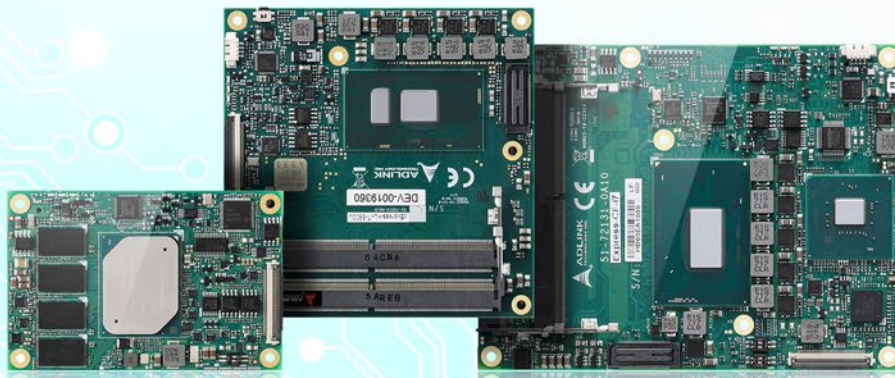


Leading Computer-on-Modules

Most Robust, Best Support

COM Express
SMARC
Qseven
ETX





COM Express

The COM Express standard (PICMG COM.0) is based on serial interfaces including PCI Express, SATA, USB, LVDS/eDP and DDI, allowing designers to utilize the latest technologies for future applications. ADLINK has heavily invested in the development and maintenance of the PICMG® COM Express® specification since its creation.

ADLINK was chair of the PICMG subcommittee that was tasked with defining the COM Express COM.0 Revision 3.0 specification update. This revision includes the Type 7 definition that brings server class platform capabilities to COM Express modules and upgrades the Type 6, 10 definitions to align with recent market trends, such as IEEE 1588 support.

ADLINK has been a pioneer in the COM Express specification. SMARC is a bus standard targeting ultra-low power applications. The SMARC connector provides access to the SoCs. In addition to common I2S, UART, CAN, SPI, GPIO, the SMARC provides complex I/O including LVDS, H.264, etc. SMARC is the fastest growing standard today!

Leading Quality

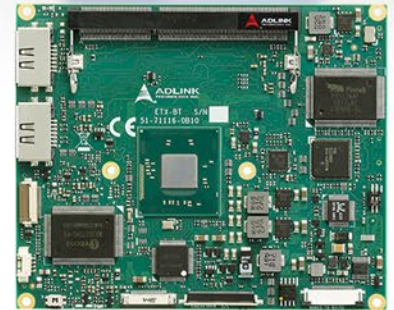
- Standard designed for Extreme Conditions
- Mandatory HALT testing during design phase
- MIL-STD-202 compliant testing
- Highest MTBF in the market

Leading Production and Logistics

- Supply line security
- Dual Factory (Shanghai/Taipei)
- Logistics, operations and quality support centers in all major regions (Europe, US, Japan, China)

Leading Product Longevity

- Fixed BOM offered to end users
- Up to 10 years standard product life
- Drop-in replacements



SMARC

In the development of the SMARC business card size computer-on-module applications. The SMARC 314-pin edge offers the full capabilities of ARM and x86 based systems. It also supports many found low level interfaces such as I²C, SPI, CAN, etc. The SMARC pinout also fully supports more modern interfaces such as HDMI, DP, eDP, GbE, USB 3.x, PCIe and SATA. ADLINK is a leading product line on the embedded COM market.

QSEVEN

Qseven[®] is a versatile and small (70x70 mm) computer-on-module standard. With its 230-pin edge connector it mainly focuses on traditional low power x86 Intel Atom[®] designs. Since Q7 is not able to support all modern interfaces and has only partial coverage for ARM features, traditional low power COM projects are now increasingly choosing SMARC over Q7.

ETX[®]

ETX[®] one of the oldest computer-on-module specifications and 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 beyond 2025.

Leading Product Innovation

- Embedded Added Value
- Support Predictive maintenance
- Real-time optimization
- IoT API extensions
- AI Ready

Leading Support

- Intel[®] Alliance Premier Member
- Pre-sales technical consultation
- Global coverage, local approach
- FAE and R&D on location
- Local carrier board design service

Leading Standardization

- PICMG[®] COM HD next gen
- PICMG[®] COM Express
- SGET[®] SMARC
- SGET[®] Q7

Leading Computer-on-Modules

Global Presence, Local Touch

Headquartered in Taiwan, ADLINK has operations in the United States, Singapore, Beijing, Shanghai, Shenzhen, Japan, Korea and Germany. ADLINK products are currently available in over 40 countries across five continents, with worldwide distribution networks and more than 1,800 employees. ADLINK is proud to be associated with many major technology leaders and Fortune 500 companies. With design and technology centers in the U.S., the Pacific Rim region and Germany, ADLINK is a technology-leading platform provider in the embedded computing industry.



Dedication to Standards

ADLINK believes that industry standards enable our customers to focus on their core competencies, accelerate time-to-market, and lower costs. We lead and actively participate in standards committees to drive innovation and ensure that the standards continue to meet our customers' needs. ADLINK has been a leading contributor to standard organizations such as PICMG® (COM Express) for over a decade, and more recently SGET® (SMARC & Q7).



Intel® IoT Solutions Alliance



ADLINK belongs to a select group of only four companies who are Premier members of the Intel® Internet of Things Solutions Alliance. The significance of Premier membership, the highest membership level, goes beyond advanced technology, new business exploration co-marketing and co-selling opportunities. Premier membership reflects a close working relationship between Intel and ADLINK that provides greater benefits to customers in their strategic development in embedded markets and greater support for their continuing innovation.

Global Carrier Design Service

Don't want to spend time and resources on developing your own carrier boards?

No problem! With ADLINK's global carrier board design service, we can take care of this job for you. 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.

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**

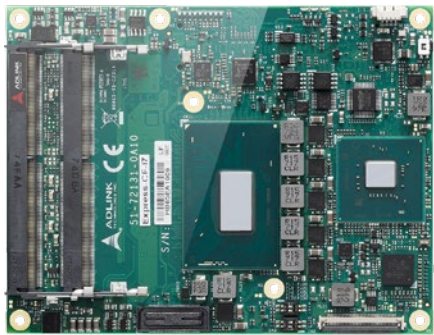
At our headquarters in Taipei our SI lab is available to help customers with module / carrier signal quality verification. We invite your carrier board engineer to take his board and visit us.

Based on SI reports he can directly talk to the module designer how any possible issues can 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 no 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 because it's power sequence is MCU controlled.





x86

Visual Oriented Applications

COM Express® Basic size Type 6 is the most popular and widely used computer-on-module form factor on the market. With pinouts closely matching the feature set of common x86 based silicon, two COM Express connectors allow for designs of up to 75 watts. The Type 6 pinout has a strong focus on multiple modern display outputs targeting applications such as medical, gaming, test and measurement and industrial automation.

Pin Definition for Both Type 6 Basic and Compact Size Modules

A-B	C-D
8x USB 2.0	4x USB 3.0
LVDS / eDP	3x DDI
4x SATA	
Gigabit Ethernet	
LPC / eSPI	
GPIO / SDIO / SERIAL / CAN / SPI / I2C / HDA	
PCIe x24	
Power	
COM6L	

Applications



Data Communication



Test and Measurement



Gaming



Medical



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.



x86

EXTREME RUGGED

Mid and Entry Level Applications

The COM Express® Compact Type 6 form factor is ideally suited to single chip x86 solutions (SoCs) with a power range between 5 to 20 watts. To reach these kind of low power envelopes peak performance and feature sets have been reduced compared to silicon used on the Basic size modules. Utilizing typically targeted at mid- and entry level applications such as transportation, robotics, edge servers, industrial control, and HMIs in the industrial and medical fields.

Type 6 Compact Size

Applications



Industrial Automation







Transportation



Robotics






Starter Kit order process



Product Name	Express-CF/CFE (Updated)	Express-CF/CFE	Express-KL/KLE	Express-SL/SLE
Product Image				
CPU	Intel® Xeon® (45W) Intel® Core™ i7/i5/i3 (45W) Intel® Celeron® (35W) Additional low TDP SKUs for Xeon® and Core™ i7/i5/i3	8th Gen Intel® Xeon® E-2176M (6 cores) Intel® Core™ i7-8850H (6 cores) i5-8400H, i3-8100H (4 cores) (formerly "Coffee Lake-H")	7th Gen Intel® Xeon® E3-1505M/E3-1505L Intel® Core™ i7-7820EQ, i5-7440EQ/7442EQ, i3-7100E/7102E (formerly "Kaby Lake-H")	6th Gen Intel® Xeon® E3-1515M (GT4e), E3-1505M/1505L, Intel® Core™ i7-6820EQ/6822EQ, i5-6440EQ/6442EQ, i3-6100E/6102E, Intel® Celeron® G3900E/3902E (formerly "SkyLake")
Chipset	Next Gen CM (ECC) Next Gen QM/HM (non-ECC)	CM246 (ECC) QM370/HM370 (non-ECC)	CM238 (ECC) QM175/HM175 (non-ECC)	CM236 (ECC) QM170/HM170 (non-ECC)
Memory	48 GB DDR4 at 2400/2133 MHz	48 GB DDR4 at 2400/2133 MHz (ECC for Express-CFE)	32 GB DDR4 at 2133/1867 MHz (ECC for Express-KLE)	32 GB DDR4 at 2133/1867 MHz (ECC for Express-SLE)
BIOS Type	AMI Aptio V	AMI Aptio V	AMI Aptio V	AMI Aptio V
Graphics Outputs	LVDS (or eDP 1.4) 3x DDI (DP/HDMI or VGA)	LVDS (or eDP 1.4) 3x DDI (DP/HDMI or VGA)	LVDS (or eDP 1.4) 3x DDI (DP/HDMI or VGA)	LVDS (or eDP 1.3) 3x DDI (DP/HDMI or VGA)
Graphics Features	DX 12, OpenGL 4.5 and ES 2.0, OpenCL 2.1 H.265(HEVC) 10-bit codec / VP9 10-bit decodes	DX 12, OpenGL 4.5 and ES 2.0, OpenCL 2.1 H.265(HEVC) 10-bit codec / VP9 10-bit decode	DX 12, OpenGL 4.4 and ES 2.0, OpenCL 2.1 H.265(HEVC) 10-bit codec / VP9 10-bit decode	DX 12, OpenGL 4.4 and ES 2.0, OpenCL 2.1 H.265(HEVC) & VP8 8-bit codec
LAN	Intel® i219LM/V	Intel® i219LM/V	Intel® i219LM/V	Intel® i219LM/V
USB	4x USB 3.0, 4x USB 2.0	4x USB 3.0, 4x USB 2.0	4x USB 3.0, 4x USB 2.0	4x USB 3.0, 4x USB 2.0
Serial ATA	4x at 6Gb/s	4x at 6Gb/s	4x at 6Gb/s	4x at 6Gb/s
PCI Express	PCI Express x16 Gen3 (or 2x8 or 1x8 plus 2x4) 8x PCI Express x1 Gen3	PCI Express x16 Gen3 (or 2x8 or 1x8 plus 2x4) 8x PCI Express x1 Gen3	PCI Express x16 Gen3 (or 2x8 or 1x8 plus 2x4) 8x PCI Express x1 Gen3	PCI Express x16 Gen3 (or 2x8 or 1x8 plus 2x4) 7x PCI Express x1 Gen3
Audio	ALC886 (carrier board)	ALC886 (carrier board)	ALC886 (carrier board)	ALC886 (carrier board)
TPM (opt.)	Yes (TPM 2.0)	Yes (TPM 2.0)	Yes (TPM 2.0)	Yes (TPM 1.2)
Management Bus	I ² C, SMBus	I ² C, SMBus	I ² C, SMBus	I ² C, SMBus
Embedded Features	EAPI/SEMA, Backup BIOS, Debug/JTAG	EAPI/SEMA, Backup BIOS, Debug/JTAG	EAPI/SEMA, Backup BIOS, Debug/JTAG	EAPI/SEMA, Backup BIOS, Debug/JTAG
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	Standard: 0°C to +60°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)
OS Support	Windows® 10 64-bit, Yocto Linux 64-bit	Windows® 10 64-bit, Yocto Linux 64-bit, VxWork 64-bit	Windows® 10 64-bit, Yocto Linux 64-bit, VxWork 64-bit	Windows® 10/8.1 64-bit, Windows® 7 32/64-bit, WES 7 32/64-bit, Yocto Linux 64-bit, VxWork 64-bit
Form Factor & Compatibility	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	PICMG COM.0 R2.1, Type 6 Basic size: 95 x 125 mm

Notes:

- TPM support 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
- All specifications are subject to change without further notice.

Product Name	cExpress-WL	cExpress-KL	cExpress-SL	cExpress-AL	cExpress-BT
Product Image					
SoC	Next Gen Intel® Core™ i7/i5/i3, Pentium® and Celeron®	7th Gen Intel® Core™ i7-7600U/i5-7300U/i3-7100U/ Intel® Celeron® 3965U (formerly "Kaby Lake-U")	6th Gen Intel® Core™ i7-6600U/i5-6300U/i3-6100U Intel® Celeron® 3955U (formerly "Sky lake")	Intel Atom® E3950/E3940/ E3930 (eTEMP) Intel® Pentium® N4200 Intel® Celeron® N3350 (formerly "Apollo Lake")	Intel Atom® E3845/3827/ 3826/3825/3815/3805 Intel® Pentium® N2930, Intel® Celeron® J1900 (formerly "Bay Trail")
Memory	32GB DDR4 at 2133/1867 MHz	32 GB DDR4 at 2133/1867 MHz	32 GB DDR4 at 2133/1867 MHz	8 GB DDR3L at 1867/1600 MHz	8 GB DDR3L at 1333/1066 MHz
BIOS Type	AMI Aptio V	AMI Aptio V	AMI Aptio V	AMI Aptio V	AMI Aptio V
Bootloader	-	-	-	Coreboot	Coreboot
Graphics Outputs	LVDS (or eDP1.4) 2x DDI (DP/HDMI or VGA)	LVDS(oreDP1.4) 2x DDI (DP/HDMI or VGA)	LVDS (or eDP 1.3) 2x DDI (DP/HDMI)	LVDS (oreDP1.4) 2x DDI (DP/HDMI or VGA)	2x DDI (DP/HDMI or LVDS), VGA
Graphics Features	DX 12, OpenGL 4.5 and ES 2.0, OpenCL 2.1 H.265(HEVC) 10-bit codec, VP9 10-bit decode	DX 12, OpenGL 4.4 and ES 2.0, OpenCL 2.1 H.265(HEVC) 10-bit codec, VP9 10-bit decode	DX 12, OpenGL 4.4 and ES 2.0, OpenCL 2.1 H.265(HEVC) 8-bit codec, VP8 8-bit codec	DX12, OpenGL4.3, ES3.0, OpenCL 2.0, H.265 (HEVC) 8-bit codec, VP9 8-bit decode	DirectX 11, OpenGL 3.2, ES 2.0, OpenCL 1.1
LAN	Intel® i219LM/V	Intel® i219LM/V	Intel® i219LM/V	Intel® i210/i211 (IEEE1588)	Intel® i210/i211
USB	4x USB 3.0, 4x USB 2.0	4x USB 3.0, 4x USB 2.0	4x USB 3.0, 4x USB 2.0	3x USB 3.0, 5x USB 2.0 (USB OTG at 0)	1x USB 3.0, 6x USB 2.0
Serial ATA	Up 3x at 6Gb/s	3x at 6Gb/s	3x at 6Gb/s (i7/i5/i3) 2x at 6Gb/s (3955U)	2x at 6Gb/s	2x SATA 3Gb/s
PCI Express	5 PCIe x1 Gen3 (More PCIe config. by project basis)	5 PCIe x1 Gen3 (3965U supports Gen2) (6 PCIe x1 w/o GbE, opt.)	5 PCIe x1 Gen3 (3955U supports Gen2) (6 PCIe x1 w/o GbE, opt.)	4 PCIe x1 Gen2 (3 devices) (5 PCIe x1 with PCIe switch, opt.)	3 PCIe x1 (Gen2) (4 PCIe x1 without GbE, opt.)
eMMC (opt.)	-	-	-	8/16/32GB	8/16/32 GB
SD	-	-	-	Yes	Yes (mini SD slot on module)
Audio	ALC886 (carrier board)	ALC886 (carrier board)	ALC886 (carrier board)	ALC886 (carrier board)	ALC886 (carrier board)
TPM (opt.)	Yes (TPM 2.0)	Yes (TPM 2.0)	Yes (TPM 1.2)	Yes (TPM 1.2)	Yes (TPM 1.2)
Management Bus	I ² C, SMBus	I ² C, SMBus	I ² C, SMBus	I ² C, SMBus	I ² C, SMBus
Embedded Features	EAPI/SEMA, Backup BIOS, Debug/JTAG	EAPI/SEMA, Backup BIOS, Debug/JTAG	EAPI/SEMA, Backup BIOS, Debug/JTAG	EAPI/SEMA, Backup BIOS, Debug/JTAG	EAPI/SEMA, Backup BIOS, Debug/JTAG
Power Supply	5-20V / 5Vsb ±5% (ATX), 5-20V (AT)	5-20V / 5Vsb ±5% (ATX), 5-20V (AT)	5-20V / 5Vsb ±5% (ATX), 5-20V (AT)	4.75-20V / 5Vsb ±5% (ATX), 4.75-20V (AT)	5-20V / 5Vsb ±5% (ATX), 5-20V (AT)
Operating Temperature	Standard: 0°C to +60°C Extreme Rugged: -40°C to +85°C (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 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 Extreme Rugged: -40°C to +85°C (standard 12V input only)
OS support	Windows® 10 64-bit, Yocto Linux 64-bit	Windows® 10 64-bit, Yocto Linux 64-bit, VxWork 64-bit	Windows® 10/8.1 64-bit, Windows® 7 32/64-bit, WES 7 32/64-bit, Yocto Linux 64-bit, VxWork 64-bit	Windows® 10 64-bit, Yocto Linux 64-bit, VxWork 64-bit	Win 7/8, Linux, WES 7, WE8 Std., VxWorks, QNX
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 R2.1, 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

Notes:

- TPM support 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
- All specifications are subject to change without further notice.



Server Level COM Express

One of the most fundamental innovations of the COM interfaces, essential for the next generation of edge node appliances. Type 7 modules are headless (no graphics), which is why they are also referred to as “Server Level COM Express”.

Since LAN PHY is located on the carrier board, end users can choose between 10GbE Copper or Fiber solutions. Type 7 further supports up to 32 lanes of PCIe as well as NC-SI management interface. SoCs range from entry level Intel extended operating temperature range of -40°C to +85°C The range of applications for Type 7 modules is very broad : general purpose rugged embedded computer, mission critical server, SDN appliance, signal processing & data acquisition appliance, network test equipment, satellite gateway, in-flight entertainment system.

Type 7

A-B	C-D
4x USB 2.0	4x USB 3.0
2x SATA	3x 10GB KR
Gigabit Ethernet	
NC-SI	
LPC / eSPI	
GPIO / SDIO / SERIAL / CAN / SPI / I2C / HDA	
PCIe x32	
Power	
BOMBL	

Applications



Satellite Gateway






Data Communication



Defense



The Type 7 Starter Kit Plus consists of a COM Express® Type 7 module with ATX size Type 7 reference carrier board that offers one PCIExpress x16 slot with proprietary pinout for a 10GbE adapter card that convert a 10GBASE-KR to 10GbE Optical Fiber or 10GbE Copper signal, one PCIExpress x16 slot, two PCIExpress x8 slots, Serial ATA, USB 3.0/2.0, GbE and Super I/O. In addition, an IPMI board management controller (miniBMC) located on the carrier board connects to the COM Express Type 7 module by NC-SI interface to support out-of-band management features. All necessary cables are included.

Product Name	Express-HD7	Express-DN7	Express-BD7
Product Image	 Preliminary		
SoC	Next Gen Intel® Xeon-D	Intel Atom® C3808/C3708/C3508/ C3308/C3958/C3858/C3758/C3558/ C3538/C3338 (formerly "Denverton-NS")	Intel® Xeon® D-1559/D-1539/D-1519 (eTEMP) D-1577/D-1548/D-1527 Pentium® D1508 (formerly "Broadwell-DE")
Memory	64 GB DDR4 at 2400/2133 MHz (ECC / non-ECC)	48 GB DDR4 at 2400/2133 MHz (ECC / non-ECC)	32 GB DDR4 at 2400/2133 MHz (ECC / non-ECC)
BIOS Type	AMI Aptio V	AMI Aptio V	AMI Aptio V
LAN	2x 10GBASE-KR (10G) Intel® i210/i211 (GbE, IEEE 1588) NC-SI	4x 10GBASE-KR (10G) Intel® i210/i211 (GbE, IEEE 1588) NC-SI	2x 10GBASE-KR (10G) Intel® i210/i211 (GbE, IEEE 1588) NC-SI
USB	4x USB 3.0	2x USB 3.0, 2x USB 2.0	4x USB 3.0
Serial ATA	2x at 6Gb/s	2x at 6Gb/s	2x at 6Gb/s
PCI Express	PCI Express x16 Gen3 (or 2 x8 or 4 x4) PCI Express x8 Gen3 (2 controllers) PCI Express x8 Gen2 (2 controllers) w/o GbE	Up to 2x PCI Express x8 Gen3 (4 controllers) w/o GbE	PCI Express x16 Gen3 (or 2 x8 or 4 x4) PCI Express x8 Gen3 (2 controllers) PCI Express x8 Gen2 (2 controllers) w/o GbE
eMMC (opt.)	-	8/16/32GB	-
TPM (opt.)	Yes (TPM 2.0)	Yes (TPM 2.0)	Yes (TPM 2.0)
Management Bus	I ² C, SMBus	I ² C, SMBus	I ² C, SMBus
Embedded Features	EAPI/SEMA, Backup BIOS, Debug/JTAG	EAPI/SEMA, Backup BIOS, Debug/JTAG	EAPI/SEMA, Backup BIOS, Debug/JTAG
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)
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 Extreme Rugged: -40°C to +85°C (standard 12V input only)
OS support	Windows® Server 2016/2012 64-bit Yocto Linux 64-bit	Windows® Server 2016/2012 64-bit Yocto Linux 64-bit	Windows® Server 2012 64-bit Yocto Linux 64-bit
Form Factor & Compatibility	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	PICMG COM.0 R3.0, Type 7 Basic size: 95 x 125 mm

Notes:

- TPM, eMMC support 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
- 10G, I/O and memory support dependent on SKUs for Express-DN7
- All specifications are subject to change without further notice.



Best Mobility

The COM Express® Type 10 Mini (84 x 55 mm, credit card size) module is intended for low power platforms (TDP 12W and below), capable of entry level processing with ultra-low power consumption, while supporting graphics and optimized I/O count for mobile applications. Type 10 modules are targeted at handheld devices (smart battery) for industrial, medical, transportation, and controllers for outdoor applications.

Type 10 A-B

- 8x USB 2.0
2x USB 3.0
- DDI
- LVDS / eDP
- 4x SATA
- Gigabit Ethernet
- LPC / eSPI
- GPIO / SDIO / SERIAL /
CAN / SPI / I2C / HDA
- PCIe x4
- Power
- DOMEL

Applications





In-Vehicle / In-Flight Entertainment



Panel Control



The nanoX Starter Kit Plus consists of a COM Express® Type 10 reference carrier board that provides two PCIe Mini Card slots, 2 RJ-45 LAN ports, 2x USB 3.0, 2x USB 2.0, 1x USB client, 2x DB-9 COM, 1x SD card socket, and Mic/Line-in/Line-out. ADLINK also provides additional development tools including a verified 10.1" LVDS panel, smart battery, power supply, thermal solution and cabling accessories.

Product Name	nanoX-AL	nanoX-BT
Product Image		
SoC	Intel® Atom® E3950/E3940/E3930 (eTEMP) Intel® Pentium® N4200 Intel® Celeron® N3350 (formerly "Apollo Lake")	Intel Atom® E3845/3827/3826/3825/3815/3805 Intel® Celeron® N2930/J1900 (formerly "Bay Trail")
Memory (soldered)	8GB DDR3L at 1866/1600 MHz	4GB non-ECC DDR3L at 1333 MHz
BIOS Type	AMI Aptio V	AMI Aptio IV
Boot Loader	Coreboot	Coreboot
Graphics Outputs	LVDS (or eDP 1.4)	LVDS (or eDP)
Graphics Features	1x DDI (DP/ HDMI) DX 12, OpenGL 4.3, ES 3.0, OpenCL 2.0	1x DDI (DP/ HDMI) DX 11, OpenGL 3.2, ES 2.0, OpenCL 1.1
LAN	Intel® i210/i211 (IEEE 1588)	Intel® i210/i211
USB	2x USB 3.0, 6x USB 2.0 (USB OTG on USB 2.0 port 7 with Yocto Linux)	1x USB 3.0, 3x USB 2.0 (USB 2.0 client at port 7)
Serial ATA	2x at 6Gb/s	2x at 3Gb/s
PCI Express	3x PCIe x1 Gen2 (others by project basis)	3x PCIe x1 Gen2 (4 PCIe x1 w/o GbE, opt.)
eMMC (opt.)	8/16/32GB	8/16/32GB
SD (opt.)	Yes	Yes
Audio	ALC262 (carrier board)	ALC262 (carrier board)
TPM (opt.)	Yes (TPM 2.0)	Yes (TPM 1.2)
Management Bus	I ² C, SMBus	I ² C, SMBus
Embedded Features	EAPI/SEMA, Backup BIOS, Debug/MIPI60	EAPI/SEMA, Backup BIOS, Debug/JTAG
Power Supply	4.75-20 V / 5Vsb ±5% (ATX), 4.75-20V (AT)	5-14 V / 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)
OS Support	Windows® 10 64-bit, Yocto Linux 64-bit, VxWorks 64-bit	Windows® 7/8, Yocto Linux, WES 7, WE8 Std., VxWorks (all 32/64-bit)
Form Factor & Compatibility	PICMG COM.0 R2.1 R3.0, Type 10 Mini size: 84 x 55 mm	PICMG COM.0 R2.1, Type 10 Mini size: 84 x 55 mm

Notes:

- TPM, eMMC support 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
- All specifications are subject to change without further notice.

ARM/x86 Lowest Power



SMARC® formfactor is the only computer-on-module form factor that truly is capable of supporting both ARM and x86 designs. With 314-pins on a high speed MXM3 connector, SMARC can fully cover both typical x86 interfaces as well as typical ARM type low level signals.

Using ARM SoCs opens the possibility to leverage the product ecosystem of familiar devices such as tablet computers and smart phones. Alternative low power SoCs and CPUs, such as tablet oriented x86 devices and other RISC CPUs may be used as well.





The module power envelope is typically under 6W and the form factor is ideal for applications that mandate designs able to withstand extreme environmental conditions.

SMARC

2x LVDS / DSI / eDP
HDMI / DP++
DP++
2x MIPI CSI
HDA / I2S
1x SATA
2x GbE
2x USB 3.0/2.0 (1x OTG) 4x USB 2.0 (1x OTG)
4x PCIe
SDIO / SPI / eSPI / 5x I2C / 4x UART / 2x CAN / 12x GPIO
Power
COM6L



- ARM Cortex or x86 Atom level based
- 314-pin MXM3 board-to-board connector supporting speeds up to PCIe Gen3
- Up to 3 display interfaces: Dual LVDS, eDP, DP, HDMI or MIPI DSI
- Camera support: 2x MIPI CSI
- PCIe, USB 3.0/2.0, SATA, 2x GbE, 4x UART, 5x I²C, 2x CAN, SPI/eSPI, 12x GPIO
- Uboot and Coreboot supported
- SEMA/EAPI Embedded Library supported
- 3.3 to 5V power input, with VDIO of 1.8V
- Extreme Rugged versions support operation from -40°C to +85°C

Modules	ARM-based			
Product Name	LEC-AL	LEC-iMX8M	LEC-iMX6 R2.0	LEC-PX30
Product Image				
CPU	Intel Atom® E3900 Series, Intel® Pentium® N4200, Intel® Celeron® N3350 (formerly "Apollo Lake")	NXP i.MX 8M Quad, QuadLite, Dual, up to 4x Cortex-A53 cores	NXP i.MX6 Quad, Dual, DualLite and Solo, up to 4x Cortex-A9 cores	Rockchip PX30 Quad-core 4x Cortex-A35 cores
Memory	Up to 8 GB DDR3L at 1867 MHz	Up to 4GB DDR3L at 1600 MHz (2/4GB) eMMC: 8/16/32GB	Up to 4GB DDR3L at 1066 MHz eMMC: 8/16/32GB	Up to 4 GB DDR3L at 1066MHz (1/2/4GB) eMMC: 8/16/32GB
Cache	L2: 2 MB	L2: 1MB	L2: 1 MB	L2: 256KB
Boot Loader	AMI UEFI BIOS	U-Boot	U-Boot	U-Boot
Graphics Outputs	H.265 (HEVC) 10-bit codec, VP9 10-bit decode Dual channel LVDS (18/24-bit) HDMI/DP++, DP++ 2x MIPI CSI camera	4K H.265/264, VP9 decode with HDR 1x HDMI 1x MIPI-DSI, 4-lane (or LVDS)	1x HDMI 1x LVDS	LVDS (or MIPI-DSI, 4-lane)
LAN	Intel® i210IT MAC/PHY 1x GbE IEEE 1588	Up to 2x GbE	1x GbE 1x 10/100Mbps LAN	Up to 2x 10/100Mbps
USB	1x USB 3.0 OTG 1x USB 3.0 host 1x USB 2.0 OTG 1x USB 2.0 host	2x USB 3.0 3x USB 2.0 (one shared with USB OTG on port 0)	5x USB 2.0 (one shared with USB OTG on port 0)	3x USB 2.0 (one shared with USB OTG on port 0)
Extension ports	1x SATA 6Gb/s	3x UART 2x eCSPI 12x GPIO 1x SDIO	1x SATA 3Gb/s (Quad and Dual only) 4x UART 2x SPI 12x GPIO 1x SDIO	2x UART 2x SPI 12x GPIO 1x SDIO
Audio	HDA	1x I ² S, HDA	1x I ² S, HDA	1x I ² S, HDA
PCI Express	4x PCIe x1	Up to 2x PCIe Gen2 (one shared with GbE)	1x PCIe x1 Gen 2	-
SEMA Support	Yes	Yes	Yes	Yes
Power Supply	5.0 V - 5.25 V DC ±5%	3.0 V - 5.25 V DC ±5%	5.0 V - 5.25 V DC ±5%	3.0 V - 5.25 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.)	0°C to +60°C -20°C to +85°C (opt.)
OS Support	Windows® 10 IoT Enterprise, Windows® 10 IoT Core, Yocto Linux	Linux, Android	Linux, Android, WEC7, QNX	Linux, Android
Form Factor & Compatibility	SMARC short size, 82 x 50 mm, SMARC specification v2.0	SMARC short size, 82 x 50 mm, SMARC specification v2.0	SMARC short size, 82 x 50 mm, SMARC specification v2.0	SMARC short size, 82 x 50 mm, SMARC specification v2.0

Note: All specifications are subject to change without further notice.



ETX

X1	X2
4x USB 2.0/1.1	8/16-bit ISA
32-bit PCI-bus	
HD Audio	
X3	X4
Analog VGA	2x PATA
Dual LVDS	2x SATA
PS2 MS / KB 2x UART, LPT1	I2c / SMBus
	10/100 Mbps Ethernet
5x UART / 2x KB	10/100 Mbps

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 very much alive in the lower power segment, mostly notably using Intel Atom® SoCs. Specifically, for customers who are still heavily invested in ISA and PCI controllers or peripheral technology, the ETX form factor has stayed in demand through the years. ADLINK's current product planning will provide long term support for ETX well beyond 2025.

Product Name	ETX-BT
Product Image	
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 (opt.)	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.)
OS Support	Windows 7/8 Linux (WES7, WE8 Std., WEC7; Linux, VxWorks)
Form Factor & Compatibility	ETX 3.02 Size: 95 x 114 mm

Note: All specifications are subject to change without further notice.



Q S E V E N



x86

EXTREME
RUGGED

Qseven® is an off-the-shelf, multi-vendor, computer-on-module that integrates all the core components of a common x86 PC and is mounted onto an application specific carrier board. A single ruggedized 230-pin MXM connector provides the carrier board interface to carry all the I/O signals to and from the Qseven module.

The Qseven® module provides all functional requirements for an embedded application. Such as graphics, sound, mass storage, PCIe, networking and multiple USB ports. Since its pinout is mostly x86 oriented, Qseven® is commonly built around "Atom level" x86 silicon. The Qseven® power envelope is typically between 6 and 12 watts.

Q7

2x LVDS / eDP

HDMI / DP++

2x MIPI CSI

HDA / I2S

2x SATA

GbE

2x USB 3.0/2.0
8x USB 2.0 (1x OTG)

4x PCIe

SDIO / SPI / LPC or GPIO
5x I2C / 2x UART or CAN

Power

60mW

Product Name	Q7-AL
Product Image	
SoC	Intel Atom® E3900 Series, Pentium® N4200 or Celeron® N3350 (Formerly "Apollo Lake")
Memory	Up to 8 GB LPDDR4 at 2400 MHz
Cache	L2: 2 MB
BIOS Type	AMI UEFI BIOS
Integrated Graphics	9th Gen Intel® graphics core architecture with up to 18 execution units, supports three independent displays, 4k video (up to 4096 x 2160 @60fps)
Graphics Features	DirectX 12, OpenGL 4.2, OpenCL
Camera	2x MIPI CSI 2L/4L
LAN	Intel® i210IT MAC/PHY, 1x GbE, IEEE 1588
USB	2x USB 3.0 6x USB 2.0
Serial ATA	2x SATA 6Gb/s to carrier or 1x SATA 6Gb/s to carrier and 1x onboard SATA SSD
PCI Express	3x PCIe x1
eMMC (opt.)	Onboard eMMC 5.0 (4-64 GB)
Audio	HDA
SEMA	Yes
Power Supply	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
OS Support	Windows 10 IOT Enterprise, Windows 10 IOT Core, Yocto Linux
Form Factor & Compatibility	Qseven 2.1, Size: 70 x 70 mm

Notes: All specifications are subject to change without further notice.

Leading Computer-on-Modules Most Robust, Best Support

ADLINK's computer-on-module products are not only leading edge when it comes to quality and standardization, they're packed with design innovations and backed up by top-class production and manufacturing logistics that ensure timely delivery and distribution to you, as ordered, when needed. To ensure lifetime stability of your products, we provide EOL management that provides long production service durations.

We play a major role in the PICMG consortium and SGeT, and have made significant contributions in defining COM Express®, SMARC® and Qseven® standards. With ADLINK as your partner in computer-on-module products, our commitment to lead the industry and produce the most robust products is backed by our comprehensive support network. Choose ADLINK computer-on-module products to ensure the success of your venture from start to finish.



Leading
Innovation



Expert
Solutions



Robust
Product



Comprehensive
Support





ADLINK
DIGITAL LINK

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