INDUSTRIAL COMPUTING

PRODUCT SELECTION GUIDE

bcm ADVANCED RESEARCH

ODM / OEM CUSTOM DESIGN

High-Performance Computing

Industrial Panel PC

Certified Industrial Computer

Embedded Computing

intel partner Titanium

BCM Advanced Research (BCM) is a U.S. based Embedded Systems & PCBA designer and manufacturer. We provide both off-the-shelf and custom products, as well as turnkey design & manufacturing services. Our production facilities (from motherboards to complete systems) are based in Taiwan, and our project management and customer facing engineering resources are based both in the USA and Taiwan. Our USA corporate office is located in Irvine, CA and has over 25,000 sq. ft. of space which includes fully functional engineering labs, a repair center, and our main U.S. logistics warehouse. Our U.S.-customer-facing engineers are experts in electrical PCBA design, mechanical design (metal & plastics), thermal engineering, firmware & BIOS & O/S support, and system engineering. We also have U.S. based QA engineers for ongoing post-production support.

BCM Core Competencies and Differentiators

- Best in class **US-based Engineering Support**, FAE Consultation, and Project Management teams able to provide **same-day responses** for North America customers through our California tech hub

- Exceptional **turnkey CPU board & System Design** and **Manufacturing** capabilities

- Products are built with **7-10 years extended lifecycle**

- Quality - **ISO 9000 & ISO 14001, ISO 13485 (Medical Electronics Device)**, and **TS 16949 (Automotive Electronics)** certified factories

- Proudly **Made in Taiwan** and **Tariff Free**

- **We create value for our customers** - offering Industrial computing building blocks speed time to market. **Certified building blocks** speed time to market plus **save on certification costs**

- Focused on the value-embedded market segment by meeting broad market core embedded computing requirements and foregoing the fringe market

Focus Application Areas

- **Medical & Healthcare**
- **Gaming**
- **Industrial and Robotics**
- **Factory Automation**
- **Smart Retail**
- **Transportation**

Embedded Computing Product Line

High-Performance Computing (HPC)

Embedded grade server boards and systems deliver lightning-fast server-class performance with extended lifecycle, traceability, IPMI real-time system monitoring, remote management and exceptional reliability.

Intel® x86 Motherboards

From small form factor to desktop platform including COM Express, Q7 Module, Pico-ITX, 3.5 in SBC, mini-ITX, uATX, ATX and custom form factors.

NXP, Rockchip ARM (RISC) Motherboards

Low power, cost effective, ultra compact ARM motherboards, ARM development kits, support Android, Linux OS, LCD touch panel.

Industrial Computing Building Blocks

Fanless Embedded Systems, Mini-ITX Barebone Building Block Computers, and Fully Certified Building Block Computers.

Open Frame Tablets

Including open frame tablets, semi-rugged tablet with PCAP touch screen, onboard CPU, memory, storage, Wi- Fi and Bluetooth. Optional card reader & scanner. Easy mounting kits available.

Medical Panel PC, Industrial Panel Computer

Industrial grade all-in-one panel PC, HMI interface, stainless steel splash proof panel PC, medical grade panel PC, healthcare panel PC, POS and more.

Custom Design

Custom design for industrial motherboards and embedded computing solutions. Our goal is to make it easy and simplified process when customers are doing the business with us.
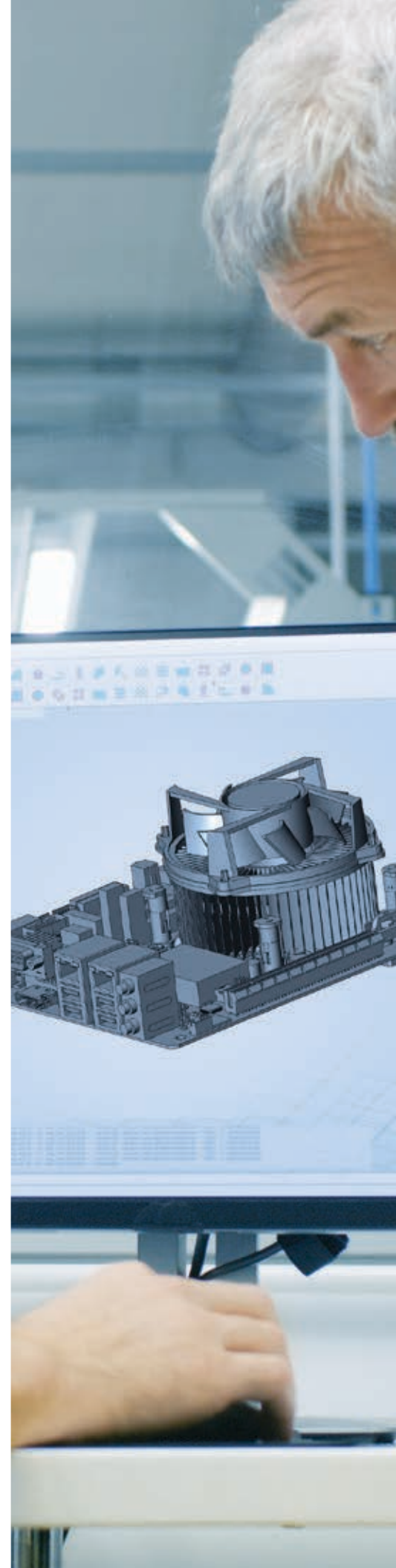
BCM is a Trusted Partner and One Stop Shop for ODM/OEM Design & Manufacturing

Accelerate your ODM project with BCM's

US In-House R&D and Project Management Teams

30+ Local R&D & Product Engineering

We have 30 experienced in-house R&D and project management team members based in Irvine, CA (and over 100 worldwide).

R&D 12 - 18+ Years Experiences

Every team member receives product technology trainings regularly and have average 12-18+ years in their respective fields including electrical engineering, schematic layout, system analysis, mechanical hardware, BIOS, firmware, and OS software.

Partner with Intel®, NXP and Rockchip

BCM is proud to keep itself as one of the pioneer leaders in the industrial embedded computing industries for decades. We continue to provide our customers with leading embedded technologies in hardware design. Partnership with Intel®, NXP and Rockchip enables us to get early access of new processor platforms, leveraging the latest technologies to help our clients stay ahead of their competitors.

Trusted Long Term Supplier

By partnering with Intel® and NXP, we ensure our customer to receive 10-15-year supply on core processors, chipset and components to keep their products stay competitive in the market.

Our ODM/OEM Custom Design and Manufacturing Products and Services:
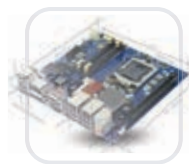
Board Design
- Intel® x86 Platform
- NXP, Rockchip ARM (RISC) Platform
- Custom Form Factors
- Standard Form Factors including Mini-ITX, uATX, ATX, COMe Module, 3.5" SBC, QSeven, SMARC Module, carrier boards
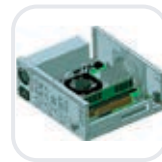
System Level Design
- Fanless ultra compact BOX PC
- Ruggedized BOX PC
- Heavy-duty steel / aluminum chassis and enclosures
- Thermal simulation test for chassis to work with our industrial motherboards

Open Frame, Panel PC & Tablets
- Industrial grade all-in-one panel PC
- HMI interface, open frame panel computers with multi-touch screen
- 7"/10"/15"/21"/24" LCD size
- Scalable performance, rich I/O interfaces
- Semi-Rugged Tablet
- Plastics housing and tooling
- Mounting design

Turnkey Metal or Plastic Systems
- Mechanical & ID Design including CAD drawing, 3D modeling, Thermal simulations
- Examples such as retail POS, interactive kiosk, medical & automotive tablets, vehicle mounted systems, self-service HMIs, etc

intel partner Titanium

Competitive NRE Design Fee and Low Volume Manufacturing MOQ Requirement

We are proud of our exceptional custom designs and business model which offers affordable NRE and flexible project size requirements that help customers to optimize the unit cost.

Medical and Automotive Electronics Certified Factories - Made in Taiwan, Tariff Free

We own Medical and Automotive grade ISO 9000, 14001, 13485 (Medical Electronics Device), and TS 16949 (Automotive Electronics) certified factories in Taiwan, Asia.

Quality Control, Quality Assurance

100% factory functional testing for each board or system prior to shipping. This quality measure minimizes the chance of out-of-box failures and reduces RMA overhead.

US-based Engineering and Support team to provide quick and efficient response through our California tech hub

The Irvine facility has its own laboratory, testing equipment, environmental chambers, and repair center with additional staff members in our Sales, Marketing, Operations, QA, and Customer Service departments.

ODM Process Flow:

1	CONNECT WITH BCM SALES/R&D FOR PROJECT CONSULTATION
2	PROJECT KICKOFF, DEVELOPMENT AND PROTOTYPE
3	DESIGN VERIFICATION (EVT)
4	DESIGN VALIDATION TESTING (DVT)
5	MANUFACTURING VERIFICATION (PVT)
6	MASS PRODUCTION
7	TECHNICAL SUPPORT AND RMA
8	REVISION CONTROL, PCN, EOL MANAGEMENT

Contact BCM for more ODM Service info: BCMSales@bcmcom.com

Design Manufacturing Service (DMS)

INDUSTRIAL MOTHERBOARDS & EMBEDDED COMPUTING SYSTEMS

BCM specializes in the ODM/OEM design and manufacture of robust industrial motherboards and embedded computing systems, delivering high quality products and world-class customer service and support.

Types of Custom Design Services

Original Design Manufacturing (ODM)

- Complete turnkey fully custom design and manufacturing services
- Customers define the product specification based on their application requirements

This would be a ground-up design for a motherboard or system starting from a customer concept, spec, or drawing, and usually based on a technology that BCM is already designing into its standard products. Typical ODM motherboard designs may include a non-standard form factor, specialized I/O, FPGA implementation, or integrating a customer's IP onto the custom computer board for cost or integration optimization.

For ODM systems, it may include metal chassis design, or coming up with an ID design for a plastic housing, tooling, battery design, touch screen implementation, integrating other PCBAs such as a light bar or custom I/O, or memory, CPU, and storage configuration.

Semi-Customization based on standard off-the-shelf motherboards and Barebone Systems

Using a standard product as a building block for a semi-custom solution reduces time-to-market and can cut development costs. Whether you need a quick system solution based on one of our standard motherboards, either a metal enclosure or adding a plastic back cover to one of our open frame tablet products, semi-customizing a system with BCM is easy and fast. For qualifying projects, BCM can also fully configure one of our existing barebones systems to add logos, labeling, memory, CPU, storage, or an operating system.

Contract Manufacturing (CM)

Customer-owned design and using BCM's engineering and manufacturing services for production in our certified factory with competitive pricing.

Key Industries Served & Market Applications

From small hand-held mobile devices to large scale industrial machines, we have been in production for our customers across many different market segments. You'll find our products in devices you encounter daily including self-serve kiosks, vending machines, POS systems, fitness equipment, video conferencing, 3D printers, security surveillance, medical equipment, airport x-ray scanners, digital signage, slot machines, and automated lottery terminals.

Medical / Healthcare
Medical Imaging System, Ultrasound System, Medical AI, CT scan, MRI, X-Ray, Smart Fitness Console

Medical Equipment
Automated Medicine Dispensing Machine, Nursing Cart, Diagnosis Devices, Surgical Room Lighting Control Interface

Gaming
Class 1,2&3, Player Tracking Systems, Lottery, Gaming Tablet, Arcade Game Amusement Machines

Test & Measurement
Custom motherboard/system design based on customer's spec requirements

Automation
Factory Automation, Industrial Control HMI, X-Ray Luggage Scanning, HVAC, Packing Line Inspection Machines

Digital Video/Audio
Video Conferencing System, Meeting Room Scheduler, Stage Lighting Control, Live Broadcasting & Media Production Computing Devices

Kiosk, Smart Retail
Automated Parcel Locker, Industrial Dispensing Cabinet, Airport Kiosk, Parking Payment System, POS, Industrial Tablet

Robotics
Autonomous Mobile/Self-driving Robots, Material Handling Robots

Broad Market HMI
Beverage Dispenser Touch Interface, In-Flight/Seat-back Entertainment Systems, Self-serve Kiosk

Printing
Touch Control Interface for Industrial 3D Printers, Commercial Printers, Enterprise Printers

Telematics
Telematics Gateway, Dash Camera Security, Edge Management Gateway, Network Systems

Transportation
Electronic Toll Collection (ETC) & License Plate Imaging Systems, ITS, Gate Control Interfaces

Medical, Healthcare & Fitness

Embedded Design-In Capability

- Intel®, NXP, Rockchip Technologies
- Wide range of form factors: ATX, uATX, Mini-ITX, Pico-ITX, 3.5" SBC, COMe, Q7
- ODM Custom Design and Manufacturing
- ID/mechanical design, thermal simulation, peripheral and system integration

Medical Design Quality Validation

- ISO 9000, 14001, 13485 (Medical Electronic) Certified Factory
- Certification Services: UL, CE, FCC
- Reliability Validation
- Functional Compatibility Test
- Environment & Reliability Test
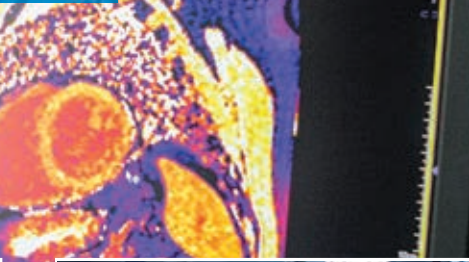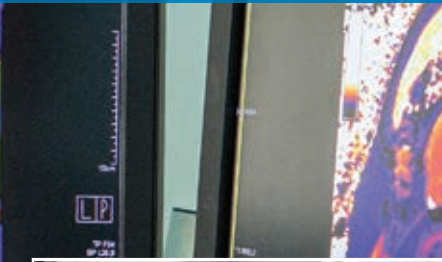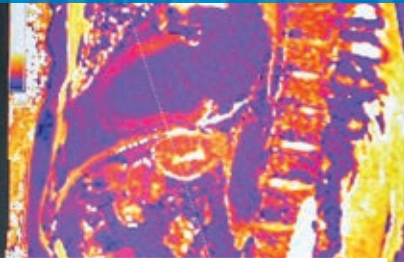
Entry Level to High-performance Medical Imaging Systems

Ultrasound systems, precision diagnosis, IGT (Image-Guided Therapy), CT (Computed Tomography) scanning and MRI (Magnetic Resonance Imaging).

Medical Carts, Nursing Cart, Point-of-Care Systems

Medical grade panel computer systems provide easy integration with mobile cart, nursing cart, patient bedside care system. Telemedicine carts.

Hospital Environment, Surgical Room

Surgical Room Lighting Control Interfaces. Medical Server, Medical AI Box, monitoring and/or recording medical imaging at the operation room.

Products

HID-2334

23.8" Ultra Light, Battery Operated, All-in-One, Multi-touch Medical Panel PC. Intel® Core™ i5-7300U Processor onboard.

HID-2132

21.5" 16:9 1080P Slim design Multi-touch Medical Panel PC, Anti-Microbial Finish.

High-Performance Computing

Delivering lightning-fast server-class performance with extended lifecycle, IPMI real-time system monitoring for medical imaging processing.

Strict Product Lifecycle Control

- 5~15 year Lifecycle Support
- Product Revision Control
- Product Change Notice (PCN) Management
- Component Management Control
- Last-Time-Buy Management
- Component EOL Plan
- Quality Management
- Extended Warranty & RMA

Medical Lab Testing and Analysis Equipment

Laboratory devices for testing, analysis, research. Analyzer for blood, urine, hemodialysis, etc.

Clinic Diagnosis Systems, Medical Treatment Devices

Dental office 3D scanning, X-ray machine, laser dental bleaching device. Optometry diagnosis equipment. Dermatology treatment device.

Fitness Rehab, Smart Fitness User Interface Console

Customized fitness console with Multi OS support, TV tuner, internet, Wi-Fi, BT, app compatibility, asset management and IoT connectivity services.

ST526-RX370Q

SySTIUM® Model 526E Chassis + Power Supply + BCM RX370Q Micro ATX Motherboard for Certified Solution. FCC, CE, UL or CSA.

ST515-MX310H

SySTIUM® Model 515 Chassis + Power Supply + BCM MX310H Mini-ITX Motherboard for Certified Solution. FCC, CE, UL or CSA.

Open Frame & Tablet

7"/10.1"/15.6" Open Frame Tablet with Touch. Medical EN-60601-1/EN-60601-1-2 Tablet, Fanless, Slim, Supports Win 10, Android and Linux OS.

Gaming & Casino Industry

Custom Computing Solutions Designed and Manufactured for Gaming & Casino Applications

BCM has been serving the leading gaming companies for over 2 decades. Our teams of experts carry the experience of custom gaming system design with confidence to continuously provide full support for our gaming customers. We understand the needs and market trends of the gaming industries.

Player Tracking Systems

Video Lottery Terminals (VLT) / Slot Machines, Jackpot

Lottery Vending Terminal & Bingo Machines, Gaming Tablets, Tablet for Casino and Hotel Management

Products
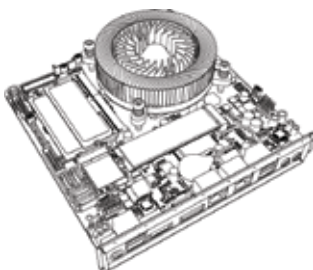
Custom Motherboards & Systems

Customized gaming boards and systems based on customer's requirement. Custom form factor, system performance, expansion slots, I/O, multi-display, etc.

High-Performance Computing

Delivering lightning-fast server-class performance with extended lifecycle, IPMI real-time system monitoring for gaming server, workstation, data center, security surveillance server etc.

Gaming Display, Digital Signage

We work with trusted display supplier and able to provide high quality, long lifecycle display panels for gaming applications - curve, extra-large, multi-touch display.

From new product development, prototyping, to manufacturing services, we guarantee our gaming solutions meet the requirements of a long lifecycle, 24/7 operation, strict ECO and revision control, exceptional 3D/4K/8K graphics performance, high security and encryption capability, extended control and rich expansion interfaces, and IoT compatible development.

Pinball, Multiplayer Game Systems, Arcade Game Amusement Machines, Touch Screen Games

Cash Management System, ATM Kiosk, Cash Counting/Recycling Kiosk

High-Performance Rackmount Server for Gaming - Security Surveillance Room, Data Center

Mini-ITX/3.5" SBC BOX PC

Small form factor, fanless building block computers, scalable performance, rich I/O interfaces.

Open Frame Tablet

Fanless, flat PCAP touch screen, CPU, memory, storage onboard, Wi-Fi, BT, DC-in. Supports Win 10, Android, Linux.

Semi-Rugged Tablet, Custom Tablet

10" Industrial Tablet with PCAP touch, Camera, Scanner, RFID. Supports Win 10, Android and Linux OS.

Autonomous Robots

The Next Generation AI + Computing Revolution in Human History

Autonomous robots with AI, machine learning and computing vision innovative technologies are drastically being developed and used across many industries including manufacturing, medical, smart farming, construction, military, security, transportation, restaurant, retail shopping and entertainment. Anywhere from resolving labor shortages due to the global pandemic, declines in fertility rate and an aging population, autonomous robots are changing the way we live, work, and entertain by providing smarter produce, goods, services and healthcare.

Farming and Agricultural Robots, Future of Farming, Smart Farm Automation

Self-Driving Robots for Hospital, Healthcare, Clinic, or Hotel Services

Robot Barista for Restaurants, Fast Food Chain Stores, Cafe Shops

Products

EMS-TGLP with Expansion Modules

Rugged, fanless embedded high-performance computer. 5G, Wi-Fi 6. Rich I/O interfaces. More I/O via IET module. Supports industrial temperature.

Thin Mini-ITX, 3.5" SBC

Thin client, quad-core CPU, 4 LAN ports onboard with two 2.5GbEEthernet Speed, 5 x USB 3.0, TPM 2.0 hardware security.

Building Block Computers

Integrated with thin Mini-ITX motherboard or 3.5" SBC inside the metal chassis. FCC, CE certified building block computer. Quick time-to-market for network server and gateway, router device.

Product Quality and Features for Robotic Applications

- Intel®, NXP, Rockchip Technologies
- Wide range of form factors: ATX, uATX, Mini-ITX, 3.5" SBC, Pico-ITX, COMe, Q7
- Open Frame, All-in-One Panel Computer, Medical Grade Panel Computer
- Mobility: Tablet, Battery Operated Panel PC

- CPU onboard, scalable performance
- Supports Win 10/11, Android, Linux OS
- Supports 5G/Wi-Fi 6, Bluetooth
- Thunderbolt USB 3.1 Gen 2, COM Port, HDMI, DP
- eMMC, M.2, 2.5GbE LAN, Real-time monitoring, Real-tim 2-way communications

Construction Robots, Military and Fire Department Security Robots

Autonomous Vehicle and Machines for Agriculture and Smart Farming

Indoor, Outdoor Self-driving Robots, Autonomous forklift, Autonomous Carts for Warehouse & Logistic Automation

Open Frame Tablet, Panel PC

7"/10.1"/15.6"/21.5" OFT flat, PCAP touch fanless tablet, easy mounting design. All-in-one Panel PC, ready to launch.

3.5" SBC, Pico-ITX

3.5" single board computer, ultra small compact, full feature, motherboard with high-performance CPU and rich I/O interfaces.

NUC-APL

Palm size, true fanless NUC-type BOX PC. HDMI, Wi-Fi. Easy VESA mount, din-rail mount.

Industrial Control, Automation

Streamline your Industrial Control application projects with BCM motherboards, panel PCs or industrial computers

BCM has been helping our clients design and develop computing boards and touch panel PC systems with special requirements for Industrial Control applications. We make the custom design process simple for faster development and quick prototype delivery. Customers can often start software development using our off-the-shelf products, which tighten project timelines and reduce design risk.

Factory Automation, Machine Vision Inspection, Logistic Barcode Reading System

Test Instrument, Inspection & Repair Equipment, Industrial Wireless Portable Lift System

Industrial Control Interface for Food Processing & Packaging Machines

Products

EMS-TGLP with Expansion Modules

Rugged, fanless embedded high-performance computer. 5G, Wi-Fi 6. Rich I/O interfaces. More I/O via IET module. Supports industrial temperature.

COM Express Modules

For application that requires unique customization or feature requirements on the core COMe module that can quickly be designed onto a carrier board.

High-Performance Computing

Delivering lightning-fast server-class performance with extended lifecycle, IPMI real-time system monitoring for automated machine inspection imaging processing.

BCM's off-the-shelf industrial motherboards are found successfully serving a broad range of factory machines in many industries such as food & beverage, automotive, packaging, textile, energy, steel, and oil refining. These machines require high reliability and high MTBF ratings, are standard in BCM's industrial motherboards. BCM designs its products with high margin tolerance and adds additional reliability features such as gold plating on high-speed bus connectors, locking connectors, industrial grade capacitors, and adequate PCB layering to ensure reliability is baked into our products from design.
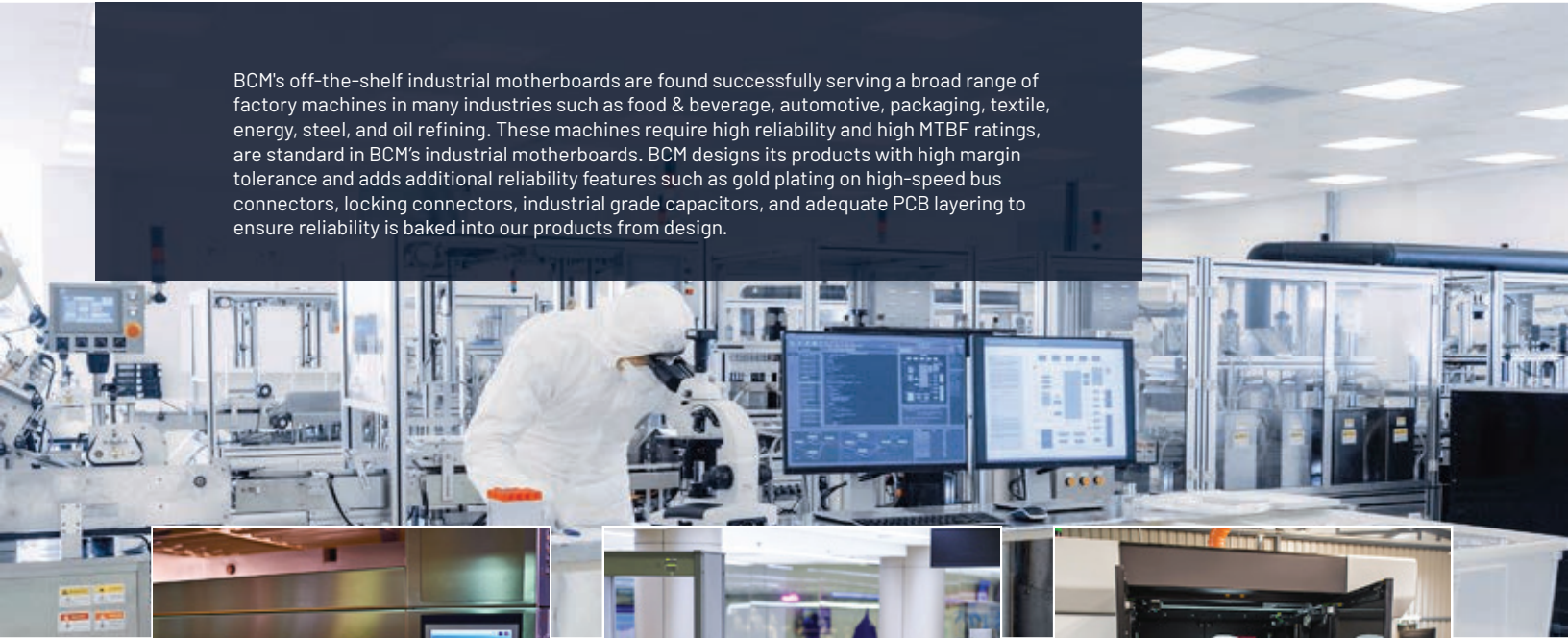
Food Processing, Commercial Kitchen Equipment

Airport Security Checkpoint, Luggage X-Ray Scanner, Gate Control System

Industrial Printing, 3D Printing Machines, Enterprise Printers

Mini-ITX/3.5" SBC BOX PC

Small form factor, fanless building block computers, scalable performance, rich I/O interfaces.

Open Frame Tablet

Fanless, flat PCAP touch screen, CPU, memory, storage onboard, Wi-Fi, BT, DC-in. Supports Win 10, Android, Linux OS.

Industrial Motherboards

Desktop ATX, uATX, Mini-ITX motherboards support scalable CPU performance, expansion slots, high speed USB and Ethernet LAN ports.

Market Applications –

Self-Serve Kiosk, Smart Retail

Computing Solutions Designed and Manufactured for Smart Retail Applications

We provide customer-oriented and customized computing solutions from entry-level to advanced-level POS and Kiosk machines in the smart retail industries. The hardware is designed to support leading technologies including facial recognition, hardware-based security, 4G/5G Wi-Fi/BT communications, remote management and more.

Point-of-Sale (POS) Systems

Cashier check-out POS. Self-serve ordering and check-out. Retail tablet. Smart cart system for grocery store.

Automated Vending, Automated Dispensers

Automated vending machine. Next Generation Beverage Dispenser with Touch Interface.

Self-Serve Kiosk, Parcel Lockers, Refrigerated Lockers

Retail Parcel Locker. ATM. Parking Lot Ticketing Systems. Airport Check-in Kiosk.

Products

RiVar-1501

Versatile All-in-One POS Terminal. Modern, industrial, modularized design for easy assembly and maintenance.

CAXA0 Tablet

10.1" Semi-Rugged Tablet with onboard Intel® Celeron® N3350 Processor. CSR, barcode scanner, supports Win 10, Android, Linux.

OFT Series, Panel Computer

The multi-purpose open frame tablet for OEM in retail market to shorten their development process as well as reduce cost.

Entry-level to Advanced-level POS/Kiosk/Automated Vending

We provide standard off-the-shelf and customized motherboards, all-in-one panel PCs, quick time-to-market open frame tablets, and building block computer solutions for entry-level to advanced-level Point-of-Sale and self-serve kiosk machines in the smart retail industries.
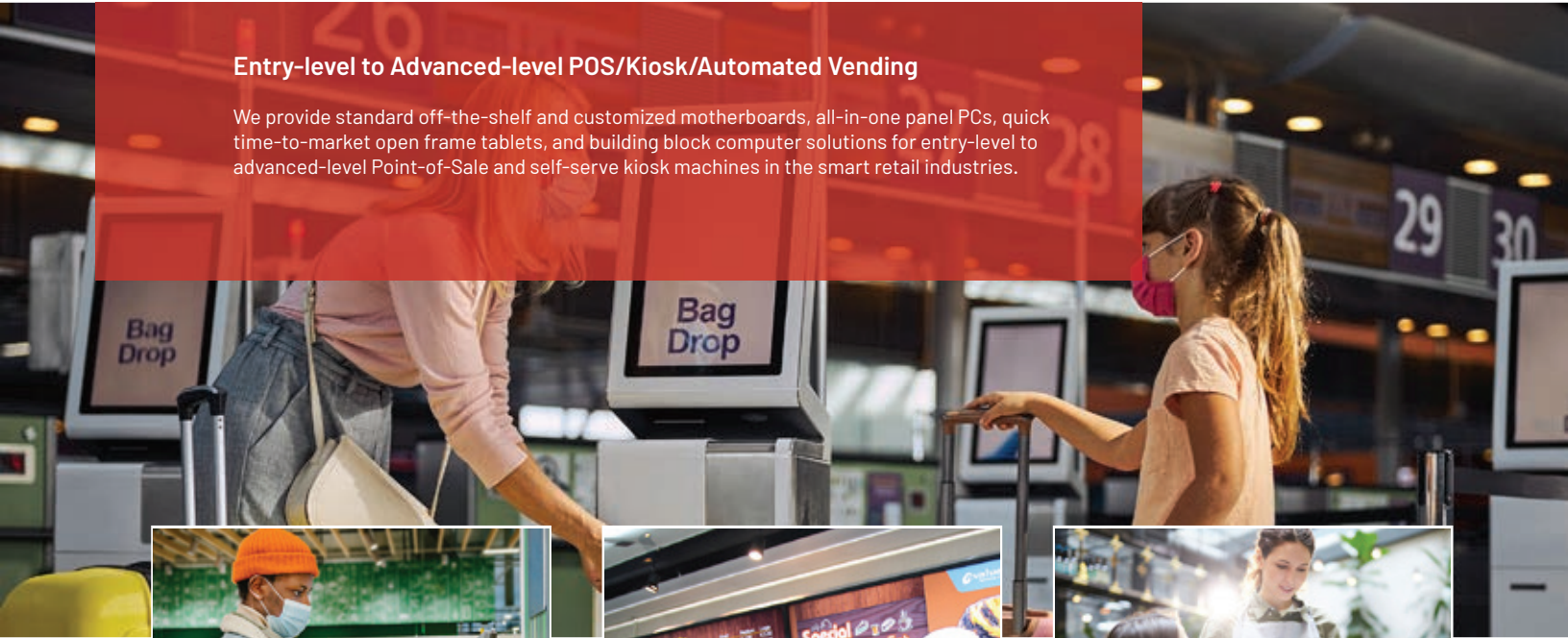
Retail Electronic Weighing and Printing Scales

Interactive Weight Scale Systems for Supermarkets and Dairy Shops.

Digital Signage

Digital menu board. Electronic shelf display. Shopping center electronic directory. Shopping center price checker.

Self-Ordering Kiosk, Tablet for Restaurant

Fast food store self-ordering kiosk. Tablet for Restaurants customer management.

Embedded Box PC

Fanless operation, small, ultra-compact. CPU onboard, rich I/O interfaces, supports multi-display.

Mini-ITX Barebone Computer

Compact, thin barebone computer. FCC CE certified. Fast integration. DC-in, power on, connect, and ready to go.
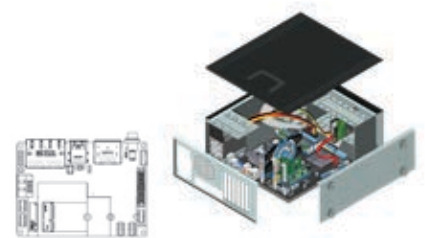
Custom Motherboards/Systems

Semi-customization, or complete custom design based on customer's requirement - form factor, system performance, I/O, etc.

Digital Audio/Video, Network/Edge Server

Custom Computing Solutions Designed for Digital Audio, Visual, Multimedia, Broadcasting, and Streaming Applications

We help customers design video conferencing, live streaming, broadcasting, and stage lighting control devices. Our OFT series products are turnkey, fast time-to-market solutions for meeting rooms or smart office applications. The OFT is available in 7"/10"/15"/21" display sizes and provides onboard Intel® Atom CPU, memory, storage, Wi-Fi/Bluetooth and PCAP touch screens. OS support includes Win 10, Linux and Android.

Video Streaming, Broadcast, Media Server, Networking Server, Media Player, A/V Processing

Commercial Lighting Control Interface, Stage & Stage Lighting, Building Automation System

Meeting Room Scheduler, Digital Signage System, Video Conferencing

Products

Server Class Boards & Systems

High-performance server motherboards, rackmount server systems with extended lifecycle. 7+ LAN ports, 7 PCI/PCIe expansion slots.

Thin Mini-ITX, 3.5" SBC

Thin client, quad-core CPU, 4 LAN ports onboard with two 2.5GbE Ethernet, 5 x USB 3.0, TPM 2.0 hardware security.

Building Block Computers

Integrated with thin Mini-ITX motherboard or 3.5" SBC inside the metal chassis. FCC, CE certified building block computer. Quick time-to-market for network server and gateway, router device.

Broad Market HMI

Quick Time-to-Market Panel Computing Solutions

- **Medical & Healthcare:** Lab & Diagnostic Device, Portable Nursing Cart, Service Robot
- **Retail, Casino, Gaming:** Point-of-Sale, Self-Service Kiosk, Information Kiosk, Digital Lockers
- **Industrial Control:** Smart Manufacturing, Food Processing & Packing System, 3D Printers
- **Smart Office & Building Automation:** Office Lighting, HVAC Control, Commercial Copy Machines
- **Textile Industries:** Sewing Machine, Embroidery, Textile Factory Automation
- **Automotive & Transportation:** Automotive Diagnostic & Repair Device, Metro/Subway System

Turnstile Access Control, Entrance Security Railing Gate System

Electric Vehicle Charging Station HMI Control Interface

Textile Industry, Industrial Sewing & Engineered Embroidery Machines

Products
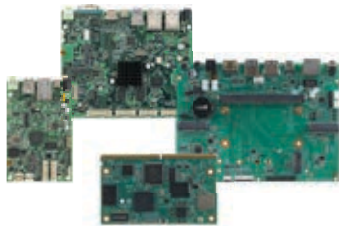
ARM (RISC) Motherboards

Low Power, ultra-compact, fanless operation, high-performance computing platform.

3.5" SBC, Small Box PC, NUC

Small form factor motherboards and embedded box computer. Space saving, fanless, and rugged design.

Open Frame Tablet

7"/10.1" OFT, full flat, PCAP touch, fanless tablet, easy mounting design. CPU, memory, storage, OS onboard, ready to launch.

Intelligent Transportation Solutions

Transportation Product Highlights – Computing Hardware

🟧 Public Service	🟩 Raw Materials Management
🟦 Public Transportation	🟪 Logistic Management

01 Terminal Display Wall System
- EGS-MX1

02 Fare Collection System & Entrance Management
- ERS-BYTE-10COM

03 Roadside Law Enforcement System
- EMS-TGL-PSE

04 AI Traffic Flow Detection and TOD Adjustment System
- EMS-SKLU
- EPC-APL
- AIB-IMX8M

05 Smart Waste Management System
- VMS-BYT
- ARC-10W00

06 Communication System for Emergency Vehicles (V2X)
- RISC SBC

07 Parking Entrance Management System with ANPR
- EMS-TGL-PSE
- ARC-1509 / ARC-1732

08 Enforcement System with Edge Computing
- VMS-CFS-PSE

09 Fatigue System & Fleet Management System
- VMS-APL
- ARC-1200

10 Precision Agriculture System
- VMS-BYT
- ARC-10W00

11 School Bus Positioning & Children Location Confirmation Solution
- UWB Anchor
- UWB Tag
- VMS-APL

12 Electrical Autonomous Bus
- VMS-CFS-PSE
- OFM-15W00 / OFM-21W00

13 Outdoor Drive-Thru Ordering System
- OFT-15W33
- OFT-21W33

14 Emergency Traffic Light Influence System (DSRC)
- ARC Series Monitor
- VMS-APL

15 Smart Public Transit - Bus
- VMS-APL + ARC-10W00
- ARC-1232
- OFT-07WR1

16 Travel Information Display - Bus Stop
- EPD-42T
- EPD-3133

17 Wi-Fi Router & Entertainment System
- VMS-BYT
- ARC Series Monitor
- OFT-07WR1

18 Smart Public Transit - Rail Road
- VMS-EHLR

19 Advertisement/ Travel Information Bulletin
- EPD-42T
- EPD-3133

20 Bridge Control System
- EMS-SKLU-Marine
- EMS-TGL-Marine

21 Collision-Avoidance System with Autonomous Mobile Robot
- VMS-CFS-PSE
- EMS-TGL-PSE
- AIB-NW01

22 Forklift & Pallet Maneuver Solution
- ARC-1033
- CAXAO Tablet

23 Smart Port Management System
- EPS-CFS + ARC 1500
- ARC-1509/ ARC-1209
- CAXAO Tablet

Software Support

RENITY Sentinel 2
Remote Management Device

RENITY ARTEMIS
Positioning System

Vehicle Power Management

OS Support (Win/Linux/Android)

API/ SDK

Ignition Control

HPC High-performance Computing Solutions

Delivering lightning-fast server-class performance with extended lifecycle, traceability, IPMI real-time system monitoring, remote management and exceptional reliability.

Optimized for AI, machine learning, edge computing, IoT and 5G technologies. These are great solutions for intensive and precise imaging processing applications such as machine vision inspection system in smart factory production lines, precision diagnosis and image-guided therapy, CT, MRI in medical and healthcare.

Extended Lifecycle

Intel® extends the product availability for IOTG roadmap products to 15 years to respond to the IoT market demand. (Based on Intel® IOTG Roadmap).

IPMI 2.0 Supported

With built-in BMC/IPMI real-time system monitoring and remote management capabilities help to reduce system downtime and save cost on field services.

Time-to-Market Solutions

Easy upgrades to the next generation from their existing server rack, cabinet, or system chassis with limited spaces. 19-inch 2U and 4U rackmount server are available.

Advantage of BCM HPC Solutions

Product Availability

- Minimum 5 years
- Revision Control to minimize BOM changes
- 2-3 Technology Cycles / Refresh

Product Quality

- Designs Based on IPC Standards
- 100% Functional Test Coverage
- Product Traceability

Lower Total Cost of Ownership

Product Reliability

- 60 Degree C Operating Temperature
- 50,000 Hours MTBF
- Lifetime RTC Battery
- 2.0mm PCB Thickness
- 15u Gold Plated High Speed Connectors

Customer Benefits

- Reduced R&D Cost / Refresh Cycles
- Skipped Re-certification Costs
- Built-in BMC/IPMI for Real-time System Monitoring

Server-class Performance with Extended Lifecycle and Revision Control

BCM's powerful computing platform series provides server-class performance with extended lifecycle and revision control not available from the typical providers of these types of server motherboards and systems. BCM's HPC products are the ideal balance between performance and hardware lifecycle continuity. We offer a broad spectrum of HPC motherboard products in different form factors providing extended lifecycle, traceability, remote access, and exceptional reliability.

All standard models for High Performance Computing

Server Motherboards

Server-class performance and quality. Available in ATX and EATX form factors. Supports single or dual 2nd Gen. and next-gen Intel® Xeon Processors. Rich LAN, DIMM, SATA interfaces.

L6 Barebone Computer

Barebone allows customers to customize integration by adding their select CPU, memory, storage and load their operation system.

L10 Fully Integrated System

A complete turnkey and fully tested system with CPU, memory, and storage. Available in Rackmount System or Tower type workstation.

Key Features

HPM-621DE

- 2 x FCLGA3647 sockets supports 2nd Gen. and next-gen Intel® Xeon processors
- Up to 3 x Full Height/ Double-wide GPU card
- Double capacity RTC battery
- 12 x DDR4 2933/ 2666/ 2400/ 2133 ECC RDIMM/ LRDIMM Up to 768 GB
- 10 x SATA III RAID
- 4 x LAN, 4 x USB 3.0
- 4 x OCuLink
- 2.0mm PCB thickness to improve robustness and signal integrity

HPS-621D4A

- **Inlet & Outlet Sensor Board**
  For real-time monitoring the variations of the environment temperature
- Center bar for fixing CPUs and PCIe cards
- Front System Fans
- **Intrusion Detector**
  Detect and send out alerts/ notifications when upper cover is opened
- 1 x GPU Card (NVIDIA P2200)
  1 x GPU Card (NVIDIA RTX5000)

HPC Motherboards

Supports single or dual 2nd Gen., Next-Gen Intel® Xeon® Server Class Scalable Processors

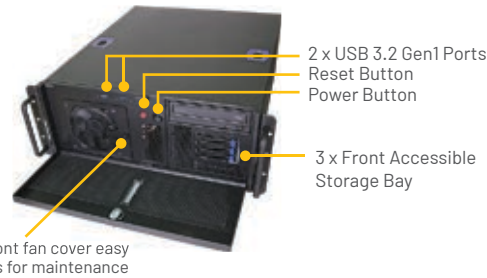| Product Name		HPM-246UA	HPM-621UA	HPM-621DE
Processor System	Processors	Supports 8th/9th Gen Core™ i7/ i5/ i3 / Pentium®/Celeron®®/ Xeon® E Processor	Supports single 2nd Gen. Intel® Xeon® Scalable Processors / Intel® Xeon® Scalable Processor	Supports dual 2nd Gen. Intel® Xeon® Scalable Processors / Intel® Xeon® Scalable Processor
	Socket	LGA1151	FCLGA3647	FCLGA3647
	Chipset	Intel® C246 PCH	Intel® C621 PCH	Intel® C621 PCH
	BIOS	AMI uEFI 256Mbit SPI	AMI uEFI 256Mbit SPI	AMI uEFI 256Mbit SPI
Memory	Socket	4 x DDR4 DIMM Slots	6 x DDR4 DIMM Slots	12 x DDR4 DIMM Slots
	Technology	2666MHz	2933/2666/2400/2133 RDIMM/LRDIMM	2933/ 2666/ 2400/ 2133 RDIMM/ LRDIMM
	Max. Capacity	up to 128GB (ECC memory supported by CPU)	up to 768GB (ECC memory supported by CPU)	up to 1.5TB (ECC memory supported by CPU)
Expansion Interface	PCIe	1 x PCI 3.0 Slot 1 x PCIe 3.0 x16 Slot 1 x PCIe 2.0 x8 Slot 1 x PCIe 3.0 x4 Slot 1 x PCIe 3.0 x1 Slot	3 x PCIe x16 or 6 x PCIe x8 Slots 1 x PCI 3.0 Slot 3 x PCIe 3.0 x8 Slots 3 x PCIe 3.0 x16 Slots	4 x PCIe x16, 2 x PCIe x8, 1 x PCI 3.0 Slots 3 x PCIe 3.0 x16 Slots 3 x PCIe 3.0 x8 Slots 1 x PCI 3.0 Slot
Audio Codec		Realtek HD Audio	-	-
Ethernet Controller		7 x Intel® I210-AT Gigabit Ethernet	4 x Intel® I210-AT Gigabit Ethernet	4 x Intel® I210-AT Gigabit Ethernet
Graphics	Controller	Intel® HD Integrated Graphics	Intel® HD Integrated Graphics	Intel® HD Integrated Graphics
	# of Display	3	-	-
IPMI		IPMI 2.0 via onboard BMC controller	IPMI 2.0 via onboard BMC controller	IPMI 2.0 via onboard BMC controller
BMC		Aspeed® AST2500	Aspeed® AST2500	Aspeed® AST2500
TPM		TPM 2.0	TPM 2.0	TPM 2.0
External I/O	HDMI/DP/VGA	3 x DP++	VGA via BMC Controller	VGA via BMC Controller
	USB	2 x USB 3.2 Gen 2 10Gbps	4 x USB 3.2 Gen 1	4 x USB 3.2 Gen 1
	LAN Port	7 x RJ45 (LAN 1 shares with IPMI 2.0)	4 x RJ45 (LAN 1 shares with IPMI 2.0)	4 x RJ45 (LAN1 Share with IPMI 2.0)
Internal Connector	USB	6 x USB 3.2 Gen 1	2 x USB 2.0, 2 x USB 3.2 Gen 1	2 x USB 2.0, 2 x USB 3.2 Gen 1
	COM (Serial)	2 x RS-232	2 x RS-232	2 x RS-232
	SATA	4 x SATA III Supports RAID	9 x SATA III Supports RAID	10 x SATA III Supports RAID
	Other	1 x 16-bit GPIO, CR2450 RTC Battery	VGA via BMC, CR2450 RTC Battery	4 x OCuLink, CR2450 RTC Battery
Power	Requirement	1 x Std. 24-pin ATX 1 x 8-Pin SSI 12V Connector	1 x Std. 24-pin ATX 1 x 8-Pin SSI 12V Connector	1 x Std. 24-pin ATX 2 x 8-Pin SSI 12V Connector
	Type	ATX Mode	ATX Mode	ATX Mode
Mechanical and Environment	Op. Humidity	40% ~ 95% Relative Humidity, Non-condensing	40% ~ 95% Relative Humidity, Non-condensing	40% ~ 95% Relative Humidity, Non-condensing
	Op. Temp.	0° ~ 60°C (32° ~ 140°F)	0° ~ 60°C (32° ~ 140°F)	0° ~ 60°C (32° ~ 140°F)
	Storage Temp.	-25 °C to 70 °C (-13 ~ 158°F)	-40 °C to 85 °C (-40 ~ 185°F)	-40 °C to 85 °C (-40 ~ 185°F)
	Dimension	12" x 9.6" (304.8 x 243.84 mm) PCB Thickness is 2.0mm	12" x 13" (304.8 x 330.2 mm) PCB Thickness is 2.0mm	12" x 9.6" (304.8 x 243.84 mm) PCB Thickness is 2.0mm
	Weight	1.54 lbs (0.7 kg)	3.96 lbs (1.8kg)	2.14 lbs (0.97 kg)
Supported OS	Windows	Windows 10 IoT Enterprise, Windows Server 2016, Windows Server 2019	Windows 10 IoT Enterprise, Windows Server 2016, Windows Server 2019	Windows 10 IoT Enterprise, Windows Server 2016, Windows Server 2019
	Linux	Linux SUSE	Linux Ubuntu 16.04 and 18.04	Linux Ubuntu 16.04 and 18.04

HPC Systems - 19" 4U Rackmount

Tool-free removable top cover for quick maintenance

Handles on both sides for easy rackmount installation and dismantle

Lockable front door for better access control

Tool-free front fan cover easy access for maintenance

2 x USB 3.2 Gen1 Ports
Reset Button
Power Button

3 x Front Accessible Storage Bay

Available in Tower Type Workstation (Vertical)

Product Name		HPS-621D4A	HPS-246U4A
Processor System	Processors	Supports dual 2nd Gen. Intel® Xeon® Scalable Processors / Intel® Xeon® Scalable Processor	Supports 8th/9th Gen Core™ i7/ i5/ i3 / Pentium®/Celeron®®/ Xeon® E Processor
	Socket	FCLGA3647	LGA1151
	Chipset	Intel® C621 PCH	Intel® C246 PCH
Memory	Socket	12 x DDR4 DIMM Slots	4 x DDR4 DIMM Slots
	Technology	2933/ 2666/ 2400/ 2133 RDIMM/ LRDIMM	2666MHz
	Max. Capacity	up to 1.5TB (ECC memory supported by CPU)	up to 128GB (ECC memory supported by CPU)
Storage	External	1 x 5.25"	1 x 5.25"
	Internal	3 x 2.5" Supports up to 10 x SATA ports, 4 x OCuLink	3 x 2.5" (Supports up to 4 x SATA Ports)
Expansion Interface	PCIe	4 x PCIe x16, 2 x PCIe x8, 1 x PCI 3.0 Slots 3 x PCIe 3.0 x16 Slots 3 x PCIe 3.0 x8 Slots 1 x PCI 3.0 Slot	1 x PCI 3.0 Slot 1 x PCIe 3.0 x16 Slot 1 x PCIe 2.0 x8 Slot 1 x PCIe 3.0 x4 Slot 1 x PCIe 3.0 x1 Slot
Display		AST 2500 BMC Controller	Intel® 8/9th Gen. CPU Integrated 3 x DP++ AST 2500 BMC Controller
Display Resolution		VGA: 1920 x 1200 @ 60Hz 32bpp	DP: 4096 x 2304 @ 60Hz HDMI : 4096 x 2160 @ 30Hz VGA: 1920 x 1200 @ 60Hz 32bpp
Ethernet Controller		4 x Intel® I210-AT Gigabit Ethernet	7 x Intel® I210AT Gigabit Ethernet
IPMI		IPMI 2.0 via onboard BMC controller	IPMI 2.0 via onboard BMC controller
BMC		Aspeed® AST2500	Aspeed® AST2500
TPM		TPM 2.0	TPM 2.0
External I/O	HDMI/DP/VGA	VGA via BMC Controller	3 x DP++
	USB	4 x USB 3.2 Gen 1	2 x USB 3.2 Gen 2 10Gbps
	LAN Port	4 x RJ45 (LAN1 Share with IPMI 2.0)	7 x RJ45 (LAN 1 shares with IPMI 2.0)
Internal Connector	USB	2 x USB 2.0, 2 x USB 3.2 Gen 1	6 x USB 3.2 Gen 1
	COM (Serial)	2 x RS-232	2 x RS-232
	SATA	10 x SATA III Supports RAID	4 x SATA III Supports RAID
Power	Supply	1300W	500W
	Type	ATX Mode	ATX Mode
Mechanical Environment	Op. Temp.	5°C ~ 45°C (41°F ~ 113°F)	5°C ~ 45°C (41°F ~ 113°F)
	Cooling Fan	80 x 25mm Front Fan x 2 80 x 25mm Rear Fan x 2	80 x 25mm Rear Fan x 2
	Dimension	528 x 430 x 174.8 mm (20.7" x 16.9" x 6.9")	528 x 430 x 174.8 mm (20.7" x 16.9" x 6.9")
	Form Factor	19" 4U Rackmount	19" 4U Rackmount
Supported OS	Windows	Windows 10 IoT Enterprise 64-bit, Windows Server 2016, Windows Server 2019	
	Linux	Ubuntu 18.04	

HPC Market Applications

Healthcare
Precision Diagnosis, Life Science

Medical
Advanced Medical Imaging Technology

Communications
Superior Accelerated Workstation

Smart Manufacturing
Visualization Machine Vision, Transformative Analytics

Smart City
Public Safety and Enforcement Technology

12th Gen Intel® Core™ Platform (Codename: Alder Lake)

Available in ATX, Micro ATX, and Mini-ITX form factors, and support the 12th Gen Intel® Core™ processors that offer new platform improvements such as **DDR5** memory support, Gen 4 and **Gen 5 PCIe,** and **DMI 4.0**. This processor family is the first Intel® Core™ processors to feature **performance hybrid architecture** combining Performance-cores and Efficient-cores with **Intel® Thread Director** to deliver intelligent workload optimization.

Product Name		BC680R	RX680R	RX610H
Processor System	Processors	Intel® Core® i9/i7/i5/i3, Pentium, Celeron, up to 16 Cores 24 Threads Hybrid	Intel® Core® i9/i7/i5/i3, Pentium, Celeron, up to 16 Cores 24 Threads Hybrid	Intel® Core® i9/i7/i5/i3, Pentium, Celeron, up to 16 Cores 24 Threads Hybrid
	Socket	LGA1700	LGA1700	LGA1700
	Chipset	Intel® R680E PCH	Intel® R680Q PCH	Intel® H610E PCH
	DMI	x8 Gen4 DMI	x8 Gen4 DMI	x4 Gen4 DMI
	BIOS	AMI 256Mb SPI	AMI 256Mb SPI	AMI 256Mb SPI
Memory	Socket	4 x DIMM slots DDR5 4800MHz	4 x DIMM slots DDR5 5200MHz	4 x DIMM slots DDR5 4800MHz
	Capacity	up to 128GB with ECC support	up to 128GB with ECC support	up to 64GB
Expansion Interface	PCIe	1 x Gen 5 PCIe x16 2 x Gen 4 PCIe x4 1 x Gen 3 PCIe x4 1 x Gen 3 PCIe x1 2 x Gen 3 PCIe x1 Open Ended	1 x Gen 5 PCIe x16 2 x Gen 4 PCIe x4 1 x Gen 3 PCIe x4 Open Ended	1 x Gen 5 PCIe x16 1 x Gen 3 PCIe x1 2 x Gen 3 PCIe x1
	M.2	1 x M.2 M-Key 2242/2280/22110 NVMe (PCIe x4 + SATA III) 1 x M.2 M-Key 2242/2280/22110 NVMe (PCIe x4 Only) 1 x M.2 E-Key 2230 with CNVi Support (PCIe x 1 + USB 2.0)	1 x M.2 M-Key 2242/2280/22110 NVMe (Gen 4 PCIe x4 + SATA III) 1 x M.2 M-Key 2242/2280/22110 NVMe (Gen 3 PCIe x4 + SATA III) 1 x M.2 E-Key 2230 with CNVi Support (PCIe x 1 + USB 2.0)	1 x M.2 M-Key 2242/2280/22110 NVMe (PCIe x4 + SATA III) 1 x M.2 E-Key 2230 with CNVi Support (PCIe x1 share with slot4 + USB 2.0)
Audio Codec		Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel
Ethernet Controller		2 x Intel® I225-LM 2.5GbE	2 x Intel® I225/226-LM 2.5GbE	1 x Intel® I255-V 2.5GbE 1 x Intel® I219-V GbE
Graphics	Controller	Intel® Integrated Iris Xe Graphic (CPU Dependent)	Intel® Integrated Iris Xe Graphic (CPU Dependent)	Intel® Integrated Iris Xe Graphic (CPU Dependent)
	# of Display	4	4	3
TPM		TPM 2.0	TPM 2.0	TPM 2.0
Rear I/O	Display	2 x HDMI 2 x DisplayPort	4 x DisplayPort	1 x HDMI 2 x DisplayPort
	USB	6 x USB 3.2 Gen 2x1 1 x USB 3.2 Gen 2x2 Type-C	6 x USB 3.2 Gen 2x1 1 x USB 3.2 Gen 2x2 Type-C	2 x USB 2.0 Type A 4 x USB 3.2 Type A
	LAN Port	2 x RJ45	2 x RJ45	2 x RJ45
	Audio	1 x 3-Jacks Audio Connector	1 x 3-Jacks Audio Connector	1 x 3-Jacks Audio Connector
Internal Connector	LVDS/eDP	-	LVDS, Optional eDP	-
	USB	4 x USB 2.0 Headers (8 Ports) 1 x USB 3.2 Gen 2 (2 Ports)	1 x USB 3.2 Gen 2x1 Header (2 Ports) 4 x USB 2.0 Headers (8 Ports)	2 x USB 2.0 Headers (4 Ports) 1 x USB 3.2 Gen 1 Header (2 Ports)
	Thunderbolt	1 x Thunderbolt Header	1 x Thunderbolt Header	
	COM (Serial)	5 x RS-232 Headers 1 x RS-232/422/485 Header	5 x RS-232 Headers 1 x RS-232/422/485 Header	5 x RS-232 Headers 1 x RS-232/422/485 Header
	SATA	4 x SATA III	4 x SATA III RAID 0, 1, 5 and 10	4 x SATA III
	Other	1 x I²C, 1 x PS/2, 8-bit GPIO, SMBus, SPI	1 x I²C, 1 x PS/2, LPT, 8-bit GPIO, SMBus, SPI	1 x I²C, 1 x PS/2, LPT, 8-bit GPIO, SMBus, SPI
Power Type / Connector		1 x 24-pin, 1 x 8-pin ATX, 1 x 4-pin ATX 12V Connectors	1 x 24-pin, 1 x 8-pin ATX, 1 x 4-pin ATX 12V Connectors	1 x 24-pin, 1 x 8-pin ATX, 1 x 4-pin ATX 12V Connectors
Form Factor		ATX / 12" x 9.6" / 305mm x 244mm	Micro ATX / 9.6" x 9.6" / 244mm x 244mm	Micro ATX / 9.6" x 9.6" / 244mm x 244mm
OS Support		Win 10/11, Linux	Win 10/11, Linux	Win 10/11, Linux

All together these new BCM products designed based on the Intel® Alder Lake platform deliver exceptional computing performance to meet the requirements of the next generation embedded and intelligent applications in healthcare, gaming, manufacturing, retail, audio and visual, video surveillance, and robotics industries.

Product Name		MX670QD	MX610HD	MX610H
Processor System	Processors	Intel® Core® i9/i7/i5/i3, Pentium, Celeron, up to 16 Cores 24 Threads Hybrid	Intel® Core® i9/i7/i5/i3, Pentium, Celeron, up to 16 Cores 24 Threads Hybrid	Intel® Core® i9/i7/i5/i3, Pentium, Celeron, up to 16 Cores 24 Threads Hybrid
	Socket	LGA1700	LGA1700	LGA1700
	Chipset	Intel® Q670E PCH	Intel® H610E PCH	Intel® H610E PCH
	DMI	x8 Gen4 DMI	x4 Gen4 DMI	x4 Gen4 DMI
	BIOS	AMI 256Mb SPI	AMI 256Mb SPI	AMI 256Mb SPI
Memory	Socket	2 x SODIMM slots DDR5 5200MHz	2 x SODIMM slots DDR5 4800MHz	2 x SODIMM slots DDR5 5200MHz
	Capacity	up to 128GB	up to 64GB	up to 64GB
Expansion Interface	PCIe	1 x Gen 5 PCIe x16	1 x Gen 4 PCIe x16	1 x Gen 4 SMT Type PCIe x16
	M.2	2 x M.2 M-Key 2242/2280 NVMe (PCIe x4 + SATA III) 1 x M.2 E-Key 2230 with CNVi Support (PCIe x 1 + USB 2.0)	1 x M.2 M-Key 2242/2280 NVMe (PCIe x4 + SATA III) 1 x M.2 E-Key 2230 with CNVi Support (PCIe x 1 + USB 2.0)	1 x M-Key M.2 2242/2280 NVMe (PCIe x4 + SATA III) 1 x E-Key M.2 2230 with CNVi Support (PCIe x 1 + USB 2.0)
Audio Codec		Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel
Ethernet Controller		2 x Intel® I225-LM 2.5GbE	1 x Intel® I225-LM 2.5GbE 1 x Intel® I219-LM GbE	1 x Intel® I225-LM 2.5GbE 1 x Intel® I219-LM GbE
Graphics	Controller	Intel® Integrated Iris Xe Graphic (CPU Dependent)	Intel® Integrated Iris Xe Graphic (CPU Dependent)	Intel® Integrated Iris Xe Graphic (CPU Dependent)
	s	4	3	3
TPM		TPM 2.0	TPM 2.0	TPM 2.0
Rear I/O	Display	4 x DisplayPort	1 x HDMI 1 x DisplayPort	1 x HDMI 2 x DisplayPort
	USB	6 x USB 3.2 Gen 2x1 Type-A 1 x USB 3.2 Gen 2x2 Type-C	2 x USB 3.2 Type A 2 x USB 2.0 Type A	4 x USB 3.2 Gen 1x1 Ports 2 x USB 2.0 Type A
	LAN Port	2 x RJ45	2 x RJ45	2 x RJ45
	DC-in	1 x DC-In	1 x DC-In	-
	COM	-	-	2 x RS-232/422/485
	Audio	1 x 3-Jacks Audio Connector	Line-out, Mic-in	1 x 3-Jacks Audio Connector
Internal Connector	LVDS/eDP	1 x LVDS, optional eDP	1 x LVDS, optional eDP	1 x LVDS, optional eDP
	USB	1 x USB 3.2 Gen 2x1 (2 Ports) 2 x USB 2.0 Headers (4 Ports)	1 x USB 3.2 Gen 1x1 Header (2 Ports) 2 x USB 2.0 Headers (4 Ports)	1 x USB 3.2 Gen 1x1 Header (2 Ports) 2 x USB 2.0 Headers (4 Ports)
	COM (Serial)	1 x RS-232 Header 1 x RS-232/422/485 Header	2 x RS-232/422/485 Headers 1 x RS-232 Header	2 x RS-232 Headers
	SATA	2 x SATA III	2 x SATA III	4 x SATA III
	Other	1 x I²C, 8-bit GPIO, SMBus, SPI	1 x I²C, 8-bit GPIO, SMBus, SPI	1 x I²C, 8-bit GPIO, SMBus, SPI
Power Type / Connector		12V-24V Wide Range DC-In	12V-24V Wide Range DC-In	1 x 24-pin ATX, 1 x 8-pin ATX 12
Form Fator		Mini-ITX / 6.7"x6.7" / 170x170mm	Thin Mini-ITX / 6.7"x6.7"	Mini-ITX / 6.7"x6.7" / 170x170mm
OS Support		Win 10/11, Linux	Win 10/11, Linux	Win 10/11, Linux

MicroATX

Industrial Micro ATX, or microATX, mATX, uATX motherboard, 9.6"x9.6" (244mm x 244mm), form factor supports desktop processors and provides at least 4 expansion slots (combination of PCI and PCI Express), and rich I/O interfaces including USB 3.0, DP++, HDMI, serial ports, SATA III. The Micro ATX motherboard provides balance between the performance and expandability and is ideal for budget and space sensitive applications.

Product Name		ERX-W480P	RX370Q	RX170Q	RX110H
Processor System	Supported Processors	10th Gen Intel® Core™ i7/i5/i3, Pentium®, Celeron®, Xeon®	8th/9th Gen Intel® Core-i™, Pentium, and Celeron®, 6/8-Core*	6th/7th Gen Intel® Core-i™, Pentium®, and Celeron®	6th/7th Gen Intel® Core-i™
	Socket	LGA1200	LGA1151	LGA1151	LGA1151
	Max. TDP	up to 95W TDP	up to 95W/ 35W TDP	up to 95W TDP	up to 95W TDP
	Chipset	Intel® W480E PCH	Intel® Q370 PCH	Intel® Q170 PCH	Intel® H110 PCH
	BIOS	AMI uEFI 256Mbit SPI	AMI 128Mb SPI	AMI 64Mb SPI	AMI 64Mb SPI
Memory	Socket	4 x 288-Pin DIMM (ECC memory supported by CPU)	4 x 288-Pin DIMM (Gold Plated)	4 x 288-Pin 4 x 288-Pin DIMM (Gold Plated)	2 x 288-Pin DIMM
	Technology	DDR4 2400/2666MHz	DDR4 2400MHz	DDR4 2133MHz	DDR4 2133MHz
	Capacity	up to 128GB	up to 64GB	up to 64GB	up to 32GB
Expansion Interface	PCIe	2 x PCIe x16 2 x PCIe x4	1 x PCIe x16 Slot (Gold Plated) 2 x PCIe x4 (Gold Plated) 1 x PCIe x1 (Gold Plated)	1 x PCIe x16 (Gold Plated) 1 x PCIe x4 (Gold Plated) 2 x PCIe x1 (Gold Plated)	1 x PCIe x16 3 x PCIe x1
	mini-PCIe	-	-	1 x mini-PCIe (Gold Plated)	-
	M.2	1 x M.2 M-Key 2260/2280 supports SSD	1 x M.2 M-Key 2242, 2260, 2280 1 x M.2 A/E-Key 2230	1 x M.2 (2280)	-
Audio Codec		Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel
Ethernet Controller		2 x Intel® I225V 2.5GbE Optional 2 x Intel® X550-AT2 10GbE 1 x Intel® I219-LM 1GbE 1 x Intel® I210-AT 1GbE	1 x Intel® I219-LM 1GbE 1 x Intel® I210-AT 1GbE	1 x Intel® I219-LM 1GbE 1 x Intel® I210-AT 1GbE	1 x Intel® I219-LM 1GbE 1 x Intel® I210-AT 1GbE
Graphics	Controller	Intel® HD Integrated Graphics	Intel® HD Integrated Graphics	Intel® HD Integrated Graphics	Intel® HD Integrated Graphics
	Interfaces	VGA, HDMI, 1DP++, LVDS	DP++ (Gold Plated), DVI-D, LVDS, Optional eDP	DP++ (Gold Plated), DVI-D, LVDS, Optional eDP	DP++ (Gold Plated), DVI-D
	# of Display	3	3	3	2
TPM		TPM 2.0	TPM 2.0	Optional TPM 2.0	TPM 2.0
Rear I/O	Video	1 x HDMI, 1 x DP++, 1 x VGA	1 x HDMI, 2 x DP++ (Gold Plated)	2 x DP++, 1 x DVI-D	2 x DP, 1 x DVI-D
	USB	4 x USB 3.2 Gen 2	2 x USB 3.1 Gen 1 1 x USB Gen 2 Type C	4 x USB 3.0 2 x USB 2.0	2 x USB 3.0 2 x USB 2.0
	LAN Port	4 x RJ45, Optional 2 x RJ45	2 x RJ45	2 x RJ45	2 x RJ45
	COM (Serial)	1 x RS-232	1 x RS-232/422/485 (Gold Plated)	1 x RS-232/422/485	1 x RS-232/RS422/RS485
	PS2	-	-	1 x PS/2 Keyboard & Mouse	1 x PS/2 Keyboard & Mouse
	Audio	-	Line-in, Line-out, Mic-in	Line-in, Line-out, Mic-in	Line-out, Line-in, Mic-in
Internal Connector	LVDS/eDP	1 x LVDS	1 x LVDS (Gold Plated)	1 x LVDS	-
	USB	2 x USB 3.0 Gen 2 8 x USB 2.0	6 x USB 2.0 (Gold Plated) 2 x USB 3.1 Gen 1 (Gold Plated)	2 x USB 3.0 5 x USB 2.0	2 x USB3.0 4 x USB2.0
	COM (Serial)	9 x x x RS-232	5 x RS-232	5 x RS-232	5 x RS-232
	SATA	4 x SATA III	6 x SATA III (Red)(Gold Plated)	6 x SATA III (Red)(Gold Plated)	4 x SATA III
	RAID	RAID 0, 1, 5, 10	RAID 0, 1, 5 and 10	RAID 0, 1, 5 and 10	-
	GPIO/LPT	1 x 16-bit GPIO /	1 x 8-bit GPIO / 1 x LPT	1 x 8-bit GPIO / 1 x LPT	1 x 8-bit GPIO / 1 x LPT

ATX

ATX motherboard, 12"x9.6" (305mm x 244mm), provides multiple PCI and PCI Express expansion slots and rich I/O interfaces including SATA, multiple COM and USB ports, dual Gigabit Ethernet LAN ports. The ATX motherboard delivers stable and scalable performances from low power to the latest multi-core processors.

Product Name		BC3700	BC246C
Processor System	Supported Processors	8th/9th Gen Intel® Intel® Core i7-9700E Intel® Core i7-9700TE, Intel® Core i5-9500TE, Intel® Core i5-9500E, Intel® Core i3-9100E, Intel® Core i3-9100TE, Pentium®, and Celeron®	Intel® 2C/4C/6C/8C Xeon® E, Core™-i, Pentium®, Celeron®
	Socket	LGA1151	LGA1151
	Max. TDP	up to 95W TDP	up to 95W TDP
	Chipset	Intel® Q370 PCH	Intel® C246 PCH
	BIOS	AMI 256Mb SPI	AMI 256Mb SPI
Memory	Socket	4 x 288-Pin DIMM	4 x 288-Pin DIMM
	Technology	DDR4 2666MT/s	DDR4 2666MT/s, Optional ECC Memory Support
	Capacity	up to 64GB	up to 64GB
Expansion Interface	PCIe	1 x PCIe x16 2 x PCIe x4 2 x PCIe x1 2 X PCI	1 x PCIe x16 2 x PCIe x4 2 x PCIe x1 2 X PCI
	M.2	1 x M.2 Type M-Key 2242, 2260, 2280 1 x M.2 A/E-Key 2230	1 x M.2 Type M-Key 2242, 2260, 2280 1 x M.2 A/E-Key 2230
Audio Codec		Realtek HD Audio	Realtek HD Audio
Ethernet Controller		1 x Intel® I219-LM 1GbE 1 x Intel® I210-AT 1GbE	1 x Intel® I219-LM 1GbE 1 x Intel® I210-AT 1GbE
Graphics	Controller	Intel® HD Integrated Graphics	Intel® HD Integrated Graphics
	Interfaces	VGA, DP++, HDMI	VGA, DP++, HDMI
	# of Display	3	3
TPM		TPM 2.0	TPM 2.0
Rear I/O	Video	1 x DB-15 VGA 2 x D++, 1 x HDMI	1 x DB-15 VGA 2 x D++, 1 x HDMI
	USB	4 x USB 3.1 Gen 1 2 x USB 3.1 Gen 2 1 x USB 3.1 Gen 2 Type C	4 x USB 3.1 Gen 1 2 x USB 3.1 Gen 2 1 x USB 3.1 Gen 2 Type C
	LAN Port	2 x RJ-5	2 x RJ45
	COM (Serial)	-	-
	PS2	-	-
	Audio	Line-in, Line-out, Mic-in	Line-in, Line-out, Mic-in
Internal Connector	USB	8 x USB 2.0 2 x USB 3.1 Gen 2	8 x USB 2.0 2 x USB 3.1 Gen 2
	COM (Serial)	5 x RS-232, 1 x RS-232/422/485	5 x RS-232, 1 x RS-232/422/485
	SATA	6 x SATA III	6 x SATA III
	RAID	RAID 0, 1, 5 and 10	RAID 0, 1, 5 and 10
	GPIO/LPT	1 x 8-bit GPIO / 1 x LPT	1 x 8-bit GPIO / 1 x LPT

Mini-ITX

Mini-ITX motherboard measures 6.7"x6.7" (170mmx170mm), is a very popular multi-purpose form factor for industrial computing applications. The Mini-ITX provides scalable performance, mobility, lower power consumption of less than 100 watts, rich I/O connectors, rich expansion slots and possibly fanless operation.

Product Name		EMX-TGLP [OEM Only]	EMX-C246P	MX370QD	MX310H
Processor System	Suppported Processors	11th Gen Intel® Core™ SoC i7/i5/i3 and Celeron® BGA Tiger Lake	8th/9th Gen Intel® Xeon®, Core-i™, Pentium®, and Celeron®	8th/9th Gen Intel® Core-i™, Pentium®, and Celeron®, 6/8-Core*	8th/9th Gen Intel® Core-i™, Pentium®, and Celeron®, 6/8-Core*
	Socket	BGA	LGA1151	LGA1151	LGA1151
	Max. TDP	12W/15W/28W TDP	up to 35W / 65W TDP by CPU	up to 35W / 65W TDP by CPU	up to 35W / 65W TDP by CPU
	Chipset	SoC	Intel® C246 PCH	Intel® Q370 PCH	Intel® H310 PCH
	BIOS	AMI SPI	AMI 256Mb SPI	AMI 256Mb SPI	AMI 128Mb SPI
Memory	Socket	2 x SODIMM	2 x 260-pin SODIMM	2 x 260-pin SODIMM (Gold Plated)	2 x 260-pin SODIMM
	Technology	DDR4 3200MT/s	DDR4 2400/2666 MHz, ECC by CPU	DDR4 2400 MHz	DDR4 SODIMM 2400 MHz
	Capacity	up to 128GB	up to 64 GB	up to 32 GB	up to 32 GB
Expansion Interface	mini-PCIe/SIM	1 x SIM Card Slot	-	-	1 x mini-PCIe (mSATA)
	PCIe	1 x PCIe Gen 4 x4	1 x PCIe x16	1 x PCIe x16	1 x PCIe x16
	M.2	1 x M.2 E-Key 2242/3042 1 x M.2 B-Key 2242/2260/2280/3042/3052	1 x M.2 M-Key 2242/2260/2280 1 x M.2 E-Key 2230	1 x M.2 M-Key 2242/2260/2280 1 x M.2 A/E-Key 2230	1 x M.2 M-Key (2242/2260/2280) 1 x M.2 E-Key 2230
Audio Codec		Realtek HD Audio 7.1 Channel	Realtek HD Audio 5.1 Channel	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel
Ethernet Controller		1 x Intel® I219-LM 1GbE 1 x Intel® I225-LM 2.5GbE 2 x Intel® I210-AT 1GbE	1 x Intel® I219-LM 1GbE 3 x Intel® I210-AT1 GbE	1 x Intel® I219-LM 1GbE 1 x Intel® I210-AT 1GbE	1 x Intel® I219-V 1GbE 1 x Intel® I210-AT 1GbE
Graphics	Controller	Intel® Iris Xe Graphic™ (Gen 12)	Intel® HD Integrated Graphics	Intel® UHD Graphics 630/610	Intel® HD Integrated Graphics
	Interfaces	DP	HDMI, VGA, LVDS	HDMI, DP, LVDS	HDMI, DP, VGA, LVDS
	# of Display	4	3	3	2
TPM		TPM 2.0	TPM 2.0	TPM 2.0	TPM 2.0
Rear I/O	Display	4 x DP	1 x VGA, 2 x HDMI	1 x HDMI, 2 x DP++	1 x HDMI, 1 x DP++, 1 x VGA
	USB	2 x USB 3.1 Gen 1 2 x USB 2.0	8 x USB 3.0 2 x USB2.0	4 x USB 3.1 Gen 2 2 x USB 3.1 Gen 1 Ports 1 x USB Gen 2 Type C	4 x USB 3.1 Gen 1
	LAN Port	4 x RJ45	4 x RJ45	2 x RJ45	2 x RJ45
	COM (Serial)	-	-	-	2 x RS-232/422/485
	PS/2 KB/MS	-	1 x PS/2 KB/MS	-	-
	Audio	-	-	Line-out, Line-in, Mic-in	Line-out, Mic-in
	DC-in	1 x DC-In	-	1 x DC-In	-
Internal Connector	LVDS/eDP	1 x LVDS/eDP Header	1 x LVDS/eDP Header	1 x LVDS Header	1 x LVDS Header
	USB	1 x USB 2.0 (2 Ports) 1 x USB 3.1 (2 Ports)	1 x USB 3.1 (2 x Ports) 1 x USB 2.0 (2 x Ports)	1 x USB 3.1 (2 x Ports) (Gold Plated) 1 x USB 2.0 (2 x Ports) (Gold Plated)	2 x USB 2.0 (4 Ports)
	COM (Serial)	4 x RS-232 2 x RS-232/422/485	2 x RS-232/422/485 4 x RS-232	1 x RS-232/422/485 1 x RS-232	1 x RS-232
	SATA	2 x SATA III	4 x SATA III	2 x SATA III	4 x SATA III
	RAID	-	RAID 0, 1, 5, 10	RAID 0, 1, 5, 10	-
	GPIO	1 x 8-bit GPIO	1 x 16-bit GPIO	1 x 8-bit GPIO	1 x 8-bit GPIO
	I²C	1 x I²C	-	1 x I²C	1 x I²C
Power Type		12V – 24V DC-In	ATX	12V-24V DC	ATX

Pico-ITX

Pico-ITX, 3.94"x2.83, is an ultra small, palm size motherboard provides optimized onboard IO interfaces. It is design for space constrained, ultra compact or mobile applications that requires low power, light weight and mobility.

MX170QD	MX110H
6th/7th Gen Intel® Core™ i7/i5/i3	6th/7th Gen Intel® Core™ i7/i5/i3 and Celeron®
LGA1151	LGA1151
Up to 65W Max	Up to 65W Max
Intel® Q170 PCH	Intel® H110 PCH
AMI 128Mb SPI	AMI 128Mb SPI
2 x 260-pin SODIMM (Gold Plated)	2 x 260-pin SODIMM
DDR4 SODIMM 2133 MHz	DDR4 SODIMM 2133 MHz
up to 32 GB	up to 32 GB
1 x PCIe x16	1 x PCIe x16
1 x mini-PCIe (mSATA)(Gold Plated)	1 x mini-PCIe (mSATA), 1 x mini-PCIe (Half-size)
1 x M.2 M-Key 2242/2280	-
Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel
1 x Intel® I219-LM 1GbE 1 x Intel® I210-AT 1GbE	1 x Intel® I219-V 1GbE 1 x Intel® I210-AT 1GbE
Intel® HD Integrated Graphics	Intel® HD Integrated Graphics
HDMI, DP, LVDS	DP, LVDS
3	2
TPM 2.0	TPM 2.0
1 x HDMI, 2 x DP++	2 x DP++
4 x USB 3.0 2 x USB 2.0	2 x USB 3.0 2 x USB 2.0
2 x RJ45	2 x RJ45
1 x RS-232/422/485	1 x RS-232/422/485 1 x RS-232
1 x PS/2 KB/MS	2 x PS/2 KB/MS
Line-in, Line-out, Mic-in	Line-in, Line-out, Mic-in
-	-
1 x LVDS Header	1 x LVDS Header
1 x USB 2.0 (2 Ports)(Gold Plated) 1 x USB 3.0 (2 Ports)(Gold Plated)	1 x USB 2.0 (2 Ports) 1 x USB 3.0 (2 Ports)
1 x RS-232	2 x RS-232
4 x SATA III	3 x SATA III
-	-
1 x 8-bit GPIO	1 x 8-bit GPIO
-	-
12V, 16 - 24V DC	ATX

Product Name		EPX-EHLP	EPX-APLP
Processor		Intel® Pentium®/ Celeron®/ Atom™ SoC	Intel® Celeron® N3350/J3455 up to 2.40/2.30 GHz)
Memory	Socket	1 x 260-pin SODIMM	1 x 204-pin SODIMM
	Technology	DDR4 SODIMM 3200MHz up to 32 GB	DDR3L SODIMM 1600MHz up to 8 GB
Expansion Interface	M.2	1 x M.2 B-Key 1 x M.2 E-Key	1 x M.2 B-Key 1 x M.2 A-Key
	SIM	1 x Micro SIM to SIM adapter (Optional)	
Audio Codec		Realtek HD Audio 7.1 Channel 2 x 3W Audio Amplifier	Realtek HD Audio 7.1 Channel Mic-in, Line-out 2 x 3W Audio Amplifier
Ethernet Controller		2 x Intel® I225-LM 2.5GbE 1 x Intel® I210-IT 1GbE	2 x Intel® I210-AT 1GbE
Graphics	Controller	Intel® Atom™/ Celeron®/ Pentium® SoC Integrated Graphics	Intel® Atom™/ Celeron®/ Pentium® SoC Integrated Graphics
	Resolution	HDMI 2.0b: 4096x2160 @ 60 Hz DP++: 4096 x 2160 @ 60Hz LVDS: 1920x1080	HDMI 1.4b: 3840x2160 @ 30Hz, 2560x1600 @ 30Hz LVDS: 1920x1800 @ 60Hz 2 x DP 1.2a: 4096x2160 @ 60Hz
Fanless Operation		Yes	Yes
I/O	VGA/DVI-D/ HDMI/DP	1 x DP++ 1 x HDMI 1 x LVDS	1 x DP++ 1 x HDMI 1 x LVDS
	USB	6 x USB	4 x USB 2.0 2 x USB 3.0
	COM Port	2 x RS-232	1 x RS-232
	LAN Port	2 x RJ45	2 x RJ45
	SATA	1 x SATA Power 1 x SATA III	1 x SATA Power 1 x SATA III
	GPIO	1 x 8-bit GPIO	1 x 8-bit GPIO
	DC-in	DC-In	DC-In
Power Requirement		+12V	+12V
Power Type		AT/ATX	ATX
Operating Temperature		-10~60°C (-14~140°F) -30~60°C (-22~140°F)	-5 ~ 60°C (23 ~ 140°F)
Dimension (L x W)		3.94" x 2.83"(100mm x 72mm)	
Weight		0.88lbs (0.4Kgs)	

Thin Mini-ITX

The thin Mini-ITX motherboard, also known as low-profile Mini-ITX, features CPU onboard with a heatsink capable for fanless operation. It is designed with low-profile I/O interfaces and DC-in power input. The thin Mini-ITX suits applications that require thin, compact enclosure, and quiet environment.

Product Name		MX6412J	MX4305UE (OEM Only)	MX4305UE (OEM Only)	MX310HD
Processor System	Processors	Intel® Celeron® J6412 Quad Core, 2.0 GHz, Elkhart Lake	Intel® Celeron® 4305UE 2.0 GHz Dual Core, Whiskey Lake	Intel® Core-i™ Processor onboard, Whiskey Lake	8th/9th Gen Intel® Core-i™, Pentium®, and Celeron®, 6/8-Core*
	Socket	CPU Onboard	CPU Onboard	CPU Onboard	LGA1151
	Max. Speed	up to 2.6 GHz	4 GT/s	4 GT/s	Depends on CPU
	Chipset	SoC	SoC	SoC	Intel® H310 PCH
	BIOS	AMI 128Mb SPI	AMI 256Mb SPI	AMI 256Mb SPI	AMI 128Mb SPI
Memory	Socket	2 x 260-pin SODIMM	2 x 260-pin SODIMM	2 x 260-pin SODIMM	2 x 260-pin SODIMM (Gold Plated)
	Technology	DDR4	DDR4 2400Mhz	DDR4 2400Mhz	DDR4 2400 MHz
	Capacity	up to 32GB	up to 32GB	up to 32GB	up to 32 GB
Expansion Interface	PCIe	-	1 x PCIe x1 (Open Ended)	1 x PCIe x1 (Open Ended)	1 x PCIe x16
	mini-PCIe/SIM	-	-	-	-
	M.2	1 x M.2 E-Key 2230 1 x M.2 M-Key 2280/2242 NVMe	1 x M.2 E-Key 2230 1 x M.2 M-Key 2280/2242 NVMe	1 x M.2 E-Key 2230 1 x M.2 M-Key 2280/2242 NVMe	1 x M.2 M-Key 2242/2260/2280 1 x M.2 A/E-Key 2230
Storage/eMMC		Optional eMMC	Optional eMMC	Optional eMMC	
Audio Codec		Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel
Ethernet Controller		2 x Intel® I210-AT 1GbE 2 x Intel® I225-LM 2.5GbE	1 x Intel® I210-AT 1GbE 1 x Intel® I219-LM 1GbE	1 x Intel® I210-AT 1GbE 1 x Intel® I219-LM 1GbE	1 x Intel® I219-LM 1GbE 1 x Intel® I210-AT 1GbE
Graphics	Controller	Intel® UHD Graphics	Intel® UHD Graphics 610	Intel® UHD Graphics 610	Intel® UHD Graphics 630/610
	Interfaces	2 x HDMI	DP, HDMI, LVDS	DP, HDMI, LVDS	HDMI, DP, LVDS
	# of Display	3	3	3	3
TPM		TPM 2.0	TPM 2.0	TPM 2.0	TPM 2.0
Fanless Operating		Yes	No	No	No
Rear I/O	Display	2 x HDMI	1 x DP++, 1 x HDMI	1 x DP++, 1 x HDMI	1 x DP++, 1 x HDMI
	USB	4 x USB 3.0	4 x USB 3.1 Type A	4 x USB 3.1 Type A	2 x USB 3.1 Gen 1, 2 x USB 2.0
	LAN Port	4 x RJ45	2 x RJ45	2 x RJ45	2 x RJ45
	DC-in	1 x DC-In	1 x DC-In	1 x DC-In	1 x DC-In
	Audio	Line-out, Mic-in	Line-out, Mic-in	Line-out, Mic-in	Line-out, Mic-in
Internal Connector	LVDS/eDP	1 x LVDS/eDP Header	1 x LVDS/eDP Header	1 x LVDS/eDP Header	1 x LVDS
	USB	2 x USB 2.0 header (4 x Ports) 1 x USB 3.0 Vertical Type A	1 x USB 3.1 Header (2 Ports) 1 x USB 2.0 Header (2 Ports)	1 x USB 3.1 Header (2 Ports) 1 x USB 2.0 Header (2 Ports)	1 x USB 2.0 (2 Ports) 1 x USB 3.1 (2 Ports)
	COM (Serial)	2 x RS-232/422/485 2 x RS-232	1 x RS-232/422/485 3 x RS-232	1 x RS-232/422/485 3 x RS-232	2 x RS-232
	SATA	1 x SATA III	1 x SATA III	1 x SATA III	2 x SATA III
	GPIO	1 x 8-bits GPIO	1 x 8-bits GPIO	1 x 8-bits GPIO	1 x 8-bits GPIO
	I²C	1 x I²C	1 x I²C	1 x I²C	1 x I²C
	PS/2 KB/MS	-	-	-	-
Power Type		12V – 24V DC-In	12V – 24V DC-In	12V – 24V DC-In	12V – 24V DC-In

MX110HD	MX3350N	MX3160N
6th/7th Gen Intel® Core™ i7/i5/i3 and Celeron®	Intel® Celeron® N3350 Dual Core	Intel® Celeron® N3160 Quad Core
LGA1151	CPU Onboard	CPU Onboard
Depends on CPU	up to 2.4GHz	up to 2.24GHz
Intel® H110 PCH	SoC	SoC
AMI 128Mb SPI	AMI 128Mb SPI	AMI 64Mb SPI
2 x 260-pin SODIMM	2 x 204-pin SODIMM	2 x 204-pin SODIMM
DDR4 2133 MHz	DDR3L 1600MHz	DDR3L 1333/1600MHz
up to 32 GB	up to 8 GB	up to 8 GB
1 x PCIe x16	1 x PCIe x1	1 x PCIe x1
1 x mini-PCIe (mSATA) , 1 x mini-PCIe (Half-size)	-	1 x mini-PCIe with mSATA support 1 x mini-PCIe
-	1 x M.2 E-Key 2230 1 x M.2 M-Key 2280/2242	-
-	-	-
Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel
1 x Intel® I219-V 1GbE 1 x Intel® I210-AT 1GbE	2 x Intel® I210-AT 1GbE	2 x Intel® I210-AT 1GbE
Intel® HD Integrated Graphics	Intel® Integrated HD Graphic	Intel® Integrated HD Graphic
DP, LVDS	DP++, HDMI, LVDS	DP++, HDMI, LVDS
2	3	3
TPM 2.0	TPM 2.0	Optional TPM
No	Yes	Yes
1 x DP++, 1 x HDMI	1 x DP++, 2 x HDMI	2 x DP, 1 x HDMI
4 x USB 3.0	4 x USB 3.0	4 x USB 3.0
2 x RJ45	2 x RJ45	2 x RJ45
1 x DC-In	1 x DC-In	1 x DC-In
Line-out, Mic-in	Mic-in, Line-out	Mic-in, Line-out
1 x LVDS Header	1 x LVDS (Optional eDP)	1 x LVDS (Optional eDP)
2 x USB 2.0 (4 Ports)	1 x USB 3.0 (2 Ports) 1 x USB 2.0 (2 Ports)	1 x USB 3.0 (1 Port), 1 x USB 3.0 (2 x Ports), 1 x USB 2.0 (2 Ports)
2 x RS-232	1 x RS-232/422/485 3 x RS-232	4 x RS-232
3 x SATA III	1 x SATA III	1 x SATA III
1 x 8-bit GPIO	1 x 8-bit GPIO	1 x 8-bit GPIO
-	-	-
2 x PS/2 KB/MS	-	-
12V – 24V DC-In	12V DC	12V DC

COM Express Modules

COMe Type 6, COMe Type 10

COMe module provides many features required by various industries or applications needing high performance, combined with specialized computing requirements not available off-the-shelf. It is an ideal solution for hosting embedded edge computing nodes, high performance medical devices incorporating unique custom IP on custom carrier boards, casino gaming applications with customized gaming circuitry, or any high-end computing application that requires unique customization or feature requirements that can quickly be designed onto a carrier board that hosts the COM Express module. This provides a better solution to a lengthier ground-up design on a single board platform.

COM Express Basic
For Type 2, Type 6 and Type 7 Pinout
(125 x 95 mm)

COM Express Compact
For Type 2, Type 6 Pinout
(125 x 95 mm)

COM Express Mini
For Type 1 & Type 10 Pinout
(84 x 55 mm)

Qseven
70 x 70mm

COM Express Type 10		COM Express Type 6 – Compact Module			
Model Number	ESM-APLM	ESM-EHLC	ESM-KBLU	ESM-SKLU	ESM-APLC
Processor	Intel® Pentium®/Celeron®SoC Processor	11th Gen Intel® Core™ i7/i5/i3/Celeron® Processor, Elkhart Lake	7th Gen Intel® Core™ i7/i5/i3/Celeron® Processor	6th Gen Intel® Core™ i7/i5/i3/Celeron® Processor	Intel® Pentium®/Celeron®SoC Processor
System Memory	1 x 204-pin DDR3L 1866 SODIMM up to 8GB	2 x 260-pin DDR4 3200 SODIMM up to 32GB	2 x 260-pin DDR4 2133MHz SODIMM up to 32GB	2 x 260-pin DDR4 2133MHz SODIMM up to 32GB	1 x 204-pin DDR3L 1866 SODIMM up to 8GB
Expansion	1 x PCIex4	3 x PCIe x1 Gen3 (8.0 GT/s)	8 x PCIex1	8 x PCIex1	3 x PCIex1
USB	6 x USB 2.0 2 x USB 3.0	8 x USB 2.0 4 x USB 3.2 Gen2 x1 (10 Gbps)	8 x USB 2.0 4 x USB 3.0	8 x USB 2.0 4 x USB 3.0	8 x USB 2.0 4 x USB 3.0
SATA	2 x SATA III	2 x SATA III	3 x SATA III	4 x SATA III	2 x SATA III
COM Port	-	2 x UART	2 x UART	2 x UART	1 x UART
MIO	1 x SMBus 1 x LPC	1 x SMBus 1 x LPC 1 x I²C 1 x SPI	1 x SMBus 1 x LPC 1 x I²C 1 x SPI	1 x SMBus 1 x LPC 1 x I²C 1 x SPI	1 x SMBus 1 x LPC 1 x I²C
Display Chipset	Intel® Apollo Lake SoC Integrated Graphics	Intel® Elkhart Lake SoC Integrated Gen11 LP Graphics	Intel® Kabylake SoC Integrated Graphics	Intel® Skylake Processor Integrated Graphics	Apollo lake SoC Integrated Graphics
Display	LVDS, DDI	HDMI, DP, eDP, LVDS, VGA	VGA, LVDS, DDI	VGA, LVDS, DDI	VGA, LVDS, DDI
Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio
Ethernet	1 x Intel® I210-AT	1 x MXL GPY215B1VI/SLNC2 VQFN-56 (7x7) SMD 2.5GbE	1 x Intel® I219-LM	1 x Intel® I219-LM	1 x Intel® I210-AT
Power Requirement	+4.75V ~ +20V	+9V ~ +19V	+9V ~ +19V	+9V ~ +19V	+9V ~ +19V
Operating Temperature	0°C ~ 60°C (32°F ~ 140°F)	Standard: 0°C ~ 60°C (32°F ~ 140°F) Extend: -40°C ~ 85°C (-40°F ~ 185°F)	Standard: 0°C ~ 60°C (32°F ~ 140°F) Extend: -20°C ~ 70°C (-4°F ~ 158°F)	Standard: -20°C ~ 80°C (-4°F ~ 176°F) Extend: -20°C ~ 70°C (-4°F ~ 158°F)	0°C ~ 60°C (32°F ~ 140°F)
Dimension (L x W)	3.31" x 2.17" (84mm x 55mm)	3.7" x 3.7" (95mm x 95 mm)	3.7" x 3.7" (95 mm x 95 mm)	3.7" x 3.7" (95 mm x 95 mm)	3.7" x 3.7" (95 mm x 95 mm)
Certification	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B

COMe / QSeven Modules
Type 1, 2, 6, 7 , 10

COMe platform is ideal for applications that require the main processing unit to be upgraded while still keeping its developed base board for I/O interfaces.

Evaluation Carrier Board

Available in MicroATX, 3.5" SBC and Mini-ITX form factors with rich I/O and expansion slots.

COM Express Type 6 – Basic Module

Model Number	ESM-TGH	ESM-CFH	ESM-KBLH	ESM-KBLA	ESM-SKLH
Processor	11th Gen. Intel®Core™ i7/i5/i3/Celeron BGA Processor	9/8th Gen Intel® Xeon®/ Core™ i7/i5/i3 Processor	7th Gen Intel® Core™ i7/i5/i3 Processor	7th Generation Intel® Xeon® E3-1505M v6/ E3-1505L v6 Processor	6th Gen Intel® Core™ i7/i5/i3 Processor
System Memory	3 x 260-pin DDR4-3200MHz SODIMM up to 96GB. ECC supported by SKU	3 x 260-pin DDR4 2400/2133MHz SODIMM up to 96GB	2 x 260-pin DDR4 2400/2133MHz SODIMM up to 32GB	2 x 260-pin DDR4 2400/2133MHz SODIMM up to 32GB	2 x 260-pin DDR4 SODIMM up to 32GB
Expansion	1 x PCIe x16 Gen4 8 x PCIe x1 Gen3	1 x PCIe x16 Gen3 8 x PCIe x1	8 x PCIex1	8 x PCIex1	8 x PCIex1
USB	4 x USB 3.2 8 x USB 2.0	8 x USB 2.0 4 x USB 3.1	8 x USB 2.0 4 x USB 3.0	8 x USB 2.0 4 x USB 3.0	8 x USB 2.0 4 x USB 3.0
SATA	4 x SATA III	4 x SATA III	4 x SATA III	4 x SATA III	4 x SATA III
COM Port	2 x UART	2 x UART	2 x UART	2 x UART	2 x UART
MIO	1 x SMBus 1 x LPC 1 x I²C 1 x SPI	1 x SMBus 1 x LPC 1 x I²C 1 x SPI	1 x SMBus 1 x LPC 1 x I²C	1 x SMBus 1 x LPC 1 x I²C	1 x SMBus 1 x LPC 1 x I²C
Display Chipset	Intel® Tiger Lake Processor Integrated Graphics	Intel® Coffee Lake Processor Integrated Graphics	Intel® Kabylake SoC Integrated Graphics	Intel® Kabylake SoC Integrated Graphics	Intel® Valleyview SoC Integrated Graphics
Display	HDMI, DP, LVDS, VGA, eDP	VGA, LVDS, DDI	VGA, LVDS, DDI	VGA, LVDS, DDI	VGA, LVDS, DDI
Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio	Intel® High Definition Audio
Ethernet	1 x Intel® I225-LM 2.5 GbE	1 x Intel® I219-LM	1 x Intel® I21LM	1 x Intel® I21LM	1 x Intel® I21LM
Power Requirement	+9V ~ +19V	+9V ~ +19V	+9V ~ +19V	+9V ~ +19V	+9V ~ +19V
Operating Temperature	Standard: 0 ~ 60 °C (32 ~ 140°F) Extend: -40°C ~ 85°C (-40°F ~ 185°F)	0°C ~ 60°C (32°F ~ 140°F)	0°C ~ 60°C (32°F ~ 140°F)	0°C ~ 60°C (32°F ~ 140°F)	0°C ~ 60°C (32°F ~ 140°F)
Dimension (L x W)	3.74" x 4.92" (125 mm x 95 mm)	5" x 3.7" (125 mm x 95 mm)	5" x 3.7" (125 mm x 95 mm)	5" x 3.7" (125 mm x 95 mm)	5" x 3.7" (125 mm x 95 mm)
Certification	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B

Q7 Module (OEM)

	EQM-APL
	Intel® Pentium®/ Celeron® Processor (N4200/N3350)
	Onboard DDR3L 4GB, up to 8GB
	3 x PCIex1
	6 x USB 2.0 2 x USB 3.0
	2 x SATA III
	1 x UART
	1 x SMBus 1 x LPC 1 x I2C 1 x SPI
	Apollo lake SoC Integrated Graphics
	HDMI/DP, eDP/LVDS
	Intel® Apollo lake SoC Integrated
	1 x Intel® I210 Industrial 1 x Intel® I210 commercial
	+5V
	Standard: 0°C ~ 70°C (32°F ~ 140°F) Extend: -20°C ~ 70°C (-4°F ~ 158°F)
	2.8" x 2.8" (70 mm x 70 mm)
	CE, FCC Class B

* All product specifications and product images are subject to change without notice.

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COM Express & Carrier Board

Power Saving, Small Form Factor, Quick Time-to-Market Solution

- 6W (fanless) suits for small handheld devices
- Soldered memory, soldered flash storage for space saving applications
- Wide range power input (4.75V - 20V) for smart battery support
- 1 x DDI (HDMI/DP), 1 x eDP/LVDS, up to 4K, for human-machine interaction (HMI)

Carrier Board in Mini-ITX Form Factor (EEV-EX15)

Type 10 COMe Module (ESM-APLM)

8 USB Ports

Expansion Module with 4 LAN Ports
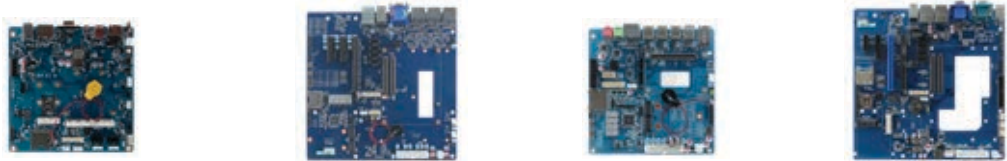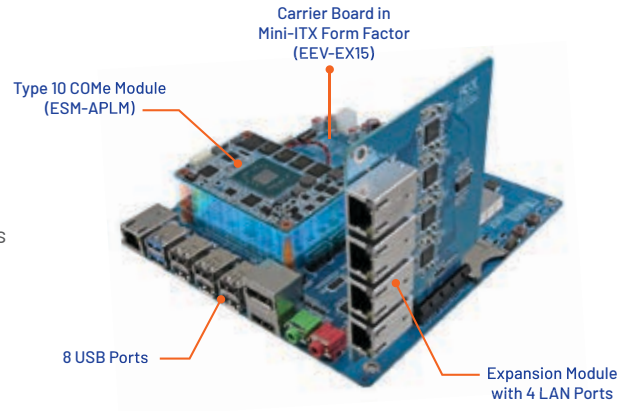
Qseven Carrier Board

Model Number	REV-Q703 (A/B)
USB	4 x USB 2.0, 2 x USB 3.0 (2 x USB on board, 2 x USB 3.0/ 1 x USB external)
SATA	2 x SATA (On board)
COM Port	1 x RS-232
Video	1 x HDMI, 1 x LVDS, 1 x DP, 1 x eDP (1 x LVDS & 1 x eDP on board)
Other	External I/O Connector 1 x Ethernet, 1 x SD socket, 3 x Audio phone jack Internal I/O connector 1 x GPIO, 1 x PCIe x1, 1 x mPCIe, 1 x SPI, 1 x CAN, 1 x LPC, 1 x JFP (Miscellaneous Setting Connector), 1 x PWM CPU Fan Header 1 x PWR Header
DIO	1 x 16-bit GPIO
MIO	1 x SD socket for version A 1 x Micro SD socket for version B
Expansion	1 x Mini PCIe Supports SIM Card
Audio Chipset	Realtek HD Audio
Audio Interface	Mic-in, Line-in, Line-out
Power Requirement	DC +12V
Operating Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
Dimension (L x W)	6.69" x 6.69" (170 mm x 170 mm)
Form Factor	Mini-ITX
Certification	CE, FCC Class B

Eval Carrier Board

	EEV-EX16	EEV-EX15	EEV-EX14
USB	4 x USB 2.0, 4 USB 3.2 (Gen2/10Gbps)	8 x USB 2.0, 2 x USB 3.0 (2 USB External)	8 x USB 2.0, 4 x USB 3.0 (4 USB External)
SATA	4 x SATA III (On Board)	2 x SATA III (On Board)	4 x SATA II (On Board)
COM Port	-	-	1 x RS-232/422/485, 1 x RS-232, 1 x LPT (1 x RS-232/422/485 external, 1 x RS-232 on board)
Video	3 x Display Port, 1 x VGA, 3 x HDMI, 1 x LVDS (1 x LVDS on board) 1 x eDP	1 x Display Port, 1 x HDMI, 1 x LVDS (1 x LVDS on board)	1 x Display Port, 1 x VGA, 1 x HDMI, 1 x LVDS (1 x LVDS on board)
Other	1 x SDIO 1 x LAN (support 2.5G)	1 x LAN	1 x PS2/ KB & MS, 1 x SDIO, 2 x LAN
DIO	1 x 8-bit GPIO	1 x 8-bit GPIO	1 x 8-bit GPIO
MIO	-	-	1 x IrDA
Expansion	2 x PCIe Slot x4 1x PCIe x16, 1 x IET 1 x SDIO/DIO (Optional)	1 x PCIe x4 1 x IET 1 x SDIO/DIO (Optional)	1 x PCIe x16, 1 x PCIe x4 1 x PCIe x1, 1 x Express Card 1 x mini-PCIe
Audio Chipset	Realtek HD Audio	Realtek HD Audio	Realtek HD Audio
Audio Interface	Mic-in and Line-out	Mic-in and Line-out	Mic-in, Line-In and Line-out
Power Requirement	ATX	ATX	AT/ATX
Operating Temperature	0°C ~ 60°C (32°F ~ 140°F)	0°C ~ 60°C (32°F ~ 140°F)	0°C ~ 60°C (32°F ~ 140°F)
Dimension (L x W)	9.6" x 9.6" (243.84 mm x 243.84 mm)	6.7" x 6.7" (170 mm x 170 mm)	9.6" x 9.6" (243.84 mm x 243.84 mm)
Form Factor	Micro-ATX	Mini-ITX	Micro-ATX
Certification	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B

SMARC Modules & Carrier Board

NXP RISC-based Small Form Factors

SMARC Module		
Model Number	SMA-X8I	SMA-IMX6
Processor	NXP i.MX 8M Mini	NXP i.MX 6 Solo NXP i.MX 6 Dual Lite NXP i.MX 6 Dual NXP i.MX 6 Quad Core
System Memory	1GB DDR3	1GB DDR3 expandable to 2 GB
Storage	eMMC 8GB	eMMC 4GB
External I/O Connector	1 x USB 2.0 Port (One OTG) 1 x I²C 1 x I²S 1 x SPI 1 x GPIO 1 x Uart 1 x MIPI CSI 1 x MIPI DSI 1 x LVDS 3 x PCIE 4 x USB 2.0 1 x Giga Lan	2 x USB 2.0 Port (One OTG) 2 x RX/TX (Ser1/3) 2 x UART (Ser0/2) 3 x PCIex1 1 x MLB150 12 x GPIOs, 1 x SDIO, 1 x SATA eMMC, 2 x SPI, 3 x I²C, 1 x SPDIF, 1 x WDT, 2 x CAN, 1 x JTAG
Internal I/O Connector	-	-
Power Requirement	12~24V	3V to 5.25V - Operates Directly from Single Level Lithium Ion Cells, or Fixed 3.3V or 5V Power Supplies
Operating Temperature	Optional Commercial Temperature: 0°C ~ 85°C (32°F ~ 185°F) Industrial Temperature: -40°C ~ 85°C (-40°F ~ 185°F)	Industrial Temperature: -40°C ~ 85°C (-40°F ~ 185°F)
Storage Temperature	-40°C ~ 85°C (-40°F ~ 185°F)	-40°C ~ 85°C (-40°F ~ 185°F)
Dimension (L x W)	82 mm x 50 mm	82 mm x 50 mm
Weight	0.06 kg	0.06 kg
Certification	CE, FCC Class B	CE, FCC Class B
Software Support	Android 9.0 Yocto 2.5	Android 4.4 Ubuntu 12.04 Yocto 2.0

SMARC Carrier Board		
Model Number	REV-SA01	REV-SA02	REV-SA03
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Processor	-	-	-
System Memory	-	-	-
Storage	-	-	-
External I/O Connector	1 x HDMI, 1 x VGA, 2 x RJ45, 1 x DB9, 1 x Mini-USB, 2 x USB Type A	1 x LAN, 2 x RCA, 1 x Micro SD socket, 1 x Mini USB (OTG), 1 x USB Type A 2.0 double deck, 1 x HDMI, 1 x VGA, 1 x Display port, 2 x RS-232, 1 x RST Switch, 1 x Power Switch, 1 x Power LED , 1 x DIP SW	1 x Power Key 1 x Reset Key 1 x DC Jack 1 x USB 2.0 Type A 1 x USB Type C 1 x Giga Ethernet 1 x Headphone 1 x Micro SD Socket 1 x SIM Socket
Internal I/O Connector	1 x LVDS,1 x Backlight, 1 x SD Socket, 1 x USB Connector, 2 x CAN BUS, 1 x Speaker-out/Mic-in, 1 x RS-232, 1 x GPIO, 1 x SATA, 1 x RTC Battery, 1 x 2 Cell Li Battery Connector	1 x Camera, 2 x Speaker, 1 x D-MIC, 1 x Mini PCIe (SATA), 1 x Mini PCIe (USB), 1 x Sim Card , 1 x GPIO, 1 x I²C, 1 x USB2.0, 1 x PCIE-1, 1 x LVDS, 1 x Battery charger connect, 1 x Inverter, 2 x RS485, 2 x CAN	1 x USB 2.0 4P Header 1 x Mic Phone 2P Header 1 x Speaker 2P Header 1 x RTC-Battery (CR2032) 1 x M.2 key E for WIFI /BT 1 x M.2 key B for LTE 1 x M.2 key M for SSD 1 x BackLight 4P Header 1 x I2C Touch Screen connector 1 x MIPI DSI Screen connector 1 x MIPI CSI Screen connector 1 x LVDS Screen connector 1 x 16-bit GPIO 1 x CAN Bus
Power Requirement	+9V ~ 36V DC-in (REV-SA01-02-A1R) +9V ~ 24V DC-in (REV-SA01-03-A1R)	DC +12V	DC +12V
Operating Temperature	0°C ~ 60°C (32°F ~ 140°F)	-40°C ~ 85°C (-40°F ~ 185°F)	-40°C ~ 85°C (-40°F ~ 185°F)
Storage Temperature	-20°C ~ 80°C (-40°F ~ 176°F)	-40°C ~ 85°C (-40°F ~ 185°F)	-40°C ~ 85°C (-40°F ~ 185°F)
Dimension (L x W)	146 mm x 101 mm	170 mm x 170 mm	165 mm x 120 mm
Weight	0.13 kg	0.024 kg	0.024 kg
Certification	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B
Software Support	-	-	-

* All product specifications and product images are subject to change without notice.

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3.5" SBC

3.5-inch single board computer (SBC) is a complete computer built on a small form factor measured 5.7" x 4" in industry standard. This solution is ideal for space-constrained, compact applications that do not require too many expansion slot interfaces or peripheral functions.

Product Name		ECM-TGU	ECM-EHL	ECM-CFS	ECM-WHL
Processor System	Processors	11th Gen Intel® Core™ i7/i5/i3/Celeron®	11th Gen Intel® Core™ i7/i5/i3/Celeron®	9th/8th Gen Intel® Core i7/i5/i3, 8000T/9000TE, Pentium, Celeron®	8th Gen Intel® Core i7/i5/i3 8000UE series, Celeron® 4305UE
	Socket	CPU Onboard	CPU Onboard	LGA 1151	CPU Onboard
	Chipset	Intel® Tiger Lake SoC	Intel® Elkhart Lake SoC	Intel® Q370 PCH / Intel® H310 PCH	Intel® Whiskey Lake SoC
	BIOS	AMI UEFI BIOS, 256 Mbit SPI	AMI UEFI BIOS, 256 Mbit SPI	AMI UEFI BIOS, 256 Mbit SPI	AMI UEFI BIOS, 256 Mbit SPI
Memory	Socket	1 x 260-Pin SODIMM	1 x 260-Pin SODIMM	1 x 260-Pin SODIMM	2 x 260-Pin SODIMM
	Technology	DDR4 3200MTs	DDR4 3200MTs	DDR4 2400/2666MHz	DDR4 2400MHz
	Max. Capacity	Up to 32GB	Up to 32GB	Up to 32GB	Up to 64GB
Expansion Interface		1 x M.2 M-Key 2260 1 x M.2 B-Key 3042/3052/2242 1 x M.2 E-Key 2230 1 x uSD	1 x M.2 B-Key 2242/3042 1 x M.2 E-Key 2230 uSIM Card Slot	1 x mini-PCIe (mSATA) Q370: with PCIe/SATA/USB 2.0 H310: with SATA/USB2.0	1 x 2230 M.2 E Key 1 x M.2 B-Key 2242/3042 uSIM Card Slot
Audio Codec		Realtek HD Audio	Realtek HD Audio	Realtek HD Audio	Realtek HD Audio
Ethernet Controller		Intel® I225-LM 2.5GbE Intel® I210-IT	Std. Temp: Intel® I225-LM + I210-AT Ext. Temp: Intel® I225-IT + I210-AT	Intel® I219-LM Intel® I210-AT	Intel® I219-LM Intel® I210-AT
Graphics	Controller	Intel® Tiger Lake UP3 SoC Integrated Gen12 Graphics	Intel® UHD Gen 11 LP	Intel® Coffee Lake/CLR SoC Integrated Graphics	Intel® UHD Graphics 620/610
	# of Display	3	3	Q370 - 3 Display/ H310 - 2 Display	3
TPM		NuvoTon TPM 2.0	TPM 2.0	TPM 2.0	TPM 2.0
Rear I/O	HDMI/DP	1 x DP, 1 x DP++	1 x HMDI, 1 x DP	2 x HMDI	2 x HDMI
	USB	4 x USB 3.1 Gen 2	2 x USB 3.1 (10 Gbps), 2 x USB 2.0	4 x USB3.1 (10 Gbps) Type-A	4 x USB 3.1 (10 Gbps)
	LAN Port	2 x RJ45	2 x RJ45	2 x RJ45	2 x RJ45
	COM (Serial)	-	1 x RS-422/485	1 x RS-232	-
	Audio	2 in 1 Line-out or Mic-in	-	-	Mic-in, Line-out
	DC-in	-	-	-	-
Internal Connector	LVDS/eDP	1 x LVDS, Optional eDP	1 x eDP	1 x LVDS	1 x LVDS
	USB	4 x USB 2.0	1 x USB 2.0 (2 Ports)	1 x USB 2.0 (2 Ports)	1 x USB 2.0 (2 Ports)
	COM (Serial)	2 x RS-232/422/485, 4 x RS-232	3 x RS-232	1 x RS-232	1 x RS-232
	SATA	1 x SATA III	1 x SATA III	2 x SATA III	1 x SATA III RAID 0/1
	Other	-	16-bit GPIO, LPC, SPI	8-bit GPIO, LPC, SPI	8-bit GPIO, LPC, SPI, SMBus
Power	Requirement	DC-in +12V ~ +24V	+9V ~ +36V	+12V	+12V
	Type	AT/ATX	AT/ATX	AT/ATX	AT/ATX
Operating Temperature		Std.: 0°C ~ 60°C (32°F ~ 140°F) Ext: -20°C ~ 60°C (-4°F ~ 140°F)	Std.: 0°C ~ 60°C (32°F ~ 140°F) Ext: -40°C ~ 85°C (-40°F ~ 185°F)	0°C ~ 60°C (32°F ~ 140°F)	0°C ~ 60°C (32°F ~ 140°F)
Operating Humidity		40°C @ 95% Relative Humidity, Non-condensing	40°C @ 95% Relative Humidity, Non-condensing	40°C @ 95% Relative Humidity, Non-condensing	40°C @ 95% Relative Humidity, Non-condensing
Certification Information		CE, FCC Class B	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B

OFT10W-3455J

Turn ECM-3455J 3.5" SCB into the Open Frame Panel Computer

- 10.1" PCAP Touch, Fanless
- Wi-Fi, Bluetooth
- Supports Android, Win 10 OS
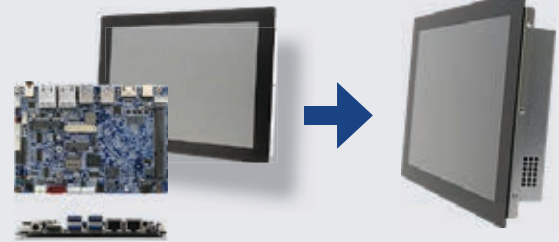
Product Name		ECM-KBLH	ECM-KBLU	ECM-3455J	ECM-APL
Processor System	Processors	7th Gen Intel® Core i7-7820EQ, i5-7440EQ, i3-7100E	7th Gen Intel® Core i7-600U, i5-300U, i3-7100U, Celeron® 3965U	Intel® Celeron® J3455 Quad Core SoC 1.5GHz, 2.3GHz max.	Intel® Atom x7-E3950, x5-E3940, x5-E3930, Pentium N4200, Celeron® N3350, J3455E
	Socket	CPU Onboard	CPU Onboard	CPU Onboard	CPU Onboard
	Chipset	Intel® QM175 PCH	Intel® QM175 PCH	Intel® Apollo SoC Integrated	Intel® Apollo SoC Integrated
	BIOS	AMI UEFI BIOS, 128 Mbit SPI	AMI UEFI BIOS, 128 Mbit SPI	AMI UEFI BIOS, 64Mb SPI	AMI UEFI BIOS, 128 Mbit SPI
Memory	Socket	1 x 260-Pin SODIMM	1 x 260-Pin SODIMM	1 x 204-Pin SODIMM	1 x 204-Pin SODIMM
	Technology	DDR4 2400MHz	DDR4 2133MT/s	DDR3L 1600MHz	DD3L 1866MHz
	Max. Capacity	Up to 16GB	Up to 16GB	Up to 8GB	Up to 8GB
Expansion Interface		1 x mini-PCIe Supports mSATA 1 x M.2 B-Key 2242	1 x mini-PCIe 1 x M.2 B-Key 2242/3042	1 x mini-PCIe 1 x M.2 E-Key 2230	1 x mini-PCIe 1 x M.2 B-Key 2242 1 x uSIM Card Slot
Audio Codec		Realtek HD Audio	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel
Ethernet Controller		Intel® I219-LM, Intel® I210-AT	Intel® I219-LM, Intel® I210-AT	2 x Realtek RTL8111H	2 x Intel® I210-AT 1GbE Wide Temp. E3900: Intel® I210-IT
Graphics	Controller	Intel® Kabylake SoC Integrated Graphics	Intel® HD Graphics 620/610	Intel® HD Graphics 500	Intel® HD Graphics 500/505
	# of Display	3	3	2	3
TPM		Optional TPM	TPM 2.0	TPM 2.0	Optional TPM
Rear I/O	HDMI/DP	2 x HMDI	2 x HDMI	1 x HDMI	2 x HDMI
	USB	4 x USB3.0	4 x USB 3.0	4 x USB 3.1 Gen 1	4 x USB 3.0
	LAN Port	2 x RJ45	2 x RJ45	2 x RJ-45	2 x RJ45
	COM (Serial)	1 x RS-232	1 x RS-232	-	1 x RS-232/422/485
	Audio	-	-	Line-out	-
	DC-in	-	-	1 x DC-In	-
Internal Connector	LVDS/eDP	1 x LVDS	1 x LVDS	1 x LVDS	1 x LVDS
	USB	1 x USB 2.0 (2 Ports)	1 x USB 2.0 (2 Ports)	2 x USB 2.0 (4 Ports)	1 x USB 2.0 (2 Ports)
	COM (Serial)	1 x RS-232/422/485	4 x RS-232, 1 x RS422/485	1 x RS-232/422/485, 1 x RS-232	5 x RS-232
	SATA	2 x SATA III	1 x SATA III	1 x SATA III	1 x SATA III
	Other	8-bit GPIO, LPC, SPI	8-bit GPIO, LPC, SPI	8-bit GPIO, LPC, SPI	8-bit GPIO, LPC, SPI
Power	Requirement	+12V	+12V	+9V ~ +36V	+12V ~ +26V
	Type	AT/ATX	AT/ATX	DC	AT/ATX
Operating Temperature		0°C ~ 60°C (32°F ~ 140°F)	0°C ~ 60°C (32°F ~ 140°F)	0°C ~ 60°C (32°F ~ 140°F)	Std.: 0°C ~ 60°C (32°F ~ 140°F) Ext: -40°C ~ 85°C (-40°F ~ 185°F)
Operating Humidity		40°C @ 95% Relative Humidity, Non-condensing	40°C @ 95% Relative Humidity, Non-condensing	5 ~ 90% Relative Humidity, Non-condensing	40°C @ 95% Relative Humidity, Non-condensing
Certification Information		CE, FCC Class B	CE, FCC Class B	CE, FCC Class B	CE, FCC Class B

ARM Motherboards (RISC-based Platform)

Product Name		AR3399RK	AR8MXMQ	AR8MXMM
Processor		Rockchip® RK3399 Dual Core Cortex-A72 + Quad Core Cortex-A53 (6-Core)	NXP i.MX 8M Cortex A53/ Cortex M4, Quad Core Processor up to 1.5 GHz	NXP i.MX8M Mini 4x Cortex-A53 core platforms up to 1.8GHz per core, 1x Cortex-M4
Memory	Technology	2GB DDR3 Onboard	2GB Onboard DDR4	1GB Onboard DDR4
	Max. Capacity	Expandable to 4GB Max	Expandable up to 4GB Max	Expandable up to 2GB Max
Graphics Engine		ARM® Mali-T860MP4 Integrated Graphics	Vivante® GC7000 Lite Integrated Graphic	GC NanoUltra 3D (1 shader) + GC320 2D, OpenGL ES2.0
Expansion Interface	mini-PCIe	–	–	–
	M.2	1 x M.2 E-Key 2230, 1 x M.2 B-Key 2242	1 x M.2 E-Key 2230, 1 x M.2 B-Key 2242	1 x M.2
	SD Socket	1 x uSD Card Slot	1 x uSD Card Slot	1 x uSD Card Slot
	SIM Card	1 x uSIM Card Slot	1 x SIM Card Slot	–
Storage		Optional	Onboard 16GB eMMC	Onboard 8GB eMMC
Wireless Communication		Through M.2/SIM Module	Through M.2/SIM Module	Optional
Audio	Codec	Wolfson® WM8960 Ultra Low Power	Wolfson® WM8960 Ultra Low Power	Wolfson® WM8960 Ultra Low Power
	Amplifier	TI® TPA2008D2 3W Stereo Class D	TI® TPA2008D2 3W Stereo Class D	TI® TPA2008D2 3-W Stereo Class-D
Ethernet Controller		1 x Micrel® KSZ9031	1 x Micrel® KSZ9031 1 x Realtek RTL8119G	1 x Micrel® KSZ9031 Optional Seiko® S-35390 External RTC
Rear I/O	Video Output	1 x HDMI	1 x HDMI	–
	USB	2 x USB 3.0 1 x USB 3.0 Gen 2 Type C OTG	2 x USB 3.0 Type A 1 x USB OTG Type C	1 x USB Type C OTG 2 x USB
	LAN Port	1 x RJ45	2 x RJ45	1 x RJ45
	COM	–	1 x RS-232	–
	DC-In	DC-In	DC-In	1 x DC-In
	Audio	Line-out	Line-out	Line-out
Internal Connector	Camera	1 x MIPI-CSI	2 x MIPI-CSI, 1 x MIPI-DSI	1 x MIPI-CSI
	LVDS/eDP	1 x LVDS	1 x LVDS	1 x LVDS
	USB	1 x USB 2.0 (2 Ports)	1 x USB 2.0 (1 Port)	2 x RS-232
	COM	1 x RS-232	–	–
	I²C, I²S, CANBus	I²C, I²S	I²C, I²S, 2 x CAN Bus	I²C, I²S
	GPIO	1 x 8-bit GPIO	1 x 8-bit GPIO	1 x 8-bit GPIO
	Other	Mic-in, Line-in	Mic-in, Line-in	Mic-in, Line-out, 1 x 4-pin USB Header
Power Requirement		12V DC	12V ~ 24V DC	5V DC
Operating Environment	Temp.	0°C ~ 60°C (32°F ~ 140°F)	0° ~ 60°C (32° ~ 140°F)	0° ~ 60°C (32° ~ 140°F)
	Humidity	5 ~ 80% Relative Humidity, Non-condensing		
Dimensions		4.4" x 5.7" (110mm x 145mm)	6.3" x 5.125" (160mm x 130mm)	4.72" x 3.07" (120mm x 78mm)
Weight		6 oz	7 oz	3.5 oz
OS Support		Android, Linux	Android, Linux	Android, Linux
Certification		CE, FCC Class B	CE, FCC Class B	CE, FCC Class B

AR6MXQ	AR6MXS	AR6MXCS
NXP® i.MX6 Cortex A9 Quad Core 1.0 GHz	NXP® i.MX6 Cortex A9 Solo Core 1.0 GHz	NXP i.MX6 Cortex A9 Solo Core 1.0 GHz
1 GB DDR3 Onboard	1 GB DDR3 Onboard	512 MB Onboard DDR3
-	-	Expandable up to 1GB Max
Vivante GC2000 Integrated Graphic	Vivante GC880 Integrated Graphic	Vivante GC880 Integrated Graphic
1 x mini-PCIe	1 x mini-PCIe	1 x mini-PCIe
-	-	-
1 x SD Card Slot	1 x SD Card Slot	1 x uSD Card Slot
1 x SIM Card Slot	1 x SIM Card Slot	1 x SIM Card Socket
4GB eMMC Onboard	Optional eMMC	Optional eMMC
Optional	Optional	Optional
Wolfson® WM8960 Ultra Low Power		
TI® TPA2008D2 3W Stereo Class D		
Micrel® KSZ9031	Micrel® KSZ9031	Micrel® KSZ9031
1 x HDMI	1 x HDMI	1 x HDMI
2 x USB 2.0	2 x USB 2.0	1 x USB Type C OTG 2 x USB
1 x RJ45	1 x RJ45	1 x RJ45
1 x RS-232	1 x RS-232	-
DC-In	DC-In	DC-in
Line-out	Line-out	Line-out
1 x MIPI-CSI, 1 x MIPI-DSI	1 x MIPI-CSI	-
2 x LVDS	1 x LVDS	1 x LVDS
1 x USB 2.0 (2 Ports) 1 x USB Type C OTG	1 x USB 2.0 (2 Ports) 1 x USB Type C OTG	1 x USB 2.0 (2 Ports)
1 x RS-232 and 1 x TTL	1 x RS-232 and 1 x TTL	1 x TTL
-	-	I²C, CAN Bus
1 x 8-bit GPIO	1 x 8-bit GPIO	1 x 8-bit GPIO
1 x SATA	-	Mic-in, Line-out
9V ~ 24V DC	9V ~ 24V DC	5V DC
0°C ~ 50°C (32°F ~ 122°F)	0°C ~ 50°C (32°F ~ 122°F)	0°C ~ 60°C (32°F ~ 140°F)
5 ~ 90% Relative Humidity, Non-condensing		
5.7 in x 4 in (145 x 101mm)	4.72" x 3.07" (120 x 78mm)	4.72" x 3.07" (120 x 78mm)
7 oz	7 oz	3.5 oz
Android, Linux	Android, Linux	Linux, Android with upgraded memory
CE, FCC Class B	CE, FCC Class B	CE, FCC Class B

Product Name	SMA-X8I	REV-SA03
Form Factor	SMARC	SMARC Carrier Board
Processor	NXP i.MX8M Mini 4x Cortex-A53 core platforms up to 1.8GHz per core, 1x Cortex-M4	-
System Memory	1GB Onboard DDR4	-
Storage	8GB eMMC	-
External I/O Connector	1 x USB 2.0 Port (One OTG) 1 x I²C 1 x I²S 1 x SPI 1 x GPIO 1 x Uart 1 x MIPI CSI 1 x MIPI DSI 1 x LVDS 3 x PCIE 4 x USB 2.0 1 x Giga Lan	1 x Power Key 1 x Reset Key 1 x DC Jack 1 x USB 2.0 Type A 1 x USB Type C 1 x Giga Ethernet 1 x Headphone 1 x Micro SD Socket 1 x SIM Socket
Internal I/O Connector	-	1 x USB 2.0 4P Header 1 x Mic Phone 2P Header 1 x Speaker 2P Header 1 x RTC-Battery (CR2032) 1 x M.2 key E for WIFI /BT 1 x M.2 key B for LTE 1 x M.2 key M for SSD 1 x BackLight 4P Header 1 x I2C Touch Screen connector 1 x MIPI DSI Screen connector 1 x MIPI CSI Screen connector 1 x LVDS Screen connector 1 x GPIO 16 bit 1 x CAN Bus
Power Requirement	12~24V	DC +12V
Operating Temperature	Optional Commercial: 0°C ~ 85°C (32°F ~ 185°F) Industrial: -40°C ~ 85°C (-40°F ~ 185°F)	-40°C ~ 85°C (-40°F ~ 185°F)
Dimensions	3.23" x 1.97" (82 x 50mm)	6.5" x 4.7" (165 x 120mm)
Weight	3 oz	8.5 oz
OS Support	Android 9.0 Yocto 2.5	-
Certification	CE, FCC Class B	CE, FCC Class B

Barebone Building Block Computers

BCM's FCC/CE certified Barebone Building Blocks are equipped with BCM's mini-ITX motherboards and a power supply, and offer multiple sizes and I/O options. These building blocks provide an excellent base platform for integrators and OEMs to quickly launch their products by doing the final configuration, such as adding memory, storage, OS, and CPUs. These are an excellent quick time-to-market solutions for end-products like kiosks, medical devices, and self-service HMIs.

Product Name		BI125-3455J	BI280-670QD	BI270-610HD	BI270-6412J
Compatible Motherboard		ECM-3455J 3.5" SBC	MX670QD Mini-ITX	MX610HD Mini-ITX	MX6412J Mini-ITX
Processor System	Supported Processors	Intel® Celeron J3455 Quad Core, 2.3GHz Max, Apollo Lake	Intel® Core® i9/i7/i5/i3, Pentium, Celeron, up to 16 Cores 24 Threads Hybrid, Alder Lake	Intel® Core® i9/i7/i5/i3, Pentium, Celeron, up to 16 Cores 24 Threads Hybrid, Alder Lake	Intel® Celeron®J6412 Quad Core, 2.0 GHz, Elkhart Lake
	CPU Type	CPU Onboard	LGA1700 Socket	LGA1700 Socket	CPU Onboard
	Chipset	SoC	Intel® Q670E PCH	Intel® H610E PCH	SoC
	Audio Codec	Realtek ALC255 HD Codec	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel
	Ethernet Controller	2 x Realtek® RTL8111H 1GbE	2 x Intel® I225-LM 2.5GbE	1 x Intel® I225-V 2.5GbE 1 x Intel® I219-LM 1GbE	2 x Intel® I225-LM 2.5GbE 2 x Intel® I210-AT 1GbE
Memory	Socket	1 x 204-pin SODIMM	2 x SODIMM	2 x SODIMM	2 x 260-pin SODIMM
	Technology	DDR3L-1600MHz (PC3-12800)	DDR5 5200MHz	DDR 5 4800MHz	DDR4
	Max.	up to 8GB	up to 128GB	up to 64GB	up to 32GB
Graphics	Controller	Intel® HD Graphics 500 Integrated	Intel® Iris Xe (CPU Dependent)	Intel® Iris Xe (CPU Dependent)	Intel® UHD Graphics
	# of Display	1	4	3	3
Internal Expansion Slot	PCIe / mini-PCIe	1 x Full Size mini-PCIe/mSATA/Micro SIM	1 x Gen 5 PCIe x16	1 x Gen 4 PCIe x16	–
	M.2	1 x M.2 E-Key 2230	2 x M.2 M-Key 2242/2280 NVMe 1 x M.2 E-Key 2230 with CNVi	1 x M.2 M-Key 2242/2280 NVMe 1 x M.2 E-Key 2230 with CNVi	1 x M.2 E-Key 2230 1 x M.2 M-Key 2280/2242 NVMe
Storage		32GB eMMC Onboard	Through M.2 Module	Through M.2 Module	Through M.2 Module
System Fan		Fanless	2 x 60mm	1 x 60mm	1 x 60mm
Rear External I/O	Video	1 x HDMI	4 x DisplayPort	1 x HDMI, 1 x DisplayPort	2 x HDMI
	USB	4 x USB 3.1 Gen 1 Type A	6 x USB 3.2 Gen 2x1 Type-A 1 x USB 3.2 Gen 2x2 Type-C	2 x USB 3.2 Type A 2 x USB 2.0 Type A	4 x USB 3.0
	LAN	2 x RJ45	2 x RJ45	2 x RJ45	4 x RJ45
	COM Port	Optional 2 x COM Port	–	–	–
	Audio	Line-out	Line-out, Mic-in, Mic-in	Line-out, Mic-in	Line-out, Mic-in
	DC-in	1 x DC-in Jack	1 x DC-in Jack	1 x DC-in Jack	1 x DC-in Jack
Front External I/O	USB	2 x USB 2.0	2 x USB 3.2 Gen 2x1 or 2 x USB 2.0	2 x USB 3.2 Gen 1x1 or 2 x USB 2.0	2 x USB 2.0
	Power	1 x Power Button with LED	1 x Power Button with LED	1 x Power Button	1 x Power Button
Other I/O		Reset Switch, Optional Antennas	Reset Switch, 2 x SATA III	2 x SATA III	1 x SATA III
Power Adapter	Voltage	9V - 36V Wide Range DC-In	12V-24V Wide Range DC-In	12V-24V Wide Range DC-In	12V-24V Wide Range DC-In
	Input	100~240V / 50~60Hz	100~240V / 50~60Hz	100~240V / 50~60Hz	100~240V / 50~60Hz
	Onput	60W 12V	90W Adapter (19V @ 4.73A)	90W Adapter (19V @ 4.73A)	90W Adapter (19V @ 4.73A)
Operating Temperature		0°C ~ 35°C (32°F ~ 95°F)	0 ~ 40°C (32 ~ 104°F)	0 ~ 35°C (32 ~ 95°F)	0 ~ 35°C (32 ~ 95°F)
Dimensions		7" L x 5.5" W x 1.85" H (177.8 x 139.7 x 47mm)	8.587" L x 8.00" W x 2.220" H (218.18 x 203.20 x 56.4mm)	8.587" L x 8.00" W x 2.166" H (218.18 x 203.20 x 55.01mm)	8.587" L x 8.00" W x 2.166" H (218.18 x 203.20 x 55.01mm)
Weight		2.56 lbs	4.25 lbs	4.25 lbs	4.25 lbs
Certification		FCC, CE	FCC, CE	FCC, CE	FCC, CE

BI270-310HD	BI270-110HD	BI260-370QD	BI260-170QD
MX310HD Mini-ITX	MX110HD Mini-ITX	MX370QD Mini-ITX	MX170QD Mini-ITX
8th/9th Gen Intel® Core-i™, Pentium, and Celeron®, 6/8-Core*	6th/7th Gen Intel® Core™ i7/i5/i3 and Celeron®	8th/9th Gen Intel® Core-i™, Pentium, and Celeron®, 6/8-Core*	6th/7th Gen Intel® Core™ i7/i5/i3 Processors
LGA1151 Socket	LGA1151 Socket	LGA 1151 Socket	LGA 1151 Socket
Intel® H310 PCH	Intel® H110 PCH	Intel® Q370 PCH	Intel® Q170 PCH
Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel	Realtek HD Audio 7.1 Channel
1 x Intel® I219-LM 1GbE 1 x Intel® I210-AT1GbE	1 x Intel® I219-V 1GbE 1 x Intel® I210-AT 1GbE	1 x Intel® I219-LM 1GbE 1 x Intel® I210-AT 1GbE	1 x Intel® I219-LM 1GbE 1 x Intel® I210-AT 1GbE
2 x 260-pin SODIMM	2 x 260-pin SODIMM	2 x 260-pin SODIMM (Gold Plated)	2 x 260-pin SODIMM (Gold Plated)
DDR4 SODIMM 2400MHz	DDR4 2133MHz	DDR4 SODIMM 2400MHz	DDR4 SODIMM 2133MHz
up to 32GB	up to 32GB	up to 32GB	up to 32GB
Intel® Integrated Graphic Engine	Intel® Integrated Graphic Engine	Intel® Integrated Graphic Engine	Intel® Integrated Graphic Engine
2	2	3	3
1 x mini-PCIe/mSATA 1 x PCIe x16	1 x PCIe 3.0 x4 Slot 1 x Half Size mini-PCIe	1 x PCIe x16	1 x mini-PCIe (mSATA)(Gold Plated) 1 x PCIe x16
1 x M.2 M-Key 2242/2260/2280 1 x M.2 E-Key 2230	-	1 x M.2 M-Key 2242/2260/2280 1 x M.2 A/E-Key 2230	1 x M.2 M-Key 2242/2280
Through M.2 Module	Through mini-PCIe mSATA	1 x 2.5" HDD Bay	1 x 2.5" HDD Bay
1 x 60mm	1 x 60mm	1 x 60mm	1 x 60mm
1 x HDMI, 1 x DP++	1 x HDMI, 1 x DP++	1 x HDMI, 2 x DP++	1 x HDMI, 2 x DP++
2 x USB 3.1 Gen 1 Ports 2 x USB 2.0	4 x USB 3.0	4 x USB 3.1 Gen 2 2 x USB 3.1 Gen 1 Ports 1 x USB Gen 2 Type C	4 x USB 3.0 2 x USB 2.0
2 x RJ45	2 x RJ45	2 x RJ45	2 x RJ45
-	-	Optional, up to 2 x COM	2 x COM
Line-out, Mic-in	-	Line-out, Line-in, Mic-in	Line-out, Line-in, Mic-in
1 x DC-in Jack	1 x DC-in Jack	1 x DC-in Jack	1 x DC-in Jack
2 x USB 2.0	2 x USB 2.0	2 x USB 3.0 or 2 x USB 2.0	2 x USB 3.0 or 2 x USB 2.0
1 x Power Button	1 x Power Button	1 x Power Switch	1 x Power Switch
2 x SATA III	3 x SATA III	2 x SATA III	4 x SATA III, 1 x PS/2 KB/MS
12V-24V Wide Range DC-In	12V-24V Wide Range DC-In	12V-24V Wide Range DC-In	12V, 16 - 24V DC
100~240V / 50~60Hz	100~240V / 50~60Hz	100~240V / 50~60Hz	100~240V / 50~60Hz
90W Adapter (19V @ 4.73A)	90W Adapter (19V @ 4.73A)	90W Adapter (19V @ 4.73A)	90W Adapter (19V @ 4.73A)
0 ~ 35°C (32 ~ 95°F)	0 ~ 35°C (32 ~ 95°F)	0 ~ 40°C (32 ~ 104°F)	0 ~ 40°C (32 ~ 104°F)
8.587" L x 8.00" W x 2.166" H (218.18 x 203.20 x 55.01mm)	8.587" L x 8.00" W x 2.166" H (218.18 x 203.20x 55.01mm)	8.587" L x 8.00" W x 3.007" H (218.10 x 203.20 x 73.68mm)	8.587" L x 8.00" W x 3.007" H (218.10 x 203.20 x 73.68mm)
4.25 lbs	4.25 lbs	4.25 lbs	4.25 lbs
FCC, CE	FCC, CE	FCC, CE	FCC, CE

Barebone Building Block Computers

Complete System Customization
Options to bundle with CPU, Memory, Storage and/or apply for safety lab certification such as UL, UL Recognized.

Customized Exterior Color
Select the color of paint to fit your applications. BI360 series default silver paint on its metal chassis provides a sleek, non-traditional IPC look.

Product Name		BI360-610H	BI360-310H	BI360-110H
Compatible Motherboard		MX610H Mini-ITX	MX310H Mini-ITX	MX110H Mini-ITX
Processor System	Supported Processors	12th Gen Intel® Core™ i9, i7, i5, i3, Pentium, Celeron® up to 16 Cores 24 Threads Hybrid	8th/9th Gen Intel® Core-i™, Pentium®, and Celeron®, 6/8-Core*	6th/7th Gen Intel® Core™ i7/i5/i3 and Celeron®
	CPU Type	LGA1700	LGA1151	LGA1151
	System Chipset	Intel® H610E PCH	Intel® H310 PCH	Intel® H110 PCH
	Audio Codec	Realtek HD Audio	Realtek HD Audio	Realtek HD Audio
	Ethernet Controller	1 x Intel® I255-LM 2.5GbE 1 x Intel® I219-LM	1 x Intel® I219-LM 1 x Intel® I210-AT	1 x Intel® I219-LM 1 x Intel® I210-AT
Memory	Socket		2 x 260-pin SODIMM	2 x 260-pin SODIMM
	Technology	Dual Channel DDR 5 5200MHz	Dual Channel DDR4 2400 MHz	Dual Channel DDR4 2133 MHz
	Max. Capacity	up to 64GB	up to 32GB	up to 32GB
Graphics	Controller	Intel® Integrated Iris Xe Graphic (CPU Dependent)	Intel® HD Integrated Graphics	Intel® HD Integrated Graphics
	# of Display	3	2	2
Internal Expansion Slot	PCIe / mini-PCIe	1 x Gen 4 SMT Type PCIe x16	1 x mini-PCIe with mSATA Support 1 x PCIe x16	1 x mini-PCIe (mSATA) 1 x mini-PCIe, 1 x PCIe x16
	M.2	1 x M-Key M.2 2242/2280 NVMe 1 x E-Key M.2 2230 with CNVi Support	1 x M.2 (2242/2260/2280) M-Key 1 x M.2 (2230) E-Key	-
Storage		1 x 2.5" Drive Bay	1 x 2.5" Drive Bay	1 x 2.5" Drive Bay
System Fan		1 x 80mm	1 x 80mm	1 x 80mm
Rear External I/O	Video Interface	1 x HDMI, 2 x DisplayPort	1 x HDMI, 1 x DP++, 1 x VGA	2 x DP++
	USB	4 x USB 3.2 Gen 1x1 Ports 2 x USB 2.0 Type A	4 x USB 3.1	2 x USB 3.0 and 2 x USB 2.0
	LAN	2 x RJ45	2 x RJ45	2 x RJ45
	COM Port	2 x RS-232/422/485	2 x RS-232/422/485	1 x RS-232/422/485, 1 x RS-232
	Audio	Line-in, Line-out, Mic-in	Line-out, Mic-in	Line-in, Line-out, Mic-in
Front External I/O	USB	2 x USB 3.2 Gen 1x1 or 2 x USB 2.0	2 x USB 3.0 or 2 x USB 2.0	2 x USB 3.0 or 2 x USB 2.0
	Power Switch	1 x Power Switch	1 x Power Switch	1 x Power Switch
Other I/O		4 x SATA III	4 x SATA III	2 x PS/2 KB/MS, 4 x SATA III
Power Requirements	Voltage	ATX	ATX	ATX
	Adapter Input	100-240V~, 4-2A, 60-50 Hz	100-240V~, 4-2A, 60-50 Hz	100-240V~, 4-2A, 60-50 Hz
	Adapter Onput	250W	250W	250W
Environment	Operating Temp.	0 ~ 40°C (32 ~ 104°F)	0 ~ 40°C (32 ~ 104°F)	0 ~ 40°C (32 ~ 104°F)
	Storage Temp.	-20 ~ 60°C (-4 ~140°F)	-20 ~ 60°C (-4 ~140°F)	-20 ~ 60°C (-4 ~140°F)
	Exterior Color	Silver	Silver	Silver
Dimensions		8.00" L x 9.335" W x 4.493" H (203.20 x 237.11 x 114.13mm)		
Weight		7.50 lbs	7.50 lbs	7.50 lbs
Certification		FCC, CE	FCC, CE	FCC, CE

Fully Certified Building Block Computers

Fully Certified Building Block Barebones & Embedded Systems add Safety Certifications in addition to FCC/CE. These building blocks provide the additional value of full certification either as a stand-alone device, or to lower the cost and lab time if re-certified as a subcomponent of a larger assembly or OEM device. Examples include a medical blood analyzer, X-ray device or lottery kiosk. These building blocks are excellent quick time-to-market solutions for end-products like kiosks, medical devices, and self-service HMIs.

The SySTIUM® MotherBoard Ready™ Platform

Product Name		ST526-RX370Q	ST515-MX310H
Compatible Motherboard		RX370Q Micro-ATX	MX310H Mini-ITX
System	**Supported Processors**	Supports 8/9th Gen LGA1151 Intel® Core, Pentium® and Celeron® Processor	Supports 8/9th Gen LGA1151 Intel® Core, Pentium® and Celeron® Processor
	CPU Socket	LGA1151	LGA1151
	System Chipset	Intel® Q370 PCH	Intel® H310 PCH
	Graphics	Intel® Integrated Graphic Engine	Intel® Integrated Graphic Engine
	Audio Codec	Realtek HD Audio	Realtek HD Audio
	Ethernet Controller	LAN1: Intel® I210-AT 1GbE LAN2: Intel® Intel® I219-LM 1GbE	LAN1: Intel® I210-AT 1GbE LAN2: Intel® Intel® I219-LM 1GbE
Memory		4 x Gold Plated DIMM Slots up to 64GB DDR4 2666MHz	2 x SODIMM up to 32GB DDR4 2666MHz
Expansion		1 x PCIe x16 Slot 2 x PCIe x4 (x16 Physical Slot) 1 x PCIe x1 Slot Open End 1 x M.2 M-Key 2242, 2260, 2280 Slot (with USB, PCIe x4 &SATA III) 1 x M.2 A/E-Key 2232 (with USB & PCIe x2)	1 x M.2 M-Key 2260, 2280 1 x M.2 A/E-Key 2230 (with USB & PCIe x1) 1 x Full Size mini-PCIe with mSATA Support
Storage/Drive		External: 1 x 5.25" or 1 x 3.5" Internal: 1 x 3.5" Drive Bay (2nd w/ bracket optional)	External: 1 x 5.25" or 1 x 3.5" with Slim CD (Optional) Internal: 2 x 2.5" or 1 x 3.5"
External I/O	**Video Interface**	1 x HDMI, 2 x DP++	1 x HDMI, 1 x DP++, 1 x VGA
	USB	Rear: 4 x USB 3.1 Gen 2 Type A 2 x USB 3.1 Gen 1 Type A 1 x USB 3.1 Gen 2 Type C Front: 2 x USB 2.0 Type A	Rear: 4 x USB 3.1 Gen 1 Front: 2 x USB 2.0
	LAN	2 x RJ45	2 x RJ45
	COM Port	1 x RS-232/422/485 Connector	2 x RS-232/422/485 COM Ports
	Audio	Line-in, Line-out and Mic-in	Rear: 1 x Line-out and 1 x Mic-in Front: 1 x Line-out and 1 x Mic-in (Optional)
Mechanical & Environment	**Power Supply**	350W	220W
	Power Type	AT/ATX (ATX is default setting)	AT/ATX (ATX is default setting)
	Cooling/Fan	2 x 60mm Fans	1 x 60mm Fan
	Operating Temp.	0 ~ 40°C (32 ~ 104°F)	0 ~ 40°C (32 ~ 104°F)
	Storage Temp.	0 ~ 60°C (32 ~ 140°F)	0 ~ 60°C (32 ~ 140°F)
	Dimensions	15.5" x 13" x 5.4" (394x329x136mm)	11.2" x 7.75" x 2.59" (282x179x66mm)
Weight		Approx. 18 lbs	Approx. 6.75 lbs
Certification		RoHs Compliant FCC, CE, UL or CSA	RoHs Compliant FCC, CE, UL or CSA

UL Listed Computers

Product Name	EPC-SKLU
Compatible Motherboard	ECM-SKLU
Supported Processors	6th Generation Intel® Core™ i7/ i5/ i3/ Celeron® Processor
CPU Socket	SoC
System Chipset	Intel® Skylake SoC
Graphics	Intel® UHD Graphics 520/510
Audio Codec	Realtek HD Audio
Ethernet Controller	LAN1: Intel® I210-AT 1GbE LAN2: Intel® Intel® I219-LM 1GbE
Memory	1 x 260-Pin SODIMM up to 16GB DDR4 2133MHz
Expansion	1 x Full Size mini-PCIe (mSATA) 1 x M.2 B-Key 3042/2242
Storage/Drive	1 x 2.5" Drive Bay (7mm) 1 x M.2 B-Key 2242
Video Interface	2 x HDMI
USB	2 x USB 2.0 4 x USB 3.0
LAN	2 x RJ45
COM Port	1 x RS-232,1 x RS-232/422/485
Audio	-
Power Supply	Input: 100 ~ 240Vdc/50 ~ 60Hz Output: 60W Adapter (12V @ 5A Adapter)
Power Type	AT/ ATX (ATX is default setting)
Cooling/Fan	Fanless
Operating Temp.	With Ext. Temp.Peripherals w /air flow: -10°C ~ 50°C (14°F ~ 122°F) with 1m/air flow
Storage Temp.	-40°C ~ 75°C (-40°F ~ 167°F)
Dimensions	7" x 4.8" x 2" (177mm x 123mm x 50mm)
Weight	2.65 lbs
Certification	CE, FCC Class B

* All product specifications and product images are subject to change without notice.

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Fanless Embedded Systems

BCM's Fanless Embedded Systems are equipped with BCM's 3.5" SBC or smaller form factor motherboard inside with semi-rugged Aluminum + Metal chassis enclosure. These systems are smart fanless design, and tested with vibration, shock and drop tests to ensure the quality and stability of operating in the critical condition environment. Select product supports wide temperature.

Flexible I/O with IET Expansion Modules

Product Name		EMS-TGL	EPC-WHL-DIN-RAIL	EPC-WHL
System	Supported Processors	11th Gen. Intel® i7-1185GRE, i5-1145GRE, i3-1115GRE, i7-1185G7E, i5-1145G7E, i3-1115G4E onboard	8th Generation Intel® Core™ i7/ i5/ i3/ Celeron® Processor onboard	8th Gen Intel® Core-i7/i5/i3, and Celeron® Processor onboard
	System Chipset	Intel® Tiger Lake Platform	Intel® Whiskey Lake SoC	Intel® Whiskey Lake SoC
	Audio Codec	Realtek HD Audio 7.1 Channel	Realtek HD Audio	Realtek HD Audio
	Ethernet Controller	1 x Intel® I225-LM, w/ TSN (Require SW support for TSN) 1 x Intel® I219-LM, w/ vPro (w/ i5 and i7 CPU)	1 x Intel® I219-LM 1 x Intel® I210-AT	1 x Intel® I219-LM 1 x Intel® I210-AT
System Memory		2 x 260-pin DDR4 3200MHz SODIMM Socket Up to 64GB	2 x 260-Pin DDR4 2400MHz SODIMM Socket Up to 64GB	2 x 260-Pin DDR4 2400MHz SODIMM Socket Up to 64GB
Graphics	Controller	Intel® Iris® Xe/ Intel® UHD Graphics	Intel® UHD Graphics 620/610	Intel® UHD Graphics 620/610
	# of Display	2	2	2
Expansion		1 x 80-Pin IET Module Interface 1 x M.2 B-Key 2242/3042/3052 (SATA/ PCIe/ USB3.1) 1 x M.2 E-Key 2230 for Wi-Fi & BT Module (CNVi)	1 x M.2 E-Key includes CNVio Signal (2230) for Wi-Fi Cards 1 x M.2 B-Key with SIM Slot (2242/3042) for LTE & I/O Cards	1 x M.2 E-Key includes CNVio Signal (2230) for Wi-Fi Cards 1 x M.2 B-Key with SIM Slot (2242/3042) for LTE & I/O Cards
Storage		1 x M.2 M-Key 2242/2280 NVMe SSD 1 x M.2 B-Key 2242	1 x 2.5" Drive Bay (7mm) 1 x M.2 B-Key 2242	1 x 2.5" Drive Bay (7mm) 1 x M.2 B-Key 2242
External I/O	Video Interface	1 x HDMI, 1 x DP	2 x HDMI	2 x HDMI
	USB	2 x USB 3.1 Gen.2 (10Gbp/s) 2 x USB 3.1 Gen.1 (5Gbp/s)	4 x USB 3.1 Optional 2 x USB 2.0	4 x USB 3.1 Optional 2 x USB 2.0
	LAN	2 x RJ45	2 x RJ45	2 x RJ45
	COM Port	2 x RS232/422/485	Optional 1 x RS-232	Optional 1 x RS-232
	Audio	Line-out, Mic-in	Line-out, Mic-in	Line-out, Mic-in
	DC-in	1 x DC-in	1 x DC-in	1 x DC-in
	Power Switch	1 x Power Button, 1 x EX Power	1 x Power On/Off Button w/LED	1 x Power On/Off Button w/LED
	Other	8 x Antenna Mounting Holes	2 x Antenna Mounting Holes	2 x Antenna Mounting Holes
Power Connector		3-Pin Terminal Block	Lockable DC Jack	Lockable DC Jack
Power Requirements		Typical +12 ~ +24Vdc (+9V ~ +32Vdv)	+12V	+12V
ACPI		Single Power ATX Support S0, S3, S4, S5; ACPI 5.0 Compliant	Single Power ATX Support S0, S3	Single Power ATX Support S0, S3
Power Mode		AT/ ATX (ATX is default setting)	AT/ ATX (ATX is default setting)	AT/ ATX (ATX is default setting)
Adapter		Optional AC-DC Adapter (60W)	Input: 100 ~ 240Vdc/50 ~ 60Hz Output: 120W Adapter (12V @ 10A Adapter) AC-DC Adapter	Input: 100 ~ 240Vdc/50 ~ 60Hz Output: 120W Adapter (12V @ 10A Adapter) AC-DC Adapter
Operating Temperature		Ext. Temp: -40°C ~ 70°C (w/SSD) Std. Temp: 0°C ~ 70°C (w/SSD)	With Ext. Temp.Peripherals w /air flow: -10°C ~ 40°C (14°F ~ 104°F)	With Ext. Temp.Peripherals w /air flow: -10°C ~ 40°C (14°F ~ 104°F)
Construction		Aluminum + Metal	Aluminum + Metal	Aluminum + Metal
Mounting Kit		Wall Mount Kit / Din Rail Mount Kit (Optional)	Din Rail Mount Kit	Wall Mount Kit (Optional)
Dimensions		9.45" x 5.9" x 1.89" (240 x 150 x 48mm)	7" x 4.8" x 2.17" (177mm x 123mm x 55mm)	7" x 4.8" x 2.17" (177mm x 123mm x 55mm)
Weight		4.6 lbs	2.65 lbs	2.65 lbs
OS Support		Win 10 64-bit, Linux	Win 10, Linux	Win 10, Linux
Certification		CE, FCC Class B	CE, FCC Class B	CE, FCC Class B

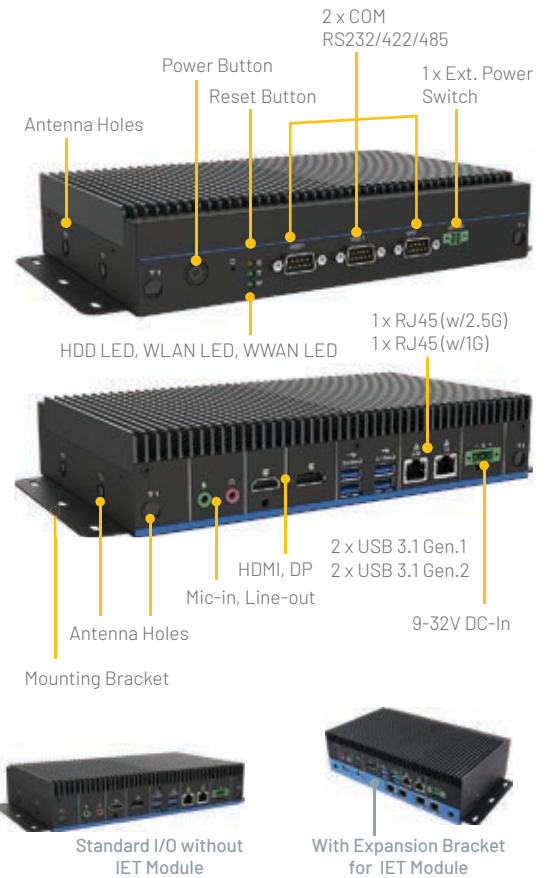| EPS-CFS	EPC-SKLU	EPC-APL	NUC-APL-SLIM
8th/9th Gen Intel® Core-i7/i5/i3, Pentium, and Celeron® onboard	6th Generation Intel® Core™ i7/ i5/ i3/ Celeron® Processor onboard	Intel® Pentium® N4200/ Celeron® J3455/ N3350 Processor onboard	Intel® Celeron® J3455 Processor onboard, 2M Cache, up to 2.3GHz
Intel® Q370 PCH / Intel® H310 PCH	Intel® Skylake SoC	Intel® Apollo Lake SoC	Intel® Apollo Lake SoC
Realtek HD Audio	Realtek HD Audio	Realtek HD Audio	Realtek HD Audio
1 x Intel® I219-LM 1 x Intel® I210-AT	1 x Intel® I219-LM 1 x Intel® I210-AT	2 x Intel® I210-AT	2 x Realtek RTL8111E Gigabit
DDR4 SODIMM2400/2666 MHz	1 x 260-Pin DDR4 2133MHz SODIMM up to 16GB	1 x 204-Pin DDR3L 1866MHz SODIMM up to 8GB	1 x 204-Pin DDR3L 1866MHz SODIMM up to 8GB
Intel® UHD Graphics 630/610	Intel® UHD Graphics 520/510	Intel® HD Graphics 505/ 500	Intel® HD Graphics 500
2	2	3	2
1 x mini-PCIe Socket (Q370 w/PCIe/SATA/ USB 2.0) (H310 w/SATA/USB2.0) 1 x mini-PCIe	1 x Full Size mini-PCIe (mSATA) 1 x M.2 B-Key 3042/2242	1 x Full Size mini-PCIe (mSATA) 1 x Half Size mini-PCIe	1 x M.2 B-Key 2242/3042, PCIe, SATA, USB 3.0, USB 2.0) 1 x M.2 E-Key 2230, PCIe, USB2.0
2 x 2.5" Drive Bay (Internal) 1 x mSATA	1 x 2.5" Drive Bay (7mm) 1 x M.2 B-Key 2242	1 x 2.5" Drive Bay (7mm) 1 x mSATA	1 x M.2 B-Key 2242
2 x HDMI	2 x HDMI	2 x HDMI, 1 x VGA	2 x HDMI
2 x USB 2.0 4 x USB 3.2 (w/Q370 Gen. 2, w/H310 Gen. 1)	2 x USB 2.0 4 x USB 3.0	4 x USB 3.0	4 x USB 3.0 (5Gbps)
2 x RJ45	2 x RJ45	2 x RJ45	2 x RJ45
2 x RS-232	1 x RS-232,1 x RS-232/422/485	1 x RS-232/422/485	1 x RS-232/422/485
Line-out, Mic-in	-	-	Line-out, Mic-in Combo
1 x DC-in	1 x DC-in	1 x DC-in	1 x DC-in
1 x Power On/Off Button w/LED	1 x Power On/Off Button w/LED	1 x Power On/Off Button w/LED	1 x Power On/Off Button w/LED, Storage LED
2 x Antenna Mounting Holes	2 x Antenna Mounting Holes	2 x Antenna Mounting Holes	2 x Antenna Mounting Holes
Lockable DC Jack	Lockable DC Jack	Lockable DC Jack	Lockable DC Jack
+12V	+12V ~ +26V	+12V ~ +26V	+12V
Single Power ATX Support S0,S3, S4, S5 ACPI 5.0 Compliant	Single Power ATX Support S0, S3, S4, S5; ACPI 5.0 Compliant	Single Power ATX Support S0, S3, S4, S5; ACPI 5.0 Compliant	Single Power ATX Support S0, S3, S4, S5; ACPI 5.0 Compliant
AT/ ATX (ATX is default setting)	AT/ ATX (ATX is default setting)	AT/ ATX (ATX is default setting)	ATX
Input: 100 ~ 240Vdc/50 ~ 60Hz Output: 120W Adapter (12V @ 10A Adapter) AC-DC Adapter	Input: 100 ~ 240Vdc/50 ~ 60Hz Output: 60W Adapter (12V @ 5A Adapter) AC-DC Adapter	Input: 100 ~ 240Vdc/50 ~ 60Hz Output: 60W Adapter (12V @ 5A Adapter) AC-DC Adapter	Input: 100 ~ 240Vac/ 50 ~ 60Hz Output: 60W Adapter (12V @ 5A)
Ext. Temp:-10°C ~ 60°C, with 0.5m/s air flow Ext. Temp:-10°C ~ 50°C, with 0.2m/s air flow	With Ext. Temp.Peripherals w /air flow: -10°C ~ 50°C (14°F ~ 122°F) with 1m/air flow	With Ext. Temp.Peripherals w /air flow: -10°C ~ 50°C (14°F ~ 122°F) with 1m/air flow	-10°C ~ 40°C (14°F ~ 104°F), 0.2m/s air flow -10°C ~ 50°C (14°F ~ 122°F), 0.5m/s air flow
Aluminum + Metal	Aluminum + Metal	Aluminum + Metal	Aluminum + Metal
VESA/ Din Rail/ Wall Mount (Optional)	VESA/ Din Rail/ Wall Mount (Optional)	VESA/ Din Rail/ Wall Mount (Optional)	VESA/ Din Rail Kit
8.35" x 9.45" x 3.35" (212 x 240 x 85 mm)	7" x 4.8" x 2" (177mm x 123mm x 50mm)	7" x 4.8" x 1.7" (177mm x 123mm x 45mm)	4.53" x 4.37" x 1.77" (115mm x 111mm x 45mm)
6.9 lbs	2.65 lbs	2.65 lbs	1.59lbs
Win 10, Linux	Win 10, Win 8.1, Win 7, Linux	Win 10, Linux	Win 10, Linux
CE, FCC Class B	CE, FCC Class B	CE, FCC Class B	CE, FCC Class A

EMS-TGL

Modular System with IET Extended Modules

A rugged, fanless, low-power, high-performance Box PC with Intel® Tiger Lake UP3 processor onboard for 5G, IoT and AIoT Applications

Product Features

- 11th Gen. 10nm Intel® Core™ i7/i5/i3 Tiger Lake UP3 BGA Processor onboard, TDP range 12W, 15W or 28 watt providing scalable computing performance
- Selected SKU with integrated Intel® Iris Xe Graphic (Gen 12), up to 96 Execution Units (EU), competitive with AMD and NVIDIA graphic performance. As a comparison, Intel® Whiskey Lake platform supports only up to 24 EU
- 2 x 260-pin SODIMM sockets support up to 64GB DDR4 3200MT/s
- 2.5G Base-Tx GbE LAN - Intel® I225-LM Gigabit Ethernet Controllers
- Rugged design for operating in extreme environments
  - Metal chassis with an IP-50 rating
  - Fanless operation with sufficient thermal solutions
  - Anti-shock (5G) and Anti-vibration (55G)
  - Supports Wide Temperature (-40°C ~ 70°C) and Standard (0°C ~ 70°C)
  - Wide Range DC (+9 ~ +32 V) input with anti-interference capability protects the computer from overload and short circuits while guaranteeing a normal function system in demanding industrial applications
- M.2 B-Key 3042/3052 supports 5G (Sub-6G) module
- M.2 M-Key 2242/2280 supports PCIe Gen. 3 x 4 (NVMe SSD) increases data communication performance and interoperability on enterprise and client computing systems
- Supports 4K Dual Display: DP++ 1.4 and HDMI 2.0b

I/O labels (front panel)

- Antenna Holes
- Power Button
- Reset Button
- 2 x COM RS232/422/485
- 1 x Ext. Power Switch
- HDD LED, WLAN LED, WWAN LED
- 1 x RJ45 (w/2.5G)
- 1 x RJ45 (w/1G)
- Antenna Holes
- Mounting Bracket
- Mic-in, Line-out
- HDMI, DP
- 2 x USB 3.1 Gen.1
- 2 x USB 3.1 Gen.2
- 9-32V DC-In

Standard I/O without IET Module

With Expansion Bracket for IET Module

Flexible I/O options with IET Modules
Intelligent Expansion Technology

If your applications require additional or customized I/O interfaces on our EMS-TGL box PC, this can be achieved using the Intelligent Expansion Technology (IET) expansion modules for custom I/O interfaces. IET offers exceptional expandability and flexibility for adapting to industry/application-specific I/O requirements. The IET modules bring a Swiss-Army-Knife-like toolkit approach to this system by providing multiple I/O combinations to the base system design by utilizing the IET modules. The approach reduces development costs and provides a quicker time-to-market without having to customize.

AUX_M01: 2USB + 4COM
Application Example: Gate Control, Fare Collection

AUX_M02: 4LAN + 2USB
Application Example: Router / Workstation

AUX_M08: 4LAN PoE + GPIO
Application Example: Machine Vision in Factory

AUX_M07: 2USB + 4COM with isolation
App: Factory Automation

AUX_M04: 4LAN PoE+ 2USB
Application Example: Surveillance System/AGV

AUX_M03: 8COM + 2USB
Application Example: Fare Collection / Gate Control

NUC-APL-SLIM

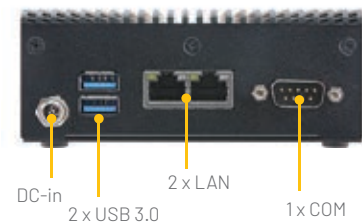## Embedded NUC-type Box Computer with Extended Lifecycle

NUC-APL-SLIM Ultra-compact FCC Class A NUC PC/NUC Computer for Light Industrial Applications
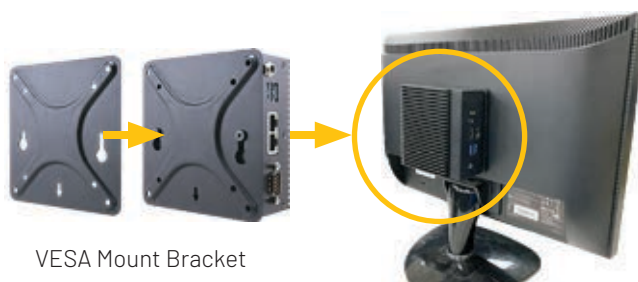
The NUC-APL-SLIM is a palm size industrial computer designed with the Intel® Celeron J3455/N3350 platform, codenamed Apollo Lake. Measuring only 4.5"x4.4"x1.77", this tiny computer has many features that differentiates it from the many other similar NUC-type products in the market. These features include 100% fanless operation, optional TPM 2.0, SIM card slot, lockable DC jack, and an operating temperature up to 50°C. This NUC is an ideal solution for light industrial and space-constrained general- purpose applications such as IoT gateway devices, factory floor data collectors, access systems, or HMI touchscreen terminals such as kiosks, smart lockers, or interactive digital signage systems.

NUC-APL-SLIM Product Features	
Processor	Intel® Celeron® J3455 Processor onboard, 2M Cache, up to 2.3GHz
Memory	Supports DDR3L 1866MHz SODIMM up to 8GB
Rich External I/O	1 x COM, 2 x HDMI, 2 x LAN, 4 x USB3.0, 1 x DVI-I/DP/VGA (Optional), 1 x Audio, 2 x Antenna Mounting Holes with dust cover
Storage & Expansion	M.2 Key-B (Storage) and M.2 Key-E (Expansion)
True Fanless	True Fanless, Operating from 0°C ~ 50°C
Security	TPM 2.0
12V DC-in	Lockable DC Jacks, DC Power Input +12V
Test	Vibration Protection, Shock Protection, Drop Test
Easy Mounting Design	VESA/Din Rail Mounting Kit
Ultra Small	4.53" x 4.37" x 1.77" Palm Size / 1.59lbs
Multi-OS Support	Win 10, Linux
Certified	CE, FCC Class A

Fanless Operation

Power Button
2 x USB 3.0
2 x HDMI
2 x Antenna Mounting Holes

DC-in
2 x USB 3.0
2 x LAN
1 x COM

VESA Mount

VESA Mount Bracket

DIN-Rail Mount

Din-Rail Mount Bracket

Medical Panel PC - HID Series

Medical UL60601-1 Certified
Mobile Workstations

2.0M CMOS Web Cam Optional

Stereo Speaker

LED Reading Light bar

Stereo Speaker

Front Bezel Touch Keypad

- Reading Light Control
- Panel Backlight Increase/Decrease
- Volume Up/ Down
- Power Button
- Touch On/Off
- NFC/RFID Module

Barcode Scanner with Bracket (Optional)

Opitonal 2 x 6900mAh Hot Swappable Batteries

HOT-SWAPPABLE BATTERY
- Easy and Quick Access Side Opening Design
- Two Hot Swappable Lithium Ion Battery
- 13600mAh Total Capacity
- Battery Charging Kit up to 4 batteries at a time

Model Number	HID-2132 / HID-2138	HID-2334 / HID-2338
LCD Size	21.5" Full HD, 1920 x 1080	23.8" Full HD, 1920 x 1080
Pixel Pitch	0.248 x 0.248	0.274 x 0.274
Luminance	250 cd/m²	250 cd/m²
Contrast Ratio	3000	3000
Viewing Angle	89 (U), 89 (D), 89 (L), 89 (R)	89 (U), 89 (D), 89 (L), 89 (R)
Response Time	18 ms	16 ms
Backlight	LED	LED
Touch Type	Projective Capacitive	Projective Capacitive
Touch Light Transmission	89%	86%
Touch Controller	USB interface, EETI	USB interface, EETI
Processor	Intel® Skylake Platform / Intel® Tiger Lake Platform	Intel® Kaby Lake Platform / Intel® Tiger Lake Platform
System Memory	1 x 260pin SODIMM socket up to 16GB DDR4 2133 SDRAM	2 x 260pin SODIMM socket up to 32GB DDR4 2400 SDRAM
Expansion	1 x Full Size (support half size, Auto switch for mSATA, USB, PCIe signal	1 x M.2 E-Key 2230 with PCIe x1, CNVI and USB2.0 for Wireless 1 x mini PCIe with SATA or PCIEx1 mSATA
Storage	1 x 2.5" SATA3 SSD	1 x 2.5" SATA3 SSD
USB	4 x USB 3.0, 4 x USB 2.0, 1 x USB 2.0 (Isolated 5KV)	4 x USB 3.0
COM Port	1 x RS-232/422/485, 1 x RS-232, 1 x RS-232 (Isolated 5KV)	-
Other	Dual LED Reading Light Bar, I/O Cover	Dual LED Reading Light Bar, I/O Cover Optional for 2x 6900mAh hot swappable batteries and 4 slot charging bay Optional for 5.0M auto focus camera with cover
Display Chipset	Intel® HD Graphics 520	Intel® HD Graphics 620
Audio	Realtek HD Audio, 2 x 0.5W	Realtek HD Audio, 2 x 2W
Ethernet	1 x Intel ® I219-LM, 1 x Intel ® I210-AT, 1 x Intel ® I210-AT	1 x Intel® I210-AT, 1 x Intel® I219-LM
Adapter	AC/ DC Medical Power Adapter Output: 90W Adapter (19V/4.74A Adapter)	Medical Grade Input: 100~240 Vac/50~60Hz; Output: 120W/24V
Construction (Front, Rear)	Plastic, Plastic	Plastic, Plastic
Dimension	21.24" x 13.49" x 1.8" (539.6 x 342.6 x 45.5 mm)	23.3" x 15.04" x 1.95" (592 x 382 x 49.5mm)
Weight	13.89 lbs	15.21 lbs (without batteries)
Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
Certification	CE, FCC Class B, UL60601-1 4th edition	CE, FCC Class B, UL60601-1 4th edition
OS Support	Win 7, Win 10, Linux	Win 10, Linux

Telemedicine Cart Solution

The Telemedicine Cart is compatible with our HID and APC series Medical Panel PC. It is a cost effective and quick time-to-market solution, which enables the healthcare professional at the clinics, hospitals, or healthcare facilities to assist patients with remote care and diagnosis.

4K HD Camera

Expansion Power Bank

Applications / Use Case

Behavioral Health Centers, Emergency Department Triage, School Healthcare Service, Skilled Nursing Facilities

Mobility, Cordless Operation, User Friendly Design

HID-2334/HID-2338 is a light weight, all-in-one, fanless, battery operated medical grade Panel PC. It is extremely easy to mount the HID Panel PC on the telemedicine cart - just use the VESA mounting kit. Together the complete solution provides mobility, true cordless operations and brings valuable benefits to healthcare providers:

Reduce Contact Infection

Improve Work Efficiency

Enhance Patient's Experience

Other Medical/Healthcare Solutions

AI Ready Solutions

- High-Performance Medical server
- DICOM AI Workstation, DICOM AI Monitor, Recording, Archiving & Streaming Solution
- Medical AI Box - supports Nvidia graphic cards, for Operation & Exam Room
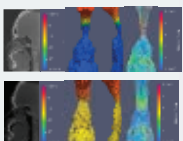
IoT / E Ink Solutions

- Real-Time Location Based Digital Bedside Card
- Intelligent Calling System
- Fitness Rehab

- 13.3" eNote Tablet
  Room Management, Signage/Bulletin
- 42" Patient Communication Board
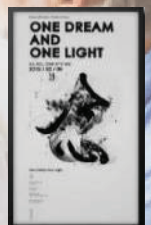
APC Series

Healthcare Workstations

Stylish Ventilation Design

Service window for 2.5" HDD storage replacement

VESA Mounting Plate

I/O cover for cable arrangement
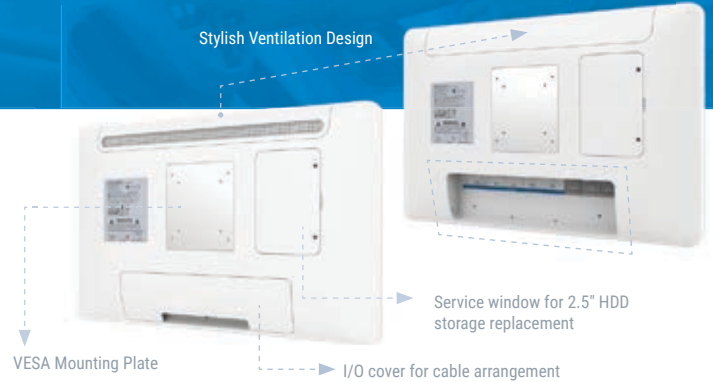
Model Number	APC-2132 / APC-2138	APC-2334
LCD Size	21.5"	23.8"
Display Type	Full HD	Full HD
Resolution	1920 x 1080	1920 x 1080
Pixel Pitch	248.25um (H) x 248.25um (V)	274.5um (H) x 274.5um (V)
Luminance	250 cd/m²	250 cd/m²
Contrast Ratio	5000	1000
Viewing Angle	89 (U), 89 (D), 89 (L), 89 (R)	89 (U), 89 (D), 89 (L), 89 (R)
Response Time	18 ms	14ms
Backlight	LED	LED
Touch Type	Projective Capacitive	Projective Capacitive
Touch Light Transmission	89 %	89 %
Touch Controller	USB touch (EETI)	USB touch (EETI)
Processor	Intel® Skylake Platform / Intel® Tiger Lake Platform	Intel® Core™ i7/ i5/ i3 / Celeron® Processor
System Chipset	Intel® Skylake U / Intel® Tiger Lake Integrated	Intel® Kabylake U SoC Integrated
I/O Chipset	EC ITE IT8518E	EC ITE IT8518E
System Memory	1 x 260-Pin DDR4 2133MHz SODIMM up to 16GB	2 x 260-pin DDR4 2133MHz SODIMM up to 32GB
Expansion	1 x mini-PCIe	1 x M.2 B-Key 3042/2242/2260/2280, 1 x M.2 A-Key 2230 Wi-Fi
Storage	1 x 2.5" Drive Bay 1 x mSATA (by mini PCIe)	1 x 2.5" Drive Bay 1 x M.2 B-Key 3042/2242/2260/2280
USB	4 x USB 3.0, 2 x USB 2.0 (by IET module)	4 x USB 3.0
COM Port	1 x RS-232/422/485, 1 x RS-232	-
Display Chipset	Intel® Skylake SoC Integrated Graphics Supports dual display	Intel® Kabylake SoC Integrated Graphics Supports dual display
Audio	Realtek HD Audio	Realtek HD Audio
Audio Interface	1 x Line-out, 1 x Mic-in (via IET module)	1 x Line-out, 1 x Mic-in
Ethernet	1 x Intel® I210-AT, 1 x Intel® I219-LM	1 x Intel® I210-AT, 1 x Intel® I219-LM
Power Connector	Lockable DC Jack, +12V ~ +26V	Lockable DC Jack, +12V ~ +24V
Power Type	AT / ATX	AT / ATX
Adapter	Input:100 ~ 240Vac/ 50 ~ 60Hz Output:72W Adapter (19V @ 3.78A Adapter)	Input:100 ~ 240Vac/ 50 ~ 60Hz Output:72W Adapter (19V @ 3.78A Adapter)
Construction (Front, Rear)	Plastic-black	Plastic-black
Dimension	21.25" x 13.46" x 1.8" (539.6 x 342.6 x 45.5 mm)	23.3" x 15.04" x 1.95" (592 x 382 x 49.5mm)
Weight	13.89 lbs	15.21 lbs
Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
Storage Temperature	-10°C ~ 60°C (14°F ~ 140°F)	-10°C ~ 60°C (14°F ~ 140°F)
Certification	CE, FCC Class B	CE, FCC Class B
OS Support	Win 7, Win 8.1, Win 10, Linux	Win 10, Linux

Light Industrial Panel PC - Venus Series

10"/15" Multipurpose Touch Panel PC
Room Info Display, Meeting Room Scheduler

Convert to Healthcare Solutions
Patient Bedside Infotainment, Patient Room Info Display

15" Full HD

10" WXGA

LED Light Bar, Red or Green

Touch Buttons

Optional Phone Device

Model Number	VNS-10W01	VNS-15W01
LCD Size	10.1", 1280 x 800, PCAP Touch	15.6", 1920 x 1080, PCAP Touch
Processor	Intel® Atom™ x5-Z8350: 2M Cache, up to 1.92 GHz	
System Memory / Storage	2GB DDR3L RAM / option: 4GB for win 10 & Ubuntu 19.04 / 32GB eMMC / option: 64GB for win 10 & Ubuntu 19.04	
Other	Touch Button for Power/ Brightness/ Volume, 1 x 3.5mm Audio Jack, NFC, Cam 2.0 MP, LED indicating bar	Touch Button for Power/ Brightness/ Volume, 1 x 3.5mm Audio Jack, NFC, Cam 2.0 MP, LED indicating bar, Reading Light x2, Smart card reader
Power Connector	DC Jack+12~24V DC in / Powered LAN	
Adapter	Input: 100 ~ 240 Vac / 50~ 60Hz; Output: 60W Adapter (12V / 5A Adapter)	
Dimension	270 x 193 x 28 mm	410 x 269 x 38 mm
Weight	1.1 kg	2.5 kg
Certification	CE, FCC Class B	CE, FCC Class B

Industrial Panel Computers for OEM/ODM

SPC Series
Stainless Steel Rugged Panel PC

- 304 Stainless Steel, optional 306 or 316
- Fanless, PCAP Touch Panel PC
- 12.1"/15"/17"/21"/22" LCD Sizes
- Full IP-66 / IP-69K Waterproof
- Air Pressure Relief Valve
- M12 Waterproof Connectors –LAN/USB/COM
- +12 - 24V, –10°C ~ 50° Op. Temp.
- Intel® Processor, Memory, Storage onboard
- Yoke Mount, 75x75/100x100 VESA Mount
- Optional Waterproof Antenna for Wi-Fi, BT, 4G
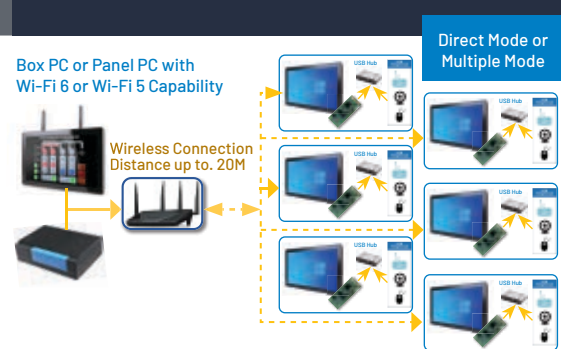- Supports Win 10, Linux, or Android 8.1

SID Series
Slim, Semi Industrial Panel PC

21.5"
15.6"
10.1"

Low Power Consumption | **Slim Design** | **Fanless** | **IP65 Rating** | **Wi-Fi Support** | **PCAP Touch**

- 10.1"/15.6"/21.5" LCD, WXGA/Full HS
- IP65 Front Panel
- Intel® Atom Z8350F 1.44GHz onboard
- 2GB/4GB DDR3L Memory onboard
- 32GB/64GB eMMC onboard
- 10/100Mbps Fast Ethernet
- Wi-Fi IEEE802.11 ac/b/g/n on board
- Wide Range DC 12~24V DC input
- Suppoprts Win 10 or Linux OS

ARC Touch Monitor
Wi-Fi 6, 2-way Communications

Box PC or Panel PC with Wi-Fi 6 or Wi-Fi 5 Capability

Direct Mode or Multiple Mode

USB Hub

Wireless Connection Distance up to. 20M

- 12.1"/15"/17" 4:3 LED Panel
- 10.1"/15.6"/21.5" Wide Screen LED
- Full Flat PCAP Touch, Front IP-65
- Fanless, Optional 9-36V DC-in Power
- Wi-Fi 6 Media Server Module is integrated in the ARC Touch Monitor enables Two Way communications for real-time USB control on PC side

Fanless Open Frame Tablets built with Intel® Atom™ Processor Onboard

BCM's Open Frame Tablet (OFT) Series offers you an easy, cost-effective way to modernize products with user-friendly, multi-touch LCD technology.

The OFT series is designed with many essential features required by almost every embedded applications. It is a multi-purpose open frame tablet for OEMs to shorten development process as well as reduce cost. The multi-OS support and bezel-free design allows your customer to simply add electricity, download the app and go. It's really that easy.

Optimized for Rapid Deployment and Extreme Affordability

BCM's OFT offers you an easy way to build your sales pipeline with a flexible multi-touch computing solution that practically sells itself. Today's demand for touchscreen technology has left a lot of OEMs looking for ways to retrofit equipment. From design to production, the new BCM Open Frame Tablet (OFT) streamlines touch screen technology with an off-the-shelf, affordable solution that fits almost every situation.

All-Inclusive

Includes LCD panel with PCAP Touch, Onboard 2Gb memory, 32 Gb eMMC, Wi-Fi and Bluetooth. Available in 7", 10", 15" or customer specified LCD sizes.

OS Friendly and Easy Integration

Our OFT series are pre-loaded with Android, Linux Or Windows 10 Image to streamlines deployment. Regulatory certifications. Ready-mount frame with CAD files makes mechanical design seamless.
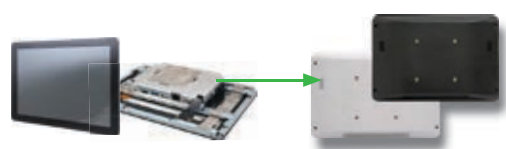
Open Frame Tablets

Fanless /Slim-Flat/ PCAP Touch /Easy Mounting

ANDROID SUPPORTED | WIN 10 SUPPORTED | LINUX SUPPORTED
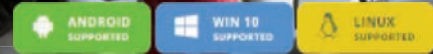
- Slim design, full flat touch screen, PCAP Touch, Multi-Touch
- Efficient integration into any embedded applications

Adding A Plastic Back Cover is Easy

Our professional team can help you turn an OFT into a light weight Panel PC or a mobile tablet by adding a custom or pre-designed plastic back cover, or custom design to add battery power. Whether you need a customized product or an existing, in-house design, we've got you covered.

Smart Mounting Kits Solutions available for Easy Mounting Installation

Wall Mount and Panel Mount kits available. Both are easy installation, deliver a clean, space saving, and professional finish.

Product Name	OFT-07W03	OFT-10W03	OFT-15W03	OFT10W-3455J
LCD Size	7"	10.1", TFT LCD WXGA	15.6", 16:9 Full HD	10.1"
Resolution	1280 x 800	1280 x 800	1920 x 1080	1280 x 800
Luminance	300cd/m²	350cd/m²	220cd/m²	350cd/m²
Viewing Angle	89 (U), 89 (D), 89 (L), 89 (R)	85 (U), 85 (D), 85 (L), 85 (R)	85 (U), 85 (D), 85 (L), 85 (R)	85°/85° (H/V)
Touch Type	Projective Capacitive	Projective Capacitive	Projective Capacitive	Projective Capacitive
Processor	Intel® Atom™ x5-Z8350 Quad Core 1.44 GHz Onboard up to 1.92 GHz			Intel® Celeron J3455 Quad Core SoC 1.5GHz up to 2.3GHz,
System Memory	2GB or 4GB DDR3L RAM Onboard			DDR3L SODIMM up to 8GB 1600MHz
Storage	32GB / 64GB eMMC onboard			32GB eMMC Onboard
WLAN	802.11 b/g/n/ac			802.11 b/g/n/ac
Expansion	1 x M.2 B-Key 3042, 1 x uSD, 1 x uSIM Card Socket			1 x Full Size mini-PCIe
External I/O Connector	1 x Power Jack, 1 x HDMI, 1 x USB 2.0 Type A, 1 x USB 3.0 Type A 1 x RJ45, 1 x Headphone Jack, 1 x Reset Button			1 x Line-out, 2 x RJ-45, 1 x HDMI, 4 x USB 3.0, Optional 1 x RS-232/422/485 Header, Optional 1 x RS-232 Header, 1 x DC Jack
Internal I/O Connector	1 x LVDS, 1 x eDP 1 x USB Touch interface, 1 x I2C Touch interface, 1 x Touch button connector 1 x USB CAM_DMIC interface 1 x RS232 (TX/RX), 1 x RS485 1 x GPIO's (16bit) interface 1 x Speaker interface, 1 x A-MIC interface 1 x I2C sensor interface 1 x Debug connector 1 x DC-in, 1 x RTC battery			1 x LVDS Header, 2 x USB 2.0 Headers (4 Ports Total). 1 x I²C Header, 1 x RS-232/422/485 Header (with Voltage Selection) 1 x RS-232 Header 1 x SATA III Connectors 1 x 8-bit GPIO
Power Requirement	DC 12 ~ 24V Input			9 to 36V DC Input
Op. Temperature	0°C ~ 40°C (32°F ~ 104°F)			0°C ~ 40°C (32°F ~ 104°F)
OS Support	2019 Windows 10 (64-bit), Ubuntu 19.04 (64-bit)			Windows 10, Android, Linux
Certification	CE, FCC Class A	CE, FCC Class A	CE, FCC Class A	CE, FCC Class A
Dimensions	7.21" x 4.56" x 1.32" (183.1 x 115.85 x 33.4mm)	9.92" x 6.54" x 1.29" (252 x 166 x 32.65mm)	15.24" x 9.25" x 1.39" (387 x 235 x 35.3mm)	10.16" x 6.57" x 1.57" (258 x167x40mm)
Weight	1.2 lbs (0.5 kg)	2.6 lbs (1.18 kg)	3.3 lbs (1.5kg)	3 lbs (0.45 kg)

* All product specifications and product images are subject to change without notice.

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Panel PC Customization Service

SBC
Remove Unused I/O
Add Additional I/O
Mainboard Coating
BIOS Customization

Panel
Brightness Enhancement
Sunlight Readable
Anti-Scratch
Privacy Filter

Bonding
Air Bonding
Direct Bonding

Touch
Touch Mode Customization
Change Color of Cover Lens
Glass only
Add Custom Logo
Change Cover Lens Thickness
Anti-Vandal Touch Screen

Mounting
Panel Mount
Wall Mount
Flush Mount

Coating/Film
Anti-Reflective
Anti-Glare
Anti-Fingerprint
Anti-UV
Anti-Bacteria (AG+)

Bonding Technology

Reflections 13.5% Reflections 0.5%

Coverlens/PCAP
Air-Gap Bonding | Optical Bonding
TFT-Display

Sunlight Readable

LCD Module
Backlight

Non-Sunlight Readable

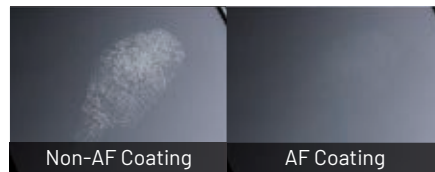LCD Module
Backlight
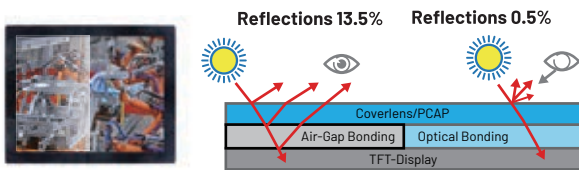
Sunlight Readable

Touch Mode Change for PCAP

We have developed a touch mode change user interface (UI) under Windows operating system allowing users easily to change the touch mode with just one click. Rebooting is not required for making the mode change. We provide up to three different kinds of touch mode for users to select, such as water, snow, glove mode. This customized service has increased the efficiency in the workplace for customers when using the Panel PC at different environment.

Normal | Glove | Water
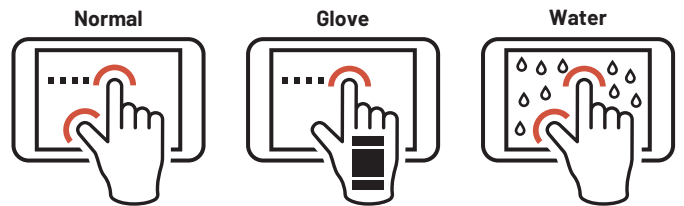
Surface Coating Treatment

Non-AR Coating | AR Coating

Non-AF Coating | AF Coating
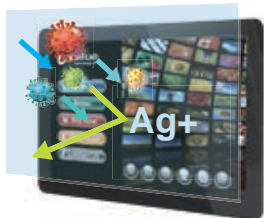
Non-AG Coating | AG Coating
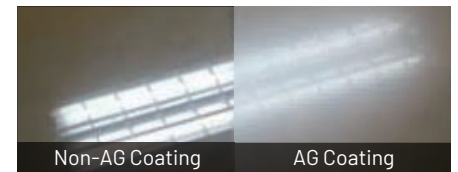
An Anti-Reflection (AR) coating is a type of optical coating applied to the surface and other optical elements to reduce reflection by vacuum evaporation process. The transmittance of glass is approximately 91%, and with single-sided coating, the transmittance can be increased to 94~95% double-sided coating can increase transmittance up to 98~99%.

Anti-Fingerprint (AFP) provides many great features for panel computers. It is a coating that prevents imprints and smudge left on the glass surface. In addition, the AF coating provides hydrophobic (water resisting) and scratch resistance performance, protecting Anti-Reflection layers, and reducing friction.

There are 2 types of Anti-Glare (AG) treatments: chemical-based and acid etching. Chemical-based surface treatment is applied directly to the glass surface to form micro asperities, giving the glass an anti-glare effect under sunlight. The acid etching treatment is manufactured by controlled acid etching process, yielding uniform diffused surfaces for anti-glare.
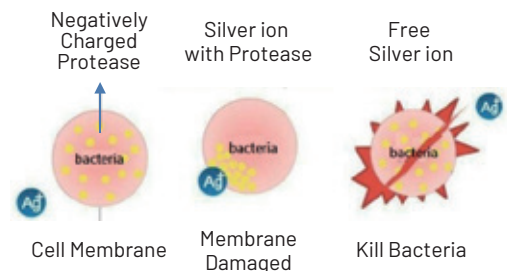
AG+ Etching Treatment

Ag+

Ag **Silver ion is antibacterial**
Kills 99.9% of surface bacteria

Escherichia Coli | Staphylococcus Aureus | Candida Albicans

How Silver ion Works

Negatively Charged Protease | Silver ion with Protease | Free Silver ion

Cell Membrane | Membrane Damaged | Kill Bacteria

Desktop POS Terminal

Sleek & Stylish Design

- Slim & Fanless Design
- Rotatable Viewing Angle
- Hidden Cabling Design
- Black or White Exterior Color

- Slim: 14 mm Thickness
- Intel® Atom™ Apollo Lake Processor Onboard

Flexible & Easy to Buildup

- Quick Rail, Easy Assembly & Maintenance
- Optional MSR, SCR, Fingerprint Reader
- Built-in RFID/NFC
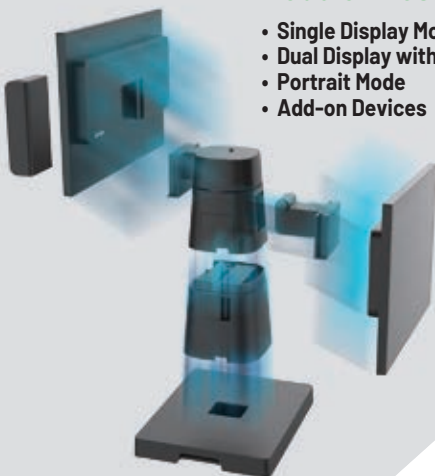- Integrated Thermal Printer
- Multi-OS Support

Easy Assembly & Maintenance

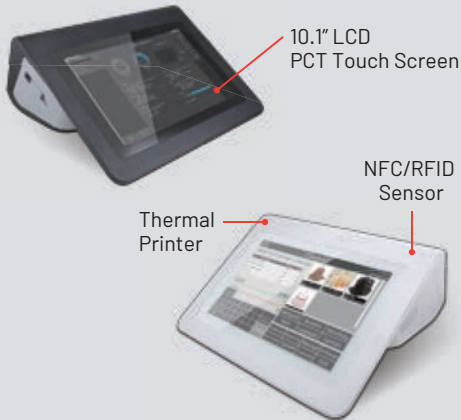- 58/80mm
- Auto Cut
- Max Speed 200 mm/sec

Modular Design

- Single Display Mode
- Dual Display with Printer
- Portrait Mode
- Add-on Devices

Product Name	RiVar-1501	RiVar-1502
LCD Size / Display Size	15.6", FHD	15.6", FHD
Resolution	1920 x 1080	1920 x 1080
Pixel Pitch	0.179 x 0.179	0.179 x 0.179
Luminance	300cd/m2	300cd/m2
Contrast Ratio	700	700
Viewing Angle	89 (U), 89 (D), 89 (L), 89 (R)	89 (U), 89 (D), 89 (L), 89 (R)
Response Time	14 ms	14 ms
Backlight	LED	LED
Touch Type	Projective Capacitive	Projective Capacitive
Touch Light Transmission	85%	85%
Processor	Intel® Celeron® N3350/J3455	Intel® Celeron® Processor J3455
System Memory	1 x DDR3L SODIMM Socket up to 8GB DDR3L 1600MTs SDRAM	Onboard 4GB DDR4 SDRAM (Optional up to 8GB)
Expansion	1 x M.2 B-Key for mSATA Module 1 x M.2 E-Key for 2.4/5G Wi-Fi Module	1 x M.2 E-Key for 2.4/5G Wi-Fi Module
Storage	M.2 2242 SATA 32GB, 1 x SD Card Slot	64GB eMMC (Optional 128GB)
USB	2 x USB 3.0 on Panel 4 x USB 3.0 on Stand	4 x USB3.0
COM Port	2 x COM ports supported All Pin 9 supported 5V/12V 1A max output	2 x COM supported 5V/12V output
Other	RJ-11 for Cash Drawer 24V Optional Camera/ NFC/ MSR	RJ-11 for Cash Drawer 12/24V, 1 x HDMI, Optional Camera/ NFC/ MSR
Thermal Printer	SEIKO Thermal Printer CAPD347D-E	N/A
2nd LCD Panel	15.6" FHD 1920 x 1080 Optioal PCAP Touch	N/A
Audio	HD Audio, 2 x 2W	HD Audio, 2 x 2W
Ethernet	1 x RJ45 / Intel® I210-AT	2 x RJ45 / Realtek 8111H
Adapter	24V DC 60W or 120W (Printer SKU)	24V DC in 60W
Dimension	253 x 390 x 431mm	391 x 251 x 44.5 mm
Weight	10kg (Dual Display Mode)	2.7 Kg
Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)	0°C ~ 40°C (32°F ~ 104°F)
Storage Temperature	-20°C ~ 60°C (-4°F ~ 140°F)	-20°C ~ 60°C (-4°F ~ 140°F)
IP Rating	IP65 for front Panel, IP41 for Rear	IP65 for front Panel, IP41 for Rear
Certification	CE/FCC/VCCI : Class B	CE/FCC/VCCI : Class B
OS Support	Winodows 10, Android 8.1	Winodows 10, Android 8.1

* All product specifications and product images are subject to change without notice.

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Mini-POS Terminal

Stylish Design

10.1" LCD
PCT Touch Screen

NFC/RFID
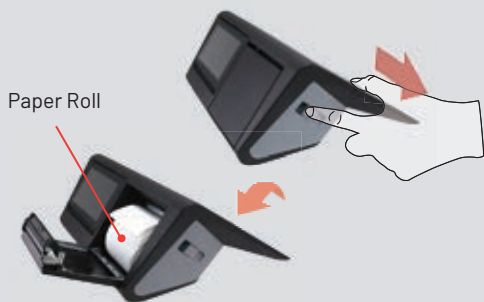Sensor

Thermal
Printer

Customer Display

- 5" 2nd Display (Customer-Facing Display)
- Adjustable for Best Viewing Angle

5" LCD

Integrated Thermal Printer

- Supports 58/80mm with Auto Cut Thermal Printer
- Pain-free Paper Roll Replacement

Paper Roll

Model Number	RiPac-10P3 [OEM Only]
Processor	Intel® Celeron® N3350 1.1GHz Processor Onboard
System Memory	4GB LPDDR4 Onboard
Storage	64GB eMMC/ Optional 128GB
OS Support	Winodows 10, Android 8.1
LCD Panel	10.1" LCD and 5" LCD (Customer-Facing Display)
Resolution	1280 x 800 (10.1"), 1280 x 720 (5")
Touch Screen	Projected Capacitive Touch
Wireless LAN	Built-in IEEE 8.0211 a/b/g/n/ac
Bluetooth	Bluetooth 4.2
Serial Port	2 x RS-232 in DB9, Powered by 5/12V
USB Port	4 x USB 3.0
SD card	1 x SD Card Slot supports up to 128GB
LAN Port	2 x RJ45 (Realtek 8111H)
Cash Drawer	1 x RJ11 (12V/24V)
NFC	ISO/IEC 14443 A/B,15693,18092 (Optional)
Thermal Printer	Printing Method: Thermal Dot Line Printing Resolution: (W) 8 Dots/mm, (H) 8 Dots/mm Maximum Print Speed: 200mm/s Maximum Print Width: 72mm Maximum Paper Width: 80mm Type of Paper Cutting: Full Cut & Partial Cut
Power Type	+24V/6A 120W
Dimensions	299 (L) x 316.2 (W) x 148.9 (H) mm
Weight	3 kg±10%
Operating Temperature	5°C ~ 40°C (41°F~104°F)
Storage Temperature	-10°C ~ 60°C (14°F ~ 140°F)
Operating Humidity	0 ~ 95% non-condensing
Certifications	CE, FCC, VCCI, CCC

Medical Grade Semi-Rugged Tablet

Model Number	CAXA0
Processor	Intel® Celeron® N3350 1.1GHz Processor Onboard
System Memory	4GB LPDDR4 Onboard
Storage	64GB M.2 Solid State Drive / Optional 128GB
OS Support	Winodows 10, Android 8.1
LCD Panel	10.1", WXGA
Resolution	1280 x 800
Luminance	300 cd/m²
Touch Screen	10 Points Projective Capacitive
Wireless LAN	802.11 a/b/g/n/ac
Bluetooth	Bluetooth 5.0
Camera	2MP Front Camera 8MP Rear Camera With Auto Focus
NFC	ISO/IEC 14443 A/B, 15693/18092, NFCIP-1, NFCIP-2, Support MIFARE and Felica
Barcode Scanner	1D/2D Barcode Scanner (Optional)
External I/O	1 x Audio Jack, 2 x USB 2.0 Type A, 1 x Micro SD, 1 x DC Jack, 1 x HDMI Output
Control Button	1 x Power Button, 1 x Barcode Scanner Trigger
LED Indicator	1 x Power
Power Requirement	DC Jack +19V
Battery	28.44W Li-Polymer Battery
Battery Operating Time	6 Hours
Construction	Rubber + Plastic
Dimensions	11" x 7.6" x 0.79" (281x193.3x19.95mm)
Weight	2.20 lbs (1kg)
Operating Temperature	0°C ~ 40°C (32°F ~ 104°F)
Storage Temperature	-20°C ~ 60°C (-4°F ~ 140°F)
IP Rating	IP65
Certifications	CE, FCC, VCCI, CCC, BSMI, EN60601-1, EN60601-1-2

CAXA0 Accessories

CAXA0-DC
Desktop Cradle
- +19V DC input
- Supports 3 x USB2.0
- Supports 1 x 10/100 LAN
- 180 x 198.2 x 129.2 mm
- 1.05 Kg

CAXA0-WM
Wall Mount kit
- +19V DC input
- Supports 3 x USB2.0
- Supports 1 x 10/100 LAN
- VESA Mount Compliant (75x75 mm)
- 143.6 x 218.8 x 48.6 mm
- 0.58 kg

CAXA0-CS
Battery Charing Station
- +19V DC input
- Supports 3-Bay Battery Charging
- 159 x 105 x 57.9 mm
- 0.62 Kg

CAXA0-SS
Shoulder Strap
- Adjustable shoulder strap with 130cm drop

CAXA0-HS
Hand Strap
- Space-saving and user friendly kit