2230 E-key (PCIe/USB) x 1, M.2 2280 M-key (PCIex4/SATA3) x 1
BIOS	256Mbit Flash ROM, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan/ Chassis Fan x 2	
Wake On LAN/ PXE	Yes (WOL / PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® Graphics Media Accelerator	Intel® UHD Graphics
Graphics Multi Display	HDMI+HDMI+VGA, HDMI+HDMI+LVDS, HDMI+VGA+LVDS, HDMI+HDMI+HDMI	HDMI+VGA+DP, HDMI+HDMI+VGA, HDMI+HDMI+DP
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—	
HDMI	Up to 4096 x 2160 @ 60 / 30 Hz, with Digital Audio	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	—	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	Up to 1920 x 1200 @ 60 Hz, Dual Channel 18/24 bit	—
eDP	—	
Backlight Control	Yes	—
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1	
Operation Temperature	32°F ~140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~185°F (-40°C ~85°C)	
Operation Humidity	0%~90%RH, non-condensing	
Certificate	CE & FCC Class A	
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244 mm x 244 mm)	
Weight	1.76 lb (0.8 Kg)	
MTBF (Hours)	259,360 Hrs	264,820
I/O		
Rear Panel I/O Ports	USB 3.2 Gen2 ports (10 Gbps) x 2, USB 3.2 Gen1 ports (5 Gbps) x 4, VGA x 1, HDMI x 3 (2.0 x 1, 1.4 x 2), Audio Jack x 3: Line-in, Mic-in, Line-out, LAN (RJ45) ports x 2, DB-9 COM (supports RS-232/422/485, 5V/12V/RI) x 1, BIOS recovery button	USB 3.2 Gen 2 ports (10 Gbps) x 6, USB 3.2 Gen 2 ports (5 Gbps) x 4, DP x 1, VGA x 1, HDMI x 2, Audio Jack x 3: Line-in, Mic-in, Line-out, LAN (RJ45) ports x 2, PS/2 combo Port (Keyboard & Mouse) x 1
Internal I/O Connectors	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10, M.2 2280/2242 M-key (PCIex4) x 1, 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, 40-pin LVDS connector x 1, speaker header (Line-out) x 1, AAFP x 1, RS-232 headers x 3, 8-bit Digital I/O interface (In/Out programmable) x 1, CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2, 24-pin EATX Power header x 1, 8-pin EATX 12V Power connector x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1, Front panel header x 1, Clear CMOS jumper x 1, 3-pin ME lock header x 1, Buzzer on board x 1	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10, M.2 2280 M-key (PCIex4/SATA3) x 1, USB 2.0 headers support additional 3 USB ports (2x5PIN, p=2.54mm), Speaker for 2W@4Ω x 1, RS-232 Box headers x 5, RS-232/422/485 Box header (COM1, Pin9 supports 5V/12V/RI optional) x 1, 8-bit Digital I/O interface (In/Out programmable) x 1, CPU Fan connector (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2, Chassis intrusion x 1, AT/ATX mode select jumper x 1, Front panel header x 1, Clear CMOS jumper x 1
OS		
OS Support	Windows® 10 64bit, Linux Ubuntu 64bit (20.04.0/Kernel 5.4)	Windows® 10 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)

Note: All specifications are subject to change without notice.

Industrial Motherboards

Model	MAX-Q370C	MAX-C246A
System		
Processor	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	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
Chipset	Intel® Q370 Express Chipset	Intel® C246 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 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
I/O Chipset	NCT6793D+ F81216HD	NCT6793D+ F81216HD
Ethernet	Intel® PHY i219LM Giga LAN (supports Intel® AMT 12.0) x 1 Intel® i211AT Giga LAN x 1, RJ45 x 2	Intel® PHY i219LM Giga LAN (supports Intel® AMT 12.0) x 1 Intel® i211AT Giga LAN x 1, RJ45 x 2
Audio	Realtek® ALC887 6-Channel High Definition Audio CODEC	
TPM	Nuvoton NPCT750AABYX TPM2.0 onboard (optional)	Nuvoton NPCT750AABYX TPM2.0 onboard
Expansion Slots	PCIe 3.0[x16] Slot x 1 PCIe 3.0[x4] Slot (open edge) x 3 M.2 2280/2242 M-key (PCIe SSD (Ideal speed: 800MB/S)) x 1	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)
BIOS	256 Mbit Flash ROM x 1, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan/ Chassis Fan x 2	
Wake On LAN/ PXE	Yes (WOL / PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® Graphics Media Accelerator	Intel® UHD Graphics
Graphics Multi Display	HDMI+VGA+DP, HDMI+HDMI+VGA, HDMI+HDMI+DP	
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)	
DVI	—	
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio	
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio	
LVDS	—	
eDP	—	
Backlight Control	—	
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1	
Operation Temperature	32°F ~140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~185°F (-40°C ~85°C)	
Operation Humidity	0%~90%RH, non-condensing	
Certificate	CE & FCC Class A	
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244 mm x 244 mm)	
Weight	1.76 lb (0.8 Kg)	
MTBF (Hours)	264,820	264,820
I/O		
Rear Panel I/O Ports	USB 3.2 Gen 1 ports (5 Gbps) x 6, USB 2.0 ports x 4, DP x 1, VGA x 1, HDMI x 2, Audio Jack x 3: Line-in, Mic-in, Line-out, LAN (RJ45) ports x 2, PS/2 combo Port (Keyboard & Mouse) x 1	USB 3.2 Gen 2 ports (10 Gbps) x 6, USB 3.2 Gen 1 ports (5 Gbps) x 4, DP x 1, VGA x 1, HDMI x 2, Audio Jack x 3: Line-in, Mic-in, Line-out, LAN (RJ45) ports x 2, PS/2 combo port (Keyboard & Mouse) x 1
Internal I/O Connectors	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10, M.2 2280/2242 M-key (PCIe SSD (Ideal speed: 800MB/S)) x 1, USB 3.2 Gen 1 box header x 1, support additional 2 ports (2x5PIN, p=2.54mm), USB 3.2 Gen 1 Type A (vertical) connector x 1, speaker header (Line-out) x 1, AAFP x 1, RS-232 headers x 5, RS-232/422/485 (COM1, supports 5V/12V/RI optional) x 1, 8-bit Digital I/O interface (In/Out programmable) x 1, CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2, 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	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10, M.2 2280 M-key (PCIex4/SATA3) x 1, USB 2.0 headers support additional 3 USB ports (2x5PIN, p=2.54mm), Speaker for 2W@4Ω x 1, RS-232 Box headers x 5, RS-232/422/485 Box header (COM1, Pin9 supports 5V/12V/RI optional) x 1, 8-bit Digital I/O interface (In/Out programmable) x 1, CPU Fan connector (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2, Chassis Intrusion x 1, AT/ ATX mode select jumper x 1 Front panel header x 1 Clear CMOS jumper x 1
OS		
OS Support	Windows® 10 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)	
Note		

Note: All specifications are subject to change without notice.

Board Level Products

Industrial Motherboards

Model	MAX-H310A
System	
Processor	8th/9th Generation Intel® (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/i7/i5/i3, Pentium 14nm LGA 1151 socket Processor
Chipset	Intel® H310 Express Chipset
Memory	DIMM x 2, DDR4 (2666/2400/2133 MHz, max. 64GB), non-ECC, un-buffered memory, Dual-channel memory architecture
I/O Chipset	NCT6793D+ F81216HD
Ethernet	Intel® PHY i219V Giga LAN x 1 Intel® i211AT Giga LAN x 1 RJ45 x 2
Audio	Realtek® ALC887 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT650ABBYX TPM2.0 onboard (default: No)
Expansion Slots	PCIe 3.0[x16] Slot x 1, PCIe 2.0[x1] Slot (open edge) x 3, M.2 2280 M-key (BOM option: PCIe or SATA; default: SATA) x 1
BIOS	128Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan x 1, Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® UHD Graphics
Graphics Multi Display	VGA+DP; VGA+HDMI; DP+HDMI
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244mmx244mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	261,090
I/O	
Rear Panel I/O Ports	USB 3.2 Gen 1 ports (5 Gbps) x 4, USB 2.0 ports x 4, DP x 1, VGA x 1, HDMI x 1, Audio Jack x 3: Line-in, Mic-in, Line-out, LAN (RJ45) ports x 2, PS/2 stack Port (Keyboard & Mouse) x 1
Internal I/O Connectors	SATA III (6.0Gb/s) ports (BOM option: additional 2 SATA) x 3, M.2 2280 M-key (BOM option: PCIex1 or SATA; default: SATA) x 1, USB 2.0 header support additional 2 USB ports (2x5PIN, p=2.54mm) x 1, Speaker header (Line-out) x 1, AAFP x 1, RS-232 Box headers x 5, RS-232/422/485 Box header (COM1, Pin9 supports 5V/12V/RI optional) x 1, 8-bit Digital I/O interface (In/Out programmable) x 1, CPU Fan connector (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2, 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
OS	
OS Support	Windows® 10 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)
Note	

Note: All specifications are subject to change without notice.

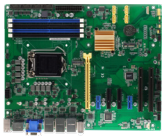
Industrial Motherboards

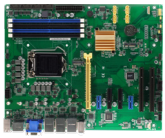
Model	IMBM-Q170A	IMBM-H110A
System		
Processor	7th/6th Generation Intel® Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor	
Chipset	Intel® Q170 Express Chipset	Intel® H110
Memory	288-pin DIMM x 4, max. 64GB, DDR4 2133/1867 MHz, non-ECC, un-buffered memory, Dual channel memory architecture	288-pin DIMM x 2, max. 32GB, DDR4 2400/2133/1867, Dual channel
I/O Chipset	NCT6791D, F81216HD	
Ethernet	LAN 1: Intel® PHY i219LM Giga LAN (supports iAMT 11.0) x 1 LAN 2: Intel® i211AT Giga LAN x 1, RJ-45 x 2	Intel® I211AT Giga LAN x 2
Audio	Realtek® ALC887 (Colay with ALC886)	
TPM	20-1 PIN header for TPM1.2/FW3.19	Nuvoton NPCT650ABBYX TPM2.0 (default : No)
Expansion Slots	PCIe 3.0/2.0[x16] Slot x 1, PCIe 3.0/2.0[x4] Slot (open edge) x 1, PCIe 3.0/2.0[x1] Slot (open edge) x 1, PCI x 1	PCIe [x16] x 1, PCIe [x1] (open edge) x 2, PCI x 1, M.2 M key (22 x 42mm) x 1
BIOS	128M bit Flash ROM x 1, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V/ 3VSB/VBAT, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan/ Chassis Fan x 2	CPU Fan x 1, Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® HD Graphics	
Graphics Multi Display	DVI-I+HDMI, HDMI+HDMI	DVI-D+HDMI, HDMI+HDMI, VGA+HDMI, DVI-D+VGA
VGA	Up to 1920 x 1200 @60Hz	
DVI	Up to 1920 x 1200 @60Hz	
HDMI	HDMI 1.4 up to 4096 x 2304 @30Hz	HDMI 1.4 up to 4096 x 2304 @24Hz
Display Port	—	
LVDS	—	
eDP	—	
Backlight Control	—	
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1	
Operation Temperature	32°F ~140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~185°F (-40°C ~85°C)	
Operation Humidity	0%~90%RH, non-condensing	
Certificate	CE & FCC Class A	
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244mmx244mm)	Micro-ATX, 9.6" x 9.6" (244mm x 244mm)
Weight	1.76 lb (0.8 Kg)	
MTBF (Hours)	193,470	245,250
I/O		
Rear Panel I/O Ports	USB 3.2 Gen 1 x 10, DVI-I x 1, HDMI x 2, Audio Jack x 3: Line-in, Mic-in, Line-out, LAN (RJ-45) port x 2, RS-232/422/485 DB-9 connector x 1 (COM1, supports 5/12V on RI pin), PS/2 Combo Port (Keyboard & Mouse) x 1	USB 3.2 Gen 1 x 4, HDMI x 2, VGA x 1, DVI-D x 1, Line-in, Mic-in, Line-out, RJ-45 x 2, DB-9 COM x 1 (supports RS-232/422/485), Stack Port (Keyboard & Mouse) x 1
Internal I/O Connectors	SATA3 (6.0Gb/s) port x 6, supports RAID 0/1/5/10 USB 2.0 header supports additional 2 USB ports x 2 Speaker header x 1 (Line-out) RS-232 header x 5 8-bit Digital I/O interface x 1 (In/Out programmable) CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2 Front panel header x 1, Clear CMOS jumper x 1, TPM header x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1	SATA 6.0Gb/s x 5, M.2 M key (22 x 42mm) x 1 USB 2.0 x 6 AMP speaker header x 1 (Line-out) RS-232 header x 5 8-bit x 1 (In/Out programmable) 4-pin CPU Fan x 1, 4-pin Chassis Fan x 2 Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1
OS		
OS Support	Windows® 7 32/64-bit, Windows® 8.1 64-bit, Windows® 10 64-bit, , Linux Fedora 64bit	Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used), Windows® 8.1 64-bit (not supported when a Kaby Lake processor is used), Windows® 10 64-bit, ,Linux Fedora 64bit
Note		

Note: All specifications are subject to change without notice.

Board Level Products

Industrial Motherboards





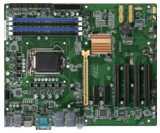
Model	ATX-Q370A	ATX-C246A
System		
Processor	Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/i7/i5/i3, Pentium 14nm LGA 1151 socket Processor, max. TDP 8 Core 95W	Intel® 8th/9th Generation (Coffee Lake-S/Coffee Lake-S Refresh) Core™ i9/i7/i5/i3, Pentium 14nm, Celeron™, Xeon E-2200/2100, LGA 1151 socketProcessor, max. TDP 8 Core 95W
Chipset	Intel® Q370 Express Chipset	Intel® C246 Express Chipset
Memory	DIMM x 4, DDR4 (2666/2400/2133 MHz, max. 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
I/O Chipset	NCT6793D + F81216HD	
Ethernet	Intel® PHY i219LM Giga LAN x 1 (supports Intel® AMT 12.0) Intel® i211AT Giga LAN x 1 (BOM option: i211AT x 2) RJ45 x 2 (BOM option: RJ45 x 3)	Intel® PHY i219LM Giga LAN x 1 (supports Intel® AMT 12.0) Intel® i211AT Giga LAN x 1 (BOM option: i211AT x 2) RJ45 x 2 (BOM option: RJ45 x 3)
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC	Realtek® ALC887 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750AABYX TPM2.0 onboard	Nuvoton NPCT750AABYX TPM2.0 onboard
Expansion Slots	PCIe 3.0[x16] Slot x 1, PCIe 3.0[x4] Slot (open edge) x 2, PCIe 3.0[x1] Slot (open edge) x 2, PCI x 2, M.2 2230 E-key (PCIex1/USB2.0/CNVi) x 1, M.2 2280 M-key (PCIex4/SATA3) 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 2, PCI x 2, M.2 2230 E-key (PCIex1/USB2.0/CNVi) x 1, M.2 2280 M-key (PCIex4/SATA3) x 1
BIOS	256Mbit Flash ROM x 1, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	CPU Fan/ Chassis Fan x 2	
Wake On LAN/ PXE	Yes (WOL / PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Intel® Graphics Media Accelerator	
Graphics Multi Display	HDMI+VGA+DP (BOM option: USB 3.2 Gen 2 -10Gbps Type-C connector (Alternate Mode: USB+DP) x 1)	
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)	
DVI	—	
HDMI	Up to 4096 x 2160 @ 24 Hz / 2560 x 1600 @ 60 Hz, with Digital Audio	
Display Port	Up to 4096 x 2160 @ 24 Hz / 3840 x 2160 @ 60 Hz, with Digital Audio	
LVDS	—	
eDP	—	
Backlight Control	—	
Environment & Power & ME		
Battery	Lithium battery	
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1	
Operation Temperature	32°F ~140°F (0°C ~ 60°C)	
Storage Temperature	-40°F ~185°F (-40°C ~85°C)	
Operation Humidity	0%~90%RH, non-condensing	
Certificate	CE & FCC Class A	
Form Factor	ATX Form Factor, 12"x9.6" (305mm x 244mm)	
Weight	1.76 lb (0.8 Kg)	
MTBF (Hours)	281,410	
I/O		
Rear Panel I/O Ports	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, HDMI x 1, VGA x 1, DP x 1, USB Type-C x 1 (optional), Audio Jack x 3: Line-in, Mic-in, Line-out, LAN (RJ45) ports x 2 (BOM option: RJ45 x 3)	
Internal I/O Connectors	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10, M.2 2280 M-key (PCIex4/SATA3) x 1, USB 2.0 headers x 1 support additional 2 USB ports (2x5PIN, p=2.54mm), 1 x speaker header (Line-out), 5 x RS-232 headers 1 x RS-232/422/485 (COM1, supports 5V/12V/RI optional), 8-bit Digital I/O interface (In/Out programmable) x 1, CPU Fan connector(s) (4-pin) x 1 Chassis Fan connector(s) (4-pin) x 2, Chassis Intrusion x 1, AT/ATX mode select jumper x 1, Front panel header x 1, Clear CMOS jumper x 1	
OS		
OS Support	Windows® 10 64bit, Linux Ubuntu 64bit (18.04.1/Kernal4.8.0)	
Note		

Note: All specifications are subject to change without notice.

Industrial Motherboards

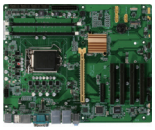
Model	ATX-H310A
System	
Processor	Intel® 10th Generation (Comet Lake-S) Core™ i9 /i7/ i5 /i3, Pentium 14nm LGA 1200 socket Processor, Max. 10 Core 80W
Chipset	Intel® Q470E Express Chipset
Memory	DIMM x 4, DDR4 (2933/2666/2400 MHz, max. 128GB) non-ECC, un-buffered memory Dual channel memory architecture
I/O Chipset	IT5121E + F81216HD
Ethernet	Intel® PHY i219LM Giga LAN (supports Intel® AMT 12.0) x 1 Intel® i211AT Giga LAN x 1, RJ45 x 2
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750AADYX TPM2.0 onboard (optional; default: onboard)
Expansion Slots	PCIe 3.0[x16] Slot (16 lanes) (8 lanes when dual use PCIe[x16]) x 1, PCIe 3.0[x16] (8 lanes) x 1,PCIe 3.0[x4] Slot x 1, PCIe 3.0[x4] Slot (2 lanes) x 1, M.2 2230 E-key (PCIe/CNVI) x 1, M.2 2280/2242 M-key (PCIex4) x 1, M.2 3042/3052/2242 B-key (PCIe/USB/SATA) x 1, Micro SIM card Slot x 1
BIOS	256Mbit Flash ROM, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
Graphics	
Graphics Chipset	Intel® Graphics Media Accelerator
Graphics Multi Display	HDMI+HDMI+VGA, HDMI+HDMI+LVDS, HDMI+VGA+LVDS, HDMI+HDMI+HDMI
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 60 / 30 Hz, with Digital Audio
Display Port	—
LVDS	Up to 1920 x 1200 @ 60 Hz, Dual Channel 18/24 bit
eDP	—
Backlight Control	Yes
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	24-pin ATX connector x 1, 8-pin (2x4) ATX 12V Power connector x 1
Operation Temperature	32°F ~140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~185°F (-40°C ~85°C)
Operation Humidity	0%~90%RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	Micro-ATX Form Factor, 9.6"x9.6" (244 mm x 244 mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	259,360 Hrs
I/O	
Rear Panel I/O Ports	USB 3.2 Gen2 ports (10 Gbps) x 2, USB 3.2 Gen1 ports (5 Gbps) x 4, VGA x 1, HDMI x 3 (2.0 x 1, 1.4 x 2), Audio Jack x 3: Line-in, Mic-in, Line-out, LAN (RJ45) ports x 2, DB-9 COM (supports RS-232/422/485, 5V/12V/RI) x 1, BIOS recovery button with Asmedia AI1315 x 1
Internal I/O Connectors	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10, M.2 2280/2242 M-key (PCIex4) x 1, 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, 40-pin LVDS connector x 1, speaker header (Line-out) x 1, AAFP x 1, RS-232 headers x 3, 8-bit Digital I/O interface (In/Out programmable) x 1, CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2, 24-pin EATX Power header x 1, 8-pin EATX 12V Power connector x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1, Front panel header x 1, Clear CMOS jumper x 1, 3-pin ME lock header x 1, Buzzer on board x 1
OS	
OS Support	Windows® 10 64bit, Linux Ubuntu 64bit (20.04.0/Kernel 5.4)
Note	

Industrial Motherboards



Model	IMBA-Q170A
System	
Processor	Intel® 7th/ 6th Generation(Kaby Lake-S/ Skylake-S) Core™ i7/i5/i3/Pentium®/ Celeron® 14nm LGA1151 Socket Processor
Chipset	Intel® Q170
Memory	288-pin DIMM x 4, max. 64GB, DDR4 2400/2133/1867, Dual channel
I/O Chipset	NCT6791D, F81216HD
Ethernet	LAN1: Intel® PHY I219LM Giga LAN (supports iAMT 11.0), LAN2: Intel® I211AT Giga LAN
Audio	Realtek® ALC887 (Colay with ALC886)
TPM	Nuvoton NPCT6xx TPM2.0 (Optional)
Expansion Slots	SKU1: 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 & PCIex4) x 1
BIOS	128M bit Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/Chassis, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan x1, Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3,S4,S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, HDMI+HDMI, VGA+HDMI+HDMI
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	HDMI 1.4 up to 4096 x 2304 @24Hz
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium Battery
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity	0% ~ 90% R/H, non-condensing
Certificate	CE & FCC Class A
Form Factor	ATX, 12" x 9.6" (305 mm x 244 mm)
Weight	1.76 lb (0.8 Kg)
MTBF (Hours)	219,970
I/O	
Rear Panel I/O Ports	USB 3.2 Gen 1 x 10, VGA x 1, HDMI x 2, Line-in, Mic-in, Line-out, RJ-45 x 2, DB-9 COM x 1 (support RS-232/422/485), Combo Port (Keyboard & Mouse) x 1
Internal I/O Connectors	SATA 6.0Gb/s x 3, Supports RAID 0/1/5M.2 M key (22 x 80mm) x 1, USB 2.0 x 3, Speaker header x 1 (Line-out), RS-232 header x 5, 8-bit x 1 (In/Out programmable), 4 pin CPU Fan x 1, 4-pin Chassis Fan x 2, 24-pin EATX Power header x 1, 8-pin EATX 12V Power connector x 1, Front panel header x 1, Clear CMOS jumper x 1, AT/ATX select jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1
OS	
OS Support	Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used) Windows® 8.1 64-bit(not supported when a Kaby Lake processor is used) Windows® 10 64-bit, Linux Fedora 64bit
Note	

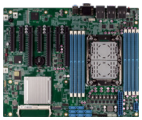
Industrial Motherboards



Model	IMBA-H110A
System	
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 Giga LAN, LAN2: Intel® I211AT Giga LAN
Audio	Realtek® ALC887 (Colay with ALC886)
TPM	Nuvoton NPCT650ABBYX TPM2.0 (default : No)
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 x1, Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3,S4,S5
Graphics	
Graphics Chipset	Intel® HD Graphics
Graphics Multi Display	VGA+HDMI, 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	—
Environment & Power & ME	
Battery	Lithium Battery
Power Requirement	24-pin ATX connector x 1, 8-pin ATX 12V Power connector x 1
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity	0% ~ 90% R/H, 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
I/O	
Rear Panel I/O Ports	USB 3.2 Gen 1 x 4, USB 2.0 x 2 HDMI x 1, DP x 1, VGA x 1, Line-in, Mic-in, Line-out, RJ-45 x 2 DB-9 COM x 1 (supports RS-232/422/485) Stack Port (Keyboard & Mouse) x 1
Internal I/O Connectors	SATA 6.0Gb/s x 3, M.2 M key (22 x 80mm) x 1, USB 2.0 x 4, Speaker header x 1 (Line-out), RS-232 header x 5, 8-bit x 1 (In/Out programmable) 4-pin CPU Fan x 1, 4-pin Chassis Fan x 2, Front panel header x 1, Clear CMOS jumper x 1, BIOS flash header (2[x4]P p=1.27mm) x 1, Chassis Intrusion x 1, AT/ATX mode select jumper x 1
OS	
OS Support	Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used) Windows® 8.1 64-bit(not supported when a Kaby Lake processor is used) Windows® 10 64-bit, Linux Fedora 64bit
Note	

Note: All specifications are subject to change without notice.

Industrial Motherboards



Model	ARES-WHI0
System	
Processor	Single Intel® Xeon® ICE LAKE-SP Processors
Chipset	Intel® C621A
Memory	8 x DDR4 2133/2400/2666 R-DIMM Slot support
I/O Chipset	ITE.IT8728F/CX
Ethernet	Intel® i210 Gigabit Ethernet x 2
Audio	Realtek®ALC892-CG
TPM	On board TPM2.0 9665
Expansion Slots	3 x [PCI-E 4.0 x 16], 3 x [PCI-E 3.0 x 4]use [PCI x 8 Slot], 1 x [PCIE-3.0 x 8]
BIOS	Flash ROM x 1, AMI BIOS
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/12V, Fan Monitor on CPU/Chassis
WatchDog Timer	1~255 steps by software program
Smart Fan Control	Yes
Wake On LAN/ PXE	Yes (WOL/PXE)
Power State	S3,S4,S5
Graphics	
Graphics Chipset	Intel C621A
Graphics Multi Display	N/A
VGA	Up to 1920 x 1200 @60Hz
DVI	—
HDMI	—
Display Port	—
LVDS	—
eDP	—
Backlight Control	Voltage/PWM
Environment & Power & ME	
Battery	Lithium battery
Power Requirement	4-pin ATX Power connector x 1
Operation Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Operation Humidity	0% ~ 90% RH, non-condensing
Certificate	CE & FCC Class A
Form Factor	305mm x 244mm
Weight	TBD
MTBF (Hours)	TBD
I/O	
Rear Panel I/O Ports	USB 3.2 Gen 1 ports Type A x 4, VGA x 1, Mic-in, Line-out, RJ-45 x 2, 1 x M.2 M-Key 2280 socket
Internal I/O Connectors	M.2 M-Key 2280 socket x 1, SATA III port on board x 8, USB2.0 (2 x 5 2.0mm Pin header) x 2, Mic-in, Line-out, RS-232/422/485 x 1, Internal pin header 8-bit Digital I/O interface 2x 5 (2.0mm), CPU and system Fan support, Aaeon proprietary IPMI Slot (Support Aaeon's proprietary IPMI Module PER-BMC0)
OS	
OS Support	Windows® 7 32/64-bit (not supported when a Kaby Lake processor is used) Windows® 8.1 64-bit(not supported when a Kaby Lake processor is used) Windows® 10 64-bit, Linux Fedora 64bit
Note	

Half-size SBC — ISA

Model	HSB-800I-A11
System	
Form Factor	Half-size CPU Card
Bus Interface	ISA
CPU	Onboard AMD Geode™ LX800
Memory Type	Onboard 128 MB (DDR 400)
Chipset	AMD Geode™ LX800 + CS 5536
BIOS	Award
Wake on LAN	No
Watchdog Timer	255 Levels
Power Requirement	ATX 2.1
Power Consumption (Typical)	AMD LX800, DDR400 128MB 0.19A@+12V, 1.51A@+5V, 9.83W
Power Supply Type	+5V, +12V operation
Dimension (L x W)	7.3" x 4.8" (185mm x 122mm)
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
MTBF (hours)	85,000
Certification	CE/FCC, Class A
Display	
VGA/LCD Controller	AMD Geode™ LX800
Video Output	1600 x 1200@32bpp at 100 MHz for CRT 1600 x 1200@24bpp for LCD
Backlight Inverter Supply	5V/12V
I/O	
Ethernet	10/100 or 10/100/1000Base-TX (optional)
Audio	Yes
USB Port	USB 2.0 x 4
Serial Port	RS-232 x 3 RS-232/422/485 x 1
Parallel Port	1
HDD Interface	IDE x 1
FDD Interface	1
SSD	CompactFlash™
Expansion Slot	ISA, PC/104
DIO	8-bit Programmable (4-in/4-out)
TPM	—
Note	

Note: All specifications are subject to change without notice.

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System Level Products

System Level Products

AI@Edge Solutions

Model	BOXER-8110AI	BOXER-8120AI	BOXER-8130AI
System			
AI Accelerator	Nvidia Jetson TX2		
CPU	HMP Dual Denver 2 + Quad ARM A57		
System Memory	8GB LPDDR4		
Storage Device	32GB eMMC 5.1, MicroSD		
Display Interface	HDMI 2.0		HDMI 2.0 x 1
Ethernet	10/100/1000Base-TX x 1	10/100/1000Base-TX x 4	10/100/1000Base-TX x 1
I/O	USB 3.2 Gen 1 x 2, HDMI x 1, LAN x 1 MicroSD x 1, OTG x 1, Antenna Holes x 1 DC Power Input x 1 2 channel CANBUS x 1 DB-9 RS-232 x 1	USB 3.2 Gen 1 x 2, HDMI x 1, LAN x 4 COM x 2, OTG x 1, Power Button x 1 SMA Antenna Holes x 2 10~24V DC-In Power input x 1 Remote Power On/Off x 1	USB Type A x 2 for USB 3.2 Gen 1 RJ-45 x 1 for GbE LAN Ethernet DB-9 x 1 for RS-232 Remote on/off switch x 1 Antenna Holes x 2, MicroSD x 1, OTG x 1
Expansion	—	MicroSD x 1 SATA x 1 (option) USB 2 x 3 (option)	SATA x1 (option) USB 2 x 3 (option) MIPI-CSI2 board to board connector x1 (The connector used on the carrier board is a Samtec QSH-060-01-H-D-A. The mating connector is a Samtec QTH-060-01-H-D-A.)
Indicator	—	Power LED	
OS support	AAEON ACLinux 4.9, Compliance with Ubantu 18.04		
Power Supply			
Power Requirement	12V with 2-pin temincal block	10~24V DC-In with DC Jack	10~24V with 2-pin terminal block
Mechanical			
Mounting	Wallmount		
Dimensions (W x H x D)	4.33" x 1.57" x 2.56" (110mm x 40mm x 65mm)	6.02" x 1.18" x 3.98" (153mm x 30mm x 101mm) 6.02" x 1.79" x 3.98" (153mm x 45.5mm x 101mm) for CS-N0001	6.02" x 1.18" x 3.98" (153mm x 30mm x 101mm)
Gross Weight	2.20 lb (1 Kg)	4.40 lb (2Kg) 5.51 lb (2.5Kg) for CS-N0001	4.40 lb (2 Kg)
Net Weight	1.10 lb (0.5 Kg)	2.20 lb (1Kg) 3.31 lb (1.5Kg) for CS-N0001	2.20 lb (1 Kg)
Environmental			
Operating Temperature	Operating Temperature -4°F ~122°F (-20°C ~ 50°C, according to IEC60068-2 with 0.5 m/s AirFlow; with Industrial Device)	-4°F ~ 122°F (-20°C ~ 50°C, according to IEC682-14 with 0.5 m/s AirFlow; with industrial Devices) for BOXER-8120AI-A1-1010 -4°F ~ 131°F (-20°C ~ 55°C, according to IEC682-14 with 0.5 m/s AirFlow; with industrial Devices) for BOXER-8120AI-A1-CS-N0001	-4°F ~ 122°F(-20°C ~ 50°C,with 0.5 m/s AirFlow)
Storage Temperature	-49°F ~176°F (-45°C ~ 80°C)	-13°F ~ 176°F (-25°C ~ 80°C)	
Storage Humidity	95% @ 40°C, non-condensing		
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation – eMMC	Random, 5 Grms/ 5 ~ 500Hz/ operation	Random, 5 Grm, 5~500Hz
Anti-Shock	—		
Certification	CE/FCC class A		
Note	COMPUTEX d&i awards 2019 TAIWAN EXCELLENCE 2020	COMPUTEX d&i awards 2020 by JP	

Note: All specifications are subject to change without notice.

AI@Edge Solutions

Model	BOXER-8150AI	BOXER-8170AI	BOXER-8220AI
System			
AI Accelerator	Nvidia Jetson TX2		Nvidia Jetson Nano
CPU	HMP Dual Denver 2 + Quad ARM A57		Quad Core ARM® Cortex®-A57 MPCore Proccessor
System Memory	8GB LPDDR4		4GB LPDDR4
Storage Device	32GB eMMC 5.1, MicroSD		16GB Micro-SD or eMMC
Display Interface	HDMI 2.0 x 2	HDMI 2.0	
Ethernet	10/100/1000 Base-TX x 1	10/100/1000 Base-TX x 1 IEEE 802.3 af PoE LAN x 4	10/100/1000Base-TX x 5
I/O	USB Type A x 8 for USB 3.2 Gen 1 DB-9 x1 for RS-232 HDMI 2.0 x 2 Power Switch 2-pin 10~24V DC-in Connector RJ-45 x1 for GbE LAN Ethernet Antenna Holes x 2 MicroSD x 1 OTG x 1	RJ-45 x 1 for GbE LAN IEEE 802.3af PoE x4 (60W total power budget) HDMI Type A x2 for HDMI 2.0 USB Type A x 4 for USB 3.2 Gen 1 DB-9 RS-232/422/485 x 2 Power On/Off Button x 1 DC-In 2-pin terminal block x1 USB OTG x 1 12~24V DC-in Power Input x1 SMA Antenna Holes x 2	USB 3.2 Gen 1 x 4 LAN x 5 RS-232 x 2 HDMI x 1 Micro-USB for Flash OS x 1 DC Power Input x 1 Power Button x 1 Recovery Button x 1
Expansion	SATA x 1 (optional) DB-9 RS-232 x 1 (optional) 2 channel CANBUS x 1 (optional)	SATA x 1 (optional) USB 2 x 1 (optional) 2 Channel CANBUS x 1 (optional)	—
Indicator	Power LED		Power LED x 1
OS support	AAEON ACLinux 4.9, Compliance with Ubantu 18.04		Linux (AAEON ACLinux 4.9) Linux (NVIDIA Jetpack 4.5)
Power Supply			
Power Requirement	10~24V with 2-pin terminal block		
Mechanical			
Mounting	Wallmount		
Dimensions (W x H x D)	6.02" x 1.77" x 3.98" (153mm x 45mm x 101mm)	7.09" x 1.89" x 5.35" (180 mm x 48 mm x 136 mm)	6.06" x 3.98" x 1.18" (154 mm x 101 mm x 30 mm)
Gross Weight	4.40 lb (2 Kg)	6.39 lb (2.9 Kg)	4.40 lbs (2 Kg)
Net Weight	2.2 lb (1 Kg)	4.73 lb (2.15 Kg)	2.20 lbs (1 Kg)
Environmental			
Operating Temperature	Operating Temperature -4°F ~122°F (-20°C ~ 50°C, according to IEC60068-2 with 0.5 m/s AirFlow; with Industrial Device)	-4°F ~ 122°F (-20°C ~ 50°C, according to IEC682-14 with 0.5 m/s AirFlow; with industrial Devices)	-4°F ~ 140°F (-20°C ~ 60°C, according to IEC60068-2 with 0.5 m/s AirFlow)
Storage Temperature	-13°F ~176 °F (-25°C ~ 80°C)	-40°F ~176 °F (-40°C ~ 80°C)	-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity	95% @ 40°C, non-condensing	5~95% @ 40°C, non-condensing	95% @ 40°C, non-condensing
Anti-Vibration	Random, 3 Grms, 5~500Hz	3 Grms/ 5 ~ 500Hz/ operation	3 Grms/ 5 ~ 500Hz/ operation – MicroSD or eMMC
Anti-Shock	—		
Certification	CE/FCC class A		
Note			

Note: All specifications are subject to change without notice.

System Level Products

AI@Edge Solutions

Model	BOXER-8221AI	BOXER-8222AI	BOXER-8223AI
System			
AI Accelerator	Nvidia Jetson Nano	NVidia® Jetson Nano™	Nvidia Jetson Nano
CPU	Quad Core ARM® Cortex®-A57 MPCore Proccessor		Quad Core ARM® Cortex®-A57 MPCore Proccessor
System Memory	4GB LPDDR4		4GB LPDDR4
Storage Device	32GB Micro-SD (A version) or 16GB eMMC (B version)	32 GB MicroSD Card (Jetson Nano version B) Mini-Card (Full Size) x 1 (PCIE+SATA+USB)	16GB eMMC + Micro SD card slot
Display Interface	HDMI 2.0	HDMI 2.0 x 1	HDMI Type A 2.0 *1 (Output) HDMI Type A 1.4 *1 (Input)
Ethernet	10/100/1000Base-TX x 1	10/100/1000Base-TX x 2	POE PSE LAN x2 (802.3af)
I/O	USB 3.2 Gen 1 x 4 LAN x 1 RS-232 x 2 HDMI x 1 MicroSD x 1 DC Power Input x 1 Recovery Button x 1 Micro-USB for Flash OS x 1	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 Mico-USB x 1 for Flash OS DC Power Input x 1 Recovery Button x 1 Micro-USB for Flash OS x 1	USB Type A x 4 for USB 3.2 Gen1 GbE LAN with LED Indicator POE PSE LAN x2 (802.3af) DB-9 x 1 for RS-232/485 DB15 x 1 Female for 13 Channel DIO O.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
Expansion	M.2 E-Key 2230 x 1(for WiFi)	Antenna x 2 M.2 2230 E Key x 1 (for Wi-Fi)	Minicard*1 w/ SIM slot M.2 E-Key 2230 x 1(for WiFi)
Indicator	Power LED x 1		
OS support	Linux (AAEON ACLinux 4.9), Linux (NVIDIA Jetpack 4.5)		Nvidia Jetpack 4.5 or above
Power Supply			
Power Requirement	12Vdc w/ 2-pin terminal block	DC 12V~24V 2-pin terminal	DC 12V~24V with 2-pin terminal block ATX mode
Mechanical			
Mounting	Wallmount		Wall mount kit (default)
Dimensions (W x H x D)	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)	7.09" x 5.35" x 2.41" (180.0 mm x 136 .0 mm x 61.1 mm)
Gross Weight	1.10 lb (0.5 Kg)	2.31 lbs (1.05 kg)	4.63 lbs. (2.1 kg)
Net Weight	0.66 lb (0.3 Kg)	1.28 lbs (0.58 kg)	2.87 lbs. (1.3 kg)
Environmental			
Operating Temperature	-4°F ~ 122°F (-20°C ~ 50°C, according to IEC60068-2 with 0.5 m/s AirFlow)		14°F ~ 158°F (-10°C ~ 70°C), with 0.5m/s airflow
Storage Temperature	-49°F ~176°F (-45°C ~ 80°C)	-40 °F ~ 176°F(-40°C ~ 80°C)	
Storage Humidity	95% @ 40°C, non-condensing		
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation – MicroSD or eMMC	Random, 3.5Grm, 5~500Hz	
Anti-Shock	—		50G peak acceleration (11 msec. duration,eMMC)
Certification	CE/FCC class A		
Note	TAIWAN EXCELLENCE 2021		

Note: All specifications are subject to change without notice.

AI@Edge Solutions

Model	BOXER-8240AI	BOXER-8250AI	BOXER-8251AI
System			
AI Accelerator	NVidia® AGX Xavier	Nvidia Jetson Xavier NX	Nvidia Jetson Xavier NX
CPU	8-core ARM v8.2 64bit CPU, 8MB L2 + 4MB L3	6-core NVIDIA Carmel ARM® v8.2 64-bit CP	6 Core ARM® Carmel®V8.2 64bit CPU 6MB L2 + 4MB L3
System Memory	32 GB 256-Bit LPDDR4 x 1 137 GB/s	8GB LPDDR4x	8GB LPDDR4
Storage Device	32GB eMMC 5.1, Micro SD card slot 2.5" SATA drive bay, M.2 Key M 2280	16 eMMC and MicroSD card slot (A1, A3) 16 eMMC and MicroSD card slot and 2.5" HDD drive(A4)	16GB eMMC + MicroSD
Display Interface	HDMI 2.0 x 1	HDMI 2.0	
Ethernet	10/100/1000 Base-TX with IEEE 802.11 af PoE LAN x 4	10/100/1000Base-TX x 5	10/100/1000Base-TX x 1
I/O	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 x1, DP 1.4 x 1 Mic-in x 1, Line-out x 1, MicroSD slot x 1 Micro USB x 1 for O.S Flash Recovery button x 1, Power button x 1	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
Expansion	Expansion header 40-pin GPIO, compliance with Nvidia Dev Kit 40 pins (4 pins CANBUS occupied) , USB 2.0 header x 1 (Optional, circuit reserved), M.2 Key E 2230 x 1 for WiFi/ Bluetooth (PCIe[x1] + USB), M.2 Key M 2280 x 1 (PCIe[x4]), SATA x 1, RS-232/422/485 pin header x 1	—	M.2 E-Key 2230 x 1(for WiFi)
Indicator	Power LED x 1		
OS support	Linux (AAEON ACLinux 4.9), Linux (NVIDIA Jetpack 4.5)		
Power Supply			
Power Requirement	DC 12V~24V 2-pin terminal	10 ~ 24V DC with 2-pin terminal block	12Vdc w/ 2-pin terminal block
Mechanical			
Mounting	Wallmount		
Dimensions (W x H x D)	8.26" x 6.46" x 2.32" (210mm x 164.2mm x 59mm)	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)	3.46" x 2.95" x 1.53" (88mm x 75mm x 39mm)
Gross Weight	6 lbs (2.72kg)	A1, A3 : 2.48 lbs (1.12 kg) A4 : 3.5lbs (1.6kg)	1.10 lb (0.5 kg)
Net Weight	4.23 lbs (1.92kg)	A1, A3 : 1.46 lbs (0.66 kg) A4 : 2.0lbs (0.91kg)	0.66 lb (0.3 kg)
Environmental			
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C, according to IEC60068-2 with 0.5 m/s AirFlow)	A1, A3 : 14°F ~ 149°F (-10°C ~ 65°C, according to IEC60068-2 with 0.5 m/s AirFlow) A4 : -13°F ~ 158°F (-25°C ~ 70°C, according to IEC60068-2 with 0.5 m/s AirFlow)	15W, 6 Core, 1.4GHz, -20°C ~ 40°C
Storage Temperature	-40 °F ~ 158°F(-40°C ~ 70°C)	-40°F ~ 176°F (-40°C ~ 80°C)	-40°F ~ 158°F (-40°C ~ 70°C)
Storage Humidity	95% @ 40°C, non-condensing		
Anti-Vibration	Random, 3 Grms, 5 ~ 500Hz	3.5Grm / 5~500Hz / operation (eMMC, MicroSD, or SSD)	3 Grms/ 5 ~ 500Hz/ operation – MicroSD or eMMC
Anti-Shock	—		
Certification	CE/FCC class A		

Note: All specifications are subject to change without notice.

System Level Products

AI@Edge Solutions

Model	BOXER-8253AI	BOXER-8254AI	BOXER-8310AI
System			
AI Accelerator	Nvidia Jetson Xavier NX		Intel® Movidius™ Myriad™ X x 1
CPU	6 Core ARM® Carmel®V8.2 64bit CPU 6MB L2 + 4MB L3		Intel® Pentium® N4200 Intel® Celeron® N3350
System Memory	8GB LPDDR4x	8GB LPDDR4	DDR3L SO-DIMM slot x 1 Supports 1867 MHz and up to 8GB
Storage Device	16GB eMMC + MicroSD card expasion		mSATA
Display Interface	HDMI Type A for HDMI 2.0 output x 1	HDMI 2.0	HDMI 1.4, VGA
Ethernet	POE PSE LAN x 2 (802.3at)	POE PSE LAN x 8 (802.3af)	10/100/1000 Base-TX x 2
I/O	USB Type A x 4 for USB 3.2 Gen 1 USB Micro A/B x 1 for OS Flash RJ-45 x 2 for PoE/PSE (802.3at) (Total 60W) RJ-45 x 1 for GbE LAN DB-9 x 1 for RS-232/485 & CANbus DB15 x1 for Digital I/O 13-Channel (programmable) Recovery Button x 1, MicroSD card slot x 1 Antenna opening x 4, HDMI Type A for HDMI 2.0 output x 1 HDMI Type A for HDMI 1.4 input x 1 Power Button x 1	RJ-45 x 8 for 10/100 PoE (802.11af, total 120W), RJ-45 x 2 for GbE LAN USB Type A x 1 for USB 3.2 Gen 2 USB Type A x 3 for USB 2.0 USB Micro A/B x 1 for OS Flash HDMI type A x1 for HDMI 2.0 a/b DB-9 x 1 for RS-232/485 COM switch x 1 for RS-232/485 DB-9 x 1 for CANbus DB-9 x 1 for Digital I/O 8-channel (programmable) MicroSD slot x 1, Power ON/OFF switch x 1 Recovery button x 1, Reset button x 1 Antenna Opening x 4	Power Button x 1 USB Type A x 4 for USB 3.2 Gen 1 HDMI type A x 1 for HDMI v1.4b RJ45 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, Mic-in x 1, Line-out x 1 DB-9 x 3 for RS-242/422/485 (Switch by BIOS) DB-15 x 1 for VGA, Remote On/Off Antenna Holes x 2 DC-in 3-pin terminal block(9~24V) x 1
Expansion	Full-size minicard slot x1 (PCIe/USB/mSATA, default PCIe) M.2 E-Key 2230 x 1 (for WiFi) SIM socket x 1 SATA III (6.0 Gbps) port x 1 for 2.5" drive	Full-Size minicard slot x 1 (PCIe/USB/ mSATA, default PCIe) M.2 E-Key 2230 x 1 for WiFi, SIM socket x 1 SATA III port x 1 for 2.5" drive Header x 1 for RS-232 x1 Header x 1 for USB2.0 x 1 Wafer x 1 for Mic-in x 1 & Lin-out x 1	Half-size Minicard slot x 1 (mSATA only)
Indicator	Power LED x 1		Power LED x1, HDD active LED x1
OS support	AAEON ACLinux 4.9 (Compliance with Ubantu 18.04)	AAEON ACLinux 4.9, Compliance with Ubantu 18.04	Linux (Debian 9.8)
Power Supply			
Power Requirement	12~24V DC with 2-pin terminal block	DC 24V with 2-pin terminal block ATX mode	3 Pin 9-24V DC-in terminal block
Mechanical			
Mounting	Wall mount kit	Wall mount kit (default)	Wallmount
Dimensions (W x H x D)	7.09 " x 5.35 " x 2.41" (180.0 mm x 136 .0 mm x 61.1 mm)	210mm x 164.2mm x 67mm	6.54" x 4.2" x 1.38" (166mm x 106.6mm x 35mm)
Gross Weight	4.63 lbs. (2.1 kg)	TBD	3.6 lb (1.6kg)
Net Weight	2.87 lbs. (1.3 kg)	TBD	1.3 lb (0.6 kg)
Environmental			
Operating Temperature	5°F ~ 131°F (-15°C ~ 55°C with 0.5 m/s airflow)	14°F ~ 140°F (-10°C ~ 60°C, according to IEC60068-2 with 0.5 m/s AirFlow)	-13°F ~ 131°F (-25°C ~ 55°C) with W.T. SSD (according to IEC68-2-14 with 0.5 m/s airFlow ; with industrial devices)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)		-4°F ~ 158°F (-20°C ~ 70°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing		95% @ 40°C, non-condensing
Anti-Vibration	3.5Grm / 5~500Hz / operation-eMMC,MicroSD or mSATA	Random, 3.5 Grms, 5~500Hz	3 Grms/ 5 ~ 500Hz/ operation – mSATA
Anti-Shock	50G peak acceleration (11 msec. duration,eMMC,microSD,or mSATA)	—	—
Certification	CE / FCC class A		

Note: All specifications are subject to change without notice.

AI@Edge Solutions

Model	BOXER-8320AI
System	
AI Accelerator	Intel® Movidius™ Myriad™ X x 2
CPU	Intel® Core™ i3-6100U
System Memory	DDR4 2133MHz SODIMM slot x 1, up to 16GB
Storage Device	HDD/SSD
Display Interface	HDMI, VGA
Ethernet	10/100/1000 Base-TX x 2
I/O	DB-9 x4 for RS-232/422/485 RJ-45 x 2 for GbE (i210IT x 2) USB 3.2 Gen 1 x 4 VGA x 1 HDMI x 1 Antenna Holes x 2 Power Button Power Input
Expansion	—
Indicator	Power LED x 1
OS support	Linux (Debian 9.8)
Power Supply	
Power Requirement	9~30V 3 pin DC-in terminal block
Mechanical	
Mounting	DIN Rail Mount, Wallmount (Monting kit is optional)
Dimensions (W x H x D)	2.68" x 7.33" x 5.96" (67mm x 186.2mm x 151.5 mm)
Gross Weight	6.1 lb (2.8kg)
Net Weight	3.9 lb (1.8kg)
Environmental	
Operating Temperature	-13°F ~140°F (-25°C ~ 60°C) with W.T. SSD (according to IEC68-2-14 with 0.5 m/s airFlow ; with industrial devices)
Storage Temperature	-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity	95% @ 40°C, non-condensing
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation - SSD 1 Grms/ 5~ 500Hz/ operation - HDD
Anti-Shock	—
Certification	CE/FCC class A
Note	

Note: All specifications are subject to change without notice.

System Level Products

AI@Edge Solutions

Model	BOXER-8521AI
System	
AI Accelerator	Google Edge TPU ML accelerator coprocessor
CPU	NXP i.MX 8M SoC (Quad-core Cortex-A53, plus Cortex-M4F)
System Memory	1GB LPDDR4x
Storage Device	8GB eMMC
Display Interface	HDMI 2.0 x 1
Ethernet	10/100/1000Base-TX x 1
I/O	HDMI 2.0a x 1 USB Type A x 2 for USB3.2 Gen 1 USB Type A x 2 for USB2.0 RJ-45 x 1 for GbE LAN & PoE/PD(802.3at) 12Vdc (DC Jack w/lockable) Mic –in x 1 Line-out x 1 40-pin I/O x 1 (GPIO/I2C/SAI/SPI/UART/PWM) DB-9 x 1 for RS-232/485 OS Flash port x 1 (Micro USB) Micro-SD slot x 1
Expansion	—
Indicator	Power LED x 1
OS Support	ACLinux 4.0 (Compatible with Debian 10)
Power Supply	
Power Requirement	PoE/PD (802.3at) 12Vdc (DC Jack w/lockable)
Mechanical	
Mounting	Wallmount
Dimensions (W x H x D)	6.92" x 3.94" x 1.54" (175 .8 mm x 100 .0 mm x 39 .0 mm)
Gross Weight	2.31 lbs. (1.05 kg)
Net Weight	1.28 lbs. (0.58 kg)
Environmental	
Operating Temperature	23°F ~ 122°F (-5°C ~ 50°C, according to IEC60068-2 with 0.5 m/s airflow)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)
Storage Humidity	95% @ 40°C, non-condensing
Anti-Vibration	Random, 3.5Grm, 5~500Hz
Anti-Shock	50G peak acceleration (11 msec. duration,eMMC,microSD)
Certification	CE/FCC class A
Note	

AI@Edge Solutions

Model	BOXER-8255AI	BOXER-8230AI
System		
AI Accelerator	Nvidia Jetson Xavier NX	NVIDIA® Jetson™ TX2 NX
CPU	6 Core ARM® Carmel®V8.2 64bit CPU 6MB L2 + 4MB L3	NVIDIA® Denver 2 (Dual-Core) Processor & ARM® Cortex® -A57 MPCore (Quad-Core) Processor
System Memory	8GB LPDDR4x	4GB 128-bit LPDDR4 @ 1600 MHz
Storage Device	16GB eMMC 5.1 MicroSD slot x 1 Full-size mSATA slot x 1 2.5" SATA drive space x 1	eMMC 5.1 16GB MicroSD card slot x 1 2.5" SATA drive bay x 1 (A4 only)
Display Interface	HDMI 2.0	HDMI Type A x 1 for HDMI 2.0
Ethernet	10/100/1000Base-TX x 1	RJ-45 x 5 for GbE LAN
I/O	USB 3.2 Gen 1 x 3, LAN x 1 CANBUS (J1939) x 1 isolation CANBUS (J1708) x 1 isolation, RS-232/485 x 1 HDMI Type A x 1 for HDMI 2.0, Digital I/O x 8 Channel GMSL Fakra port x 6, MicroSD slot x 1, Recovery button x 1 Micro-USB for Flash OS x 1, Power button x 1 with LED indicator	HDMI Type A x 1 for HDMI 2.0 RJ-45 x 5 for GbE LAN, 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
Expansion	Full size Mini-PCIe slot x 1 (PCIe, USB, and SATA, default PCIe) M.2 E-Key 2230 x 1 (for WiFi) M.2 B-key 3052 x 1 (for 5G module) 4G SIM socket 5G SIM socket SATA III port for 2.5"" drive	SATA III Port x 1 for 2.5" SATA drive (A4 only)
Indicator	Power LED x 1	
OS support	Ubuntu 18.04	
Power Supply		
Power Requirement	9~40Vdc with 2-pin terminal block with ACC on/off delay	DC-in 10V~24V with 2-pin terminal block ATX mode
Mechanical		
Mounting	—	Wallmount kit
Dimensions (W x H x D)	TBD	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)
Gross Weight	TBD	A3 : 2.91lbs (1.3kg) A4 : 3.5lbs (1.6kg)
Net Weight	TBD	A3 : 1.51lbs (0.67kg) A4 : 2.0lbs (0.91kg)
Environmental		
Operating Temperature	-13°F ~ 158°F (-25°C ~ 70°C , according to IEC60068-2 with 0.5 m/s AirFlow)	A3 : -13°F ~ 149°F(-25°C ~ 65°C,according to IEC60068-2 with 0.5 m/s AirFlow) A4 : -13°F ~ 167°F(-25°C ~ 75°C,according to IEC60068-2 with 0.5 m/s AirFlow)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	
Storage Humidity	5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	3.5Grm / 5~500Hz / operation-eMMC,MicroSD, mSATA, or SSD	3.5Grm / 5~500Hz / operation (eMMC, MicroSD, or SSD)
Anti-Shock	50G peak acceleration (11 msec. duration,eMMC,microSD, mSATA, or SSD)	50G peak acceleration (11 msec. duration, eMMC, microSD, or SSD)
Certification	CE/FCC class A	
Note		

Note: All specifications are subject to change without notice.

System Level Products

AI@Edge Solutions

Launching in Q3

Model	BOXER-8231AI	BOXER-8233AI	BOXER-8241
System			
AI Accelerator	Nvidia Jetson Xavier NX	NVIDIA® Jetson™ TX2 NX	8-core ARM v8.2 64bit CPU, 8MB L2 + 4MB L3
CPU	6 Core ARM® Carmel®V8.2 64bit CPU 6MB L2 + 4MB L3	NVIDIA® Denver 2 (Dual-Core) Processor & ARM® Cortex® -A57 MPCore (Quad-Core) Processor	—
System Memory	8GB LPDDR4x	4GB 128-bit LPDDR4 @ 1600 MHz	32 GB 256-Bit LPDDR4 x 1
Storage Device	16GB eMMC 5.1 MicroSD slot x 1	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 Micro-SD 2.5"" HDD Drive M.2 Key M 2280
Display Interface	HDMI 2.0	HDMI Type A x 1 for HDMI 2.0	HDMI 2.0 x 1 Display Port x 1
Ethernet	10/100/1000Base-TX x 1	RJ-45 x 2 for GbE PoE/PSE (802.3at) RJ-45 x 1 for GbE LAN	LAN x 1
I/O	USB 3.2 Gen 1 x 4 LAN x 1 RS-232 x 2 HDMI x 1 MicroSD x 1 DC Power Input x 1 Recovery Button x 1 Micro-USB for Flash OS x 1	USB Type A x 4 for USB 3.2 Gen 1 DB-9 x 1 for RS-232/485 & CANbus DB15 x1 Female for Digital I/O 13-channel (Programmable) HDMI Type A x 1 for HDMI 2.0 (Output) HDMI Type A 1.4 x 1 (Input) MicroSD slot x 1 Micro USB x 1 for O.S Flash Recovery button x 1 Power button with power LED x 1 Antenna opening x 4	USB Type A x 1, USB Type C x 2, RS-232/422/485 x 1
Expansion	M.2 E-Key 2230 x 1(for WiFi)	Full-size minicard x 1 with SIM socket (for LTE/ mSATA) M.2 E-Key 2230 x 1 (for WiFi) SATA III (6.0 Gbps) Port x 1 for 2.5" SATA drive	M.2 E Key x 1 M.2 B Key x 1 M.2 M Key x 1 Mini Card x 1 (Full-size)
Indicator	—	Power LED x 1	
OS support	Ubuntu 18.04	nVIDIA Ubantu 18.04	NVIDIA Jetpack 4.5
Power Supply			
Power Requirement	12Vdc w/ 2-pin terminal block	DC 12V~24V with 2-pin terminal block ATX mode	12Vdc w/DC Jack
Mechanical			
Mounting	—	Wallmount kit	
Dimensions (W x H x D)	3.64" x 2.95" x 1.54" (88mm x 75mm x 39mm)	7.09" x 5.35" x 2.41" (180.0 mm x 136 .0 mm x 61.1 mm)	TBD
Gross Weight	1.10 lb (0.5 kg)	TBD	
Net Weight	0.66 lb (0.3 kg)	TBD	
Environmental			
Operating Temperature	-13°F ~ 122°F (-25°C ~ 50°C , according to IEC60068-2 with 0.5 m/s AirFlow)	5°F ~ 131°F (-15°C ~ 55°C, according to IEC60068-2 with 0.5 m/s airflow)	14°F ~ 104°F (-10°C ~ 40°C) with 0.5 m/s airflow
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)		TBD
Storage Humidity	5 ~ 95% @ 40°C, non-condensing		TBD
Anti-Vibration	3.5Grm / 5~500Hz / operation-eMMC, MicroSD	3.5Grm / 5~500Hz / operation (eMMC, MicroSD, mSATA, or SSD)	1Grm / 5~500Hz / operation-eMMC
Anti-Shock	50G peak acceleration (11 msec. duration,eMMC,microSD)	50G peak acceleration (11 msec. duration, eMMC, microSD, mSATA, or SSD)	TBD
Certification	CE/FCC class A		CE / FCC Class B
Note			

Note: All specifications are subject to change without notice.

AI@Edge Solutions

Model	VPC-3350AI	VPC-5620AI
System		
Form Factor	Multi-PoE & Fanless Appliance	
Processor	Intel® Pentium®/ Celeron®/ Atom™ Processor (Default: E3940; Project base: N4200/N3350, or E3950 w/ customized chassis)	8th Gen Intel® Core™ (formerly Whisky Lake)(Default: i7-8665UE; Project base: i5-8365UE, i3-8145UE or 4305UE)
AI Accelerator	2 x Intel® Myriad™ X, up to 4 Myriad™ X (Project base)	The Gen 3 Intel® Movidius™ VPU M.2 2280 (formerly Keem Bay)
Main Memory	Up to 8GB, DDR3L 204-pin SODIMM	Up to 64GB, DDR4 260-pin SODIMM
Display	HDMI x 1, DP x 1	
Ethernet	Intel® i211 (colay i210)	GbE x 1, Intel i211, support Wake on LAN and PXE supported
PoE Ethernet Port	4 ports, sharing 60W of power budget for every four PoE ports	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)
RAID support	—	0/1
Expansion Slot	SATA x 1	mPCIe Full-Size x 1 (USB+PCIe) mPCIe Full-Size x 1 (USB+SATA) colay SATA
GPS	—	
Front I/O Panel	Power Button x 1, Reset Button x 1, Power/HDD, LED x 2, USB 3.2 Gen 1 x 2, GbE port (RJ-45) x 1, PoE LAN x 4 (IEEE 802.3 at/af), HDMI x 1	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 x 2, Antenna holes x 2
Rear I/O Panel	DC-In power x 1 8-bit DIO x 1, 4-ch digital input , 4-ch digital output RS-232/422/485 x 2 DP x 1 Audio Line-out x 1, Mic-In x 1 Micro SIM slot x 2	jack for Line out & MIC in x 1 HDMI x 1 RS-232/422/485 x 2 (Isolated by BOM option) HW Reset x 1, 3pin Power input x 1 8 bits DIO (Isolated 4DI & 4DO / 8DI/ 8DO by BOM option) Antenna holes x 2
Storage		
HDD Tray	2.5” HDD/SSD Bay x 1	2.5” HDD/SSD Bay x 2
CF/CFast/mSATA Slot	—	
Environmental		
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	TBD
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Storage Humidity	10%~80% @40°C, non-condensing	
Vibration/Shock	MIL-STD-810G	
Certification	CE & FCC Class A	
Power Requirement		
Power Supply	DC 12-24V	
Mechanical		
Removable HDD Tray	—	
Internal System HDD Bay	—	
Dimension	6.3” x 5.28” x 2.44” (160mm x 134mm x 62mm)	TBD
Gross Weight	5.07 lb (2.3 kg)	TBD
Note		

Note: All specifications are subject to change without notice.

System Level Products

IoT Gateway & Protocol Expansion

Model	AIOT-IP6801	AIOT-AIVD
System		
CPU	Intel® Atom™ E3940 Processor Intel® Celeron® N3350 Processor	Intel® Pentium® N4200 Processor
Chipset	Intel® System on Chip	
Memory	Onboard 4GB/ 2GB LPDDR4 memory	Onboard 8GB LPDDR4 memory
Storage	32GB eMMC on board	64GB eMMC on board 500GB HDD x 1 (Optional)
Display	HDMI	HDMI x 1, DP x 1
Ethernet	Standard: Realtek 8111G x 1 Wide temperature: Intel i211 x 1	Realtek® 8111G x 2
USB	USB 3.2 Gen 1 x 1	USB 3.2 Gen 1 x 3
COM	RS-232/422/485 x 2	—
Digital I/O	—	
Expansion Slot	Mini Pcie card x 1 Sim Card x 1	AI core X mini card module x 1 M.2 2230 E-Key x 1
Indicator	—	
WI-FI	801.11ac	801.11ac (Optional)
Bluetooth	BT4.0	BT4.0 (Optional)
LORA	868/915 MHz (Optional)	—
PoE	IEEE802.3 AT Standard, Max 25W Power Supply	—
OS Support	Microsoft Windows 10 (full), Windows IOT Core, Linux ubilinux, Ubuntu, Yocto	Windows® 10, Linux Ubuntu, OpenVino
I/O Placements		
Front I/O	M12 Connector x 1 (RS-232), Reset button x 1, GND Screw x 1, Antenna connector x 1, Antenna x 1	RJ45 Connector x 2, Power button x 1, HDMI x 1, DP x 1, USB3.0 x 2, Power input x 1, Power button x 1
Rear I/O	RJ45 Connector x 1, HDMI Connector x 1, USB 3.2 Gen 1 Connector x 1, M12 Connector x 1 (RS-232), Antenna connector x 1, Antenna x 1	USB 3.2 Gen 1 x 1 Antenna connector x 1 (Optional)
Right side I/O	—	Antenna connector x 1 (Optional)
Left side I/O	—	Antenna connector x 1 (Optional)
Power		
Power Requirement	5V DC in	
Mechanical		
IP	IP68	—
Dimesion	9.43" x 6.28" x 2.73" (239.4 mm x 159.4 mm x 69.4 mm)	4.96" x 3.74" x 2.28" (126 mm x 95 mm x 58 mm)
Mounting	Wallmount	VESA Mount
Gross Weight	7.8lb (3.5kg)	2.4lb (1.1 kg)
Net Weight	5.6lb (2.5kg)	1.5lb (0.7 kg)
Environment		
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C) (E3940) 32°F ~ 122°F (0°C ~ 50°C) (N3350)	32°F ~ 140°F (0°C ~ 60°C)
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	5~95% @ 40°C, non-condensing	
Anti-Vibration	3 Grms /5 ~500Hz/Operation	3 Grms/ 5 ~ 500Hz/ operation – eMMC 1 Grms/ 5~ 500Hz/ operation – HDD
Certification	CE, FCC Class A	
Note		

Note: All specifications are subject to change without notice.

IoT Gateway & Protocol Expansion

Model	SRG-3352	SRG-3352C	SRG-IMX8P
System			
Processor	ARM Cortex-A8 800 MHz RISC Processor	ARM Cortex-A8 800 MHz RISC Processor	ARM NXP i.MX8M Plus Quad-Core Cortex-A53 1.6GHz Processor
System Memory	Onboard DDR3L 1GB		Onboard DDR4L 2GB (Optional 4GB)
DISPLAY	—		HDMI 2.0b x 1 (Optional)
RTC	Serial real time clock x 1		
Expansion Interface	3G/4G LTE mini PCIe connector; NB-IoT connector; SIM card socket x 1		3G/4G LTE mini PCIe connector x 2 (USB signal); M.2 3042/3052 connector x 1 (PCIe signal, USB 3.0)
Battery	3V CR2032 Lithium battery for RTC		
Power Requirement	DC9-30V	DC10-30V	DC 9-36V
Power Consumption	2.28 W	1.8 W	TBD
Dimension	5.67" x 3.94" x 1.73"(109 x 110 x 39 mm)	4.3" x 4.33" x 1.54" (109 x 110 x 39 mm)	5.33" x 4.33" x 1.81"(135.5 x 110 x 46 mm)
Gross Weight	512 g	430 g	TBD
Operation Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)		-4 °F ~ 158 °F (-20 °C ~ 70 °C)
Storage Temperature	-40 °F ~ 176 °F (-40 °C ~ 80 °C)		
Operation Humidity	10% ~ 95% relative humidity, non-condensing		
MTBF (Hours)	855590		TBD
Wireless	—	On board WiFi/Bluetooth Module x 1	—
OS SUPPORT	Debain 9		Debain 10
Pre-install Library	Modbus/MQTT Library		
I/O			
Storage	eMMC 8G; Micro SD slot		eMMC 16G (Optional 32GB) ; Micro SD slot
Serial Port	RS-485 x 2		
LAN	Gigabit Ethernet, RJ-45 x 2		
USB	USB 2.0 x 2		USB 3.0 x1, USB 2.0 x3
GPIO	4 LED control		7 LED control
OUTPUT INTERFACE	—	—	CAN-FD x2 2 channels Isolated DI, OFF:0~8V, ON:9~24V, 1 channel Isolated DO, DC 24V (100mA/channel)
Note			

Note: All specifications are subject to change without notice.

System Level Products

IoT Gateway & Protocol Expansion

Launching in Q3

Model	SRG-TG01	SRG-APL01
System		
Processor	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) Celeron® 6305E (2C, 1.80GHz,TDP 15W)	Intel Atom X5-E3940, 1.6GHz
System Memory	Support DDR4 3200MHz SODIMM x2	Onboard LPDDR4 1866MHz 8GB
DISPLAY	HDMI 2.0b x 1	HDMI (3840 x 2160 @ 30Hz)
RTC	Serial real time clock x 1	
Expansion Interface	M.2 E key 2230 x 1 (For WIFI/BT, PCIe/USB signal only) M.2 M key 2280 x1 (SSD, PCIe GEN4 x 4) M.2 B key 3042 x1 (5G, PCIe x1, USB3.2 Gen2 x1)	—
Battery	3V CR2032 Lithium battery for RTC	3V CR2032 Lithium battery for RTC
Power Requirement	DC9 ~ 36V (Optional: +12V)	DC12V
Power Consumption	TBD	
Dimension	TBD	95.00 x 80.28 x 40.60 mm
Gross Weight	TBD	
Operation Temperature	32 °F ~ 140 °F (0 °C ~ 60 °C)	
Storage Temperature	-4 °F ~ 176 °F (-20 °C ~ 80 °C)	
Operation Humidity	0~90% @ 40°C, non-condensing	10% ~ 80% relative humidity, non-condensing
MTBF (Hours)	TBD	
Wireless	—	
OS SUPPORT	Windows 10, Ubuntu 20.04 (2020/04 - 2025/04)	Windows 10, Ubuntu 16.04
Pre-install Library	Modbus/MQTT Library	
I/O		
Storage	SATA 3.0 x 1 (Up to 64GB) SATA Power connector (12V/5V)	eMMC 5.1 32GB, Micro SD slot x 1
Serial Port	RS-232/422/485 x 4	—
LAN	Intel ®i219-LM,10/100/1000Base,RJ45 x 2 (Support Vpro) Intel ®i225-LM,10/100/1000Base,RJ45 x 1 (Support Vpro)	Gigabit Ethernet, RJ-45 x 1
USB	USB3.2 GEN2 x 1 (Rear I/O) USB3.2 GEN1 x 3 (Rear I/O)	USB 3.0 x 1
GPIO	8 bit	—
OUTPUT INTERFACE	CAN 2.0 x2	—
Note		

Note: All specifications are subject to change without notice.

IoT Gateway & Protocol Expansion

Model	SRG-4858P	SRG-ADIO
System		
Processor	ARM Cortex-A8 800 MHz RISC Processor	
System Memory	Onboard DDR3L 1GB	
DISPLAY	—	
RTC	Serial real time clock x 1	
Expansion Interface	3G/4G LTE mini PCIe connector; NB-IoT connector; SIM card socket x 1	
Battery	3V CR2032 Lithium battery for RTC	
Power Requirement	DC9-30V	DC10-30V
Power Consumption	2.28 W	1.8 W
Dimension	5.67" x 3.94" x 1.73"(109 x 110 x 39 mm)	4.3" x 4.33" x 1.54" (109 x 110 x 39 mm)
Gross Weight	550 g	470 g
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	
MTBF (Hours)	855590	
Wireless	—	On board WiFi/Bluetooth Module x 1
OS SUPPORT	Debain 9	Debain 10
Pre-install Library	Modbus/MQTT Library	
I/O		
Storage	eMMC 8G; Micro SD slot	
Serial Port	RS-485 x 10	—
LAN	Gigabit Ethernet, RJ-45 x 2	
USB	USB 2.0 x 2	
GPIO	4 LED control	
OUTPUT INTERFACE	—	16bit ADC for 2 CH differential Type or 4 CH single-End Type Isolated 4 CH Digital Input Isolated 4 CH Digital Output
Note		

Note: All specifications are subject to change without notice.

System Level Products

IoT Gateway & Protocol Expansion

Model	SRG-ACAN	SRG-I485
System		
Processor	ARM Cortex-A8 800 MHz RISC Processor	
System Memory	Onboard DDR3L 1GB	
DISPLAY	—	
RTC	Serial real time clock x 1	
Expansion Interface	3G/4G LTE mini PCIe connector; NB-IoT connector; SIM card socket x 1	
Battery	3V CR2032 Lithium battery for RTC	
Power Requirement	DC10-30V	
Power Consumption	1.8 W	
Dimension	4.3" x 4.33" x 1.54" (109 x 110 x 39 mm)	
Gross Weight	470 g	
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	
MTBF (Hours)	855590	
Wireless	On board WiFi/Bluetooth Module x 1	
OS SUPPORT	Debain 10	
Pre-install Library	Modbus/MQTT Library	
I/O		
Storage	eMMC 8G; Micro SD slot	
Serial Port	—	Isolation RS-485 x 2
LAN	Gigabit Ethernet, RJ-45 x 2	
USB	USB 2.0 x 2	
GPIO	4 LED control	
OUTPUT INTERFACE	16bit ADC for 2 CH differential Type or 4 CH single-End Type 2 CH CANBus 1 CH RS232/422/485 switchable	4 LED control
Note		

Note: All specifications are subject to change without notice.

IoT Gateway & Protocol Expansion

Launching in Q3

Launching in Q3

Model	SPG-MG22	SPG-P2020-00	SPG-P2020-WF
System			
Processor	Core: Arm 32-bit Cortex-M4 180MHz	Arm Cortex-M4 Core 80 MHz	
System Memory	256KB of SRAM	40KB of SRAM	
DISPLAY	—		
RTC	32 kHz crystal oscillator		
Expansion Interface	4G LTE/CAT-M1/CAT-NB mini PCIe connector;SIM card socket x 2;RF module connector	—	
Battery	—		
Power Requirement	DC12-24V	DC5-12V	DC5-12V
Power Consumption	TBD	1.5W	
Dimension	6.06" x 4.17" x 1.06"(154 x 106 x 27 mm)	3.31" x 1.82" x 0.55"(84.3 x 46.3 x 14 mm)	
Gross Weight	90 g		
Operation Temperature	-4 °F ~ 158 °F (-20°C ~ 70 °C)		
Storage Temperature	-40 °F ~ 185 °F (-40 °C ~ 85 °C)		
Operation Humidity	5% ~ 95% relative humidity, non-condensing		
MTBF (Hours)	TBD		
Wireless	—		On board WiFi chip
OS SUPPORT	—		
Pre-install Library	—		
I/O			
Storage	Micro SD slot Max. 32GB	— —	
Serial Port	RS-485 x 2	RS-485 x 1	
LAN	10/100M, RJ45 x 2	—	
USB	USB 2.0 x 1 (UART port)		
GPIO	10 LED control	3 LED control	
OUTPUT INTERFACE	"Isolated 4 CH Digital Input Relay Output 1CH"	—	
Note			

Note: All specifications are subject to change without notice.

System Level Products

Vision System BOX PC Solutions

Model	BOXER-6405M	BOXER-6404M
System		
CPU	Intel® Celeron®/Pentium® processor	Intel® Celeron™ J1900, 2.0 GHz Intel® Celeron™ N2807, 1.58 GHz
Chipset	Intel® System on Chip	
System memory	DDR3L SO-DIMM slot x 1 Supports 1867MHz and up to 8GB	DDR3L 1333 SODIMM slot x 1, up to 8 GB (J1900) or 4 GB (N2807)
Display Interface	HDMI type A x 1 for HDMI v1.4b VGA x 1	HDMI
Storage Device	HDD/SSD, (mSATA BOM option)	CFast™, HDD/SSD
Ethernet	Intel® i211-AT x 2	Intel® I211, 10/100/1000Base-TX x 4
I/O	Power Button x 1 USB Type A x 4 for USB 3.2 Gen 1 HDMI type A x 1 for HDMI v1.4b RJ-45 x 2 for GbE LAN with LED indicator (i211-AT x 2) Power input x 1 3-pin terminal block in default (+, - , GND) Co-layout 3-pin terminal block & lockable DC-in jack,) Co-layout internal DC Mic-in x 1, Line-out x 1 RS-232/422/485 x 4 with automatic flow control (switch by BIOS) VGA x 1 Remote On/Off Antenna opening x 2	RS-232 x 1 USB 2.0 x 2 USB 3.2 Gen 1 x 1 HDMI x 2 LAN x 4 CFast slot x 1 Antenna holes x 1 Power button Power input
Expansion	Full-size Mini PCIe slot x 1 (PCIe/USB/SIM slot), one screw Half-size Minicard slot x 1 (optional for mSATA,PCIE/mSATA)	Full-size Mini-Card (USB interface only) x 1
Indicator	Power LED x1, HDD active LED x1	Power LED on power button
OS Support	Windows® 10, Windows® 10 IoT, Linux	Windows® 10, Windows® 8.1, Windows® 7, Windows® Embedded 8, Windows® Embedded 7, Linux Fedora
Power Supply		
Power Requirement	3-pin Phoenix DC Input 9~24V without power protection	12V - 24V with lockable DC jack
Mechanical		
Mounting	Wallmount	VESA (Mounting kit is optional), DIN rail (Mounting kit is optional)
Dimensions (W x H x D)	6.54" x 4.2" x 1.65" (166mm x 106.6mm x 42mm)	6.53" x 4.20" x 2.05" (166mm x 106.6mm x 52mm)
Gross Weight	3.6 lb (1.6kg)	3.81 lb (1.73 kg)
Net Weight	1.7 lb (0.8 kg)	2.8 lb (1.27 kg)
Environmental		
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C) with W.T. mSATA (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial decives)	-22°F ~ 167°F (-30°C ~ 75°C) with wide temperature CFast™ card (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)
Storage Temperature	-22°F ~ 140°F (-30°C ~ 60°C)	-22°F ~ 176°F (-30°C ~ 80°C)
Storage Humidity	95% @ 40°C, non-condensing	
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation – mSATA 1 Grms /5 ~ 500Hz/ operation - HDD	5 Grms/ 5 ~ 500Hz/ operation –CFast™ card or SSD 1 Grms/ 5 ~ 500Hz/ operation –HDD
Certification	CE/FCC class A	
Note		

Note: All specifications are subject to change without notice.

Vision System BOX PC Solutions

Model	BOXER-6841M-A1	BOXER-6841M-A2
System		
CPU	Intel Core-i 6th / 7th 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	
Chipset	Intel® H110 PCH	
System memory	DDR4 ECC or Non-ECC SODIMM, up to 32GB	
Display Interface	HDMI type A x 2 for HDMI v1.4b	
Storage Device	2 x 2.5" Drive Bay	
Ethernet	RJ-45 x 5 for GbE (Intel i211AT x4, i219LM x1)	
I/O	2 pin Remote Power on/off connector Power ON/OFF Switch x 1 HDMI 1.4b x2 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)	
Expansion	Full-size Mini card x2 (USB, w/ 1 SIM slot) 1 x PCIe[x16], max support 180W graphic card - Graphic card size limit: 114.55mm(H) x 350mm (L) 1 x PCIe[x1]	Full-size Mini card x2 (USB, w/ 1 SIM slot) 1 x PCIe[x16], max support 250W graphic card - Extension card size limit: 114.55mm(H) x 350mm (L) 1 x PCIe[x1]
Indicator	Power LED x1, HDD active LED x1	
OS Support	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	
Power Supply		
Power Requirement	DC-In 12~24V - CPU < 65W, No Graphic Card: 120W Adapter - CPU ≤ 65W, 180W Graphic Card: 330W Adapter	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
Mechanical		
Mounting	Wallmount	
Dimensions (W x H x D)	6.10" x 7.87" x 15.75" (155mm x 200mm x 400mm)	
Gross Weight	18.29 lb (8.3 Kg)	
Net Weight	14.53 lb (7 Kg)	
Environmental		
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C) according to IEC60068-2 with 0.5m/s airflow (TDP 35W Processor)	
Storage Temperature	-4°F ~ 176°F (-40°C ~ 80°C)	
Storage Humidity	5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	Random, 1Grm, 5~500Hz, Anti-vibration design	
Certification	CE/FCC class A	
Note		

Note: All specifications are subject to change without notice.

System Level Products

Vision System BOX PC Solutions

Model	BOXER-6841M-A3	BOXER-6841M-A4	BOXER-6841M-A5
System			
CPU	Intel Core-i 6th / 7th 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		
Chipset	Intel® C236 PCH		
System memory	DDR4 ECC or Non-ECC SODIMM, up to 32GB		
Display Interface	HDMI type A x 2 for HDMI v1.4b		
Storage Device	2 x 2.5" Drive Bay		
Ethernet	RJ-45 x 5 for GbE (Intel i211AT x4, i219LM x1)		
I/O	2 pin Remote Power on/off connector Power ON/OFF Switch x 1 HDMI 1.4b x2 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)		
Expansion	Full-size Mini card x2 (USB, w/ 1 SIM slot) 1 x PCIe[x16], max support 180W graphic card - Extension card size limit: 114.55mm(H) x 350mm (L) 1 x PCIe[x1]	Full-size Mini card x2 (USB, w/ 1 SIM slot) 1 x PCIe[x16], max support 250W graphic card - Extension card size limit: 114.55mm(H) x 350mm (L) 1 x PCIe[x1]	Full-size Mini card x2 (USB, w/ 1 SIM slot) 2 x PCIe[x8] - Extension card size limit: 114.55mm(H) x 192mm (L) 1 x PCIe[x1]
Indicator	Power LED x1, HDD active LED x1		Power LED x1, HDD active LED x1
OS Support	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		
Power Supply			
Power Requirement	DC-In 12~24V - CPU < 73W, No Graphic Card: 120W Adapter - CPU ≤ 73W, 180W Graphic Card: 330W Adapter	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
Mechanical			
Mounting	Wallmount		
Dimensions (W x H x D)	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)
Gross Weight	18.29 lb (8.3 Kg)		12.75 lb (5.8 kg)
Net Weight	14.53 lb (7 Kg)		9.9 lb (4.5 Kg)
Environmental			
Operating Temperature	-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)		
Storage Temperature	-4°F ~ 176°F (-40°C ~ 80°C)		
Storage Humidity	5 ~ 95% @ 40°C, non-condensing		
Anti-Vibration	Random, 1Grm, 5~500Hz, Anti-vibration design		
Certification	CE/FCC class A		

Note: All specifications are subject to change without notice.

Vision System BOX PC Solutions

Model	BOXER-6841M-A6	BOXER-6841M-A7
System		
CPU	Intel Core-i 6th / 7th 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	
Chipset	Intel® C236 PCH	
System memory	DDR4 ECC or Non-ECC SODIMM, up to 32GB	
Display Interface	HDMI type A x 2 for HDMI v1.4b, VGA x 1	HDMI 1.4b
Storage Device	2 x 2.5" Drive Bay	
Ethernet	RJ-45 x 5 for GbE (Intel i211AT x4, i219LM x1)	
I/O	2 pin Remote Power on/off connector Power ON/OFF Switch x 1 HDMI 1.4b x2, 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 x4 for USB 3.2 Gen 1 DB-9 x1 for RS-232/422/485 HDMI type A x2 for HDMI v1.4b Power ON/OFF Switch x 1 2 pin Remote Power on/off connector x1 Power input x 1
Expansion	Full-size Mini card x2 (USB, w/ 1 SIM slot) 2 x PCIe[x8] - Extension card size limit: 114.55mm(H) x 192mm (L) 1 x PCIe[x1]	Full-size Mini card x2 (USB, w/ 1 SIM slot) 1 x PCIe[x16], max support 180W graphic card - Extension card size limit: 114.55mm(H) x 192mm (L) 1 x PCIe[x1]
Indicator	Power LED x1, HDD active LED x1	
OS Support	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	
Power Supply		
Power Requirement	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
Mechanical		
Mounting	Wallmount	
Dimensions (W x H x D)	6.10" x 7.87" x 10.24" (155mm x 200mm x 260mm)	
Gross Weight	12.75 lb (5.8 kg)	
Net Weight	9.9 lb (4.5 Kg)	
Environmental		
Operating Temperature	-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)	
Storage Temperature	-4°F ~ 176°F (-40°C ~ 80°C)	
Storage Humidity	5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	Random, 1Grm, 5~500Hz, Anti-vibration design	
Certification	CE/FCC class A	
Note		

Note: All specifications are subject to change without notice.

System Level Products

Vision System BOX PC Solutions

Model	BOXER-6842M
System	
CPU	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
Chipset	C246, No H310 downward support
System memory	DDR4 SO-DIMM socket x4 (double deck), Support max. 2666MHz up to 128GB, Support un-buffered and ECC / non-ECC type SODIMM
Display Interface	HDMI x 2, Support Dual Independent Display, 4K Ultra HD displays
Storage Device	2.5" SATA Drive Bay x2 (4 SATA Port w/ RAID Function), mSATA x 1 (optional), M.2 2280 NVMe SSD slot x 1
Ethernet	RJ-45 x 3 for GbE (Intel i211AT x 2, i219LM x 1)
I/O	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
Expansion	A2/A3/A4/A5 Full-size Minicard x 1 (PCIE + USB with 1 SIM Slot) Half-size Minicard x 1 (PCIE + USB, optional for mSATA) M.2 M key (2280) x 1 (PCIEx4) A2: PCIE [x4] x1 + PCIE [x16] x 1 A3: PCIE [x4] x1 + PCIE [x8] (in x16 slot) x 2 A4: PCIE [x4] x1 + PCIE [x8] (in x16 slot) x2, Support dual Graphics Cards with two power inputs A5: Built in Nvidia Tesla T4 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.
Reserved Connector	Internal, SATA x 2; Internal, 8bit DIO x 1; Internal, USB 2.0 x 4; Internal, LPC x 1; Internal, Secondary System Fan Connector x 1
Indicator	System Power LED x 1 (Green), Storage Active LED x 1 (Red)
OS Support	Windows® 10 Enterprise 64 bit, Ubuntu 18.04.4
Power Supply	
Power Requirement	A2/A3/A4 DC In 12~24V with 3-pin terminal block No Graphics Card: CPU 35W->120W Adapter x 1, CPU 71W->240W Adapter x 1 With 250W Graphics Card x1: 480W Adapter x 1 A4: DC In 12~24V with 3-pin terminal block, With 250W Graphics Card x2: 330W Adapter x 1 + 480W Adapter x 1 A5: DC In 12~24V with 3-pin terminal block, With T4 x 1: 240W Power Adapter x 1, With T4 x 2: 330W Power Adapter x 1
Mechanical	
Mounting	Wallmount
Dimensions (W x H x D)	A2/A3/A5: 6.17" x 8.92" x 12.8" (156.7mm x 226.5mm x 325mm) A4: 7.77" x 8.92" x 12.8" (197.3mm x 226.5mm x 325mm)
Gross Weight	A2/A3: 18.52 lb (8.4 Kg); A4: 20.72 lb (9.4 Kg); A5: 20.5 lb (9.3 Kg)
Net Weight	A2/A3: 15.65 lb (7.1 Kg); A4: 17.86 lb (8.1 Kg); A5: 17.64 (8 Kg)
Environmental	
Operating Temperature	Without Graphics Cards: -4°F ~ 149°F (-20°C ~ 65°C) with 0.5m/s airflow With 250W Graphics Card: 32°F ~ 113°F (0°C ~ 45°C) with 0.5m/s airflow A5: 32°F ~ 113°F (0°C ~ 40°C) with 0.5m/s airflow
Storage Temperature	-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing
Anti-Vibration	HDD: Random, 1Grm, 5~500Hz
Certification	CE / FCC class A

Note: All specifications are subject to change without notice.

Vision System BOX PC Solutions

Model	BOXER-6639M
System	
CPU	**7th Generation Intel® Core™ Processor family:** Intel® Core™ i7-7700T, 2.9 GHz / Intel® Core™ i5-7500T, 2.8 GHz / Intel® Core™ i3-7101TE, 3.4 GHz / Intel® Pentium® G4600T, 3.0 GHz / Intel® Pentium® G4560T, 2.9 GHz / Intel® Celeron® G3930T, 2.7 GHz **6th Generation Intel® Core™ Processor family:** Intel® Core™ i7-6700TE, 2.4 GHz / Intel® Core™ i5-6500TE, 2.3 GHz / Intel® Core™ i3-6100TE, 2.7 GHz / Intel® Pentium® G4500T, 3.0 GHz / Intel® Pentium® G4400T, 2.9 GHz / Intel® Celeron® G3900T, 2.6 GHz
Chipset	Intel® Q170
System memory	DDR4 1866/2133 SODIMM slot x 2, up to 32GB
Display Interface	HDMI, VGA
Storage Device	CFast™, HDD/SSD
Ethernet	Intel® I210, 10/100/1000Base-TX x 3
I/O	RS-232/422/485 x 6 USB Type A x 6 for USB 3.2 Gen 1 USB Type A x 2 for USB 2.0, RJ-45 x 3 for GbE LAN RJ-45 x 4 for PoE (802.3at, max. 80W in total) DB-44 for 34-bit Digital I/O (5V), CFast™ slot x 1 SIM card slot x 1 Power On/Off Button x 1 2 pin Remote power on/off, Reset switch Mic-in x 1, Line-out x 1 Antenna opening x 2 SYS LED indicator x 1 HDD LED indicator x 1 DB-15 x 1 for VGA, HDMI v1.3 x 2 DC-in 3-pin terminal block (12~36V)
Expansion	Full-size Mini-Card x 1 (PCI-E + USB, w/ SIM slot), Full-size Mini-Card x 1 (PCI-E + USB, Optional for mSATA and SIM Slot)
Indicator	Power LED, HDD active LED
OS Support	**7th Generation Intel® Core™ Processor family:** Windows® 10 IOT (64bit), Ubuntu 16.04 above, Fedora 25 above, CentOS 7.3 above **6th Generation Intel® Core™ Processor family:** Windows® 10 IOT (64bit), Windows® 8.1 (64bit), Windows® embedded 8 standard (64bit), Windows® 7 (32bit/64bit), Windows® embedded standard 7 (32/64bit) Ubuntu 16.04 above, Fedora 25 above, CentOS 7.3 above
Power Supply	
Power Requirement	12 - 36V with 3-pin terminal block
Mechanical	
Mounting	Wallmount
Dimensions (W x H x D)	10.4" x 3.8" x 6.1" (264.2mm x 96.4mm x 154.2mm)
Gross Weight	13.0 lb (5.9 kg)
Net Weight	8.8 lb (4.0 kg)
Environmental	
Operating Temperature	-13°F ~ 131°F (-25°C ~ 55°C)(according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)
Storage Temperature	-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing
Anti-Vibration	5 Grms/ 5 ~ 500Hz/ operation – SSD/CFast™ card 1 Grms/ 5~ 500Hz/ operation – HDD
Certification	CE/FCC class A
Note	

Note: All specifications are subject to change without notice.

System Level Products

Compact Fanless BOX PC Solutions

Model	BOXER-6616	BOXER-6615	BOXER-6614
System			
CPU	Intel® Pentium® N4200, 2.5 GHz Intel® Celeron® N3350, 2.4 GHz	Intel® Pentium® N3710 1.6GHz	Intel® Celeron® N2930, 1.83 GHz Intel® Celeron® N2807, 1.58GHz
Chipset	Intel® System on Chip		
System memory	DDR3L 1866 SODIMM slot x 1, up to 8GB	204-pin 1600 DDR3L SODIMM x 1, up to 8GB	DDR3L 1333 SODIMM slot x 1, up to 8 GB (N2930) or 4 GB (N2807)
Display Interface	HDMI (max. 2048 x 1152) VGA (max. 2048 x 1152)	VGA, HDMI	
Storage Device	mSATA, HDD/SSD	mSATA, 2.5" HDD/SSD	CFast™, HDD/SSD
Ethernet	Intel® I211, 10/100/1000Base-TX x 2	Realtek RTL-8111E, 10/100/1000Base x2	Intel® I210/I211, 10/100/1000Base-TX x 2
I/O	RS-232/422/485 x 2, RS-232 x 4 USB 3.2 Gen 1 x 4, VGA x 1 HDMI x 1, LAN x 2, Remote On/Off x 1 Reset Button x 1, AT/ATX DIP Switch Mic-In x 1, Line-Out x 1 Antenna holes x 1, Power button Power input	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 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
Expansion	Full-size Mini-Card x 1 (PCI-E + USB, w/ SIM slot) Half-size Mini-Card x 1 (A1:PCI-E + USB, A2: mSATA + USB)	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 (PCI-E + USB)
Indicator	Power LED HDD active LED		
OS Support	Windows® 10 Pro 64 bit Windows® 10 IoT Ent LTSC 2019 64 bit Ubuntu 16.04 above	Windows® 10, Windows® 8.1 (32/64-bit), Windows® 7 (32/64-bit), WES7/WES8, Windows® 10 IOT, Linux	Windows® 10, Windows® 8.1 (32/64-bit), Windows® 7 (32/64-bit), WES7/WES8, Linux Ubuntu 14.04/ Kernel 3.13.0
Power Supply			
Power Requirement	9-24V with 3-pin terminal block	9 - 30V with 3-pin terminal block (A2M) 12V with lockable DC jack (A2)	9 - 30V with 3-pin terminal block 12V with lockable DC jack
Mechanical			
Mounting	Wallmount DIN Rail (Mounting kit is optional)		
Dimensions (W x H x D)	7.76" x 2.17" x 4.33" (197mm x 55mm x 110mm)	7.76" x 2.17" x 4.33" (197mm x 55mm x 110mm)	8.35" x 4.21" x 2.53" (212.15mm x 107mm x 64.2mm)
Gross Weight	6.6 lb (2.8 kg)		
Net Weight	4.4 lb (2 kg)		
Environmental			
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C) with W.T. SSD/HDD/mSATA (according to IEC682-14 with 0.5 m/s AirFlow; with industrial devices)	-4°F ~ 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 ~ 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)
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)		
Storage Humidity	95% @ 40°C, non-condensing		
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation – mSATA/SSD 1 Grms/ 5~ 500Hz/ operation – HDD	5 Grms/ 5 ~ 500Hz/ operation –mSATA/ SSD 1 Grms/ 5~ 500Hz/ operation – HDD	5 Grms/ 5 ~ 500Hz/ operation –CFast™ card 1 Grms/ 5~ 500Hz/ operation – HDD
Anti-Shock	—		
Certification	CE/FCC class A		CE/FCC class A, UL
Note	TAIWAN EXCELLENCE 2018		

Note: All specifications are subject to change without notice.

Compact Fanless BOX PC Solutions

Model	BOXER-6643-TGU	BOXER-6642-CML
System		
CPU	Intel® Core™ i7-1185G7E Intel® Core™ i5-1145G7E Intel® Core™ i3-1115G4E	Intel® Core™ i9-10900TE Intel® Core™ i7-10700TE Intel® Core™ i5-10500TE Intel® Core™ i3-10100TE Intel® Celeron® G5900TE
Chipset	Intel® SoC	Intel® Q470E
System memory	DDR4 SO-DIMM x 2, up to 64GB	
Display Interface	HDMI 1.4 x 2	HDMI 1.4 x 1
Storage Device	M.2 2280 M key slot x 1 (PCIex4), 2.5" SATA SSD/HDD bay x 1	M.2 2280 slot x 1 (PCIex4), 2.5" SATA SSD/HDD bay x 1
Ethernet	Intel® i219 x 1, i225 x 1	Intel® i211-AT x 1, i219-LM x 1
I/O	HDMI x 2 RJ-45 x 2 for 1G/2.5GbE LAN (i219 x 1, i225 x 1) USB 3.2 Gen 2 x 3 USB 2.0 x 1 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	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
Expansion	M.2 2280 M Key x 1 M.2 3052 B Key x 1 (for 5G module) Full-Size Mini Card x1 (mSATA/PCIe Default PCIe) SIM x 1	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
Indicator	Power / System LED	Power LED
OS Support	Windows® 10 IoT Enterprise 64-bit Linux Ubuntu 20.04.2	
Power Supply		
Power Requirement	9-36V DC-in with 3-pin terminal block	10-35V DC-in with 3-pin terminal block
Mechanical		
Mounting	Wallmount	
Dimensions (W x H x D)	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	11.58" x 5.98" x 2.11" (292.4mm x 152mm x 53.5mm)
Gross Weight	3.3 lb (1.5 kg)	8.4lb (3.8kg)
Net Weight	4.4 lb (2.0 kg)	6.2lb (2.8kg)
Environmental		
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C), according to IEC68-2-14 with 0.5 m/s AirFlow	32°F ~ 113°F (0°C ~ 45°C) (35W CPU), according to IEC68-2-14 with 0.5 m/s AirFlow
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	
Storage Humidity	5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	2 Grms/5 ~ 500Hz/operation (with SSD)	
Anti-Shock	50G peak acceleration (11msec) (with SSD)	
Certification	CE/FCC class A	
Note		

Note: All specifications are subject to change without notice.

System Level Products

Compact Fanless BOX PC Solutions

Model	BOXER-6641	BOXER-6640
System		
CPU	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® 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
Chipset	Intel® C246/H310	Intel® H110
System memory	DDR4-2666 SO-DIMM slot x 2 Up to 64GB, ECC or Non-ECC Support	DDR4 SODIMM socket (double deck) x 2 Supports 1866/2133MHz DDR4 and up to 32GB Supports un-buffered and ECC / non-ECC type SODIMM
Display Interface	HDMI x 2	VGA x 1, HDMI x 2 (Combo DP x 2) - A1 Sku VGA x 1 - A2 Sku
Storage Device	2.5" SATA HDD/SSD Bay x 1 (x 2 for A2 & A6 model)	mSATA, SATA HDD/SSD
Ethernet	Intel® i211 x 3, i219 x 1	Intel® I211AT x 1, I219LM x 1
I/O	HDMI x 2 RJ-45 x 4 for GbE LAN (i211 x 3, i219 x 1) USB 3.2 Gen 1 x 4, USB 2.0 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	2 pin Remote power on/off connector Audio x 1 (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)
Expansion	Full-size Mini PCIe x 1, Full-size Mini Card x 1 (PCIe/mSATA switch by BIOS, Default: mSATA), SIM slot x 1	Full-size Mini-Card x 1 (PCI-E + USB, w/ SIM slot), Full-size Mini-Card x 1 (mSATA + USB), LPC x 1
Indicator	HDD LED x 1 SYS LED x 1	Power LED, HDD active LED
OS Support	Windows® 10 64-bit Linux Ubuntu 18.04	Windows® 10 64 bit (Kabylake, Skylake CPU), Windows® 8.1 64 bit (Skylake CPU only), Windows® embedded 8 standard 64 bit (Skylake CPU only)
Power Supply		
Power Requirement	3-pin DC Input 10~35V	3-pin Phoenix DC Input 9~36V
Mechanical		
Mounting	Wallmount	
Dimensions (W x H x D)	10.4" x 3.19" x 6.15" (264.2mm x 80.92mm x 156.2mm)	10.39" x 3.8" x 7.33" (264mm x 96.4mm x 186.2mm)
Gross Weight	10.4 lb (4.7 kg)	12.76 lb (5.8 kg)
Net Weight	8.2 lb (3.7 kg)	9.9 lb (4.5 kg)
Environmental		
Operating Temperature	-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	-4°F ~ 131°F (-20°C ~ 55°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)	-49 °F ~ 176°F (-45°C ~ 80°C)
Storage Humidity	5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	2 Grms/ 5 ~ 500Hz/ operation – SSD/mSATA 1 Grms/ 5 ~ 500Hz/ operation – HDD	2 Grms/ 5 ~ 500Hz/ operation – SSD 1 Grms/ 5 ~ 500Hz/ operation – HDD
Anti-Shock	—	
Certification	CE/FCC class A	

Note: All specifications are subject to change without notice.

Compact Fanless BOX PC Solutions

Model	BOXER-6639	BOXER-6638U
System		
CPU	Intel® Core™ i7-7700T, 2.9 GHz, Intel® Core™ i5-7500T, 2.7 GHz, Intel® Core™ i7-6700TE, 2.4 GHz, Intel® Core™ i5-6500TE, 2.3 GHz, Intel® Core™ i3-6100TE, 2.7 GHz, Intel® Pentium® G4400TE, 2.4 GHz, Intel® Celeron® G3900TE, 2.3 GHz	5th Generation Intel® Core™ i3-5010U, 2.1 GHz
Chipset	Q170	Intel® System on Chip
System memory	DDR4 1866/2133 SODIMM slot x 2, up to 32 GB, ECC or Non-ECC support	DDR3L 1600 SODIMM slot x 1, up to 8 GB
Display Interface	VGA, HDMI	VGA, DP
Storage Device	CFast, SATA HDD/SSD (Optional: x2)	mSATA, HDD/SSD
Ethernet	Intel® i210, 10/100/1000Base-TX x 3	Intel® WGI211AT, 10/100/1000Base-TX x 1 Intel® WGI218LM, 10/100/1000Base-TX x 1
I/O	RS-232/422/485 x 6 USB 3.2 Gen 1 x 4 USB 2.0 x 2, VGA x 1 HDMI x 2, Line-out x 1 Mic-in x 1, LAN x 3 CFast slot x 1, SIM slot x 1 Antenna holes x 2 34bit DIO x 1(A2 & A4 SKU) Power switch Power input Remote power switch Reset Button	RS-232/422/485 x 2 RS-232 x 2 USB 2.0 x 2 (A2M) USB 3.2 Gen 1 x 2 VGA x 1 DP x 1, Line-out x 1 LAN x 2 Antenna holes x 2 Power switch Power input
Expansion	Full-size Mini-Card x 1 (PCI-E + USB, w/ SIM slot), Full-size Mini-Card x 1 (PCI-E + USB, Optional for mSATA and SIM Slot)	Full-size Mini-Card x 1 (mSATA + USB, w/ SIM slot, optional for PCI-E) Half-size Mini-Card x 1 (PCI-E + USB)
Indicator	Power LED, HDD active LED	
OS Support	Windows® 7 (32/64-bit), Windows® 8/8.1 (64-bit) , Windows® 10 (64-bit)	Windows® 10 (64 bit), Windows® 8.1(32/64-bit), Windows® 7 (32/64-bit), Linux Ubuntu 14.10
Power Supply		
Power Requirement	9 - 36V with 3-pin terminal block	9 - 24V with lockable DC jack
Mechanical		
Mounting	Wallmount, DIN Rail (Mounting Kit is opt.)	Wallmount
Dimensions (W x H x D)	10.4" x 2.6" x 6.1" (264.2mm x 66.5mm x 156.2mm)	7.76" x 2.17" x 5.63" (197mm x 55mm x 143mm)
Gross Weight	7.7 lb (3.5 kg)	5.5 lb (2.5kg)
Net Weight	6.6 lb (3 kg)	3.3 lb (1.5 kg)
Environmental		
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)	-4°F ~ 140°F (-20°C ~ 60°C) with wide temperature HDD (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)
Storage Temperature	-49 °F ~ 176°F (-45°C ~ 80°C)	
Storage Humidity	5 ~ 95% @ 40°C, non-condensing	
Anti-Vibration	2 Grms/ 5 ~ 500Hz/ operation –CFast™ card, 1 Grms/ 5~ 500Hz/ operation – HDD	5 Grms/ 5 ~ 500Hz/ operation –mSATA / SSD 1 Grms/ 5~ 500Hz/ operation – HDD
Anti-Shock	—	
Certification	CE/FCC class A	
Note	TAIWAN EXCELLENCE 2017	

Note: All specifications are subject to change without notice.

System Level Products

Ultra Slim Fanless BOX PC Solutions

Model	BOXER-6405	BOXER-6404U
System		
CPU	Intel® Celeron/Pentium™ processor	Intel® Celeron™ J1900, 2.0 GHz Intel® Celeron™ N2807, 1.58 GHz
Chipset	Intel® System on Chip	
System Memory	DDR3L SO-DIMM slot x 1 Supports 1867 MHz and up to 8GB	DDR3L 1333 SODIMM slot x 1, up to 8 GB (J1900) or 4 GB (N2807)
Display Interface	HDMI (max. 1920 x 1080)	VGA
Storage Device	mSATA	mSATA, HDD/SSD
Ethernet	Intel® i211-AT x 2	Realtek® RTL8111E-VL-CG, 10/100/1000 Base-TX x 2
I/O	Power Button x 1 USB Type A x 4 for USB 3.2 Gen 1 HDMI type A x 1 for HDMI v1.4b RJ-45 x 2 for GbE LAN with LED indicator (i211-AT x 2) Power input x 1 3-pin terminal block in default (+, - , GND) Co-layout 3-pin terminal block & lockable DC-in jack,) Co-layout internal DC Mic-in x 1, Line-out x 1 RS-232/422/485 x 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	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
Expansion	Full-size Mini PCIe slot x 1 (PCIe/USB/SIM slot), one screw Half-size Minicard slot x 1 (mSATA only)	Full-size Mini-Card x 1 Half Mini-Card x 1 (for mSATA) SIM card slot x 1
Indicator	Power LED x1, HDD active LED x 1	Power LED, HDD active LED
OS Support	Windows® 10 Windows® 10 IoT Linux	Windows® 10 Windows® 8.1 Windows® 7 Windows® Embedded 8 Windows® Embedded 7 Linux Fedora
Power Supply		
Power Requirement	9-24V with 3-pin terminal block	12 - 24V with 3-pin terminal block
Mechanical		
Mounting	Wallmount	Wallmount VESA (Mounting kit is optional) DIN rail (Mounting kit is optional)
Dimensions (W x H x D)	6.54" x 4.2" x 1.45" (166mm x 106.6mm x 37mm)	6.53" x 4.20" x 1.63" (166 mm x 106.6 mm x 41.5 mm)
Gross Weight	3.6 lb (1.6kg)	
Net Weight	1.76 lb (0.8 kg)	
Environmental		
Operating Temperature	-4°F ~ 140°F (-20°C ~ 60°C) with W.T. mSATA (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial decives)	-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)
Storage Temperature	-22°F ~ 140°F (-30°C ~ 60°C)	-22°F ~ 176°F (-30°C ~ 80°C)
Storage Humidity	95% @ 40°C, non-condensing	
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation – mSATA 1 Grms/ 5 ~ 500Hz/ operation - HDD	5 Grms/ 5 ~ 500Hz/ operation –mSATA
Certification	CE/FCC class A	
Note		

Note: All specifications are subject to change without notice.

Ultra Slim Fanless BOX PC Solutions

Model	BOXER-6404	BOXER-6404WT
System		
CPU	Intel® Celeron™ J1900, 2.0 GHz Intel® Celeron™ N2807, 1.58 GHz	
Chipset	Intel® System on Chip	
System Memory	DDR3L 1333 SODIMM slot x 1, up to 8 GB (J1900) or 4 GB (N2807)	
Display Interface	HDMI (max. 1920 x 1080)	HDMI
Storage Device	CFast™	
Ethernet	Intel® I211, 10/100/1000Base-TX x 4	
I/O	RS-232 x 1 USB 2.0 x 2 USB 3.2 Gen 1 x 1 HDMI x 2 LAN x 4 CFast slot x 1 Antenna holes x 1 Power button Power input	
Expansion	Full-size Mini-Card (USB interface only) x 1	
Indicator	Power LED on power button	
OS Support	Windows® 10 Windows® 8.1 Windows® 7 Windows® Embedded 8 Windows® Embedded 7 Linux Fedora	
Power Supply		
Power Requirement	12V - 24V with lockable DC jack	
Mechanical		
Mounting	VESA (Mounting kit is optional) DIN rail (Mounting kit is optional)	
Dimensions (W x H x D)	6.53" x 4.20" x 1.18" (166 mm x 106.6 mm x 30 mm)	6.53" x 4.20" x 1.59" (166mm x 106.6mm x 40.5mm)
Gross Weight	2.9 lb (1.3 kg)	3.59 lb (1.63 kg)
Net Weight	1.9 lb (0.86 kg)	2.6 lb (1.17 kg)
Environmental		
Operating Temperature	-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)	-22°F ~ 167°F (-30°C ~ 75°C) with wide temperature CFast™ card (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)
Storage Temperature	-22°F ~ 176°F (-30°C ~ 80°C)	
Storage Humidity	95% @ 40°C, non-condensing	
Anti-Vibration	5 Grms/ 5 ~ 500Hz/ operation –CFast™ card	
Certification	CE/FCC class A	
Note		

Note: All specifications are subject to change without notice.

Ultra Slim Fanless BOX PC Solutions

Launching in Q3

Model	BOXER-6450-TGU
System	
CPU	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
Chipset	Intel® System on Chip
System Memory	LPDDR4x 4267 MHz on board memory up to 32GB, In-Band ECC (select SKUs)
Display Interface	HDMI2.0b x 1, 4Kx2K 60Hz
Storage Device	2.5" SATA HDD/SSD Drive Bay x 1
Ethernet	Intel® i225, 10/100/1000/2500Base, 2.5GbE RJ45 x1 Intel® i219, 10/100/1000Base,1GbE RJ45 x1
I/O	USB3.2 Gen2 x 2 USB2.0 x 4 RJ-45 x 2 for LAN (i225 x 1, i219 x 1) DB-9 x 2 for RS-232/422/485 Power Input x 1 Power Button x 1 DB-15 for DIO 8 bit x 1
Expansion	M.2 M key 2280 x 1 Full size USB2.0 or mSATA/mPCIe x 1
Indicator	System Power LED x 1 (Green)
OS Support	Windows® 10, Windows® 10 IoT, Ubuntu 20.04.2
Power Supply	
Power Requirement	DC In 12V with lockable DC jack
Mechanical	
Mounting	Wallmount
Dimensions (W x H x D)	166 x 118 x 56 mm
Gross Weight	3.81 lb (1.73 kg)
Net Weight	2.8 lb (1.27 kg)
Environmental	
Operating Temperature	Turbost on: -20°C ~ 40°C with 0.5m/s airflow Turbost off: -20°C ~ 50°C with 0.5m/s airflow
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Storage Humidity	5 ~ 95% @ 40˚C, non-condensing
Anti-Vibration	SSD: Random, 5Grms, 5~500Hz HDD: Random, 1Grms, 5~500Hz
Certification	CE/FCC class A
Note	

Note: All specifications are subject to change without notice.

Din Rail Fanless BOX PCs

Model	BOXER-6750	BOXER-6710
System		
CPU	Intel® Core™ i3-6100U Intel® Celeron® 3955U Intel® Core™ i3-7100U Intel® Core™ i5-7200U Intel® Core™ i5-6200U	Intel® Pentium® processor N4200 Intel® Celeron® processor N3350
Chipset	Intel® System on Chip	
System memory	DDR4 2133MHz SODIMM slot x 1, up to 16GB	DDR3L 1866 SODIMM slot x 1, up to 8GB
Display Interface	HDMI x 1, VGA x 1	HDMI, VGA
Storage Device	mSATA, HDD/SSD	HDD/SSD, optional mSATA
Ethernet	Intel® i210-IT x 2	Intel® i211-AT x 1 Intel® i219-LM x 1
I/O	RS-232/422/485 x 4 RJ-45 x 2 for GbE (i210IT x 2) USB 3.2 Gen 1 x 4 VGA x 1 HDMI x 1 Antenna Holes x 2 Power Switch Power Input	VGA x 1 HDMI x 1 RJ-45 x 2 for GbE LAN USB Type A x 4 for USB 3.2 Gen 1 Mic-in x 1 Line-out x 1 RS-232/422/485 x 3 with automatic flow control Power On/Off Button x 1 DC-in 3-pin terminal block (9~24V) x 1
Expansion	Full-size minicard x 1 (PCIe+USB with SIM slot, optional for mSATA) Full-size minicard x 1 (PCIe+USB)	Full-size Minicard x 1 w/ SIM Slot Half-size Minicard x 1 (optional for mSATA)
Indicator	Power LED on power button	
OS Support	Windows® 10 (64 bit) Windows® 8.1 (64 bit) Windows® 7 (32/64 bit) Linux	Windows® 10 64 bit Windows® 10 IoT 64 bit Linux Ubuntu 16.04.4
Power Supply		
Power Requirement	9 - 30V with 3-pin terminal block	9 - 24V with 3-pin terminal block
Mechanical		
Mounting	DIN Rail Mount Wallmount (Monting kit is optional)	DIN Rail Mount
Dimensions (W x H x D)	2.72" x 7.2" x 6.1" (69mm x 183mm x 155mm)	1.73" x 6.54" x 4.17" (44mm x 166mm x 106mm)
Gross Weight	6.1 lb (2.8kg)	3.08lb (1.4kg)
Net Weight	3.9 lb (1.8kg)	1.32lb (0.6kg)
Environmental		
Operating Temperature	-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 ~ 140°F (-20°C ~ 60°C) with W.T. SSD/HDD/mSATA (according to IEC68-2-14 with 0.5 m/s AirFlow ; with industrial devices)
Storage Temperature	-49°F ~ 176°F (-45°C ~ 80°C)	
Storage Humidity	95% @ 40°C, non-condensing	
Anti-Vibration	3 Grms/ 5 ~ 500Hz/ operation – mSATA/SSD 1 Grms/ 5~ 500Hz/ operation – HDD	
Certification	CE/FCC class A	
Note		

Note: All specifications are subject to change without notice.

System Level Products

Din Rail Fanless BOX PCs

Model	ICS-6270	ICS-6280
System		
Form Factor	DIN Rail/ Desktop	
Processor	Intel® Celeron® Processor N3350 SoC	Onboard Intel® Elkhart lake SoC
System Memory	204-pin DDR3L 1866MHz x 1, SODIMM Up to 8GB	204-pin DDR4 2133/2400MHz, SODIMM Up to 32GB with IBECC support
Chipset	—	
Ethernet	Intel® i211, Gigabit Ethernet x 6	Intel® i211 Gigabit Ethernet x 4
Bypass	Supports up to 2 pairs	1 pair , support up to 2 pairs (Optional)
BIOS	AMI SPI Flash BIOS	
Serial ATA	SATA 6.0 Gb/s port x 1, for 2.5" HDD/SSD	SATA III port x 1 for 2.5"SSD support
CFast/mSATA	CFast™ socket x 1 (co-lay mSATA)	mSATA (Full size) socket colay SATAIII port x 1
Expansion Interface	Supports Mini-Card slot x 1 with SIM socket	Supports Mini-card slot x 1 with Micro SIM socket
USB	USB 3.2 Gen 1 x 2	
Serial Port	Supports up to RS-232/422/485 COM Port x 2	
Watchdog Timer	1~255 steps by software programmable	
RTC	Internal RTC	
System Fan	Fanless	
Color	Dark Grey	Black
Power Supply	2 Pin Terminal Block	Dual 2-Pin Phoenix terminal block
Dimension	4.96" x 2.93" x 5.74" (126 x 74.5 x 146mm)	5.12" x 4.96" x 2.83" (130mm x 126mm x 72mm)
Power Requirement	+9 ~ 36V, 2-pin terminal block	Redundant 9~48Vdc power input
MTBF (Hours)	101,292	TBD
Display		
Chipset	Intel® HD Graphics 500	Intel® HD Graphics
Interface	VGA port x 1	HDMI port x 1
I/O		
Front I/O Panel	RJ-45 GbE x 6 RS-232/422/485 COM Port x 2 VGA port x 1 USB 3.2 Gen 1 x 2 Software programmable button x 1 Power LED x 1 HDD LED x 1 Status LED x 1 Bypass LED x 2	RJ-45 GbE x 4 RS-232/422/485 COM Ports x 2 HDMI portx1 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 Bypass LED x 1 (Optional x 2)
Rear I/O Panel	DIN Rail/ Wallmount Lock	
Top Panel	2-Pin Terminal Block +9~36VDC x 1	2-Pin Terminal Block +9~46VDC x 2
Environmental Parameters and Dimension		
Operating Temperature	-40°F ~ 156°F (-40°C ~ 75°C)	-40°F ~ 158°F (-40°C ~ 70°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	-40°F ~ 176°F (-40°C ~ 80°C)
Operating Humidity	10% ~ 80% relative humidity, non-condensing	
Storage Humidity	10% ~ 80% @40°C; non-condensing	
Vibration	0.5 Grms/ 5 ~ 500Hz / operation (SSD) 1.5 Grms/ 5 ~ 500Hz / non operation	0.5 g rms/ 5 ~ 500Hz / operation (2.5" SSD) 1.5 g rms/ 5 ~ 500Hz / non operation
Shock	10 G peak acceleration (11 m sec. duration), operation 20 G peak acceleration (11 m sec. duration), non operation	
Note		

Note: All specifications are subject to change without notice.

Expandable Fanless BOX PC Solutions

Model	BOXER-6839
System	
CPU	**7th Generation Intel® Core™ Processor family:** Intel® Core™ i7-7700T, 2.9 GHz / Intel® Core™ i5-7500T, 2.8 GHz / Intel® Core™ i3-7101TE, 3.4 GHz / Intel® Pentium® G4600T, 3.0 GHz / Intel® Pentium® G4560T, 2.9 GHz / Intel® Celeron® G3930T, 2.7 GHz **6th Generation Intel® Core™ Processor family:** Intel® Core™ i7-6700TE, 2.4 GHz / Intel® Core™ i5-6500TE, 2.3 GHz / Intel® Core™ i3-6100TE, 2.7 GHz / Intel® Pentium® G4500T, 3.0 GHz / Intel® Pentium® G4400T, 2.9 GHz / Intel® Celeron® G3900T, 2.6 GHz
Chipset	Intel® Q170
System Memory	DDR4 1866/2133 SODIMM slot x 2, up to 32GB
Display Interface	HDMI, VGA
Storage Device	CFast™, HDD/SSD
Network	Intel® I210, 10/100/1000 Base-TX x 3
I/O	RS-232/422/485 x 6 USB Type A x 6 for USB 3.2 Gen 1 USB Type A x 2 for USB 2.0 RJ-45 x 3 for GbE LAN, DB-44 for 34-bit Digital I/O (5V) CFast™ slot x 1, SIM card slot x 1 Power On/Off Button x 1 2 pin Remote power on/off Reset switch, Mic-in x 1, Line-out x 1 Antenna opening x 2 SYS LED indicator x 1 HDD LED indicator x 1 DB-15 x 1 for VGA, HDMI v1.3 x 2 DC-in 3-pin terminal block (9~36V)
Expansion	Full-size Mini-Card x 2 PCIe [x4] x 1 & PCIe [x1] x 1 (for A1) PCIe [x4] x 1 & PCI x 1 (for A2) PCI x 2 (for A3)
Indicator	Power LED HDD active LED
OS Support	**7th Generation Intel® Core™ Processor family:** Windows® 10 IOT (64bit) / Ubantu 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) / Ubantu 16.04 above / Fedora 25 above / CentOS 7.3 above
Power Supply	
Power Requirement	9 - 36V with 3-pin terminal block
Mechanical	
Mounting	Wallmount
Dimensions (W x H x D)	10.40" x 4.90" x 6.15" (264.2mm x 124.5mm x 156.2mm)
Gross Weight	13.2 lb (6.0 kg)
Net Weight	9.9 lb (4.5 kg)
Environmental	
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C) (according to IEC68-2-14 with 0.5 m/s AirFlow; with industrial devices)
Storage Temperature	-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity	5~95% @ 40°C, non-condensing
Anti-Vibration	5 Grms/ 5 ~ 500Hz/ operation – SSD/CFast™ card 1 Grms/ 5~ 500Hz/ operation – HDD
Anti-Shock	—
Certification	CE/FCC class A

Note: All specifications are subject to change without notice.

System Level Products

Expandable Fanless BOX PC Solutions

Model	BOXER-6839-CFL
System	
CPU	Intel® Xeon® E-2124G Intel® i9-9900T Intel® i7-9700TE Intel® i7-8700T Intel® i5-8500T Intel® i3-8100T Pentium® G5400T Celeron® G4900T
Chipset	C246
System Memory	DDR4-2666 SO-DIMM slot x 2 Up to 64GB, ECC or Non-ECC Support
Display Interface	HDMI x 2
Storage Device	2.5" SATA HDD/SSD Bay x 2
Network	RJ-45 x 4 for GbE LAN (i211-AT x 3, i219-LM x 1)
I/O	HDMI x 2 RJ-45 x 4 for GbE LAN (i211 x 3, i219 x 1) USB 3.2 Gen 1 x 8 DB-9 x 6 for RS-232/422/485 Audio x 1 (MIC-in, Line-out) DB-15 for DIO 8 bit x 1 3 pin 10~35V Power Input x 1 Power Button x 1 Remote Power switch x 1 Reset Button x 1
Expansion	Full-size Mini card x 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 Riser card type 2: PCIe[x4] slot x 1 & PCI x 1 Riser card type 3: PCI x 2
Indicator	HDD LED x 1 System LED x 1
OS Support	Windows® 10 64-bit, Linux Ubuntu 20.04
Power Supply	
Power Requirement	3-pin Phoenix DC Input 10~35V
Mechanical	
Mounting	Wallmount
Dimensions (W x H x D)	264mm x 156mm x 125mm
Gross Weight	13.2 lb (6.0 kg)
Net Weight	9.9 lb (4.5 kg)
Environmental	
Operating Temperature	-4°F ~131°F (-20°C ~ 55°C) with 0.5 m/s airflow (with TDP ≦ 35W CPU) -4°F~113°F (-20°C ~45°C) with 0.5 m/s airflow (with TDP > 35W CPU)
Storage Temperature	-49°F ~ 176°F (-45°C ~ 80°C)
Storage Humidity	5~95% @ 40°C, non-condensing
Anti-Vibration	5 Grms/ 5 ~ 500Hz/ operation –SSD
Anti-Shock	SSD: 50G @ wallmount, Half-sine, 11ms
Certification	CE/FCC class A
Note	

Note: All specifications are subject to change without notice.

Expandable Fanless BOX PC Solutions

Launching in Q3

Model	BOXER-6840-CFL
System	
CPU	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 PS. Support max. TPD 71W Processor
Chipset	C246
System Memory	DDR4 SO-DIMM socket x4 (double deck) Supports max. 2666MHz up to 128GB Support un-buffered and ECC / non-ECC type SODIMM
Display Interface	HDMI x2 Support Dual Independent Display, 4K Ultra HD displays
Storage Device	2.5" SATA Drive Bay x2 mSATA x1 (optional) M.2 2280 NVMe SSD slot x1
Network	Intel® i225, 10/100/1000/2500Base, 2.5GbE RJ45 x1 Intel® i219, 10/100/1000Base,1GbE RJ45 x1
I/O	HDMI x2 RJ-45 x3 for GbE LAN (Intel I211-AT x2, Intel I219-LM x1) Audio (Mic-in, Line-out) USB 3.2 Gen1 x6 DB-9 x4 for RS-232/422/485 with automatic flow control 3 pin DC Power input x1 (+, - , GND) Power ON/OFF switch x1 2 Pin Remote power on/off connector Reset switch
Expansion	Full-size Minicard x1 (PCIE + USB), support PCIE Gen 1 Half-size Minicard x1 (PCIE/mSATA, default PCIE+USB), support PCIE Gen 1 SIM Card Slot x1 M.2 M key (2280) x1 (PCIEx4, Gen3) PCIEx4 slot x1 (Gen3) PCIEx16 slot x1 (Gen3)
Indicator	System Power LED x 1 (Green) Storage Active LED x 1 (Red)
OS Support	Windows® 10, Windows® 10 IoT, Ubuntu 20.04.1
Power Supply	
Power Requirement	DC In 12~24V with 3-pin terminal block
Mechanical	
Mounting	Wallmount
Dimensions (W x H x D)	220 x 150 x 320 mm
Gross Weight	18.52 lb (8.4 Kg)
Net Weight	5.65 lb (7.1 Kg)
Environmental	
Operating Temperature	-4°F~149°F (-20°C ~ 65°C) with 0.5m/s airflow
Storage Temperature	-40˚F ~ 176˚F (-40˚C ~ 80˚C)
Storage Humidity	5 ~ 95% @ 40˚C, non-condensing
Anti-Vibration	SSD: Random, 5Grms, 5~500Hz HDD: Random, 1Grms, 5~500Hz
Certification	CE/FCC class A
Note	

Note: All specifications are subject to change without notice.

Transportation BOX PC Solutions

Model	BOXER-6313U
System	
CPU	Intel® Atom™ E3845, 1.91 GHz
Chipset	Intel® System on Chip
System Memory	DDR3L 1066/1333 SODIMM slot x 1, up to 8 GB
Display Interface	HDMI, VGA
Storage Device	2.5" HDD bay x 2
Ethernet	Intel® I211, 10/100/1000Base-TX x 2
I/O	RS-232/422/485 x 2 isolated RS-232 x 2 USB 3.2 Gen 1 x 1 USB 2.0 x 3 HDMI x 1 VGA x 1 LAN x 2 2 Channel CANBUS x 1 Mic-in x 1 Line-out x 1 Antenna hole x 4 Power on/off LED button x 1 Power input
Expansion	Full-size Mini-Card x 3 with SIM slot x 3
Indicator	Power LED on power button HDD active LED
OS support	Windows® 10, Windows® 8.1, Windows® 7, Linux Fedora
Power Supply	
Power Requirement	9 - 30V with 3-pin terminal block
Mechanical	
Mounting	Wallmount
Dimensions (W x H x D)	10.55" x 6.48" x 2.00" (268mm x 164.6mm x 51mm)
Gross Weight	9.0 lb (4.1 kg)
Net Weight	6.6 lb (3.1 kg)
Environmental	
Operating Temperature	5°F ~ 149°F (-15°C ~ 65°C)(according to IEC60068-2, with 0.5m/s AirFlow)
Storage Temperature	-40°F ~ 176°F (-40°C ~ 80°C)
Storage Humidity	95% @ 40°C, non-condensing
Anti-Vibration	3 Grms/ 5~ 500Hz/ operation – CFast™
Certification	CE/FCC class A, E13, ISO7637
Note	

Note: All specifications are subject to change without notice.

Transportation BOX PC Solutions

Model	VPC-3350VS	VPC-5620VS
System		
Form Factor	Multi-PoE & Fanless Appliance	Multi-PoE & Fanless Appliance
Processor	Intel® Pentium®/ Atom™ Processor (Default: E3940; Project base: N4200/N3350, or E3950 w/ customized chassis)	Intel® Whisky Lake Processor (Default: i7-8665UE; Project base: i5-8365UE, i3-8145UE or 4305UE)
Chipset	—	
Main Memory	Up to 8GB, DDR3L 204-pin SODIMM	Up to 32GB, DDR4 260-pin SODIMM
Display	HDMI x 1, DP x 1	
Ethernet	LAN x 1 + PoE x 4, Intel® i211	
PoE Ethernet Port	4 ports, sharing 60W of power budget for every four PoE ports	4 ports, sharing 60W of power budget for every four PoE ports
RAID support	—	0/1
Expansion Slot	SATA x 1 Mini-Card slot x 4 (USB2.0 + PCIe, full size)	SATA x 1 mPCIe Full-Size (USB+PCIe) x 3 mPCIe Full-Size (USB+SATA) colay SATA x 1 M.2 2280 (USB+PCIe) x 1, support NVME PCIe [x4] SSD
GPS, G-Sensor	GPS, G-Sensor, Gyro	
Front I/O Panel	Power Button x 1, Reset Button x 1, Power/HDD, LED x 2, USB 3.2 Gen 1 x 2, GbE port (RJ-45) x 1, PoE LAN x 4 (IEEE 802.3 at/af), HDMI x 1, RS-232 x 3	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, Antenna holes x 2, RS-232 x 3
Rear I/O Panel	DC-In power x 1 8-bit DIO x 1, 4-ch digital input , 4-ch digital output, RS-232/422/485 x 2 DP x 1 Audio Line-out x 1, Mic-In x 1 Micro SIM slot x 2	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
Storage		
HDD Tray	2.5" HDD/SSD Bay x 1	2.5" HDD/SSD Bay x 1
CF/CFast/mSATA Slot	mSATA Slot x 1 (Project base, colay on of mini card slot)	Optional mSATA Slot x 1 (If mSATA x 1 used, then only one SATA available)
Environmental		
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Storage Humidity	10%~80% @40°C, non-condensing	
Vibration/Shock	MIL-STD-810G	
Certification	CE & FCC Class A, eMark compliance	
Power Requirement		
Power Supply	DC 10-36V, power ignition	
Mechanical		
Removable HDD Tray	—	
Internal System HDD Bay	2.5" HDD bay x 2	2.5" HDD bay x 1
Dimension	6.3'' x 5.28'' x 2.95''(160mm x 134mm x 75mm)	7.09'' x 5.87'' x 2.95''(180mm x 149mm x 75mm)
Gross Weight	5.07lb(2.3 kg)	6.8lb(3.1 kg)
Note		

Note: All specifications are subject to change without notice.

System Level Products

Transportation BOX PC Solutions

Model	VPC-5600S	VPC-3300S
System		
Form Factor	Multi-PoE & Fanless Appliance	
Processor	Intel® 7th Gen. Core™ i3/i5/i7 Processor (Default: i3-7100U; Project base: i5-7300U, i7-7600U)	Intel® Celeron® J1900 Processor
Chipset	—	Quad Core SoC
Main Memory	Up to 32GB, DDR4 260-pin SODIMM	Up to 8GB, DDR3L 204-pin SODIMM
Display	HDMI x 1, DP x 1	VGA x 1, HDMI x 1
Ethernet	LAN x 2 + 4 PoE Ports (Up to 8 PoE ports), RTL8111E 10/100/1000 Base	10/100/1000Base-TX x 6
PoE Ethernet Port	4 ports (Max. 8 ports), sharing 60W of power budget for every four PoE ports.	4 ports, RJ-45 ports support IEEE 802.3 at/af with total PoE Power budget of 60W
RAID support	0/1	—
Expansion Slot	Mini-Card slot x 3 (USB2.0 x 2 + PCIe & USB 2.0 x 1) Built-in CAN 2.0B x 1	Mini-Card x 3, Built-in CAN 2.0B x 1
GPS	On board (GPS/GLONASS), G Sensor	On board (GPS/GLONASS)
Front I/O Panel	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), Max. 8 ports DP x 1 Reset Button x 1	Power Button x 1, Power Input x 1, Remote Power x 1, 3G/4G/WIFI LED x 3, SIM slot x 2, HDD LED x 1, CanBus connector x 1, 8bit 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)
Rear I/O Panel	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	VGA out x 1 HDMI x 1 GbE port (RJ-45) x 2 PoE LAN x 4 USB2.0 x 2 USB 3.2 Gen 1 x 1 Audio Line-out x 1 Mic-In x 1
Storage		
HDD Tray	2.5" SSD x 2	2.5" HDD/SSD Bay x 1
CF/CFast/mSATA Slot	mSATA Slot x 1 (If mSATA x 1 used, then only one SATA available)	mSATA Slot x 1 (deafult; colay w/ 2.5" HDD x 1)
Environmental		
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C); Project base, -40°C ~ 85°C	-4°F ~ 158°F (-20°C ~ 70°C)
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Storage Humidity	10%~80% @40°C, non-condensing	
Vibration/Shock	MIL-STD-810G	
Certification	CE & FCC Class A, EMARK	
Power Requirement		
Power Supply	DC 10-36V, with ignition pin	DC 9-36V, with Ignition Pin
Mechanical		
Removable HDD Tray	Hot swappable 2.5'' SSD x 2 (Project base) via extension module	2.5" HDD x 2 (Optional, MOQ apply)
Internal System HDD Bay	2.5" HDD x 2	2.5" HDD x 1 (Optional SKU if support HDD x 2)
Dimension	6.85'' x 7.87" x 2.52" (174mm x 200mm x 64mm)	6.85" x 7.87" x 2.36" (174mm x 200mm x 60mm)
Gross Weight	5.7 lb (2.6 kg)	
Note		

Note: All specifications are subject to change without notice.

Multi-PoE & Fanless Appliance

Model	VPC-3350IS	VPC-5620IS
System		
Form Factor	Multi-PoE & Fanless Appliance	Multi-PoE & Fanless Appliance
Processor	Intel® Pentium®/ Celeron®/ Atom™ Processor (Default: E3940; Project base: N4200/N3350, or E3950 w/ customized chassis)	"Intel® Whisky Lake Processor (Default: i7-8665UE; Project base: i5-8365UE, i3-8145UE or 4305UE)"
Chipset	—	
Main Memory	Up to 8GB, DDR3L 204-pin SODIMM	Up to 32GB, DDR4 260-pin SODIMM
Display	HDMI x 1, DP x 1	
Ethernet	LAN x 1 + PoE x 4, Intel® i211	
PoE Ethernet Port	4 ports, sharing 60W of power budget for every four PoE ports	4 ports, sharing 60W of power budget for every four PoE ports
RAID support	—	0/1
Expansion Slot	"Mini-Card slot x 2 (USB2.0 + PCIe, full size), up to 4 slots (Project base) SATA x 1"	"mPCIe Full-Size (USB+PCIe) x 1 mPCIe Full-Size (USB+SATA) colay SATA x 1 M.2 2280 (USB+PCIe) x 1, support NVME PCIe [x4] SSD"
GPS	—	
Front I/O Panel	Power Button x 1, Reset Button x 1, Power/HDD, LED x 2, USB 3.2 Gen 1 x 2, GbE port (RJ-45) x 1, PoE LAN x 4 (IEEE 802.3 at/ af) HDMI x 1, RS-232 x 3 (Project base)	"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, Antenna holes x 2"
Rear I/O Panel	DC-In power x 1 8-bit DIO x 1, 4-ch digital input , 4-ch digital output, RS-232/422/485 x 2 DP x 1 Audio Line-out x 1, Mic-In x 1 Micro SIM slot x 2	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
Storage		
HDD Tray	2.5" HDD/SSD Bay x 1	2.5" SSD x 2
CF/CFast/mSATA Slot	mSATA Slot x 1 (Project base, colay on of mini card slot)	Optional mSATA Slot x 1 (If mSATA x 1 used, then only one SATA available)
Environmental		
Operating Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Temperature	-40°F ~ 185°F (-40°C ~ 85°C)	
Storage Humidity	10%~80% @40°C, non-condensing	
Vibration/Shock	MIL-STD-810G	
Certification	CE & FCC Class A	
Power Requirement		
Power Supply	DC 12-24V	
Mechanical		
Removable HDD Tray	—	
Internal System HDD Bay	2.5" HDD bay x 1	2.5" HDD bay x 2
Dimension	6.3'' x 5.28 x 2.44''(160mm x 134mm x 62mm	7.09'' x 5.87'' x 2.17''(180mm x 149mm x 55mm)
Gross Weight	3.97lb(1.8 kg)	5.74lb(2.6 kg)
Note		

Note: All specifications are subject to change without notice.

System Level Products

All in One Panel PC Solutions: ACP Series

Model	ACP-1106	ACP-1104
System		
Processor	Intel® Pentium® N4200 processor, 1.1 GHz (Quad-Core), Burst frequency 2.5GHz Intel® Celeron® N3350 processor, 1.1 GHz (Dual-Core), Burst frequency 2.4GHz	Intel® Celeron® J1900 processor, 2 GHz Intel® N2807 processor, 1.58 GHz
System Memory	204-pin DDR3L SODIMM x 1, Build-in 4GB, Max. 8GB	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)
LCD/CRT Controller	Integrated in processor	—
Ethernet	10/100/1000Base-TX, RJ-45 x 2	
I/O Port	Bottom: DB9 Type RS-232 x 1, USB 3.2 Gen 1 x 2, HDMI x 1 RJ-45 10/100/1000 LAN x 2 2 Pin terminal block for power input Top: Power Button x 1, Type A USB 2.0 x 1, Expansion I/O Slot	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
Storage Disk Drive	Full Size mSATA x 1	Half size mSATA x 1 (Installation by AAEON recommeded)
Expansion Slot	Half size mini card x 1(Internal)	Full size Mini-Card x 1
OS support	Windows® 10, Linux Kernal 4.4.0 or higher	Windows® 7, Windows® 8.1, Windows® 10, Linux kernel 2.6.3 or higher, Android 4.4.4
Mechanical		
Construction	Aluminum Front Bezel + Metal Chassis	Aluminum Design
Mounting	VESA 75, Panel Mount	VESA 75/ Panel mount/ Stand
Dimension	10.47" x 7.24 x 1.89" (266 x 184 x 48mm)	10.47" x 7.22" x 1.81" (266 x 183.5 x 30mm)
Carton Dimension	13.38" x 7.64 x 9.96" (340 x 194 x 253mm)	13.58" x 7.87" x 9.65" (345 x 200 x 245mm)
Gross Weight	6.38 lb (2.9 kg)	5.5 lb (2.5 kg)
Environmental		
Operating Temperature	23°F ~ 122°F (-5°C ~ 50°C) with 0.5 m/s airflow	32°F ~ 113°F (0°C ~ 45°C) without airflow 32°F ~ 122°F (0°C ~ 50°C) with airflow
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C; non-condensing	5%~90% @40°C, non-condensing
Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD	1 Grms/ 5~ 500Hz/ operation
Shock	—	15 G peak acceleration (11 msec. duration)
EMC	CE/FCC Class A	
Power Supply		
DC Input	DC 9~30V	DC 12V with lockable power adapter
LCD		
Display Type	10.1" TFT-LCD, LED	
Max. Resolution	1280 x 800	
Max. Colors	262K colors (6 bit for R,G,B)	262k
Luminance	300 cd/m^2	
Viewing Angle	170°(H), 170°(V)	
Back Light	LED	
Back Light MTBF (hours)	—	
Touchscreen		
Type	P-CAP Touchscreen	Projected capacitive multi-touch
Light Transmission	90%	—
Note		

Note: All specifications are subject to change without notice.

All in One Panel PC Solutions: ACP Series

Model	ACP-1076	ACP-1074
System		
Processor	Intel® Pentium®N4200 processor, 1.1 GHz (Quad-Core), Burst frequency 2.5GHz Intel® Celeron® N3350 processor, 1.1 GHz (Dual-Core), Burst frequency 2.4GHz	Intel® N2807 processor, 1.58 GHz Intel® Celeron® J1900 processor, 2 GHz
System Memory	204-pin DDR3L SODIMM x 1, Build-in 4GB, Max. 8GB	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)
LCD/CRT Controller	Integrated in processor	
Ethernet	10/100/1000Base-TX, RJ-45 x 2	
I/O Port	Bottom: DB9 Type RS-232 x 1 USB 3.2 Gen 1 x 2, HDMI x 1 RJ-45 10/100/1000 LAN x 2 2 Pin terminal block for power input Top: Power Button x 1, Type A USB 2.0 x 1 Expansion I/O Slot	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
Storage Disk Drive	Full Size mSATA x 1	Half size mSATA storage x 1 (Installation by AAEON recommeded)
Expansion Slot	Half size mini card x 1(Internal)	Full size Mini-Card x 1
OS support	Windows® 10, Linux Kernal 4.4.0 or higher	Windows® 7, Windows® 8.1, Windows® 10, Linux kernel 2.6.3 or higher
Mechanical		
Construction	Aluminum Front Bezel + Metal Chassis	Aluminum Design
Mounting	VESA 75, Panel Mount	VESA 75/ Panel mount/ Stand
Dimension	7.72" x 5.28" x 1.89" (196 x 134 x 48 mm)	7.71" x 5.27" x 1.18" (196mm x 134mm x 30mm)
Carton Dimension	10.87" x 9.41" x 6.69" (276 x 239 x 170 mm)	13.58" x 7.87" x 9.64" (345mm x 200mm x 245mm)
Gross Weight	4.62 lb (2.1 Kg)	5.5 lb (2.5 kg)
Environmental		
Operating Temperature	23°F ~ 122°F (-5°C ~ 50°C) with 0.5 m/s airflow	32°F ~ 122°F (0°C ~ 50°C) without airflow 23°F ~ 131°F (-5°C ~ 55°C) with airflow
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C; non-condensing	5%~90% @40°C, non-condensing
Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD	
Shock	15 G peak acceleration (11 msec. duration) – with HDD	
EMC	CE/FCC Class A	
Power Supply		
DC Input	DC 9~30V	DC12V, with lockable power adapter
LCD		
Display Type	7" TFT-LCD, LED	
Max. Resolution	1024 x 600	
Max. Colors	16.7M	
Luminance	320 cd/m^2	
Viewing Angle	150°(H), 145°(V)	
Back Light	LED	
Back Light MTBF (hours)	20,000	
Touchscreen		
Type	P-CAP Touchscreen	Projected capacitive multi-touch (2-point)
Light Transmission	90%	
Note		

Note: All specifications are subject to change without notice.

System Level Products

All in One Panel PC Solutions: OMNI Series

Model	OMNI-5155L	OMNI-2155-CML
System		
Processor	Intel® Celeron® J1900 Processor 2.00 GHz	Intel® Core™ i9-10900TE Intel® Core™ i7-10700TE Intel® Core™ i5-10500TE Intel® Core™ i3-10100TE Intel® Celeron® G5900TE
System Memory	DDR3L 1333 MHz SODIMM x 2 up to 8 GB	DDR4 SO-DIMM x 2, up to 64GB
LCD/CRT Controller	—	
Ethernet	Realtek PCIe Gb LAN 8111G x 2	Intel® i211 x 1, i219 x 1
I/O Port	USB 2.0 Type A x 2 USB 3.2 Gen 1 Type A x 1 DB-9 Type RS-232/422/485 x 1 DB-9 Type RS-232 x 1 RJ-45 Type for 10/100/1000Base-TX x 2 DB-15 x 1 for VGA, HDMI x 1 Audio Jack x 1 for Line out DC Jack x1 for 12 Vdc power input	USB 3.2 Gen 2 x 4 RJ-45 x 2 for GbE LAN (i211-AT x 1, i219-LM x 1) HDMI x 1 Line out x 1 DB-9 x 2 for RS-232/422/485 3 pin 10~35V Power Input x 1 Power Button with LED x 1
Storage Disk Drive	2.5" SATA HDD bay x 1	M.2 2280 slot x 1 (PCIex4), 2.5" SATA SSD/HDD bay x 1
Expansion Slot	Internal Full-size Mini-Card x 1 / Half-size Mini-Card x 1	M.2 2230 E Key x 1, M.2 2280 B Key x 1 Full-Size Mini Card x 1 (mSATA/PCIe switch by BIOS, default PCIe), SIM x 1
OS Support	Windows® 7, Windows® 8, Windows® 10, Linux kernel 2.6.x or higher	Windows® 10 IoT Enterprise 64-bit, Linux Ubuntu 20.04
Mechanical		
Construction	Aluminum design (IP65 Front Frame)	
Mounting	VESA 100x100 / Panel Mount	VESA 100 / Panel Mount
Dimension	14.53" x 12" x 2.63" (369mm x 304mm x 67mm)	420.14mm x 264.47mm x 73.2 mm
Carton Dimension	20.08" x 9.84" x 18.11" (510mm x 250mm x 460mm)	530mm x 445mm x 200mm
Gross Weight	12.12 lb (5.5 kg)	6.75 kg
Environmental		
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) with 0.5 m/s airflow	32°F ~ 113°F (0°C ~ 45°C) (35W CPU), according to IEC68-2-14 with 0.5 m/s AirFlow
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C; non-condensing	
Anti-Vibration	1 Grms/ 5~500Hz/random operation	
Anti-Shock	—	15 G peak acceleration (11 msec. duration
EMC	CE/FCC Class A	
Power Supply		
DC Input	12V DC in	10-35V DC-in with 3-pin terminal block
LCD		
Display Type	15" TFT-LCD, LED	15.6" TFT-LCD, LED
Max Resolution	1024(H) x 768(V)	1366 (H) x 768 (V)
Max. Colors	16.2M color	16.7M (8 bit/color)
Luminance	300 cd/m^2	400 cd/m^2
Viewing Angle	176° (H), 176° (V)	170° (H), 130° (V)
Back Light	LED	
Back Light MTBF (Hours)	70,000	50,000
Touchscreen		
Type	5-wire resistive	Flat 5-wire Resistive / P-CAP Multi Touch
Light Transmission	80% ± 2%	80% ± 3% / 88%± 2%

Note: All specifications are subject to change without notice.

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%		
Note	1. Connect with OMNI-Box Kit 2. Connect with LVDS/USB Type Touch		1. Connect with OMNI-Box Kit 2. Connect with LVDS/USB Type Touch

Note: All specifications are subject to change without notice.

OMNI Series : Modular Builder - Panel Kit

Model	OMNI-312D	OMNI-315D	OMNI-317D
Mechanical			
Construction	Aluminum Front Bezel		
Mounting	Panel Mount		
Dimension	12.95" x 11.34" x 0.98" (329mm x 288mm x 25mm)	14.53" x 12.36" x 1.06" (369mm x 314mm x 27mm)	16.14" x 14.57" x 1.1" (410mm x 370mm x 28mm)
Carton Dimension	20.87" x 17.52" x 7.87" (530mm x 445mm x 200mm)	20.08" x 9.84" x 18.11" (510mm x 250mm x 460mm)	20.47" x 10.32" x 19.29" (522mm x 262mm x 490mm)
Gross Weight	4.4 lb (2 kg)	11.66 lb (5.3 kg)	8.8 lb(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	12.1" TFT-LCD, LED	15" TFT-LCD, LED	17" TFT-LCD, LED
Max Resolution	1024 x 768		1280 x 1024
Max. Colors	16.2M colors	16.2M (8bit/color)	16.7M colors
Luminance	500 cd/m²	300 cd/m²	350 cd/m²
Viewing Angle	160°(H), 160°(V)	176° (H), 176° (V)	170°(H), 160°(V)
Back Light	LED		
Back Light MTBF (hours)	50,000	70,000	50,000
Touch Screen			
Type	P-CAP/ Full-flap resistive		
Light Transmission	90%		
Note	1. Connect with OMNI-Box Kit 2. Connect with LVDS/USB Type Touch		

Note: All specifications are subject to change without notice.

OMNI Series : Modular Builder - Panel Kit

Model	OMNI-319D	OMNI-3120PD	OMNI-3150PD
Mechanical			
Construction	Aluminum Front Bezel	Open Frame LCD Kit	
Mounting	Panel Mount		
Dimension	18.13" x 16.12" x 1.1" (460.4mm x 409.4mm x 28mm)	13.2" x 10.8" x 1.04" (335.2mm x 274.2mm x 26.5mm)	15.08" x 12.05" x 1.04" (383mm x 306mm x 26.5mm)
Carton Dimension	26.02" x 8.11" x 19.53" (661mm x 206mm x 496mm)	20.87" x 17.52" x 7.87" (530mm x 445mm x 200mm)	20.08" x 9.84" x 18.11" (510mm x 250mm x 460mm)
Gross Weight	11 lb (5 kg)	4.4 lb (2 kg)	8.8 lb (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	19" TFT-LCD, LED	12.1" TFT-LCD, LED	15" TFT-LCD, LED
Max Resolution	1280 x 1024	1024 x 768	
Max. Colors	16.7M colors	16.2M colors	16.2M (8bit/color)
Luminance	350 cd/m²	500 cd/m²	300 cd/m²
Viewing Angle	170°(H), 160°(V)	160°(H), 160°(V)	176° (H), 176° (V)
Back Light	LED		
Back Light MTBF (hours)	50,000		70,000
Touch Screen			
Type	P-CAP/ Full-flap resistive	Projected Capacitive Multi Touch or Full Flat Resistive Touch Screen or 5-wire Resistive Touch Screen	
Light Transmission	90%		
Note	1. Connect with OMNI-Box Kit 2. Connect with LVDS/USB Type Touch		

Note: All specifications are subject to change without notice.

OMNI Series : Modular Builder - BOX Kit

Model	OMNI-BT CPU BOX	OMNI-SKU CPU BOX
System		
Processor	Intel® N2807 processor, 1.58 GHz Intel® Celeron® J1900 processor, 2 GHz	Intel® Core™ i7-6600U, i5-6300U, i3-6100U, Celeron® 3995 Processor
System Memory	204-pin DDR3L 1333MHz SODIMM x 1, up to 8 GB, (J1900) 204-pin DDR3L 1333MHz SODIMM x 1, up to 4 GB, (N2807)	260-pin DDR4 SODIMM x 1, Max. 16GB
LCD CRT Controller	Integrated in processor	
Ethernet	Intel® I211, 10/100/1000Base-TX x 2	Gigabit Ethernet, RJ-45 x 1
IO Port	USB 2.0 Type A x 3 USB 3.2 Gen 1 Type A x 1 SMA Antenna hole x 1 HDMI x 1, CFast™ x 1 DB-9 x 1 for RS-232/422/485 RJ-45 x 2 for 10/100/1000 Base-TX DB-15 x 1 for VGA 3-pin terminal block x 1 for 9~30 Vdc power input LED Power on/off switch x 1 (Power on = Orange, Power off =N/A)	USB Type A x 4 for USB 3.2 Gen 1 RJ-45 x1 for GbE LAN DB-9 x 2 for RS-232 DB-9 x 1 for RS-232/422/485 Power input connector Power ON/OFF Switch x 1 antenna hole, HDMI x 1 3-pin terminal Power input x 1
Storage Disk Drive	CFast™ x 1, 2.5" SATA HDD bay x 1	2.5" SATA HDD bay x 1
Expansion Slot	Mini card x 2 (Full size x 2) SIM card x 1 OMNI I/O connector x 1	Full size mini card x 1 SIM card x 1 OMNI I/O connector x 1
OS Support	Windows® 7, Windows® 8, Windows® 10, Linux Kernal 2.6.x or higher	Windows® 10 (64 bit), Linux kernal 2.6.3 or above
Construction	Aluminum design	
Mounting	Wallmount	Wallmount (with optional Bottom cover: M0421550A0) / with OMNI-Panel Kits
Dimension	7.2" x 6.38" x 1.1" (183mm x 162mm x 28mm)	7.2" x 6.38" x 1.77" (183mm x 162mm x 45mm)
Gross Weight	3.96 lb (1.8 kg)	
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) (J1900) 14°F ~ 140°F (-10°C ~ 60°C) (N2807) with 0.5 m/s airflow (CF & HDD)	-4°F ~ 131°F (-20°C ~ 55°C)
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C; non-condensing	
Anti Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD	
Anti-Shock	15 G peak acceleration (11 msec. duration) – HDD	
Certification	CE/FCC class A	
DC Input	DC 9 (min.) ~ 30 (max.) V w/3-pin terminal block, ATX Power function	
Display Type	HDMI x 1, VGA	HDMI x 1
Note	Box Bottom Chassis Cover (optional): M0421550A0	

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

Note: All specifications are subject to change without notice.

OMNI Series : Modular Builder - I/O Modules

Model	9741215501 - Mini Card x 2 & SIM Card x 2 Module	9741215502 - Dual LAN Module
Product Description	Mini PCIe Slot x 2, for OMNI Panel PC Only	Gigabit Ethernet x 2, for OMNI Panel PC only
Features	Full-size Mini-Card Slot x 2 SIM Card Slot x 2	Gigabit Ethernet x 2 Intel® i2l Chipset
Os Support	Window® 7 Window® 10 Linux Kernal 2.6.x or above	
Construction	SECC Design	
Dimension	161 x 80 x 31 mm	
Note		

Model	9741215506 - DIO Module	9741215508 - Audio Module
Product Description	DIO without Isolation x 8, for OMNI Panel PC only	MIC-In x 1, Line-out x 1, for OMNI Panel PC only
Features	DIO x 8 (3.3Vac)	Mic-in x 1 Line-out x 1
Os Support	Window® 7 Window® 10 Linux Kernal 2.6.x or above	
Construction	SECC Design	
Dimension	161 x 80 x 31 mm	
Note		

Model	9741215510 - HMS Kit	9741215512
Product Description	10/100 Ethernet x 2, for OMNI Panel PC Only	WiFi 802.11 b/g/n Module
Features	10/100 Ethernet x 2, Anybus Support All Major Industrial Ethernet and Fieldbus Networks * Due to communication protocol limit, only for EU region	Supports 802.11b/g/n Supports BT 4.0
Os Support	Window® 7 Window® 10 Linux Kernal 2.6.x or above	
Construction	SECC Design	
Dimension	161 x 80 x 42 mm	161 x 80 x 31 mm
Note		

OMNI Series : Modular Builder - I/O Modules

Model	9741215513	9741215515
Product Description	RS-485/422/232 Module	OMNI USB/COM/LAN Module
Features	RS-232/422/485 x 2 Selection by Jumper	USB 2.0 x 2 RS-232/422/485 x 2 (Selection by External Switch) Gigabit Ethernet x 1
Os Support	Window® 7 Window® 10 Linux Kernal 2.6.x or above	
Construction	SECC Design	
Dimension	161x 99 x 42 mm	161x 99 x 56 mm
Note		

Model	9741215516	9741215517
Product Description	OMNI COM x 4 Module	OMNI Isolated COM Module
Features	RS-232/422/485 x 4 Selection by internal jumper	Isolated RS-232/422/485 x 4 2K Vdc Isolation Selection by internal jumper
Os Support	Window® 7 Window® 10 Linux Kernal 2.6.x or above	
Construction	SECC Design	
Dimension	161 x 99 x 56 mm	
Note		

Model	9741215518
Product Description	OMNI COM, DIO Module
Features	DB9 Isolated RS-232/422/485 x 4 DIO x 16
Os Support	Window® 7 Window® 10 Linux Kernal 2.6.x or above
Construction	SECC Design
Dimension	161 x 99 x 55 mm
Note	

Note: All specifications are subject to change without notice.

OMNI Series : Modular Touch Panel Solutions

Model	OMNI-2155-BT	OMNI-3105-BT
System		
Processor	Intel® Celeron® J1900, 2.0 GHz/ N2807, 1.58 GHz	Intel® N2807 processor, 1.58 GHz, Intel® Celeron® J1900 processor, 2 GHz
System Memory	204-pin DDR3L 1333MHz SODIMM x 1, up to 8 GB (J1900), 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)
LCD/CRT Controller	Integrated in Processor	
Ethernet	10/100/1000Base-TX, RJ-45 x 2	Intel® I211, 10/100/1000Base-TX x 2
I/O Port	USB Type A x 1 for USB 3.2 Gen 1 USB Type A x 3 for USB 2.0 SMA antenna hole x 1 HDMI x 1, CFast™ x 1 DB-9 for RS-232/422/485 x 1 RJ-45 x 2 for 10/100/1000Base-TX DB-15 x 1 for VGA 3-pin terminal block x 1 for 9~30 V DC power input LED Power On/Off Switch x 1 (Power on = orange, Power off =N/A)	USB 2.0 Type A x 3 USB 3.2 Gen 1 Type A x 1 SMA Antenna hole x 1 HDMI x 1 CFast™ x 1 DB-9 x 1 for RS-232/422/485 RJ-45 x 2 for GbE LAN DB-15 x 1 for VGA 3-pin terminal block x1 for 9~30 Vdc power input LED Power on/off switch x 1 (Power on = Orange, Power off =N/A)
Storage Disk Drive	CFast™ socket x 1, SATA 2.5" HDD bay x 1	CFast™ x 1, 2.5" SATA HDD bay x 1
Expansion Slot	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
OS support	Windows® 7, Windows® 8, Windows® 10, Linux kernel 2.6.x or higher	
Mechanical		
Construction	Aluminum front bezel + metal chassis	Aluminum design (IP65 Front Frame)
Mounting	VESA 100/ Panel mount	
Dimension	16.54" x 10.43" x 2.36" (420mm x 265mm x 60mm)	11.02" x 9.41" x 2.32" (280 mm x 239 mm x 59 mm)
Carton Dimension	20.87" x 17.52" x 7.87" (530mm x 445mm x 200mm)	16.34" x 7.05" x 15.39" (415mm x 179mm x 391mm)
Gross Weight	14.1 lb (6.4kg)	7.92 lb (3.6 kg)
Environmental		
Operating Temperature	-20°C~60°C with industrial grade device (with 0.5 m/s air flow, according to IEC68-2-14, CPU: N2807) -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)
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C, non-condensing	
Anti-Vibration	1 Grms/ 5 ~ 500 Hz/ Operation (HDD)	1 Grms/ 5~ 500Hz/ operation – with HDD
Anti-Shock	15 G peak acceleration (11 msec. duration)	15 G peak acceleration (11 msec. duration) – with HDD
EMC	CE/FCC class A	
Power Supply		
DC Input	DC 9 (min.) ~ 30 (max.) V w/ 3-pin terminal block, ATX Power function	
LCD		
Display Type	15.6" TFT-LCD, LED backlight	10.4" TFT-LCD, LED
Max Resolution	1366 x 768	800 (H) x 600 (V)
Max. Colors	16.7M colors (8-bit for R,G,B)	16.2M colors
Luminance	400 cd/m2	230 cd/m^2
Viewing Angle	160°(H), 140°(V)	120° (H), 100° (V)
Back Light	LED	
Back Light MTBF (Hours)	50,000	
Touchscreen		
Type	P-CAP/ 5-wire resistive	
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)	
Note		Not support OMNI I/O Modules due to chassis limitation

Note: All specifications are subject to change without notice.

OMNI Series : Modular Touch Panel Solutions

Model	OMNI-3125-BT	OMNI-3155-BT
System		
Processor	Intel® N2807 processor, 1.58 GHz Intel® Celeron® J1900 processor, 2 GHz	
System Memory	204-pin DDR3L 1333MHz SODIMM x 1, up to 8 GB, (J1900) 204-pin DDR3L 1333MHz SODIMM x 1, up to 4 GB, (N2807)	
LCD/CRT Controller	Integrated in processor	
Ethernet	Intel® I211, 10/100/1000Base-TX x 2	
I/O Port	USB 2.0 Type A x 3 USB 3.2 Gen 1 Type A x 1 SMA Antenna hole x 1 HDMI x 1 CFast™ x 1 DB-9 Type RS-232/422/485 x 1 RJ-45 Type for 10/100/1000Base-TX x 2 DB-15 x 1 for VGA 3-pin terminal block x1 for 9~30 Vdc power input LED Power on/off switch x 1 (Power on = Orange, Power off =N/A)	
Storage Disk Drive	CFast™ x 1, 2.5" SATA HDD bay x 1	
Expansion Slot	Full Size Mini card x 2, SIM card x 1, OMNI I/O connector x 1	
OS support	Windows® 7, Windows® 8, Windows® 10, Linux Kernal 2.6.x or higher	
Mechanical		
Construction	Aluminum design (IP65 Front Frame)	
Mounting	VESA 100 / Panel Mount	
Dimension	12.95" x 11.34" x 2.2" (329 mm x 288 mm x 56 mm)	14.53" x 12.36" x 2.28" (369 mm x 314 mm x 58 mm)
Carton Dimension	20.87" x 17.52" x 7.87" (530mm x 445mm x 200mm)	20.08" x 9.84" x 18.11" (510mm x 250mm x 460mm)
Gross Weight	11 lb (5.0 kg)	13.97 lb (6.35 kg)
Environmental		
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) (J1900), 14°F ~ 140°F (-10°C ~ 60°C) (N2807) with 0.5 m/s airflow (CF & HDD)	
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C; non-condensing	
Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD	
Shock	15 G peak acceleration (11 msec. duration) – with HDD	
EMC	CE/FCC class A	
Power Supply		
DC Input	DC 9 (min.) ~ 30 (max.) V w/ 3-pin terminal block, ATX Power function	
LCD		
Display type	12.1" TFT-LCD, LED	15" TFT-LCD, LED
Max Resolution	1024(H) x 768(V)	
Max. Colors	16.2M colors	16.2M (8bit/color)
Luminance	500 cd/m2	300 cd/m2
Viewing Angle	160° (H), 160° (V)	176° (H), 176° (V)
Back Light	LED	
Back Light MTBF (Hours)	50,000	70,000
Touchscreen		
Type	P-CAP/ 5-wire resistive	
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)	P-CAP (90%± 2%), 5-wire Resistive (80% ± 2%)
Note	Not support OMNI I/O Modules due to chassis limitation	Support OMNI I/O Modules

Note: All specifications are subject to change without notice.

OMNI Series : Modular Touch Panel Solutions

Model	OMNI-3175-BT	OMNI-3195-BT
System		
Processor	Intel® N2807 processor, 1.58 GHz Intel® Celeron® J1900 processor, 2 GHz	
System Memory	204-pin DDR3L 1333MHz SODIMM x 1, up to 8 GB, (J1900) 204-pin DDR3L 1333MHz SODIMM x 1, up to 4 GB, (N2807)	
LCD/CRT Controller	Integrated in processor	
Ethernet	Intel® I211, 10/100/1000Base-TX x 2	
I/O Port	USB 2.0 Type A x 3 USB 3.2 Gen 1 Type A x 1 SMA Antenna hole x 1 HDMI x 1 CFast™ x 1 DB-9 Type RS-232/422/485 x 1 RJ-45 Type for 10/100/1000Base-TX x 2 DB-15 x 1 for VGA 3-pin terminal block x1 for 9~30 Vdc power input LED Power on/off switch x 1 (Power on = Orange, Power off =N/A)	
Storage Disk Drive	CFast™ x 1, 2.5" SATA HDD bay x 1	
Expansion Slot	Full Size Mini card x 2, SIM card x 1, OMNI I/O connector x 1	
OS support	Windows® 7, Windows® 8, Windows® 10, Linux kernel 2.6.x or higher	
Mechanical		
Construction	Aluminum design (IP65 Front Frame)	
Mounting	VESA 100 / Panel Mount	
Dimension	16.14" x 14.57" x 2.32" (410mm x 370mm x 59mm)	18.15" x 16.14" x 2.32" (461 mm x 410 mm x 59 mm)
Carton Dimension	20.55" x 10.31" x19.29"(522mm x 262mm x 490mm)	26.02" x 8.11" x 19.53" (661mm x 206mm x 496mm)
Gross Weight	15.84 lb (7.2 kg)	19.36 lb (8.8 kg)
Environmental		
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) (J1900), 14°F ~ 140°F (-10°C ~ 60°C) (N2807) with 0.5 m/s airflow (CF & HDD)	
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C; non-condensing	
Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD	
Shock	15 G peak acceleration (11 msec. duration) – with HDD	
EMC	CE/FCC class A	
Power Supply		
DC Input	DC 9 (min.) ~ 30 (max.) V w/3-pin terminal block, ATX Power function	
LCD		
Display type	17" TFT-LCD, LED	19" TFT-LCD, LED
Max Resolution	1280(H) x 1024(V)	
Max. Colors	16.7M colors (RGB 6-bits + Hi-FRC data)	16.7M colors
Luminance	350 cd/m2	
Viewing Angle	170°(H), 160°(V)	
Back Light	LED	
Back Light MTBF (Hours)	50,000	
Touchscreen		
Type	P-CAP/ 5-wire resistive	
Light Transmission	P-CAP (≥85%), 5-wire Resistive (80% ± 5%)	
Note	Support OMNI I/O Modules	

Note: All specifications are subject to change without notice.

OMNI Series : Modular Touch Panel Solutions

Model	OMNI-2155-SKU	OMNI-2215-SKU
System		
Processor	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
System Memory	260-pin DDR4 SODIMM x 1, up to 16 GB	
LCD/CRT Controller	Integrated in processor	
Ethernet	Intel® I211, 10/100/1000Base-TX x 1	
I/O Port	USB 3.2 Gen 1 Type A x 4 SMA Antenna hole x 1 HDMI x 1 DB-9 Type RS-232/422/485 x 2 RJ-45 Type 10/100/1000Base-TX x 1 3-pin terminal block x1 for 9~30 Vdc power input LED Power on/off switch x1 (Power on = Orange, Power off =N/A)	
Storage Disk Drive	2.5" SATA HDD bay x 1	
Expansion Slot	Full Size Mini card x 1 SIM card x 1 OMNI I/O connector x 1	
OS support	Windows® 8.1, Windows® 10 (64 bit), Linux Kernal 2.6.x or higher	
Mechanical		
Construction	Aluminum design (IP65 Front Frame)	
Mounting	VESA 100/Panel mount	
Dimension	16.54" x 10.43" x 2.87" (420 mm x 265 mm x 73 mm)	21.7" x 14.7" x 2.6" (550mm x 373mm x 66mm)
Carton Dimension	20.87" x 17.52" x 7.87" (530mm x 445mm x 200mm)	26.38" x 7.87" x 20.67" (670mm x 200mm x 525mm)
Gross Weight	14.96 lb (6.8 kg)	20.02 lb (9.1 Kg)
Environmental		
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C) with 0.5 m/s airflow (Industrial Grade HDD)	
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C; non-condensing	
Anti-Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD	
Anti-Shock	15 G peak acceleration (11 msec. duration) – with HDD	
EMC	CE/FCC class A	
Power Supply		
DC Input	DC 9 (min.) ~ 30 (max.) V w/3-pin terminal block, ATX Power function	
LCD		
Display type	15.6" TFT-LCD, LED	21.5" TFT-LCD, LED
Max Resolution	1366(H) x 768(V)	1920(H) x 1080(V)
Max. Colors	16.7M (8 bit/color)	16.7M colors
Luminance	400 cd/m2	250 cd/m2
Viewing Angle	160 (H), 140 (V)	178 (H), 178 (V)
Back Light	LED	
Back Light MTBF (Hours)	50,000	
Touchscreen		
Type	P-CAP/ 5-wire resistive	
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 2%)	P-CAP (≥85%), 5-wire Resistive (80% ± 5%)
Note	Support OMNI I/O Modules	

Note: All specifications are subject to change without notice.

OMNI Series : Modular Touch Panel Solutions

Model	OMNI-3125-SKU	OMNI-3155-SKU
System		
Processor	Intel® i5-6300U processor, 2.4 GHz Intel® Celeron® 3955U processor, 2.0 GHz	
System Memory	260-pin DDR4 SODIMM x 1, up to 16 GB	
LCD/CRT Controller	Integrated in processor	
Ethernet	Intel® I211, 10/100/1000Base-TX x 1	
I/O Port	USB 3.2 Gen 1 Type A x 4 SMA Antenna hole x 1 HDMI x 1 DB-9 Type RS-232/422/485 x 2 RJ-45 Type 10/100/1000Base-TX x 1 3-pin terminal block x1 for 9~30 Vdc power input LED Power on/off switch x1 (Power on = Orange, Power off =N/A)	
Storage Disk Drive	2.5" SATA HDD bay x 1	
Expansion Slot	Full Size Mini card x 1 SIM card x 1 OMNI I/O connector x 1	
OS support	Windows® 8.1, Windows® 10 (64 bit), Linux Kernal 2.6.x or higher	
Mechanical		
Construction	Aluminum design (IP65 Front Frame)	
Mounting	VESA 100 / Panel Mount	
Dimension	12.95" x 11.34" x 2.72" (329mm x 28mm x 69 mm)	14.53" x 12.36" x 2.79" (369mm x 314mm x 71 mm)
Carton Dimension	20.87" x 17.52" x 7.87" (530mm x 445mm x 200mm)	20.08" x 9.84" x 18.11" (510mm x 250mm x 460mm)
Gross Weight	12.34 lb (5.6 kg)	14.3 lb (6.5 kg)
Environmental		
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C) with 0.5 m/s airflow (Industrial Grade HDD)	
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C; non-condensing	
Anti-Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD	
Anti-Shock	15 G peak acceleration (11 msec. duration) – with HDD	
EMC	CE/FCC class A	
Power Supply		
DC Input	DC 9 (min.) ~ 30 (max.) V w/3-pin terminal block, ATX Power function	
LCD		
Display type	12.1" TFT-LCD, LED	15" TFT-LCD, LED
Max Resolution	1024(H) x 768(V)	
Max. Colors	16.2M colors	16.2M (8bit/color)
Luminance	500 cd/m^2	300 cd/m^2
Viewing Angle	160° (H), 160° (V)	176° (H), 176° (V)
Back Light	LED	
Back Light MTBF (Hours)	50,000	70,000
Touchscreen		
Type	P-CAP/ 5-wire resistive	
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)	P-CAP (90%± 2%), 5-wire Resistive (80% ± 2%)
Note	Not support OMNI I/O Modules due to chassis limitation	Support OMNI I/O Modules

Note: All specifications are subject to change without notice.

OMNI Series : Modular Touch Panel Solutions

Model	OMNI-3175-SKU	OMNI-3195-SKU
System		
Processor	Intel® i5-6300U processor, 2.4 GHz Intel® Celeron® 3955U processor, 2.0 GHz	
System Memory	260-pin DDR4 SODIMM x 1, up to 16 GB	
LCD/CRT Controller	Integrated in processor	
Ethernet	Intel® I211, 10/100/1000Base-TX x 1	
I/O Port	USB 3.2 Gen 1 Type A x 4 SMA Antenna hole x 1 HDMI x 1 DB-9 Type RS-232/422/485 x 2 RJ-45 Type 10/100/1000Base-TX x 1 3-pin terminal block x1 for 9~30 Vdc power input LED Power on/off switch x1 (Power on = Orange, Power off =N/A)	
Storage Disk Drive	2.5" SATA HDD bay x 1	
Expansion Slot	Full Size Mini card x 1 SIM card x 1 OMNI I/O connector x 1	
OS support	Windows® 8.1, Windows® 10 (64 bit), Linux kernel 2.6.x or higher	
Mechanical		
Construction	Aluminum design (IP65 Front Frame)	
Mounting	VESA 100 / Panel Mount	
Dimension	16.14" x 14.57" x 2.32" (410mm x 370mm x 59mm)	18.14" x 16.14" x 2.83" (460.8mm x 410mm x 72 mm)
Carton Dimension	20.55" x 10.31" x19.29"(522mm x 262mm x 490mm)	26.02" x 8.11" x 19.53" (661mm x 206mm x 496mm)
Gross Weight	16.28 lb (7.4 kg)	20.06 lb (9.1 kg)
Environmental		
Operating Temperature	-4°F ~ 131°F (-20°C ~ 55°C) with 0.5 m/s airflow (Industrial Grade HDD)	
Storage Temperature	-4°F ~ 158°F (-20°C ~ 70°C)	
Storage Humidity	90% @40°C; non-condensing	
Anti-Vibration	1 Grms/ 5~ 500Hz/ operation – with HDD	
Anti-Shock	15 G peak acceleration (11 msec. duration) – with HDD	
EMC	CE/FCC class A	
Power Supply		
DC Input	DC 9 (min.) ~ 30 (max.) V w/3-pin terminal block, ATX Power function	
LCD		
Display type	17" TFT-LCD, LED	
Max Resolution	1280(H) x 1024(V)	
Max. Colors	16.7M colors (RGB 6-bits + Hi-FRC data)	
Luminance	350 cd/m^2	
Viewing Angle	170 (H), 160 (V)	
Back Light	LED	
Back Light MTBF (Hours)	50,000	
Touchscreen		
Type	P-CAP/ 5-wire resistive	
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)	
Note	Support OMNI I/O Modules	

Note: All specifications are subject to change without notice.

OMNI Series : Modular Display Solutions

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

Note: All specifications are subject to change without notice.

OMNI Series : Modular Display Solutions

Model	OMNI-310M	OMNI-312M
System		
Input Signal	VGA/HDMI	
On Screen Display Control	5 keys OSD keypad (Up, Down, Menu, Auto, Power)	
I/O Port	DB-15 VGA x 1 HDMI x 1 USB x 1 (For Enable T/S Function) Line in x 1 (For optional internal Speaker) Power Input x 1(Terminal Block 3pin)	
Os Support	Windows® 7 32/64 bit, Windows® 8 32/64 bit, Windows® 10 64 bit, Linux Ubuntu 16.04	
Mechanical		
Construction	IP65 aluminum front bezel & SGCC chassis	
Mounting	Panel Mount / VESA 100x100 / Stand	
Dimension	11.0" x 9.4" x 2.33" (280mm x 239.3mm x 59.1mm)	12.9" x 11.3" x 2.2" (328.5mm x 288.1mm x 55.9mm)
Carton Dimension	16.3" x 15.4" x 7.04" (415mm x 391mm x 179mm)	20.9" x 17.5" x 7.9" (530mm x 445mm x 200mm)
Gross Weight	7.9 lbs (3.6 kg)	10.4 lbs (4.7 kg)
Net Weight	1.1 lbs (2.4 kg)	7.7 lbs (3.5 kg)
Environmental		
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) With 0.5m/s Airflow	
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)	
Storage Humidity	10%~90% @104°F (40°C); non-condensing	
Anti-Vibration	1 Grms / 5~500Hz/random Operation	
Anti-Shock	—	
EMC	CE/FCC, Class A	
Power Supply		
DC Input	DC 12~30V Power Input with 3 Pin Terminal Block	
LCD		
Display Type	10.4" TFT-LCD	12.1" TFT-LCD
Max Resolution	800 x 600	1024 x 768
Max. Colors	16.2M	
Luminance	230 cd/m²	500 cd/m²
Viewing Angle	160°(H), 130°(V)	160°(H), 160°(V)
Back Light	LED	
Back Light MTBF (hours)	30,000	50,000
Touch Screen		
Type	Projective Capacitive Multi Touch or 5 Wire Resistive Touch Screen (By Model)	
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)	
Life Time	—	
Note		

Note: All specifications are subject to change without notice.

OMNI Series : Modular Display Solutions

Model	OMNI-315M	OMNI-317M	OMNI-319M
System			
Input Signal	VGA / HDMI		
On Screen Display Control	5 keys OSD keypad (Up, Down, Menu, Auto, Power)		
I/O Port	DB-15 VGA x 1 HDMI x 1 USB x 1 (For Enable T/S Function) Line in x 1 (For optional internal Speaker) Power Input x 1(Terminal Block 3pin)		
Os Support	Windows® 7 32/64 bit, Windows® 8 32/64 bit, Windows® 10 64 bit, Linux Ubuntu 16.04		
Mechanical			
Construction	IP65 aluminum front bezel & SGCC chassis		
Mounting	Panel Mount / VESA 100x100 / Stand		
Dimension	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)	18.1" x 16.1" x 2.3" (460.8mm x 410mm x 59.1mm)
Carton Dimension	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)	26.0" x 19.5" x 8.1 (661mm x 496mm x 206mm)
Gross Weight	14 lbs (6.35 kg)	14.8 lbs (6.7 kg)	18.1 lbs (8.2 kg)
Net Weight	11.2 lbs (5.1 kg)	11.7 lbs (5.3 kg)	15.2 lbs (6.9 kg)
Environmental			
Operating Temperature	14°F ~ 131°F (-10°C ~ 55°C) With 0.5m/s Airflow		
Storage Temperature	-4°F ~ 140°F (-20°C ~ 60°C)		
Storage Humidity	10%~90% @104°F (40°C); non-condensing		
Anti-Vibration	1 Grms / 5~500Hz/random Operation		
Anti-Shock	—		
EMC	CE/FCC, Class A		
Power Supply			
DC Input	DC 12~30V Power Input with 3 Pin Terminal Block		
LCD			
Display Type	15" TFT-LCD	17" TFT-LCD	19" TFT-LCD
Max Resolution	1024 x 768	1028 x 1024	
Max. Colors	16.2M (8bit/color)	16.7M	16.7M
Luminance	300 cd/m²	350 cd/m²	
Viewing Angle	176° (H), 176° (V)	160° (H), 140° (V)	170°(H), 160°(V)
Back Light	LED		
Back Light MTBF (hours)	70,000	50,000	
Touch Screen			
Type	Projective Capacitive Multi Touch or 5 Wire Resistive Touch Screen (By Model)		
Light Transmission	P-CAP (90% ± 3%), 5-wire Resistive (80% ± 3%)		
Life Time	—		
Note			

Note: All specifications are subject to change without notice.

System Level Products

UP Systems

Model	UP-GWS01	UPS-GWS01	UPC-GWS01
System			
CPU	Intel® Atom™ x5-Z8350 Processor (2M Cache, 1.44 GHz up to 1.92 GHz) CPU with 64 bit architecture; Quad Core	Intel® Pentium® N4200/ Celeron® N3350 Processor SoC/Atom® E3950	Intel® Atom™ x5-Z8350 Processor
Memory	Onboard DDR3L memory	Onboard Single/ Dual Channel LPDDR4 memory, Max. 8GB	1GB/ 2GB/ 4GB onboard DDR3L-1600
Graphics	Intel® HD 400 Graphics ,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	Intel® HD 400 Graphics
Storage	Onboard eMMC	eMMC ver 5.0 x 1, Max. 128G	16GB/32GB/64GB eMMC
Ethernet	Giga LAN x 1	Realtek 8111G x 2	Realtek 8111G x 1
WiFi/BT	Optional	—	WIFI802.11 b/g/n @2.4 GHz, Bluetooth 4.0
Audio	HDMI x 1	HDMI x 1, DP x 1	HDMI x 1
USB	USB2.0 x 4, USB 3.2 Gen 1 OTG x 1	USB 3.2 Gen 1 x 3	USB 3.2 Gen 1 Host x 1
Expansion Slot	—	Minicard (MINI card with SIM) socket x 1	
I/O Placements			
Power	DC-in Jack x 1	DC-in Jack x 1, Power Button x 1	5V DC x 1
USB	USB2.0 x 4, USB 3.2 Gen 1 OTG x 1	USB 3.2 Gen 1 x 2, USB 3.2 Gen 1 OTG x 1/ USB 3.2 Gen 1 x 1	USB 3.2 Gen 1 x 1
Display Port	HDMI x 1	HDMI x 1, DP x 1	HDMI x 1
Ethernet	Giga LAN x 1	Realtek 8111G x 2	RJ-45 x 1
COM	—		RS-232/422/485 x 1
Environment			
Power	5V/4A DC Only	5V DC Only	5V/4A DC Only
Form Factor	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)	3.58" x 2.63" x 2.17" (91mm x 67mm x 55.2mm)
Gross Weight	—		0.77 lb (0.35 kg)
Operating Temperature	32°F ~ 104°F (0°C ~ 40°C)	32°F ~ 113°F (0°C ~ 45°C)	32°F ~ 104°F (0°C ~ 40°C)
Operating Humidity	0% ~ 90% relative humidity non-condensing		10% ~ 80% relative humidity, non-condensing
Certification	CE/FCC Class A	CE, FCC Class A, UL	CE, FCC Class A
OS Support	Windows® 10, Linux, Android 6.0, Windows® 10 IoT core	Windows® 10, Linux, Android 7.0, Windows® 10 IoT core	Windows® 10, Linux (UbiLinux, Ubuntu, Yocto), Android 6.0, Windows® 10 IoT core
Note			

Note: All specifications are subject to change without notice.

UP Systems

Model	UPX-Edge	UPX-Edge Lite
System		
CPU	8th generation Intel® Core™ i7/i5/i3/Celeron Processor SoC	
Memory	Onboard DDR4 memory, Max 16GB, Single Channel: 4GB, Dual Channel: 8GB, 16GB	DDR4 SO DIMM slot x 1, Max 16GB
Graphics	Intel® Graphics, GEN 9	
Storage	eMMC 64GB	SATA3 (6Gb/s) x 3: a. SATA connector x 1 b. M.2 2280 SATA option (auto detect) x 1
Ethernet	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 i211 GbE port x 2
WiFi/BT	Optional	
Audio	Line out + MIC x 1	
USB	USB 3.2 Gen 2 x 4	
Expansion Slot	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)	M.2 2230 E Key x 1 M.2 2280 B+M Key x 1 M.2 3042/3052 B Key x 1 40pin HAT
I/O Placements		
Power	DC-in Jack x 1, Power Button x 1	
USB	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	
Display Port	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)	HDMI 1.4 x 1 DP 1.2 x 1 eDP x 1
Ethernet	RJ45 connector x 2	
COM	RS-232/422/485 x 2	
Environment		
Power	12V - 60VDC	12V - 24VDC
Form Factor	7.48" x 5.12" x 3.1" (190mm x 130mm x 78.6mm)	5.59" x 4.89" x 1.8" (142mm x 124mm x 45.7mm)
Gross Weight	6.61lbs (3kg)	—
Operating Temperature	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)	32°F ~ 140°F (0°C ~ 60°C)
Operating Humidity	0% ~ 90% relative humidity non-condensing	
Certification	CE/FCC Class A, RoHS Compliant, REACH	
OS Support	Win 10, Linux Ubuntu 18.04 with Kernel 5.0, Linux Yocto 2.7 with Kernel 4.19	
Note		

Note: All specifications are subject to change without notice.

System Level Products

UP Systems

Model	UPX-Edge i11	UPN-Edge Pro	UPN-Edge Pro 2
System			
CPU	11th Gen Intel® Core™ Processor SoC Core i7-1185GRE Core i5-1145GRE Core i3-1115GRE Celeron® 6305E	Intel® Apollo Lake N4200/N3350/E3950 Processor SoC	Intel® Atom™ X6000E Series and Intel Pentium® and Celeron® N and J Series Processor(formerly Elkhart Lake)
Memory	DDR4 SO-DIMM Slot x 2 (up to 64GB 3200Mhz)	onboard DDR4, Max 8GB Single Channel:2GB Dual Channel:4GB,8GB	4x IC LPDDR4
Graphics	Intel® Iris® Xe graphics	Intel® Graphic ,Gen 9	Intel® Graphics, GEN 11
Storage	SATA CONN x 1 with POWER CONN M.2 2280 M Key NVMe(PCIe [x2])	Emmc 32G/64G	emmc 64G
Ethernet	Intel® i225IT (TSN) x 1, Intel® i219 (vPRO) x 1	Intel i210 x2	Gbe x 2 via (1 x Intel.WGI210IT ,1 x Intel. I225-LM)
WiFi/BT	Optional		
Audio	Realtek ALC888s x 1 (Mic /Line out)	Line out+mic in x1	HDMI Audio x 1, DP Audio x 1
USB	USB 3.2 Gen2 x 3 USB 2.0 x 1 (Type A) USB 4.0 via USB type C	USB 3.2 Gen 1 OTG x 1 USB 3.2 Gen 1 (Type A) x 3	On mainboard: USB3.1 Connector x 2 USB 3.1 TYPE C Connector x 1 for 1 ports (OTG support)
Expansion Slot	M.2 2230 E-Key x 1 M.2 2280 M-Key x 1 M.2 3052 B-Key x 1 with SIM SATA3.0 with power connector x 1	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)	M.2 (2230 E Key) (1x PCIex1, 1x USB2.0) bottom x 1 M.2 2242/2280 B/M Key (1 x PCIe) bottom x 1 M.2 3042/3052 B/M Key (1xUSB3.0) top x 1
I/O Placements			
Power	12V DC-in (Lockable plug)/ Phoenix connector	DC-in Jack x 1, Power Button x 1	12V-24V DC-in (Lockable plug)/ Phoenix connector (optional)
USB	USB3.2 Gen2 x 3 USB2.0 x 1 (Type A) USB4.0 via USB type C	USB3.2 Gen1 OTG x 1 USB3.2 Gen1 (Type A) x 3	USB3.1 Connector x 2 USB 3.1 TYPE C Connector x 1 for 1 ports (OTG support)
Display Port	HDM 2.0 x 1 /DP 1.4 x 1 eDP x 1, 4K at 60hz panel	HDMIx1, DP x1	
Ethernet	Intel® i225IT (TSN) x 1, Intel® i219 (vPRO) x 1	Gb Ethernet (full speed) RJ-45 x 2 (Intel i210)	Gb Ethernet (full speed) RJ-45 x 2
COM	RS232/422/485 x 2	RS422/RS232/RS485 x 2	RS422/RS232/RS485 x 1
Environment			
Power	12V (AT & ATX)	12-24VDC	12V (with +/- 5% tolerance)
Form Factor	124mm x 152mm x 66.5mm	117x106.5x88.8 mm	—
Gross Weight	GW: 2.3kg	GW: 982.5g	—
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)	32°F ~ 140°F (0°C ~ 55°C) with air flow 0.5m/s	32°F ~ 140°F (0°C ~ 60°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing		
Certification	CE,FCC Class A	CE/FCC Class A, RoHS Compliant , REACH	CE, FCC
OS Support	Windows 10 /IOT, Yocto 3.1, Ubuntu 20.04.02	Microsoft Windows 10 (full), Windows IOT Core Linux: Ubuntu 18.04.5 & Ubuntu 20.04.1 Yocto 3.1	Win 10/ 10 IoT Core, Linux: Ubuntu 18.04 and 20.04 Yocto 3.1
Note			

Note: All specifications are subject to change without notice.

UP Systems

Launching in Q3

Model	UP-Edge Pro
System	
CPU	Intel® Apollo Lake N4200/N3350/E3950 Processor SoC
Memory	onboard DDR4, Max 8GB Single Channel:2GB Dual Channel:4GB,8GB
Graphics	Intel® Graphic ,Gen 9
Storage	Emmc 32G/64G
Ethernet	Realtek® 8111H x 1
WiFi/BT	Optional
Audio	Line out+MIC x1
USB	USB3.2 Gen1 x 3 USB3.0 OTG via USB type C
Expansion Slot	40 pin GPIO x 1 M.2 2230 E-key x 1
I/O Placements	
Power	12V- DC-in / Phoenix connector (optional)
USB	USB 3.2 Gen 1 x3 USB type C x1
Display Port	HDMIx1 DP x 1 via Type C connector
Ethernet	RJ-45 x 1
COM	—
Environment	
Power	12V/5A DC
Form Factor	TBC
Gross Weight	TBC
Operating Temperature	32°F ~ 140°F (0°C ~ 60°C)
Operating Humidity	0% ~ 90% relative humidity, non-condensing
Certification	CE,FCC
OS Support	Windows* 10 IOT Enterprise Yocto project 3.1 Kernel 5.4 Ubuntu 20.04 Kernel 5.4
Note	

Note: All specifications are subject to change without notice.

System Level Products

Turn-Key Chassis Solutions

Model	NANO-002N	NANO-002F
System		
CPU	6th gen. Intel® 14nm ULT Core™, BGA CPU, 15W TDP. i7-6600U 2C/4T GT2 2.6/3.4 GHz 4M/ i5-6300U 2C/4T GT2 2.4/3.0 GHz 3M/ i3-6100U 2C/4T GT2 2.3 GHz 3M/ Celeron® 3955U 2C/2T GT1 (f) 2.0 GHz 2M	
Chipset	Intergrated into SoC	
System Memory	SODIMM x 2, max. 32 GB, DDR4 2133/1867 MHz non-ECC, un-buffered memory	
I/O Chipset	NCT5538D	
Storage Devices	M.2 2280 M-Key slot (PCIe[x4]+SATA) x 1	
Ethernet	Realtek 8111G Giga LAN 10/100/1000Mb LAN x 2, RJ-45 x 2	
Audio	Realtek® ALC887	
Expansion Slots	M.2 2230 E-Key slot (PCIe+USB) x 1	
BIOS	128Mbit Flash ROM, AMI BIOS	
H/W Monitor	Temperature Monitor on CPU/System, Voltage Monitor on Vcore/5V/3.3V/12V, Fan Monitor on Chassis	
WatchDog Timer	1~255 steps by software program	
Smart Fan Control	Chassis Fan	
Wake On LAN / PXE	Yes (WOL / PXE)	
Power State	S3, S4, S5	
Graphics		
Graphics Chipset	Integrated Graphics	
Resolution	HDMI 1.4 up to 4096 x 2160@24Hz	
Graphics Multi Display	HDMI+HDMI	
Environement & Power & ME		
Battery	Lithium battery	
Power Requirement	DC Power x 1 (DC: 12V~19V, wide rage:12V-5%~ 19V+10%)	
Operating Temperature	FANLESS : 0°C~40°C	FAN: 0°C ~ 50°C
Operating Humidity	20%~90%RH, non-condensing	
Certificate	CE & FCC class A	
Form Factor	NANO ITX: 4.72" x 4.72" (120mm x 120mm)	
Weight	—	
I/O		
Front I/O	USB 3.2 Gen 1 port x 2 Audio Jack x 2: Line-out (green), Mic-in (pink) COM port RS-232 On/Off Button x 1 Power LED + HD LED x1	
Rear I/O	USB 3.2 Gen 1 port x 2 HDMI Connector x 2 RJ-45 Connector x 2 Reset Button x 1, DC Power Jack x 1	
Internal I/O	M.2 2280 M-Key slot x 1 Chassis Fan connector x 1 (3-pin, p=2.00mm) Reset Switch 2-pin header x 1, power button 2-pin header x 1, M.2 2230 E-Key slot x 1	
Operating System		
OS	Windows® 7 32 bit, Windows® 7 64 bit, Windows® 8.1 64 bit, Windows® 10 64 bit, Linux Fedora* 22 (64b)	
Note		

Turn-Key Chassis Solutions

Model	ACS-1U01-BT4	ACS-1U01-H110B
System		
CPU	Intel® Atom™ J1900 Processor (4C @ 2.00 GHz CPU, 688/854 MHz GFX, 10W TDP), Intel® Atom™ N2807 Processor (2C @ 1.58 GHz CPU, 313/750 MHz GFX, 4.3W TDP)	Intel® Skylake 14nm LGA 1151 socket Processor, Max. 65W TDPs (follow thin mini-ITX)
Chipset	—	Intel® H110
System Memory	204-pin SODIMM x 2 up to 8 GB (for J1900) 204-pin SODIMM x 1 up to 4 GB (for N2807) DDR3L 1333 MHz , Non-ECC, un-buffered memory, Dual-channel memory architecture	2 x SODIMM, Max. 32GB, DDR4 2133/1867 MHz, Non-ECC, Un-buffered
I/O Chipset	Fintech 81866D	NCT6791D
Display Interface	Intel® Graphics Media Accelerator VGA x 1, Up to 1920 x 1200 @60 Hz ; HDMI x 1, Up to 1920 x 1200 @60 Hz	Intel® HD Graphics DP(BOM Change, default HDMI): Up to 1920 x 1200 @60Hz, with Digital Audio HDMI: Up to 4096 x 2304 @24Hz / 2560 x 1600 @60Hz, with Digital Audio LVDS: Up to 1920 x 1200 @60Hz, Dual Channel 18/24-bit colay eDP: Up to 4096 x 2304 @60Hz
Storage Devices	2.5" HDD, Full-Size Mini-Card (optional)	
LAN	Realtek PCIe Gb LAN 8111G x 1	
IO		
Front I/O	USB 2.0 port x 4 VGA x 1 On/Off Button x 1, Power LED + HD LED x 1 (COM port optional if not use VGA port)	USB 2.0 port x 4 Power S/W x 1 COM port x 1 HDD LED x 1 POWER LED x 1
Rear I/O	USB 3.2 Gen 1/2.0 port x 1, USB 2.0 port x 2, Line-out (green) x 1, Line-in (blue) x 1, HDMI x 1, RJ-45 connector x 1, DC Power x 1, RS-232 connector x 1	USB 3.2 Gen 1 port x 4, Mic-In (pink) x 1, Line-Out (green) x 1, HDMI x 2 (BOM Changeable to DP), RJ-45 Connector x 2, DC Power jack x 1
Expansion	Full-size Mini-Card (PCIe +USB or mSATA) + SIM Card (mSATA default) x 1, Half-size Mini-Card (PCIe +USB) x 1 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 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	Mini PCIe : Half-Size Mini-Card slot (PCIe + USB) x 1, Full-Size Mini-Card (Default mSATA, PCIe + USB optional) x 1 Storage : Full-size Mini-Card slot (mSATA default) x 1, SATA3(6.0Gb/s) x 1, SATA power connector x 1 Others : RS-232 9-pin int. box header x 1, RS/232/422/485 9-pin box header x 1, 5-pin USB 2.0 header(p=2.00mm) x 2
Indicator	Power LED x 1, HDD Active LED x 1	
Power		
Battery	Lithium battery	
Power Requirement	DC: 12V	
Mechanical		
Dimension (WxHxD)	8" x 8" x 1.75" (203.20mm x 203.20mm x 44.45mm)	
VESA Mounting	Wallmount	
Anti-Vibration	0.5 Grms/ 5~ 500Hz/ operation – HDD	
Anti-Shock	10 G peak acceleration (11 msec. duration)	
Environmental		
Operating temperature	32°F ~ 122°F (0°C ~ 50°C)	
Certificate	CE & FCC Class A	
Operating System		
MS Windows	Windows® 7 32/64 bit, Windows® 8.1 32/64 bit	
Linux	Fedora	
Note		

Note: All specifications are subject to change without notice.

System Level Products

Turn-Key Chassis Solutions

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

Note: All specifications are subject to change without notice.

Turn-Key Chassis Solutions

Model	ACS-4U01-Q470A
System	
Processor	Intel® 10th Generation (Comet Lake-S) Core™ i9 /i7/ i5 /i3, Pentium 14nm LGA 1200 socket Processor, Max. 10 Core 80W
Chipset	Intel® Q470E Express Chipset
Memory	DIMM x 4, DDR4 (2933/2666MHz, max. 128GB)
I/O Chipset	IT5121E + F81216HD
Ethernet	Intel® PHY i219LM Giga LAN (supports Intel® AMT 12.0) x 1, Intel® i211AT Giga LAN x 1
Audio	Realtek® ALC897 6-Channel High Definition Audio CODEC
TPM	Nuvoton NPCT750AADYX TPM2.0 onboard (optional)
Expansion Slots	PCIe 3.0[x16] Slot (16 lanes) (8 lanes when dual use PCIe[x16]) x 1, PCIe 3.0 [x16] (8 lanes) x 1, PCIe 3.0[x4] Slot x 1, PCIe 3.0[x4] Slot (2 lanes) x 1 M.2 2230 E-key (PCIe/CNVI) x 1, M.2 2280/2242 M-key (PCIex4) x 1, M.2 3042/3052/2242 B-key (PCIe/USB/SATA) x 1, Micro SIM card Slot x 1
BIOS	256Mbit 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
Storage	SATA III (6.0Gb/s) ports x 4, support RAID 0/1/5/10M.2 228, M-key 256G/512G/1TB (PCIex4) x 1
WatchDog Timer	1~255 steps by software program
Smart Fan Control	CPU Fan/ Chassis Fan x 2
Wake On LAN/ PXE	Yes (WOL / PXE)
Power State	S3, S4, S5
DIO	8-bit Digital I/O interface (In/Out programmable) x 1
FAN	CPU Fan connector(s) (4-pin) x 1, Chassis Fan connector(s) (4-pin) x 2
Others	Chassis Intrusion x 1, AT/ATX mode select jumper x 1, Front panel header x 1, Clear CMOS jumper x 1, 3-pin ME lock header x 1
Graphics	
Graphics Chipset	Intel® Graphics Media Accelerator
Graphics Multi Display	HDMI+HDMI+VGA, HDMI+HDMI+HDMI
VGA	Up to 1920 x 1200 @60Hz (via IT6516B)
DVI	—
HDMI	Up to 4096 x 2160 @ 60 / 30 Hz, with Digital Audio
Display Port	—
LVDS	—
eDP	—
Backlight Control	—
Environment & Power & ME	
Battery	Lithium battery
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
Rear Panel I/O Ports	
USB	USB 3.2 Gen2 ports (10 Gbps) x 2, USB 3.2 Gen1 ports (5 Gbps) x 4
Display I/O	VGA x 1, HDMI x 3 (2.0 x 1, 1.4 x 2)
Audio I/O	Audio Jack x 3: Line-in, Mic-in, Line-out
LAN I/O	LAN (RJ45) ports x 2
Serial Port	DB-9 COM (supports RS-232/422/485, 5V/12V/RI) x 1
PS/2 Port	—
Front I/O Connectors	
USB	USB 2.0 x 2
Others	Power On/Off, System Reset
Power	
Power Requirement	ATX power supply, Input:90~264V, Output:500W~900W
Mechanical	
Color	Black + Sliver
Dimensions (W x H x D)	445 x 430 x 176 (mm), 17.5" x 16.9" x 6.9"
Gross Weight	TBC
Net Weight	TBC

Note: All specifications are subject to change without notice.

Industrial Chassis — Rackmount

Model	ARC-645	ARC-645M	ARC-625M
System			
Construction	1.2 mm SECC Zinc-coated Steel	1.2mm SECC Zinc-coated Steel (Japanese Manufactured)	1.2mm SECC Zinc-Coated Steel
Storage	External: 3.5" Drive Bay x 1, 5.25" Drive Bay x 4 Internal: 3.5" Drive Bay x 2		External: 3.5" Disk Drive x 1, 5.25" CD-ROM or Removable Hard Disk Drive x 1 Internal: 3.5" Hard Disk Drive Bay x 2
System Fan	12 cm Ball Bearing Fan with Removable Filter x 1	12 cm Fan on Front Panel x 1, 8 cm Fan On Rear Side x 1	8cm Ball Bearing Fan with Removable Filter x 1
Front Panel	Power ON/OFF Switch x 1 Reset Button x 1 Power ON LED x 1 Hard Disk Drive Active LED x 1 USB Port x 4		Power ON/OFF Switch x 1 Reset Button x 1 Power ON LED x 1 Hard Disk Drive Active LED x 1 USB x 2
Rear Panel	AT Keyboard Cut-out x 1 14 Slots (including system slot), supports max. 339 mm (length) for expansion card	AT Keyboard Cut-out x 1 Reserved Cut-out for DB Connector x 4 7 Slots, supports max. 312 mm (length) for expansion card	PCI via riser card x 3, supports max. 167 mm (length) for expansion card
Color	Black		
Dimensions	19" (W) x 20.8" (D) x 7" (H) (482mm x 528mm x 177mm)	19" (W) x 7" (H) x 20.8" (D) (482mm x 177mm x 528mm)	19" (W) x 20.8" (D) x 3.5" (H) (482mm x 528mm x 88.2mm)
Carton Size	21.6" (W) x 27" (D) x 12.4" (H) (548mm x 685mm x 315mm)	21.6" (W) x 12.4" (H) x 27" (D) (548mm x 315mm x 685mm)	21.6" (W) x 27" (D) x 8.8" (H) (548mm x 685mm x 224mm)
Net Weight	26.4 lb (12 kg)		22 lb (10 kg)
Gross Weight	30.8 lb (14 kg)		26.4 lb (12 kg)
Environmental			
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)		
Storage Temperature	-4°F ~ 176°F (-20°C ~ 80°C)		
Storage Humidity	10 ~ 90% @ 40°C, non-condensing		
Vibration	0.5 Grms/ 5 ~ 500Hz/ operation (2.5" Hard Disk Drive) 1.5 Grms/ 5 ~ 500Hz/ non operation		
Shock	15 G peak acceleration (11 m sec. duration), operation 30 G peak acceleration (11 m sec. duration), non operation		
EMC	CE/FCC Class A		
Note			

Note: All specifications are subject to change without notice.

Industrial Chassis — Wallmount

Model	AMC-280M	AEC-206
System		
Construction	Heavy-duty Steel	
Storage	External: 5.25" External Drive Bay x 2 Internal: Up to 3.5" Drive Bay x 1 Optional: Two 3.5 HDD Bay Cage	External: 5.25" Drive Bay x 1 (Front Accessible) 3.5"" Drive Bay x 1 (Front Accessible) Internal: 3.5"" Drive Bay x 2
System Fan	12cm Ball Bearing Fan with Removable Filter x 1	12cm Ball Bearing Fan with Removable Filter (Flow-in) x 1
Front Panel	Power ON/OFF Switch x 1 Reset Button x 1 Power ON LED x 1 Hard Disk Drive Active LED x 1 PS/2 Keyboard Connector x 1 USB x 2	Power On/ Off Switch with LED x 1 Reset Button x 1 Hard Disk Drive Active LED x 1 USB x 2
Rear Panel	I/O Bracket provided by motherboard mfg 7 slots, supports max. 312 mm (length) for expansion card	COM x 1 Parallel x 1 Reserved Cut-out for LVDS Connector x 1 6 slots (including system slot), supports max. 339 mm (length) for expansion card
Color	White	Black
Dimensions	7.7" (W) x 17.7" (D) x 13" (H) (196mm x 450mm x 330mm)	7.7" (W) x 15.55" (D) x 8.5" (H) (196mm x 395mm x 216mm)
Carton Size	11.1" (W) x 20.3" (D) x 18" (H) (281mm x 515mm x 457mm)	12.2" (W) x 13.2" (D) x 20" (H) (310mm x 335mm x 510mm)
Net Weight	19.8 lb (9 kg)	17 lb (7.8 kg)
Gross Weight	22 lb (10 kg)	20 lb (9.2 kg)
Environmental		
Operating Temperature	32°F ~ 122°F (0°C ~ 50°C)	
Storage Temperature	-4°F ~ 176°F (-20°C ~ 80°C)	32°F ~ 167°F (0°C ~ 75°C)
Storage Humidity	10 ~ 90% @ 40°C, non-condensing	5 ~ 95%@40°C, non-condensing
Vibration	0.5 Grms/ 5 ~ 500Hz/ operation	1 Grms/ 5 ~ 500Hz/ random operation
Shock	15 G peak acceleration (11 m sec. duration), operation	15 G peak acceleration (11 msec. duration)
EMC	CE/ FCC Class A	
Note		

Note: All specifications are subject to change without notice.

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AAEON Technology Inc.

5F, No. 135, Lane 235, Pao Chiao Rd., Hsin-Tien Dist, New Taipei City, 231, Taiwan, R.O.C.
Tel: +886-2-8919-1234 Fax: +886-2-8919-1056 E-mail: sales@aaeon.com.tw URL: http://www.aaeon.com

LITERATURE ORDERING

Contact local office for literature requests.

USA

USA

California Office
324 W. Blueridge Ave, Orange, CA 92865
Toll Free: +1-877-TO-AAEON (1-877-862-2366)
TEL: +1-714-996-1800
FAX: +1-714-996-1811
E-mail: sales@aaeon.com
Tech Support: tech@aaeon.com

New Jersey Office
11 Crown Plaza, Hazlet, NJ 07730-2441
TEL: +1-732-203-9300
FAX: +1-732-203-9311
E-mail: sales@aaeon.com
Tech Support: tech@aaeon.com

EUR

Netherlands

AAEON EUROPE
Ekkersrijt 4090, 5692 DA Son, Science Park, Eindhoven
TEL: +31(0)499-745200
FAX: +31(0)499-462010
E-mail: sales@aaeon.eu

Germany

AAEON Technology GmbH
Monzastrasse 4e, 63225 Langen
TEL: +49(0)61033 74 79 00
FAX: +49(0)61033 74 79 49
E-mail: sales@aaeon.eu

France

AAEON France Office
Gare de Lyon, 37/39 Avenue Ledru-Rollin, CS 11237, 75012 Paris Cedex 12
TEL: +33 (0) 156 95 16 40
E-mail: sales@aaeon.eu

Italy

AAEON Italy Office
Viale Masini 12/14, 40126 Bologna
TEL: + 39 051 0923582
E-mail: sales@aaeon.eu

ASIA

China

AAEON Technology (Su Zhou) Inc.
Room 12, 2F, Building B, No.5 Xing Han Street, Suzhou Industrial Park, Jiang Su Province
TEL: +86-512-6762-5700
FAX: +86-512-6761-7337
E-mail: sales@aaeon.com.cn

Shanghai Branch Office
20F, Unit D, GEM Building, No.487 Tianlin Road, Xuhui District, Shanghai
TEL: +86-21-3367-5511
FAX: +86-21-3367-4238
E-mail: sales@aaeon.com.cn

Beijing Branch Office
Room 606-608 Block D, Jiahua Building, No.9, Shanghai 3rd Street, Haidian District, Beijing
TEL: +86-10-8278-0904
FAX: +86-10-8278-0214
E-mail: sales@aaeon.com.cn

Wuhan Branch Office
B1501, 111 Guangu Time Spuare Guanshan st. Wuhan Hubei Province
TEL: +86-27-87606090
E-mail: sales@aaeon.com.cn

China

Chengdu Branch Office
Room 2204, 22F, Building6, No.666 JinCheng Avenue, GaoXin District, Chengdu City
TEL: +86-28-85120523
E-mail: sales@aaeon.com.cn

Guangzhou Branch Office
Room 1505,B2,No.122-124 kexue Road, High-Tech Development Zone, Guangzhou
TEL: +86-13534236621
E-mail: sales@aaeon.com.cn

Shenzhen Branch Office
Room 602,6th Floor,Building J, Zhongli Entrepreneurial Community, Liuxian 2 Road, Xinan Street, Baoan District, Shenzhen
TEL: +86-755-8304-7277
FAX: +86-755-8304-7272
E-mail: sales@aaeon.com.cn

Singapore

AAEON Technology Singapore PTE LTD.
57 Genting Lane, #07-00, Singapore 349564
TEL: +65-6749-8749
FAX: +65-6746-1595
E-mail: sales@aaeon.com.sg