ARBOR

Embedded Computing

ARM-Based Computing

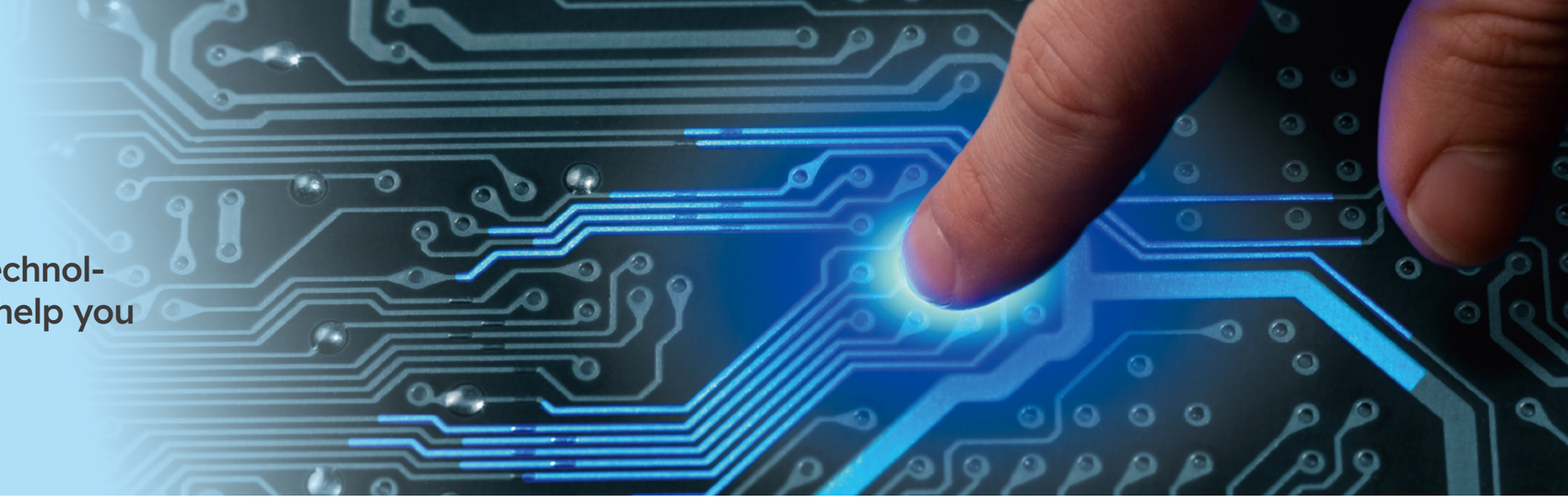
Computer-on-modules

Single Board Computers

Industrial Motherboards

Trusted Embedded Computing Platform

ARBOR offers advanced embedded technology and a dedicated service team to help you get the best ROI



Full-service OEM/ODM Solutions

Our dedicated RD/BIOS service team provides customization support from initial prototype design all the way through development, manufacturing, assembly, logistics, and after sales services.

Wide Temperature Design & Validation

ARBOR COM Express modules can be operated in an extended temperature range of −40°C to +85°C and have passed stringent vibration tests. The exclusive use of high quality components and highly effective thermal solutions ensure that the modules are rugged enough for use in harsh environments.

In-house Technologies and Expertise

ARBOR has extensive expertise in power MCU design for automation control. Its BIOS Anti-Crash Technology (ACT) enables embedded system to recover BIOS code from a secondary on-board flash memory and restart in case of a system BIOS failure.

Conformal Coating Service

To provide maximum PCB operational lifespan and functionality, ARBOR offers automated conformal coating services to protect components and circuitry from dust, fungus, moisture and salt spray.

15 Years Longevity Commitment

Most of ARBOR board products carry a life cycle commitment of 15 years from first production. ARBOR will notify customers in advance of component revisions or End-of-Life scheduling, and provide options in qualifying updated components and modules.

Strategic Partner Ecosystem

ARBOR extends our technology and business capability through a powerful alliance ecosystem of industry-leading companies including Intel®, AMD®, Microsoft, as well as the leading standards development organizations, such as PICMG & SGeT.

Quality Assurance

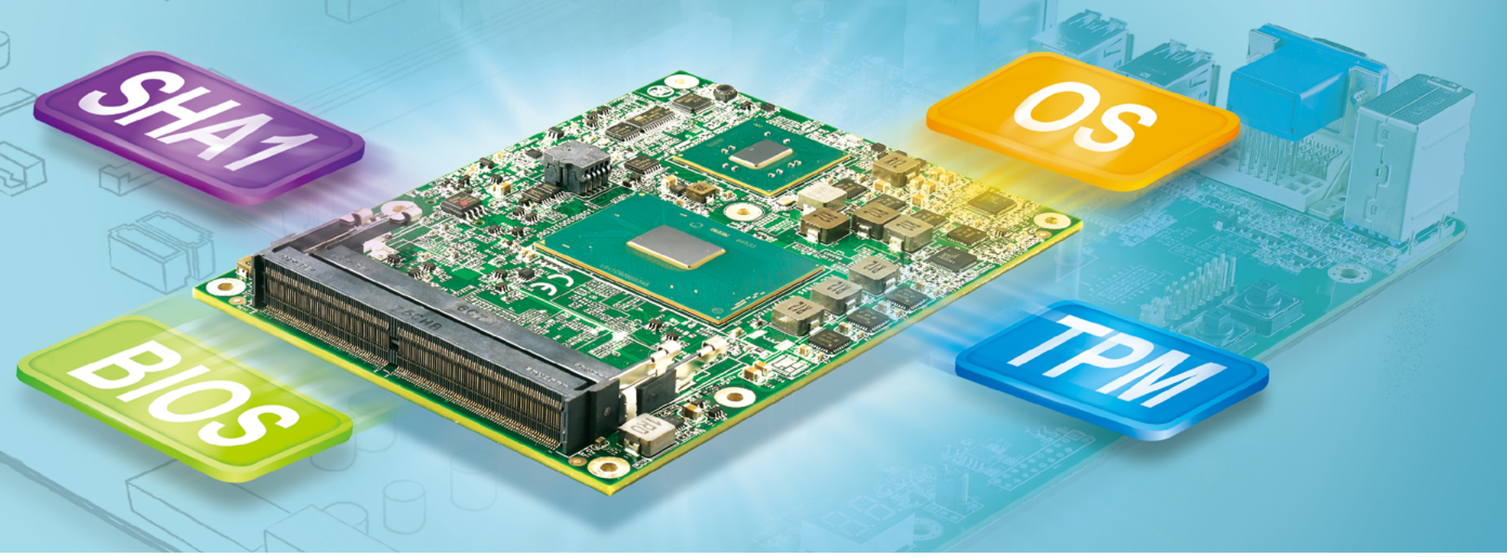
ARBOR's products are certified to comply with applicable regulatory bodies for their application to determine the quality of products, as well as ensure operational safety in embedded applications.

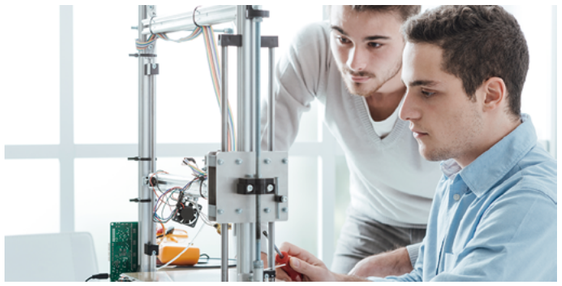
Medical Regulation Compliance

ARBOR is ISO 13485 and ISO 14971 certified, filling the requirements for implementing a comprehensive quality management system (QMS) for the design and manufacture of medical devices.

Embedded Hardware & Software Design Competency

Accelerating your embedded development with lower risk





Hardware Services

ARBOR offers a full lineup of embedded boards in different form factors to fulfill different industrial chassis. In addition to supporting the strong mechanical & thermal solution, our reliable components feature industrial-grade chipsets, and have passed stringent validation testing to an operating temperature range of up to -40°C to 85°C. ARBOR also has extensive expertise in power MCU design.

Software Services

- Embedded BIOS/bootloaders
- Embedded OS/licenses
- Embedded tools
- Trusted Platform Module (TPM)
- SHA1
- BIOS Anti-Crash Technology (ACT)

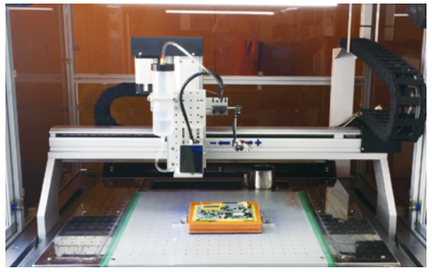
Validation & Testing

ARBOR provides rigorous product verification to ensure its ruggedness and performance to meet customers' requirements.

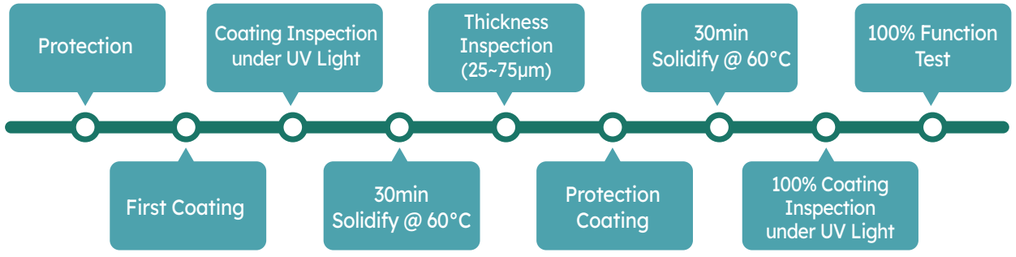
- EMI/EMC validation
- Vibration, shock and drop tests
- Humidity and temperature tests
- Thermal analysis
- Performance & compatibility tests

Automated Conformal Coating Services

ARBOR provides the automated conformal coating service, with an acrylic coating being applied to the whole surface of the board except contact pins, to protect the components & circuitry against dust, fungus, moisture and salt spray. The conformal coating also prevents short circuits and corrosion of metal between conductors.



Coating Flow Chart



Supported Form Factors

CPU on Module	
Qseven	70 x 70 mm
COM Express Mini	84 x 55 mm
COM Express Compact	95 x 95 mm
COM Express Basic	125 x 95 mm
ETX	114 x 95 mm

Single Board Computer	
PC/104	96 x 90 mm
3.5"	146 x 102 mm
EPIC	165 x 115 mm
Slot Computing	338 x 122 / 185 x 122mm
Industrial Motherboard	
Mini-ITX	170 x 170 mm
Micro-ATX	244 x 244 mm

Building a Trustworthy, Long-term Service

Increasing the value of applications at every level of evolution

Extended Product Lifecycle

Unlike commercial motherboards with a typical lifespan of 12 to 18 months, motherboards in embedded computing applications, where design processes can last as long as two years, 3-5 year life cycles are a must. To deliver long-life products, ARBOR selects key components that offer long-life availability, and have adopted Product Lifecycle Management (PLM) systems to manage product design, collaboration, and manufacturing processes effectively.

Parts do go End-of-Life, but ARBOR manages that process by making sure component revision and EOL notifications are made at least 180-days before occurring, helping customers facilitate smooth transitions. Most of ARBOR board products carry a life cycle commitment of 15 years from first production. ARBOR will notify customers in advance of component revisions or End-of-Life scheduling, and provide options in qualifying updated components and modules.

ARBOR

29 years of embedded experience

Up to 15 years longevity commitment from first production

EOL notifications are made within 180 days before occurring

Ecosystem Partners

To deliver up-to-date technologies and solutions to our clients, ARBOR extends our technology and business capability through a powerful alliance ecosystem of industry-leading companies and organizations. Together, we provide our customers the top notch services to streamline their projects.

Full Experience of Industry Standards

ARBOR holds the most required ISO certification and industry standards to ensure our products and manufacturing capabilities meet the worldwide regulations and standards compliance. Our customers have no need to worry about getting documents for their product development. With our internal and external test laboratories, this allows manufacturers to circulate industrial products freely within the internal market of the USA, Europe and China.

Certified Quality Assurance

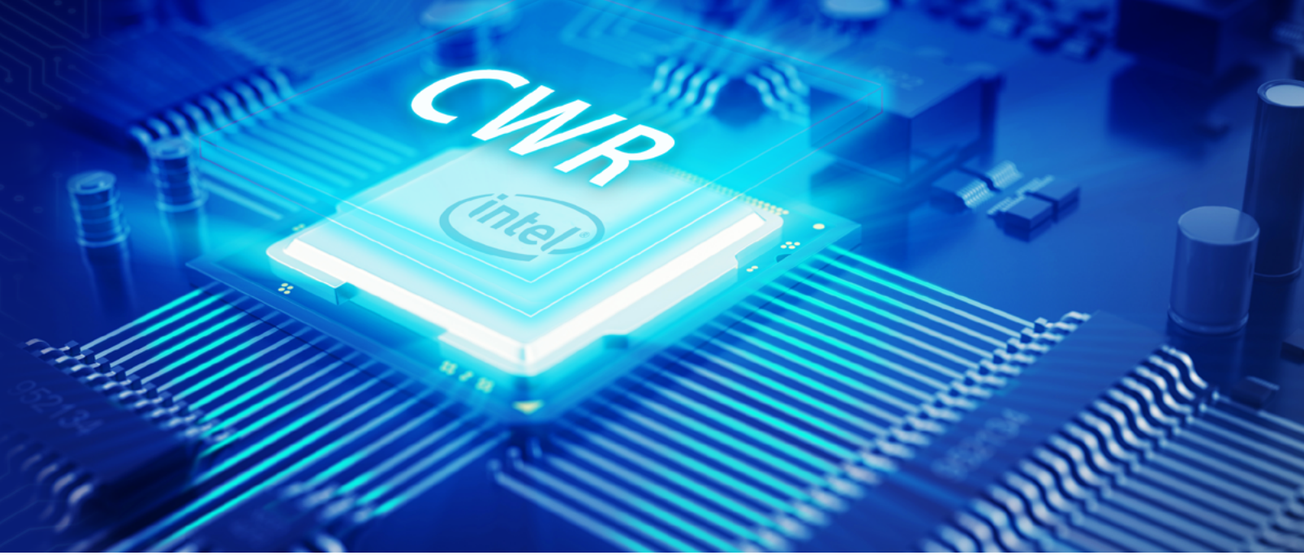
- ISO 9001:2008
- ISO 14001
- CE
- FCC

Medical Regulation Compliance

- IEC60601-1, EN60601-1, EN60601-1-2
- UL60601-1
- ISO 13485
- ISO 14971

Customization Competency

Satisfy all your needs to speed your embedded development



ARBOR's design team has the expertise to develop a solution to meet your environmental needs. Whether it is a completely new design or a minor modification to an existing product, ARBOR's skilled design teams' experience and expertise ensures a solution will be suited to your requirements.

Live Video Equipment

Location: USA
Product & Design-In Service:

- Intel® Core i7 Processor COM Express Type 6 CPU Module w/ customized carrier board
- Full integration of system, chassis design and EMS service of capture, audio and LCD board
- UL-60950 certification service

Train Control & Monitor System

Location: France
Product & Design-In Service:

- Wide-Temperature COM Express Type 10 CPU Module
- Conformal coating to enhance the resistance to environmental conditions
- Assembly integration and testing service

ANPR Camera Engine

Location: South East Asia
Product & Design-In Service:

- 6th Gen. Intel® Core™ Processor 3.5" Compact Board
- Custom power and thermal design to fit space constraints of the camera enclosure
- Conformal coating to avoid short circuits in highly humid environments

Innovative CWR Technology to Optimize CPU Power

CPU Watt Reduction (CWR) is one of ARBOR's latest technology illustrating our customization competency to satisfy customers' individual embedded applications. It limits CPU power consumption while at the same time optimizing its performance. By offering application-optimized CPU power configuration, it enables developers to achieve the best tradeoff between power and performance demands.

Limiting CPU Power

With CWR technology, the thermal design power (TDP) of a CPU is specifically configured to limit CPU power consumption.

Increasing Performance-per-Watt

Limiting CPU power inevitably impacts the performance, yet a higher performance-watt ratio can be delivered, indicating higher power efficiency can be attained.

Better Performance

CWR optimizes performance at acceptable levels according to each project's actual applications to ensure workload can be met.

CWR Technology Advantages

- Cost-Effective Migration to New Generation CPU
- More Flexible CPU Selection
- Project-Specific Configuration
- Reducing Total Cost of Ownership (TCO)

ARM-Based Embedded Solutions

Smart design for sophisticated demands

ARBOR provides ARM-based computer-on-module and system solutions for general, communication and mobility purposes to fulfill the diverse market demands. We offer a series of flexible, highly customizable and cost effective small form factor solutions that can meet the requirements for power-efficient IoT devices and performance-oriented professional applications.

ARBOR ARM-Based IIoT Solutions

Internet of Vehicle

Vehicle Panel PC

- 4G/LTE Communication
- OBDII
- CANBUS
- Low Power Consumption
- LCM

Smart Retail

Retail Price Checker

- Touch Display
- NFC/RFID Support
- PoE Powered
- Barcode Scanner
- Wireless Communication

Industrial IoT

Frame-less Panel PC

- Frame-Less Design
- Efficient Thermal Solution
- Wireless Communication

SOM Embedded Boards

- Embedded CPU Board
- Customized Carrier Board

Intelligent Healthcare

Bedside Infotainment

- Medical Certificate
- High Performance
- Rich I/O
- Various Size
- Android OS
- Wireless Communication

ARM-Based Embedded Systems

			
SoM	IOT-1000N Slim Panel PC	PC1017 Price Checking Terminal	IEC-3390 Compact Signage System

Custom Your ARM-Based Solutions with ARBOR

ARM-Based Solutions

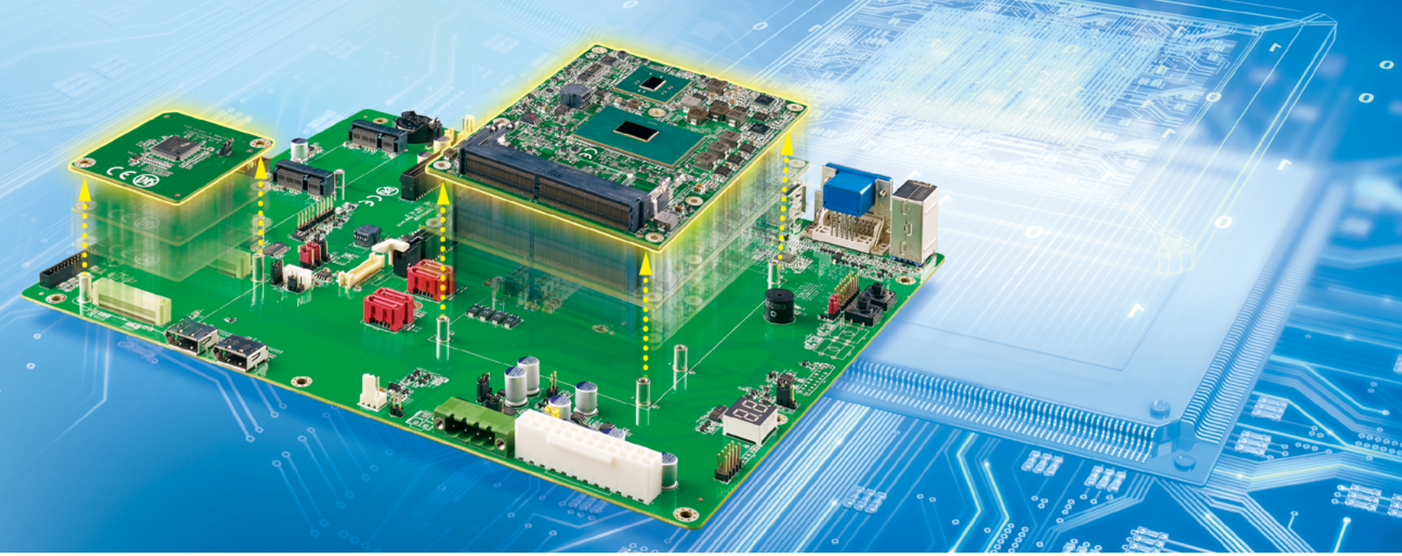
- **Configurations** — MEDIATEK, Rockchip 瑞芯微电子, NXP
- **Architecture** — Wi-Fi, Bluetooth, Ethernet, Touch and panel, HDMI
- **Advantages** — Small Form Factor; Low-Power Consumption; Linux Support
- **Software**

ARM-Based Embedded Systems

		
RP-101K Open Frame Touch Panel Kit	M1016 Medical Thin Client	M1861 Medical Infotainment Terminal

Computer on Modules

Building your embedded projects easier and faster!



Computer on Module perfectly meets your custom application requirements while helping you reach your goals for time-to-market, saving money, design flexibility and risk minimization. With a versatile portfolio of low-power CPU available from Intel®, AMD® and VIA supporting fanless operation, your embedded system will enjoy the benefits of high CPU performance per watt. ARBOR's Computer on Module supports different form factors, including COM Express, Qseven and ETX System on Module to meet every type of demand in your applications.

PICMG Standard Compliant

As an active member of PICMG, ARBOR's COM Express comes with the latest module specifications and pinout definitions.

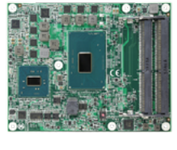
High Efficient Thermal Solution

ARBOR uses specially CNC-machined aluminum heat-spreaders to contact hot spots in order to efficiently distribute the heat to the outside heat sink.

Conformal Coating Services

Upon customer request, this optional service that protects the components & circuitry against dust, fungus, moisture and salt spray.

Supported Form Factors

			
COM Express	ETX	Qseven	Carrier Board

COM Express CPU Modules

COM Express Builds Highly-Reliable Embedded Systems, Rugged and wide-temperature designed for the harshest environments.

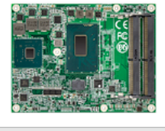
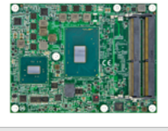
Ready for Harsh Environment Applications

ARBOR COM Express modules provide a wide operating temperature range and conformal coating that protects components and circuitry from harmful environmental conditions. Size and cost-efficient COM Express modules also address space and budget constraints while delivering utmost reliability and long life cycle support. Changing customer project scale and/or parameters can easily be addressed with minimum system downtime via ARBOR's broad range of ready-made COM Express modules.

Accelerating Development of Medical Ultrasound Equipment

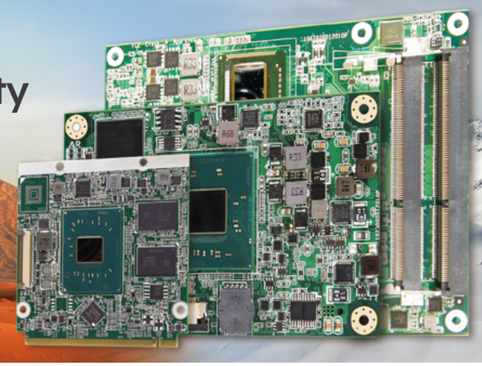
Scalability, performance, and complete safety are key concerns for developers and manufacturers of ultrasound medical equipment. ARBOR addresses these requirements with ready made COM Express modules in different form factors for distinct type of devices, and supporting the most compute intensive requirements and most advanced graphics applications.

COM Express CPU Modules

			
Intel® 11th Gen.	Intel® 8th Gen.	Intel® 7th Gen.	Intel® 6th Gen.
EmETXe-i92U0-WT	EmETXe-i91M0-WT	EmETXe-i90M3-WT	EmETXe-i89U0-WT

Single Board Computers

Meet industrial grade design and quality



ARBOR Single Board Computer (SBC) series ranging from 3.5”, PC/104, PC/104-Plus and EPIC, to a wide range of full-size and half-size Slot Computing boards. ARBOR’s SBCs are designed around the powerful core logic embodied within the chipsets from Intel® and AMD®. Highly integrated designs allow them to fit the minimal / critical space requirements of most embedded applications.

Moreover, ARBOR’s slot based SBCs are all based on open PICMG standards. All of these slot-based SBCs are ideally suited for applications in compact and rugged enclosures suited for mission-critical applications.

Reliable and Rugged Designs

- Wide temperature design option
- Industrial-grade components
- Conformal coating services

Ready-to-use Platforms

- X86 architecture, Intel® & AMD®
- PICMG, SGeT standards complinace

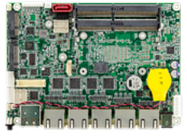
Extensive I/O Interfaces

- Expandable by PCI Express, Mini PCI Express and M.2 slots
- I/O extension options

Conformal Coating Services

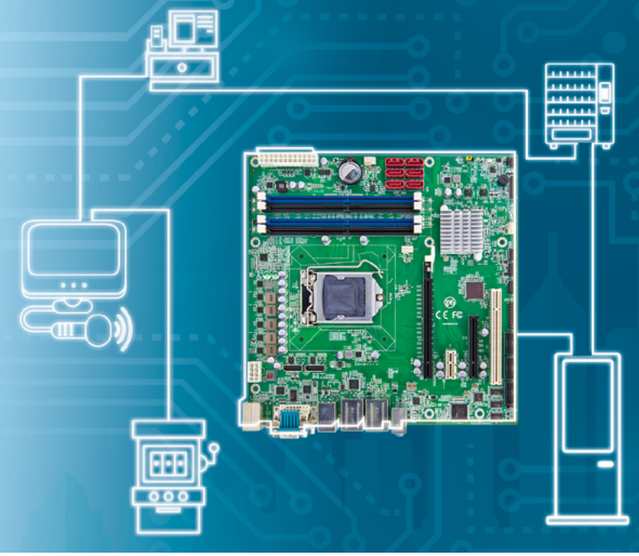
To protect the components & circuitry against dust, fungus, moisture and salt spray.

SBC Product Highlights

		
AMD Embedded Ryzen R1000	Intel® 7th Gen.	Intel® 7th Gen.
EmCORE-a10R2	EmCORE-i90U2-WT	EmCORE-i90M2-WT

Industrial Motherboards

Minimal configuration and maintenance required



ARBOR offers plenty of industrial motherboard series in different form factors including Micro ATX and Mini-ITX. All industrial motherboards are designed with Intel® chipsets based on demand from system integrators, and ideal alternatives to platforms needing industrial features such as longevity, reliability and manageability, including many controller, server and gaming machine applications.

Customization & Configuration

- One-stop SW/HW integration
- Extensive I/O expansion

Reliability & Longevity

- Fanless Thermal Solution System
- Long term availability 10+ years
- Extended temp. of -20~70°C option
- Wide-Range DC Input

Ready for Vertical Markets

- Standards form factors for easy integration
- Industrial design for the complete product life cycle

Supported Form Factors

		
Mini-ITX	Micro-ATX	ATX

Semi-Industrial Motherboards

Minimal configuration and maintenance

ARBOR's Semi-Industrial Motherboards are a new series of off-the-shelf motherboards ready for clients to commission their projects faster, smarter and more efficiently. This series is designed to meet the growing demand of light industrial embedded computing applications, such as commercial, retail, gaming and residential systems. Coming in versatile form factors including mini-ITX, micro-ATX and ATX, these motherboards can satisfy various vertical market needs. Plus, the series features the latest platforms such as 8th Gen. Intel® Core™ processors, so that customers can take advantage of the cutting-edge features, making it a perfect fit for price sensitive but performance-demanding applications.

Faster Time to Market

Standard form factors from mini-ITX to full size ATX for easy integration

Greater Affordability

Our cost effective solutions save turnaround costs and time for your projects.

Vertical Markets Ready

Our expertise in a variety of vertical markets can help provide quick execution and rapid project delivery.

Features

- Off-the-shelf motherboards with expansion ability and industrial reliability
- Intel® latest platforms from 6th to 8th Gen. Intel® Core Processors
- Standard form factors from mini-ITX to full size ATX for easy integration
- High bandwidth I/Os like USB 3.1 Gen. 2 (10 Gbit/s), PCIe Gen. 3.0 lanes and M.2

Selection Guide

ARM-Based System on Module

Model	SOM-RK391
Form Factor	SOM-1
Dimension	69.6 x 70 mm
Processor	Rockchip RK3399 Dual-core Cortex-A72 + Quad-core Cortex-A53
Memory	LPDDR4 2GB, optional to 4GB
Storage	16GB eMMC with SDIO 5.1
Graphics	Mali-T860MP4 GPU
Display	1 x HDMI, 1 x MIPI DSI, 1 x eDP
Camera	2 x MIPI CSI RX (up to 13MP)
Audio	2 x 1W Speaker; 2 x Analog MIC; 1 x Digital MIC; 1 x Headphone
LAN	1 x GbE
Wifi+BT	1 x 802.11 a/b/g/n/ac + BT 5.0
USB 2.0	4
USB 3.0	2 (Type C)
Serial Ports	2 x UART ports, 2-wire; 2 x UART ports, 4-wire
RTC	Supported
SDIO	Supported
GPIO	Supported
SPI	1
I^2C	2
Power Input	5V/3A
Operating Temperature	-10 ~ 60° C
OS Support	Android

Model	PBA-9000-A
Form Factor	Carrier Board for SOM series
Dimension	165 x 115 mm
Display	1 x HDMI; 1x MIPI DSI; 1 x eDP
Camera	2 x MIPI CSI RX (up to 13MP)
Audio	2 x 1W Speaker; 2 x Analog MIC; 1 x Digital MIC; 1 x Headphone
Ethernet	1 x GbE RJ-45
USB 2.0	4
USB 3.0	2 (Type C)
Serial Port	2 x RS-232 ports, 2-wire; 2 x RS-232 ports, 4-wire
RTC	Supported
SD Card	Supported
SPI	2
I^2C	2
Power Input	12V/3A
Operating Temperature	-10 ~ 60° C

Computer On Module
COM Express - Type 6

NEW

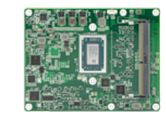



Model	EmETXe-i89U0-WT	EmETXe-i90U0-WT	EmETXe-i91U0-WT	EmETXe-i92U0-WT
Form Factor	COM Express® Compact Type 6	COM Express® Compact Type 6	COM Express® Compact Type 6	COM Express® Compact Type 6
Dimension	95 x 95 mm	95 x 95 mm	95 x 95 mm	95 x 95 mm
Processor	6th Gen. Intel® Core™ i7-6600U 3.4GHz / i5-6300U 2.8GHz / i3-6100U 2.3GHz / Celeron® 3955U 2.0GHz	7th Gen. Intel® Core™ i7-7600U 3.9GHz / i5-7300U 3.5GHz	8th Gen. Intel® Core™ i7-8665UE 4.4GHz / i5-8365UE 4.1GHz / i3-8145UE 3.9GHz / Celeron® 4305UE 2.0GHz	11th Gen Intel® i7-1185G7E 4.4GHz i5-1145G7E 4.1GHz i3-1115G4E 3.9GHz Celeron 6305E 1.8GHz
Chipset	N/A	N/A	N/A	N/A
Memory	2 x DDR4 SO-DIMM Sockets	2 x DDR4 SO-DIMM Sockets	2 x DDR4 SO-DIMM Sockets	2 x DDR4 SO-DIMM Sockets
Video Output	2 x DDI ports	2 x DDI ports	2 x DDI ports or 1 x DDI port, 1 x Analog RGB(Optional)	Analog RGB 3 x DDI ports
LVDS	Dual Channels 24-bit	Dual Channels 24-bit	Dual Channels 24-bit	Dual Channels 24-bit
Audio	HD audio link	HD audio link	HD audio link	HD audio link
Ethernet	1 x GbE	1 x GbE	1 x GbE	1 x GbE
Mass Storage	2 x SATA3.0, eMMC 5.0 (OEM Request)	2 x SATA3.0, eMMC 5.0 (OEM Request)	2 x SATA3.0, eMMC 5.0 (OEM Request)	2 x SATA3.0
RS-232	2 x RX/TX	2 x RX/TX	2 x RX/TX	2 x RX/TX
RS-232/422/485	N/A	N/A	N/A	N/A
USB 2.0	8	8	8	8
USB 3.0	4	4	4	4
Digital I/O	8-bit Programmable	8-bit Programmable	8-bit Programmable	8-bit Programmable
Expansion & Serial Bus	8 x PCIe x1, I²C, SMBus, SPI, LPC	8 x PCIe x1, I²C, SMBus, SPI, LPC	8 x PCIe x1, I²C, SMBus, SPI, LPC	8 x PCIe x 1, 1 x PCIe x 4 I²C, SMBus, SPI, LPC
Power Input	DC 5~20V, 5VSB	DC 5V~20V, 5VSB	DC 8.5V~20V, 5VSB	DC 8.5V ~ 20V, 5VSB
Operating Temperature	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	-40~ 85° C (-40~185° F)

Wide Temperature Range

Computer On Module
COM Express - Type 6



Model	EmETXe-i2309-WT	EmETXe-a10M0	EmETXe-a10R0	EmETXe-a10M3
Form Factor	COM Express® Compact Type 6	COM Express® Compact Type 6	COM Express® Compact Type 6	COM Express® Basic Type 6
Dimension	95 x 95 mm	95 x 95 mm	95 x 95 mm	125 x 95 mm
Processor	Intel® Atom® E3845 1.91GHz	AMD® Ryzen™ V1000 V1605B 3.6GHz /V1756B 3.6GHz / V1807B 3.8GHz	AMD® Ryzen™ R1000 R1606G 3.5GHz / R1505G 3.3GHz	AMD® RyzenTM V1000 Processor V1605B 3.6 GHz V1756B 3.6 GHz V1807B 3.8 GHz
Chipset	N/A	N/A	N/A	N/A
Memory	1 x DDR3L SO-DIMM Socket	2 x DDR4 ECC SO-DIMM Sockets	2 x DDR4 ECC SO-DIMM Sockets	2 x DDR4 ECC SO-DIMM Sockets
Video Output	Analog RGB, 1 x DDI port	3 x DDI ports	2 x DDI ports	3 x DDI ports
LVDS	Dual Channels 24-bit	Dual Channels 24-bit	Dual Channels 24-bit	Dual Channels 24-bit
Audio	HD audio link	HD audio link	HD audio link	HD audio link
Ethernet	1 x GbE	1 x GbE	1 x GbE	1 x GbE
Mass Storage	2 x SATA2.0 eMMC 4.5 (OEM request)	2 x SATA3.0	2x SATA3.0	4 x SATA3.0
RS-232	1 x RX/TX	2 x RX/TX	2 x RX/TX	2 x RX/TX
RS-232/422/485	N/A	N/A	N/A	N/A
USB 2.0	8	8	8	8
USB 3.0	1	4	2	4
Digital I/O	8-bit Programmable (Optional)	8-bit Programmable	8-bit Programmable	8-bit programmable
Expansion & Serial Bus	7 x PCIe x1, SDIO (GPIO pin shared), I²C, SMBus, SPI, LPC	8 x PCIe x1, 1 x PCIe x8, I²C, SMBus, SPI, LPC	6 x PCIe x1, 1 x PCIe x4 I²C, SMBus, SPI, LPC	8 x PCIe x1, 1 x PCIe x8, I²C, SMBus, SPI, LPC
Power Input	DC 12V, 5VSB	DC 8.5V~20V, 5VSB	DC 8.5V~20V, 5VSB	DC 5V~20V, 5VSB
Operating Temperature	-40 ~ 85° C (-40 ~ 185° F)	-20 ~ 70° C (-4 ~ 158° F)	-20~70° C (-4 ~ 158° F)	-20 ~ 70° C (-4 ~ 158° F)

Wide Temperature Range

Computer On Module
COM Express - Type 6

Model	EmETXe-i89M0-WT	EmETXe-i89M3-WT	EmETXe-i90M0-WT	EmETXe-i90M3-WT	EmETXe-i91M0-WT
Form Factor	COM Express® Basic Type 6	COM Express® Basic Type 6	COM Express® Basic Type 6	COM Express® Basic Type 6	COM Express® Basic Type 6
Dimension	125 x 95 mm	125 x 95 mm	125 x 95 mm	125 x 95 mm	125 x 95 mm
Processor	6th Gen. Intel® Core™ i7-6822EQ 2.8GHz	6th Gen. Intel® Core™ i7-6822EQ 2.8GHz / i5-6442EQ 2.7GHz Xeon E3-1505Lv5 2.8GHz Xeon E3-1505Mv5 3.7GHz	7th Gen. Intel® Core™ i7-7820EQ 3.7GHz / i5-7442EQ 2.9GHz	7th Gen. Intel® Core™ i7-7820EQ 3.7GHz i5-7442EQ 2.9GHz Xeon E3-1505L v6 3.0GHz	8th Gen. Intel® Core™ i7-8850H 4.3GHz i5-8400H 4.2GHz i3-8100H 3.0GHz
Chipset	QM170	QM170 / CM236	QM175	QM175 / CM238	QM370
Memory	2 x DDR4 SO-DIMM Sockets	2 x DDR4 SO-DIMM Sockets	2 x DDR4 SO-DIMM Sockets	2 x DDR4 SO-DIMM Sockets	2 x DDR4 SO-DIMM Sockets
Video Output	3 x DDI ports	Analog RGB, 2 x DDI ports	3 x DDI ports	Analog RGB, 2 x DDI ports	3 x DDI ports or 2 x DDI ports, Analog RGB (Optional)
LVDS	Dual Channels 24-bit	Dual Channels 24-bit	Dual Channels 24-bit	Dual Channels 24-bit	Dual Channels 24-bit
Audio	HD audio link	HD audio link	HD audio link	HD audio link	HD audio link
Ethernet	1 x GbE	1 x GbE	1 x GbE	1 x GbE	1 x GbE
Mass Storage	4 x SATA3.0	4 x SATA3.0	4 x SATA3.0	4 x SATA3.0	4 x SATA3.0
RS-232	2 x RX/TX	2 x RX/TX	2 x RX/TX	2 x RX/TX	2 x RX/TX
RS-232/422/485	N/A	N/A	N/A	N/A	N/A
USB 2.0	8	8	8	8	8
USB 3.0	4	4	4	4	4
Digital I/O	8-bit Programmable	8-bit Programmable	8-bit Programmable	8-bit Programmable	8-bit Programmable
Expansion & Serial Bus	8 x PCIe x1, 1 x PCIe x16, I²C, SMBus, SPI, LPC	6 x PCIe x1, 1 x PCIe x16, I²C, SMBus, SPI, LPC	8 x PCIe x1, 1 x PCIe x16, I²C, SMBus, SPI, LPC	8 x PCIe x1, 1 x PCIe x16, I²C, SMBus, SPI, LPC	8 x PCIe x1, 1 x PCIe x16, I²C, SMBus, SPI, LPC
Power Input	DC 5~20V, 5VSB	DC 5~20V, 5VSB	DC 8.55~20V, 5VSB	DC 8.5V~20V, 5VSB	DC 8.5V~20V, 5VSB
Operating Temperature	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)

Wide Temperature Range

Computer On Module
COM Express - Type 10

NEW

Model	EmNANO-i2402-WT	EmNANO-i230V-WT	EmNANO-i2408
Form Factor	COM Express® Mini Type 10	COM Express® Mini Type 10	COM Express® Mini Type 10
Dimension	84 x 55 mm	84 x 55 mm	84 x 55 mm
Processor	Intel® Atom® E3900 Series Intel® Celeron® N3350 Intel® Pentium® N4200	Intel® Atom® Processor E3825 1.33GHz / E3845 1.91GHz	Intel® Atom® Processor E3825 1.33GHz / E3845 1.91GHz
Chipset	N/A	N/A	N/A
Memory	Soldered onboard 4GB DDR3L SDRAM	Soldered Onboard 2GB/4GB DDR3L SDRAM	Soldered Onboard 2GB/4GB DDR3L SDRAM
Video Output	1 x DDI port	1 x DDI port	1 x DDI port
LVDS	Single Channel 24-bit	Single Channel 24-bit	Single Channel 24-bit
Audio	HD audio link	HD audio link	HD audio link
Ethernet	1 x GbE	1 x GbE	1 x GbE
Mass Storage	2 x SATA3.0 eMMC 5.0 (OEM Request)	2 x SATA2.0	2 x SATA2.0
RS-232	2 x RX/TX	2 x RX/TX	2 x RX/TX
RS-232/422/485	N/A	N/A	N/A
USB 2.0	8	8	8
USB 3.0	2	1	1
Digital I/O	N/A	N/A	N/A
Expansion & Serial Bus	4 x PCIe x1, SDIO, I²C, SMBus, SPI, LPC	3x PCIe x1, SDIO, I²C, SMBbus, PI, LPC	3x PCIe x1, SDIO, I²C, SMBbus, PI, LPC
Power Input	DC 12V / 5V Auto Detect	DC 12V / 5V Auto Detect	DC 12V / 5V Auto Detect
Operating Temperature	-40 ~ 85° C (-40 ~ 185° F) (For Atom E3900 Series)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)

Wide Temperature Range

Computer On Module

PC/104 & PC/104+ | SMARC | ETX




Model	Em104P-i2313	Em104-i230F	EmSMK-i2403-WT	EmETX-i2304-WT
Form Factor	ETXP	PC/104	SMARC 2.0	ETX 3.02
Dimension	114 x 95 mm	96 x 90 mm	82 x 50 mm	114 x 95 mm
Processor	Intel® Atom® E3825 1.33GHz / E3845 1.91GHz	Intel® Atom® E3825 1.33GHz / E3845 1.91GHz	Intel® Atom® Processor X7-E3950 2.0GHz	Intel® Atom® Processor E3825 1.33GHz, E3845 1.91GHz
Chipset	N/A	N/A	N/A	N/A
Memory	1 x DDR3L SO-DIMM Socket	1 x DDR3L SO-DIMM Socket	Soldered Onboard 8GB LPDDR4 SDRAM	1 x DDR3L SO-DIMM Socket
Video Output	Analog RGB	Analog RGB	1 x eDP port, 1 x DP++ port, 1 x HDMI port	Analog RGB, 1 x DDI port*
LVDS	Dual Channel 24-bit	Dual Channel 24-bit	N/A	Dual Channels 24-bit
Audio	Realtek® ALC662	Realtek® ALC662	HD audio link	Realtek® ALC662
Ethernet	1 x 10/100Mbps 1 x GbE	2 x GbE	1 x GbE	1 x 10/100Mbps
Mass Storage	1 x Ultra ATAx SATA2.0, 1 x CF II Socket	1 x SATA2.0, 1 x mSATA Socket	1 x SATA3.0, eMMC (OEM Request)	1 x Ultra ATA, 2 x SATA2.0
RS-232	3 x RS-232	2 x RS-232	4 RX/TX	1 RX/TX
RS-232/422/485	1 x RS-232/422/485 selectable	2 x RS-232/422/485 selectable	N/A	1 (by Carrier Board)
USB 2.0	4	2	6	4
USB 3.0	N/A	1	2	N/A
Digital I/O	16-bit DIO (8-in/8-out)	8-bit Programmable	8-bit Programmable	N/A
Expansion & Serial Bus	PC/104-Plus	PC/104	4 x PCIe x1, SDIO, I²C, SMBus, SPI, LPC	4 x PCI & ISA, LPC
Power Input	DC 12V, 5V	DC 12V, 5V	DC 3~5.25V	DC 5V, 5VSB
Operating Temperature	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)

Wide Temperature Range

Computer On Module
Qseven





Model	EmQ-i2401	EmQ-i240A	EmQ-i2200	EmQ-i2205	EmQ-i230J-WT
Form Factor	Qseven® R2.0	Qseven® R2.1	Qseven® R2.0	Qseven® R2.0	Qseven® R1.2
Dimension	70 x 70 mm	70 x 70 mm	70 x 70 mm	70 x 70 mm	70 x 70 mm
Processor	Intel® Celeron® N3350 2.4GHz Intel® Pentium® N4200 2.5GHz	Intel® Celeron® N3350 2.4GHz Intel® Pentium® N4200 2.5GHz	Intel® Celeron® Processor N3160 2.24GHz	Intel® Celeron® processor N3060 2.48GHz / N3160 2.24GHz	Intel® Atom® Processor E3825 1.33GHz / E3845 1.91GHz
Memory	Soldered onboard 4GB DDR3L SDRAM	Soldered onboard 8GB LPDDR4 SDRAM	Soldered onboard 4GB DDR3L SDRAM	Soldered onboard 2GB/4G DDR3L SDRAM	Soldered onboard 2GB/4GB DDR3L SDRAM
Video Output	1 x DDI port	1 x DDI port	1 x D230J DI ports	2 x DDI ports, 1 x eDP port	Analog RGB, 1 x DDI port
LVDS	Dual Channels 24-bit	Dual Channels 24-bit	Dual Channels 24-bit	N/A	Dual Channels 24-bit
Audio	HD audio link	HD audio link	HD audio link	HD audio link	HD audio link
Ethernet	1 x GbE	1 x GbE	1 x GbE	1 x GbE	1 x GbE
Mass Storage	2 x SATA3.0 eMMC (OEM Request)	2 x SATA3.0 eMMC 5.0 (OEM Request)	2 x SATA3.0	2 x SATA3.0	2 x SATA2.0, eMMC 4.5 (OEM request)
RS-232	1	1	1 x RX/TX	1 x RX/TX	N/A
RS-232/422/485	N/A	N/A	N/A	N/A	N/A
USB 2.0	4	N/A	4	4	8
USB 3.0	2	2	2	2	N/A
Digital I/O	N/A	N/A	N/A	N/A	N/A
Expansion & Serial Bus	4 x PCIe x1, SDIO, I²C, SMBus, SPI, LPC	4 x PCIe x1, SDIO I²C, SMBus, SPI, LPC	3 x PCIe x1, SDIO, I²C, SMBus, SPI, LPC	3 x PCIe x1, SDIO I²C, SMBus, SPI, LPC	3 x PCIe x1, SDIO, I²C, SMBus, SPI, LPC
Power Input	DC 5V, 5VSB	DC 5V, 5VSB	DC 5V, 5VSB	DC 5V, 5VSB	DC 5V, 5VSB
Operating Temperature	-20~85° C (-4 ~ 185° F)	-20~ 85° C (-4~185° F)	-20~70° C (-4 ~ 158° F)	-20 ~ 70° C (-4 ~ 158° F)	-40 ~ 85° C (-40 ~ 185° F)

Wide Temperature Range *Note: Via FPC connector

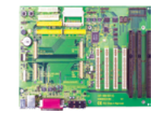
Carrier Board




Model	PBC-900J	PBN-9007	PBQ-3000	PBQ-900L
Form Factor	COM Express® Basic Type 6 Carrier Board	COM Express® Mini Type 10 Carrier Board	EPIC™ form factor Qseven® Carrier Board	EPIC™ form factor Qseven® Carrier Board
Dimension	125 x 95 mm	125 x 95 mm	165 x 115 mm	165 x 115 mm
Graphics interface	1 x VGA BHs, 1 x LVDS connector	1 x LVDS connector, 1 x DisplayPort connector	1 x VGA connector, 1 x LVDS connector, 1 x DVI-D connector	1 x LVDS connector, 1 x DVI-I connector
Audio	Realtek® ALC662	Realtek® ALC662	Realtek® ALC662	Realtek® ALC662
Ethernet	2 x lockable BHs	2 x RJ-45 connectors	2 x RJ-45 connectors	2 x RJ-45 connectors
Storage	1 x SATA connector, 1 x mSATA Socket	1 x SATA connector, 1 x CFast Socket	2 x SATA connectors	1 x SATA connector, 1 x M.2 Socket
Serial Port	3 x RS-232, 1 x RS-232/422/485	1 x RS-232, 1 x RS-232/422/485	3 x RS-232, 1 x RS-232/422/485	3 x RS-232, 1 x RS-232/422/485, 1 x UART
LPT Port	1	N/A	N/A	N/A
USB 2.0	2	4	6	1
USB 3.0/2.0	2	2	N/A	2
Digital I/O	16-bit Programmable	8-bit Programmable	8-bit Programmable	8-bit Programmable
Expansion & Serial Bus	1 x Mini-Card Socket, PCI/104	1 x Mini-Card Socket, SIM Socket	1 x Mini-Card Socket, LPC	SMBus, I^2C, SDIO, 1 x M.2 Socket E-key
Power Input	DC 12V	DC 12V	10V ~ 30V	10V ~ 30V
Operating Temperature	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)

Wide Temperature Range

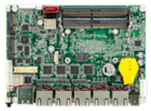
Carrier Board


Model	PBQ-900R	PBE-1000	PBE-1101	PBE-1705	PBS-9015
Form Factor	ATX form factor Qseven Carrier Board	ATX form factor ETX Evaluation Board	ETX carrier Board	ATX form factor COM Exp. Type 6 Evaluation Board	SMARC 2.0 Evaluation Carrier Board
Dimension	305 x 244 mm	305 x 210 mm	114 x 95mm	305 x 244 mm	294 x 172mm
Graphics interface	Depends on CPU module	1 x VGA connector, 1 x LVDS connector	1 x VGA connector 1 x 24-bit LVDS connector	1 x VGA connector, 1 x DVI-I connector, 1 x LVDS connector, 2 x DisplayPort connectors	1 x HDMI connector 1 x DP++ connector 1 x LVDS/2 x eDP connector
Audio	Realtek® ALC886	Mic-in/ Line-in/ Line-out	Mic-in/Line-in/Line-out	Realtek® ALC886	Realtek® ALC662
Ethernet	1 x RJ-45 connector	1 x RJ-45 connector	2 x LAN PHs	1 x RJ-45 connector	2 x RJ-45 connectors
Storage	2 x SATA connectors	2 x Ultra ATA connectors 1 x FDD connector, 1 x CF II socket	1 x Ultra ATA connector 1 x CFII Socket	4 x SATA connectors	1 x SATA connector
Serial Port	12 x RS-232/422/485 (depends on Super IO module)	3 x RS-232, 1 x RS-232/422/485	3 x RS-232 1 x RS-232/422/485	6 x RS-232	2 x RS-232
LPT Port	1 (depends on Super IO module)	1	1	1	N/A
USB 2.0	5 (depends on Super IO module)	4	4	2	2
USB 3.0/2.0	3 (depends on Super IO module)	N/A	N/A	4	2
Digital I/O	12-bit Programmable	16-bit DIO 8-in/ 8-out	16-bit DIO, 8-in/ 8-out	8-bit Programmable	8-bit Programmable
Expansion & Serial Bus	1 x PCIe x 16 slot, 4 x PCIe x1 slots, 1 x M.2 Socket E-key SDIO, I^2C, LPT	4 x PCI slots, 3 x ISA slots	PC/104-Plus, 1 x I^2C	2 x PCIe x1 slots, 1 x PCIe x 4 slot, 1 x PCIex16 slot, 2 x Mini-Card Sockets	1 x PCIe x 1, 1 x PCIe x 4, 1 x mini PCIe, 1 x M.2 Socket E-key
Power Input	9~36V	AT/ ATX	12V DC	DC 5~20V / ATX	ATX
Operating Temperature	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85°C (-40 ~ 185°F)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85°C (-40 ~ 185°F)

Wide Temperature Range

Single Board Computer
3.5” Miniboard

Model	EmCORE-i89M2-WT	EmCORE-i90U2-WT	EmCORE-i90M2-WT	EmCORE-a10R2
Form Factor	3.5”	3.5”	3.5”	3.5”
Dimension	146 x 102 mm	146 x 102 mm	146 x 102 mm	146 x 102 mm
Processor	6th Gen. Intel® Core™ i5-6442EQ 2.7GHz / i7-6822EQ 2.8GHz	7th Gen. Intel® Core™ i7-7600U 3.4GHz / i5-7300U 2.8GHz / i3-7100U 2.4GHz, Intel® Celeron® 3965U 2.2GHz	7th Gen. Intel® Core™ i5-7442EQ 2.9Ghz	Soldered onboard AMD® Ryzen™ R1102G 2.6GHz
Chipsets	QM170	N/A	QM175	N/A
Memory	1 x DDR4 SO-DIMM Socket	2 x DDR4 SO-DIMM Sockets	1 x DDR4 SO-DIMM Socket	1 x DDR4 SO-DIMM Socket
Graphic interface	1 x HDMI 1 x DisplayPort	1 x HDMI 1 x DisplayPort	1 x HDMI 1 x DisplayPort	1 x DisplayPort*
LVDS	2 x Dual Channels 24-bit	Dual Channels 24-bit	2 x Dual Channels 24-bit (1 x LVDS is optional)	2 x Dual Channels 24-bit LVDS*
Audio	Realtek® ALC886	Realtek® ALC269	Realtek® ALC662	Realtek® ALC269
Ethernet port	2 x GbE	5 x GbE	2 x GbE	2 x GbE
Storage	2 x SATA3.0 1 x M.2 M-key	1 x SATA3.0 1 x M.2 B-key	2 x SATA3.0 1 x M.2 M-key	2 x SATA3.0
Serial port	4 x RS-232 2 x RS-232/422/485 selectable	4 x RS-232/422/485 selectable	4 x RS-232 2 x RS-232/422/485 selectable	6 x RS-232
USB 2.0	4	4	4	6
USB 3.0/2.0	2	4	2	2
Digital I/O	8-bit Programmable	8-bit Programmable	8-bit Programmable	8-bit Programmable
Expansion & Serial Bus	1 x Mini-Card Socket 1 x Micro SIM Socket (OEM request)	4 x PCIe x 1 / 1 x PCIe x 4 FCC connector, 1 x M.2 E-key, 1 x Nano SIM Socket (OEM request)	1 x Mini-Card Socket 1 x Micro SIM socket	2 x Mini-Card Sockets (1 x Full size, 1 x Half size) 1 x Micro SIM Socket
Power Input	DC 12V	DC 9V ~ 15V / 15V ~ 36V	DC 12V	DC 8V - 13.2V
Operating Temperature	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	-20 ~ 70° C (-4 ~ 158° F)

Wide Temperature Range

Single Board Computer
3.5” Miniboard

Slot Computing




Model	EmCORE-i2305-WT	EmCORE-i230G-WT	HiCORE-i89Q1	HiCORE-i89Q2
Form Factor	3.5”	3.5"	PICMG 1.3 full size SBC	PICMG 1.3 full size SBC
Dimension	146 x 102 mm	146 x 102 mm	338 x 126 mm	338 x 126 mm
Processor	Intel® Atom® E3825 1.33GHz / E3845 1.91GHz Celeron® N2807 2.16GHz / N2930 2.16GHz	Intel® Atom® E3825 1.33GHz / E3845 1.91GHz	6th/7th Gen. Intel® Core™ i7/i5/i3 (Socket LGA1151)	6th/7th Gen. Intel® Core™ i7/i5/i3 (Socket LGA1151)
Chipsets	N/A	N/A	Q170	Q170
Memory	1 x DDR3L SO-DIMM Socket	1 x DDR3L SO-DIMM Socket	4 x DDR4 Long-DIMM Sockets	4 x DDR4 Long-DIMM Sockets
Graphic interface	Analog RGB, 1 x HDMI	Analog RGB, HDMI	1 x DVI-I 1 x DisplayPort	1 x Analog RGB 1 x DisplayPort
LVDS	Dual Channels 24-bit	Dual Channel 24-bit	N/A	N/A
Audio	HD audio link	Realtek® ALC662	HD Audio Link	HD Audio Link
Ethernet port	2 x GbE	2 x GbE	2 x GbE	2 x GbE
Storage	1 x SATA2.0, 1 x mSATA , eMMC 4.5 (OEM request, E3800 family only)	1 x SATA2.0, 1 x CFast Socket, eMMC 4.5 (OEM request)	6 x SATA3.0	6 x SATA3.0
Serial port	1 x RS-232 1 x RS-232/485 selectable	2 x RS-232/485 selectable	1 x RS-232 1 x RS-232/422/485	1 x RS-232 1 x RS-232/422/485
USB 2.0	4	6	8	8
USB 3.0/2.0	1	1	2	2
Digital I/O	8-bit Programmable	8-bit Programmable	8-bit Programmable	8-bit Programmable
Expansion & Serial Bus	1 x Mini-Card Socket, 1 x micro-SDXC socket, 2 x I²C ports (OEM request, E3800 family only)	1 x Mini-Card Socket, 1 x micro SDXC Socket, 1 x micro SIM Socket	PCI / PCIe golden finger	PCI / PCIe golden finger
Power Input	DC 12V	DC 12V	DC 12V, 5VSB	DC 12V, 5VSB
Operating Temperature	-40 ~ 85° C (-40 ~ 185° F)	-40 ~ 85° C (-40 ~ 185° F)	0 ~ 60° C (32 ~ 122° F)	0 ~ 60° C (32 ~ 122° F)

Wide Temperature Range *Choose two from three

Industrial Motherboard


Model	ITX-i89H0	MB-i89Q0
Form Factor	Mini-ITX	Micro-ATX Motherboard
Dimension	170 x 170 mm	244 x 244 mm
Processor	6th Gen. Intel® Core™ i3-6100E 2.7GHz Intel® Xeon® E3-1505L V5 2.8GHz / E3-1515M V5 3.7GHz	6th Gen. Intel® Core™ i7/i5/i3 (Socket LGA1151)
Chipsets	CM236	Q170
Memory	2 x DDR4 ECC SO-DIMM Sockets	4 x DDR4 Long-DIMM Sockets
Graphic interface	1 x HDMI 2 x DisplayPort	1 x DVI-I 2 x DisplayPort
LVDS	N/A	N/A
Audio	Realtek® ALC662	Realtek® ALC269
Ethernet port	1 x GbE	2 x GbE
Storage	2 x SATA3.0 1 x M.2 M-key Socket	6 x SATA3.0
Serial port	1 x RS-232	2 x RS-232 up to 4 x RS-232 (OEM request)
USB 2.0	4	10
USB 3.0/2.0	6	4
Digital I/O	N/A	N/A
Expansion & Serial Bus	1 x PCIe x16 Slot 1 x M.2 E-key 1 x LPC	1 x PCI Slot 1 x PCIe x16 Slot 1 x PCIe x4 in x8 Slot 1 x PCIe x1 Slot
Power Input	DC12V	24-pin + 4-pin ATX power connector
Operating Temperature	-20 ~ 70° C (-4 ~ 158° F)	0 ~ 60° C (32 ~ 140° F)

Embedded Computing

Semi-Industrial Motherboard





Model	ITX-i89QA	ITX-i89QB	ITX-i89QC	ITX-i89Q3	ITX-i91Q2
Form Factor	Mini-ITX	Mini-ITX	Mini-ITX	Mini-ITX	Mini-ITX
Dimension	170 x 170 mm	170 x 170 mm	170 x 170 mm	170 x 170 mm	170 x 170 mm
Processor	7th/6th Gen. Intel® Core™ i7/i5/i3 / Pentium®	7th/6th Gen. Intel® Core™ i7/i5/i3 / Pentium®	7th/6th Gen. Intel® Core™ i7/i5/i3 / Pentium®	7th/6th Gen. Intel® Core™ i7/i5/i3 / Pentium®	8th Gen. Intel® Core™ i7/i5/i3 / Pentium®
Socket	LGA1151	LGA1151	LGA1151	LGA1151	LGA1151
Chipset	Intel® PCH Q170	Intel® PCH Q170	Intel® PCH Q170	Intel® PCH H110	Intel® PCH Q370
Super I/O	Fintek® F81768	Fintek® F81866	Fintek® F81866	Fintek® F81803U	NUVOTON® NCT6116D
RAM Socket	2 x DDR4 2133MHz SO-DIMM	2 x DDR4 2133MHz SO-DIMM	2 x DDR4 2133MHz SO-DIMM	2 x DDR4 2133MHz SO-DIMM	2 x DDR4 2400MHz SO-DIMM
Max. Capacity	32GB	32GB	32GB	32GB	32GB
Serial Port	1 x RS-232 (RJ-45 type)	2 x RS-232 2 x RS-232/422/485	4 x RS-232 2 x RS-232/422/485	4 x RS-232 2 x RS-232/422/485	4 x RS-232 2 x RS-232/422/485
USB Port	6 x USB 3.0/2.0 2 x USB 2.0	6 x USB 3.0/2.0 2 x USB 2.0	2 x USB 3.0/2.0 4 x USB 2.0	4 x USB 3.0/2.0 4 x USB 2.0	4 x USB 3.1 (Gen. 2) 6 x USB 3.0/2.0 2 x USB 2.0
Digital I/O	8-bit Programmable	8-bit Programmable	8-bit Programmable	8-bit Programmable	8-bit Programmable
Expansion & Serial Bus	1 x PCIe x16, 1 x Mini-card (half), 1 x M.2 E-key, 1 x SIM	1 x PCIe x16, 1 x Mini-card (half)	1 x PCIe x4, 1 x Mini-card (half), 1 x SIM	1 x PCIe x16, 1 x Mini-card (full), 1 x SIM	1 x PCIe x16, 1 x Mini-card(half), 1 x SIM
Storage	4 x SATA 600MB/s 1 x mSATA (full)	4 x SATA 600MB/s 1 x mSATA (full)	4 x SATA 600MB/s 1 x mSATA (full)	2 x SATA 600MB/s, 1 x M.2 M-key	5 x SATA 600MB/s 1 x mSATA (full)
Ethernet	4 x GbE	2 x GbE	2 x GbE	2 x GbE	2 x GbE
Audio	N/A	Mic-in, Line-in, Line-out	Mic-in, Line-in, Line-out	Mic-in, Line-in, Line-out	Mic-in, Line-in, Line-out
LVDS	Dual Channels 24-bit	Dual Channels 24-bit	N/A	N/A	Dual Channels 24-bit
Video Output	1 x HDMI	1 x DVI-D 1 x HDMI, 1 x DP	3 x HDMI	1 x eDP 1 x HDMI, 1 x DP	1 x VGA 1 x HDMI, 1 x DP
Power Input	24-pin + 4-pin ATX power connector	24-pin + 4-pin ATX power connector	9V~ 24V DC-in jack or 2-pin internal ATX connector	24-pin + 4-pin ATX power connector	24-pin + 4-pin ATX power connector
Operating Temperature	0 ~ 60˚C (32 ~ 140˚F)	0 ~ 60˚C (32 ~ 140˚F)	0 ~ 60˚C (32 ~ 140˚F)	0 ~ 60˚C (32 ~ 140˚F)	0 ~ 60˚C (32 ~ 140˚F)

Semi-Industrial Motherboard





Model	ITX-i240B	MB-i89Q8	MB-i89Q9	MB-i91Q0	MB-i91Q1
Form Factor	Mini-ITX	ATX	micro-ATX	ATX	micro-ATX
Dimension	170 x 170 mm	305 x 244 mm	244 x 244 mm	305 x 244 mm	244 x 244 mm
Processor	Intel® Pentium® N4200/ Celeron® N3350 Atom® x7-E3950 / x5-E3930	7th/6th Gen. Intel® Core™ i7/ i5/i3 Pentium® / Celeron®	7th/6th Gen. Intel® Core™ i7/ i5/i3 Pentium® / Celeron®	8th Gen. Intel® Core™ i7/i5/i3 Pentium®	8th Gen. Intel® Core™ i7/i5/i3 Pentium®
Socket	BGA	LGA1151	LGA1151	LGA1151	LGA1151
Chipset	N/A	Intel® PCH H110	Intel® PCH H110	Intel® PCH Q370	Intel® PCH H310
Super I/O	NUVOTON® NCT6116D	Fintek® F71808E	Fintek® F81866A	Fintek® F81966	Fintek® F81966
RAM Socket	2 x DDR3L 1866MHz SO-DIMM	2 x DDR4 2133 / 1866MHz Long-DIMM	2 x DDR4 2133MHz Long-DIMM	4 x DDR4 2666MHz Long-DIMM	2 x DDR4 2666MHz Long-DIMM
Max. Capacity	8GB	32GB	32GB	64GB	32GB
Serial Port	5 x RS-232 1 x RS-232/422/485	4 x RS-232 2 x RS-232/422/485	9 x RS-232 1 x RS-232/422/485	8 x RS-232 2 x RS-232/422/485	8 x RS-232 2 x RS-232/422/485
USB Port	4 x USB 3.0/2.0 3 x USB 2.0	8 x USB 3.0/2.0 5 x USB 2.0	4 x USB 3.0/2.0 ports 5 x USB 2.0 ports	4 x USB 3.1 (Gen. 2) 4 x USB 3.0/2.0 4 x USB 2.0	4 x USB 3.0/2.0 ports 4 x USB 2.0 ports
Digital I/O	8-bit Programmable	8-bit Programmable	8-bit Programmable	8-bit Programmable	8-bit Programmable
Expansion & Serial Bus	1 x PCIe x1, 1 x Mini-card (full) 1 x SIM	1 x PCIe x16, 1 x PCIe x 4, 5 x PCI, 1 x Mini-card (full) 1 x SIM	1 x PCIe x16, 1 x PCIe x1, 2 x PCI, 1 x Mini-card (full), 1 x SIM	2 x PCIe x16, 1 x PCIe x4, 1 x PCIe x1, 2 x PCI, 1 x M.2 E-key	1 x PCIe x16, 1 x PCIe x1, 2 x PCI, 1 x Mini-card (full) 1 x SIM
Storage	1 x SATA 600MB/s 1 x M.2 M-key	3 x SATA 600MB/s 1 x M.2 M-key	3 x SATA 600MB/s 1 x M.2 M-key	5 x SATA 600MB/s 1 x M.2 M-key	3 x SATA 600MB/s 1 x M.2 M-key
Ethernet	2 x GbE	2 x GbE	2 x GbE	2 x GbE	2 x GbE
Audio	Mic-in, Line-in, Line-out	Mic-in, Line-in, Line-out	Mic-in, Line-in, Line-out	Mic-in, Line-in, Line-out	Mic-in, Line-in, Line-out
LVDS	Dual Channels 24-bit	N/A	N/A	N/A	N/A
Video Output	1 x HDMI 1 x DP	1 x VGA 1 x HDMI	1 x VGA, 1 x DVI-D, 1 x HDMI	1 x VGA, 1 x DVI-D, 1 x HDMI, 1 x DP	1 x VGA, 1 x DVI-D, 1 x HDMI, 1 x DP
Power Input	24-pin ATX power connector	24-pin + 8-pin ATX power connector	24-pin + 8-pin ATX power connector	24-pin + 8-pin ATX power connector	24-pin + 8-pin ATX power connector
Operating Temperature	0 ~ 60˚C (32 ~ 140˚F)	0 ~ 60˚C (32 ~ 140˚F)	0 ~ 60˚C (32 ~ 140˚F)	0 ~ 60˚C (32 ~ 140˚F)	0 ~ 60˚C (32 ~ 140˚F)

Multi-Display Terminals

NEW NEW NEW





Model	IEC-3900/02/04	IEC-3300	IEC-3350	IEC-3390	IEC-3366
Dimension (W x H x D)	130 x 124 x 35 mm	163 x 109 x 39 mm	163 x 109 x 50 mm	163 x 109 x 35 mm	198.5 x 124 x 38.7 mm
CPU	IEC-3900 / 7th Gen. Intel® Core™ i7/ i5 IEC-3902 / 8th Gen. Intel® i7/ i5, Celeron® IEC-3904 / 11th Gen. Intel® i7/ i5/ i3, Celeron®	Intel® Celeron® N2807 2.16GHz / J1900 2.42GHz	Intel® Celeron® N33502.4GHz	ARMv8, Dual Cortex-A72 + Quad Cortex-A53	Soldered onboard Intel® 11th Generation Core i7/ i5/i3 or Celeron® processor
Memory	2 x DDR4 SO-DIMM Sockets	1 x DDR3L SO-DIMM Socket	1 x DDR3L SO-DIMM Socket	LPDDR4 4GB soldered onboard	2 x DDR4 SO-DIMM Socket
Video	2 x HDMI	1 x VGA, 1 x HDMI	2 x DisplayPort	2 x HDMI	2 x HDMI
Audio	N/A	1 x Line-out	1 x Line-out & Mic	1 x Line-out	1 x Line-out & Mic
Ethernet	1 x GbE	2 x GbE	2 x GbE	2 x GbE	2 x GbE
Mass Storage	1 x M.2 M-Key	1 x mSATA eMMC (OEM request)	1 x M.2 M-key	64G eMMC Flash soldered onboard	1 x M.2 M-key
USB 2.0	N/A	3	N/A	4	N/A
USB 3.0/2.0	4	1	4	1	2 (option 1) 6 (option 2)
RS-232	1(RJ-45)	1 (DB-9)	3 (1 x RJ-45, 2 x DB-9)	2	1 (DB-9)
Expansion & Serial Bus	N/A	1 x mPCIe (for Wi-Fi option)	1 x mPCIe (for Wi-Fi option)	N/A	1 x M.2 2230 E key 1 x mPCIe
Power Input	DC 24V	DC 12V	DC 12V	DC 24V	DC 12V
Operating Temperature	-40 ~ 70° C (-40 ~ 158ºF)	-20 ~ 55° C (-4 ~ 131ºF)	0 ~ 50° C (32 ~ 122ºF)	0 ~ 50° C (32 ~ 122ºF)	0 ~ 50° C (32 ~ 122ºF)

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