ADLINK
LEADING EDGE AI COMPUTING



COM-HPC
COM Express
SMARC
OSM
Qseven
ETX

Computer on Modules

Product Brochure

COM-HPC™ COM Express SMARC module OPEN STANDARD MODULE™ Qseven ETX®

Sep. 2026

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The ADLINK COM Value Proposition:
Beyond the Module

Partnering with ADLINK for your Computer-on-Module strategy delivers compound value that extends across the entire product lifecycle. Our value proposition encompasses technical excellence, strategic flexibility, and long-term supply line security.

Technical & Time-to-Market Excellence



- **Radical Development Acceleration**
  By starting with a fully validated, certified compute core, engineering teams compress their own development cycles by at least **5 months**. This acceleration isn't merely about saving on engineering hours—it's more importantly about capturing market opportunities, responding to competitive moves, and achieving revenue realization during optimal market windows.



- **Substantial Risk Mitigation**
  We eliminate the most complex and failure-prone aspects of embedded design: high-speed digital signaling (DDR memory interfaces, PCI Express routing), power integrity management, and thermal optimization for high-performance processors. Each ADLINK COM arrives as a pre-validated super-component, having undergone rigorous signal integrity testing, thermal validation, and reliability certification.



- **Strategic Engineering Focus**
  Liberate your senior engineers from the intricacies of processor integration and validation. Redirect this expertise toward your core competencies: application-specific carrier board design, proprietary algorithm development, unique sensor integration, and domain-specific software innovation. This is where our customers achieve genuine product differentiation and market leadership.

Long-Term Viability & Ecosystem Strength

- **Future-Proof Architectural Foundation:**
  ADLINK's commitment to **open**, **vendor-neutral standards** (COM-HPC, COM Express, SMARC, OSM) provides a guaranteed migration path. As processing requirements evolve—whether for increased AI capability, enhanced graphics performance, or expanded connectivity—upgrades can often be achieved through a module swap, protecting your carrier board investment and extending product revenue streams.
- **Guaranteed Longevity & Support:**
  We align our technology roadmaps with the longevity commitments of leading silicon partners. Our **Long-Term Support (LTS) programs** ensure hardware availability, driver updates, security patches, and BSP maintenance, meeting the stringent lifecycle demands of industrial, medical, transportation, and defense applications.

- **Strategic partnerships:**
  ADLINK ranks as the preferred ODM or OEM with companies such as: Intel, AMD, Nvidia, NXP, Mediatek, Qualcomm and Ti.

- **Manufacturing Excellence & Quality Assurance:**
  ADLINK's vertical manufacturing capabilities represent a strategic asset. Our facilities, certified to ISO-13485 (medical) and IATF 16949 (automotive) standards, implement rigorous **Design for Manufacturability (DFM)** and **Design for Test (DFT)** principles. This ensures not only superior quality and reliability but also optimized yield and cost efficiency at production scale.

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Why ADLINK?

Your Partner in Addressing Critical Needs Tailored Solutions for a Competitive World

With ADLINK, you're not just choosing a supplier—you're partnering with a team that leverages its rich ODM expertise to put your success first. In a world where technology evolves at an unprecedented pace, ADLINK's Computer-on-Modules (COM) Business Unit stands as your steadfast ally, committed to solving the challenges that matter most to you.

With extensive experience supporting ODM customers, we bring a deep understanding of your unique requirements, enabling us to deliver customized, high-value solutions that set you apart. Our 2025 product catalog reflects our unwavering dedication to addressing your needs with precision and foresight, ensuring every offering aligns with your goals and delivers measurable impact.

We understand that success hinges on more than just performance—it's about trust and resilience.

That's why ADLINK focuses on:



Business Risks Mitigation

Our comprehensive COM portfolio and scalable ODM services reduce uncertainty, safeguarding your investments.

Control of IP

We empower you to protect your innovations with designs that prioritize your ownership and security.



Agility to the Market

Our powerful silicon vendor partnerships and rapid-response strategies keep you competitive in dynamic industries.

Flexibility to Migrate Technology

Seamlessly transition to new architectures with solutions designed for adaptability.



Resources Optimization

Maximize efficiency with tailored offerings that streamline development and deployment.

Product Security

Robust safeguards ensure your systems remain protected in an increasingly connected world.



Longevity

Our commitment to long-term support guarantees your solutions endure, delivering sustained value over time.

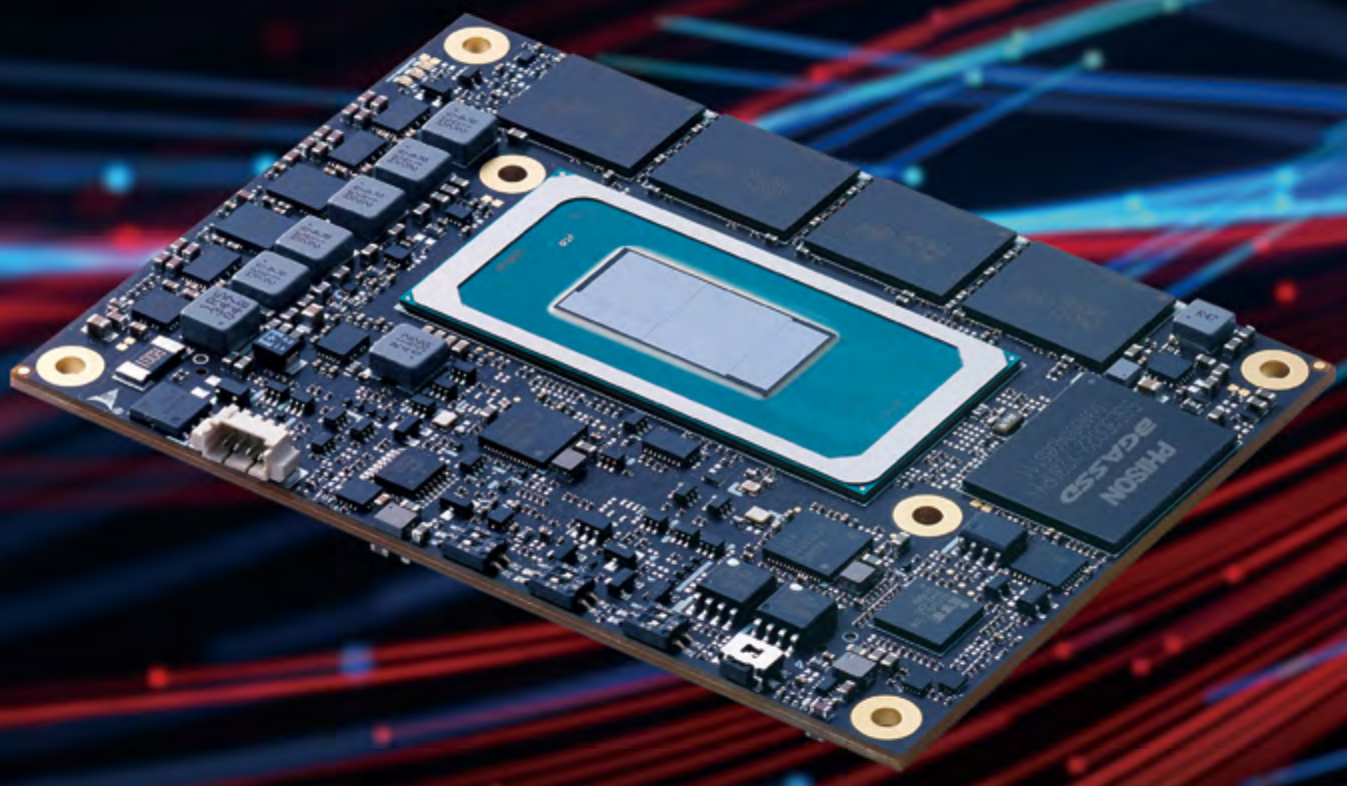
Tailored Solutions

Our versatile capabilities enable tailored solutions and our dedicated business units across industries provide specialized expertise.

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Most Robust, Best Support

Always pioneering to empower you with the latest, cutting-edge technologies



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Global Carrier Design Service



Save time and resources by opting for ADLINK's global carrier board design service!

Outsourcing a carrier board design to us is fast and cost-effective compared to a full custom solution. We will help you get your product to market in a minimum amount of time and for a fraction of the cost of a full design. Our local R&D teams in Germany and the US are ready to serve you in your own time zone and in your own language.

How we can support you when designing your own carrier board?

Of course, if you decide to design your own carrier boards, we will support you where possible, this starting with the initial design phase and extending to prototype sample testing.



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Carrier Design Phase

Get Our Carrier Reference Schematics!

We provide schematics, layout and mechanical files to our customers for all COM form factors, giving you a head start and providing a reference platform to test your carrier against later.

Schematic Review Service

We are ready to help you review your schematics before going to the layout phase.

Pre or Post Layout Simulation

If you're unsure about any high speed signaling and routing lengths in your design, we can support pre layout simulation that will inform you about optimal placement or post layout simulation that will provide you with a high level of confidence that your design will function as intended.

Carrier Prototype Verification

BIOS Modification Service Signal Integrity Verification

At our headquarters in Taipei, our SI lab is available to help customers with module to carrier signal quality verification. Our SI lab boasts state-of-the-art equipment that enables us to conduct cutting-edge carrier board testing.

Based on SI reports, the customer can easily consult module designer on how potential design-to-application barriers could be resolved.

Power Sequence Verification

Even the most advanced LAB testing of your module/ carrier combination can never really cover how end users are going to operate the systems in the field. Especially unforeseen power on and power off operation can lead to hanging systems that in the worst case is not recoverable. ADLINK provides a power test procedure called "Monkey Testing" that covers testing of any possible power sequence in the field. If still any mismatches between carrier and modules are found, we can simply update the module by firmware at OS time since its power sequence is MCU controlled.

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Core Values



Innovation and reliability converge in core values, redefining excellence in edge computing solutions

Security

Driven to safeguard client products and data free of cyberattacks and mitigate vulnerabilities, ADLINK has always been at the forefront of the latest security technologies and best-practice infrastructures, for hardware and software alike.

How? ADLINK does so by actively collaborating with a spate of security partners to accomplish its ever-evolving, all-around security mechanisms. These security attributes include, but are not limited to, the following.

Arm	FOUNDRIES
SystemReady compliance Parsec security certification PSA certification	Linux microPlatform Secure for life Deployment, maintenance, OTA

With decades of endeavor in administering foolproof security and assurance measures, ADLINK is well aware of the necessity of a developer's application or product to be easily monitored and managed, especially remotely, for timely responses and immediate actions whenever needed.

In this regard, ADLINK is backed by partnerships with the likes of SEMA and Allxon and continues to add to its growing list of partnerships in bringing full-scale remote management and error logging functions, including:

- Varied means of control across different system levels, both in-band and out-of-band
- Real-time monitoring of CPU/GPU performance, memory usage, user access, power consumption, temperature, etc.
- Remote control and updating of the system's varying components, interfaces, and firmware
- Collecting and retrieving system / error logs for event analysis and troubleshooting

Software

Explore ADLINK's versatile software solutions tailored for various industries, where innovation and reliability converge in comprehensive software suite.

- **Edge Computing:**
  Deploying AI and ML applications like eIQ, OpenVINO, Neuropilot, and Qualcomm Neuron SDK for real-time, low-latency processing at the network edge
- **Internet of Things (IoT):**
  Seamlessly connecting and managing IoT devices using ADLINK software, featuring NXP components and IPMI 2.0 for efficient data collection and analysis
- **Embedded Computing:**
  Elevating embedded systems with ADLINK's tools and libraries, including SEMA and Hardware Acceleration, for streamlined development
- **Industrial Automation:**
  Automating manufacturing processes with ADLINK's industrial automation software, optimizing operations with SEMA, OS tailoring, and adlink-meta-layer
- **Transportation:**
  Improving safety and efficiency in transportation systems using ADLINK's specialized software — Autoware, SOAFEE, TSN, and TCC.
- **Healthcare:**
  Enhancing healthcare delivery quality and efficiency with ADLINK's healthcare software — Slimbootloader, Hardware Acceleration, TSN, and TCC.

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Supply Chain Management



ADLINK provides the most reliable supply chain management backed by strategic part sourcing and manufacturing redundancy. Right from the design phase, ADLINK undergoes a series of meticulous part selection procedures in ensuring supply chain resilience. Adding on, ADLINK has mirrored manufacturing sites, the Taipei Manufacturing Center (TPMC) based in Taiwan and the Shanghai Operation Center based in China, which add flexibility and responsiveness in further ensuring continued supply.

Certification and Validation

ADLINK places a strong emphasis on industrial-grade reliability for its embedded computing products.

This begins with component selection and is reinforced by in-house certification and validation labs that conduct extensive testing, including ISO- and TUV-certified De-rating, electrical, thermal, HALT, and SI (Signal Integrity) tests, to ensure flawless performance throughout a product's lifetime in the field.



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ARM SystemReady

Certified, ensuring generic OSs to ‘just work’ right off the shelf

With uncompromising efforts in delivering a seamless development experience, ADLINK has been an active participant in the Arm SystemReady compliance certification program since its launch in 2020.

By proactively contributing to and meeting Arm SystemReady standards, ADLINK ensures that generic off-the-shelf operating systems ‘just work’ – enabling generic operating systems, and subsequent layers of software, to work out of the box on Arm-based hardware.

ADLINK eliminates the need for custom-engineered firmware, thus significantly reducing both the cost and time to market for Arm-based hardware, including infrastructure edge and embedded IoT systems.

arm SystemReady





Arm SystemReady IR for embedded devices

Find ADLINK products with the Arm SystemReady IR band stamp, which ensures Arm-based embedded devices supported by mainline Linux/BSD suiting both custom and prebuilt operating system images.

- For embedded Linux ecosystem
- Mainline Linux support for SoC
- Suiting custom (Yocto, OpenWRT, buildroot) and prebuilt (Debian, Fedora, SUSE, Ubuntu) system images

Arm SystemReady SR for servers & workstations

Find ADLINK products with the Arm SystemReady SR band stamp, which ensures Arm-based servers or workstations to offer seamless interoperability with standard operation systems, hypervisors, and software, i.e. Windows, VMware, Linux, and BSD.

- For Windows, VMware, Linux, and BSD ecosystem
- Supporting old OSs to run on new hardware and vice versa
- Suiting generic off-the-shelf OSs

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Extreme Rugged

Extreme durability, unrivaled reliability





Our Extreme Rugged boards are designed for harsh environments from the ground up. To support the extremes of shock, vibration, humidity and temperature, care is given to component selection, circuit design, PCB layout and materials, thermal solutions, enclosure design, and manufacturing process. Robust test methods, including Highly Accelerated Life Testing (HALT), ensure optimal product design phases and meet stringent requirements such as -40°C to 85°C operating temperature range, MIL-STD, shock & vibration, and long-term reliability.

Design stage	Validation stage	Production stage
component selection based on temperature/voltage de-rating and MTBF	HALT, Chamber test, Shock and Vibration resistant (MIL-STD-202G) and EMC Class B	ETT screening process with selected CPU SKUs

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I-Pi Development Kits

The 1-stop solution to prototyping your edge, IoT innovations rapidly and conveniently

Instant Prototyping of Your Innovative Ideas at I-Pi

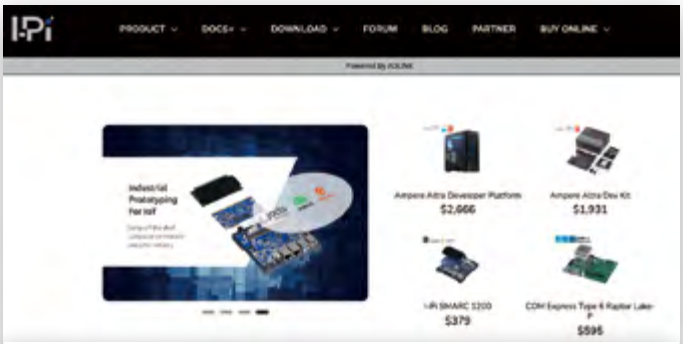
Explicitly for open-source developing, ADLINK has established its I-Pi wiki, a website and 1-stop service for any software developer, novice or professional, to transform their embedded ideas into real-life applications.

From designing to prototyping and evaluating, visit https://www.ipi.wiki/ now to get started with the development kit of your choice delivered right to your doorsteps. Readily-

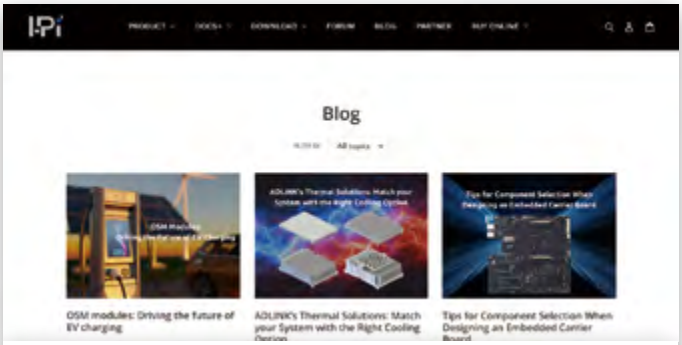


accessible online help and technical support forums are also provided on I-Pi wiki just 1 click away.

Development kits currently available include I-Pi SMARC 1200, I-Pi SMARC RB5,I-Pi SMARC IMX8M Plus, I-Pi SMARC Elkhart Lake, COM Express Type 6 Raptor Lake-P, COM Express Type 6 Alder Lake-P, COM Express Type 7 Ryzen V3000, COM Express Type 10 Elkhart Lake, Ampere Altra Developer Platform, and more.



Browse for industrial development delivered right to your doorstep



Stay posted with I-Pi blogs for the latest technology trends



Readily accessible online help (DOCS+) and forums for on-the-spot tech support

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I-Pi Shop

I-Pi YouTube

Instantaneous evaluating module capabilities for application prospects

Starter Kits

As a worldwide leader in Computer-on-Modules, ADLINK understands the developers' needs for affordable and comprehensive development kits.

ADLINK offers an extensive collection of Starter Kits, including for COM-HPC, COM Express, and SMARC, in aiding engineers and system integrators to reduce their products' time to market and accelerate project schedules.









Reference Carrier Boards

In addition to starter kits, ADLINK also offers a wide variety of Reference Carrier Boards.

Using a reference carrier board, developers can emulate the functionalities of their desired end products against the selected COMs for software development and hardware verifications instantly.



COM-HPC Server Base



COM-HPC Client Base



Express Base6 R3.1



I-Pi SMARC Plus carrier board

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Form Factor Overview

Always one step ahead

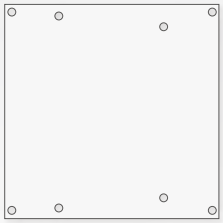
COM-HPC™



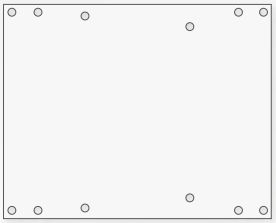
COM-HPC is the latest PICMG standard for high-performance Computer-on-Modules. It aims to drive the newest breed of embedded edge servers with limitless scalability for today and tomorrow.

COM-HPC supports up to 64 general-purpose PCIe Gen4 or Gen5 lanes, eight 25GbE ports, and a maximum of four USB 4 ports. The COM-HPC specification defines six different module sizes. The larger Size D and E (Server Type) serve next-gen headless edge servers and can accommodate up to 8 DIMMs. In contrast, the smaller Size A, B, and C (Client Type) target visually-oriented client platforms utilizing SO-DIMMs or soldered onboard memory and support up to 4 video displays. The smallest size, COM-HPC mini, is crucial for advanced embedded computer logic, serving top-hat rail PCs in building and industrial automation control cabinets, as well as portable test and measurement devices.

Server Type

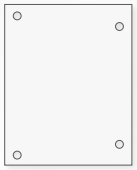


Size D
(160 x 160mm)

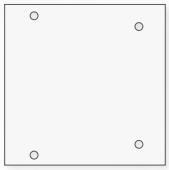


Size E
(200 x 160mm)

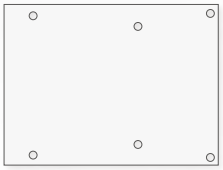
Client Type



Size A
(95 x 120mm)



Size B
(120 x 120mm)



Size C
(160 x 120mm)

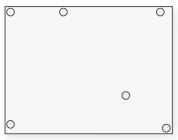


Mini
(95 x 70mm)

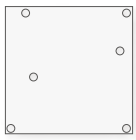
COM Express



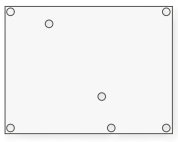
COM Express, defined by PICMG, is the most widely adopted COM standard and is based on serial interfaces including PCI Express, SATA, USB, LVDS/eDP, and DDI. It allows designers and system integrators to utilize the latest technologies with straight off-the-shelf modules of varied sizes for their edge applications. ADLINK has heavily invested in the development and maintenance of the PICMG® COM Express® specification since its creation.



Type 6 Basic
(125 x 95mm)



Type 6 Compact
(95 x 95mm)



Type 7 Basic
(125 x 95mm)



Type 10 Mini
(84 x 55mm)

Revision 3.1

As a chair of the PICMG subcommittee, ADLINK has helped to define the COM Express COM.0 Revision 3.1. This revision upgrades the Type 6 and 7 definitions with several new interface support, such as USB 4, PCIe Gen4 on the Type 6 and 10G CEI-mode Ethernet on the Type 7.

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SMARC module





Short size
(82 x 50mm)

OPEN STANDARD MODULE™





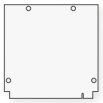
Large size
(45 x 45mm)

ADLINK leads in SMARC specification development, offering a compact Computer-on-Module ideal for ultra-low power ARM- and x86-based embedded applications. Featuring a versatile 314-pin edge connector, SMARC grants access to standard low-level interfaces like I²C, I²S, UART, CAN, SPI, and GPIO, alongside advanced I/O such as LVDS, HDMI, DP, eDP, GbE, USB 3.x, PCIe, and SATA. With Revision 2.1, SMARC pioneers as the first open specification for AI on Module (AIOM), supporting up to 4 MIPI CSI camera inputs and 4 GbE Ethernet ports via SerDes multiplexing, facilitating seamless integration with NPU-integrated SoCs for diverse video-based and AI-vision applications.

The OSM form factor represents the first Computer-on-Module designed for solderable BGA mini modules, supporting both ARM and x86 designs. These modules, notably smaller than previous available modules, measure up to 45mm x 45mm, catering to the evolving needs of IoT applications by combining modular embedded computing with cost-effectiveness and compactness. With up to 662 BGA pins, the BGA design enables the implementation of numerous interfaces on a small footprint. Ideal for rugged environments, the power envelope typically stays under 15W.

Qseven





(70x70mm)

ETX®





(114 x 95mm)

Qseven® is a versatile, small Computer-on-Module standard. With its 230-pin edge connector, it mainly focuses on traditional low-power x86 Intel Atom® designs. Since Qseven is not able to support all modern interfaces and has only partial coverage for ARM features, there has been an eminent, accelerated migration of low-power COM projects from Qseven to SMARC.

ETX®, one of the oldest Computer-on-Module specifications, supports legacy interfaces such as ISA bus, Parallel ATA (IDE), and PS/2 keyboard/mouse. ADLINK is highly committed to this product line and is one of the only vendors that offers customers a migration path for ETX even beyond 2025.

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COM-HPC

The next-generation standard for high-performance computing modules





Server Type Pin Definition

Aimed for next-gen headless edge servers, COM-HPC Server Type features up to 64 PCIe Gen4 or Gen5 lanes, eight 25GbE ports, and can accommodate up to 8 DIMM slots. Additionally, it provides the IPMB function for convenient out-of-band monitoring and management. COM-HPC Server Type is suitable for both ARM and x86 architectures.

J1	J2
Power	48x PCIe
16x PCIe PCIe_BMC / IPMB	
4x ETH_KR (max. 25G) 1x ETH_LED_I²C	
8x USB 2.0	
2x USB 3.X	
2x USB 4/3.X	
2x SATA	
1x NBASE-T (max. 10G)	4x ETH_KR (max. 25G)
eSPI	
12x GPIO / BOOT_SPI / GPP_SPI / 2x I²C / SMB / 2x URAT	RSVD

Client Type Pin Definition

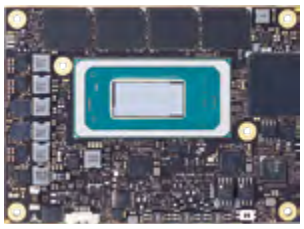
Targeting visual-oriented applications, such as medical imaging, gaming, and testing measurement, COM-HPC Client Type provides system integrators with up to four USB4 and four video displays, plus dual Ethernet, all compacted in a modest size utilizing SO-DIMMs or soldered onboard memory.

J1	J2
Power	DDI 3
8x USB 2.0	2x USB 4/3.X
2x USB 4/3.X	32x PCIe
Audio HDA/I²S/Soundwire/DMIC	
DDI 1	
DDI 2	
eDP/DSI	
PCIe_BMC / IPMB	
eSPI	
2x SATA	NBASE-T_1 (max. 10G)
16x PCIe	2x MIPI-CSI
	2x ETH_KR (max.25G)
	PCIe Target
NBASE-T_0 (max. 10G)	RSVD

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COM-HPC

COM-HPC is the latest PICMG standard introduced by PICMG to complement COM Express in response to the ever-evolving digital transformation. Providing standards for three module types – Server Type, Client Type and Mini Type– COM-HPC offers substantially higher data bandwidths for delivering superior I/O performance while featuring high-performance computing and high-speed transmission with limitless scalability.



- One-click Buy & Ship
- Easy “How-to’s”
- Online documentation
- Forum support



Ampere Altra
Developer Platform



COM-HPC
Development Kits



Ampere Altra
Developer Rugged

Mini Pin Definition

Using a single connector, reducing signal pins by half but still maintaining PCIe Gen5, USB4, DDI and Ethernet. COM-HPC Mini is vital for high-end embedded computing in applications like industrial control PCs. When combined with soldered memory and storage, it is also well-suited for mission-critical applications.

Mini
Power
8x USB 2.0
Audio HDA/I²S/Soundwire/DMIC
2x DDI / 2x USB4/3.X
2x USB4/3.X
eDP/DSI
eSPI
12x PCIe 2x PCIe/SATA, 2x PCIe/SGMII
1x NBASE-T (max. 10G)
12x GPIO / SDIO / BOOT_SPI / GPP_SPI / 2x 12C / SMB / 2x USART

Applications



Robotic Surgery



Rugged Network Communication



Test and Measurement



Task Consolidation

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COM-HPC Server Type

Model Name	COM-HPC-ALT	COM-HPC-sIDH
COM-HPC®		
CPU	Ampere Altra / Altra Max M128-26 M96-28 Q64-22 Q32-17	Intel® Xeon® D-2700 series (formerly "Ice Lake-D")
Memory	768 GB DDR4 at 3200/2666 MT/s	512 GB DDR4 at 3200/2666 MT/s
BIOS Type	TianoCore EDK II	AMI UEFI
Ethernet KR	Up to 4x 10GBASE-KR	Up to 8x 10GBASE-KR (25/40/100G, opt.)
NBASE-T Ethernet	GbE (Intel i210)	up to 2.5GbE (Intel i225, TSN opt.)
Remote Management	IPMB (via MMC, opt.) Dedicated PCIe_BMC lane	IPMB (via MMC, opt.) Dedicated PCIe_BMC lane
PCI Express	64 PCI Express Lanes : 3x PCI Express x16 Gen4 (x16, x8, x4) 2x PCI Express x8 Gen4 (x8, x4, x2)	48 PCI Express Lanes: 2x PCI Express x16 Gen4 (x16, x8, x4) 2x PCI Express x8 Gen3 (x8, x4, x2)
USB	4x USB 3.X/2.0	4x USB 3.X/2.0
Serial ATA	-	2x at 6Gb/s
TPM	TPM 2.0	TPM 2.0
Management Bus	2x I²C, SMBus	2x I²C, SMBus
Embedded Features	EAPI/SEMA, Debug/JTAG	EAPI/SEMA, Debug/JTAG
Power Supply	12 V / 5Vsb ±5% (ATX) 12V ±5% (AT)	12V ±5% (AT)
Operating Temperature	Standard: 0°C to 60°C	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (selected SKUs)
Form Factor & Compatibillity	PICMG COM-HPC: Rev 1.0 Server Type size E: 200 x 160 mm	PICMG COM-HPC: Rev 1.0 Server Type size D: 160 x 160 mm
OS Support	CentOS debian Fedora Ubuntu yocto	yocto

Notes:

- Extreme Rugged products are exclusively offered for specific SKUs.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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COM-HPC Client Type

Model Name	COM-HPC-cBLS	COM-HPC-cRLS
COM-HPC®	New 	
CPU	14th Gen Intel® Core® i7 / i5 / i3 series (formerly Bartlett Lake-S)	13th Gen Intel® Core® i9 / i7 / i5 / i3 series (formerly "Raptor Lake-S")
Chipset		R680E(ECC), Q670E/H610E(non-ECC)
Memory	Up to 128GB (4x 32GB) DDR5 SODIMM	128 GB DDR5 at 4000 MT/s
BIOS Type	AMI UEFI with CMOS backup in 32MB SPI BIOS	AMI UEFI
Graphics Outputs	DDI 0/1/2 supporting DisplayPort/HDMI/DVI DP1.4a and HDMI2.0b (eDP 1.4b)	4 independent displays 3x DDI (DP/HDMI/DVI) eDP 1.4
Audio	1xHD Audio	1x HD Audio (1x I²S, opt.)
Camera		-
NBASE-T Ethernet	up to 2x 2.5GbE (Intel I226)	up to 2x 2.5GbE (Intel 226, TSN opt.)
USB	4x USB 3.2 4x USB 2.0	4x USB3.X/2.0, 4x USB2.0
Serial ATA		-
PCI Express	38 PCI Express Lanes : 1 PCIe Gen5 x16 (16-31) 1 PCIe Gen4 x4 (8-11) 6 PCIe Gen3 x1 (0-5) R680E/Q670E (all x4, x2, x1): 1 PCIe Gen4 x4 at 12-15 1 PCIe Gen4 x4 at 32-35 1 PCIe Gen4 x4 at 36-39	38 PCI Express Lanes : PCI Express Graphic x16 Gen5 1x PCI Express Graphic x4 Gen4 6x PCI Express x1 Gen3 3x PCI Express x4 Gen4 (R680E/Q670E)
TPM	TPM 2.0	TPM 2.0
Management Bus	SMBus	2x I²C, SMBus
Embedded Features	EAPI/SEMA Debug/JTAG	EAPI/SEMA Debug/JTAG
Power Supply	AT mode 12V±5%	12V ±5% (AT)
Operating Temperature	Standard: 0°C to 60°C	Standard: 0°C to 60°C
Form Factor & Compatibillity	PICMG COM-HPC: Rev 1.1 Client Type size C: 160 x 120 mm	PICMG COM-HPC: Rev 1.0 Client Type size C: 160 x 120 mm
OS Support		

Notes:

- VxWorks is supported by project basis.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

COM-HPC Mini Type

Model Name	COM-HPC-mPTL	COM-HPC-mMTL
COM-HPC®	New 	
CPU	Intel Core Ultra Series 3 X7 / 7 / 5 (formerly Panther Lake)	Intel Core Ultra (formerly "Meteor Lake-H/U" Ultra 7/5
Chipset		-
Memory	Up to 64GB LPDDR5X	64GB LPDDR5 at 5600 MT/s
BIOS Type	AMI UEFI with CMOS backup in 32MB SPI BIOS	AMI UEFI
Graphics Outputs	2XDDI (DP/HDMI) eDP1.4a	
Audio	1xHD Audio	
Camera	2x MIPI-CSI (opt.)	
NBASE-T Ethernet	up to 2x 2.5GbE (Intel I226, TSN opt.)	up to 2x 2.5GbE
USB	up to 4x USB3.2 Gen2 x1 4 x USB2.0	3x USB 3.X/2.0, 5x USB 2.0 up to 3x USB4 (no DDI, opt.)
Serial ATA		up to 2x 6Gb/s
PCI Express	Up to 16 PCIe lanes : 1 PCIe Gen5 x8 (8-15) 1 PCIe Gen4 x4 (0-3) 1 PCIe Gen4 x2 (4-5) 1 PCIe Gen4 x2 (6-7)	2x PCIe Graphic x4 Gen4 8x PCIe x1 Gen4 (no SATA, GbE opt.)
TPM	TPM 2.0	TPM 2.0
Management Bus	SMBus	2x I²C, SMBus
Embedded Features	EAPI/SEMA Debug/JTAG	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)
Power Supply	AT mode 12V±5%	8.5-20V (AT)
Operating Temperature	Standard: 0°C to 60°C Industrial: -40°C to 85°C	Standard: 0°C to 60°C
Form Factor & Compatibillity	PICMG COM-HPC: Rev 1.3 mini Type 95mm x 70 mm	PICMG COM-HPC R1.2 Mini Type size: 95 x 70 mm
OS Support	yocto	

Notes:

- VxWorks is supported by project basis.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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Memo

COM Express Type 6 Basic Size

Transforming your everyday edge computing



x86

EXTREME RUGGED

Pin Definition
Type 6 Rev 3.1 Basic Size Modules

A-B	C-D
8x USB 2.0	4x USB 3.X
LVDS / eDP	2x DDI/**USB4**
4x SATA	
8x USB 2.0	
Gigabit Ethernet	1x DDI
LPC / eSPI	
GPIO / SDIO / SERIAL / CAN / **GP SPI** / I²C / HDA / SNDW	
PCIe Gen4 x24	
Power	

Pin Definition
Type 6 Rev 3.0 Basic Size Modules

A-B	C-D
8x USB 2.0	4x USB 3.X
LVDS / eDP	3x DDI
4x SATA	
8x USB 2.0	
Gigabit Ethernet	
LPC / eSPI	
GPIO / SDIO / SERIAL / CAN / SPI / I²C / HDA	
PCIe x24	
Power	

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COM Express Type 6 Basic Size

COM Express Type 6 Basic size is the most popular and widely used form factor on the market. With two COM Express connectors and pinouts closely similar to the common x86 based silicon, the Type 6 Basic size yields up to 75 watts, making it well-fitted for various embedded computing applications, including medical, gaming, test & measurement, industrial automation, and more. Topping off, its latest revision – R3.1 – has also added support for several advanced interfaces, such as PCIe Gen4 and USB4.

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- Easy "How-to's"
- Online documentation
- Forum support

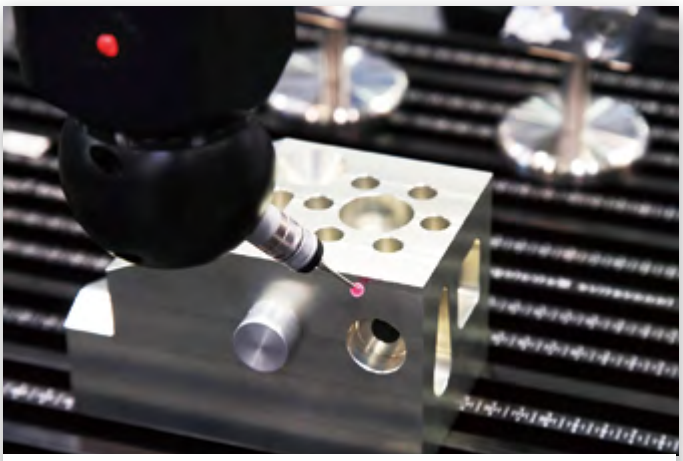


COM Express Type 6
Development Kits

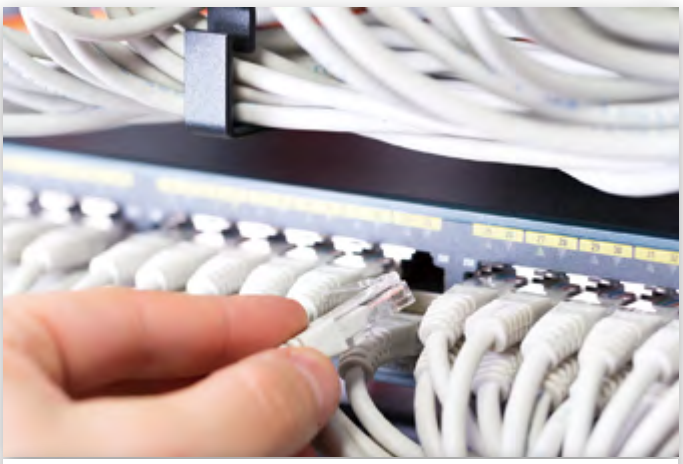
Applications



Medical



Test and Measurement



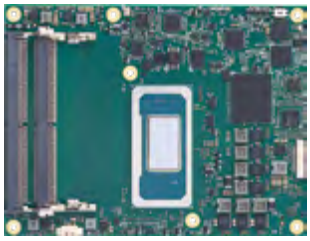
Data Communication



Gaming

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COM Express Type 6 Basic Size

Model Name	Express-PTL	Express-RLP	Express-ADP
COM Express	New 	COM Express R3.1 	COM Express R3.1 
CPU	Intel Core Ultra Series 3 Ultra X7 / X5 (formerly Panther Lake)	13th Gen Intel® Core™ i7 / i5 / i3 series (formerly "Raptor Lake-P")	12th Gen Intel® Core™ i7 / i5 / i3 series (formerly "Alder Lake-P")
Chipset		-	-
Memory	Up to 128GB (2x 32GB) DDR5 SODIMM	64 GB DDR5 at 4800MT/s	64 GB DDR5 at 4800MT/s
BIOS Type	AMI UEFI with CMOS backup in 32MB SPI BIOS	AMI UEFI	AMI UEFI
Graphics Outputs	3x DDI (DP/HDMI) 1x LVDS 1x HD Audio 2x MIPI-CSI (opt.)	4 independent displays LVDS (or eDP 1.4, opt.) 2x DDI (or USB4, opt.) 1x DDI (or VGA, opt.)	4 independent displays LVDS (or eDP 1.4, opt.) 2x DDI (or USB4, opt.) 1x DDI (or VGA, opt.)
LAN	up to 1x 2.5GbE (Intel I226, TSN opt.)	up to 2.5GbE (Intel i225, TSN opt.)	up to 2.5GbE (Intel i225, TSN opt.)
USB	4x USB 3.2 / 8x USB 2.0	4x USB 3.X / 2.0, 4x USB 2.0	4x USB 3.X / 2.0, 4x USB 2.0
Serial ATA	4x SATA	2x at 6Gb/s	2x at 6Gb/s
PCI Express	20 PCI Express Lanes : 1 PCIe Gen4 x8 (16-23/H484 SKU) 4 PCIe Gen4 x1 (0-3) 2 PCIe Gen4 x1 (4-5) 1 PCIe Gen4 x1 (6) 1 PCIe Gen4 x1 (7 option with LAN i226)	PCIe Graphic x8 Gen4 (45W SKU) 2x PCIe Graphic x4 Gen4 8x PCIe x1 Gen3 (via switch)	PCIe Graphic x8 Gen4 (45W SKU) 2x PCIe Graphic x4 Gen4 8x PCIe x1 Gen3 (via switch)
Audio		HDA	HDA
TPM	TPM 2.0	TPM 2.0	TPM 2.0
Management Bus	SMBus	I²C, SMBus	I²C, SMBus
Embedded Features	EAPI/SEMA Debug/JTAG	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)
Power Supply	Standard Input ATX: 12V±5% / 5Vsb ±5%; or AT: 12V±5% Wide Input ATX: 8.5-20V / 5Vsb ±5%; or AT: 8.5-20V	8.5-20 V / 5Vsb ±5% (ATX) 8.5-20V (AT)	8.5-20 V / 5Vsb ±5% (ATX) 8.5-20V (AT)
Operating Temperature	Standard: 0°C to 60°C Industrial: -40°C to 85°C	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)
Form Factor & Compatibillity	PICMG COM Express Rev 3.1 Basic Type 125mm x 95 mm	PICMG COM.0 R3.1, Type 6 Basic size: 95 x 125 mm	PICMG COM.0 R3.1, Type 6 Basic size: 95 x 125 mm
OS Support		yocto	yocto

Notes:

- VxWorks is supported by project basis.
- Extreme Rugged products are exclusively offered for specific SKUs.
- Optional -40°C to 85°C support: Standard product with 100% ETT screening available for selected CPU SKUs and std. 12V power supply only.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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COM Express Type 6 Basic Size

Model Name	Express-TL	Express-CFR	Express-CF/CFE	Express-KL/KLE
COM Express				
CPU	11th Gen Intel® Core™ Intel® Xeon® W/Celeron® 6000 (formerly "Tiger Lake-H")	9th Gen Intel® Xeon®, Core™, Pentium® and Celeron® Processors (formerly "Coffee Lake-H Refresh")	8th Gen Intel Core™ 8000 series and Intel Xeon® Processors (formerly "Coffee Lake-H")	7th Gen Intel® Core™ 7000 series and Intel® Xeon® Processors (formerly "Kaby Lake-H")
Chipset	RM590E (ECC), QM580E/HM570E (non-ECC)	CM246 (ECC) QM370/HM370 (non-ECC)	CM246 (ECC) QM370/HM370 (non-ECC)	CM238 (ECC) QM175/HM175 (non-ECC)
Memory	128 GB DDR4 at 3200/2666 MT/s	96 GB DDR4 at 2400/2133 MT/s	96 GB DDR4 at 2400/2133 MT/s (ECC for Express-CFE)	32 GB DDR4 at 2133/1867 MT/s (ECC for Express-KLE)
BIOS Type	AMI UEFI	AMI UEFI	AMI UEFI	AMI UEFI
Graphics Outputs	4 independent displays LVDS (or eDP 1.4, opt.) 2x DDI 1x DDI (or VGA, opt.)	4 independent displays LVDS (or eDP 1.4, opt.) 2x DDI 1x DDI (or VGA, opt.)	4 independent displays LVDS (or eDP 1.4, opt.) 2x DDI 1x DDI (or VGA, opt.)	4 independent displays LVDS (or eDP 1.4, opt.) 2x DDI 1x DDI (or VGA, opt.)
LAN	up to 2.5GbE (Intel i225, TSN opt.)	GbE (Intel i219)	GbE (Intel i219)	GbE (Intel i219)
USB	4x USB 3.X/2.0, 4x USB 2.0	4x USB 3.X/2.0, 4x USB 2.0	4x USB 3.X/2.0, 4x USB 2.0	4x USB 3.X/2.0, 4x USB 2.0
Serial ATA	4x at 6Gb/s	4x at 6Gb/s	4x at 6Gb/s	4x at 6Gb/s
PCI Express	PCIe Graphic x16 Gen4 (or 2x8 or 1x8+2x4) 8x PCI Express x1 Gen3	PCIe Graphic x16 Gen3 (or 2x8 or 1x8+2x4) 8x PCI Express x1 Gen3	PCIe Graphic x16 Gen3 (or 2x8 or 1x8+2x4) 8x PCI Express x1 Gen3	PCIe Graphic x16 Gen3 (or 2x8 or 1x8+2x4) 8x PCI Express x1 Gen3
Audio	HDA	HDA	HDA	HDA
TPM	TPM 2.0	TPM 2.0 (opt.)	TPM 2.0 (opt.)	TPM 2.0 (opt.)
Management Bus	I²C, SMBus	I²C, SMBus	I²C, SMBus	I²C, SMBus
Embedded Features	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)
Power Supply	8.5-20 V / 5Vsb ±5% (ATX) 8.5-20V (AT)	8.5-20 V / 5Vsb ±5% (ATX) 8.5-20V (AT)	8.5-20 V / 5Vsb ±5% (ATX) 8.5-20V (AT)	8.5-20 V / 5Vsb ±5% (ATX) 8.5-20V (AT)
Operating Temperature	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)	Standard: 0°C to 60°C	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)
Form Factor & Compatibillity	PICMG COM.0 R3.0, Type 6 Basic size: 95 x 125 mm	PICMG COM.0 R3.0, Type 6 Basic size: 95 x 125 mm	PICMG COM.0 R3.0, Type 6 Basic size: 95 x 125 mm	PICMG COM.0 R2.1, Type 6 Basic size: 95 x 125 mm
OS Support	yocto ■	yocto ■	yocto ■	yocto ■

Notes:

- VxWorks is supported by project basis.
- TPM is supported by BOM option.
- Extreme Rugged products are exclusively offered for specific SKUs.
- Optional -40°C to 85°C support: Standard product with 100% ETT screening available for selected CPU SKUs and std. 12V power supply only.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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COM Express Type 6 Compact Size

COM Express

Significantly lowered power envelopes



x86

EXTREME RUGGED

Technical Article

Ideal Small Form Factor Choices Require Consideration of both Technical and Strategic Options

Computer-on-Modules, though small, significantly influence fields like medical imaging and production control.

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Pin Definition Type 6 Compact Size Modules

A-B	C-D
8x USB 2.0	4x USB 3.X
LVDS / eDP	2x DDI/**USB4**
4x SATA	
8x USB 2.0	
Gigabit Ethernet	1x DDI
LPC / eSPI	
GPIO / SDIO / SERIAL / CAN / **GP SPI** / I²C / HDA / SNDW	
PCIe Gen4 x24	
Power	

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COM Express Type 6 Compact Size

COM Express Type 6 Compact size, shorter in length than the Basic size, is ideally suited for single-chip x86 SoCs, and features proficient performance at significantly lowered power envelopes of 5 to 30 watts. COM Express Type 6 Compact size targets mid- to entry-level applications such as transportation, robotics, edge servers, industrial control, and HMIs in a spate of industries.

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- Forum support



COM Express Type 6
Development Kits

Applications



Industrial Automation



Robotics



Transportation



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COM Express Type 6 Compact Size

Model Name	cExpress-R8	cExpress-MTL
COM Express	New COM Express R3.1 AIOM 	COM Express R3.1 AIOM 
CPU	AMD Ryzen Embedded 8000 series	Intel® Core™ Ultra Processors (formerly "Meteor Lake-H/U" Ultra 7/5)
Memory	Dual-channel DDR5 non-ECC/ECC max. 5600 MHz up to 96GB (2x 48GB)	64 GB DDR4 at 5600 MT/s
BIOS Type	AMI UEFI with CMOS backup in 32MB SPI BIOS	AMI UEFI
Graphics Outputs	4 independent displays LVDS (or eDP 1.4, opt.) 2x DDI (or USB4, opt.) 1x DDI (or VGA, opt.)	4 independent displays LVDS (or eDP 1.4, opt.) 2x DDI (or USB4, opt.) 1x DDI (or VGA, opt.)
LAN	up to 2.5GbE (Intel i226, TSN, opt.)	up to 2.5GbE (Intel i226, TSN, opt.)
USB	4x USB 3.X/2.0, 4x USB 2.0	4x USB 3.X/2.0, 4x USB 2.0
Serial ATA	2x at 6Gb/s	2x at 6Gb/s
PCI Express	1x PCIe Graphic x8 Gen4 2x PCIe Graphic x4 Gen4 8x PCIe x1 Gen4 (no SATA, opt.)	1x PCIe Graphic x8 Gen4 2x PCIe Graphic x4 Gen4 8x PCIe x1 Gen4 (no SATA, opt.)
eMMC (opt.)	64-256GB NVMe SSD	64-256GB NVMe SSD
SD	-	-
Audio	HDA	HDA
TPM	TPM 2.0	TPM 2.0
Management Bus	I²C, SMBus	I²C, SMBus
Embedded Features	EAPI/SEMA, Debug/JTAG	EAPI/SEMA, Debug/JTAG
Power Supply	8.5-20V / 5Vsb ±5% (ATX), 8.5-20V (AT)	8.5-20V / 5Vsb ±5% (ATX), 8.5-20V (AT)
Operating Temperature	Standard: 0°C to 60°C	Standard: 0°C to 60°C
Form Factor & Compatibility	PICMG COM.0 R3.1 Type 6 Compact size: 95 x 95 mm	PICMG COM.0 R3.1 Type 6 Compact size: 95 x 95 mm
OS support		

Notes:

- VxWorks is supported by project basis.
- TPM is supported by BOM option.
- Extreme Rugged products are exclusively offered for specific SKUs.
- Optional -40°C to 85°C support: Standard product with 100% ETT screening available for selected CPU SKUs and std. 12V power supply only.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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COM Express Type 6 Compact Size

Model Name	cExpress-TL	cExpress-AR
COM Express		
CPU	11th Gen Intel® Core™ i7 / i5 / i3 series (formerly "Tiger Lake-UP3")	AMD Ryzen™ Embedded V2000 series
Memory	64 GB DDR4 at 3200/2666 MT/s (IBECC opt.)	64 GB DDR4 at 3200/2666 MT/s
BIOS Type	AMI UEFI	AMI UEFI
Graphics Outputs	4 independent displays LVDS (or eDP 1.4, opt.) 2x DDI 1x DDI (or VGA, opt.)	4 independent displays LVDS (or eDP 1.3, opt.) 2x DDI 1x DDI (or VGA, opt.)
LAN	up to 2.5GbE (Intel i225, TSN, opt.)	GbE (Intel i225)
USB	4x USB 3.X/2.0, 4x USB 2.0	4x USB 3.X/2.0, 4x USB 2.0
Serial ATA	2x at 6Gb/s	2x at 6Gb/s
PCI Express	1x PCIe Graphic x4 Gen4 4x PCIe x1 Gen3 (PCIe switch, opt.)	1x PCIe Graphic x8 Gen3 6x PCIe x1 Gen3
eMMC (opt.)	-	-
SD	-	-
Audio	HDA	HDA
TPM	TPM 2.0 (opt.)	TPM 2.0 (opt.)
Management Bus	I²C, SMBus	I²C, SMBus
Embedded Features	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)
Power Supply	8.5-20V / 5Vsb ±5% (ATX), 8.5-20V (AT)	8.5-20V / 5Vsb ±5% (ATX), 8.5-20V (AT)
Operating Temperature	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)
Form Factor & Compatibility	PICMG COM.0 R3.0 Type 6 Compact size: 95 x 95 mm	PICMG COM.0 R3.0 Type 6 Compact size: 95 x 95 mm
OS support	yocto	yocto

Notes:

- VxWorks is supported by project basis.
- TPM is supported by BOM option.
- Extreme Rugged products are exclusively offered for specific SKUs.
- Optional -40°C to 85°C support: Standard product with 100% ETT screening available for selected CPU SKUs and std. 12V power supply only.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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COM Express Type 6 Compact Size

Model Name	cExpress-WL	cExpress-SL/KL	cExpress-TWL
COM Express			Preliminary COM Express R3.1 
CPU	8th Gen Intel® Core™ i7 / i5 / i3 series (formerly “Whiskey Lake-U”)	6th Gen IntelCore. Intel® Core™ i7 / i5 / i3 series (formerly "Skylake-U")	Intel x7000 series ATOM (formerly "Twin Lake")
Memory	64 GB DDR4 at 2133/1867 MT/s	32 GB DDR4 at 2133/1867 MT/s	16GB LPDDR5 at 4800 MT/s
BIOS Type	AMI UEFI	AMI Aptio V	AMI UEFI
Graphics Outputs	3 independent displays LVDS (or eDP 1.3, opt.) 1x DDI 1x DDI (or VGA, opt.)	LVDS(oreDP1.4) 2x DDI (DP/HDMI or VGA)	3 independent displays LVDS (or eDP 1.4, opt.) 1x DDI 1x DDI (or VGA, opt.)
LAN	GbE (Intel i219)	Intel® i219LM/V	up to 2.5GbE
USB	4x USB 3.X/2.0, 4x USB 2.0	4x USB 3.X/2.0, 4x USB 2.0	up to 4x USB 3.X/2.0, 4x USB 2.0
Serial ATA	3x at 6Gb/s	3x at 6Gb/s	up to 2x 6Gb/s
PCI Express	1x PCIe x1 Gen3 at PEG 8x PCIe x1Gen3	5x PCIe x1 Gen3 (3965U supports Gen2) (6 PCIex1 w/o GbE, opt.)	8x PCIe x1 Gen3 (no SATA, GbE, opt.)
eMMC (opt.)	32-64GB	-	32-128GB EMMC
SD	Yes	-	-
Audio	HDA	HDA	HDA
TPM	TPM 2.0 (opt.)	TPM 2.0 (opt.)	TPM 2.0
Management Bus	I²C, SMBus	I²C, SMBus	I2C, SMBus
Embedded Features	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)
Power Supply	5-20V / 5Vsb ±5% (ATX), 5-20V (AT)	5-20V / 5Vsb ±5% (ATX), 5-20V (AT)	8.5-20V / 5Vsb ±5% (ATX), 8.5-20V (AT)
Operating Temperature	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)	Standard: 0°C to 60°C
Form Factor & Compatibility	PICMG COM.0 R3.0 Type 6 Compact size: 95 x 95 mm	PICMG COM.0 R2.1, Type 6 Compact size: 95 x 95 mm	PICMG COM.0 R3.1 Type 6 Compact size: 95 x 95 mm
OS support	yocto	yocto	

Notes:

- VxWorks is supported by project basis.
- TPM is supported by BOM option.
- Extreme Rugged products are exclusively offered for specific SKUs.
- Optional -40°C to 85°C support: Standard product with 100% ETT screening available for selected CPU SKUs and std. 12V power supply only.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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COM Express Type 6 Compact Size

Model Name	cExpressASL/ALN	cExpress-EL	cExpress-AL
COM Express			
CPU	7th Gen Intel® Atom™, Processer N series, and Core™ i3-N305 (formerly "Alder Lake-N") Amston Lake x7835RE/ x7433RE/x7213RE/x7211RE (formerly "Amston Lake")	Intel Atom® x6000E series (formerly "Elkhart Lake")	Intel Atom E3900 series (formerly "Apollo Lake")
Memory	Up to 16GB LPDDR5 at 4800MT/s support IBECC	32GB DDR4 at 3200/2666 MT/s (IBECC opt.)	32 GB DDR4 at 2133/1867 MT/s
BIOS Type	AMI Aptio V	AMI UEFI	AMI UEFI
Graphics Outputs	3 independent displays LVDS (or eDP 1.4, opt.) 1x DDI (or TCSS, opt.) 1x DDI (or VGA, opt.)	3 independent displays LVDS (or eDP 1.3, opt.) 1x DDI 1x DDI (or VGA, opt.)	3 independent displays LVDS (or eDP 1.3, opt.) 1x DDI 1x DDI (or VGA, opt.)
LAN	up to 2.5GbE (Intel i226, TSN, opt.)	GbE (MaxLinear GPY)	GbE (Intel 219)
USB	Up to 4x USB 3.2 Gen2, 8x USB 2.0	2x USB 3.X/2.0, 6x USB 2.0 (USB3 hub opt.)	4x USB 3.X/2.0, 4x USB 2.0
Serial ATA	2x at 6Gb/s	2x at 6Gb/s	3x at 6Gb/s
PCI Express	Up to 8 PCIe GEN3 x1 (on-board LAN, SATA[0:1]. Opt.)	6x PCIe x1 Gen3	5x PCIe x1 Gen3 (3965U supports Gen2) (6 PCIex1 w/o GbE, opt.)
eMMC (opt.)	32-63 eMMC	32-64 (by project)	-
SD	1x MIPI-CSI camera resolution up to 4K	Yes	-
Audio	HDA	HDA	HDA
TPM	TPM 2.0	TPM 2.0 (opt.)	TPM 2.0 (opt.)
Management Bus	I²C, SMBus	I²C, SMBus	I²C, SMBus
Embedded Features	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)
Power Supply	8.5-20V / 5Vsb ±5% (ATX), 8.5-20V (AT)	8.5-20V / 5Vsb ±5% (ATX), 8.5-20V (AT)	5-20V / 5Vsb ±5% (ATX), 5-20V (AT)
Operating Temperature	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (Amston Lake)	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)
Form Factor & Compatibility	PICMG COM.0 R3.1 Type 6 Compact size: 95 x 95 mm	PICMG COM.0 R3.0, Type 6 Compact size: 95 x 95 mm	PICMG COM.0 R2.1, Type 6 Compact size: 95 x 95 mm
OS support	Linux yocto	yocto	yocto

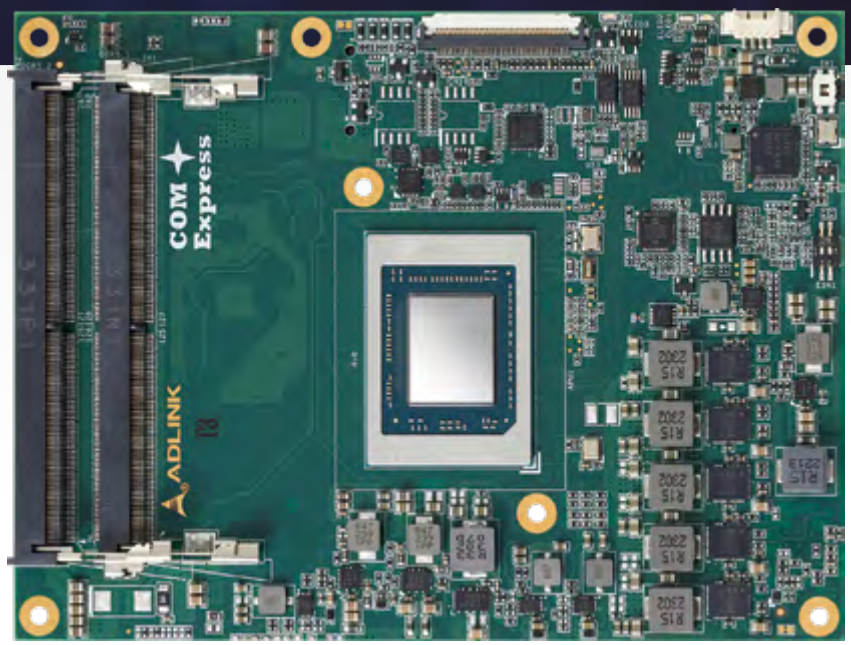
Notes:

- VxWorks is supported by project basis.
- TPM is supported by BOM option.
- Extreme Rugged products are exclusively offered for specific SKUs.
- Optional -40°C to 85°C support: Standard product with 100% ETT screening available for selected CPU SKUs and std. 12V power supply only.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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COM Express Type 7 Basic Size

Serving servers with extended operating temperatures



Pin Definition
Type 7 Rev 3.1 Basic Size Modules

A-B	C-D
4x USB 2.0	4x USB 3.X
2x SATA	4x 10G KR **CEI mode**
Gigabit Ethernet	
NC-SI	
LPC / eSPI	
GPIO / SDIO / SERIAL / CAN / SPI / I²C / HDA / PCIe clock & **2nd PCIe clock** / IPMB	
PCIe Gen4 x32	
Power	

Pin Definition
Type 7 Rev 3.0 Basic Size Modules

A-B	C-D
4x USB 2.0	4x USB 3.X
2x SATA	4x 10G KR
Gigabit Ethernet	
NC-SI	
LPC / eSPI	
GPIO / SDIO / SERIAL / CAN / SPI / I²C / HDA / PCIe clock & RSVD	
PCIe x32	
Power	

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COM Express Type 7 Basic Size

COM Express Type 7 Basic size, designed for intermediate- to high-performance headless edge servers, offers up to 32 PCIe lanes and four 10GbE ports with an extended temperature tolerance. As of late, its suitability for a wide range of rugged and embedded industrial applications has been widened further with Revision 3.1, which adds a second PCIe clock for PCIe Gen4. The range of applications for Type 7 modules is very broad, including general-purpose rugged embedded computers, mission-critical servers, SDN appliances, signal processing & data acquisition appliances, network test equipment, satellite gateways, inflight entertainment systems, and more.

- One-click Buy & Ship
- Easy “How-to’s”
- Online documentation
- Forum support



COM Express Type 7 Development Kits

Applications



Satellite Gateway



Defense



Data Communication

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COM Express Type 7 Basic Size

Model Name	Express-VR7	Express-ID7
COM Express	COM Express R3.1 	COM Express R3.1 
CPU	AMD Ryzen™ Embedded V3000 series	Intel® Xeon® D-1700 series (formerly "Ice Lake-D")
Memory	64GB DDR5 at 4800 MT/s (ECC/non-ECC)	128 GB DDR4 at 3200/2666 MT/s (ECC / non-ECC)
BIOS Type	AMI UEFI	AMI UEFI
Ethernet KR	2x 10GBASE-KR	4x 10GBASE-KR
LAN	up to 2.5GbE (Intel i226)	GbE (Intel i210, TSN opt.)
USB	4x USB3.X/2.0	4x USB 3.X/2.0
Serial ATA	2x at 6Gb/s	2x at 6Gb/s
PCI Express	8 PCI Express Gen4 (1 x8, 2 x4), 4 PCI Express Gen4 (4 x1, 2 x2, 1 x4), 2 PCI Express Gen4 (1 x1, 1 x2)	PCI Express x16 Gen4 (or 2 x8 or 4 x4) PCI Express x8 Gen3 (x8, x4, x2) PCI Express x8 Gen3 (x8, x4, x2)
eMMC (opt.)	-	-
TPM	TPM 2.0	TPM 2.0
Management Bus	I²C, SMBus	I²C, SMBus
Embedded Features	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)
Power Supply	8.5-20V/5Vsb±5%(ATX)8.5-20V(AT)	12 V / 5Vsb ±5% (ATX) 12 V (AT)
Operating Temperature	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)
Form Factor & Compatibillity	PICMG COM.0: Rev 3.1 Type 7 Type 7 Basic size: 95 x 125 mm	PICMG COM.0 R3.1, Type 7 Basic size: 95 x 125 mm
OS Support	yocto	yocto

Notes:

- TPM is supported by BOM option.
- Extreme Rugged products are exclusively offered for specific SKUs.
- Optional -40°C to 85°C support: Standard product with 100% ETT screening available for selected CPU SKUs and std. 12V power supply only.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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COM Express Type 7 Basic Size

Model Name	Express-BD7/BD74	Express-DN7
COM Express		
CPU	Intel® Xeon® D-1500 series (formerly "Broadwell-DE")	Intel® Atom® C3000 series (formerly "Denverton-NS")
Memory	64 GB DDR4 at 2400/2133MT/s (ECC/non-ECC)	96 GB DDR4 at 2400/2133 MT/s (ECC/non-ECC)
BIOS Type	AMI UEFI	AMI UEFI
Ethernet KR	2x 10GBASE-KR	4x 10GBASE-KR (max. 20G)
LAN	GbE (Intel i210)	GbE (Intel i210)
USB	4x USB 3.X/2.0	2x USB 3.X/2.0, 2x USB 2.0
Serial ATA	2x at 6Gb/s	2x at 6Gb/s
PCI Express	PCI Express x16 Gen3(or 2 x8 or 4 x4) PCI Express x8 Gen3 (x8, x4, x2) PCI Express x8Gen2(x8, x4, x2), w/o GbE	PCI Express x8 Gen3 (or 2x8 or 1x8 plus 2x4) PCI Express x8 Gen3 (x8, x4, x2), w/o GbE
eMMC (opt.)	-	32-64 GB (opt.)
TPM	TPM 2.0 (opt.)	TPM 2.0 (opt.)
Management Bus	I²C, SMBus	I²C, SMBus
Embedded Features	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)
Power Supply	8.5-20V/5Vsb±5%(ATX)8.5-20V(AT)	8.5-20 V / 5Vsb ±5% (ATX) 8.5-20V (AT)
Operating Temperature	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)
Form Factor & Compatibillity	PICMG COM.0 R3.0, Type 7 Basic size: 95 x 125 mm	PICMG COM.0 R3.0, Type 7 Basic size: 95 x 125 mm
OS Support	yocto	yocto

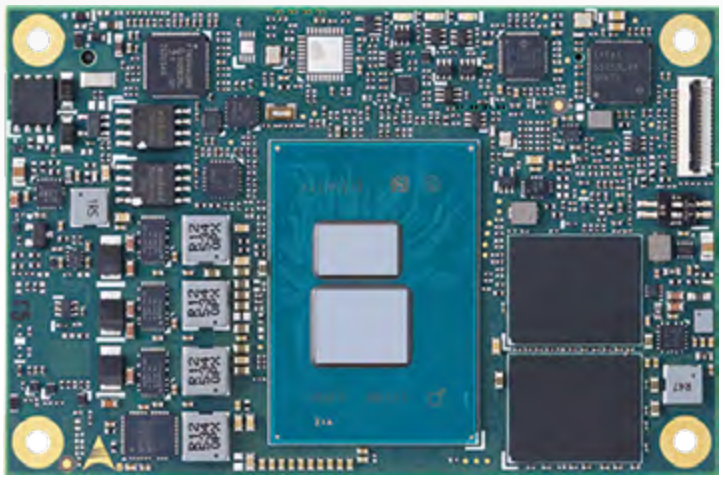
Notes:

- TPM is supported by BOM option.
- Extreme Rugged products are exclusively offered for specific SKUs.
- Optional -40°C to 85°C support: Standard product with 100% ETT screening available for selected CPU SKUs and std. 12V power supply only.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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COM Express Type 10 Mini Size

Ultra-low power with soldered onboard memory



Solution Brief

Computer-on-Modules Boost Improvements in Ultrasound Technology

ADLINK's COM Express modules empower portable workstations by integrating various data entry interfaces and remote diagnosis capabilities. Explore how these modules enhance ultrasound technology in our online solution brief for more details!

Pin Definition for Type 10 Mini Size Modules

A-B
8x USB 2.0 v2x USB 3.X
DDI
LVDS / eDP
4x SATA
Gigabit Ethernet
LPC / eSPI
GPIO / SDIO / UART / CAN / SPI / I²C / SMB / **GP_SPI** / HDA
4x PCIe Gen4
Power

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COM Express Type 10 Mini Size

COM Express Type 10 Mini size features power envelopes of TDP 12W and lower and soldered onboard memory, yet still offering graphics display and optimized I/O capabilities needed for various technologically-advanced mobile solutions, such as handheld devices and controllers for industrial, medical, and transportation applications.

- One-click Buy & Ship
- Easy “How-to’s”
- Online documentation
- Forum support



COM Express Type 10 Development Kits

Applications



Medical Portable Ultrasound



In-Vehicle / In-Flight Entertainment



Panel Control



Industrial Automation (Portable Devices)

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COM Express Type 10 Mini Size

Model Name	nanoX-ASL	nanoX-EL
COM Express	New 	
CPU	Intel Core Atom x7000 series Processor	Intel Atom® x6000E series (formerly "Elkhart Lake")
Memory (soldered)	Up to 32GB LPDDR5	16GB LPDDR4 at 4267/3200 MT/s (IBECC opt.)
BIOS Type	AMI UEFI with CMOS backup in 32MB SPI BIOS	AMI UEFI
Graphics Outputs	1x DDI (DP/HDMI) 1x LVDS	2 independent displays LVDS (or eDP 1.4, opt.) 1x DDI
LAN	up to 1x 2.5GbE (Intel I226, TSN opt.)	GbE (MaxLinear GPY)
USB	2x USB 3.2 / 8x USB 2.0	2x USB 3.X/2.0, 6x USB 2.0
Serial ATA	4x SATA	2x at 6Gb/s
PCI Express	4 PCIe Gen4 x1 (0-3)	4x PCIe x1 Gen3 (x4, x2, x1)
eMMC (opt.)		32-64GB
SD (opt.)		Yes
Audio	1xHD Audio	HDA
TPM	TPM 2.0	TPM 2.0 (opt.)
Management Bus	SMBus	I²C, SMBus
Embedded Features	EAPI/SEMA Debug/JTAG	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)
Power Supply	Standard Input ATX: 12V±5% / 5Vsb ±5%; or AT: 12V±5% Wide Input ATX: 4.5-20V / 5Vsb ±5%; or AT: 4.5-20V	4.75-20V / 5Vsb ±5% (ATX), 4.75-20V (AT)
Operating Temperature	Standard: 0°C to 60°C Industrial: -40°C to 85°C	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)
Form Factor & Compatibility	PICMG COM Express Rev 3.1 Mini Type 84mm x 55 mm	PICMG COM.0 R3.0 Type 10 Mini size: 84 x 55 mm
OS support		yocto

Notes:

- VxWorks is supported by project basis.
- TPM, eMMC are supported by BOM option.
- Optional -40°C to 85°C support: Standard product with 100% ETT screening available for selected CPU SKUs and std. 12V power supply only.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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COM Express Type 10 Mini Size

Model Name	nanoX-AL	nanoX-BT
COM Express		
CPU	Intel Atom® E3900 series (formerly "Apollo Lake")	Intel Atom® E3800 series (formerly "Bay Trail")
Memory (soldered)	8 GB DDR3L at 1867/1600 MT/s	4 GB DDR3L at 1333 MT/s
BIOS Type	AMI UEFI	AMI UEFI
Graphics Outputs	2 independent displays LVDS (or eDP 1.4, opt.) 1x DDI	2 independent displays LVDS (or eDP 1.2, opt.) 1x DDI
LAN	GbE (Intel i210)	GbE (Intel i210)
USB	2x USB 3.X/2.0, 6x USB 2.0	1x USB 3.X/2.0, 3x USB 2.0
Serial ATA	2x at 6Gb/s	2x at 3Gb/s
PCI Express	3x PCIe x1 Gen2 (x2, x1)	3x PCIe x1 Gen2 (4x PCIe x1, w/o GbE, opt.)
eMMC (opt.)	32 GB	32GB
SD (opt.)	Yes	Yes
Audio	HDA	HDA
TPM	TPM 2.0 (opt.)	TPM 1.2 (opt.)
Management Bus	I²C, SMBus	I²C, SMBus
Embedded Features	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)	EAPI/SEMA, Debug/JTAG Failsafe BIOS (opt.)
Power Supply	4.75-20V / 5Vsb ±5% (ATX), 4.75-20V (AT)	5-14V / 5Vsb ±5% (ATX), 5-14V (AT)
Operating Temperature	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)	Standard: 0°C to 60°C Extreme Rugged: -40°C to 85°C (standard 12V input only)
Form Factor & Compatibility	PICMG COM.0 R3.0 Type 10 Mini size: 84 x 55 mm	PICMG COM.0 R2.1 Type 10 Mini size: 84 x 55 mm
OS support	yocto	yocto

Notes:

- VxWorks is supported by project basis.
- TPM, eMMC are supported by BOM option.
- Optional -40°C to 85°C support: Standard product with 100% ETT screening available for selected CPU SKUs and std. 12V power supply only.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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SMARC

SMARC module

Covering ARM / x86 ecosystems



x86

ARM

EXTREME RUGGED

AIoM (AI on Module)

AIOM



With the latest Revision 2.1, SMARC has positioned itself as the ideal standard for scalable, low-power, silicon-independent AIoM solutions in the industrial embedded market. Over the revision, SMARC adds the support for up to 4 MIPI CSI camera inputs specifically for SoCs with integrated NPUs (Neural Processing Units) used for video-based AI solutions, such as robotic vehicles and autonomous driving. Additionally, it also allows multiplexing SerDes signals over two PCIe x1 interfaces for a total of four GbE Ethernet ports to support up to 4 GigE Vision cameras for AI vision applications.

Pin Definition for SMARC

2x LVDS / DSI / eDP
HDMI / DP++
DP++
2x MIPI CSI
HDA / I²S
1x SATA
2x GbE
2x USB 3.X/2.0 (1x OTG) 4x USB 2.0 (1x OTG)
4x PCIe
SDIO / SPI /eSPI / 5x I²C 4x UART / 2x CAN / 12x GPIO
Power

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SMARC

Short for Smart Mobility ARChitecture, the SMARC form factor is the only standard natively built for both ARM- and x86-based SoCs, allowing it to leverage the wide-ranging smart phone and tablet computer ecosystems. With 314-pins on a high-speed MXM3 connector, SMARC delivers a combination of high-performance computing, low power envelopes typically under 6W and no more than 15W, low cost, and the ability to withstand extreme environmental conditions, making it the ideal building blocks for portable and stationary embedded systems.

I-Pi SMARC Development Kits

- One-click Buy & Ship
- Easy “How-to’s”
- Online documentation
- Forum support



Applications



Drone



Robotics



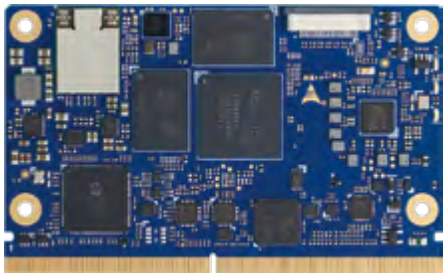
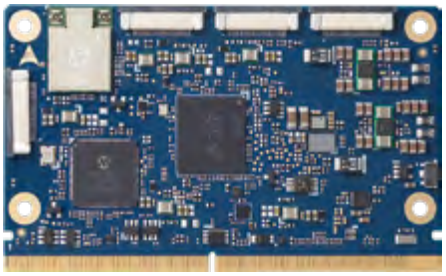
Smart City (Transportation)



Portable Medical Devices

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SMARC

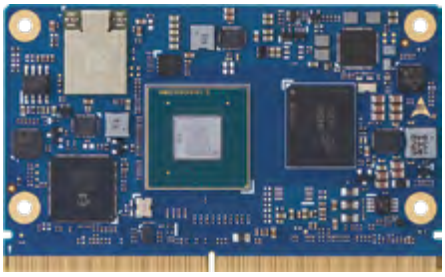
Model Name	LEC-MTK-I1200	LEC-RB5
SMARC module	AIOM 	AIOM 
CPU	MediaTek® Genio 1200 Octa-core CPU 4x Cortex-A78 4x Cortex-A55	Qualcomm® QRB5165 SoC Qualcomm® Kryo™ 585 Octa-core CPU 8x Cortex-A77 cores
Memory/Storage	Up to 16 GB LPDDR4X UFS: 64/128/256GB	Up to 16 GB LPDDR5 UFS: 64/128/256GB
Cache	L2: 256KB per core	128KB / 256KB / 512KB
Boot Loader	U-Boot	U-Boot
Graphics Outputs	1x HDMI 1x eDP 4 lanes 2x MIPI-DSI 4 lanes	1x HDMI 1x MIPI-DSI 4 lanes
Camera	2x MIPI-CSI 4 lanes 1x MIPI-CSI 2 lanes	5x MIPI-CSI 4 lanes 1x MIPI-CSI 2 lanes
LAN	Up to 2x GbE	Up to 2x GbE
USB	2x USB 3.X, 4x USB 2.0	2x USB 3.X, 4x USB 2.0
Extension ports	4x UART 2x SPI 14x GPIO 1x SDIO	3x UART 2x SPI 14x GPIO 1x SDIO
Audio	1x I²S	1x I²S
PCI Express	1x PCIe x1 Gen2	2x PCIe x2 Gen3
TPM	TPM 2.0 (opt.)	TPM 2.0 (opt.)
SEMA Support	Yes	Yes
Power Supply	5.0 V DC±5%	5.0 V DC±5%
Operating Temperature	0°C to 60°C -40°C to 85°C (opt.)	0°C to 60°C -20°C to 85°C (opt.)
Form Factor & Compatibility	SMARC short size, 82 x 50 mm, SMARC specification v2.1.1	SMARC short size, 82 x 50 mm, SMARC specification v2.1.1
OS Support	android, ubuntu, yocto	ubuntu, yocto

Notes:

- TPM is supported by BOM option.
- All specifications are subject to change without further notice.

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SMARC

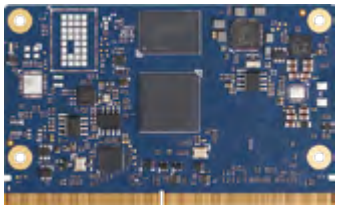
Model Name	LEC-IMX95	LEC-IMX8MP
SMARC module	New AIOM 	AIOM 
CPU	NXP i.MX 95 series with 2/4/6-core Arm Cortex®-A55 1x Arm Cortex®-M7, 1x Arm Cortex®-M33	NXP i.MX 8M Plus Quad, QuadLite 4x Cortex-A53 cores, 1x M7 core
Memory/Storage	Up to 8 GB LPDDR5	Up to 8 GB LPDDR4 at 4266 MT/s eMMC: 32/64GB
Cache	512KB	L2: 512KB ECC
Boot Loader	U-boot	U-Boot
Graphics Outputs	Dual Channel LVDS, HDMI or DSI	1x HDMI 2x LVDS 1x MIPI-DSI 4 lanes
Camera	2x MIPI CSI Camera (1x shared from DSI)	1x MIPI-CSI 4 lanes 1x MIPI-CSI 2 lanes
LAN	2x GbE with TSN 1x 10GbE with TSN (Option)	2x GbE (LAN0 with TSN)
USB	2x USB 3.1 4x USB 2.0 (one shared with WIFI on port 1)	2x USB 3.X, 4x USB 2.0 (one shared with USB OTG on port 0)
Extension ports	4x UART 2x SPI 14x GPIO 1x SDIO	4x UART 2x SPI 14x GPIO 1x SDIO
Audio	1x I2S	1x I²S
PCI Express	2x PCIe x1 Gen3 (one shared with WIFI on port B)	2x PCIe x1 Gen 2 or 1x PCIe x1 Gen 3
TPM	Yes	TPM 2.0 (opt.)
SEMA Support	5.0 V DC±5%	Yes
Power Supply	-40°C to +85°C	5.0 V DC±5%
Operating Temperature	SMARC short size, 82 x 50 mm, SMARC specification v2.1	0°C to 60°C -40°C to 85°C (opt.)
Form Factor & Compatibility	SMARC short size, 82 x 50 mm, SMARC specification v2.1	SMARC short size, 82 x 50 mm, SMARC specification v2.1.1
OS Support		yocto

Notes:

- TPM is supported by BOM option.
- All specifications are subject to change without further notice.

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SMARC

Model Name	LEC-IMX8MM	LEC-ASL	LEC-ALN
SMARC module			
CPU	NXP i.MX 8M Mini, 4x Cortex-A53 cores, 1x M4 core	Intel® Atom® x7000RE / x7000C series (formerly "Amston Lake")	Intel® Core™ i3 Processor N-series Intel® Atom® x7000 series (formerly "Alder Lake-N")
Memory/Storage	Up to 4 GB DDR4 at 4266 MT/s eMMC: 32/64/128GB	Up to 16 GB LPDDR5 Up to 128 GB eMMC	Up to 16 GB LPDDR5 Up to 128 GB eMMC
Cache	L2: 512KB	6MB	6MB
Boot Loader	U-Boot	AMI UEFI BIOS	AMI UEFI BIOS
Graphics Outputs	1x MIPI-DSI 4 lanes (or 2x LVDS via bridge)	Dual Channel LVDS, HDMI/DP++, DP++	Dual Channel LVDS, HDMI/DP++, DP++
Camera	1x MIPI-CSI 4 lanes	2x MIPI CSI Camera	2x MIPI CSI Camera
LAN	2x GbE	Dual 10/100/100/ 2.5 Gbit Ethernet with TSN	Dual 10/100/100/ 2.5 Gbit Ethernet with TSN
USB	5x USB 2.0 (one shared with USB OTG on port 0)	2x USB 3.2 6x USB 2.1	2x USB 3.2 6x USB 2.0
Extension ports	4x UART 2x SPI 14x GPIO 1x SDIO	1x SATA 6Gb/s 4xUART 2x SPI 14x GPIO	1x SATA 6Gb/s 4xUART 2x SPI 14x GPIO
Audio	1x I²S	1x HDA	1x HDA
PCI Express	1x PCIe Gen2	4x PCIe x1 Gen3 (x4, x2, x1)	4x PCIe x1 Gen3 (x4, x2, x1)
TPM	TPM 2.0 (opt.)	TPM 2.0 (opt.)	TPM 2.0 (opt.)
SEMA Support	Yes	Yes	Yes
Power Supply	5.0 V DC±5%	5.0 V DC±5%	5.0 V DC±5%
Operating Temperature	0°C to 60°C -40°C to 85°C (opt.)	-40°C to 85°C	0°C to 60°C
Form Factor & Compatibility	SMARC short size, 82 x 50 mm, SMARC specification v2.1.1	SMARC short size, 82 x 50 mm, SMARC specification v2.1.1	SMARC short size, 82 x 50 mm, SMARC specification v2.1.1
OS Support	yocto	yocto	yocto

Notes:

- TPM is supported by BOM option.
- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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SMARC

Model Name	LEC-EL	LEC-AL	LEC-PX30
SMARC module			
CPU	Intel Atom® x6000E series (formerly "Elkhart Lake")	Intel Atom® E3900 series, Intel® Pentium® N4200, Intel® Celeron® N3350 (formerly "Apollo Lake")	Rockchip PX30 Quad-core 4x Cortex-A35 cores
Memory/Storage	Up to 16 GB LPDDR4 at 4266 MT/s Up to 128 GB eMMC	Up to 8 GB DDR3L at 1867 MHz Up to 64 GB eMMC	Up to 4 GB DDR3L at 1066MHz eMMC: 32/64GB
Cache	1.5 MB system L2 cache 4MB LLC	L2: 2 MB	L2: 256KB
Boot Loader	AMI UEFI BIOS	AMI UEFI BIOS	U-Boot
Graphics Outputs	Dual channel LVDS 18/24-bit) HDMI/ DP++, DP++	Dual channel LVDS (18/24-bit) HDMI/ DP++, DP++	LVDS (or MIPI-DSI, 4-lane)
Camera	-	2x MIPI CSI camera	-
LAN	Dual 10/100/1000/ 2.5 Gbit Ethernet with TSN	Intel® i210IT MAC/PHY 1x GbE IEEE 1588	Up to 2x 10/100Mbps
USB	2x USB 3.X host 6x USB 2.0 host	1x USB 3.X OTG 1x USB 3.X host 1x USB 2.0 OTG 1x USB 2.0 host	3x USB 2.0 (one shared with USB OTG on port 0)
Extension ports	1x SATA 6Gb/s 4x UART 2x SPI 14x GPIO 1x SDIO	1x SATA 6Gb/s 4x UART 2x SPI 12x GPIO 1x SDIO	2x UART 2x SPI 12x GPIO 1x SDIO
Audio	1x I²S, 1x HDA	1x HDA	1x I²S
PCI Express	4x PCIe x1 Gen3 (x4, x2, x1)	4x PCIe x1 Gen2 (x4, x2, x1)	-
TPM	TPM 2.0 (opt.)	TPM 2.0 (opt.)	TPM 2.0 (opt.)
SEMA Support	Yes	Yes	Yes
Power Supply	5.0 V DC±5%	5.0 V DC±5%	3.0 V - 5.0 V DC±5%
Operating Temperature	0°C to 60°C -40°C to 85°C (opt.)	0°C to 60°C -40°C to 85°C (opt.)	0°C to 60°C -40°C to 85°C (opt.)
Form Factor & Compatibility	SMARC short size, 82 x 50 mm, SMARC specification v2.1	SMARC short size, 82 x 50 mm, SMARC specification v2.0	SMARC short size, 82 x 50 mm, SMARC specification v2.1
OS Support	yocto	yocto	

Notes:

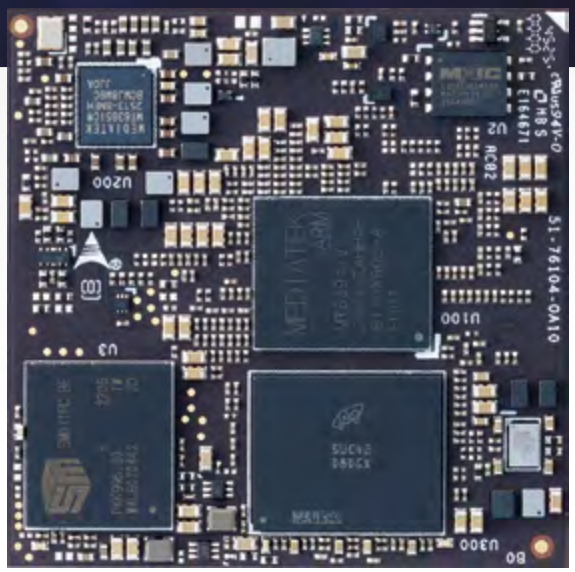
- TPM is supported by BOM option.
- All specifications are subject to change without further notice.

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OSM

OPEN STANDARD MODULE

Compact power, limitless potential



x86 ARM EXTREME RUGGED

OSM

OSM (Open Standard Module) is the first Computer-on-Module for solderable BGA mini modules, accommodating ARM and x86 designs within a compact 45mm x 45mm size. With up to 662 BGA pins, it allows for multiple interfaces in a confined space, ideal for IoT applications. Maintaining a power envelope under 15W, they ensure reliable performance in rugged conditions.

The OSM specification, smaller than previous standards like Qseven and SMARC, enhances existing solutions and offers greater miniaturization and interface flexibility. OSM modules are completely machine processible during soldering, assembly and testing.

Pin Definition for OSM

HDMI/DP++
LVDS/eDP
MIPI-DSI
MIPI-CSI
2x I²S
1x UFS
5x LAN
4x USB 3.x/2.0
10x PCIe
2x SDIO/3x SPI/ 2x I²C/ 4x UART/2x CAN/ 40x GPIO/ 4x PWM/2x ADC
Power

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Key Features & Advantages:

By eliminating the traditional high-density connector, OSM modules are inherently more rugged, exhibiting superior resistance to shock, vibration, and corrosion—a critical requirement for automotive, aerospace, and heavy industrial environments.

This soldered approach also enables the lowest possible z-height and improves thermal transfer from the SOC to the main PCB.

From a manufacturing perspective, it reduces Bill of Materials (BOM) cost and simplifies assembly, making it economically compelling for high-volume production runs. OSM is not just a component; it's a design philosophy for creating ultra-reliable, cost-optimized embedded systems at scale.

- One-click Buy & Ship
- Easy “How-to’s”
- Online documentation
- Forum support



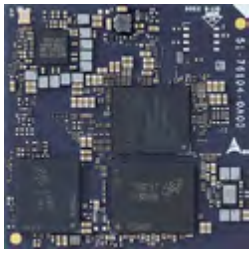
I-Pi SMARC Development Kits

Applications



Robotics

OSM

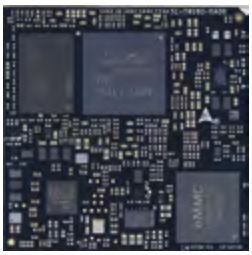
Model Name	OSM-MTK520	OSM-IMX95
OPEN STANDARD MODULE™	New AIOM 	New AIOM 
CPU	MediaTek Genio 520 (2x Arm Cortex-A78 + 6x Arm Cortex-A55)	NXP i.MX 95 (6x Arm Cortex-A55 + 1x Arm Cortex-M7 + 1x Arm Cortex-M33)
Memory/Storage	up to 16GB LPDDR5	up to 16GB LPDDR4
Cache		
Boot Loader	Uboot	Uboot
Graphics Outputs	HDMI , DP, eDP, DSI	LVDS, HDMI or DSI (build option)
Camera	1x 4 lane CSI	1x 4 lane CSI
LAN	1x RGMII	2x RGMII with TSN
USB	2x USB 2.0, 1x USB 3.1 Gen1	1x USB 2.0, 1x USB 3.1 Gen1
Extension Ports		
Audio	I2S to carier	I2S to carier
PCI Express	1x PCIe Gen2 single lane	1x PCIe Gen 3 single lane
SEMA Support		
Power Supply	5Vdc	5Vdc
Operating Temperature	Standard: 0°C to 60°C Industrial: -40°C to 85°C	Standard: 0°C to 60°C Industrial: -40°C to 85°C
Form Factor & Compatibility	OSM Size-L Rev.1.2, 45 x 45mm	OSM Size-L Rev.1.2, 45 x 45mm
OS support	yocto	yocto

Notes:

- You may add / delete some specs if necessary

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OSM

Model Name	OSM-MTK510	OSM-IMX93
OPEN STANDARD MODULE™	AIOM 	AIOM 
CPU	MediaTek Genio 510 SoC (2x Arm Cortex-A78+ 4x Arm Cortex-A55 cores)	NXP i.MX93 series Dual core Cortex-A55 1x Cortex-M33
Memory/Storage	up to 8GB LPDDR4	Up to 2GB LPDDR4, up to 128 GB eMMC
Cache		512KB system L2 cache
Boot Loader	Uboot	Uboot + device tree
Graphics Outputs	HDMI/DP and eDP/DSI 4L	LVDS 4L / DSI 4L
Camera	1x MIPI CSO camera, 4 lanes	1x MIPI CSI
LAN	1x Gbe RGMII	2x RGMII with TSN
USB	2x USB 2.0 1x USB 3.1 Gen 1	2x USB 2.0, 1x OTG
Extension Ports	4x UART 3x SPI 2x I²C 17x GPIO 2x SDIO 1x PWM	3x UART 2x SPI 2x I²C 1x SDIO 2x CAN 10x GPIO
Audio	1x I2S	I²S audio interface
PCI Express	1x Gen 2 x1	-
SEMA Support	yes	-
Power Supply	5.0 V DC±5%	5.0 V DC±5%
Operating Temperature	-40°C to +85°C	-40°C to 85°C
Form Factor & Compatibility	OSM Size-L Rev.1.1, 45 x 45mm	OSM Size-L Rev.1.1, 45 x 45mm
OS support	yocto	yocto

Notes:

- You may add / delete some specs if necessary

Qseven

Where performance meets simplicity



Qseven

Qseven® is an off-the-shelf, multi-vendor, Computer-on-Module that integrates all the core components of a typical PC packed in a slim design, to be mounted onto an application-specific carrier board. Its single ruggedized 230-pin MXM2 connector offers all the I/O interfaces necessary for mobile / ultra-mobile embedded applications, such as graphics, sound, mass storage, and networking, at power envelopes usually between 6 and 12 watts. Since its pinouts are mostly x86 x86-oriented, Qseven® is commonly built around "Atom level" x86 silicon.

Pin Definition for Q7

2x LVDS / DSI / eDP
HDMI / DP++
2x MIPI CSI
HDA / I²S
2x SATA
GbE
2x USB 3.X/2.0 (1x OTG) 4x USB 2.0 (1x OTG)
4x PCIe
SDIO / SPI / LPC or GPIO 5x I²C / 2x UART or CAN
Power

Applications



Industrial Automation (Monitoring)

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Qseven

Model Name	Q7-EL	Q7-AL	Q7-BT
QSEVEN			
SoC	Intel Atom® x6000 series (formerly "Elkhart Lake")	Intel Atom® E3900 series, Pentium® N4200 or Celeron® N3350 (formerly "Apollo Lake")	Intel Atom® E3800 series (formerly codename: BayTrail)
Memory	Up to 16 GB LPDDR4 at 4266 MHz	Up to 8 GB LPDDR4 at 2400 MHz	Up to 4 GB DDR3L at 1066/1333 MHz
Cache	1.5MB system L2 cache 4MB LLC	L2: 2 MB	512 kB to 2 MB L2 cache
BIOS Type	AMI UEFI BIOS	AMI UEFI BIOS	AMI UEFI BIOS
Integrated Graphics	Intel® UHD Graphics for 10th Gen Intel® Processors, supports three independent displays, 4k video (up to 4096 x 2160@60fps)	9th Gen Intel® graphics core architecture with up to 18 execution units, supports three independent displays, 4k video (up to 4096 x 2160 @60fps)	7th Gen Intel® graphics supporting two independent displays
Graphics Features	DirectX 12, OpenGL 4.5, OpenCL 2.0, ES 3.2	DirectX 12, OpenGL 4.2, OpenCL	DirectX 11.1, OpenGL 2,0, ES 3.2
Camera	-	2x MIPI CSI 2L/4L	-
LAN	MaxLinear® 2.5Gbit Ethernet with TSN	Intel® i210IT MAC/PHY, 1x GbE, IEEE 1588	Intel® E3800 i210-IT 1GbE
USB	2x USB 3.X 6x USB 2.0	2x USB 3.X 6x USB 2.0	1x USB3.0 6x USB 2.0
Serial ATA	2x SATA3 6Gb/s	2x SATA 6Gb/s to carrier or 1x SATA 6Gb/s to carrier and 1x onboard SATA SSD	2x SATA3 3 Gb/s
PCI Express	4x PCIex1 Gen.3	3x PCIe x1	3x PCIe x1 Gen2
eMMC (opt.)	Onboard eMMC 5.1 (16-128 GB)	Onboard eMMC 5.0 (4-64 GB)	Onboard eMMC 5.1 (4-64 GB)
Audio	HDA	HDA	HDA
SEMA	Yes	Yes	Yes
Power Supply	Module Input Voltage: 5.0V Power Pins:12 pins, 6A at 5V Typical IO Voltage: 3.3V	Module Input Voltage: 5.0V Power Pins: 12 pins, 6A at 5V Typical IO Voltage: 3.3V	Module Input Voltage: 5.0V Power Pins: 12 pins, 6A at 5V Typical IO Voltage: 3.3V
Operating Temperature	0°C to 60°C -40°C to 85°C (opt.)	0°C to 60°C -40°C to 85°C (opt.)	0°C to 60°C -40°C to 85°C (opt.)
Form Factor & Compatibility	Qseven 2.1, Size: 70 x 70 mm	Qseven 2.1, Size: 70 x 70 mm	Qseven 2.0, Size: 70 x 70 mm
OS support	yocto	yocto	yocto

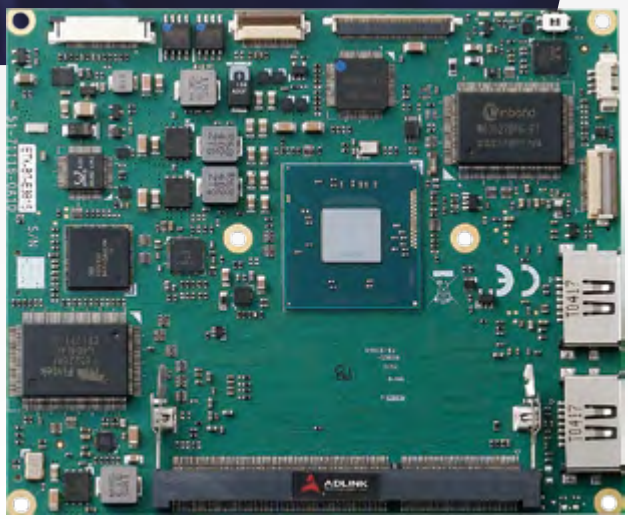
Notes:

- For more CPU options please refer to online data sheet or user manual.
- All specifications are subject to change without further notice.

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ETX

Legacy beyond 2025



ETX

ETX® is one of the earliest successful Computer-on-Module form factors. Today it is still widely used in applications such as industrial automation, transportation and medium and low level medical appliances. While high-end Intel® Core™ applications have mostly migrated to COM Express, ETX® is still prominent in the lower power segment, mostly notably using Intel® Atom® SoCs. Specifically, customers who have heavily invested in ISA and PCI controllers or peripheral technologies still pose great demand for ETX® through the years. To this extent, ADLINK is providing long-term support for ETX® well beyond 2025.

Applications



CNC controller



Transportation (Monitoring)

Pin Definition for ETX

X1	X2
4x USB 2.0/1.1	8/16-bit ISA
32-bit PCI-bus	
HD Audio	

X1	X2
Analog VGA	2x PATA
Dual LVDS	2x SATA
PS2 MS / KB 2x UART, LPT1	I²C / SMbus
	10/100 Mbps Ethernet

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ETX

Model Name	ETX-BT
ETX®	
SoC	Intel Atom® E3800 series Celeron® N2930/J1900 (formerly "Bay Trail")
Memory	Up to 8GB DDR3L at 1333/1066MHz
Cache	L2: 512 kB to 2MB
BIOS Type	AMI Aptio EFI
TPM	Atmel AT97SC3204
Graphics Features	LVDS, DisplayPort, VGA Decode: H.264, MPEG2, MVC, VC-1, WMV9 and VP8 Encode: H.264, MPEG2 and MVC DirectX 11, OCL 1.1, OGL ES Halt/2.0/1.1, OGL 3.2
LAN	Intel® i211 MAC/PHY, supporting 10/100 Mbps (GbE via onboard connector)
USB	4x USB 2.0
PATA (IDE)	2x
SATA	2x SATA 3Gb/s
Audio	Integrated on E3800 SoC, Realtek ALC 262
SEMA Support	Yes
Power Supply	5V±5% / 5Vsb ±5% (ATX) 5V±5% (AT)
Operating Temperature	0°C to 60°C -40°C to 85°C (opt.)
Form Factor & Compatibility	ETX 3.02 Size: 95 x 114 mm
OS Support	

Notes:

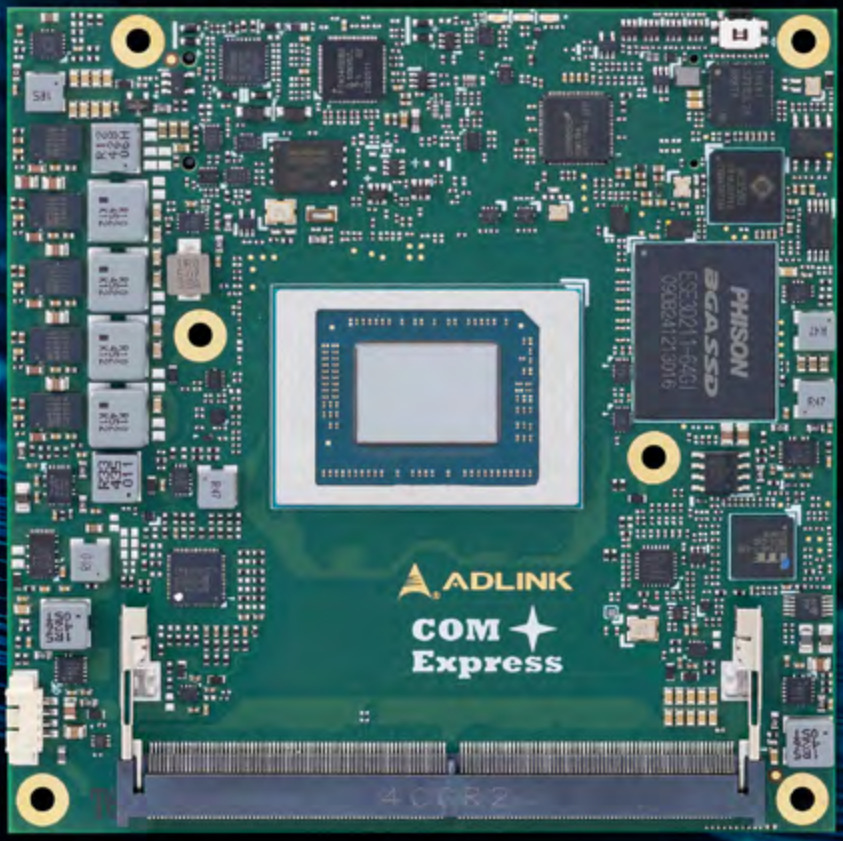
- VxWorks is supported by project basis.
- All specifications are subject to change without further notice.

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COM Express

COM Express R3.1 Type 6 Compact size Module

based on AMD Ryzen™ Embedded 8000 Series Processors



- Up to 8x Zen4 cores at 15-54W TDP
- AMD Radeon RDNA™ 3 Graphics
- AMD XDNA™ NPU
- Up to 96GB DDR5 (ECC/non-ECC)
- Up to 16x PCIe Gen4 lanes

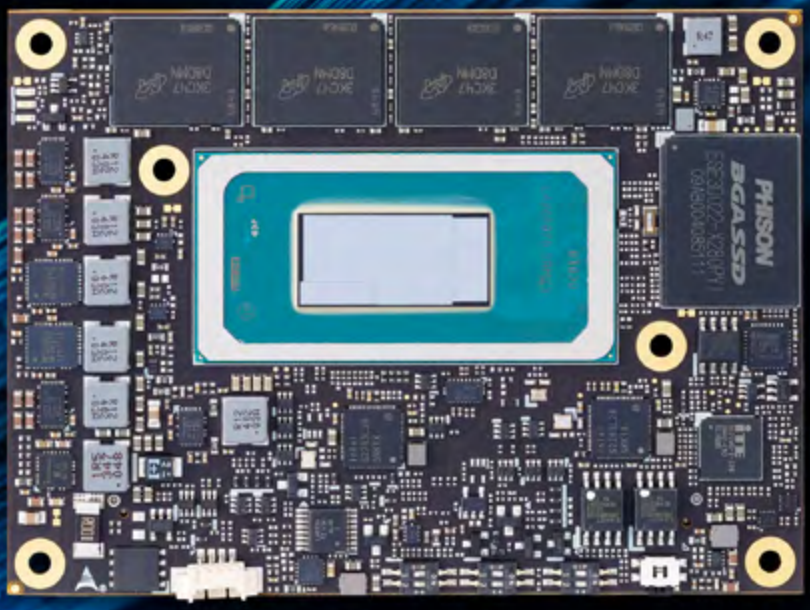
AMD RYZEN Embedded

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COM-HPC®

Mini Type COM-HPC Module

with Intel® Core™ Ultra Processor (Meteor Lake)



- Up to 14 CPU cores, 8 Xe GPU and NPU integrated
- Up to 64GB LPDDR5x memory
- Up to 16 PCIe lanes, 2x 2.5GbE Ethernet
- Multiple DDI/USB4, USB3/2.0 and SATA
- Rugged operating temperature: -40°C to +85°C (optional, selected SKU)

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Head Office

ADLINK Technology, Inc.

No. 66, Huaya 1st Rd., Guishan District
Taoyuan City 333411, Taiwan
333411桃園市龜山區華亞一路66號
Tel: +886-3-216-5088
Fax: +886-3-328-5706

www.adlinktech.com

Worldwide Office

Ampro ADLINK Technology, Inc.

6450 Via Del Oro, San Jose, CA 95119, USA
Tel: +1-408-360-0200
Toll Free: +1-800-966-5200
Fax: +1-408-360-0222
Email: info@adlinktech.com

ADLINK Technology Korea Ltd.

경기도 용인시 수지구 신수로 767 A동 1503호
(동천동, 분당수지유타워) (우) 16827
A-1503, U-TOWER, 767 Sinsu-ro, Suji-gu, Yongin-si,
Gyeonggi-do, Republic of Korea, 16827
Toll Free: +82-80-800-0585
Tel: +82-31-786-0585
Fax: +82-31-786-0583
Email: korea@adlinktech.com

ADLINK Technology GmbH

Hans-Thoma-Straße 8-10
68163 Mannheim, Germany
Tel: +49-621-43214-0
Fax: +49-621-43214-30
(Deggendorf) Ulrichsbergerstrasse 17, 94469
Deggendorf, Germany
Tel: +49-991-29094-10
Email: emea@adlinktech.com

ADLINK Technology Singapore Pte, Ltd.

1008 Toa Payoh North, 07-17/18
Singapore 318996
Tel: +65-6844-2261
Fax: +65-6844-2263
Email: singapore@adlinktech.com

ADLINK Technology (China) Co., Ltd.

上海市浦东新区张江高科技园区芳春路300号 (201203)
300 Fang Chun Rd., Zhangjiang Hi-Tech Park
Pudong New Area, Shanghai, 201203 China
Tel: +86-21-5132-8988
Fax: +86-21-5192-3588
Email: market@adlinktech.com

ADLINK Technology, Inc. (French Liaison Office)

Bâtiment Thalès – Parc des Algorithmes,
Route de l' Orme des Merisiers ,
91190 SAINT AUBIN , France
Tel:+33(0) 1-60-12-35-66
Fax:+33(0) 1-60-12-35-66
Email: france@adlinktech.com

ADLINK Technology India Private Limited

Ground Floor, 317, Samanvitha Complex, Mayura
Street, Outer Ring Road, Byatarayanapura, Bangalore
North, Bangalore- 560092, Karnataka
Tel: +91-80-2346-4606 / +91-80-3121-3332
Fax: +91-80-2346-4606
india@adlinktech.com

ADLINK Technology Beijing

北京市海淀区上地东路1号盈创动力大厦E座801室(100085)
Rm. 801, Power Creative E, No. 1 Shang Di East Rd.
Beijing, 100085 China
Tel: +86-10-5885-8666
Fax: +86-10-5885-8626
Email: market@adlinktech.com

ADLINK Technology, Inc. (UK Liaison Office)

First Floor West Exeter House, Chichester Fields
Business Park Tangmere, West Sussex,
PO20 2FU, United Kingdom
Tel: +44-1243-859677
Email: UK@adlinktech.com

ADLINK Technology Japan Corporation

〒101-0045 東京都千代田区神田鍛冶町3-7-4
KDX神田駅前ビル4F
KDX Kanda Ekimae Bldg. 4F, 3-7-4 Kanda Kajicho,
Chiyoda-ku, Tokyo 101-0045, Japan
Tel: +81-3-5209-6001
Fax: +81-3-5209-6013
Email: japan@adlinktech.com

ADLINK Technology Shenzhen

深圳市南山区科技园南区高新南七道数字技术园
A1栋2楼C区 (518057)
2F, C Block, Bldg. A1, Cyber-Tech Zone, Gao Xin Ave. Sec. 7
High-Tech Industrial Park S., Shenzhen, 518054 China
Tel: +86-755-2643-4858
Fax: +86-755-2664-6353
Email: market@adlinktech.com

ADLINK Technology, Inc. (Israel Liaison Office)

MIXER Herzliya (Building B, 8 Floor)
3 Arik Einstein St.
4610301, Herzliya, Israel
Tel: +972-54-632-5251
israel@adlinktech.com

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