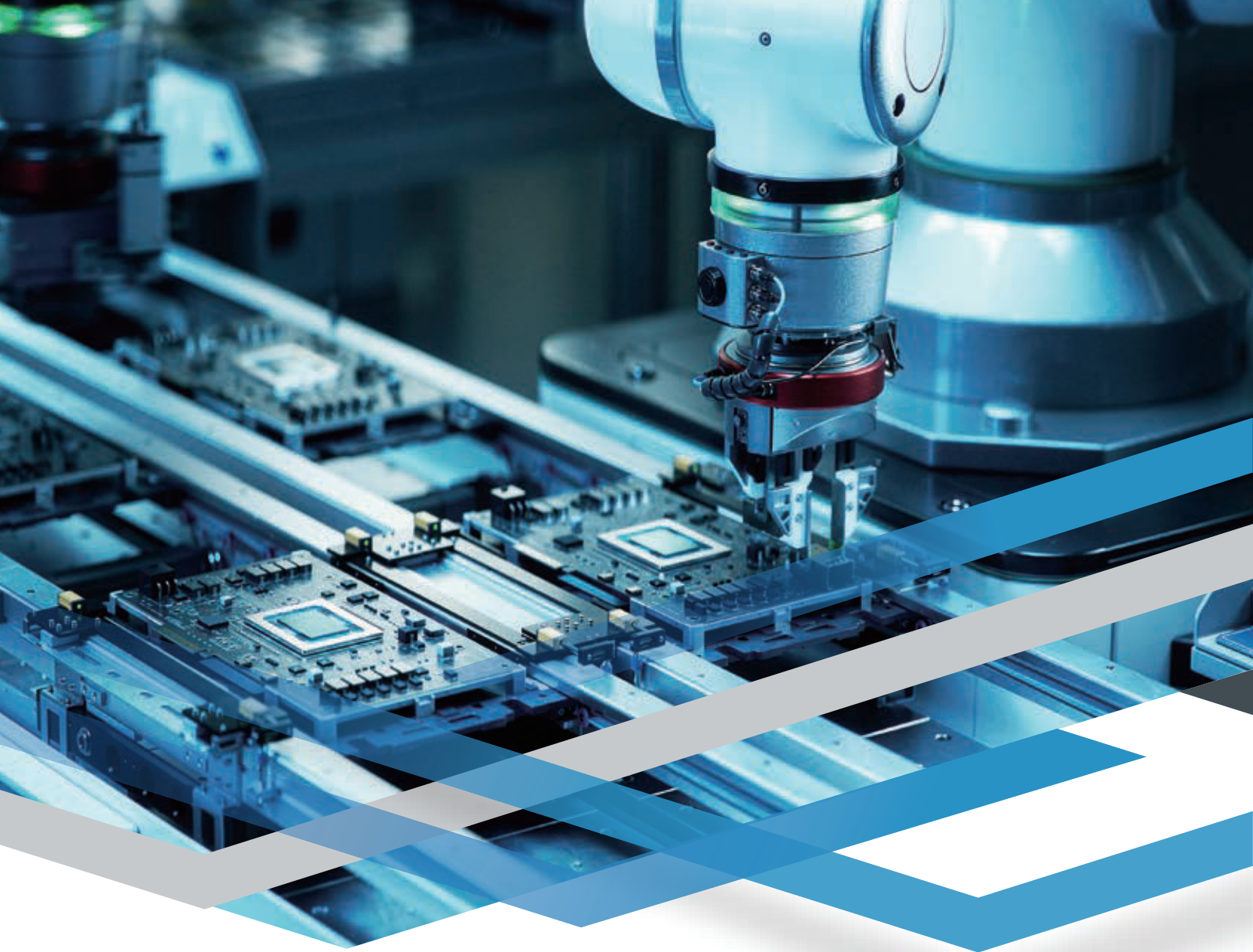
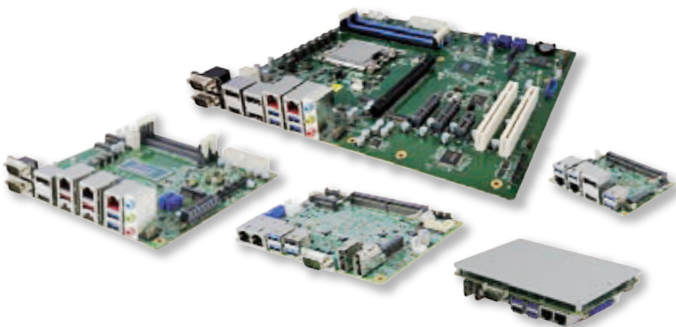




Vol.24

EMBEDDED COMPUTING



iBASE
www.ibase.com.tw

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About IBASE



HQ

**Taipei,
Taiwan**



Stock Code

TPEX 8050
(Since 2003)



Chairman

C. S. Lin



Capital

US\$
66.2M



Revenue

US\$
161M
(2024)



Employees

1,010
(Group)
770
(IBASE HQ)



**Design and Manufacturing of
Robust Computing Platforms**

Company Profile

IBASE Technology specializes in the design and manufacture of robust industrial PC products and has been serving the global market since its establishment in 2000. All manufacturing and quality control operations are conducted in IBASE's own facilities in Taiwan, which are certified to ISO 9001, ISO 13485, ISO 14001, and ISO 27001 standards. The company's current product offerings include x86 and RISC-based industrial motherboards, embedded systems, Edge AI computers, panel PCs, network appliances, and digital signage players. IBASE is publicly listed on the Taipei Exchange (TPEX: 8050) and has become a leading global provider of innovative industrial and embedded computing solutions.



Core Competence – R&D Design Capabilities

IBASE excels in delivering advanced R&D design capabilities through a team of experienced, reliable, and highly skilled engineers. Our core expertise lies in adaptive innovation and customized design solutions tailored to diverse industry requirements. By leveraging rapid prototyping and flexible design processes, we help customers accelerate time-to-market and gain a competitive edge in today's fast-evolving technology landscape. From concept to completion, IBASE prioritizes precision, efficiency, and reliability—making us a trusted partner for businesses seeking advanced industrial computing solutions.

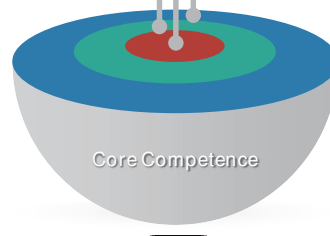
Experienced, Reliable
& Highly Skilled
Engineering Team



Adaptive Innovation
& Custom Design
Capabilities

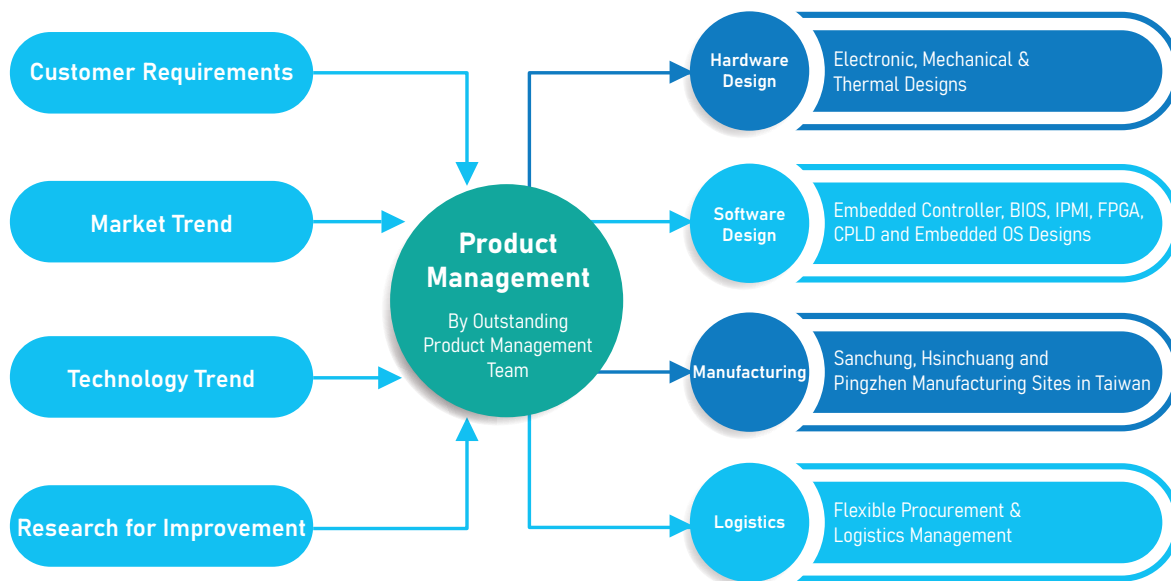


Rapid Prototyping &
Flexible Design for
Faster Time-to-Market



Design & Manufacturing Services

Established to become a leading global provider of embedded board and system solutions, IBASE manufactures and supplies cutting-edge products based on the latest technologies to meet market demands. Our R&D and product management teams have the expertise to design and develop innovative products that meet customer requirements and design specifications. We place great importance on research and development, investing heavily in manpower and resources to consistently deliver high-quality, innovative products. IBASE is also committed to environmental compliance by working to prevent pollution through the avoidance of banned or restricted substances in our production processes and products, helping our customers address their environmental challenges.



IBASE Manufacturing Sites

IBASE Manufacturing Sites in Taiwan



18,481 m² / 5,591 Ping

Pingzhen

- Board Production
- System Assembly
- Validation



6,070 m² / 1,840 Ping

Xinzhuang

- System Assembly
- Validation



3,124 m² / 945 Ping

Sanchong

- Board Production
- Validation

Total Size

297,891 Square-feet
(27,675 m² / 8,376 Ping)

Capacity

- SMT Line x 7
- DIP Assembly Line x 4
- System Assembly Line x 10
- Cleanroom x 2
- Burn-in Room x 20

PCBA

80K/month

In-house Production+
Outsourcing

System Assembly

50K/month

In-house Production+
Outsourcing

Certifications



ISO 9001



ISO 14001



ISO 13485



ISO 27001



EN60601

Comparison Table

3.5"/2.5" Single Board Computer

Models	IB962	IB96W	IB961	IB956
Form Factor	3.5" SBC	3.5" SBC	3.5" SBC	3.5" SBC
CPU Socket	CPU on board	CPU on board	CPU on board	CPU on board
CPU	Intel® Core™ Ultra 7/5 100 Series mobile processors	13th Gen Intel® Core™ i7/i5/i3 mobile processors	13th Gen Intel® Core™ i7/i5/i3 mobile processors	11th Gen Intel® Core™ i / H-Series processor
CPU Max. Frequency	Up to 5.0GHz	Up to 4.8GHz	Up to 4.8GHz	Up to 4.7GHz
PCH	N/A	N/A	N/A	QM580E HM570E
Memory	2x DDR5 SO-DIMM	1x DDR5 SO-DIMM	1x DDR5 SO-DIMM	1x DDR4 SO-DIMM
Max. Memory Size	64GB	32GB	32GB	32GB
BIOS	AMI	AMI	AMI	AMI
Graphics Controller	Intel® Core™ Ultra 7/5 100 Series built-in Iris Xe Graphics with up to 128EUs	13th Gen Intel® Core™ i7/i5/i3 mobile processors, built-in Gen13 graphics, Up to EU96	13th Gen Intel® Core™ i7/i5/i3 mobile processors, built-in Gen13 graphics, Up to EU96	11th Gen Intel® Core™ i / H-Series built-in Gen12 graphics, Up to EU96
Video Output	24-bit dual-channel LVDS eDP, HDMI2.0, DisplayPort	24-bit dual-channel LVDS eDP 2x DisplayPort	24-bit dual-channel LVDS eDP 2x DisplayPort	24-bit dual-channel LVDS 3x DisplayPort
Ethernet	1x Intel® I226LM 2.5GbE 1x Intel® I226V 2.5GbE	1x Intel® I226LM 2.5GbE 1x Intel® I226V 2.5GbE	1x Intel® I226LM 2.5GbE 1x Intel® I226V 2.5GbE	1x Intel® I226-LM 2.5GbE (IB956AF series) 1x Intel® I226-V 2.5GbE (IB956EF series) Intel® I226-V as 2nd GbE
Audio	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec
SATA	2x SATA III ports	2x SATA III ports	2x SATA III ports	2x SATA III ports
I/O Chipset	Fintek F81804U-I	Fintek F81804U-I	Fintek F81804U-I	Fintek F81804U-I
Serial Port	2x RS232/422/485 (jumper-less selection)	2x RS232/422/485 (jumper-less selection)	2x RS232/422/485 (jumper-less selection)	1x RS232 1x RS232/422/485 (jumper-less selection)
USB 2.0	3x USB 3.2 Type-A 5x USB 2.0 via pin header	3x USB 2.0 (1x Type-A; 2x via pin headers)	3x USB 2.0 (1x Type-A; 2x via pin headers)	2x USB 2.0 via pin header
USB 3.X	3x USB 3.2 via rear I/O 1x USB 2.0 via rear I/O	3x USB 3.2 via rear I/O	3x USB 3.2 via rear I/O	5x USB 3.1 (Gen.2) via rear I/O 1x USB 3.1 (Gen2) via Type-C
Hardware Monitor	Yes	Yes	Yes	Yes
TPM	dTPM/fTPM	fTPM	fTPM	2.0
Storage Device Interface	M.2 (M2280 for NVMe)	M.2 (M2280 for NVMe)	M.2 (M2280 for NVMe)	1x M.2 (M-Key)
Watchdog Timer	256 levels	256 levels	256 levels	256 levels
Digital I/O	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out
Mini Type Slots	3x M.2 slots (M-Key + E-Key + B-Key)	3x M.2 slots (M-Key + E-Key + B-Key)	3x M.2 slots (M-Key + E-Key + B-Key)	1x M.2 (M-Key), 1x M.2 (E-Key)
Power input	DC-in 12V~24V	DC-in 12V~24V	DC-in 12V~24V	DC-in 12V~24V
Power Consumption	Intel® Core™ Ultra 7 165H, Up to 5.0GHz w/ 2 x 32G DDR5-5600 memory module + 12V: 6.83A	Intel® Core™ i7-1370PRE, Up to 4.8GHz w/ 1x 32GB DDR5-4800 memory module + 12V: 6.56A	Intel® Core™ i7-1370PE processor, Up to 4.8GHz w/ 1 x 32G DDR5-4800 memory module + 12V: 6.56A	Intel® Core™ i7-11850HE 2.6GHz w/ 8GB DDR4-2400 + 12V: 5.82A
Dimensions (L x W)	147mm x 102mm	147mm x 102mm	147mm x 102mm	147mm x 102mm
Extra Features	Built-in iAMT (18.0)	Built-in iAMT (16.1)	Built-in iAMT (16.1)	Built-in iAMT (15)
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Single Board Computers

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Comparison Table

3.5"/2.5" Single Board Computer

Models	IB953	IB952	IB919	IB918
Form Factor	3.5" SBC	3.5" SBC	3.5" SBC	3.5" SBC
CPU Socket	CPU on board	CPU on board	CPU on board	CPU on board
CPU	11th Gen Intel® Core™ U-Series processor	AMD Ryzen™ Embedded V2000 series	8th Gen Intel® Core™ U-Series processor	AMD Ryzen™ embedded V1000/R1000 series
CPU Max. Frequency	Up to 4.7GHz	Up to 4.15GHz	Up to 4.7GHz	3.6GHz/ 2.3GHz
PCH	N/A	N/A	N/A	N/A
Memory	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM
Max. Memory Size	64GB	64GB	32GB	32GB
BIOS	AMI	AMI	AMI	AMI
Graphics Controller	11th Gen Intel® Core™ i / U-Series built-in Gen 12 graphics, Up to EU96	AMD Ryzen™ V-Series APU built-in GPU	8th Gen Intel® Core™ i / U-Series built-in Gen 9 graphics, Up to 24EU	AMD Ryzen™ V-Series APU built-in GPU
Video Output	24-bit dual-channel LVDS eDP 2x DisplayPort	2x DisplayPort 1.4 24-bit dual-channel LVDS eDP	24-bit dual-channel LVDS or eDP 2x DisplayPort	2x HDMI2.0 24-bit dual-channel LVDS eDP
Ethernet	Intel® I219LM GbE PHY (IB953AF series) Intel® I219V GbE PHY (IB953EF series) Intel® I210AT as 2nd GbE	2x Intel® I211AT or I210AT GbE	Intel® I219LM GbE PHY (IB919AF series) Intel® I219V GbE PHY (IB918EF series) Intel® I211AT or I210AT as 2nd GbE	Intel® I211AT or I210AT GbE
Audio	Built-in ALC269Q-VC3-GR HD audio codec with 2W amplifier	Built-in ALC888S HD audio codec	Built-in ALC269Q-VC3-GR HD audio codec with 2W amplifier	Built-in ALC269Q-VC3-GR HD audio codec with 2W amplifier
SATA	2x SATA III ports	2x SATA III ports	2x SATA III ports	2x SATA III ports
I/O Chipset	Fintek F81804U-I	Fintek F81804U-I	Fintek F81964D-I	F81964D-I
Serial Port	2x RS232/422/485 (jumper-less selection)	1x RS232 1x RS232/422/485 (jumper-less selection)	3x RS232 1x RS232/422/485 (jumper-less selection)	3x RS232 1x RS232/422/485 (jumper-less selection)
USB 2.0	2x USB 2.0 via pin header 1x USB 2.0 Type-A	2x USB 2.0 via real I/O	2x USB 2.0 via pin header	1x USB 2.0 via pin header
USB 3.X	3x USB 3.1 via rear I/O	2x USB 3.1 (Gen.2) via rear I/O 1x USB 3.1 via Type-C	1x USB 3.1 Type-C 4x USB 3.1 via rear I/O	2x USB 3.1 via rear I/O 2x USB 3.0 via rear I/O from eDP Lanes
Hardware Monitor	Yes	Yes	Yes	Yes
TPM	2.0	2.0	2.0	2.0
Storage Device Interface	1x M.2 (M-Key)	1x M.2 (M-Key)	1x M.2 (M-Key)	1x M.2 (M-Key)
Watchdog Timer	256 levels	256 levels	256 levels	256 levels
Digital I/O	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out
Mini Type Slots	1x M.2 (B-Key), 1x M.2 (E-Key), 1x M.2 (M-Key)	1x M.2 (M-Key), 1x M.2 (E-Key)	1x M.2 (B-Key), 1x M.2 (E-Key)	1x M.2 (B-Key), 1x M.2 (E-Key)
Power input	DC-in 9V~24V	DC-in 12V~24V	DC-in 9V~24V	DC-in 12V~24V
Power Consumption	Intel® Atom® i7-1185G7E 2.80GHz w/2x 16GB DDR4-3200 +12V: 3.88A	AMD Ryzen™ Embedded V2748 2.90GHz w/2x 16GB DDR4-3200 +12V: 7.61A	Intel® Core™ i7-8665UE 1.70GHz w/2x 16GB DDR4-2400 +12V: 2.25A Intel® Core™ i3-8145UE 2.20GHz w/2x 16GB DDR4-2400 +12V: 2.24A	AMD Ryzen™ Embedded V1605B 2.00GHz w/ 2x 16GB DDR4-2400 +12V: 2.55A AMD Ryzen™ Embedded R1606G 2.6GHz w/ 2x 16GB DDR4-2400 +12V: 2.34A
Dimensions (L x W)	147mm x 102mm	147mm x 102mm	147mm x 102mm	147mm x 102mm
Extra Features	Built-in iAMT (15), EuP/ErP	EuP/ErP, LAN Wakeup	EuP/ErP, LAN Wakeup	EuP/ErP, LAN Wakeup
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Single Board Computers

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Comparison Table

3.5"/2.5" Single Board Computer

Models	IB917	IB916	IB915	IB899
Form Factor	3.5" SBC	3.5" SBC	3.5" SBC	3.5" SBC
CPU Socket	CPU on board	CPU on board	CPU on board	CPU on board
CPU	7th Gen Intel® Core™ U-Series processor	7th Gen Intel® Core™ U-Series processor	6th Gen Intel® Core™ U-Series processor	Intel® Pentium® Processor N3710 / Intel® Celeron® Processor N3010
CPU Max. Frequency	Up to 3.9GHz	Up to 3.9GHz	Up to 3.4GHz	Up to 2.56GHz/ 2.24GHz
PCH	N/A	N/A	N/A	N/A
Memory	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR3L SO-DIMM	2x DDR3L SO-DIMM
Max. Memory Size	32GB	32GB	16GB	8GB
BIOS	AMI	AMI	AMI	AMI
Graphics Controller	Intel® Core™ U-Series processor integrated graphics	Intel® Core™ U-Series processor integrated graphics	Intel® Core™ i integrated HD GT2-520	Intel® Gen8 graphics
Video Output	24-bit dual-channel LVDS HDMI / DisplayPort on board	eDP/ HDMI / DisplayPort on board	24-bit dual-channel LVDS & eDP DisplayPort on board	24-bit dual-channel LVDS DVI-D & VGA on board
Ethernet	IB917AF: Intel® I219LM LAN PHY IB917F: Intel® I219V LAN PHY Intel® I210AT Gigabit LAN as 2nd LAN	IB916AF: Intel® I219LM LAN PHY IB916F: Intel® I219V LAN PHY Intel® I210AT Gigabit LAN as 2nd LAN	Intel® I219LM/V Gigabit LAN PHY Intel® I210AT Gigabit LAN	2x Intel® I210AT Gigabit LAN
Audio	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec
SATA	2x SATA III ports	2x SATA III ports	2x SATA III ports	2x SATA III ports
I/O Chipset	F81846AD-I	F81846AD-I	F81846AD-I	NCT5523D
Serial Port	3x RS232 1x RS232/422/485 (Jumper-less selection)	3x RS232 1x RS232/422/485 (Jumper-less selection)	3x RS232 1x RS232/422/485 (Jumper-less selection)	1x RS232 1x RS232/422/485 (Jumper-less selection)
USB 2.0	2x USB 2.0 via pin header	2x USB 2.0 via pin header	2x USB 2.0 via pin header	2x USB 2.0 (via pin header)
USB 3.X	4x USB 3.0 via rear I/O	4x USB 3.0 via rear I/O	1x USB 3.1 Type-C + 4x USB 3.0 via rear I/O	4x USB 3.0 via rear I/O
Hardware Monitor	Yes	Yes	Yes	Yes
TPM	2.0	2.0	N/A	N/A
Storage Device Interface	mSATA via Mini PCI-E	mSATA via Mini PCI-E	mSATA via Mini PCI-E	mSATA via Mini PCI-E
Watchdog Timer	256 levels	256 levels	256 levels	256 levels
Digital I/O	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out
Mini Type Slots	1x Mini PCI-E(x1)	1x Mini PCI-E(x1)	1x Mini PCI-E(x1)	2x Mini PCI-E(x1)
Power input	DC-in 9V~24V	DC-in 9V~24V	DC-in 9V~24V	DC-in 12V~24V
Power Consumption	Intel® i7-7600U, 2.8GHz w/ 8GB DDR4-2133, +12V: 3.46A Intel® i3-7100U, 2.4GHz w/ 8GB DDR4-2133, +12V: 2.68A	Intel® i7-7300U, 2.6GHz w/ 8GB DDR4-2133, +12V: 2.06A, Intel® i3-7100U, 2.4GHz w/ 8GB DDR4-2133, +12V: 2.24A	Intel® Core™ i3-6100U 2.3GHz w/ 2x DDR3L-1600 4GB +12V: 2.36A Intel® Core™ i7-6600U 2.6GHz w/ 2x DDR3L-1600 4GB +12V: 2.27A	Intel® Pentium® N3700 1.6GHz w/ 2x 4GB DDR3L-1600 +12V : 1.5A
Dimensions (L x W)	147mm x 102mm	147mm x 102mm	147mm x 102mm	147mm x 102mm
Extra Features	Built-in iAMT (11.0), RAID LAN Wakeup, iSMART	Built-in iAMT (11.0), RAID LAN Wakeup, iSMART	Built-in iAMT (11.0), RAID LAN Wakeup, iSMART	LAN Wakeup, iSMART
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Comparison Table

3.5"/2.5" Single Board Computer

Models	IB898	IB897	IB839	IB838
Form Factor	3.5" SBC	3.5" SBC	3.5" SBC	3.5" SBC
CPU Socket	CPU on board	CPU on board	CPU on board	CPU on board
CPU	Intel® Atom® Processor E3825/ E3815	Intel® Atom® Processor E3845/ E3827/E3815	Intel® Atom® Processor x7835RE Intel® Atom® Processor x7211RE	Intel® Core i3-N305 Intel® Processor N50
CPU Max. Frequency	1.33GHz / 1.46GHz	1.91GHz / 1.75GHz / 1.46GHz	Up to 3.6GHz	Up to 3.8GHz
PCH	N/A	N/A	N/A	N/A
Memory	1x DDR3L SO-DIMM	2x DDR3L SO-DIMM	1x DDR5 SO-DIMM	2x DDR5 SO-DIMM
Max. Memory Size	8GB	16GB	16GB	16GB
BIOS	AMI	AMI	AMI	AMI
Graphics Controller	Intel® Gen7 w/ 4EUs graphics	Intel® Gen7 w/4EUs graphics	Intel® Gen12 UHD graphics	Intel® Gen12-AL w/ 32 EUs graphics
Video Output	24-bit dual-channel LVDS DisplayPort & VGA on board	24-bit dual-channel LVDS DisplayPort on board	24-bit dual-channel Type-C & DP++ and eDP or LVDS 1x DisplayPort on board	24-bit dual-channel Type-C & DP++ and eDP or LVDS 1x DisplayPort on board
Ethernet	1x Intel® I210IT Gigabit LAN	2x Intel® I210IT Gigabit LAN	2x Intel® I226IT Gigabit LAN	2x Intel® I226V Gigabit LAN
Audio	Built-in ALC269 HD audio codec with integrated 2 amplifier	Built-in ALC269 HD audio codec 2W amplifier	Built-in ALC888S HD audio codec with 2W amplifier	Built-in ALC888S HD audio codec with 2W amplifier
SATA	2x SATA II ports	2x SATA II ports	1x SATA III port	1x SATA III ports
I/O Chipset	NCT5523D	NCT5523D	F81964D-I	F81964D-I
Serial Port	1x RS232 1x RS232/422/485 (Jumper-less selection)	1x RS232 1x RS232/422/485 (Jumper-less selection)	3x RS232 1x RS232/422/485	3x RS232 1x RS232/422/485
USB 2.0	3x USB 2.0 (1x rear I/O + 2x via pin header)	3x USB 2.0 (1x rear I/O + 2x via pin header)	2x USB 2.0 via pin header	2x USB 2.0 via pin header
USB 3.X	1x USB 3.0 via rear I/O	1x USB 3.0 via rear I/O	1x Type-C 3x Type-A	1x Type-C 3x Type-A
Hardware Monitor	Yes	Yes	Yes	Yes
TPM	N/A	N/A	fTPM	fTPM
Storage Device Interface	mSATA via Mini PCI-E	mSATA via Mini PCI-E, MicroSD slot	M.2 SSD via B-Key	M.2 SSD via B-Key
Watchdog Timer	256 levels	256 levels	256 levels	256 levels
Digital I/O	4-in/4-out	4-in/4-out	4-in / 4-out	4-in / 4-out
Mini Type Slots	3x Mini PCI-E(x1)	2x Mini PCI-E(x1)	1x M.2(E-Key), 1x M.2(B-Key)	1x M.2(E-Key), 1x M.2(B-Key)
Power input	DC-In 12V	DC-In 9V~30V	DC-In 9V~36V	DC-In 9V~36V
Power Consumption	Intel® Atom® E3825 1.33GHz w/ 4GB DDR3L-1600 +12V: 0.65A	Intel® Atom® E3827 @1.75GHz w/ 2x 2GB DDR3L-1600 +12V: 1.29A Intel® Atom® E3845 @1.91GHz w/ 2x 2GB DDR3L-1600 +12V: 1.57A	Intel® N355 Processor, Up to 3.90 GHz Transcend TS2GSA64V6E w/ 1x DDR5-5600 16GB +12V : 4.17A	Intel® Core™ i3-N305 1.80 GHz w/ 4800 8GB DDR5 ADATA AD5S48008G-S +12V:2.8A
Dimensions (L x W)	147mm x 102mm	147mm x 102mm	147mm x 102mm	147mm x 102mm
Extra Features	LAN Wakeup, iSMART	LAN Wakeup, iSMART	LAN Wakeup, Eup / Erp	LAN Wakeup, Eup / Erp
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Comparison Table

3.5"/2.5" Single Board Computer

Models	IB837	IB836	IB818
Form Factor	3.5" SBC	3.5" SBC	3.5" SBC
CPU Socket	CPU on board	CPU on board	CPU on board
CPU	Intel® Celeron QC J6412 Intel® Celeron QC N6210	Intel® Atom® Processor x6211E Intel® Atom® Processor x6413E Intel® Atom® Processor x6425E	Intel® Atom® Processor E3950/E3930 Intel® Pentium® Processor N4200 Intel® Celeron® Processor N3350
CPU Max. Frequency	Up to 2.6GHz	Up to 3.0GHz	Up to 2.0GHz/ 1.8GHz/ 2.5GHz/ 2.4GHz
PCH	N/A	N/A	N/A
Memory	1x DDR4 SO-DIMM	2x DDR4 SO-DIMM	1x DDR3L SO-DIMM
Max. Memory Size	16GB	32GB	8GB
BIOS	AMI	AMI	AMI
Graphics Controller	Intel® Gen11 w/ 32 EUs graphics	Intel® Gen11-LP w/ 32 EUs graphics	Intel® Gen9-LP w/ 18 EUs graphics
Video Output	2x 24-bit dual-channel LVDS 1x DisplayPort on board	24-bit dual-channel LVDS or eDP 2x DisplayPort on board	18/24-bit dual-channel LVDS HDMI on board
Ethernet	2x Intel® I226V Gigabit LAN	3x Intel® I226IT 2.5G LAN	2x Intel® I210IT Gigabit LAN or 1x Intel® I210AT Gigabit LAN
Audio	Built-in ALC888S HD audio codec with 2W amplifier	Built-in ALC888S HD audio codec with 2W amplifier	Built-in ALC888S HD audio codec with 2W amplifier
SATA	1x SATA III ports	2x SATA III ports	2x SATA III ports
I/O Chipset	F81966D-I	F81964D-I	F81964D-I
Serial Port	5x RS232 1x RS232/422/485	3x RS232 1x RS232/422/485 (Jumper-less selection)	3x RS232 1x RS232/422/485 (Jumper-less selection)
USB 2.0	2x USB 2.0 via pin header	2x USB 2.0 via pin header	2x USB 2.0 ports via pin header
USB 3.X	4x USB3.1 Type-A	3x USB 3.1 via rear I/O 1x USB 3.1 via Type-C	4x USB 3.0 ports on board
Hardware Monitor	Yes	Yes	Yes
TPM	fTPM	dTPM 2.0	N/A
Storage Device Interface	mSATA via Mini PCI-E	mSATA via Mini PCI-E	mSATA via Mini PCI-E
Watchdog Timer	256 levels	256 levels	256 levels
Digital I/O	4-in / 4-out	4-in / 4-out	4-in/4-out
Mini Type Slots	1x Mini PCI-E(x1) , 1x M.2(E-Key), 1x M.2(B-Key)	1x Mini PCI-E(x1), 1x M.2(E-Key)	2x Mini PCI-E(x1)
Power input	DC-in 12V	DC-in 9V~36V	DC-in 12V~24V
Power Consumption	Intel® Celeron® J6412 2.00GHz w/ 8GB DDR4-3200 +12V:1.57A	Intel® Atom® x6425E Processor w/ 2x 16GB DDR4-3200 +12V:1.93A	Intel® Atom® E3950, 1.6GHz w/ 8GB DDR3L +12V: 1.09A, Intel® Pentium® N4200, 1.1GHz w/ 8GB DDR3L +12V: 1.09A
Dimensions (L x W)	147mm x 102mm	147mm x 102mm	147mm x 102mm
Extra Features	LAN Wakeup, Eup / Erp	LAN Wakeup, Eup / Erp	LAN Wakeup, Eup / Erp
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3.5"/2.5" Single Board Computer

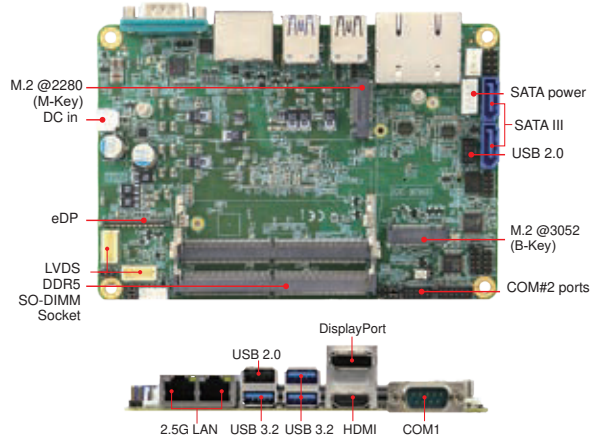
Models	IB811	IB301	IB200
Form Factor	3.5" SBC	3.5" SBC	2.5" SBC
CPU Socket	CPU on board	CPU on board	APU on board
CPU	Intel® Atom® Processor E3950/E3930 Intel® Pentium® Processor N4200 Intel® Celeron® Processor N3350	Ryzen™ Embedded 8000 series	AMD Ryzen™ Embedded R2514 AMD Ryzen™ Embedded R2314 AMD Ryzen™ Embedded R2312
CPU Max. Frequency	Up to 2.0GHz/ 1.8GHz/ 2.5GHz/ 2.4GHz	Up to 5.1 GHz	Up to 2.7GHz
PCH	N/A	N/A	N/A
Memory	2x DDR3L SO-DIMM	2x DDR5 SO-DIMM	Onboard Memory, DDR4
Max. Memory Size	16GB	128GB	8GB
BIOS	AMI	AMI	AMI
Graphics Controller	Intel® Gen9-LP w/ 18 EUs graphics	RDNA3 graphics with Up to 6 WGP's	Radeon™ Graphics
Video Output	24-bit dual-channel LVDS or eDP HDMI & DisplayPort on board	1x DP 2.1 1x HDMI 2.1 1x eDP 1.5	24bits dual-channel LVDS (LVDS: 1920 x 1200 1080 at 60 Hz) 2x HDMI 2.0b
Ethernet	2x Intel® I210IT Gigabit LAN or 2x Intel® I210AT Gigabit LAN	2x Intel® I226-V 2.5 Gigabit LAN	2x Intel® I226IT Gigabit LAN
Audio	Built-in ALC888S HD audio codec with 2W amplifier	Realtek audio codec ALC888S-VD2-GR	Built-in ALC888S HD audio codec
SATA	2x SATA III ports	N/A	1x SATA III port
I/O Chipset	F81964D-I	Fintek F81956D-I	F81966AB-I
Serial Port	3x RS232 1x RS232/422/485 (Jumper-less selection)	COM 1 & 2 : RS-232/422/485 configurabe via BIOS Default is RS-232 RI/+5V/+12V function can be set by Jumper (Default is RI) COM 3 & 4: RS232	COM 1 & 2 : RS-232/422/485 configurabe via BIOS Default is RS-232. COM 3 & 4 : RS232
USB 2.0	2x USB 2.0 via pin header	4x USB 2.0 (2 for Type-A, 2 for Pin Header) (Add +5V source for Panel)	3x USB 2.0 via pin header
USB 3.X	4x USB 3.0 via rear I/O	2x USB 3.2 Gen2 (10Gbps) Type-A	2x USB 3.2 Gen2
Hardware Monitor	Yes	Yes	Yes
TPM	N/A	fTPM	2.0
Storage Device Interface	mSATA via Mini PCI-E	M.2 (M2280 for NVMe)	1x M.2 (M-Key, type:2280, supports PCI-E Gen.3)
Watchdog Timer	256 levels	256 levels	256 levels
Digital I/O	4-in / 4-out	4-in/4-out	4-in/4-out
Mini Type Slots	1x Mini PCI-E(x1), 1x M.2(B-Key)	3x M.2 slots (M-Key + E-Key + B-Key)	1x M.2 (E-Key, type: 2230, 1x PCI-Ex1, USB 2.0)
Power input	DC-in 9V~36V	DC-in 12V~24V	DC-in 12V
Power Consumption	Intel® Atom® E3900 1.3GHz w/ 2x Transcend DDR3L 1600 4GB +12V: 1.2A	TBD	AMD Ryzen™ Embedded R2514 3.35GHz w/ 1x 8GB DDR4-3200 (Onboard) +12V: ~2.9A AMD Ryzen™ Embedded R2312 2.1GHz w/ 1x 8GB DDR4-3200 (Onboard) +12V: ~1.8A
Dimensions (L x W)	147mm x 102mm	147mm x 102mm	100mm x 72mm
Extra Features	LAN Wakeup, Eup / Erp	1x Smart FAN Connector	LAN Wakeup, Eup / Erp
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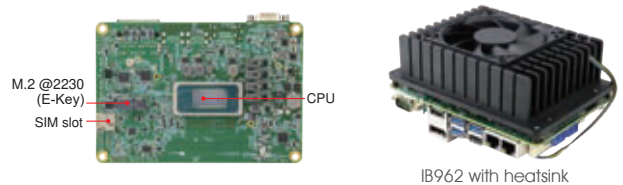
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Features

- Onboard Intel® Core™ Ultra 7/5 100 Series Mobile processors
- 2x DDR5 SO-DIMM, Max. 96GB
- supports HDMI, DP++, LVDS and eDP
- 1x Intel® I226LM 2.5G LAN, 1x Intel® I226V 2.5G LAN
- 3x USB 3.2, 3x USB 2.0, 2x COM, 2x SATA III
- 3x M.2 slots (M-Key + E-Key + B-Key)
- supports 5G, digital I/O (4-in/4-out), TPM & watchdog timer



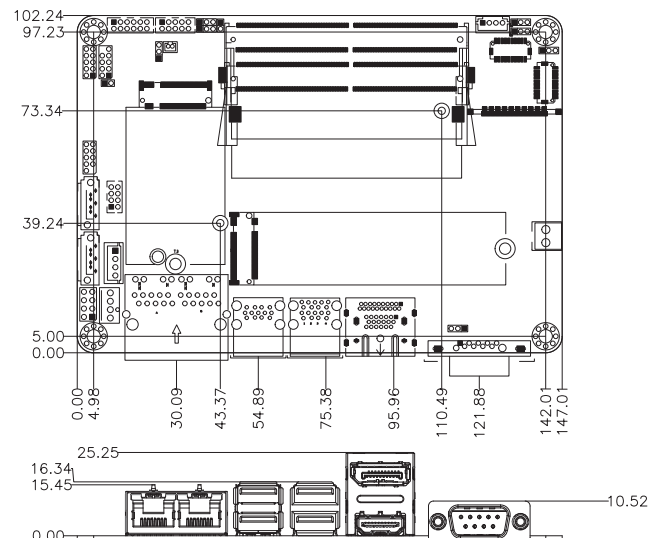
Specifications

CPU	Intel® Core™ Ultra 7/5 100 Series Mobile processors
PCH	N/A
Memory	2x DDR5 SO-DIMM, 5600MT/s, Non-ECC, Max.96GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	M.2 (M2280 for NVMe)
Mini Type Slots	1x M.2 (M-Key, Type:2280, supports NVMe with PCI-E(4x) signal only) 1x M.2 (E-Key, Type:2230, supports CNVi) 1x M.2 (B-Key, Type:3052, supports 5G/LTE)
Graphics Controller	Intel® Core™ Ultra processor series built-in Iris Xe Graphics
Video Output	HDMI, DisplayPort, eDP & LVDS
Ethernet	Intel® I226LM as 1st LAN, I226V as 2nd LAN
I/O Chipset	Fintek F81804U-I on board
Serial Port	2x RS232/422/485
USB 2.0	3x USB 2.0 (1x Type-A ; 2x via pin headers)
USB 3.X	3x USB 3.2 (Type-A)
Serial ATA	2x SATA III
Audio	Intel® Core™ Ultra processor built-in HD audio + ALC888S codec
TPM	Discrete TPM
Others	Digital I/O (4-in/4-out); +12V~+24V DC-in
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® Core™ Ultra 7 165H, Up to 5.0GHz w/2 x 32G DDR5-5600 memory module +12V: 6.83A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	10% ~ 90% (non-condensing)

Ordering Information

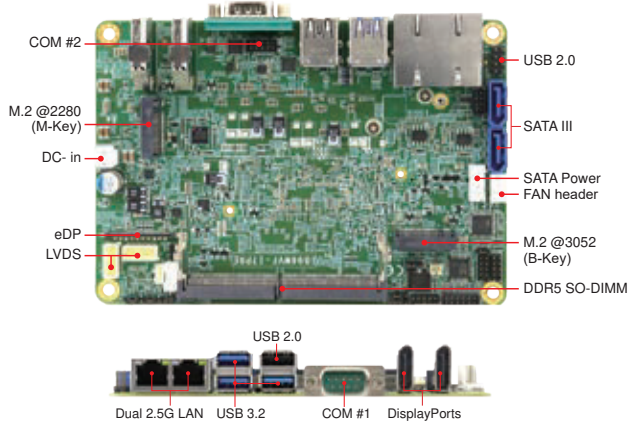
IB962AF-165H	Intel® Core™ Ultra 7 165H onboard 3.5" SBC, w/ I226LM + I226V 2.5G LAN, VGA (HDMI + DP + eDP + LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230/ B3052), supports iAMT & dTPM, DC-in (12V~24V), Optional heatsink, cable kit
IB962AF-165U	Intel® Core™ Ultra 7 165U onboard 3.5" SBC, w/ I226LM + I226V 2.5G LAN, VGA (HDMI + DP + eDP + LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230/ B3052), supports iAMT & dTPM, DC-in (12V~24V), Optional heatsink, cable kit
IB962AF-135H	Intel® Core™ Ultra 5 135H onboard 3.5" SBC, w/ I226LM + I226V 2.5G LAN, VGA (HDMI + DP + eDP + LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230/ B3052), supports iAMT & dTPM, DC-in (12V~24V), Optional heatsink, cable kit
IB962AF-135U	Intel® Core™ Ultra 5 135U onboard 3.5" SBC, w/ I226LM + I226V 2.5G LAN, VGA (HDMI + DP + eDP + LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230/ B3052), supports iAMT & dTPM, DC-in (12V~24V), Optional heatsink, cable kit
IB76A	Cable kit w/USB, COM, Power, SATA
HSIB962-B	Heatsink + Cooler for IB962 series
HSIB962-1	Heat Spreader for IB962 series

Dimensions and Drawing



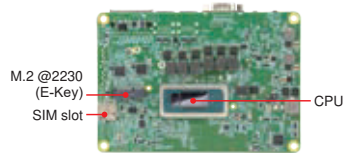


Preliminary



Features

- Onboard 13th Gen Intel® Core™ i7-1370PRE mobile processor, supports wide-temp.
- 1x DDR5 SO-DIMM, up to 32GB, supports IB ECC
- supports 2x DP++, LVDS, and eDP
- 2x Intel® I226IT PCIe 2.5G LAN
- 3x USB 2.0, 3x USB 3.2, 2x COM, 2x SATA III
- 3x M.2 slots (M-Key + E-Key + B-Key)
- supports digital I/O (4-in/4-out), fTPM, and watchdog timer



IB96W with heatsink

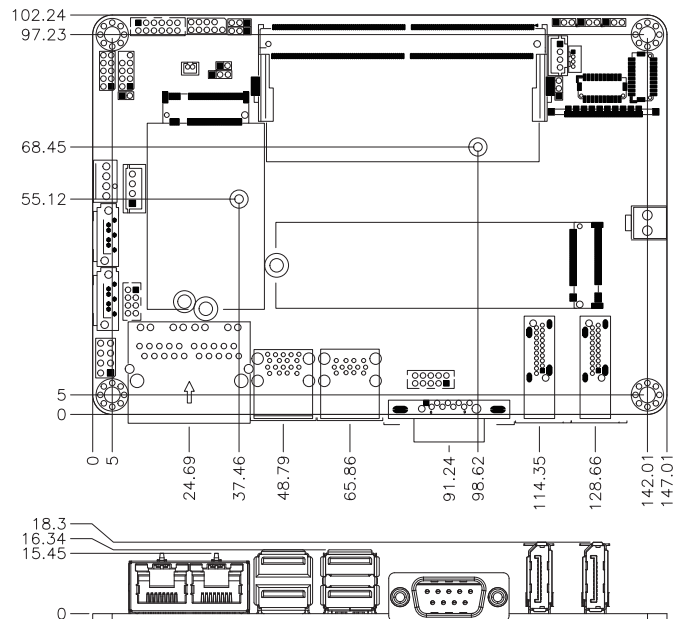
Specifications

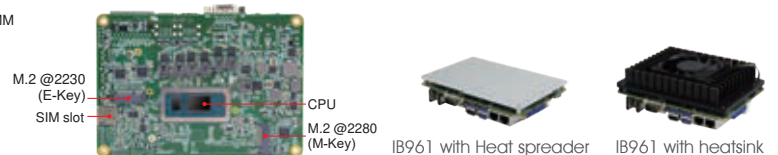
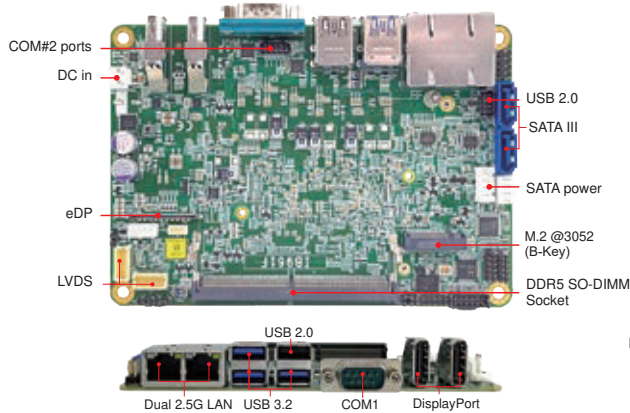
CPU	Onboard 13th Gen Intel® Core™ i7-1370PRE processor, support wide-temp
PCH	N/A
Memory	1x DDR5 SO-DIMM, Max.32GB, supports IB ECC
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	M.2 (M2280 for NVMe) SATA III
Mini Type Slots	1x M.2 (M-Key, Type:2280, with PCIe (4x) signal only, supports NVMe) 1x M.2 (E-Key, Type:2230, with PCIe (1x) & USB 2.0 signal, supports CNV) 1x M.2 (B-Key, Type:3052, with PCIe (1x) & USB 3.2 signal, supports 5G/LTE)
Graphics Controller	13th Gen Intel® Core™ mobile processor integrated graphics
Video Output	2x DisplayPort, eDP, and LVDS
Ethernet	2x Intel® I226IT 2.5G LAN
I/O Chipset	Fintek F81804U-I
Serial Port	2x COM (RS232/422/485)
USB 2.0	3x USB 2.0 (1x Type-A ; 2x via pin headers)
USB 3.X	3x USB 3.2 (Type-A)
Serial ATA	2x SATA III
Audio	Integrated HD audio with ALC888S codec
TPM	fTPM only
Others	Digital I/O (4-in/4-out); +12V~+24V DC-in
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	TBD
Operating Temperature	-40°C~+75°C (-40°F~+167°F)
Storage Temperature	-45°C~+80°C (-49°F~+176°F)
Relative Humidity	10% ~ 90% (non-condensing)

Ordering Information

IB96WVF-I7PRE	Intel® Core™ i7-1370PRE 3.5" SBC, w/ Dual I226IT LAN, VGA (2x DisplayPort + eDP + LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230 & B3052), DC in (12V~24V), supports iAMT, fTPM, Optional heatsink, w/o cable kit, (RoHS 2)
HSIB96W-A	Heatsink with fan for IB96W
HSIB96W-1	Heat spreader for IB96W

Dimensions and Drawing





Features

- Onboard 13th Gen Intel® Core™ i7/i5/i3 mobile processors
- 1x DDR5 SO-DIMM, Max. 32GB
- supports 2x DisplayPort (1.2), LVDS and eDP
- 2x Intel® PCI-E 2.5G LAN
- 3x USB 2.0, 3x USB 3.2, 2x COM, 2x SATA III
- 3x M.2 slots (M-Key + E-Key + B-Key)
- supports 5G, digital I/O (4-in/4-out), fTPM & watchdog timer
- **supports wide-range operating temperature from -40°C to 75°C (Only IB961AF-I7PRE)**

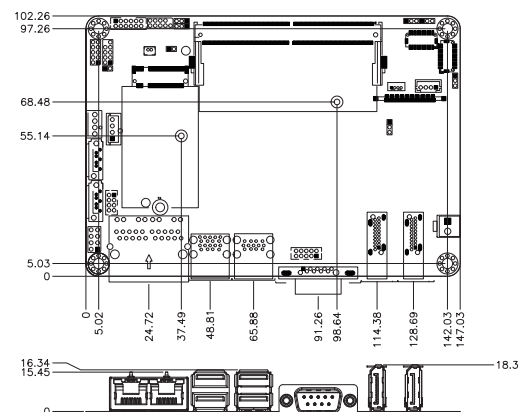
Specifications

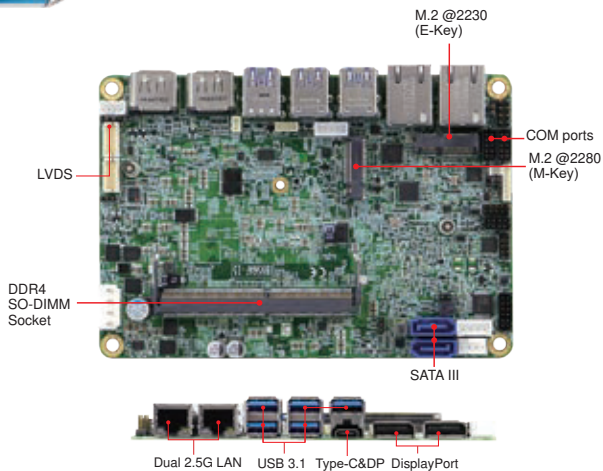
CPU	13th Gen Intel® Core™ i7-1370PRE 13th Gen Intel® Core™ i7-1370PE 13th Gen Intel® Core™ i5-1340PE 13th Gen Intel® Core™ i5-1335UE 13th Gen Intel® Core™ i3-1320PE
PCH	N/A
Memory	1x DDR5 5200/4800 SO-DIMM, Max. 32GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	M.2 (M2280 for NVMe)
Mini Type Slots	1x M.2 (M-Key, Type:2280, supports NVMe with PCI-E(4x) signal only) 1x M.2 (E-Key, Type:2230, supports CNVi) 1x M.2 (B-Key, Type:3052, supports 5G/LTE)
Graphics Controller	13th Gen Intel® Core™ mobile processor integrated graphics
Video Output	2x DisplayPort (1.2), eDP & LVDS
Ethernet	Intel® I226LM/IT as 1st LAN, I226V/IT as 2nd LAN
I/O Chipset	Fintek F81804U-I on board
Serial Port	2x COM port
USB 2.0	3x USB 2.0 (1x Type-A ; 2 via pin headers)
USB 3.X	3x USB 3.2 (3x Type-A)
Serial ATA	2x SATA III
Audio	13th Gen Intel® Core™ P-Series processor built-in HD audio + ALC888S codec
TPM	fTPM
Others	Digital I/O (4-in/4-out) ; +12V~+24V DC-in
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® Core™ i7-1370PE processor, Up to 4.8GHz w/1 x 32G DDR5-4800 memory module +12V: 6.56A
Operating Temperature	0°C~60°C (32°F~140°F) -40°C~75°C (-40°F~167°F) for IB961AF-I7PRE
Storage Temperature	-40°C~80°C (-40°F~176°F)
Relative Humidity	10% ~ 90% (non-condensing)

Ordering Information

IB961AF-I7P	Intel® Core™ i7-1370PE 3.5" SBC w/ I226LM + I226V 2.5G LAN, VGA (2x DisplayPort (1.2) + eDP + LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230& B3052), DC in (12V~24V), supports iAMT, fTPM, optional heatsink, w/o cable kit, (RoHS 2)
IB961AF-I5P	Intel® Core™ i5-1340PE 3.5" SBC w/ I226LM + I226V 2.5G LAN, VGA (2x DisplayPort (1.2) + eDP + LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230& B3052), DC in (12V~24V), supports iAMT, fTPM, optional heatsink, w/o cable kit, (RoHS 2)
IB961F-I3P	Intel® Core™ i3-1320PE 3.5" SBC w/ I226LM + I226V 2.5G LAN, VGA (2x DisplayPort (1.2) + eDP + LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230& B3052), DC in (12V~24V), supports fTPM, optional heatsink, w/o cable kit, (RoHS 2)
IB961AF-I5U	Intel® Core™ i5-1335UE 3.5" SBC w/ I226LM + I226V 2.5G LAN, VGA (2x DisplayPort (1.2)+ eDP + LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230& B3052), DC in (12V~24V), supports iAMT, fTPM, optional heatsink, w/o cable kit, (RoHS 2)
IB961AF-I7PRE	Intel® Core™ i7-1370PRE 3.5" SBC w/ I226IT 2.5G LAN, VGA (2x DisplayPort(1.2) + eDP + LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230& B3052), DC in (12V~24V), supports iAMT, fTPM, Optional heatsink, w/o cable kit, (RoHS 2)
HSIB961-A	Heatsink with fan for IB961
HSIB961-B	Heatsink with fan for IB961AF-I7PRE
HSIB961-1	Heat spreader for IB961

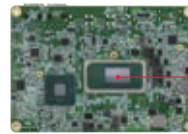
Dimensions and Drawing





Features

- Onboard 11th Gen Intel® Core™ / Celeron® processor (formerly Tiger Lake H)
- 1x DDR4 SO-DIMM, Max. 32GB
- supports 3x DisplayPort (DP connectors + Type-C connector) and 24-bit dual channel LVDS
- 2x Intel® 2.5 Gigabit LAN
- 6x USB 3.1, 2x USB 2.0, 2x SATA III, 2x COM, 2x M.2
- Watchdog timer, Digital I/O, iAMT (15), TPM (2.0)



CPU



IB956 with heatsink

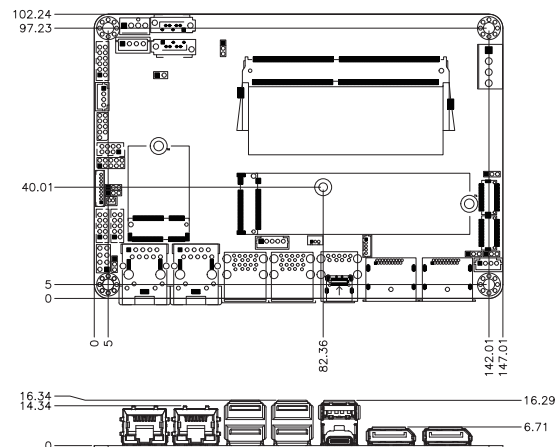
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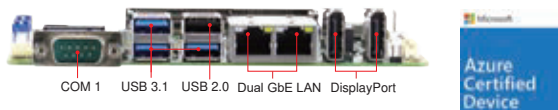
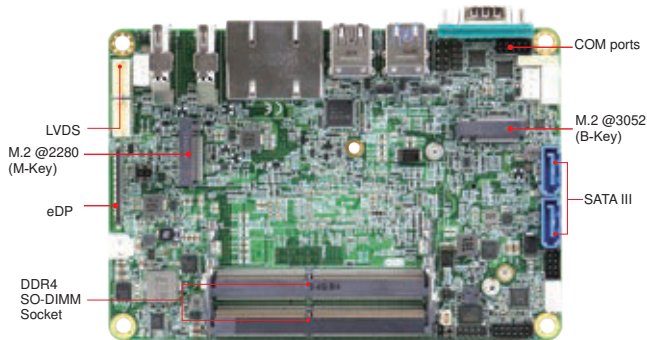
CPU	11th Gen Intel® Core™ i7-11850HE 11th Gen Intel® Core™ i5-11500HE 11th Gen Intel® Core™ i3-11100HE Intel® Celeron®-6600HE
PCH	IB956AF series: Intel® QM580E IB956EF series: Intel® HM570E
Memory	1x DDR4 SO-DIMM, Max.32GB
BIOS	AMI
Watchdog Timer	256 Levels
H/W Monitor	Yes
Storage Device Interface	NVMe
Mini Type Slots	1x M.2 (M-Key, type:2280, supports NVMe with PCI-E(4x)signal only) 1x M.2 (E-Key, type:2230, supports CNVi)
Graphics Controller	11th Gen Intel® Core™ H-series processor integrated graphics
Video Output	3x DisplayPort (1.4) (DP connectors + Type-C connector), and 24-bit dual channel LVDS
Ethernet	1st LAN: IB956AF series: Intel® I226-LM IB956EF series: Intel® I226-V 2nd LAN: Intel® I226-V
I/O Chipset	Fintek F81804U-I
Serial Port	1x RS232/422/485, 1x RS232
USB 2.0	2x USB 2.0 via pin header
USB 3.X	QM580E: 6x USB 3.1 (Gen2) HM570E: 4x USB 3.1 (Gen2), 2x USB 3.1(Gen1)
Serial ATA	2x SATA III
Audio	11th Gen Intel® Core™ H-series processor Built-in HD audio controller + Realtek ALC888S
TPM	TPM (2.0)
Others	Digital I/O, +12~ +24V DC-in
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® Core™ i7-11850HE 2.6GHz w/ 1x 8GB DDR4-2400 +12V: 5.82A
Operating Temperature	0°C~60°C
Storage Temperature	-20°C~80°C
Relative Humidity	95%@60 degree-C non-condensing

Ordering Information

IB956AF-i7	Onboard Intel® QM580E/ Core™ i7-11850HE, w/ I226-LM 2.5GbE LAN + I226V 2.5GbE LAN, 3x DisplayPort (DP+ Type-C) & LVDS (24bit dual-channel), 2x SATA III, 2x COM, 2x M.2 (M2280/ E2230), DC-in (12V~24V), support iAMT 15.0, TPM (2.0), Optional heatsink, w/o cable kit, (RoHS 2)
IB956AF-i5	Onboard Intel® QM580E/ Core™ i5-11500HE, w/ I226-LM 2.5GbE LAN + I226V 2.5GbE LAN, 3x DisplayPort (DP+ Type-C) & LVDS (24bit dual-channel), 2x SATA III, 2x COM, 2x M.2 (M2280/ E2230), DC-in (12V~24V), support iAMT 15.0, TPM (2.0), Optional heatsink, w/o cable kit, (RoHS 2)
IB956EF-i3	Onboard Intel® HM570E/ Core™ i3-11100HE, w/ 2x I226V 2.5GbE LAN, 3x DisplayPort (DP+ Type-C) & LVDS (24bit dual-channel), 2x SATA III, 2x COM, 2x M.2 (M2280/ E2230), DC-in (12V~24V), TPM (2.0), Optional heatsink, w/o cable kit, (RoHS 2)
HSIB956-A	Heatsink with fan for IB956
HSIB956-1	Heat spreader for IB956
IB92	Cable kit w/ COM, Power, SATA + Power

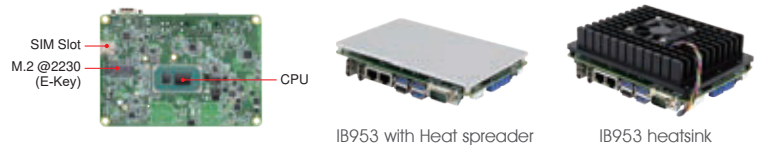
Dimensions and Drawing





Features

- Onboard 11th Gen Intel® Core™ i7/i5/i3 / Celeron® processor
- 2x DDR4-3200 SO-DIMM, Max. 64GB
- supports 2x DisplayPort, eDP and 24-bit dual-channel LVDS
- 2x Intel® PCI-E GbE LAN
- 3x USB 2.0, 3x USB 3.1, 2x SATA III
- 3x M.2 sockets (B-Key/ E-Key and M-Key)
- Watchdog timer, Digital I/O, TPM (2.0), 5G compatible



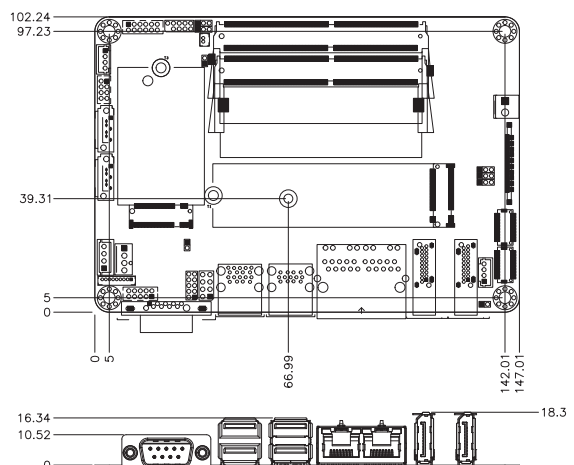
Specifications

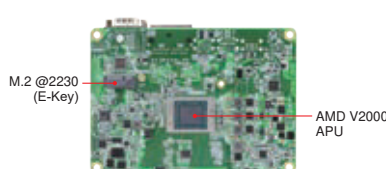
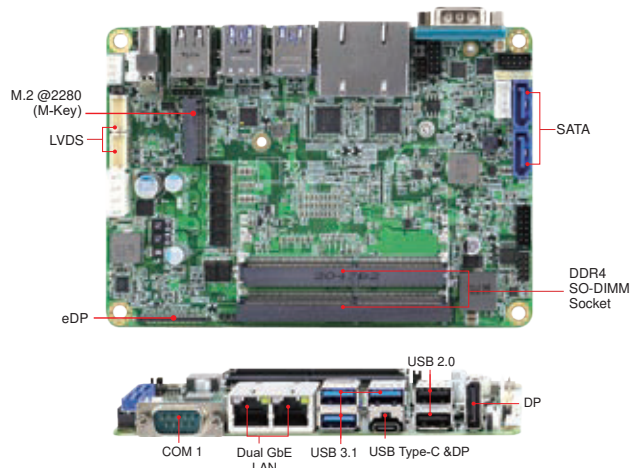
CPU	11th Gen Intel® Core™ i7-1185G7E 11th Gen Intel® Core™ i5-1145G7E 11th Gen Intel® Core™ i3-1115G4E Intel® Celeron® 6305E
PCH	Integrated in 11th Gen Intel® Core™ / Celeron® processor
Memory	DDR4-3200 SO-DIMM, Max. 64GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x M.2 (M-Key)
Mini Type Slots	1x M.2 (M-Key, Type:2280, supports NVMe with PCI-E(4x) signal only) 1x M.2 (E-Key, Type:2230, supports CNVi) 1x M.2 (B-Key, Type:3052, supports 5G)
Graphics Controller	Intel® Gen 12 Graphics
Video Output	2x DisplayPort, eDP and 24-bit dual-channel LVDS
Ethernet	IB953AF series: Intel® I219LM Gigabit LAN PHY IB953EF series: Intel® I219V Gigabit LAN PHY Intel® I211AT or I210AT Gigabit LAN (as 2nd LAN)
I/O Chipset	Fintek F81804U-I
Serial Port	2x RS232/422/485 (Jumperless selection)
USB 2.0	2x USB 2.0 (pin-header), 1x USB 2.0 (Type-A)
USB 3.X	3x USB 3.1 (Type-A)
Serial ATA	2x SATA III
Audio	Built-in HD with Realtek ALC269 w/ class-D amplifier
TPM	TPM (2.0)
Others	Digital I/O (4-in/4-out), EuP/ErP, +12V~+24V DC-in (+/-10%), supports IB ECC (depend on CPU SKU)
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® i7-1185G7E 2.8GHz/ w/ 2x16GB DDR4-3200 +12V: 3.71A Intel® i3-1115G4E 3.00GHz w/ 2x16GB DDR4-3200 +12V: 3.26A
Operating Temperature	0°C~60°C
Storage Temperature	-20°C~80°C
Relative Humidity	95% (non-condensing@60°C)

Ordering Information

IB953AF-I7	Intel® Core™ i7-1185G7E 3.5" SBC, w/ I211AT or I210AT GbE LAN + I219LM GbE LAN, VGA (2x DisplayPort + eDP and LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230& B3052), DC-in (12V~24V), supports iAMT 15.0, TPM (2.0), Optional heatsink, w/o cable kit, (RoHS 2)
IB953AF-I5	Intel® Core™ i5-1145G7E 3.5" SBC, w/ I211AT or I210AT GbE LAN + I219LM GbE LAN, VGA (2x DisplayPort + eDP and LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230& B3052), DC-in (12V~24V), supports iAMT 15.0, TPM (2.0), Optional heatsink, w/o cable kit, (RoHS 2)
IB953EF-I3	Intel® Core™ i3-1115G4E 3.5" SBC, w/ I211AT or I210AT GbE LAN + I219V GbE LAN, VGA (2x DisplayPort + eDP and LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230& B3052), DC-in (12V~24V), TPM (2.0), supports EuP/ ErP, Optional heatsink, w/o cable kit, (RoHS 2)
IB953EF-CEL	Intel® Celeron® 6305E 3.5" SBC, w/ I211AT or I210AT GbE LAN + I219V GbE LAN, VGA (2x DisplayPort + eDP and LVDS), 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230& B3052), DC-in (12V~24V), TPM (2.0), supports EuP/ ErP, Optional heatsink, w/o cable kit, (RoHS 2)
HSIB953-A	Heatsink with fan for IB953
HSIB953-1	Heat spreader for IB953
IB76A-2	Cable kit w/ USB, COM, Power, SATA + Power

Dimensions and Drawing





IB952 with heatsink

Features

- AMD Ryzen™ Embedded V2000 on board
- 2x DDR4 SO-DIMM, Max. 64GB
- 2x Gigabit LAN
- supports 2x DisplayPort (DP connector and Type-C), 1x eDP, 1x 24-bit dual-channel LVDS
- 2x USB 2.0, 3x USB 3.1, 2x SATA III, 2x COM
- 2x M.2 sockets (M-Key/ E-Key)

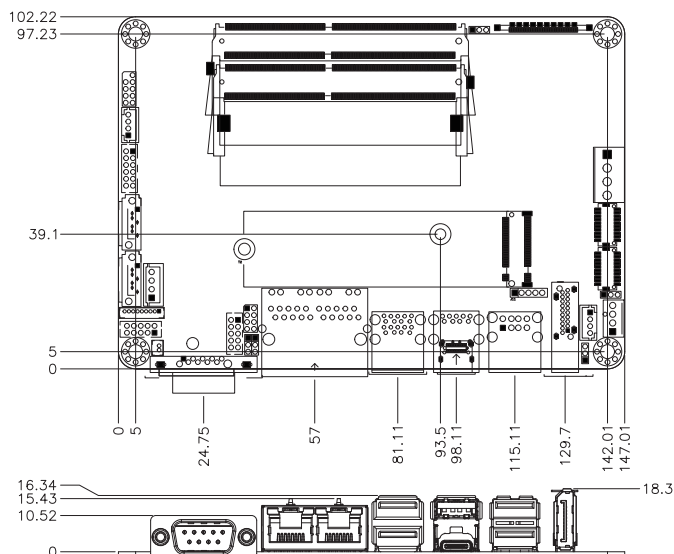
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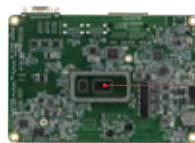
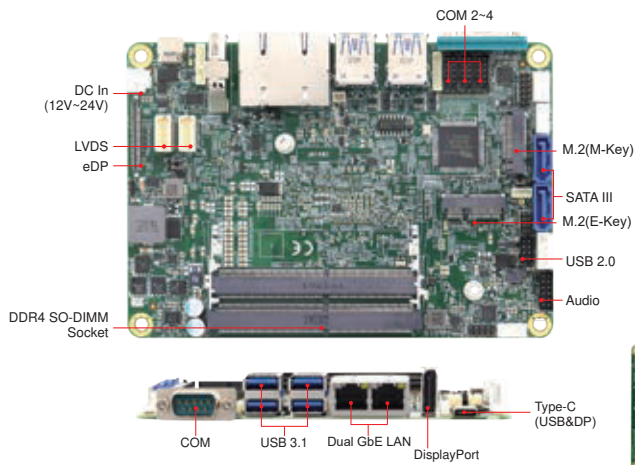
CPU	AMD Ryzen™ Embedded V2000 on board
PCH	N/A
Memory	DDR4-3200 SO-DIMM, Max. 64GB, supports ECC
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x M.2 (M-Key)
Mini Type Slots	1x M.2 (M-Key, type:2280, NVMe) 1x M.2 (E-Key, type:2230)
Graphics Controller	AMD Radeon™ Vega integrated
Video Output	2x DisplayPort (DP connector & Type-C), 1x 24-bit dual-channel LVDS, 1x eDP
Ethernet	2x Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Fintek F81964
Serial Port	1x RS232/422/485 (Jumperless selection) 3x RS232
USB 2.0	2x USB 2.0 on board
USB 3.X	3x USB 3.1 on board
Serial ATA	2x SATA III
Audio	Built-in audio w/ Realtek ALC888S
TPM	TPM (2.0)
Others	Digital I/O(4-in/ 4-out), EuP/ErP, +12V~+24V DC-in (+/-10%)
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	AMD Ryzen™ Embedded V2748 2.9GHz w/ 2x 16GB DDR4-3200 +12V: 7.61A AMD Ryzen™ Embedded V2718 1.70GHz w/ 2x 16GB DDR4-3200 +12V: 3.92A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	95% (non-condensing@60°C)

Ordering Information

IB952F-2748	AMD Ryzen™ V2748 Octa APU (2.9GHz~4.15GHz) on board 3.5" SBC w/ dual LAN, 2x DisplayPort (DP+ Type-C), eDP & LVDS (24-bit dual-channel), EuP/ErP, 12V~24V DC-in
IB952F-2718	AMD Ryzen™ V2718 Octa APU (1.7GHz~4.15GHz) on board 3.5" SBC w/ dual LAN, 2x DisplayPort (DP+ Type-C), eDP & LVDS (24-bit dual-channel), EuP/ErP, 12V~24V DC-in
HSIB952-A	Heatsink with fan for IB952F-2718
HSIB952-B	Heatsink with fan for IB952F-2748
HSIB952-1	Heat spreader for IB952
IB92	Cable kit w/ COM, Power, SATA + Power

Dimensions and Drawing





Features

- Onboard 8th Gen Intel® Core™ i7/i5/i3 / Celeron® processor
- 2x DDR4-2400 SO-DIMM, Max.32GB, Non-ECC
- 2x DisplayPort (DP connector & Type-C), eDP or 24-bit dual-channel LVDS
- 2x Intel® PCI-E GbE LAN
- Watchdog timer, Digital I/O, TPM (2.0)
- 2x USB 2.0, 4x USB 3.1 (Type-A), 1x USB (Type-C), 2x SATA III
- 2x M.2 sockets (M/E-Key)

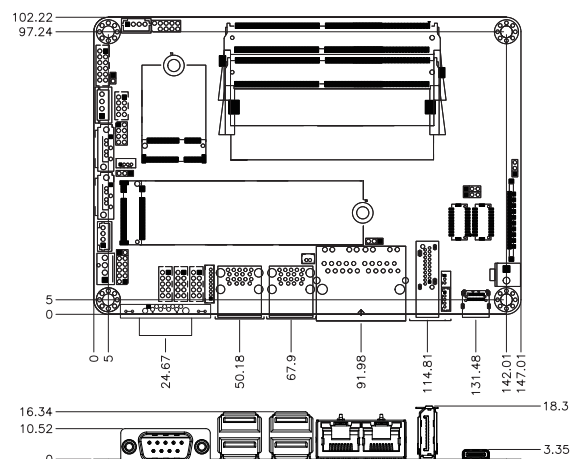
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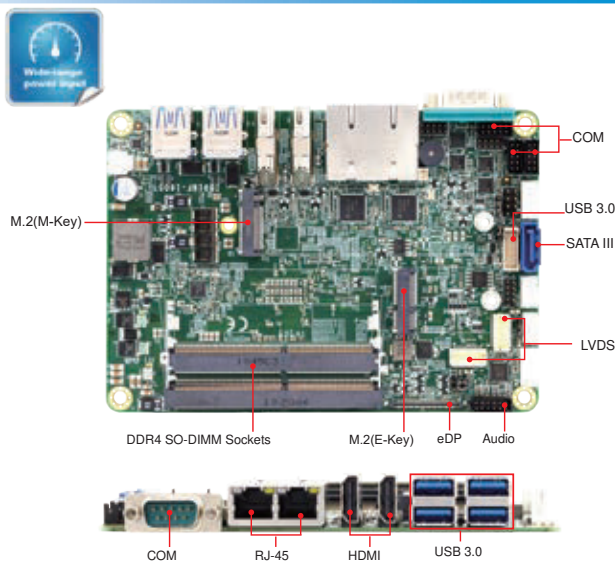
CPU	8th Gen Intel® Core™ i7-8665UE (1.7GHz/4.4GHz) 8th Gen Intel® Core™ i5-8365UE (1.6GHz/4.1GHz) 8th Gen Intel® Core™ i3-8145UE (2.2GHz/3.9GHz) Intel® Celeron® 4305UE (2.0GHz)
PCH	Integrated in 8th Gen Intel® Core™ / Celeron® processor
Memory	DDR4-2400 SO-DIMM, Max. 32GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x M.2 (M-Key)
Mini Type Slots	1x M.2 (M2280, supports NVMe) 1x M.2 (E2230, supports CNVi)
Graphics Controller	Intel® UHD Graphics 620
Video Output	2x DisplayPort (DP connector & Type-C) eDP or 24-bit dual-channel LVDS
Ethernet	IB919AF series : Intel® I219LM Gigabit LAN PHY IB919EF series: Intel® I219V Gigabit LAN PHY Intel® I211AT or I210AT Gigabit LAN (as 2nd LAN)
I/O Chipset	Fintek F81964D-I
Serial Port	1x RS232/422/485 (Jumperless selection) 3x RS232
USB 2.0	2x USB 2.0 (pin-header)
USB 3.X	4x USB 3.1 (Type-A) 1x USB (Type-C)
Serial ATA	2x SATA III
Audio	Built-in HD with Realtek ALC269 w/ class-D amplifier
TPM	TPM (2.0)
Others	Digital I/O (4-in/4-out), +9V (Non-tolerance) ~+24V DC-in (+20%), EuP/ErP
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® Core™ i7-8665UE 1.70GHz w/ 2x DDR4-2400 16GB +12V: 2.25A Intel® Core™ i3-8145UE 2.20GHz w/2x DDR4-2400 16GB +12V: 2.24A
Operating Temperature	0°C~60°C
Storage Temperature	-20°C~80°C
Relative Humidity	90% (non-condensing@60°C)

Ordering Information

IB919AF-8665	Intel® Core™ i7-8665UE (1.7GHz/4.4GHz) 3.5" SBC w/ I211AT or I210AT GbE LAN + I219LM GbE LAN, USB Type-C (USB 3.1+DP), VGA (DisplayPort + DP or LVDS), 2x SATA III, 4x COM, 2x M.2 (M2280 & E2230), DC-in (9V~24V), supports iAMT 11.0, TPM (2.0), Optional heatsink, w/o cable kit, (RoHS)
IB919AF-8365	Intel® Core™ i5-8365UE (1.6GHz/4.1GHz) 3.5" SBC w/ I211AT or I210AT GbE LAN + I219LM GbE LAN, USB Type-C (USB 3.1+DP), VGA (DisplayPort + DP or LVDS), 2x SATA III, 4x COM, 2x M.2 (M2280 & E2230), DC-in (9V~24V), supports iAMT 11.0, TPM (2.0), Optional heatsink, w/o cable kit, (RoHS)
IB919EF-8145	Intel® Core™ i3-8145UE (2.2GHz/3.9GHz) 3.5" SBC w/ I211AT or I210AT GbE LAN + I219V GbE LAN, USB Type-C (USB 3.1+DP), VGA (DisplayPort + DP or LVDS), 2x SATA III, 4x COM, 2x M.2 (M2280 & E2230), DC-in (9V~24V), EuP/ErP, TPM (2.0), Optional heatsink, w/o cable kit, (RoHS)
IB919EF-4305	Intel® Celeron® 4305UE (2.0GHz) 3.5" SBC w/ I211AT GbE LAN + I219V GbE LAN, USB Type-C (USB 3.1+DP), VGA (DisplayPort + DP or LVDS), 2x SATA III, 4x COM, 2x M.2 (M2280 & E2230), DC-in (9V~24V), EuP/ErP, TPM (2.0), Optional heatsink, w/o cable kit, (RoHS)
HSIB919-A	Heatsink for IB919
HSIB919-1	Heat spreader for IB919
IB76A-2	Cable Kit w/ USB, COM, Power cable, SATA+Power cable for IB919 series

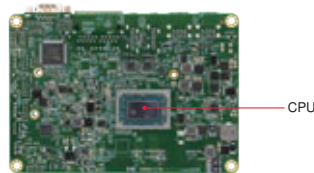
Dimensions and Drawing





Features

- AMD Ryzen™ Embedded V1000/R1000 Series on board
- 2x DDR4 SO-DIMM, Max. 32GB
- 2x PCI-E Gigabit LAN
- 2x HDMI, 1x eDP, 1x 24-bit dual-channel LVDS
- 1x USB 2.0, 4x USB 3.1, 1x SATA III, 4x COM
- 2x M.2 sockets (M-Key/ E-Key)



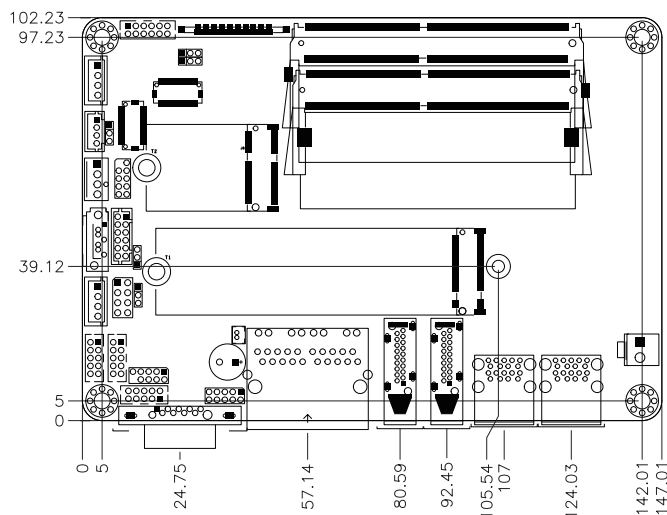
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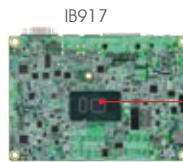
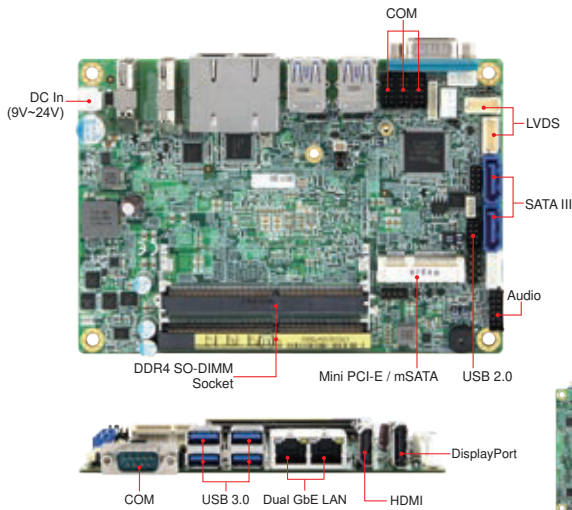
CPU	AMD Ryzen™ Embedded V1000 / R1000 series
PCH	N/A
Memory	DDR4-2400 SO-DIMM, Max. 32GB, supports ECC
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x M.2 (M-Key)
Mini Type Slots	1x M.2 (M-Key, type: 2280, NVMe) 1x M.2 (E-Key, type: 2230)
Graphics Controller	AMD Raden™ Vega integrated
Video Output	2x HDMI(2.0a), 1x 24-bit dual-channel LVDS & eDP
Ethernet	2x Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Fintek F81964D-I
Serial Port	1x RS232/422/485 (Jumperless selection) 3x RS232
USB 2.0	1x USB 2.0 on board
USB 3.X	4x USB 3.1 on board
Serial ATA	1x SATA III
Audio	Built-in audio w/ Realtek ALC269Q-VC3-GR w/ class-D amplifier
TPM	TPM (2.0)
Others	Digital I/O (4-in/ 4-out), EuP/ErP, +12V~+24V DC-in (+/-10%)
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	AMD Ryzen™ Embedded V1605B 2.00GHz w/ 2x 16GB DDR4-2400 +12V: 2.55A AMD Ryzen™ Embedded R1606G 2.6GHz w/ 2x 16GB DDR4-2400 +12V: 2.34A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing@60°C)

Ordering Information

IB918F-1605	AMD Ryzen™ V1605B QC APU (2.0GHz~3.6GHz) on board 3.5" SBC w/ dual LAN, 2x HDMI, eDP & LVDS (24-bit dual-channel), EuP/ErP, 12V~24V DC-in
HSIB918-C	Heat sink with fan for IB918

Dimensions and Drawing





IB917 with Heat spreader

IB917 with heatsink

Specifications

CPU	BGA1356 for 7th Gen Intel® Core™ U-Series i7/i5/i3/ Celeron® DC processors, up to 3.4GHz
PCH	Integrated in 7th Gen Intel® Core™ U-Series processor
Memory	2x DDR4-2133 SO-DIMM, Max. 32GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA
Mini Type Slots	1x Mini PCI-E (full-size)
Graphics Controller	7th Gen Intel® Core™ U-Series processor integrated graphics
Video Output	Supports DisplayPort, HDMI and 24-bit dual-channel LVDS
Ethernet	IB917AF series: Intel® I219LM LAN PHY IB917F series: Intel® I219V LAN PHY Intel® I211AT or I210AT Gigabit LAN (as 2nd LAN)
I/O Chipset	Fintek F81846AD-I
Serial Port	1x RS-232/422/485 (jumper-less selection), 3x RS232
USB 2.0	2x USB 2.0 via pin header
USB 3.X	4x USB 3.0 on board
Serial ATA	2x SATA III
Audio	7th Gen Intel® Core™ U-Series processor built-in HD audio controller + Realtek ALC888S codec
TPM	TPM (2.0)
Others	Digital I/O, +9V~ +24V DC-in, iSMART
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® i7-7600U, 2.8GHz w/ 8GB DDR4-2133+12V: 3.46A Intel® i3-7100U, 2.4GHz w/ 8GB DDR4-2133+12V: 2.68A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

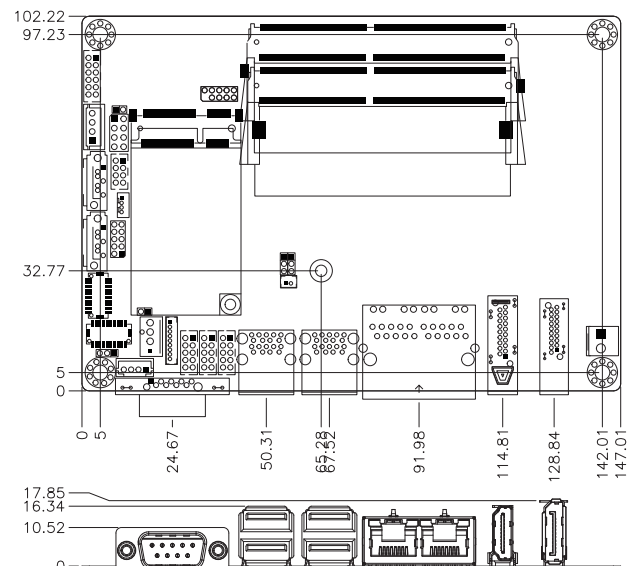
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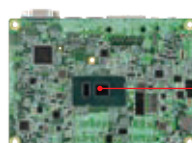
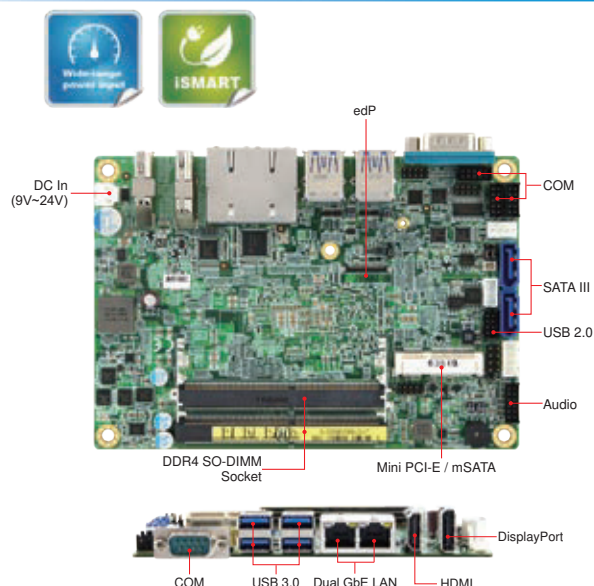
- Onboard 7th Gen Intel® Core™ U-Series mobile processor
- 2x DDR4-2133 SO-DIMM, Max. 32GB, Non-ECC
- supports DisplayPort, HDMI and 24-bit dual-channel LVDS (IB917)/eDP (IB916)
- 2x Intel® PCI-E GbE LAN
- Watchdog timer, Digital I/O, mSATA, iSMART, TPM (2.0)
- 2x USB 2.0, 4x USB 3.0, 4x COM, 2x SATA III
- 1x Mini PCI-E slot

Ordering Information

IB917AF-7600	Intel® Core™ i7-7600U(2.8GHz/3.9GHz), 3.5" SBC w/ dual PCI-E GbE LAN, DP & HDMI, LVDS(24-bit dual-channel LVDS), TPM (2.0), iSMART, mSATA, iAMT(11.6)
IB917AF-7300	Intel® Core™ i5-7300U(2.6GHz/3.5GHz), 3.5" SBC w/ dual PCI-E GbE LAN, DP & HDMI, LVDS (24-bit dual-channel LVDS), TPM (2.0), mSATA, iSMART
IB917F-7100	Intel® Core™ i3-7100U(2.4GHz), 3.5" SBC w/ dual PCI-E GbE LAN, DP & HDMI, LVDS(24-bit dual-channel LVDS), TPM (2.0), mSATA, iSMART
IB917F-3965 (MOQ)	Intel® Celeron® 3965U(2.2GHz), 3.5" SBC, w/ dual PCI-E GbE LAN, DP & HDMI, LVDS(24-bit dual-channel LVDS), TPM (2.0), mSATA, iSMART
HSIB916-A	Heatsink for IB917/IB916
HSIB916-1	Heat spreader for IB917/IB916
IB76A-2	Cable kit w/ USB, COM, Power, SATA + Power cable

Dimensions and Drawing





Features

- Onboard 7th Gen Intel® Core™ U-Series mobile processor
- 2x DDR4-2133 SO-DIMM, Max. 32GB, Non-ECC
- supports eDP, DisplayPort and HDMI 1.4
- 2x Intel® PCI-E GbE LAN
- Watchdog timer, Digital I/O, mSATA, iSMART, TPM (2.0)
- 2x USB 2.0, 4x USB 3.0, 4x COM, 2x SATA III
- 1x Mini PCI-E slot

Specifications

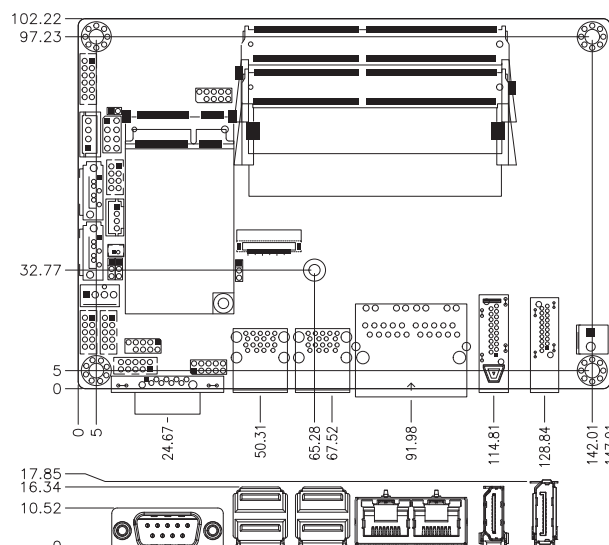
CPU	BGA1356 for 7th Gen Intel® Core™ U-Series i7/i5/i3/ Celeron® DC processors, up to 3.4GHz
PCH	Integrated in 7th Gen Intel® Core™ U-Series processor
Memory	2x DDR4-2133 SO-DIMM, Max. 32GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA
Mini Type Slots	1x Mini PCI-E (full-size)
Graphics Controller	7th Gen Intel® Core™ U-Series processor integrated graphics
Video Output	Supports eDP, DisplayPort and HDMI
Ethernet	IB916AF series: Intel® I219LM LAN PHY IB916F series: Intel® I219V LAN PHY Intel® I211AT or I210AT Gigabit LAN (as 2nd LAN)
I/O Chipset	Fintek F81846AD-I
Serial Port	1x RS232/422/485 (jumper-less selection), 3x RS232
USB 2.0	2x USB 2.0 via pin header
USB 3.X	4x USB 3.0 on board
Serial ATA	2x SATA III
Audio	7th Gen Intel® Core™ U-Series processor built-in HD audio controller + Realtek ALC888S codec
TPM	TPM (2.0)
Others	Digital I/O, +9V~ +24V DC-in, iSMART
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® i5-7300U, 2.6GHz w/ 8GB DDR4-2133, +12V: 2.06A Intel® i3-7100U, 2.4GHz w/ 8GB DDR4-2133, +12V: 2.24A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

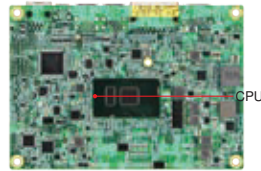
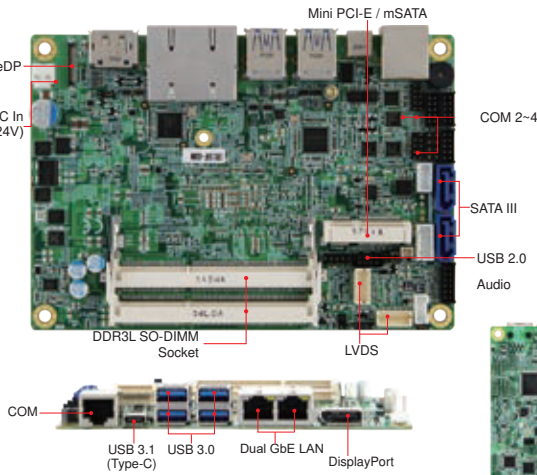
Ordering Information

IB916AFS-7600	Intel® Core™ i7-7600U(2.8GHz/3.9GHz), 3.5" SBC w/ dual PCI-E GbE LAN, eDP, DP & HDMI, TPM (2.0), iSMART, mSATA, iAMT(11.6)
IB916AFS-7300	Intel® Core™ i5-7300U(2.6GHz/3.5GHz), 3.5" SBC w/ dual PCI-E GbE LAN, eDP, DP & HDMI, TPM (2.0), mSATA, iSMART
IB916FS-7100	Intel® Core™ i3-7100U(2.4GHz), 3.5" SBC w/ dual PCI-E GbE LAN, eDP, DP & HDMI, TPM (2.0), mSATA, iSMART
IB916F-3965 (MOQ)	Intel® Celeron® 3965U(2.2GHz), 3.5" SBC w/ dual PCI-E GbE LAN, eDP, DP & HDMI, TPM (2.0), mSATA, iSMART
HSIB916-A	Heatsink for IB917/IB916
HSIB916-1	Heat spreader for IB917/IB916
IB76A-2	Cable kit w/ USB, COM, Power, SATA + Power cable

*[S] means with Realtek ALC888S codec

Dimensions and Drawing





Features

- Onboard 6th Gen Intel® Core™ U-Series mobile processor
- 2x DDR3L-1600 SO-DIMM, Max. 16GB
- supports eDP, DP and 24bit dual-channel LVDS
- 2x Intel® Gigabit LAN
- Watchdog timer, Digital I/O, mSATA, iSMART
- 2x USB 2.0, 4x USB 3.0, 1x USB 3.1(Type-C), 4x COM, 2x SATA III
- 1x Mini PCI-E slot

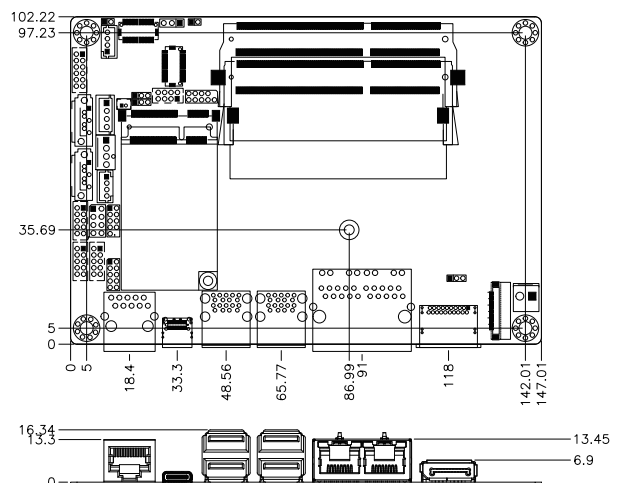
Specifications

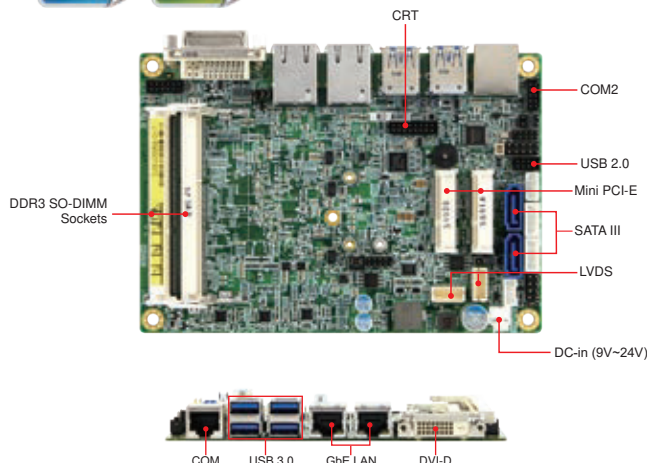
CPU	BGA1356 for 6th Gen Intel® Core™ U-Series i7/i5/i3/ Celeron® DC processors, up to 3.4GHz
PCH	Integrated in 6th Gen Intel® Core™ U-Series processor
Memory	2x DDR3L-1600 SO-DIMM, Max. 16GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA
Mini Type Slots	1x Mini PCI-E (full-size)
Graphics Controller	6th Gen Intel® Core™ U-Series processor integrated graphics
Video Output	Supports eDP, DisplayPort and 24-bit dual-channel LVDS
Ethernet	IB915AF: Intel® I219LM LAN PHY IB915F: Intel® I219V LAN PHY Intel® I211AT or I210AT Gigabit LAN (as 2nd LAN)
I/O Chipset	Fintek F81846AD-I
Serial Port	1x RS232/422/485 (jumper-less selection), 3x RS232
USB 2.0	2x USB 2.0 via pin header
USB 3.X	1x USB 3.1(Type-C) 4x USB 3.0 on board
Serial ATA	2x SATA III
Audio	6th Gen Intel® Core™ U-Series processor built-in HD audio controller + Realtek ALC888S codec
TPM	N/A
Others	Digital I/O, +9V~ +24V DC-in, iSMART
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Max. Power Requirement	Intel® Core™ i3-6100U 2.3GHz w/ 2x DDR3L-1600 4GB, +12V: 2.36A Intel® Core™ i7-6600U 2.6GHz w/ 2x DDR3L-1600 4GB, +12V: 2.27A
Power Consumption	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

IB915AF-6600	Intel® Core™ i7-6600U(2.6GHz/3.4GHz) 3.5" SBC w/ dual PCI-E GbE LAN, eDP, DP & LVDS (24-bit dual-channel LVDS), mSATA, iSMART, iAMT(11.0)
IB915AF-6300	Intel® Core™ i5-6300U(2.4GHz/3GHz) 3.5" SBC w/ dual PCI-E GbE LAN, eDP, DP & LVDS (24-bit dual-channel LVDS), mSATA, iSMART, iAMT(11.0)
IB915F-6100	Intel® Core™ i3-6100U(2.3GHz) 3.5" SBC w/ dual PCI-E GbE LAN, eDP, DP & LVDS (24-bit dual-channel LVDS), mSATA, iSMART
IB915F-3955 (MOQ)	Intel® Celeron® 3955U (2GHz) 3.5" SBC w/ dual PCI-E GbE LAN, eDP, DP & LVDS (24-bit dual-channel LVDS), mSATA, iSMART
HSIB915-BGA-A	Heatsink for IB915
HSIB915-BGA-1	Heat spreader for IB915
IB76A-2	Cable kit w/ USB, COM, Power, SATA + Power cable

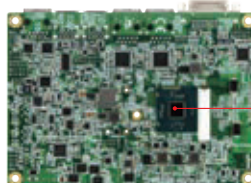
Dimensions and Drawing





Features

- Onboard Intel® Pentium® QC N3710, up to 2.56GHz or Celeron® DC N3010, up to 2.24GHz
- 2x DDR3L SO-DIMM sockets, Max. 8GB
- supports VGA, DVI-D and 24-bit dual-channel LVDS
- 2x Intel® I211AT or I210AT Gigabit LAN
- Watchdog timer, Digital I/O, mSATA, iSMART
- 4x USB 3.0, 2x USB 2.0, 2x COM, 2x SATA III
- 2x Mini PCI-E slots (1x full-size, 1x half-size)



IB899 with heatsink

Specifications

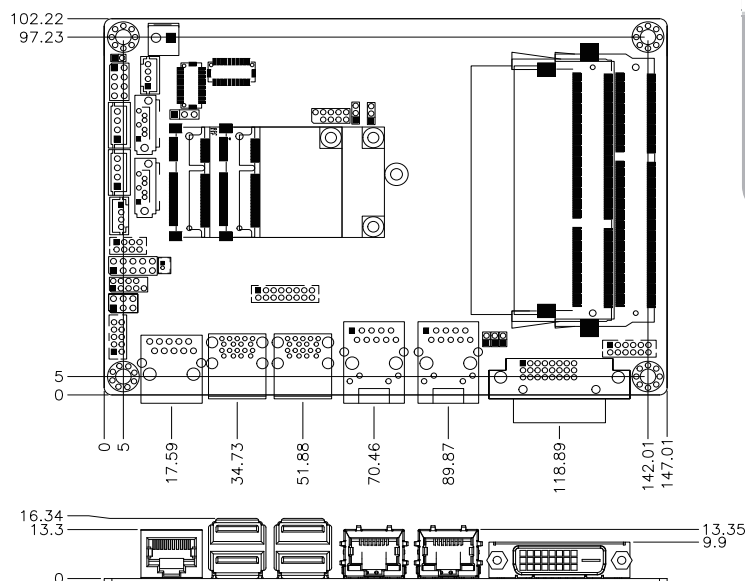
CPU	Intel® Pentium® N3710, up to 2.56GHz or Celeron® N3010, up to 2.24GHz
PCH	N/A
Memory	2x DDR3L SO-DIMM sockets, Max. 8GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA
Mini Type Slots	2x Mini PCI-E (1x full-size, 1x half-size)
Graphics Controller	Intel® Pentium® SoC integrated Gen-8 graphics
Video Output	Supports DVI-D, CRT 24-bit dual-channel LVDS
Ethernet	2x Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Nuvoton NCT5523D
Serial Port	1x RS232/422/485 (jumper-less selection) 1x RS232
USB 2.0	2x USB 2.0 via pin header
USB 3.X	4x USB 3.0 on board
Serial ATA	2x SATA III
Audio	Intel® Pentium® SoC built-in HD audio controller + Realtek ALC888S codec
TPM	N/A
Others	Digital I/O, +9V~ +24V DC-in, iSMART
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® Pentium® N3700 1.6GHz w/ 2x 4GB DDR3L-1600, +12V: 1.5A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

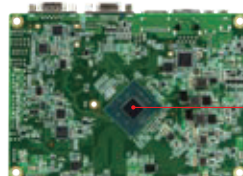
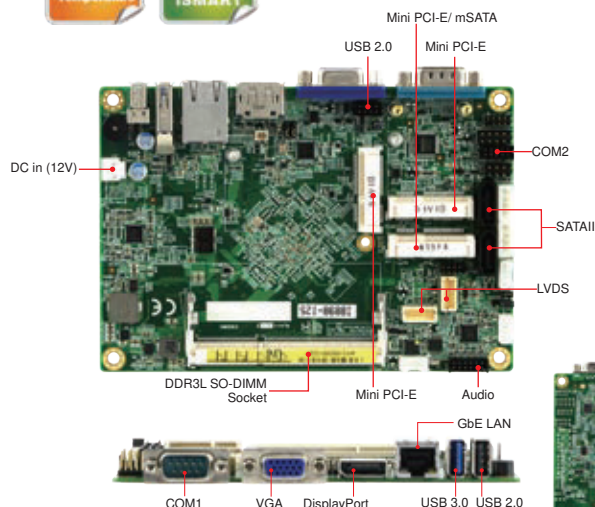
Ordering Information

IB899FS-371	Intel® Pentium® N3710(2.56GHz) on board, 3.5" SBC w/ dual PCI-E GbE LAN, CRT, DVI-D & LVDS (24-bit dual-channel LVDS), mSATA, iSMART
IB899FS-301	Intel® Celeron® N3010(2.24GHz) on board, 3.5" SBC w/ dual PCI-E GbE LAN, CRT, DVI-D & LVDS (24-bit dual-channel LVDS), mSATA, iSMART
HSIB899-BGA-A	Heatsink for IB899
HSIB899-BGA-1	Heat Spreader for IB899
IB81	Cable kit w/ USB, COM, power, SATA + power, VGA, audio

*(S) means with Realtek ALC888S codec

Dimensions and Drawing





IB898 with Heat spreader



IB898 with heatsink

Features

- Onboard Intel® Atom® E3825 DC/ E3815 SC SoC, 1.33GHz/1.46GHz
- 1x DDR3L-1066 SO-DIMM, Max. 8GB
- supports VGA, DisplayPort and 24-bit dual-channel LVDS
- 1x Intel® I210IT Gigabit LAN
- Watchdog timer, Digital I/O, mSATA, iSMART
- 3x USB 2.0, 1x USB 3.0, 2x COM, 2x SATA II
- 3x Mini PCI-E slots (2x full-size, 1x half-size)
- supports wide-range operating temperature from -40°C to 85°C

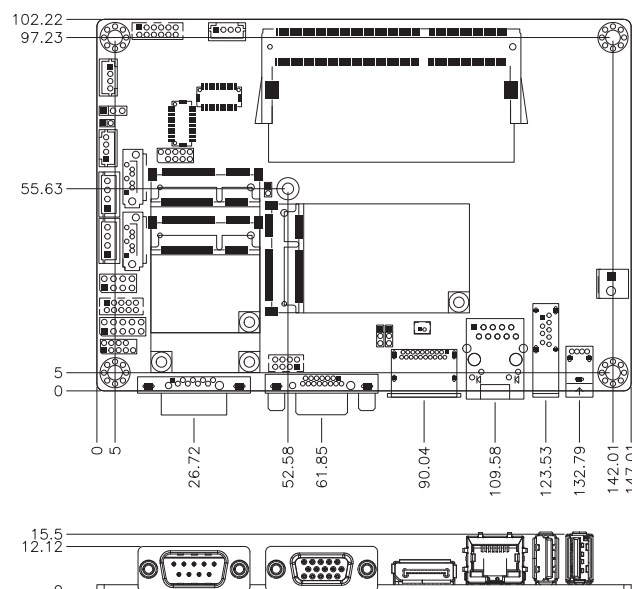
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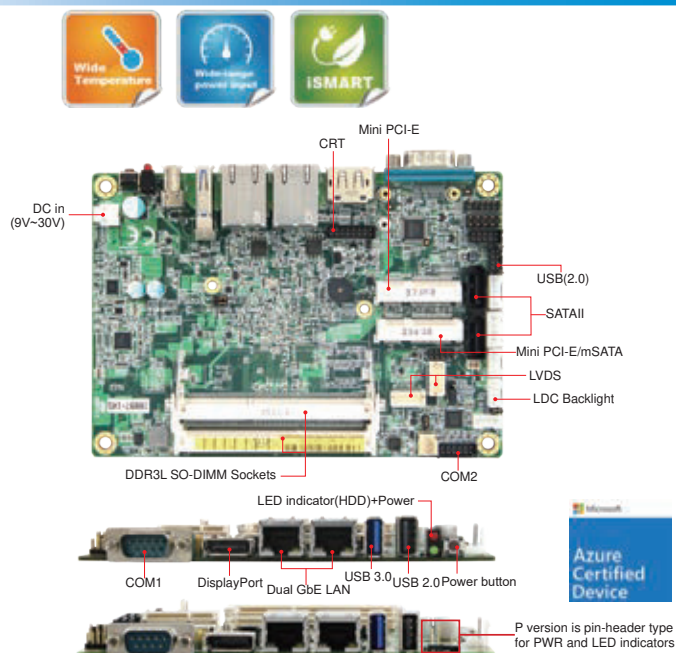
CPU	Intel® Atom® DC E3825 (1.33GHz, 1MB cache) Intel® Atom® SC E3815 (1.46GHz, 512KB cache)
PCH	Integrated in Intel® Atom® SoC
Memory	1x DDR3L-1066 SO-DIMM, Max. 8GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA
Mini Type Slots	3x Mini PCI-E (2x full-size, 1x half-size)
Graphics Controller	Intel® Atom® SoC integrated Gen7 4EUs graphics
Video Output	Supports CRT, DisplayPort, and 24-bit dual-channel LVDS
Ethernet	1x Intel® I210IT Gigabit LAN
I/O Chipset	Nuvoton NCT5523D
Serial Port	1x RS232/422/485 (jumper-less selection) 1x RS232
USB 2.0	1x USB 2.0 on board 2x USB 2.0 via pin header
USB 3.X	1x USB 3.0 on board
Serial ATA	2x SATA II
Audio	Intel® Atom® SoC built-in HD Audio controller + Realtek ALC269QHD codec w/ class-D amplifier
TPM	N/A
Others	Digital I/O, +12V DC-In, iSMART Wide-range operating temperature
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® Atom® E3825 1.33GHz w/ 4GB DDR3L-1600 +12V: 0.65A
Operating Temperature	-40°C~85°C (-40°F~185°F)
Storage Temperature	-40°C~90°C (-40°F~194°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

IB898-I25D1	Intel® Atom® E3825 (1.33GHz) 3.5" SBC w/ PCI-E GbE LAN, CRT, DisplayPort & LVDS (24-bit dual-channel LVDS), mSATA, iSMART, wide-temp support
IB898-I15D1	Intel® Atom® E3815 (1.46GHz) 3.5" SBC w/ PCI-E GbE LAN, CRT, DisplayPort & LVDS (24-bit dual-channel LVDS), mSATA, iSMART 3.1, wide-temp support
HSIB898-BGA-A	Heatsink for IB898
HSIB898-BGA-1	Heat spreader for IB898
IB76A-2	Cable kit w/ USB, COM, Power, SATA + Power cable

Dimensions and Drawing





Features

- Onboard Intel® Atom® E3845/E3827/E3815 SoC, 1.91GHz/1.75GHz/1.46GHz
- 2x DDR3L-1333 SO-DIMM, Max. 8GB
- supports VGA, DisplayPort and 24-bit dual-channel LVDS
- 2x Intel® I210IT Gigabit LAN
- Watchdog timer, Digital I/O, mSATA, iSMART
- 3x USB 2.0, 1x USB 3.0, 2x COM, 2x SATA II, 1x MicroSD slot
- 2x Mini PCI-E slots (1x full-size, 1x half-size)
- supports wide-range operating temperature from -40°C to 85°C



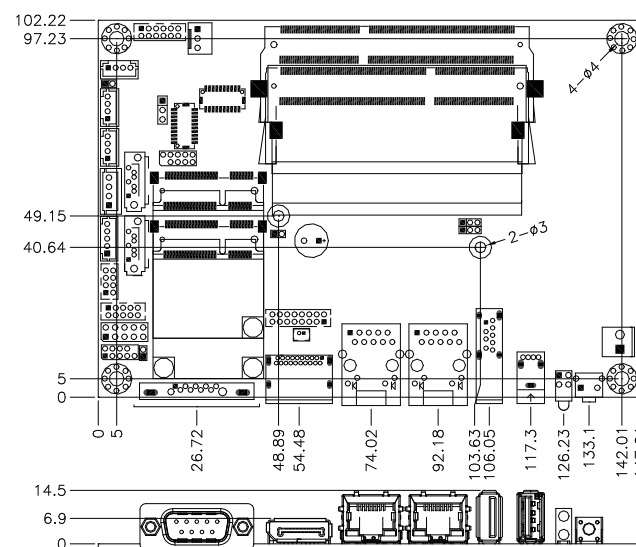
Specifications

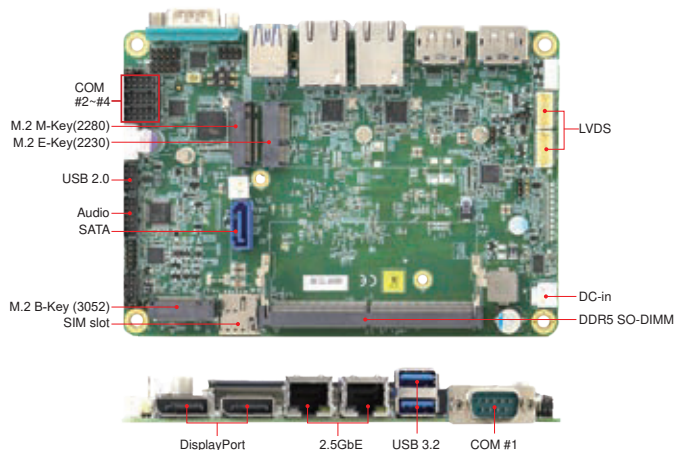
CPU	Intel® Atom® QC E3845 (1.91GHz, 2MB cache) Intel® Atom® DC E3827 (1.75GHz, 1MB cache) 2nd Atom® SC E3815 (1.46GHz, 512k cache)
PCH	Integrated in Intel® Atom® SoC
Memory	2x DDR3L-1333 SO-DIMM, Max. 8GB (Non-ECC) 1x DDR3L-1333 SO-DIMM, (IB897-215 only)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA, 1x MicroSD
Mini Type Slots	2x Mini PCI-E (1x full-size, 1x half-size)
Graphics Controller	Intel® Atom® SoC integrated Gen7 4EUs graphics
Video Output	Supports CRT, DisplayPort, and 24-bit dual-channel LVDS
Ethernet	2x Intel® I210IT Gigabit LAN
I/O Chipset	Nuvoton NCT5523D
Serial Port	1x RS232/422/485 (jumper-less selection) 1x RS232
USB 2.0	1x USB 2.0 on board 2x USB 2.0 via pin header
USB 3.X	1x USB 3.0 on board
Serial ATA	2x SATA III
Audio	Intel® Atom® SoC built-in HD Audio controller + Realtek ALC269Q HD codec w/ class-D amplifier
TPM	N/A
Others	Digital I/O, +9V~ +30V DC-In, iSMART
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® Atom® E3845 @ 1.91GHz w/ 2x Transcend 2GB DDR3L-1600 +12V: 1.57A
Operating Temperature	-40°C~85°C (-40°F~185°F)
Storage Temperature	-40°C~90°C (-40°F~194°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

IB897-I45	Intel® Atom® E3845(1.91GHz) 3.5" SBC w/ dual PCI-E GbE LAN, CRT, DisplayPort & LVDS, mSATA, iSMART
IB897-I27	Intel® Atom® E3827(1.75GHz) 3.5" SBC w/ dual PCI-E GbE LAN, CRT, DisplayPort & LVDS, mSATA, iSMART
IB897-I15	Intel® Atom® E3815(1.46GHz) 3.5" SBC w/ dual PCI-E GbE LAN, CRT, DisplayPort & LVDS, mSATA, iSMART
IB897-I45P	Intel® Atom® E3845(1.91GHz) 3.5" SBC w/ dual PCI-E GbE LAN, CRT, DisplayPort & LVDS, mSATA, iSMART, pin-header type for power button and LED
IB897-I27P	Intel® Atom® E3827(1.75GHz) 3.5" SBC w/ dual PCI-E GbE LAN, CRT, DisplayPort & LVDS, mSATA, iSMART, pin-header type for power button and LED
HSIB897-BGA	Heatsink for IB897
HSIB897-BGA-1	Heat spreader for IB897
IB76-2	Cable kit w/ USB, COM, power, SATA + power, VGA

Dimensions and Drawing





Features

- Onboard Intel® Atom® x7000RE series or N-Series processor
- 1x DDR5-4800 SO-DIMM, Max. 16GB
- supports 2x DisplayPort (DP++) and eDP or LVDS
- 2x PCI-E 2.5G LAN, 4x COM ports
- 2x USB 3.2 (Type-A), 4x USB 2.0, 1x SATA III
- 3x M.2 sockets (M-Key, E-Key & B-Key)
- +12V~+24V DC wide-range power input
- Watchdog timer, Digital I/O, dTPM

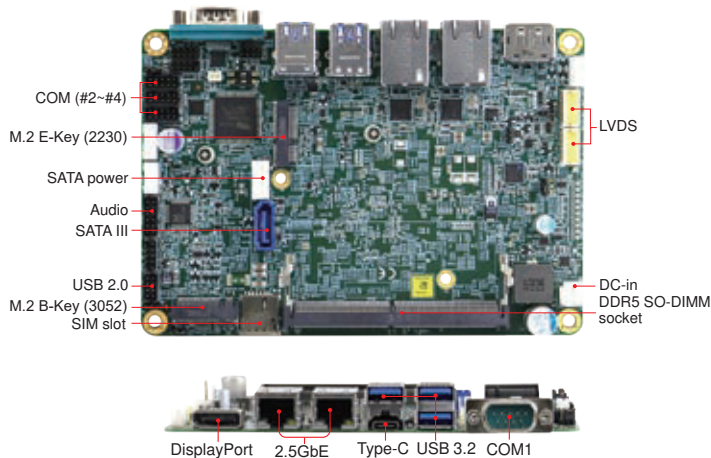


Specifications

CPU	Intel® Atom® dual-Core x7211RE or Intel® Processor Quad-Core N97
PCH	N/A
Memory	1x DDR5 SO-DIMM, Max. 16GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x M.2 M2280 (SATA)
Mini Type Slots	1x M.2 (E2230), 1x M.2 (B3052)
Graphics Controller	Intel® SoC integrated graphics
Video Output	2x DisplayPorts & eDP or LVDS]
Ethernet	2x Intel® PCI-E 2.5G LAN Dual I226IT 2.5G LAN for Atom x7000RE series Dual I226V 2.5G LAN for Processor N series
I/O Chipset	Fintek F81966AB-I
Serial Port	1x RS232/422/485 (Jumperless selection) & 3x RS232
USB 2.0	4x USB 2.0 (pin-header)
USB 3.X	2x Type-A
Serial ATA	1x SATA III
Audio	Built-in HD with Realtek ALC888S
TPM	Infineon SLB9672 series
Others	Digital I/O (4-in/4-out), EuP/ErP, +12V~+24V DC-in
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® N355 Processor, Up to 3.90 GHz Transcend TS2GSA64V6E w/ 1x DDR5-5600 16GB +12V : 4.17A
Operating Temperature	0°C~+60°C (+32°F ~+140°F) For Processor N -40°C~+85°C (-40°F ~+185°F) For Atom x7000RE processor (up to 9W TDP)
Storage Temperature	-40°C~85°C (-40°F ~+185°F)
Relative Humidity	10% ~ 90% (non-condensing)

Ordering Information

IB839F-7433RE	Intel® Atom® x7433RE SoC onboard 3.5-inch SBC, w/ 2x 2.5GbE LAN, 2 x DP, LVDS, 4x COM, 3x M.2, TPM, EuP/ErP, +12V~24V DC-in
IB839F-7211RE	Intel® Atom® x7211RE SoC onboard 3.5-inch SBC, w/ 2x 2.5GbE LAN, 2x DP, LVDS, 4x COM, 3x M.2, TPM, EuP/ErP, +12V~24V DC-in
IB839F-N97	Intel® N97 SoC onboard 3.5-inch SBC, w/ 2x 2.5GbE LAN, 2x DP, LVDS, 4x COM, 3x M.2, TPM, EuP/ErP, +12V~24V DC-in
IB839FE-N97	Intel® N97 SoC onboard 3.5-inch SBC, w/ 2x 2.5GbE LAN, 2x DP, eDP, 4x COM, 3x M.2, TPM, EuP/ErP, +12V~24V DC-in
IB839FE-N97R	Intel® N97 SoC onboard 3.5-inch SBC, w/ 2x 2.5GbE LAN, 2x DP, eDP, 4x COM, 3x M.2, TPM, EuP/ErP, +12V~24V DC-in, Right-angle type PWR connector
HSIB838-C	Heatsink for IB839 Quad-core & Dual-core processors (up to 9W)
HSIB838-1	Heat spreader for IB839
IB76A-2	Cable kit w/USB, COM, Power, SATA + Power



Features

- Intel® Processor N series SoC (Alder Lake-N)
- 1x DDR5 SO-DIMM, Max. 16GB
- supports Type-C & DP++ and eDP or LVDS
- 2x Intel® PCI-E 2.5G LAN
- 2x USB 2.0, 4x USB 3.2 (1x Type-C + 3x Type-A), 4x COM, 1x SATA III
- 2x M.2 sockets (E-Key + B-Key), supports CNVi
- 9V~36V wide-range DC input
- supports fTPM, Watchdog timer, Digital I/O



IB838 with Heat spreader

IB838 with heatsink

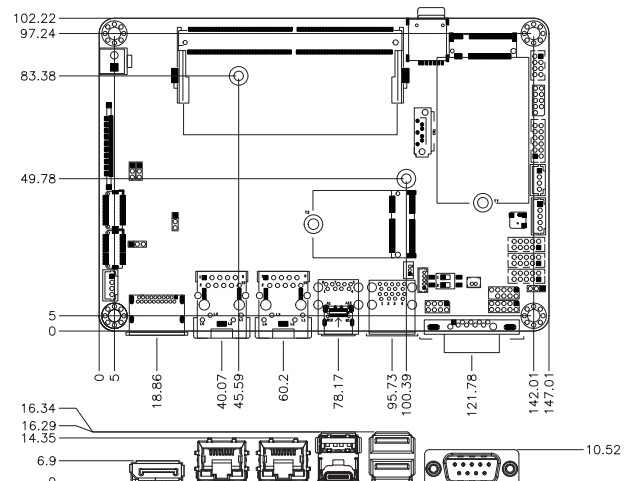
Specifications

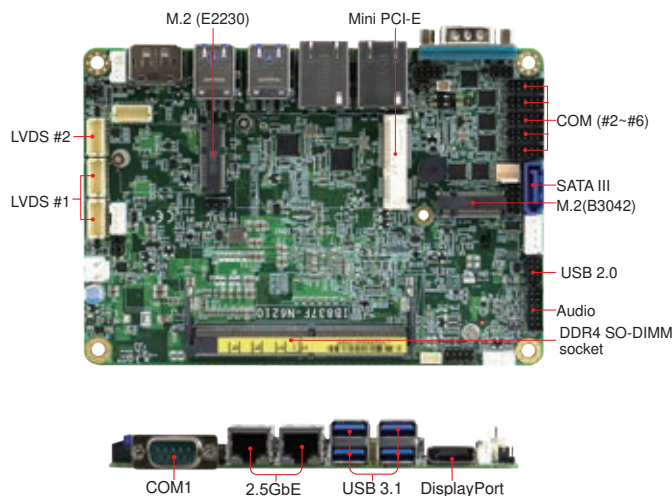
CPU	Intel® Processor N series SoC (Alder Lake-N)
PCH	N/A
Memory	1x DDR5 SO-DIMM, Max. 16GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	M.2(B-Key)
Mini Type Slots	2x M.2 sockets (E-Key+B-Key)
Graphics Controller	Intel® SoC integrated Gen12 graphics
Video Output	3x Display [DP connector & Type-C & eDP or LVDS]
Ethernet	2x Intel® I226V LAN
I/O Chipset	Fintek F81964D-I on board
Serial Port	1x RS232/422/485 (Jumperless selection) 3x RS232
USB 2.0	2x USB 2.0 via (pin header)
USB 3.X	1x Type-C+ 3x Type-A
Serial ATA	1x SATA III
Audio	Intel® Processor N-series built-in HD audio + ALC888S codec
TPM	fTPM
Others	Digital I/O (4-in/4-out), EuP/ErP, +9V~+36V DC-in
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® Core™ i3-N305 1.80 GHz w/ 4800 8GB DDR5 ADATA AD5S48008G-S +12V:2.8A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-40°C~85°C (-40°F ~185°F)
Relative Humidity	10% ~ 90% (non-condensing)

Ordering Information

IB838F-N305	Intel® Core i3-N305 SoC on board 3.5" SBC w/ 2x 2.5GbE, DisplayPort + Type-C + LVDS, 4x COM, 2x M.2 (E-Key+B-Key), 1x SATA III, fTPM, DC-in (9V~36V)
IB838FE-N305	Intel® Core i3-N305 SoC on board 3.5" SBC w/ 2x 2.5GbE, DisplayPort + Type-C + eDP, 4x COM, 2x M.2 (E-Key+B-Key), 1x SATA III, fTPM, DC-in (9V~36V)
IB838F-N97	Intel® N97 SoC onboard 3.5" SBC w/ 2x 2.5GbE, DisplayPort + Type-C + LVDS, 4x COM, 2x M.2 (E-Key + B-Key), 1x SATAIII, fTPM, DC-in (9V~36V)
IB838F-N50	Intel® N50 SoC on board 3.5" SBC w/ 2x 2.5GbE, DisplayPort + Type-C + eDP, 4x COM, 2x M.2 (E-Key+B-Key), 1x SATA III, fTPM, DC-in (9V~36V)
IB838FE-N50	Intel® N50 SoC on board 3.5" SBC w/ 2x 2.5GbE, DisplayPort + Type-C + eDP, 4x COM, 2x M.2 (E-Key+B-Key), 1x SATA III, fTPM, DC-in (9V~36V)
HSIB838-A	Heatsink for IB838F(E)-N50 & IB838F-N97
HSIB838-C	Heatsink for IB838F-N305
HSIB838-1	Heat spreader for IB838 series

Dimensions and Drawing





Specifications

CPU	Intel® Celeron® QC J6412 (2.0GHz/2.6GHz) Intel® Celeron® DC N6210 (1.2GHz/2.6GHz)
PCH	N/A
Memory	1x DDR4 SO-DIMM, Max. 16GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA 1x M.2 B3042
Mini Type Slots	Mini PCI-E [for PCI-E (x1) + USB2.0 + SATA] 1x M.2 (B-Key, type:3042, SATA) 1x M.2 (E-Key, type:2230, PCI-E x1 + USB2.0)
Graphics Controller	Intel® SoC integrated Gen11 Graphics
Video Output	1x DisplayPort, 2x 24-bit dual-channel LVDS
Ethernet	2x Intel® I226V PCI-E Gigabit LAN
I/O Chipset	Fintek F81966D-I
Serial Port	1x RS232/422/485 (Jumperless selection) & 5x RS232
USB 2.0	2x USB 2.0 (pin-header)
USB 3.X	4x USB 3.1 (Type A)
Serial ATA	1x SATA III (shared with M.2 B-Key)
Audio	Built-in HD with Realtek ALC888S + amplifier
TPM	fTPM
Others	Digital I/O (4-in/4-out), +12V DC-in
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® Celeron® J6412 2.00GHz w/ 8GB DDR4-3200 +12V:1.57A
Operating Temperature	0°C~60°C (32°F ~140°F)
Storage Temperature	-20°C~80°C (-4°F ~176°F)
Relative Humidity	95% (non-condensing@60°C)

Features

- Onboard Intel® Celeron® N & J series processor
- 1x DDR4-3200 SO-DIMM, Max. 16GB
- supports 1x DisplayPort & 2x dual channel LVDS
- 2x I226V PCI-E 2.5G LAN, 6x COM ports
- 4x USB 3.1, 2x USB 2.0, 1x SATA III (shared with M/2 B-Key)
- 2x M.2 sockets (E-Key & B-Key), 1x Mini PCI-E slot (full-size)
- Watchdog timer, Digital I/O, fTPM, mSATA, 12V only DC-in



IB837 with Heat spreader

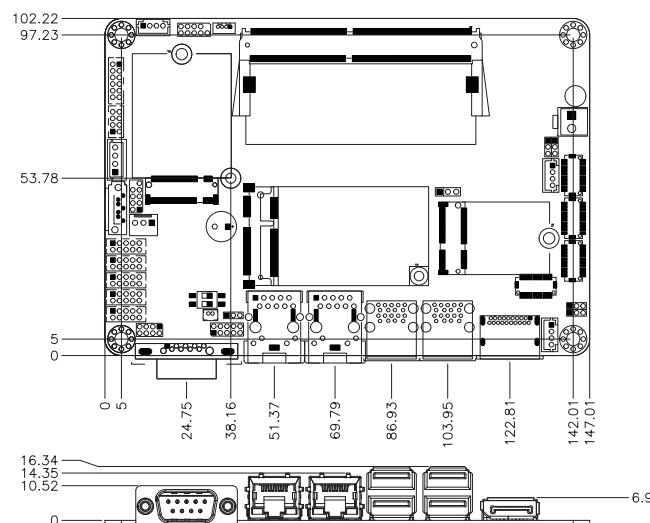


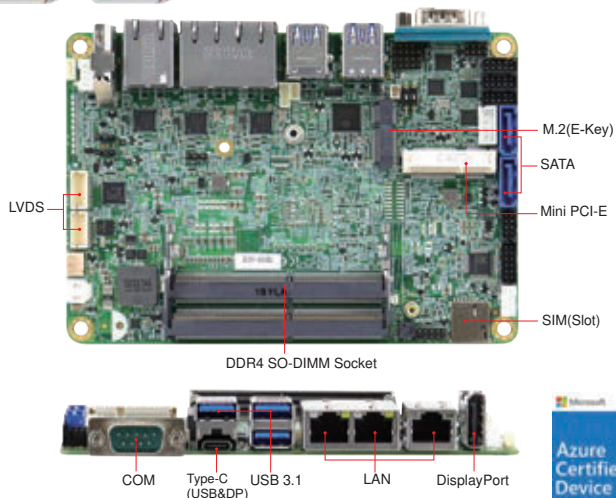
IB837 with heatsink

Ordering Information

IB837F-J6412	Intel® Celeron® J6412 (2GHz~2.6GHz) onboard 3.5-inch SBC, w/ 2x 2.5GbE LAN, 1x DisplayPort, 2x LVDS (24-bit LVDS dual channel), mSATA, M.2, 12V DC-in
IB837F-N6210	Intel® Celeron® N6210 (1.2GHz~2.6GHz) onboard 3.5-inch SBC, w/ 2x 2.5GbE LAN, 1x DisplayPort, 2x LVDS (24-bit LVDS dual channel), mSATA, M.2, 12V DC-in
HSIB837-A	Heatsink for IB837
HSIB837-1	Heat spreader for IB837

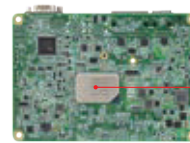
Dimensions and Drawing





Features

- Onboard Intel® Atom® x6000 Series processor
- 2x DDR4-3200 SO-DIMM, Max.32GB, supports IB ECC
- supports 2x DisplayPort (DP and Type-C), eDP or 24-bit dual-channel LVDS
- 3x Intel® 2.5G LAN
- 2x USB 2.0, 4x USB 3.1, 2x SATA III
- 1x M.2 sockets (E-Key), 1x Mini PCI-E slot (full-size)
- Watchdog timer, Digital I/O, TPM (2.0), mSATA(Share with SATA port)
- Wide-range operating temperature from -40°C to 70°C



IB836 with heatsink

IB836 with Heat spreader

Specifications

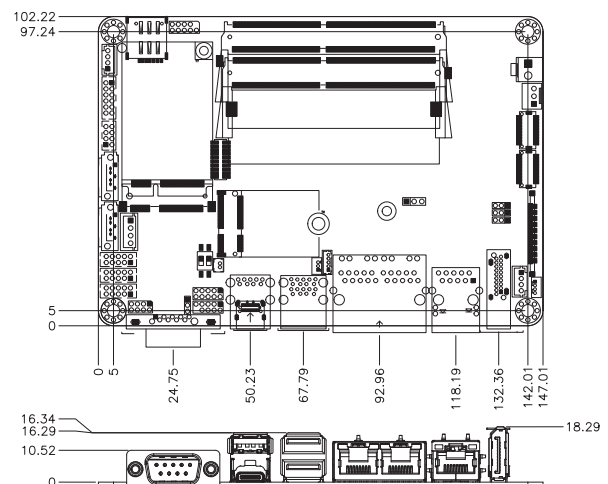
CPU	Intel® Atom® QC x6425E (1.8GHz/3.0GHz) Intel® Atom® QC x6413E (1.5GHz/3.0GHz)
PCH	Integrated in Intel® SoC
Memory	DDR4-3200 SO-DIMM, Max. 32GB, (supports IB ECC based on CPU)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA (Shared with SATA port)
Mini Type Slots	1x M.2 (E-Key, type:2230) 1x Mini PCI-E (full-size)
Graphics Controller	Intel® SoC integrated Gen11 Graphics
Video Output	2x DisplayPort (DP connector & Type-C) eDP or 24-bit dual-channel LVDS
Ethernet	3x Intel® I226IT 2.5G LAN for Atom® (x6000)
I/O Chipset	Fintek F81964D-I
Serial Port	1x RS232/422/485 (Jumperless selection) 3x RS232
USB 2.0	2x USB 2.0 (pin-header)
USB 3.X	3x USB 3.1 (Type-A) 1x USB (Type-C)
Serial ATA	2x SATA III
Audio	Built-in HD with Realtek ALC888S w/ class-D amplifier
TPM	TPM (2.0)
Others	Digital I/O (4-in/4-out), EuP/ErP, +9V~+36V DC-in
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® Atom® x6413E 1.5GHz w/ 2x DD4 3200 16GB +12V: 1.87A
Operating Temperature	Atom® x6000: -40°C~70°C(-40°F~158°F)
Storage Temperature	-40°C~85°C (-40°F ~185°F)
Relative Humidity	90% (non-condensing@60°C)

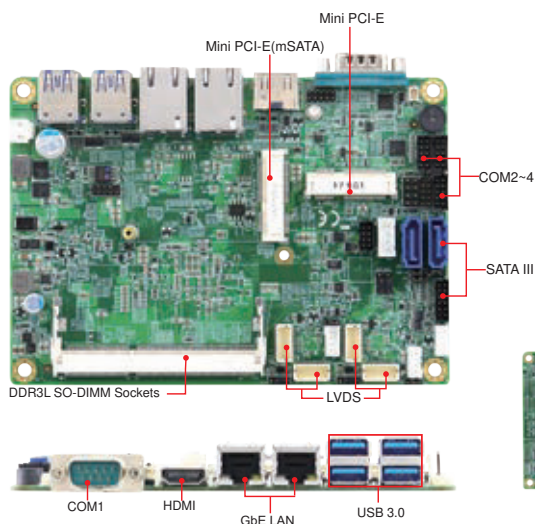
Ordering Information

IB836F/FE-6425E	Intel® Atom® x6425E (1.8GHz~3.0GHz) 3.5" SBC w/ 3x 2.5G LAN, 2x DisplayPort (DP connector & Type-C), eDP or LVDS, mSATA, M.2, EuP/ErP, 9V~36V DC-in, wide-temperature support
IB836F/FE-6413E	Intel® Atom® x6413E (1.5GHz~3.0GHz) 3.5" SBC w/ 3x 2.5G LAN, 2x DisplayPort (DP connector & Type-C), eDP or LVDS, mSATA, M.2, EuP/ErP, 9V~36V DC-in, wide-temperature support
HSIB836-X-B	Heatsink for IB836F/FE
HSIB836-X-2	Heat spreader for IB836F/FE

*model name with "F" is LVDS, "FE" is eDP

Dimensions and Drawing





IB818 with Heat spreader

IB818 with heatsink

Features

- Onboard Intel® Atom® x7-E3950/ x5-E3940/ x5-E3930 Processor [i-Temp support]
- Onboard Intel® Pentium® N4200/ Celeron® N3350/ J3455
- 1x DDR3L-1866 SO-DIMM, Max. 8GB
- supports HDMI 1.4b, **Dual LVDS (18/24bit)**
- Dual Intel® Gigabit LAN
- Watchdog timer, Digital I/O, mSATA, EuP/ErP
- 4x USB 3.0, 2x USB 2.0, 4x COM, 2x SATA III
- 1x Mini PCI-E slot (full-size), 1x Mini PCI-E slot (half-size)
- Wide-range operating temperature in certain models

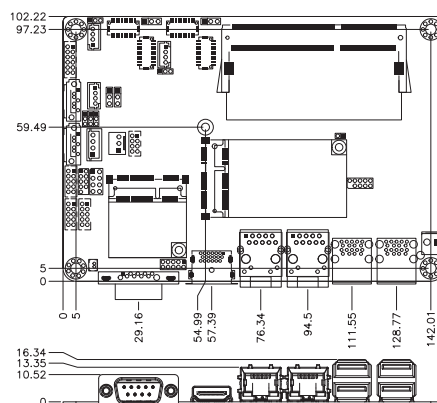
Specifications

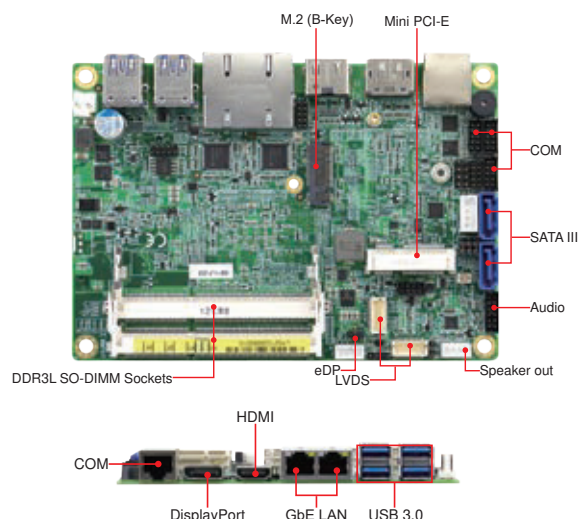
CPU	Intel Atom® x7-E3950 Processor (1.6GHz~2.0GHz) Intel Atom® x5-E3940 Processor (1.6GHz~1.8GHz) Intel Atom® x5-E3930 Processor (1.3GHz~1.8GHz) Intel® Pentium® Processor N4200 (1.1GHz~2.5GHz) Intel® Celeron® Processor N3350 (1.1GHz~2.4GHz) Intel® Celeron® Processor J3455 (1.5GHz~2.3GHz)
PCH	Integrated in Intel® SoC
Memory	1x DDR3L SO-DIMM, Max. 8GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA (via full-size Mini PCI-E)
Mini Type Slots	2x Mini PCI-E (1x full-size, 1x half-size)
Graphics Controller	Intel® SoC integrated Gen9 18EUs graphics
Video Output	Supports HDMI(1.4b), Dual LVDS (18/24bit)
Ethernet	IB818F-I50 2x Intel® I210IT Gigabit LAN IB818F-420/335: 2x Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Fintek F81964D-I
Serial Port	1x RS232/422/485 (jumper-less selection) 3x RS232
USB 2.0	2x USB 2.0 via pin-header
USB 3.X	4x USB 3.0 on board
Serial ATA	2x SATA III
Audio	Intel® Atom® SoC built-in HD audio controller + Realtek ALC888S Codec w/ class-D speaker amplifier
TPM	TPM2.0
Others	Digital I/O, +12V~+24V DC-in, EuP/ErP
Dimensions (L x W)	102 x 147 mm (4" x 5.8")
Power Consumption	Intel® Atom® E3950, 1.6GHz w/ 8GB DDR3L +12V: 1.09A Intel Pentium N4200, 1.1GHz w/ 8GB DDR3L +12V: 1.09A
Operating Temperature	E3950/E3940/E3930: -40°C~85°C (-40°F~185°F) N4200/N3350: 0°C~+60°C (32°F~140°F)
Storage Temperature	-40°C~90°C (-40°F~194°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

IB818F-I50	Intel® Atom®x7-E3950 (1.6GHz~2.0GHz) 3.5" SBC w/ dual GbE LAN, HDMI, 2x LVDS (18/24-bit dual-channel LVDS), EuP/ErP, 12V~24V DC-in, wide-temp support
IB818F-I40	Intel® Atom®x5-E3940 (1.6GHz~1.8GHz) 3.5" SBC w/ dual GbE LAN, HDMI, 2x LVDS (18/24-bit dual-channel LVDS), EuP/ErP, 12V~24V DC-in, wide-temp support
IB818F-I30	Intel® Atom®x5-E3930 (1.3GHz~1.8GHz) 3.5" SBC w/ dual GbE LAN, HDMI, 2x LVDS (18/24-bit dual-channel LVDS), EuP/ErP, 12V~24V DC-in, wide-temp support
IB818F-420	Intel® Pentium® N4200 (1.1GHz~2.5GHz) 3.5" SBC w/ dual GbE LAN, HDMI, 2x LVDS (18/24-bit dual-channel LVDS), EuP/ErP, 12V~24V DC-in
IB818F-335	Intel® Celeron® N3350 (1.1GHz~2.4GHz) 3.5" SBC w/ dual GbE LAN, HDMI, 2x LVDS (18/24-bit dual-channel LVDS), EuP/ErP, 12V~24V DC-in
IB818F-J3455	Intel® Celeron® J3455 (1.5GHz/2.3GHz) 3.5" SBC w/ dual GbE LAN, HDMI, 2x LVDS (18/24-bit dual-channel LVDS), EuP/ErP, 12V~24V DC-in
HSIB818-I	Heatsink for IB818-I50/I40/I30
HSIB818	Heatsink for IB818-420/335/J3455
HSIB818-I-1	Heat Spreader for IB818-I50/I40/I30
HSIB818-1	Heat Spreader for IB818-420/335/J3455
IB76A-1	Cable kit w/ USB, COM, Power, SATA+Power

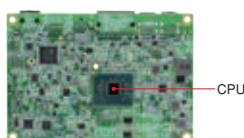
Dimensions and Drawing





Features

- Onboard Intel® Atom® x7-E3950/ x5-E3940/ x5-E3930 Processor [i-Temp support]
- Onboard Intel® Pentium® N4200/ Celeron® N3350
- 2x DDR3L-1866/1600 SO-DIMM, Max. 8GB
- supports HDMI(1.4b), DisplayPort 24 bit dual-channel LVDS
- Dual Intel® Gigabit LAN
- Watchdog timer, Digital I/O, mSATA, EuP/ErP
- 4x USB 3.0, 2x USB 2.0, 4x COM, 2x SATA III
- 1x Mini PCI-E slot (full-size), 1x M.2 (B-Key)
- Wide-range operating temperature in certain models



IB811 with heatsink

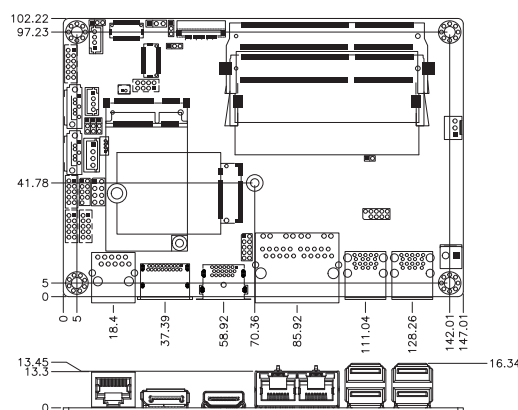
Specifications

CPU	Intel Atom® x7-E3950 Processor (1.6GHz~2.0GHz) Intel Atom® x5-E3940 Processor (1.6 GHz~1.8GHz) Intel Atom® x5-E3930 Processor (1.3 GHz~1.8GHz) Intel® Pentium® Processor N4200 (1.1GHz~ 2.5GHz) Intel® Celeron® Processor N3350 (1.1GHz~ 2.4GHz)
PCH	Integrated in Intel® SoC
Memory	2x DDR3L SO-DIMM, Max. 8GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA
Mini Type Slots	1x Mini PCI-E (full-size), 1x M.2 (B-Key, type:3042)
Graphics Controller	Intel® SoC integrated Gen9 18EUs graphics
Video Output	Supports HDMI (1.4b), DP (1.2), 24-bit dual-channel LVDS
Ethernet	IB811F-I50/I40/I30: 2x Intel® I210IT Gigabit LAN IB811F-420/335: 2x Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Fintek F81964D-I
Serial Port	1x RS232/422/485 (jumper-less selection) 3x RS232
USB 2.0	2x USB 2.0 via pin-header
USB 3.X	4x USB 3.0 on board
Serial ATA	2x SATA III
Audio	Intel® Atom® SoC built-in HD audio controller + Realtek ALC888SHD Codec w/ class-D speaker amplifier
TPM	TPM 2.0
Others	Digital I/O, +9V~ +36V DC-In, EuP/ErP
Dimensions (L x W)	102mm x 147mm (4" x 5.8")
Power Consumption	Intel® Atom® E3900 1.3GHz w/ 2x DDR3L 1600 4GB +12V: 1.2A
Operating Temperature	E3950/E3940/E3930: -40°C~85°C (-40°F~185°F) N4200/N3350: 0°C~60°C (32°F~140°F)
Storage Temperature	-40°C~90°C (-40°F~194°F)
Relative Humidity	90% (non-condensing @60°C)

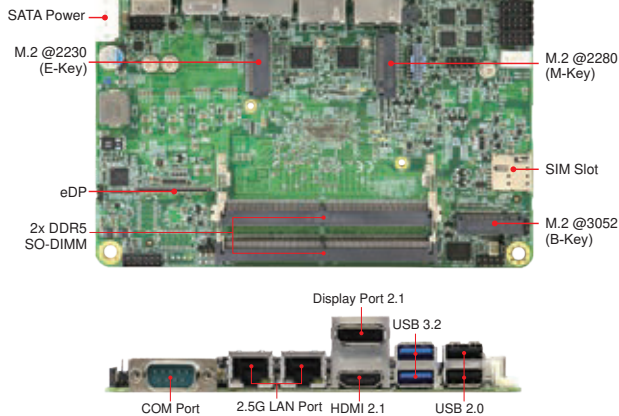
Ordering Information

IB811LF-I50	Intel® Atom® x7-E3950 (1.6GHz~2.0GHz) 3.5" SBC w/ dual GbE LAN, HDMI, DisplayPort & LVDS (24-bit dual-channel LVDS), mSATA, M.2, EuP/ErP, 9V~36V DC-in, wide-temp. support
IB811LF-I40	Intel® Atom® x5-E3940 (1.6GHz~1.8GHz) 3.5" SBC w/ dual GbE LAN, HDMI, DisplayPort & LVDS (24-bit dual-channel LVDS), mSATA, M.2, EuP/ErP, 9V~36V DC-in, wide-temp. support
IB811LF-I30	Intel® Atom® x5-E3930 (1.3~1.8GHz) 3.5" SBC w/ dual GbE LAN, HDMI, DisplayPort & LVDS (24-bit dual-channel LVDS), mSATA, M.2, EuP/ErP, 9V~36V DC-in, wide-temp. support
IB811LF-420	Intel® Pentium® N4200 (1.1~2.5GHz) 3.5" SBC w/ dual GbE LAN, HDMI, DisplayPort & LVDS (24-bit dual-channel LVDS), mSATA, M.2, EuP/ErP, 9V~36V DC-in
IB811LF-335	Intel® Celeron® N3350 (1.1~2.4GHz) 3.5" SBC w/ dual GbE LAN, HDMI, DisplayPort & LVDS (24-bit dual-channel LVDS), mSATA, M.2, EuP/ErP, 9V~36V DC-in
HSIB811-B	Heatsink for IB811F-420/ 335
HSIB811-I-A	Heatsink for IB811F-I50/ I40/ I30
HSIB811-1	Heat spreader for IB811F-420/ 335
HSIB811-I-1A	Heat spreader for IB811F-I50/ I40/ I30
IB76A-2	Cable kit w/ USB, COM, Power, SATA + Power

Dimensions and Drawing

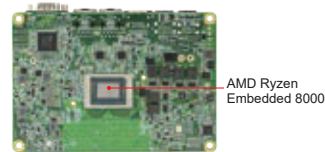


NEW



Features

- AMD Ryzen™ Embedded 8000 Series APU on board, up to 8 cores/16 threads
- Dual-channel SO-DIMM, DDR5 5600, Max. 128GB (per DIMM), Total capacity: 256GB
- 1x eDP, 1x LVDS, 1x DP 2.1, 1x HDMI 2.1
- 2x Intel® I226-V 2.5 Gigabit LAN, 2x USB3.2, 4x USB 2.0
- 1x M.2 B-Key for 5G or LTE options
- 1x M.2 E-Key for Wi-Fi, Bluetooth or capture card options
- supports 2x RS232/422/485 COM port, 2x RS232 COM port



Specifications

CPU	AMD Ryzen™ Embedded 8000 series APU
PCH	N/A
Memory	Dual-Channel SO-DIMM, DDR5 5600, Max. 128GB (per DIMM), Total capacity: 256GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x PIC-E Gen4 x4 (M.2 NVMe) M-Key Type 2280
Mini Type Slots	1x M.2 (E-Key, Type:2230, supports CNVi) 1x M.2 (B-Key, Type:3052, supports 5G/LTE) 1x SIM socket (Nano SIM)
Graphics Controller	RDNA3 graphics with up to 6 WGP (Work Group processors)
Video Output	1x DP 2.1, max resolution: 8K@60Hz (Up to DP 2.1 / UHBR10 (10Gbps)) 1x HDMI 2.1, max resolution: 4K@120Hz 10bpc, 8K60A 10bpc (4:2:0) (Up to HDMI 2.1 FRL and 10G with Re-driver (Windows) / 2.0b (Linux)) 1x eDP 1.5 [original eDP, DP0], max resolution: 4K@60Hz 1x LVDS [original DP, DP1] max resolution: Dual-Channel 18/24bit, up to 1920x1080 @ 60Hz
Ethernet	2x Intel® I226-V 2.5 Gigabit LAN
I/O Chipset	Fintek F81956D-I
Serial Port	2x RS232/422/485 COM port (configurable) 2x RS232 COM port
USB 2.0	4x USB 2.0 (2 for Type-A, 2 for Pin Header)
USB 3.X	2x USB 3.2 Gen2 (10Gbps)
Serial ATA	N/A
Audio	Realtek audio codec ALC888S-VD2-GR audio header x1 (for Line-in/Line-out/MIC)
TPM	fTPM as default (dTPM option: SLB9672)
Others	Digital I/O(4-in/ 4-out)
Dimensions (L x W)	102 mm x 147 mm (4" x 5.7")
Power Consumption	TBD
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing@60°C)

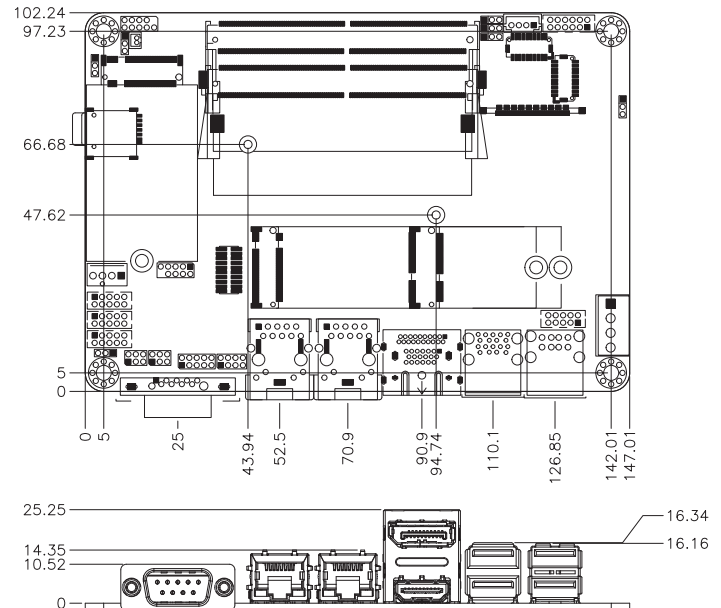
Ordering Information

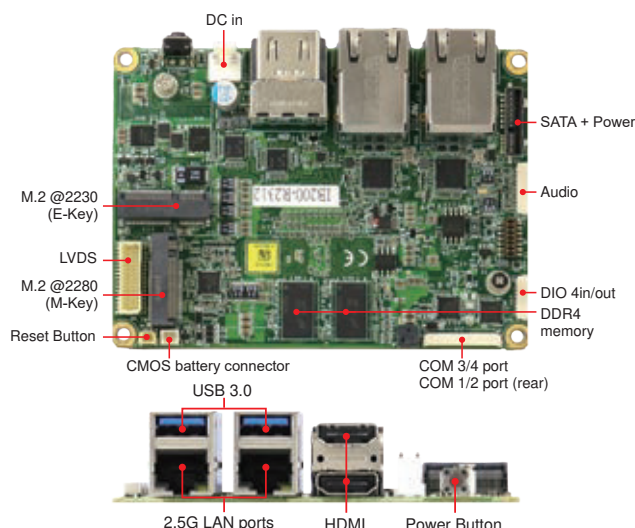
IB301-8845

AMD Ryzen™ Ryzen 7 Pro 8845HS APU (3.8GHz~5.1GHz) on board, 3.5-inch Disk-Size w/dual LAN, 1x DP1, 1x HDMI, 1x eDP, 1x LVDS, 12V – 24V DC-in

*Specifications are subject to change without prior notice

Dimensions and Drawing





Specifications

CPU	AMD Ryzen™ Embedded R2000 Series on board
PCH	N/A
Memory	Onboard DDR4 memory, Max. 8GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x SATA III 1x M.2 (M-Key)
Mini Type Slots	1x M.2 (M-Key, type 2280) 1x M.2 (E-Key, type 2230)
Graphics Controller	AMD Radeon™ Vega integrated
Video Output	2x HDMI (2.0b), 1x 24-bit dual channel LVDS
Ethernet	2x Intel® I226IT Gigabit LAN
I/O Chipset	Fintek F81966AB-I
Serial Port	COM1 / COM2 : RS-232/422/485 (Default: RS-232, adjustable in BIOS) COM3 / COM4 : RS232
USB 2.0	3x USB 2.0 (pin header)
USB 3.X	2x USB 3.2 Gen2 (10Gbps)
Serial ATA	1x SATA II
Audio	Built-in audio w/ Realtek audio codec ALC888S-VD2-GR
TPM	2.0
Others	Digital I/O(4-in/ 4-out), Watchdog Timer
Dimensions (L x W)	100mm x 72mm
Power Consumption	AMD Ryzen™ Embedded R2514 3.35GHz w/ 1x 8GB DDR4-3200 (Onboard) + 12V: ~2.9A AMD Ryzen™ Embedded R2312 2.1GHz w/ 1x 8GB DDR4-3200 (Onboard) + 12V: ~1.8A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing@60°C)

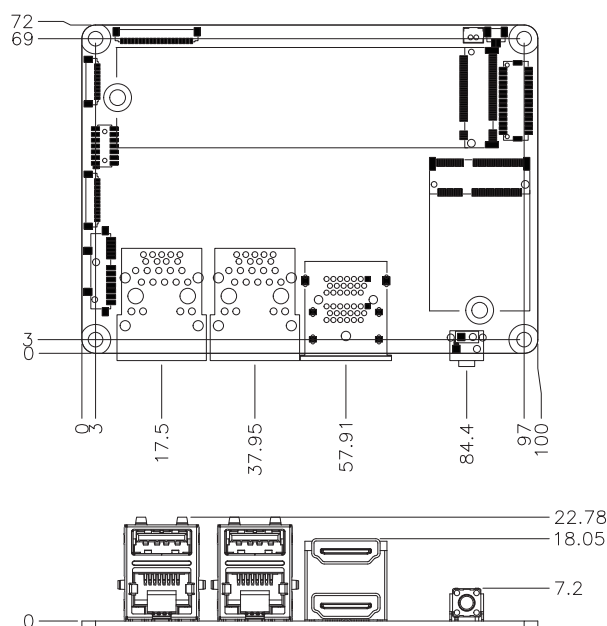
Features

- AMD Ryzen™ Embedded R2000 series APU on board, up to 4 cores/8 threads
- Onboard DDR4 memory, Max. 8GB
- 2x HDMI 2.0b & LVDS: 5V/3.3V, 24 bit, dual channel (LVDS: 1920x1080 @60 Hz)
- 2x GbE LAN, 4x COM, 2x USB 3.2 Gen2 (10Gbps) [with PDPC support], 3x USB 2.0 via pin headers
- supports 1x M.2 (M-Key, type 2280) & 1x M.2 (E-Key, type 2230)
- supports 4x COM - COM1/COM2: RS-232/422/485, COM3/COM4: RS232 (Default: RS-232, adjustable in BIOS)
- Energy-efficient 12W-25W thermal design

Ordering Information

IB200	AMD Ryzen™ R2312 APU (2.7GHz~3.5GHz) on board 2.5-inch Disk-Size w/ dual LAN, 2x HDMI, LVDS (24-bit dual-channel), 12V DC-in
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Dimensions and Drawing



Comparison Table

CPU Module

Models	ET981	ET980	ET978	ET977
Form Factor	COM Express Type-6 (R3.0)	COM Express Type-6 (R3.0)	COM Express Type-6 (R3.0)	COM Express Type-6 (R3.0)
CPU Socket	BGA1744 on board	BGA1744 on board	FP8 on board	BGA1140 on board
CPU	13th Gen Intel® Core™ i7/i5/i3	12th Gen Intel® Core™ i7/i5/i3	AMD Ryzen™ 8000 series Hawk Point APUs	AMD Ryzen™ V1000 / R1000 series Embedded APU
CPU Max. Frequency	Up to 4.8GHz	Up to 4.7GHz	Up to 5.2GHz	Up to 3.8GHz
PCH	N/A	N/A	N/A	N/A
Memory	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR5 SO-DIMM	2x DDR4 SO-DIMM
Max. Memory Size	64GB	64GB	64GB	32GB
BIOS	AMI	AMI	AMI	AMI
Graphics Controller	Intel® Core™ i integrated graphics	Intel® Core™ i integrated graphics	AMD Radeon™ 780M	AMD Radeon™ Vega GPU integrated
Video Output	24-bit dual-channel LVDS (on carrier Board)	24-bit dual-channel LVDS (on carrier board)	24-bit dual-channel LVDS (on carrier board)	24-bit dual-channel LVDS or eDP (on carrier board)
Ethernet	Intel® I226LM 2.5 Gigabit LAN	Intel® I226LM 2.5 Gigabit LAN	Intel® I225V 2.5 Gigabit LAN	Intel® I210AT Gigabit LAN
Audio	Realtek ALC888S HD audio codec (on carrier board)	Realtek ALC888S HD audio codec (on carrier board)	Realtek ALC662 or ALC888S HD audio codec (on carrier board)	AMD Ryzen™ built-in HD audio controller
SATA	2x SATA III (on carrier Board)	2x SATA III ports (on carrier Board)	2x SATA III ports (on carrier Board)	2x SATA III (on carrier board)
I/O Chipset	F81804U-I (on board)	F81804U-I (on board)	F81804U-I (on board)	Fintek F81804U-I
Parallel Port	N/A	N/A	N/A	1 SPP/EPP/ECP port (on carrier board)
Serial Port	2x UART (Tx/Rx only) (on carrier board)	2x UART (Tx/Rx only) (on carrier board)	2x RS-232 COM ports (Tx/Rx only)	2x UART (Tx/Rx only) (on carrier board)
USB 2.0	8x USB2.0 ports (via Carrier Board)	8x USB 2.0 ports (via carrier board)	8x USB 2.0 ports (via carrier board)	8x USB 2.0 ports (via carrier board)
USB 3.X	4x USB 3.1 Gen2 (via Carrier Board)	4x USB 3.1 Gen2 (via carrier board)	4x USB 3.1 Gen2 (via carrier board)	1x USB 3.1 (10G), 3x USB 3.1 (via carrier board)
TPM	2.0	2.0	2.0	2.0
KB / MS	N/A	N/A	N/A	N/A
Hardware Monitor	Yes	Yes	Yes	Yes
Storage Device Interface	N/A	N/A	N/A	N/A
Watchdog Timer	256 levels	256 levels	256 levels	256 levels
Expansion slots	1x PCI-E(x16), 1x PCI-E(4x), 4x PCI-E(1x)	1x PCI-E(x16), 1x PCI-E(4x), 4x PCI-E(1x)	1x PCI-E(x16), 1x PCI-E(4x), 4x PCI-E(1x)	V1000: 1x PEG(8x), 4x PCI-E(1x)(Gen3), 2x PCI-E(1x)(Gen2) R1000: 1x PEG(4x), 3x PCI-E(1x)(Gen3), 3x PCI-E(1x)(Gen2)
Digital I/O	4-in / 4-out on carrier Board (IP414)	4-in / 4-out on carrier board (IP414)	4-in / 4-out on carrier board	4-in / 4-out on carrier board (IP418)
Power Input	On Carrier Board	On carrier board	On carrier board	On carrier board
Power Consumption	13th Gen Intel® Core™ i7-1370PRE 1.90GHz w/ 2x DDR4 2400 4GB Innodisk M4SS-4GSSN50J-EA35 +12V:7.57A	Intel® Core™ i5-1250PE 1.50GHz w/ 2x 16GB DDR4-3200 +12V:2.6A	AMD Ryzen™ 8040 Hawk Point APUs series	AMD V1605B w/ 2x 8GB DDR4-2133, +12V: 3.28A AMD R1606G w/ 2x 8GB DDR4-2133, +12V: 3.43A
Dimensions (L x W)	125mm x 95mm	125mm x 95mm	125mm x 95mm	125mm x 95mm
Extra Features	Two 220-pin COM Express Type 6 interface connectors to Carrier Board (for USB, expansion slots, SATA, LVDS, VGA, DVI, DisplayPort, LAN, audio, LPC, GPIO), Boot on LAN	Two 220-pin COM Express Type 6 interface connectors to carrier board (for USB, expansion slots, SATA, LVDS, VGA, DVI, DisplayPort, LAN, audio, LPC, GPIO), Boot on LAN	Two 220-pin COM Express Type 6 interface connectors to carrier board (for USB, expansion slots, SATA, LVDS, VGA, DVI, DisplayPort, LAN, audio, LPC, GPIO), Boot on LAN	Two 220-pin COM Express Type-6 interface connectors to carrier board (for USB, expansion slots, SATA, LVDS, VGA, DVI, DisplayPort, LAN, audio, LPC, GPIO), Boot on LAN
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Comparison Table

CPU Module

ET976	ET975	ET970	ET880	ET876
COM Express Type-6	COM Express Type-6	COM Express Type-6	COM Express Type-6 (R3.0)	COM Express Type-10 (R3.0)
BGA1140 on board	FCBGA1356 CPU on board	BGA1440 CPU on board	FCBGA1296 SoC on board	FCBGA1296 SoC on board
AMD Ryzen™ V1000 series embedded APU	7th Gen Intel® Core™ i7/i5/i3	7th Gen Intel® Xeon® / Core™ i7/i5/i3	Intel® Atom® QC x6425E Intel® Atom® DC x6211E	Intel® Atom® Processor E3950/ E3940/E3930
Up to 3.8GHz	Up to 3.9GHz	Up to 3.7GHz	Up to 3.0GHz	Up to 2.5GHz
N/A	N/A	Intel® CM238/QM175/QM170 PCH	N/A	N/A
DDR4 Memory on board	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	DDR4 8GB memory onboard + 1x DDR4 SO-DIMM	Onboard DDR3L memory
8GB	32GB	32GB	24GB	4GB
AMI	AMI	AMI	AMI	AMI
AMD Radeon™ Vega GPU integrated	Intel® Core™ i integrated graphics	Intel® Core™ i integrated graphics	Intel® SoC integrated Gen11 graphics	Intel® SoC integrated Gen9-LP graphics
24-bit dual-channel LVDS or eDP (on carrier board)	24-bit dual-channel LVDS (on carrier board)	24-bit dual-channel LVDS (on carrier board)	24-bit dual-channel 2x DDI, LVDS or eDP (on carrier board)	24-bit dual-channel LVDS or eDP (on carrier board)
Intel® I211AT or I210AT Gigabit LAN	Intel® I219LM Gigabit LAN PHY	Intel® I219LM Gigabit LAN PHY	Intel I226IT Gigabit LAN	Intel® I210IT Gigabit LAN
AMD V1000 series APU built-in HD interface	Realtek ALC662 or ALC888S (on carrier board)	Realtek ALC662 or ALC888S (on carrier board)	Intel® Atom® SoC built-in HD audio controller	Intel® Atom® SoC built-in HD audio controller
2x SATA III ports (on carrier board)	2x SATA III ports (on carrier board)	4x SATA III ports (on carrier board)	2x SATA III (on carrier Board)	2x SATA III (on carrier Board)
F81804U-I (on board)	NCT5523D (on board)	NCT5523D (on board)	F81804U-I (on board)	F81804U-I (on board)
1 SPP/EPP/ECP port (on carrier board)	1 SPP/EPP/ECP port (on carrier board)	1 SPP/EPP/ECP port (on carrier board)	1 SPP/EPP/ECP port (on carrier Board)	1 SPP/EPP/ECP port (on carrier board)
2x RS-232 COM ports (on carrier board)	2x RS-232 COM ports (on carrier board)	2x UART (Tx/Rx only) (on carrier board)	2x UART (Tx/Rx only) (on carrier board)	2x UART (Tx/Rx only) (on carrier board)
8x USB 2.0 (via carrier board)	8x USB 2.0 (via carrier board)	8x USB 2.0 (via carrier board)	4x USB 2.0 (via Carrier Board)	8x USB 2.0 (via carrier board)
4x USB 3.1 (via carrier board)	4x USB 3.0 (via carrier board)	4x USB 3.0 (via carrier board)	2x USB 3.1 (via Carrier Board)	2x USB 3.0 (via carrier board)
2.0	2.0	2.0	2.0	2.0
N/A	On carrier board	On carrier board	N/A	N/A
Yes	Yes	Yes	Yes	Yes
N/A	eMMC5.0 (option)	N/A	N/A	eMMC 5.0 up to 32GB (option)
256 levels	256 levels	256 levels	256 levels	256 levels
8x PCI-E(x1) 1x PCI-E(x1)	4x PCI-E(x1), 1x PCI-E(x4)	8x PCI-E(x1), 1x PCI-E(x16)	5x PCI-E(x1)	4x PCI-E(x1)
4-in / 4-out on carrier board (IP418)	N/A	4-in / 4-out on carrier board (IP413)	4-in/ 4-out on carrier Board (IP419)	4-in/ 4-out on carrier board (IP417)
On carrier board	On carrier board	On carrier board	On Carrier Board	On carrier board
Intel® i7-7600U, 2.8GHz w/ 8GB DDR4-2133 +12V: 3.47A; +5V: 1.4A +3.3V: 0.33, +5VBS: 0.10A	Intel® i7-7600U, 2.8GHz w/ 8GB DDR4-2133 +12V: 3.47A; +5V: 1.4A +3.3V: 0.33, +5VBS: 0.10A	Intel® i7-7820EQ, 3.0GHz w/ 16GB DDR4-2400 +12V: 4.48A; +5V: 0.65A +3.3V: 0.27A, +5VBS: 0.13A	Intel® Atom® x6425E Processor 2.00GHz w/ 8GB DDR4-3200 +12V: 1.93A	Intel® Atom® E3950 1.6GHz w/ 4GB LDDR3L 1600 +12V: 1.42A
125mm x 95mm	95mm x 95mm	95mm x 125mm	95mm x 95mm	84mm x 55mm
Two 220-pin COM Express Type-6 interface connectors to carrier board (for USB, expansion slots, SATA, LVDS, VGA, DVI, DisplayPort, LAN, audio, LPC, GPIO), Boot on LAN	Two 220-pin COM Express Type-6 interface connectors to carrier board (for USB, expansion slots, SATA, LVDS, VGA, DVI, DisplayPort, LAN, audio, LPC), Boot on LAN	Two 220-pin COM Express Type-6 interface connectors to carrier board (for USB, expansion slots, SATA, LVDS, VGA, DVI, DisplayPort, LAN, audio, LPC, GPIO), Boot on LAN	Two 220-pin COM Express Type-6 interface connectors to Carrier Board (for USB, expansion slots, SATA, LVDS, DVI, DisplayPort, LAN, audio, LPC, GPIO), Boot on LAN	One 220-pin COM Express Type-10 interface connectors to carrier board (for USB, expansion slots, SATA, LVDS, VGA, DVI, DisplayPort, LAN, audio, LPC, GPIO), Boot on LAN
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1
Single Board Computers

2
CPU Modules

3
Motherboards

4
CPU Cards

Comparison Table

CPU Module

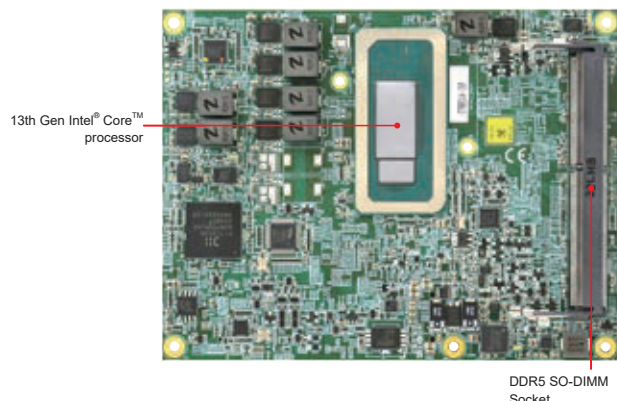
Models	ET875	ET870	ET860	IBQ800	ET839
Form Factor	COM Express Type-10 (R3.0)	COM Express Type-6 (R3.0)	COM Express Type-6	QSeven (R2.1)	ETX (3.0)
CPU Socket	FCBGA1296 SoC on board	FCBGA1296 SoC on board	BGA1170 SoC on board	FCBGA1296 SoC on board	BGA1170 SoC on board
CPU	Intel® Atom® Processor E3950/ E3940/E3930 Intel® Pentium® QC N4200 Intel® Celeron® DC N3350	Intel® Atom® Processor E3950/ E3940/ E3930 Intel® Pentium® QC N4200 Intel® Celeron® DC N3350	Intel® Atom® Processor E3845/ E3827	Intel® Atom® Processor E3950/ E3940/ E3930	Intel® Atom® Processor E3845
CPU Max. Frequency	Up to 2.5GHz	Up to 2.5GHz	Up to 1.91GHz	Up to 2.5GHz	1.91GHz
PCH	N/A	N/A	N/A	N/A	N/A
Memory	LPDDR4 Onboard Memory	2x DDR3L SO-DIMM	2x DDR3L SO-DIMM	LPDDR4 on board Memory	1x DDR3L SO-DIMM
Max. Memory Size	8GB	16GB	16GB	8GB	8GB
BIOS	AMI	AMI	AMI	AMI	AMI
Graphics Controller	Intel® Gen9-LP w/ 18 EUs graphics	Intel® Gen9-LP w/ 18 EUs graphics	Intel® Gen7 graphics	Intel® Gen9-LP w/ 18 EUs graphics	Intel® Gen7 graphics
Video Output	24-bit dual-channel LVDS (on carrier board)	24-bit dual-channel LVDS (on carrier board)	18/24-bit single-channel LVDS (on carrier board)	24-bit dual-channel LVDS (on carrier board)	18/24-bit single-channel LVDS (on carrier board)
Ethernet	Intel® I210IT Gigabit LAN	Intel® I210IT Gigabit LAN	Intel® I210IT Gigabit LAN	Intel® I210IT Gigabit LAN	Realtek RTL8106E 10/100M LAN
Audio	Realtek ALC662 or ALC888S HD audio codec (on carrier board)	Realtek ALC662 or ALC888S HD audio codec (on carrier board)	Realtek ALC662 or ALC888S HD audio codec (on carrier board)	Realtek ALC662 or ALC888S HD audio codec (on carrier board)	Realtek ALC662 or ALC888S HD audio codec (on carrier board)
SATA	2x SATA III ports (on carrier board)	2x SATA III ports (on carrier board)	2x SATA III ports (on carrier board)	2x SATA III ports (on carrier board)	1x SATA II port (on carrier board)
I/O Chipset	F81804U-I (on board)	F81804U-I (on board)	NCT5523D (on board)	F81804U-I (on board)	NCT6102D (on board)
Parallel Port	1 SPP/EPP/ECP port (on carrier board)	1 SPP/EPP/ECP port (on carrier board)	1 SPP/EPP/ECP port (on carrier board)	N/A	1 SPP/EPP/ECP port (on carrier board)
Serial Port	2x UART (Tx/Rx only) (on carrier board)	2x UART (Tx/Rx only) (on carrier board)	2x UART (Tx/Rx only) (on carrier board)	1x UART (TX/RX) (on carrier board)	2x RS232 COM ports, TTL Level (on carrier board)
USB 2.0	4x USB 2.0 (via carrier board)	4x USB 2.0 (via carrier board)	8x USB 2.0 (via carrier board)	4x USB 2.0 (via carrier board)	4x USB 2.0 (via carrier board)
USB 3.X	2x USB 3.0 (via carrier board)	3x USB 3.0 (via carrier board)	1x USB 3.0 (via carrier board)	3x USB 3.0 (via carrier board)	N/A
TPM	2.0	2.0	N/A	2.0	N/A
KB / MS	N/A	N/A	On carrier board	N/A	On carrier board
Hardware Monitor	Yes	Yes	Yes	Yes	Yes
Storage Device Interface	eMMC5.0 (option)	N/A	MicroSD	eMMC5.0 (option)	N/A
Watchdog Timer	256 levels	256 levels	256 levels	256 levels	256 levels
Expansion slots	4x PCI-E(x1)	4x PCI-E(x1)	1x PCI-E (x1) on carrier board (IP411)	4x PCI-E(x1)	3x PCI + 1x ISA on carrier board (IP412)
Digital I/O	4-in / 4out on carrier board (IP417)	4-in / 4out on carrier board (IP419)	4-in / 4-out on carrier board (IP411)	4-in / 4out on carrier board (IP416)	4-in / 4-out on carrier board (IP412)
Power Input	On carrier board	On carrier board	On carrier board	On carrier board	On carrier board
Power Consumption	Intel® Atom® Processor E3950 1.60GHz w/ Onboard LPDDR4 2400MHz 8GB +12V: 1.587A	Intel® Atom® E3950 1.6GHz w/ 2x 8GB DDR3L-1600 +12V: 2.18A	Intel® Atom® E3845 1.91GHz w/ 2GB DDR3L-1600 +12V: 0.91A; +5V: 0.13A +5VSB: 0.05A; +3.3V: 0.24A	Intel® Atom® E3950 1.6GHz w/ 8GB LPDDR4 1600 +12V: 1.7121A	Intel® Atom® E3845 1.91GHz w/ 2x 4GB DDR3L-1600 +5V: 1.92A
Dimensions (L x W)	84mm x 55mm	95mm x 95mm	95mm x 95mm	70mm x 70mm	95mm x 114mm
Extra Features	One 220-pin COM Express Type-10 interface connector to carrier board (for USB, expansion slots, SATA, LVDS, DisplayPort, LAN, audio, LPC, GPIO) Boot on LAN	Two 220-pin COM Express Type-6 interface connectors to carrier board (for USB, expansion slots, SATA, LVDS, VGA, DVI, DisplayPort, LAN, audio, LPC, GPIO), Boot on LAN	Two 220-pin COM Express Type-6 interface connectors to carrier board (for USB, expansion slots, SATA, LVDS, VGA, DVI, DisplayPort, LAN, audio, LPC, GPIO), Boot on LAN	One 230-pin golden finger Qseven interface connector to carrier board (for USB, expansion slots, SATA, LVDS, DisplayPort, LAN, audio) Boot on LAN	Four 100-pin ETX interface connectors to carrier board (for PCI, USB, Audio, ISA, LVDS, VGA, COM ports, LPT, PS/2 KB/MS, LAN, IDE, LPC), Boot on LAN
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1 Single Board Computers

2 CPU Modules

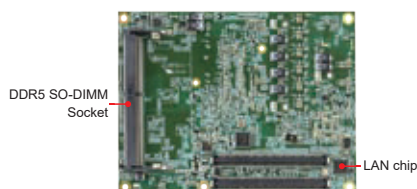
3 Motherboards

4 CPU Cards



Features

- Onboard 13th Gen Intel® P-series Core™ i7/i5/i3 processors
- 2x DDR4-3200 SO-DIMM sockets, Max. 64GB
- 1x 2.5 GbE
- 4x USB 3.2, 8x USB 2.0, 2x SATA III, 2x COM
- supports 3x independent displays from HDMI / DP / VGA / LVDS or eDP
- Digital I/O, TPM (2.0), Watchdog timer
- 1x PCI-E(x16), 1x PCI-E(x4), 4x PCI-E(x1) signals to carrier board
- supports wide-range operating temperature from -40°C to 85°C (Only ET981LV-I7PRE)



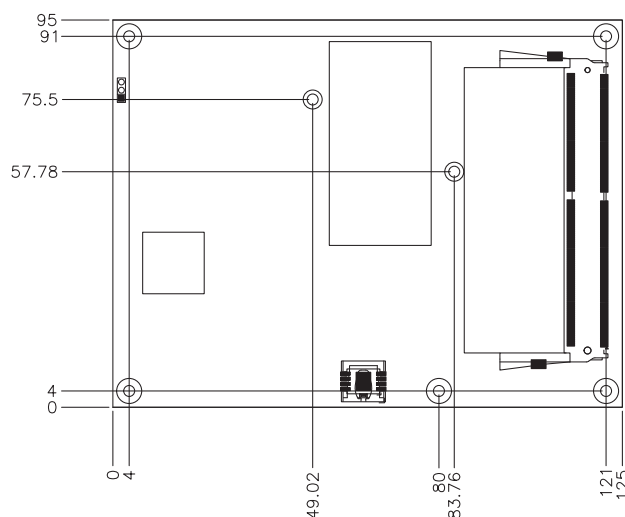
Specifications

CPU	BGA1744 for 13th Intel® Gen P-series Core™ i7/i5/i3 processors (SoC)
PCH	N/A
Memory	2x DDR4-3200 SO-DIMM socket, Max. 64GB, ECC compatible
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	1x PCI-E(x16), 1x PCI-E(x4), 4x PCI-E(x1) to carrier board
Graphics Controller	13th Intel® Gen P-series Core™ processors integrated graphics
Video Output	HDMI, DisplayPort, VGA, LVDS or eDP on carrier board
Ethernet	Intel® I226LM 2.5 GbE RJ45 on carrier board I226IT 2.5 GbE for ET981LV-I7PRE only
I/O Chipset	Fintek F81804U-I on board
Serial Port	2x COM ports (Tx/Rx only)
USB 2.0	8x USB 2.0 via carrier board
USB 3.X	4x USB 3.2 (10bps-10Gbps) via carrier board
Serial ATA	2x SATA III via carrier board
Audio	Built-in HD audio controller
TPM	TPM (2.0)
Others	Power: +12 V and +5 VSB for ATX, +12V for AT, Digital I/O (4-in/4-out), Watchdog timer
Dimensions (L X W)	95mm x 125mm (3.74" x 4.92")
Power Consumption	13th Gen Intel® Core™ i7-1370PRE 1.90GHz w/ 2x DDR4 2400 4GB Innodisk M4SS-4GSSN50J-EA35 +12V:7.57A
Operating Temperature	-40°C~85°C (-40°F~185°F) for ET981LV-I7PRE 0°C~60°C (32°F~140°F)
Storage Temperature	-40°C~80°C (-40°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

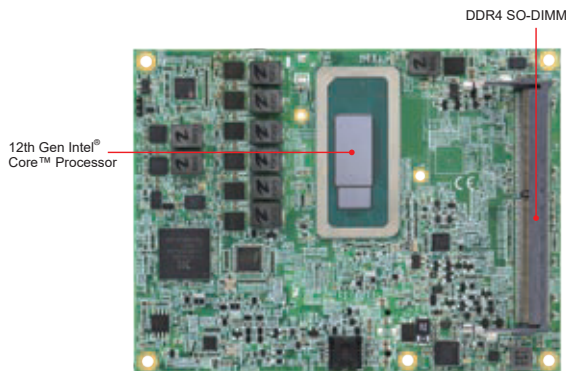
ET981LV-I7P	COM Express (Type 6) module w/ Intel® i7-1370PE onboard, LVDS support
ET981LV-I7PRE	COM Express (Type 6) Module w/ Intel® Core™ i7-1370PRE onboard, LVDS support (wide-temperature)
ET981LV-I5U	COM Express (Type 6) module w/ Intel® i5-1335UE onboard, LVDS support
ET981-I5U	COM Express (Type 6) module w/ Intel® i5-1335UE onboard, eDP support
ET981LV-I5P	COM Express (Type 6) module w/ Intel® i5-1340PE onboard, LVDS support
ET981LV-I3P	COM Express (Type 6) module w/ Intel® i3-1320PE onboard, LVDS support
IP414	ATX COM Express Type-6 carrier board, supports ATX
IP414-DC	ATX COM Express Type-6 carrier board, supports DC-in (+8V ~ +20V)
HSET981-A	Heatsink with fan for ET981
HSET981-3	Heat spreader for ET981

Dimensions and Drawing



Features

- Onboard 12th Gen Intel® Core™ i7/i5/i3 processors
- 2x DDR4-3200 SO-DIMM sockets, Max. 64GB
- Onboard 2.5 GbE
- supports 3x independent displays from HDMI / DP / VGA / LVDS or eDP
- 4x USB 3.2, 8x USB 2.0, 2x SATA III, 2x COM
- 1x PCI-E(x16), 1x PCI-E(x4), 4x PCI-E(x1) to carrier board
- Digital I/O, TPM (2.0), Watchdog timer



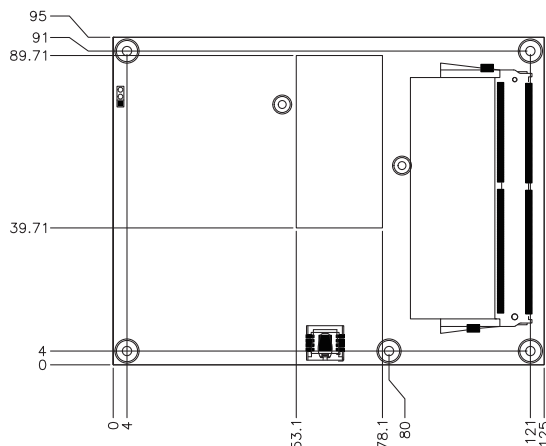
Specifications

CPU	BGA1744 for 12th Gen Intel® Core™ i7/i5/i3 processors
PCH	N/A
Memory	2x DDR4-3200 SO-DIMM sockets, Max. 64GB, ECC compatible
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	1x PCI-E(x16), 1x PCI-E(x4), 4x PCI-E(x1) to carrier board
Graphics Controller	12th Gen Intel® Core™ P-series processor integrated graphics
Video Output	HDMI, DisplayPort, VGA, LVDS or eDP on carrier board
Ethernet	Intel® I226LM 2.5 GbE RJ45 on carrier board
I/O Chipset	Fintek F81804U-I onboard
Serial Port	2x COM ports (Tx/Rx only)
USB 2.0	8x USB 2.0 via carrier board
USB 3.X	4x USB 3.2 (10bps) via carrier board
Serial ATA	2x SATA III via carrier board
Audio	Built-in HD audio controller
TPM	TPM (2.0)
Others	Power: +12V and +5VSB for ATX, +12V for AT Digital I/O (4-in/4-out), Watchdog timer
Dimensions (L X W)	125mm x 95mm (4.92" x 3.74")
Power Consumption	Intel® Core™ i5-1250PE 1.50GHz w/ 2x 16GB DDR4-3200 +12V:2.6A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60)

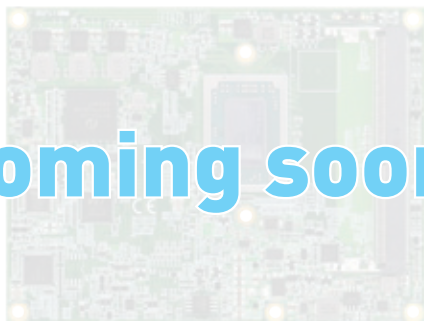
Ordering Information

ET980LV-I7U	COM Express (Type 6) CPU Module w/ Intel® Core™ i7-1265UE onboard, LVDS support
ET980LV-I7P	COM Express (Type 6) CPU Module w/ Intel® Core™ i7-1270PE onboard, LVDS support
ET980LV-I5U	COM Express (Type 6) CPU Module w/ Intel® Core™ i5-1245UE onboard, LVDS support
ET980-I5U	COM Express (Type 6) CPU Module w/ Intel® Core™ i5-1245UE onboard, eDP support
ET980LV-I5P	COM Express (Type 6) CPU Module w/ Intel® Core™ i5-1250PE onboard, LVDS support
ET980-I3P	COM Express (Type 6) CPU Module w/ Intel® Core™ i3-1220PE onboard, eDP support
ET980LV-I3P	COM Express (Type 6) CPU Module w/ Intel® Core™ i3-1220PE onboard, LVDS support
IP414	ATX COM Express Type-6 carrier board, supports ATX
IP414-DC	ATX COM Express Type-6 carrier board, supports DC-in (+8V ~ +20V)
HSET980-B	Heatsink with fan for ET980
HSET980-2	Heat spreader for ET980

Dimensions and Drawing



Coming soon



Features

- Onboard AMD Ryzen™ 8000 series (Hawk Point APUs)
- Onboard DDR5 memory, Max. 8GB
- supports 3x independent displays, HDMI/DVI/DisplayPort & LVDS or eDP via carrier board
- 4x USB 3.1, 8x USB 2.0, 2x SATA III
- supports TPM (2.0)

Specifications

CPU	AMD Ryzen™ Embedded 8000 series (Hawk Point APUs)
PCH	N/A
Memory	Onboard memory, DDR5, Max. 8GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	1x PEG (x8) 8x PCI-E (x1)
Graphics Controller	AMD Radeon™ Vega GPU integrated
Video Output	2x DDI 1x LVDS or 1x eDP (option)
Ethernet	Intel® I226IT PCI-E Gigabit LAN
I/O Chipset	Fintek F81804U-I
Serial Port	2x UART (Tx/Rx only)
USB 2.0	8x USB 2.0 via carrier board
USB 3.X	4x USB 3.2 via carrier board
Serial ATA	2x SATA III via carrier board
Audio	AMD Ryzen™ built-in HD audio controller
TPM	TPM (2.0)
Others	Digital I/O (4in/4-out)

Dimensions (L X W)	125mm x 95mm (4.92" x 3.74")
Power Consumption	TBD
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60)

1

Single Board Computers

2

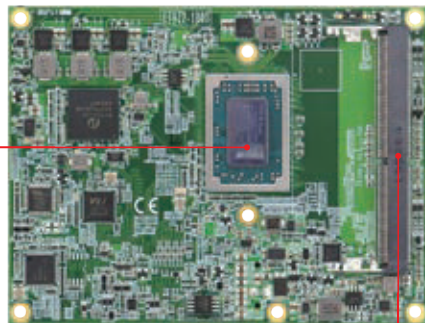
CPU Modules

3

Motherboards

4

CPU Cards

AMD Ryzen™ V1000 / R1000
series Embedded APUDDR4 SO-DIMM
Socket

Specifications

CPU	AMD Ryzen™ Embedded V1000 / R1000 series
PCH	N/A
Memory	2x DDR4 SO-DIMM, Max. 32GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	V1000 Series: 1x PEG(8x)(Gen3), 4x PCI-E(1x)(Gen3), 2x PCI-E(1x) R1000 Series: 1x PEG(4x)(Gen3), 3x PCI-E(1x)(Gen3), 3x PCI-E(1x)
Graphics Controller	AMD Radeon™ Vega GPU integrated
Video Output	V1000 Series: 3x DDI R1000 Series: 2x DDI 1x LVDS or 1x eDP (By option)
Ethernet	Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Fintek F81804U-I
Serial Port	2x UART (Tx/Rx only)
USB 2.0	8x USB 2.0 Port [USB 2.0 Hub x 3 ports, (VL822-Q7)]
USB 3.X	1x USB 3.1 port (10G), 3x USB 3.1 ports (VL822-Q7)
Serial ATA	2x SATA III via carrier board
Audio	AMD Ryzen™ built-in HD audio controller
TPM	TPM (2.0)
Others	Digital I/O (4in/4-out)
Dimensions (L X W)	125mm x 95mm (4.92" x 3.74")
Power Consumption	AMD V1605B w/ 2x 8GB DDR4-2133, +12V: 3.28A AMD R1606G w/ 2x 8GB DDR4-2133, +12V: 3.43A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Features

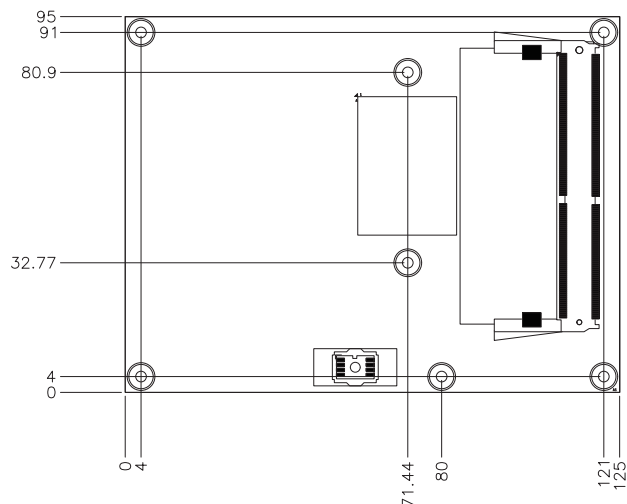
- Onboard AMD Ryzen™ Embedded V1000/ R1000 Series
- 2x DDR4-2400 SO-DIMM sockets, Max. 32GB, ECC compatible
- supports 4x independent displays (HDMI/DVI/ DisplayPort, LVDS, and eDP) via the carrier board
- 4x USB 3.1, 8x USB 2.0, 2x SATA III
- supports TPM (2.0)

DDR4 SO-DIMM
Socket

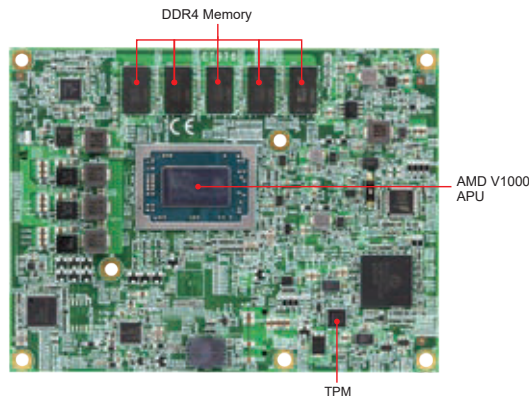
Ordering Information

ET977-1605LV	COM Express (Type-6) CPU Module with AMD Ryzen™ V1605B QC APU (2.0GHz~3.6GHz), DDR4 dual-channel memory, LVDS support
ET977-1606LV	COM Express (Type-6) CPU Module with AMD Ryzen™ R1606G DC APU (2.6GHz~3.5GHz), DDR4 dual-channel memory, LVDS support
ET977-1505LV	COM Express (Type-6) CPU Module with AMD Ryzen™ R1505G DC APU (2.4GHz~3.5GHz), DDR4 dual-channel memory, LVDS support
HSET977-A	Heatsink with fan for ET977
HSET977-1	Heat spreader for ET977

Dimensions and Drawing

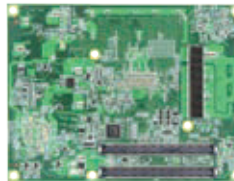


AMD Ryzen™ Embedded V1000 Series COM Express Type-6 (R3.0)



Features

- Onboard AMD Ryzen™ Embedded V1000 Series
- Onboard DDR4 memory, Max. 8GB
- 3x independent displays, HDMI/DVI/DisplayPort & LVDS or eDP via carrier board
- 4x USB 3.1, 8x USB 2.0, 2x SATA III
- TPM (2.0)



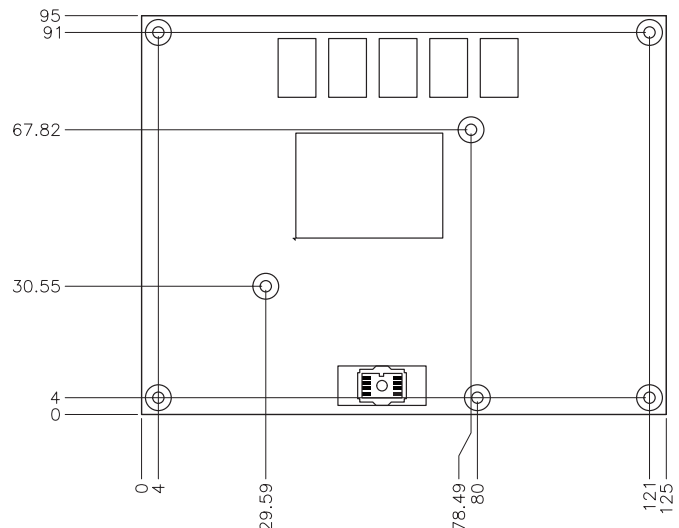
Specifications

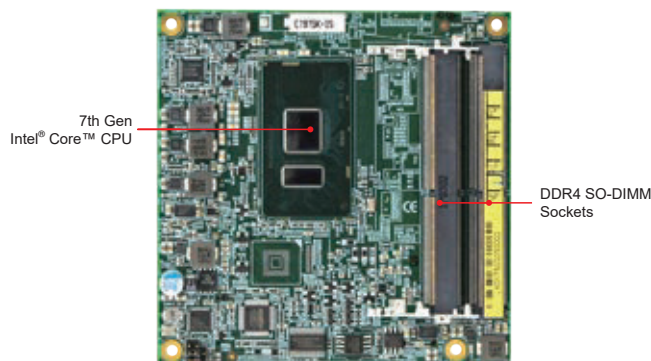
CPU	Onboard AMD Ryzen™ Embedded V1000 Series
PCH	N/A
Memory	Onboard Memory 4GB/8GB DDR4
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	1x PEG(x8) 8x PCI-E(x1)
Graphics Controller	AMD Radeon™ Vega GPU integrated
Video Output	2x DDI 1x LVDS or 1x eDP (option)
Ethernet	Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Fintek F81804U-I
Serial Port	2x UART (Tx/Rx only)
USB 2.0	8x USB 2.0 via carrier board
USB 3.X	4x USB 3.1 via carrier board
Serial ATA	2x SATA III via carrier board
Audio	AMD Ryzen™ built-in HD audio controller
TPM	TPM (2.0)
Others	Digital I/O (4in/4-out)
Dimensions (L X W)	125mm x 95mm (4.92" x 3.74")
Power Consumption	AMD V1807B, 3.35GHz w/ 4GB DDR4-2666 +12V:6.28A; +5V: 0.28A, +5VSB: 0.16A, +3.3V: 0.52A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

ET976-1605LV-G	COM Express (Type-6) CPU Module with AMD Ryzen™ V1605B QC APU (3.6GHz), LVDS, 8GB DDR4 memory on board
ET976-1605LV-4G	COM Express (Type-6) CPU Module with AMD Ryzen™ V1605B QC APU (3.6GHz), LVDS, 4GB DDR4 memory on board
ET976-1605-8G	COM Express (Type-6) CPU Module with AMD Ryzen™ V1605B QC APU (3.6GHz), 8GB DDR4 memory on board
ET976-1605-4G	COM Express (Type-6) CPU Module with AMD Ryzen™ V1605B QC APU (3.6GHz), 4GB DDR4 memory on board
ET976-1202LV-E4G	COM Express (Type-6) CPU Module with AMD Ryzen™ V1202B DC APU (3.2GHz), LVDS, 4GB DDR4 memory on board with ECC
ET976-1202LV-4G	COM Express (Type-6) CPU Module with AMD Ryzen™ V1202B DC APU (3.2GHz), LVDS, 4GB DDR4 memory on board
HESET976-A	Heatsink with fan for ET976
HSET976-1	Heat spreader for ET976

Dimensions and Drawing





Features

- Onboard 7th Gen Intel® Core™ i7/i5/i3 processors
- 2x DDR4 SO-DIMM, Max. 32GB
- supports 2x DDI port or DDI + VGA
- 1x Intel® PCI-E GbE LAN
- Watchdog timer
- 8x USB 2.0, 4x USB 3.0, 2x COM, 2x SATA III
- 4x PCI-E(x1), 1x PCI-E(x4)
- TPM (2.0), eMMC5.0 (option)

Specifications

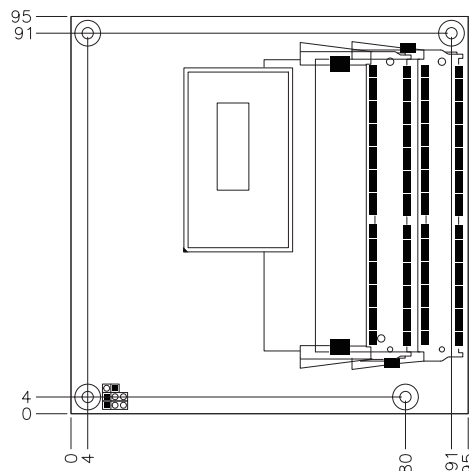
CPU	Onboard 7th Gen Intel® Core™ U-Series processors
PCH	N/A
Memory	2x DDR4 SO-DIMM, Max. 32GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	eMMC 5.0, up to 32GB (option)
Expansion Slots	4x PCI-E(x1), 1x PCI-E(x4)
Graphics Controller	7th Gen Intel® Core™ U-Series processor integrated graphics, supports DVI, HDMI, DisplayPort, LVDS
Video Output	24-bit dual-channel LVDS on carrier board
Ethernet	Intel® I219LM LAN PHY
I/O Chipset	Nuvoton NCT5523D on board (supports Tx/Rx only)
Serial Port	2x COM port (Tx/Rx only))
USB 2.0	8x USB 2.0 via baseboard
USB 3.X	4x USB 3.0 via baseboard
Serial ATA	2x SATA III via carrier board
Audio	7th Gen Intel® Core™ U-Series processor built-in HD audio + Realtek ALC662 or ALC888S codec
TPM	TPM (2.0)
Others	N/A
Dimensions (L X W)	95mm x 95mm (3.74" x 3.74")
Power Consumption	Intel® i7-7600U, 2.8GHz w/ 8GB DDR4-2133 +12V: 3.47A; +5V: 1.4A +3.3V: 0.33, +5VBS: 0.10A
Operating Temperature	-20°C~60°C (-4°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	10% ~ 90% (non-condensing)

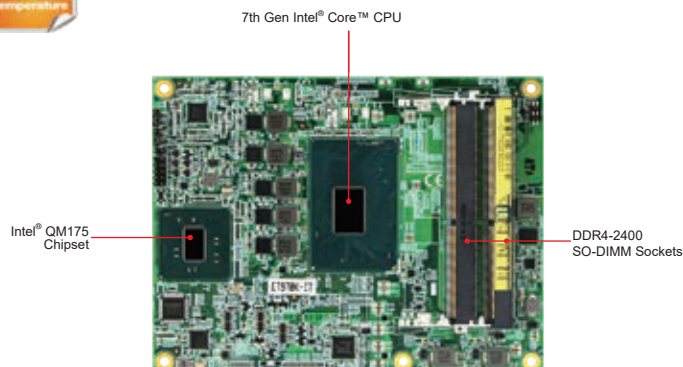
Ordering Information

ET975K-I7	COM Express (Type-6) CPU Module w/ Intel® Core™ i7-7600U, DDR4 dual-channel memory, 2x DDI
ET975K-I7V	COM Express (Type-6) CPU Module w/ Intel® Core™ i7-7600U, DDR4 dual-channel memory, 1x DDI+ 1x VGA
ET975K-I5	COM Express (Type-6) CPU Module w/ Intel® Core™ i5-7300U, DDR4 dual-channel memory, 2x DDI
ET975K-I5V	COM Express (Type-6) CPU Module w/ Intel® Core™ i5-7300U, DDR4 dual-channel memory, 1x DDI+ 1x VGA
ET975K-I3 (MOQ)	COM Express (Type-6) CPU Module w/ Intel® Core™ i3-7100U, DDR4 dual-channel memory, 2x DDI
ET975S-I7V	COM Express (Type-6) CPU Module w/ Intel® Core™ i7-6600U, DDR4 dual-channel memory, 1x DDI+ 1x VGA
ET975K-I7	COM Express (Type-6) CPU Module w/ Intel® Core™ i7-7600U, DDR4 dual-channel memory, 2x DDI
HSET975-A	Heatsink with fan for ET975
HSET975-1	Heat spreader for ET975

*(S) means with Realtek ALC888S codec

Dimensions and Drawing





Features

- Onboard 7th Gen Intel® Xeon® E3/ Core™ i7/i5/i3 processors
- 2x DDR4-2400 SO-DIMM, Max. 32GB
- 1x Intel® PCI-E GbE LAN
- Watchdog timer, Digital I/O
- 8x USB 2.0, 4x USB 3.0, 2x COM, 4x SATA III
- 3x independent displays
- TPM (2.0)
- 8x PCI-E(x1), 1x PCI-E(x16)
- Wide-range operating temperature in certain models

Specifications

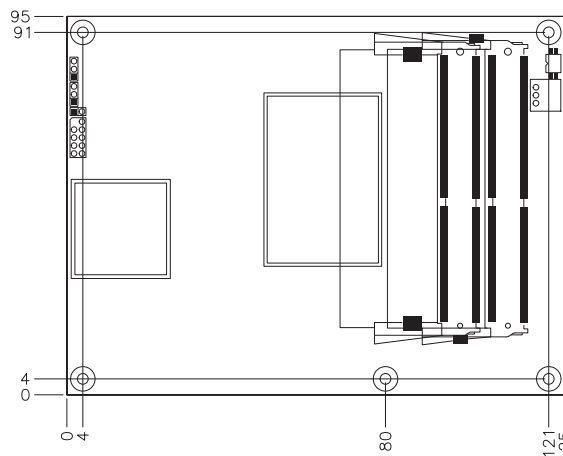
CPU	BGA1440 for 7th Gen Intel® Xeon® E3/ Core™ i7/i5/i3 processors
PCH	Intel® QM175 & CM238 & HM175 PCH
Memory	2x DDR4-2400 SO-DIMM, Max. 32GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	8x PCI-E (x1), 1x PCI-E(x16)
Graphics Controller	7th Gen Intel® Core™ processor integrated graphics, supports DVI, HDMI, DisplayPort, LVDS
Video Output	24-bit dual-channels LVDS on carrier board
Ethernet	Intel® I219LM LAN PHY/Intel® I219V LAN GbE
I/O Chipset	Nuvoton NCT5523D
Serial Port	2x COM ports (Tx/Rx only)
USB 2.0	8x USB 2.0 via carrier board
USB 3.X	4x USB 3.0 via carrier board
Serial ATA	4x SATA III via carrier board
Audio	Intel® QM175 PCH built-in HD audio w/ Realtek ALC662 or ALC888S codec on carrier board (IP413)
TPM	TPM (2.0)
Others	Digital I/O (4-in/4-out)
Dimensions (L X W)	95mm x 125mm (3.74" x 4.92")
Power Consumption	Intel® i7-7820EQ, 3.0GHz w/16GB DDR4-2400 +12V: 4.48A; +5V: 0.65A +3.3V: 0.27A, +5VBS: 0.13A
Operating Temperature	-40°C~75°C (-40°F~167°F)(ET970K-I3) 0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	10%~90% (non-condensing)

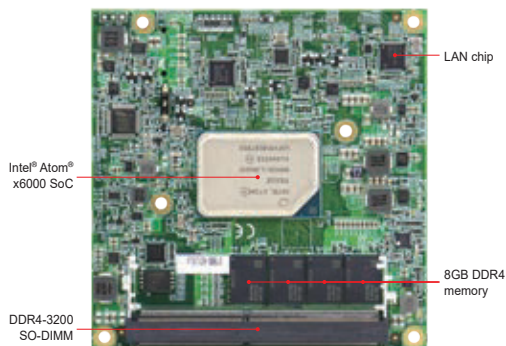
Ordering Information

ET970K-X3G	COM Express (Type-6) CPU Module w/ Intel® Xeon® E3-1505M V6 (3.0GHz), CM238 PCH, DDR4 dual-channel memory
ET970K-I7	COM Express (Type-6) CPU Module w/ Intel® Core™ i7-7820EQ (3.0GHz~3.7GHz), QM175 PCH, DDR4 dual-channel memory
ET970K-I5	COM Express (Type-6) CPU Module w/ Intel® Core™ i5-7440EQ (2.9GHz~3.6GHz), QM175 PCH, DDR4 dual-channel memory
ET970K-I3	COM Express (Type-6) CPU Module w/ Intel® Core™ i3-7100T (2.9GHz), HM175 PCH, DDR4 dual-channel memory, wide-temp support
ET970S-I7	COM Express (Type-6) CPU Module w/ Intel® Core™ i7-6820EQ (2.8GHz), QM170 PCH, DDR4 dual-channel memory
HSET970-B	Heatsink with fan for ET970
HSET970-2	Heat spreader with fan for ET970

*(S) means with Realtek ALC888S codec

Dimensions and Drawing





Features

- Onboard Intel® Atom® x6000 series processors
- Onboard 8GB DDR4 memory + 1x DDR4 SO-DIMM, IB ECC compatible
- 1x I226IT PCI-E 2.5G LAN
- 2x USB 3.1, 4x USB 2.0, 2x SATA III, 2x UART (Tx/Rx only)
- 3x independent displays, DisplayPort /DVI-D / LVDS or eDP via carrier board (IP419)
- Wide-range operating temperature from -40°C to +85°C

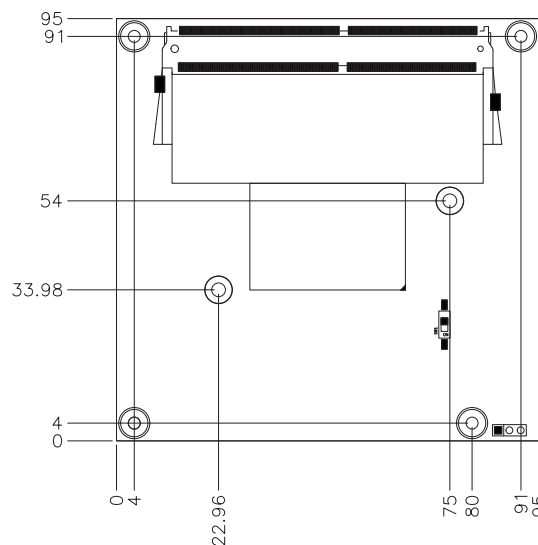
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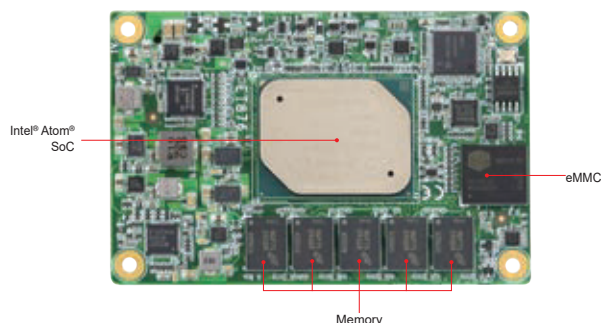
CPU	Intel® Atom® QC x6425E (1.8Ghz/3.0GHz) Intel® Atom® DC x6211E (1.2Ghz/3.0GHz)
PCH	Integrated in Intel® SoC
Memory	Onboard 8GB DDR4 & 1x DDR4 SO-DIMM, Max. support 24GB, IB ECC compatible
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	5x PCI-E(x1) to carrier board
Graphics Controller	Intel® Gen11 integrated graphics
Video Output	2x DDI, LVDS or eDP on carrier board
Ethernet	1x Intel I226IT 2.5GbE RJ45 on carrier board
I/O Chipset	Fintek F81804U-I
Serial Port	2x COM ports (Tx/Rx only)
USB 2.0	4x USB 2.0 via carrier board
USB 3.X	2x USB 3.1 (5Gbps) via carrier board
Serial ATA	2x SATA III via carrier board
Audio	Built-in HD audio controller
TPM	TPM (2.0)
Others	Digital I/O (4-in/4-out)
Dimensions (L X W)	95mm x 95mm (3.74" x 3.74")
Power Consumption	Intel® Atom® x6425E Processor 2.00GHz w/ 8GB DDR4-3200 + 12V:1.93A
Operating Temperature	-40°C~+85°C (-40°F~+185°F) ; exclude SO-DIMM memory module
Storage Temperature	-40°C~90°C (-40°F~+194°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

ET880-6425E	COM Express (Type-6) module w/ Intel® Atom® x6425E SoC on board, supports eDP
ET880-6425ELV	COM Express (Type-6) module w/ Intel® Atom® x6425E SoC on board, supports LVDS
ET880-6211E	COM Express (Type-6) module w/ Intel® Atom® x6211E SoC on board, supports eDP
ET880-6211ELV	COM Express (Type-6) module w/ Intel® Atom® x6211E SoC on board, supports LVDS
HSET880-A	Heatsink with fan for ET880 with Atom® x6000 series SoC
HSET880-1	Heat spreader for ET880 with Atom® x6000 series SoC

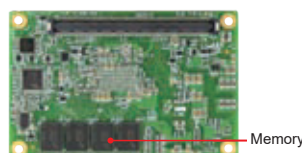
Dimensions and Drawing





Features

- Onboard Intel® Atom® x7-E3950/ x5-E3940/ x5-E3930 Processor [i-Temp support]
- Onboard DDR3L memory with ECC support
- 1x Intel® I210IT Gigabit LAN
- TPM (2.0), eMMC5.0 (option)
- Wide-range operating temperature from -40°C to 85°C



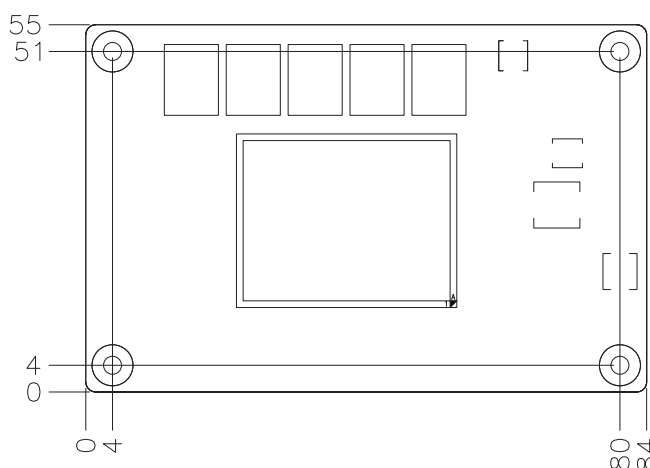
Specifications

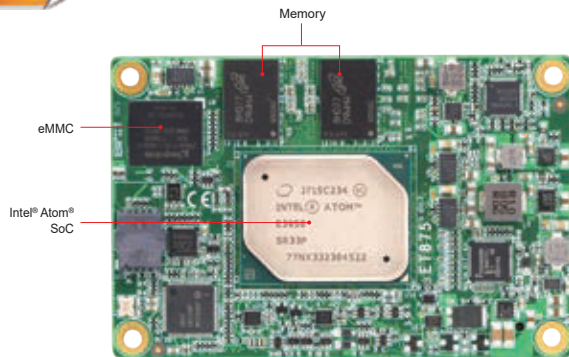
CPU	Intel Atom® x7-E3950 Processor (1.6GHz~2.0GHz) Intel Atom® x5-E3940 Processor (1.6 GHz~1.8GHz) Intel Atom® x5-E3930 Processor (1.3 GHz~1.8GHz)
PCH	Integrated in Intel® SoC
Memory	Onboard 4GB memory, DDR3L 1600MHz with ECC
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	eMMC 5.0 up to 32GB (option)
Expansion Slots	4x PCI-E(x1)
Graphics Controller	Intel® SoC integrated Gen9-LP graphics
Video Output	1x DDI 1x LVDS or 1x eDP (option)
Ethernet	Intel® I210IT Gigabit LAN
I/O Chipset	F81804U-I
Serial Port	2x UART (Tx/Rx only)
USB 2.0	8x USB 2.0 via carrier board
USB 3.X	2x USB 3.0 via carrier board
Serial ATA	2x SATA III
Audio	Intel® Atom® SoC built-in HD audio controller
TPM	TPM (2.0)
Others	I2C
Dimensions (L X W)	84mm x 55mm (3.3" x 2.17")
Power Consumption	Intel® Atom® E3950 1.6GHz w/ 4GB LDDR3L 1600 +12V: 1.42A
Operating Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
Storage Temperature	-40°C ~ 90°C (-40°F ~ 194°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

ET876-X7LV	COM Express (Type-10) CPU Module with Intel® Atom® x7-E3950 (2.0GHz) on board, LVDS, 4GB DDR3L memory on board
ET876-X5QLV	COM Express (Type-10) CPU Module with Intel® Atom® x5-E3940 (1.8GHz) on board, LVDS, 4GB DDR3L memory on board
ET876-X5LV	COM Express (Type-10) CPU Module with Intel® Atom® x5-E3930 (1.8GHz) on board, LVDS, 4GB DDR3L memory on board
IP417	Mini-ITX COM Express Type-10 (R3.0) carrier board
HSET876-1	Heat spreader for ET876-420/ 335
HSET876-X-1	Heat spreader for ET876-X7/ X5Q/ X5
HSET876-A	Heatsink w/ fan for ET876-420/ 335
HSET876-X-A	Heatsink w/ fan for ET876-X7/ X5Q/ X5
HSET876-X-B	Heatsink w/o FAN for ET876-X5 (only temp -40°C ~80°C)

Dimensions and Drawing





Features

- Onboard Intel® Atom® x7-E3950/ x5-E3940/ x5-E3930 Processor [i-Temp support]
- Onboard Intel® Pentium® N4200/ Celeron® N3350
- Onboard LPDDR4 memory
- 1x Intel I210IT Gigabit LAN
- supports TPM (2.0), eMMC5.0 (option)
- Wide-range operating temperature in certain models

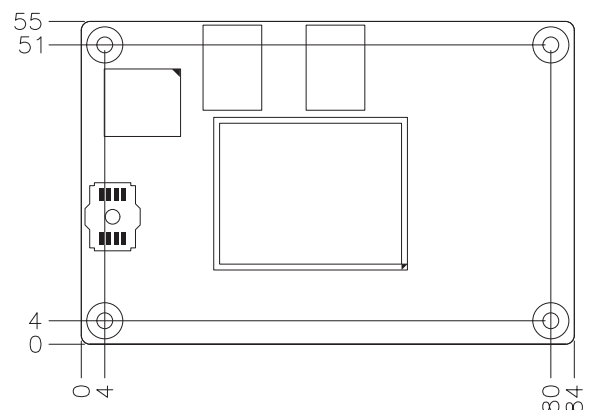
Specifications

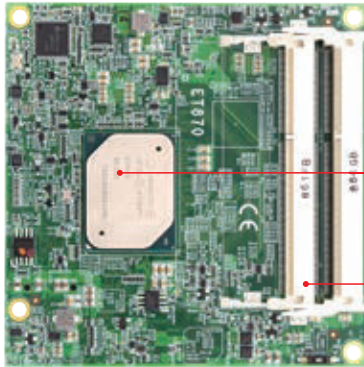
CPU	Intel Atom® x7-E3950 Processor (1.6GHz~2.0GHz) Intel Atom® x5-E3940 Processor (1.6 GHz~1.8GHz) Intel Atom® x5-E3930 Processor (1.3 GHz~1.8GHz) Intel® Pentium® Processor N4200 (1.1GHz~ 2.5GHz) Intel® Celeron® Processor N3350 (1.1GHz~ 2.4GHz)
PCH	Integrated in Intel® SoC
Memory	Onboard memory, LPDDR4, Max. 8GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	eMMC 5.0 up to 32GB (option)
Expansion Slots	4x PCI-E(x1)
Graphics Controller	Intel® SoC integrated Gen9-LP graphics
Video Output	1x DDI 1x LVDS or 1x eDP (option)
Ethernet	Intel® I210IT Gigabit LAN
I/O Chipset	Fintek F81804U-I
Serial Port	2x UART (Tx/Rx only)
USB 2.0	8x USB 2.0 via carrier board
USB 3.X	2x USB 3.0 via carrier board
Serial ATA	2x SATA III via carrier board
Audio	Intel® Atom® SoC built-in HD audio controller
TPM	TPM (2.0)
Others	I2C
Dimensions (L X W)	84mm x 55mm (3.3" x 2.17")
Power Consumption	Intel® Atom® Processor E3950 1.60GHz w/ Onboard LPDDR4 2400MHz 8GB +12V: 1.587A
Operating Temperature	N4200/N3350: -20°C ~ 60°C (-4°F~176°F)(ET875-420/ ET875-335) E3950/E3940/E3930: -40°C~85°C (-40°F~185°F) (ET875-x7/x5)
Storage Temperature	-40°C ~ 90°C (-40°F ~ 194°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

ET875F1-X7	COM Express (Type-10) CPU Module with Intel® Atom® x7-E3950 (2.0GHz) on board, eDP, 4GB LPDDR4 memory on board, wide-temp support
ET875F1-X5Q	COM Express (Type-10) CPU Module with Intel® Atom® x5-E3940 (1.8GHz) on board, eDP, 4GB LPDDR4 memory on board, wide-temp support
ET875F1-X5QLV	COM Express (Type-10) CPU Module with Intel® Atom® x5-E3940 (1.8GHz) on board, LVDS, 4GB LPDDR4 memory on board, wide-temp support
ET875F1-X5	COM Express (Type-10) CPU Module with Intel® Atom® x5-E3930 (1.8GHz) on board, eDP, 4GB LPDDR4 memory on board, wide-temp support
ET875F1-420LVM8G	COM Express (Type-10) CPU Module with Intel® Pentium® N4200 (2.5GHz), LVDS, 8GB LPDDR4 memory on board, eMMC 32GB
ET875F1-335	COM Express (Type-10) CPU Module with Intel® Celeron® N3350 (2.4GHz), eDP, 4GB LPDDR4 memory on board
IP417	Mini-ITX COM Express Type-10 (R3.0) carrier board
HSET875-A	Heatsink with FAN for ET875-420/ 335
HSET875-X-B	Heatsink with FAN for ET875-X7/ X5
HSET875-1	Heat spreader for ET875-420/335
HSET875-X-1	Heat spreader for ET875-X7/ X5

Dimensions and Drawing





Intel® Atom®
x7/x5 CPU

DDR3L SO-DIMM
Sockets

Features

- Onboard Intel® Atom® x7-E3950/ x5-E3940/ x5-E3930 Processor [i-Temp support]
- 2x DDR3L-1866 SO-DIMM sockets, Max. 16GB
- 2x independent displays, DisplayPort/ DVI-D/ LVDS or eDP via carrier board (IP419)
- HD audio via carrier board (IP419)
- Wide-range operating temperature from -40°C to 85°C



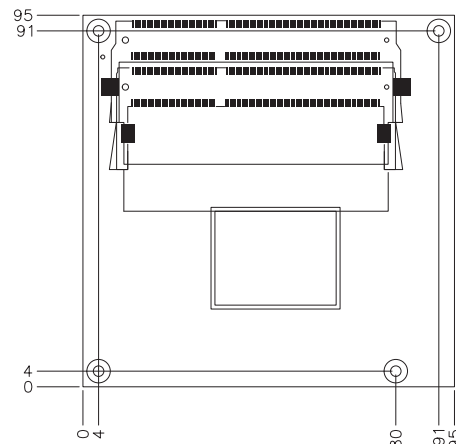
Specifications

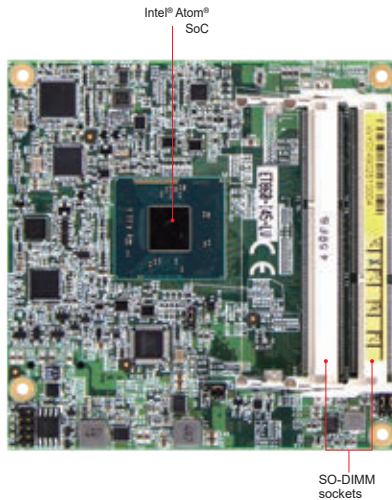
CPU	Intel Atom® x7-E3950 Processor (1.6GHz~2.0GHz) Intel Atom® x5-E3940 Processor (1.6 GHz~1.8GHz) Intel Atom® x5-E3930 Processor (1.3 GHz~1.8GHz)
PCH	Integrated in Intel® SoC
Memory	2x DDR3L-1866 SO-DIMM sockets, Max. 16GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	4x PCI-E(x1)
Graphics Controller	Intel® SoC integrated Gen9 18EUs graphics
Video Output	Supports 2x DDI (DisplayPort / DVI-D) 1x 24-bit dual-channel or eDP
Ethernet	Intel® I210IT Gigabit LAN
I/O Chipset	Fintek F81804U-I
Serial Port	2x COM ports (Tx/Rx only)
USB 2.0	4x USB 2.0 via carrier board
USB 3.X	3x USB 3.0 via carrier board
Serial ATA	2x SATA III via carrier board
Audio	Intel® Atom® SoC built-in HD Audio
TPM	TPM (2.0)
Others	Digital I/O (4-in / 4-out)
Dimensions (L X W)	95mm x 95mm
Power Consumption	Intel® Atom® E3950 1.6GHz w/ 2x 8GB DDR3L-1600 + 12V: 2.18A
Operating Temperature	-40°C ~85°C (-40°F ~ 185°F)
Storage Temperature	-40°C ~ 90°C (-40°F ~ 194°F)
Relative Humidity	10~90% (non-condensing)

Ordering Information

ET870-I50	COM Express (Type-6) CPU Module with Intel® Atom® x7-E3950 (2.0GHz), DDR3L dual-channel memory, eDP support
ET870-I50LV	COM Express (Type-6) CPU Module with Intel® Atom® x7-E3950 (2.0GHz), DDR3L dual-channel memory, LVDS support
ET870-I40	COM Express (Type-6) CPU Module with Intel® Atom® x5-E3940 (1.8GHz), DDR3L dual-channel memory, eDP support
ET870-I40LV	COM Express (Type-6) CPU Module with Intel® Atom® x5-E3940 (1.8GHz), DDR3L dual-channel memory, LVDS support
ET870-I30	COM Express (Type-6) CPU Module with Intel® Atom® x5-E3930 (1.8GHz), DDR3L dual-channel memory, eDP support
ET870-I30LV	COM Express (Type-6) CPU Module with Intel® Atom® x5-E3930 (1.8GHz), DDR3L dual-channel memory, LVDS support
IP419	Mini-ITX COM Express Type-6 (R3.0) carrier board
HSET870-A	Heatsink with fan for ET870
HSET870-1	Heat Spreader for ET870

Dimensions and Drawing



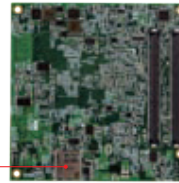


Specifications

CPU	Intel® Atom® Processor E3845/E3827
PCH	Integrated in Intel® Atom® SoC
Memory	2x DDR3L@1.35V SO-DIMM, Max. 8GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device interface	N/A
Expansion Slots	1x PCI-E(x1)
Graphics Controller	Intel® Atom® E3845/E3827 SoC integrated graphics supports CRT, DisplayPort & LVDS
Video Output	24-bit single-channel LVDS on carrier board (IP411)
Ethernet	1x Intel® I210IT Gigabit LAN
I/O Chipset	Nuvoton NCT5523D
Serial Port	2x COM ports (Tx/Rx only))
USB 2.0	8x USB 2.0 via carrier board (Supports 6x USB 2.0 only on IP411)
USB 3.X	1x USB 3.0 via carrier board (IP411)
Serial ATA	2x SATA III ports via carrier board (IP411)
Audio	Intel® Atom® E3845/E3827 SoC built-in audio with Realtek ALC662 or ALC888S codec on carrier board (IP411)
TPM	N/A
Others	MicroSD slot on board @ rear side Digital I/O (4-in / 4-out) on carrier board (IP411)
Dimensions (L x W)	95mm x 95mm (3.74" x 3.74")
Power Consumption	Intel® Atom® E3845 1.91GHz w/ 2x 2GB DDR3L-1600 +12V: 0.91A; +5V: 0.13A; +5VSB: 0.05A; +3.3V: 0.24A
Operating Temperature	-40°C~85°C (-40°F~185°F)
Storage Temperature	-40°C~90°C (-40°F~194°F)
Relative Humidity	90% (non-condensing @60°C)

Features

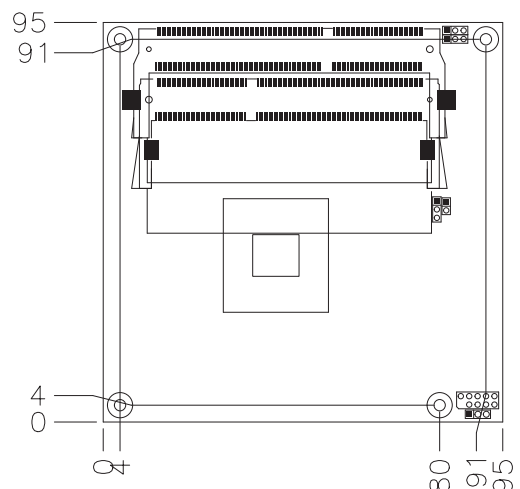
- Onboard Intel® Atom® Processor E3845/E3827
- 2x DDR3L SO-DIMM, Max. 8GB
- Single Gigabit LAN via carrier board (IP411)
- 2x SATA II, 1x USB 3.0, 8x USB 2.0, 2x COM via carrier board (IP411)
- supports 2x independent displays, DisplayPort/CRT/LVDS via carrier board (IP411)
- supports HD audio via carrier board (IP411)
- Wide-range operating temperature from -40°C to 85°C

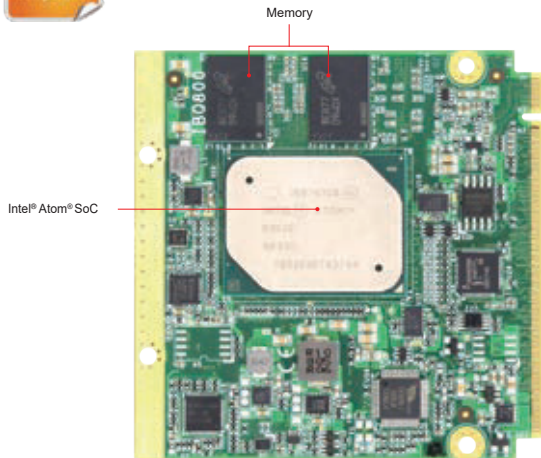


Ordering Information

ET860-I45-LV	COM Express (Type-6) CPU Module w/ Intel® Atom® Processor E3845 (1.91GHz) SoC, DDR3L dual-channel memory, LVDS support
ET860-I27-LV	COM Express (Type-6) CPU Module w/ Intel® Atom® Processor E3827 (1.75GHz) SoC, DDR3L dual-channel memory, LVDS support
IP411	Mini-ITX COM Express (Type-6) carrier board
HSET860-BGA-A	Heatsink with fan for ET860
HSET860-BGA-1	Heat spreader for ET860

Dimensions and Drawing





Features

- Onboard Intel® Atom® x5-E3930, 1.8GHz or x7-E3950, 2.0GHz [i-Temp support]
- Onboard LPDDR4 memory
- 1x Intel I210IT Gigabit LAN
- TPM (2.0), eMMC5.0 (option)
- Wide-range operating temperature from -40°C to 85°C

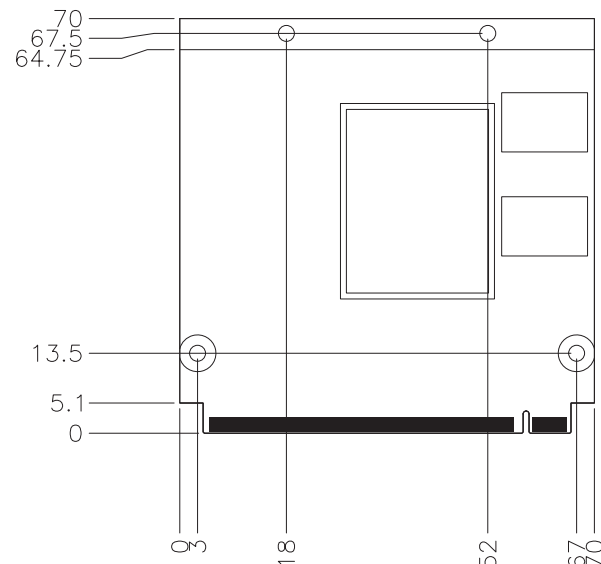
Specifications

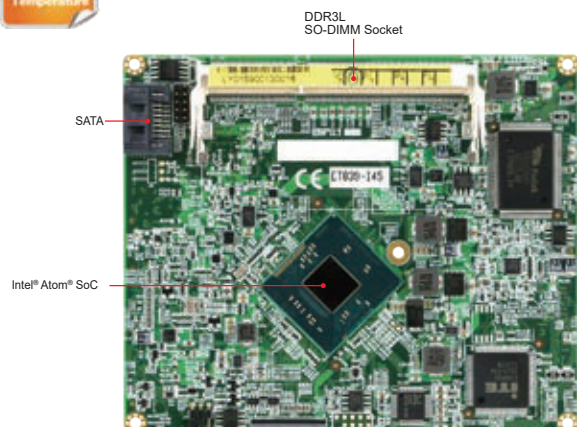
CPU	Intel® Atom® QC x5/ E3930 (1.3 GHz~1.8GHz) Intel® Atom® QC x5/ E3940 (1.6 GHz~1.8GHz) Intel® Atom® QC x7/ E3950 (1.6 GHz~2.0GHz)
PCH	Integrated in Intel® SoC
Memory	Onboard memory, LPDDR4, Max. 8GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	eMMC 5.0 up to 32GB (option)
Expansion Slots	4x PCI-E(x1)
Graphics Controller	Intel® SoC integrated Gen9-LP graphics
Video Output	Supports 1x DDI port, 1x eDP or 1x dual-channel LVDS (option)
Ethernet	1x Intel® I210IT Gigabit LAN
I/O Chipset	Fintek F81804U-I
Serial Port	1x COM port (RX/TX/RTS/CTS only)
USB 2.0	4x USB 2.0, derived from Qseven CPU module
USB 3.X	3x USB 3.0, derived from Qseven CPU module
Serial ATA	2x SATA III via carrier board
Audio	Intel® Atom® SoC built-in HD audio controller
TPM	TPM (2.0)
Others	SD, from SoC CPU
Dimensions (L X W)	70mm x 70mm (2.75" x 2.75")
Power Consumption	Intel® Atom® E3950 1.6GHz w/ 8GB memory, DDR4 1600 +12V: 1.7121A
Operating Temperature	-40°C ~ 85°C (-40°F ~ 185°F)
Storage Temperature	-40°C ~ 90°C (-40°F ~ 194°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

IBQ800F1-X7LV	Qseven CPU module with Intel® Atom® E3950 (2.0GHz), 4GB LPDDR4 memory on board, LVDS support
IBQ800F1-X7	Qseven CPU module with Intel® Atom® E3950 (2.0GHz), 4GB LPDDR4 memory on board, eDP support
IBQ800F1-X5QLV	Qseven CPU module with Intel® Atom® E3940 (1.8GHz), 4GB LPDDR4 memory on board, LVDS support
IBQ800F1-X5Q	Qseven CPU module with Intel® Atom® E3940 (1.8GHz), 4GB LPDDR4 memory on board, eDP support
IBQ800F1-X5LV	Qseven CPU module with Intel® Atom® E3930 (1.8GHz), 4GB LPDDR4 memory on board, LVDS support
IBQ800F1-X5	Qseven CPU module with Intel® Atom® E3930 (1.8GHz), 4GB LPDDR4 memory on board, eDP support
IP416	Qseven (R2.1) carrier board
HSIBQ800-1	Heat spreader for IBQ800
HSIBQ800-A	Heatsink with fan for IBQ800

Dimensions and Drawing





Features

- Onboard Intel® Atom® Processor E3845, 1.91GHz
- 1x DDR3L SO-DIMM, Max. 8GB
- supports CRT, LVDS and 1x DDI
- 1x 10/100Mbps LAN
- Watchdog timer, LPC to ISA
- 1x SATA II, 2x IDE, 4x USB 2.0, 2x COM
- Wide-range operating temperature from -20°C to 70°C



ET839 with heat spreader

Specifications

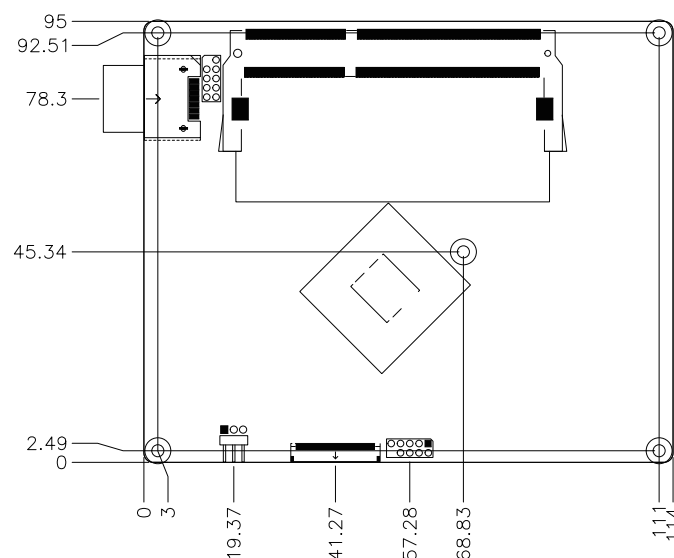
CPU	Intel® Atom® Processor E3845 SoC, 1.91GHz
PCH	Integrated in Intel® Atom® SoC
Memory	1x DDR3L SO-DIMM, Max. 8GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	4x ETX connectors for PCI bus, USB, audio, CRT, LVDS, LAN, COM ports, LPT, IDE, PS/2 keyboard/mouse and ISA bus
Graphics Controller	Intel® Atom® SoC integrated Gen 7 4Eus graphics
Video Output	Supports CRT, 24-bit dual-channel LVDS & 1x DDI port
Ethernet	Realtek 8106E 10/100Mbps LAN
I/O Chipset	Nuvoton NCT6102D 1x keyboard, 1x mouse, 1x printer
Serial Port	2x RS232
USB 2.0	4x USB 2.0 via carrier board
USB 3.X	N/A
Serial ATA	1x SATA 2.0 port on board (3.0Gb/sec)
Audio	Intel® Atom® SoC built-in HD Audio w/ Realtek ALC888S codec
TPM	N/A
Others	Fintek F85226 (LPC to ISA)
Dimensions (L X W)	95mm x 114mm (3.74" x 4.49")
Power Consumption	Intel® Atom® E3845 1.91GHz w/ 2x 4GB DDR3L-1600 +5V : 1.92A
Operating Temperature	-20°C~70°C (-68°F~158°F)
Storage Temperature	-20°C~80°C (-68°F~176°F)
Relative Humidity	10%~90% (non-condensing)

Ordering Information

ET839D1S-I45	ETX (3.0) CPU Module w/ Intel® Atom® processor E3845 SoC, CRT, LVDS and 10/100 LAN, heat spreader included
IP412	ETX(3.0) carrier board
HSET838-BGA-1	Heat Spreader for ET839

*(S) means with Realtek ALC888S codec

Dimensions and Drawing



Comparison Table

Carrier Board

Models	IP419	IP418	IP417	IP416
Form Factor	Mini-ITX form factor	ATX form factor	Mini-ITX form factor	Micro ATX form factor Qseven
Module Interface	COM Express Type-6 (3.0)	COM Express Type-6 (3.0)	COM Express Type-10 (3.0)	Qseven CPU Module (R2.1)
Video Output	18/24-bit dual-channel LVDS DVI-D / DisplayPort on board	18/24-bit single-channel LVDS eDP DVI-D / HDMI / DisplayPort on board	18/24-bit single-channel LVDS DisplayPort on board	18/24-bit dual-channel LVDS DisplayPort on board
Ethernet	2x RJ45 connector	2x RJ-45 connector	2x RJ45 connector	1x RJ45 connector
Audio	Built-in ALC662 or ALC888S HD audio codec	Built-in ALC662 or ALC888S HD audio codec	Built-in ALC662 or ALC888S HD audio codec	Built-in ALC662 or ALC888S HD audio codec
SATA	2x SATA III	2x SATA III	2x SATA III	2x SATA III
I/O Chipset	Fintek F81964D-I	Fintek F81964D-I	Fintek F81964D-I	Fintek F81846D-I
Parallel Port	1x Parallel port	1x Parallel port	N/A	N/A
Serial Port	4x COM ports	2x COM ports	4x COM ports (4 ports via rear I/O, 2-ports via pin header)	5x COM ports (4 ports via rear I/O, 1-port via pin header)
USB 2.0	4x USB 2.0 (2 ports via rear I/O, 2x ports via onboard pin header, 1x port share with micro USB)	4x USB 2.0	4x USB 2.0 (4 ports via rear I/O)	2x USB 3.0 via rear I/O 2x USB 2.0 (2 ports via onboard vertical, 1x port share with micro USB)
USB 3.X	2x USB 3.0 via rear I/O	4x USB 3.0 via rear I/O	2x USB 3.0 via rear I/O	2x USB 3.0 via rear I/O
KB / MS	N/A	N/A	1x KB/MS connector	N/A
Hardware Monitor	Yes	Yes	Yes	Yes
Watchdog Timer	256 levels	256 levels	256 levels	256 levels
Expansion slots	1x PCI-E(x1) slot 1x M.2 (B Key) socket	1x PCIx16 slot 5x PCI-Ex1 slots 2x Mini PCI-E sockets	1x PCI-E(x1) slot 2x Mini PCI-E sockets (full-size & half-size)	4x PCI-E(x1) slots 1x Mini PCI-E sockets (full-size)
Digital I/O	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out
Power Connector	2x 2-pin connector for DC-in 12V only	20+4-pin connector for ATX or DC-in 12V only	2x 2-pin connector for DC-in 12V only	2x 2-pin connector for DC-in 12V only
Dimensions (L x W)	170mm x 170mm (6.7"x6.7")	305mm x 244mm (12"x9.6")	170mm x 170mm (6.7"x6.7")	244mm x 244mm (9.6"x9.6")
Extra Features	Compatible with ET870	Compatible with ET976 / ET977	Compatible with ET875	Compatible with IBQ800
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1

Single Board
Computers

2

CPU Modules

3

Motherboards

4

CPU Cards

Models	IP414	IP412	IP411
Form Factor	ATX form factor	Micro ATX form factor	Mini-ITX form factor
Module Interface	COM Express Type-6	ETX (3.0)	COM Express Type-6
Video Output	18/24-bit dual-channel LVDS VGA / eDP / DisplayPort on board	18/24-bit dual-channel LVDS Analog CRT	18/24-bit dual-channel LVDS VGA/2x DVI-D
Ethernet	1x RJ45 connector	1x RJ45 connector	2x RJ45 connector
Audio	Built-in ALC888S HD audio codec	N/A	Built-in ALC662 or ALC888S HD audio codec
SATA	4x SATA III	N/A	2x SATA III
I/O Chipset	Fintek F81946D-I	N/A	Fintek F81846AD-I
Parallel Port	N/A	1x Parallel port	1x Parallel port
Serial Port	2x COM ports via onboard box-headers (RS232 only) 2x COM ports 2x COM ports (from CPU module, Tx/Rx only)	2x COM ports (1 port via rear I/O, 1-port via pin header)	2x COM ports via rear I/O
USB 2.0	3x USB2.0	2x USB 2.0 via rear I/O	8x USB 2.0 (2 ports on rear I/O, 6 ports via pin header)
USB 3.X	3x USB 3.2	N/A	1x USB 3.0 via rear I/O
KB / MS	1x KB/MS connector	1x PS/2 KB/MS connector	N/A
Hardware Monitor	Yes	Yes	Yes
Watchdog Timer	256 levels	256 levels	256 levels
Expansion slots	1x PCI-E(x16) slot [up to Gen.5] 2x PCI-E(x4) slot 2x PCI-E(x1) slot	3x PCI slots 1x ISA slot	1x PCI-E(x1) slot
Digital I/O	4-in/4-out	4-in/4-out	4-in/4-out
Power Connector	20+4-pin connector for ATX (IP414) 2x 2-pin connector for DC power-in (IP414-DC only)	20+4-pin connector for ATX	20+4-pin connector for ATX
Dimensions (L x W)	305mm x 244mm (12" x 9.6")	244mm x 244mm (9.6" x 9.6")	170mm x 170mm (6.7" x 6.7")
Extra Features	Compatible with ET980/ET981	Compatible with ET839	Compatible with ET860
Page No.	P.2-24	P.2-25	P.2-26

1

Single Board Computers

2

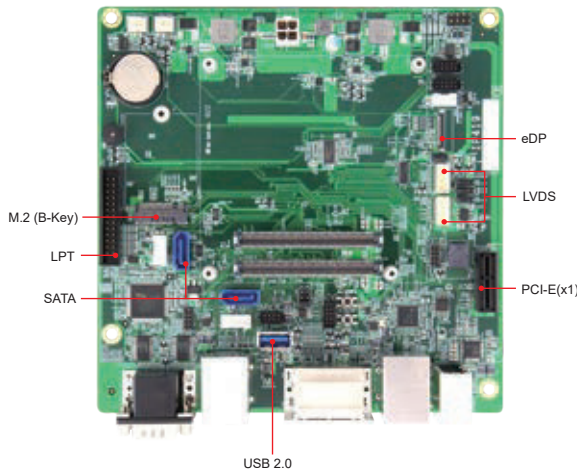
CPU Modules

3

Motherboards

4

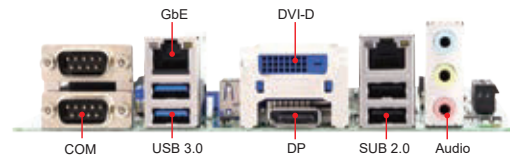
CPU Cards



Features

- supports 4x USB 2.0, 3x USB 3.0, 2x SATA III
- 1x PCI-E(x1) slot, 1x M.2 socket
- 1x eDP or 1x LVDS, 1x DisplayPort, 1x DVI-D
- 2x LAN connectors

I/O View



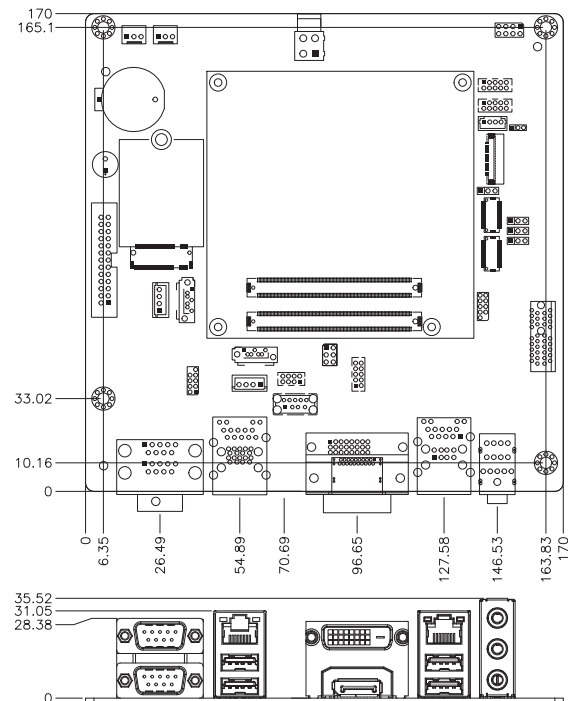
Specifications

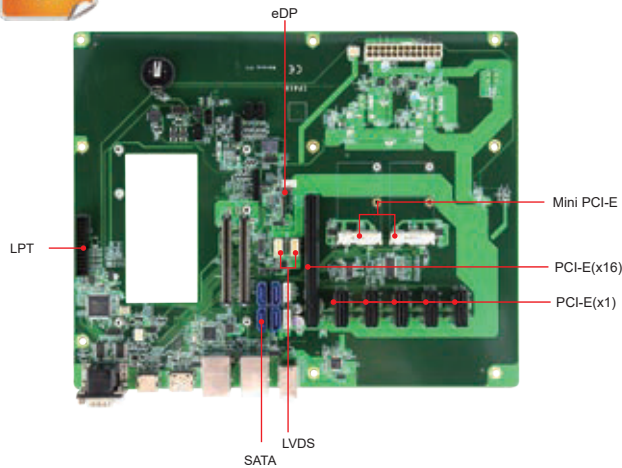
Form Factor	Mini-ITX
Module Interface	COM Express Type-6 (R3.0)
Expansions slots	1x PCI-E(x1) slot 1x M.2 socket
Mini Type Slots	N/A
Video Output	2x DDI (1x DisplayPort 1x DVI-D) 1x LVDS or 1x eDP (By option) 1x 18/24-bit dual-channel LVDS or 1x eDP (option)
Ethernet	LAN1: Derived from COM Express CPU module LAN2: 1x Intel® I210IT
I/O Chipset	Fintek F81964D-I
Serial Port	4x COM ports -2x COM ports (from Super I/O) -2x COM ports (from CPU module, TX/RX)
USB 2.0	Derived from COM Express module 4x USB 2.0, (one port for OTG)
USB 3.X	2x USB 3.0
Serial ATA	Derived from COM Express module 2x SATA III
Audio	Built-in ALC888S HD audio codec
Digital I/O	4-in/4-out
Watchdog	256 levels
KB/MS	N/A
Parallel	1x Parallel port via box header
Dimensions (L X W)	170 mm x 170 mm (6.7" x 6.7")
Power	DC-in (12V) 2x 2-pin connector for 12V DC power-in
Operating Temperature	-20°C~70°C (-4°F~94°F)
Storage Temperature	-40°C~90°C (-40°F~194°F)
Relative Humidity	10% ~ 90% (non-condensing)

Ordering Information

IP419	Mini-ITX COM Express Type-6 carrier board, supports LVDS or eDP
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Dimensions and Drawing

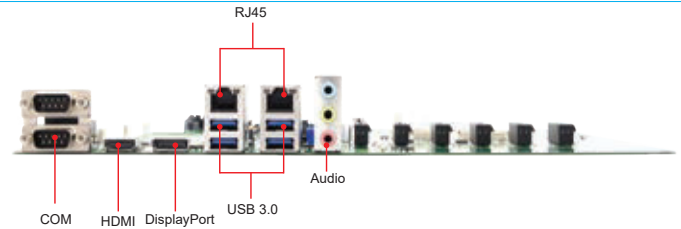




Features

- ATX form factor with PICMG COM.0 R3.0 Type-6 pin-out
- 1x VGA, 1x DisplayPort, 1x HDMI, 1x DVI-D
- supports 1x eDP or 1x LVDS
- 1x PCI-E (x16), 5x Mini-PCI-E(x1), 2x Mini PCI-E sockets
- ATX power connector / DC-in (12V only)

I/O View



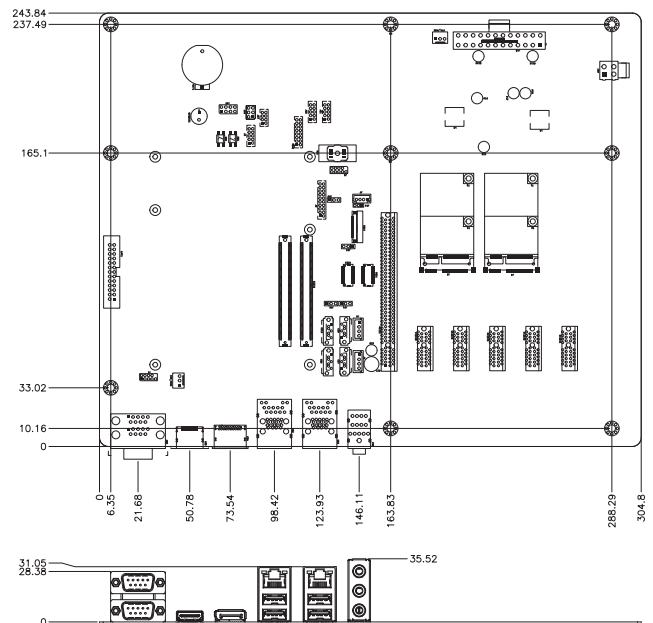
Specifications

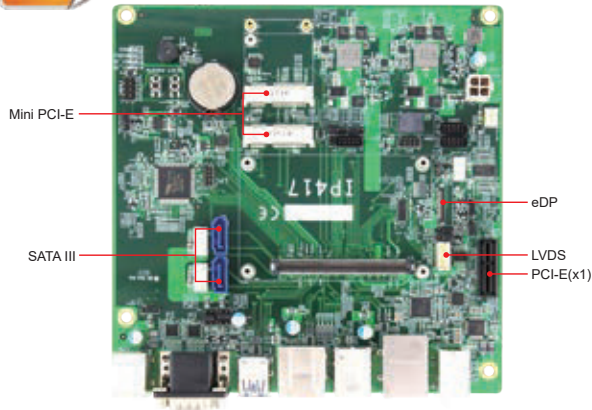
Form Factor	ATX
Module Interface	COM Express Type-6 (R3.0)
Expansions slots	1x PCI-E(16x) slot 5x PCI-E(1x) slot
Mini Type Slots	2x MiniPCI-E socket
Video Output	1x VGA 3x DDI (1xDisplayPort, 1x HDMI, 1x DVI-D) 1x dual channel LVDS or 1x eDP (Depends on CPU module)
Ethernet	LAN1: Derived from COM Express CPU module LAN2: 1x Intel® I210IT
I/O Chipset	Fintek F81964D-I
Serial Port	2x COM ports (RS232)
USB 2.0	4x USB 2.0
USB 3.X	4x USB 3.0
Serial ATA	Derived form COM Express CPU module 4x SATA III
Audio	Built-in ALC888S HD audio codec
Digital I/O	4-in/4-out
Watchdog	256 levels
KB/MS	N/A
Parallel	1x Parallel port via box header
Dimensions (L X W)	305mm x 244mm (12" x 9.6")
Power	ATX/ DC-IN 12V (only) 20+4-pin connector for ATX 2x 2-pin connector for 12V DC power-in (IP418-DC only)
Operating Temperature	-40°C~85°C (-40°F~185°F)
Storage Temperature	-40°C~90°C (-40°F~194°F)
Relative Humidity	10% ~ 90% (non-condensing)

Ordering Information

IP418	COM Express Type-6 carrier board, supports ATX
IP418-DC	COM Express Type-6 carrier board, supports DC-in

Dimensions and Drawing

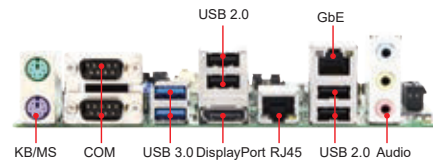




Features

- 1x PCI-E (x1), 2x Mini PCI-E sockets (full-size & half-size)
- 8x USB 2.0, 2x USB 3.0
- supports 1x eDP or 1x LVDS (based on COMe module), 1x DisplayPort
- 2x LAN connectors

I/O View



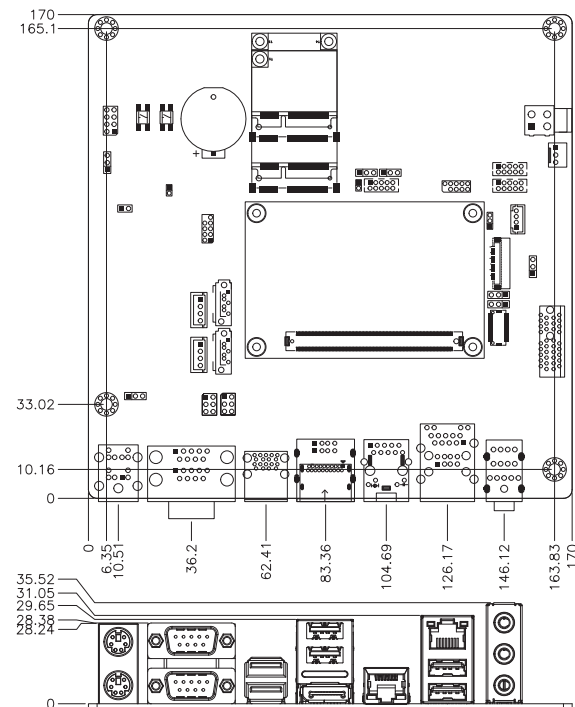
Specifications

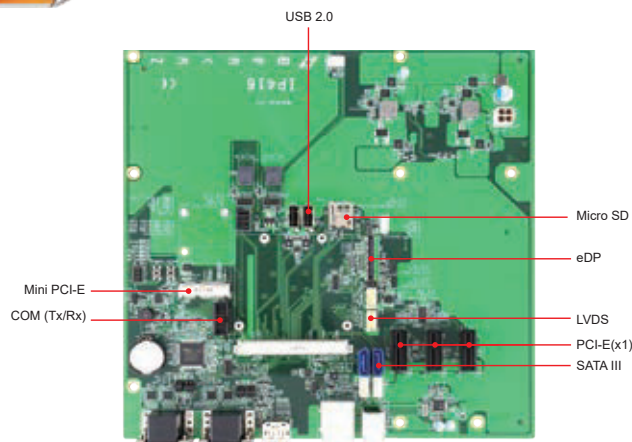
Form Factor	Mini ITX
Module Interface	COM Express Type-10 (R3.0)
Expansions slots	1x PCI-E(x1) slot
Mini Type Slots	1x MiniPCI-E socket (full-size) 1x MiniPCI-E socket (half-size)
Video Output	1x DisplayPort 1x LVDS or 1x eDP (option)
Ethernet	LAN1: Derived from COM Express CPU module LAN2: 1x Intel I210IT
I/O Chipset	Fintek F81846D-I
Serial Port	2x COM ports (RS232)
USB 2.0	8x USB 2.0
USB 3.X	2x USB 3.0
Serial ATA	2x SATA III
Audio	Built-in ALC888S HD audio codec
Digital I/O	4-in/4-out
Fan Connector	1x 3-pin
Watchdog	256 levels
KB/MS	Yes
Dimensions (L X W)	170mm x 170mm (9.6" x 9.6")
Power	DC-in 12V only
Operating Temperature	-40°C~85°C (-40°F~185°F)
Storage Temperature	-40°C~90°C (-40°F~194°F)
Relative Humidity	10%~90% (non-condensing)

Ordering Information

IP417	COM Express Type-10 carrier board, supports eDP or LVDS
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Dimensions and Drawing

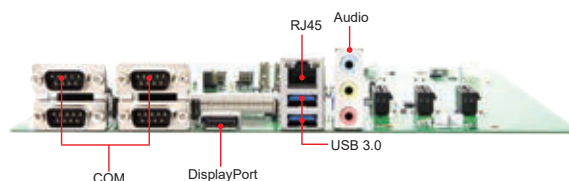




Features

- 2x USB 2.0, 2x USB 3.0
- 3x PCI-E(x1) slots, 1x MiniPCI-E socket (full-size)
- 1x eDP or 1x LVDS, 1x DisplayPort
- 1x LAN, 1x Micro SD

I/O View



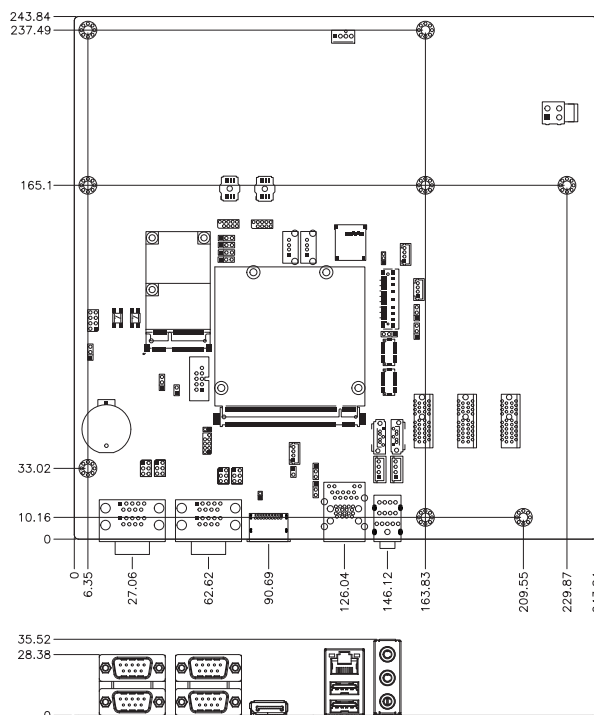
Specifications

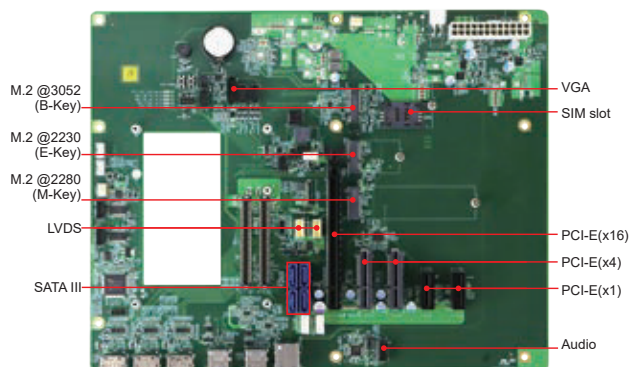
Form Factor	Micro ATX
Module Interface	Qseven CPU Module (R2.1)
Expansion Slots	3x PCI-E(x1) slot
Mini Type Slots	1x MiniPCI-E socket (full-size, reserved one hole for half-size)
Video Output	1x DisplayPort, 1x LVDS or 1x eDP (option)
Ethernet	LAN: Derived from Qseven CPU module
I/O Chipset	Fintek F81846D-I
Serial Port	4x COM RS232 & 1x COM (Tx/Rx only) from Qseven module
USB 2.0	2x USB 2.0
USB 3.X	2x USB 3.0
Serial ATA	2x SATA III
Audio	Built-in ALC888S HD audio codec
Digital I/O	4-in/4-out
Watchdog	256 levels
KB/MS	Yes
Parallel	N/A
Dimensions (L X W)	244mm x 244mm (9.6" x 9.6")
Power	DC-in 12V
Operating Temperature	-40°C~85°C (-40°F~185°F)
Storage Temperature	-40°C~90°C (-40°F~194°F)
Relative Humidity	10% ~ 90% (non-condensing)

Ordering Information

IP416	Micro ATX Qseven carrier board
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Dimensions and Drawing





Features

- 1x PCI-E(x16), 2x PCI-E(x4), 2x PCI-E(x1) expansion slots
- 1x RJ45, 3x DP, 3x dual USB 2.0 (1x M.2 E-Key, 1x Type-A, 1x via box headers), 3x dual USB 3.2
- 2x COM via onboard box-headers (RS232 only)
- ATX power connector / DC-in (+8V ~ +20V)

I/O View



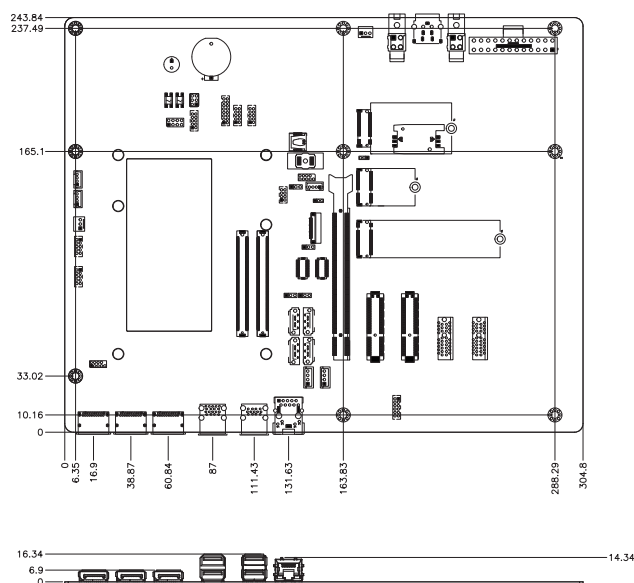
Specifications

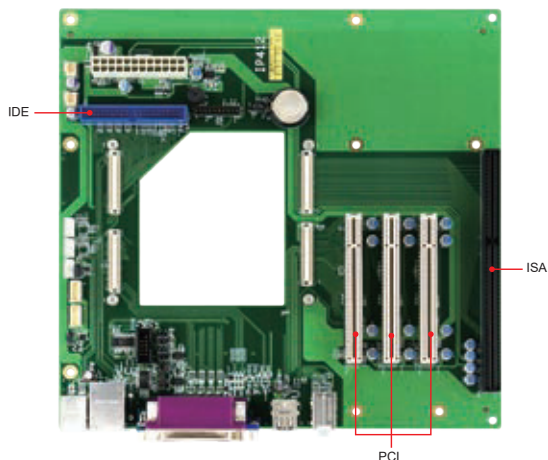
Form Factor	ATX
Module Interface	COM Express Type-6
Expansion Slots	1x PCI-E(x16) slot [up to Gen.5] 2x PCI-E(x4) slot 2x PCI-E(x1) slot
Mini Type Slots	1x M.2 (B3052) 1x M.2 (M2080) 1x M.2 (E2230)
Video Output	3x DisplayPort 1x VGA 1x 24-bit dual-channel LVDS 1x eDP
Ethernet	Derived from COM Express CPU module
I/O Chipset	Fintek F81964D-I
Serial Port	COM ports x2 via onboard box-headers (RS232 only) - 2x COM ports (from onboard Super I/O) - 2x COM ports (from CPU module, Tx/Rx only)
USB 2.0	Derived from COM Express module 3x USB2.0 (1 for Type-A, 2x via box headers)
USB 3.X	3x USB 3.2 Type-A connectors @edge I/O
Serial ATA	Derived from COM Express CPU module 4x SATA III
Audio	Built-in ALC888-S HD audio codec
Digital I/O	4-in/4-out
Watchdog	256 levels
KB/MS	Yes
Parallel	N/A
Dimensions (L X W)	305mm x 244mm (12" x 9.6")
Power	20+4-pin connector for ATX (IP414) 2x 2-pin connector for DC power-in (IP414-DC only)
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	10% ~ 90% (non-condensing)

Ordering Information

IP414	ATX COM Express Type-6 carrier board, supports ATX
IP414-DC	ATX COM Express Type-6 carrier board, supports DC-in (+8V ~ +20V)

Dimensions and Drawing

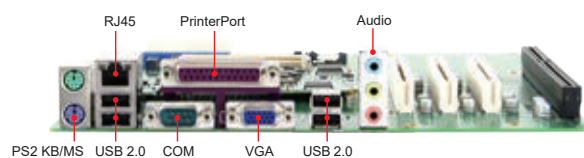




Features

- supports 1x ISA, 3x PCI expansion slots
- Edge connector for PS/2 keyboard & mouse, RJ45 + dual USB (2.0), COM, VGA, printer port, dual USB 2.0, audio connector (Line-out, Line-in & Mic.)
- Onboard header for COM, LVDS, IDE, ETX connectors

I/O View



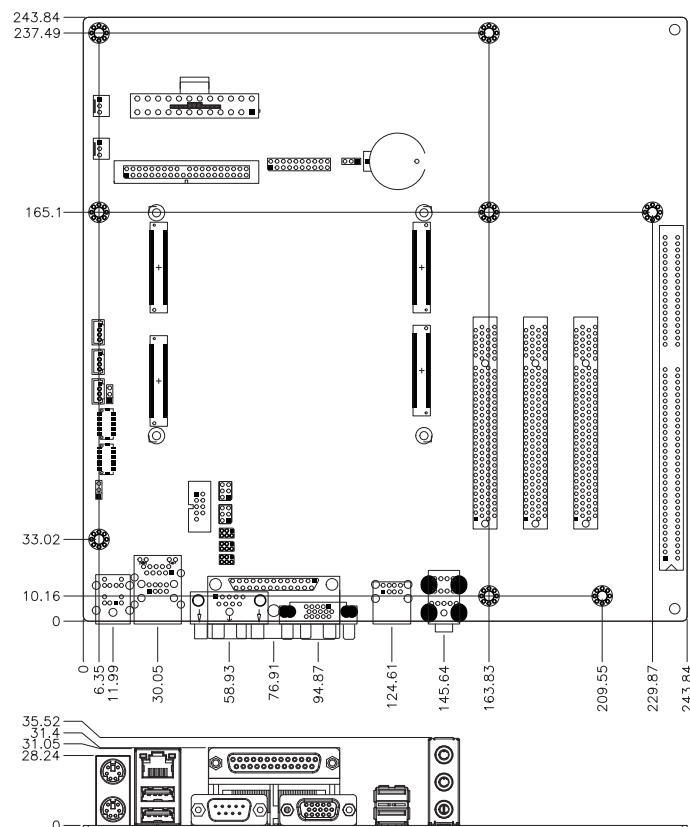
Specifications

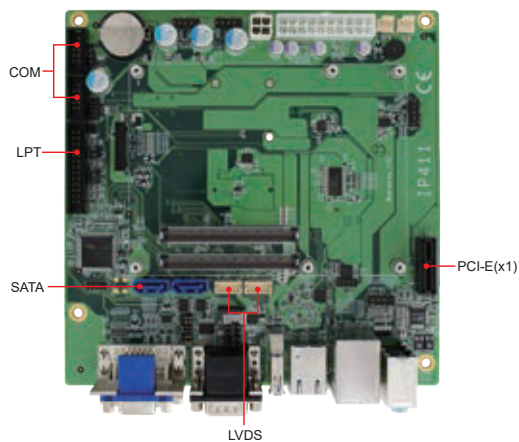
Form Factor	Micro ATX
Module Interface	ETX (3.0)
Expansion Slots	3x PCI slot 1x ISA slot
Mini Type Slots	N/A
Video Output	Derived from ETX module 1x CRT 1x 18/24-bit dual-channel LVDS
Ethernet	Derived from ETX module for 10/100 LAN
I/O Chipset	N/A
Serial Port	1x DB-9 connector for COM1 (RS232/422/485) 1x pin header for COM2 (RS232 only)
USB 2.0	Derived from ETX module 4x USB 2.0
USB 3.X	N/A
Serial ATA	N/A
Audio	Derived from ETX module via audio jack for AC97 out
Digital I/O	4-in/4-out
Watchdog	256 levels
KB/MS	PS/2 KB/MS stack connector
Parallel	1x Parallel port connector
Dimensions (L X W)	244mm x 244mm (9.6" x 9.6")
Power	20+4-pin connector for ATX
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	10% ~ 90% (non-condensing)

Ordering Information

IP412	Micro ATX ETX (3.0) carrier board
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Dimensions and Drawing





Specifications

Form Factor	Mini-ITX
Module Interface	COM Express Type-6
Expansion Slots	1x PCI-E(x1) slot
Mini Type Slots	N/A
Video Output	1x VGA 2x DDI (1 x DVI-D, 1 x DVI-D shared with LVDS) 1x 18/24-bit dual-channel LVDS
Ethernet	Derived from COM Express CPU module as GbE #1 Intel® I210IT Gigabit LAN x 1 as GbE #2
I/O Chipset	Fintek F81846AD-I
Serial Port	4x COM ports 2x COM ports (from Super I/O) 2x COM ports (from CPU module, TX/RX)
USB 2.0	Derived from COM Express CPU module 8x USB 2.0
USB 3.X	1x USB 3.0
Serial ATA	Derived from COM Express CPU module 2x SATA III
Audio	Built-in ALC888S HD audio codec
Digital I/O	4-in/4-out
Watchdog	256 levels
KB/MS	Yes
Parallel	1x Parallel port via pin header
Dimensions (L X W)	170mm x 170mm (6.7" x 6.7")
Power	20+4pins connector for ATX
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	10% ~ 90% (non-condensing)

Features

- Mini-ITX COM Express carrier board for compact-size COMe module
- supports DVI-D, VGA, 24-bit dual-channel LVDS
- 4x COM, 1x printer port, 1x USB 3.0, 8x USB 2.0, 2x SATA III
- Onboard dual Gigabit LAN
- 1x PCI-E(x1)

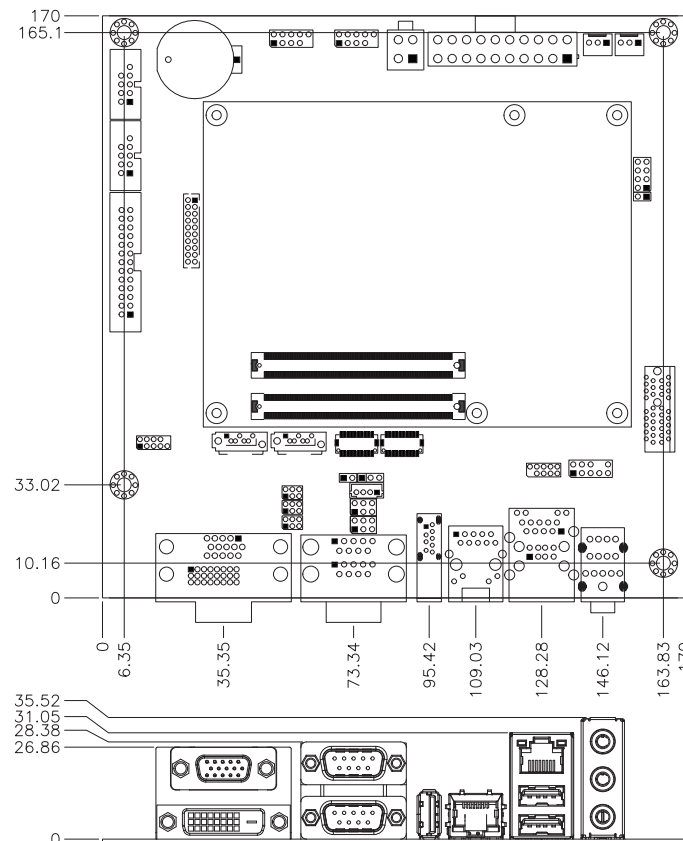
I/O View



Ordering Information

IP411	Mini-ITX COM Express Type-6 carrier board
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Dimensions and Drawing



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Processor	Core number	Base ~ Turbo (Max.)	TDP	L3 Cache	Compatible IBASE M/B, Mini-ITX, CPU Card Models	Use Condition Embedded
i7-12800HL	14	P-core:4.8GHz; E-core:3.7GHz	45 W	24MB	MI997	10 years (Q3'22)
i7-12700HL	14	P-core:4.7GHz; E-core:3.5 GHz	45 W	24MB	MI997	10 years (Q3'22)
i5-12600HL	12	P-core:4.5GHz; E-core:3.3 GHz	45 W	18MB	MI997	10 years (Q3'22)
i5-12500HL	12	P-core:4.5GHz; E-core:3.3 GHz	45 W	18MB	MI997	10 years (Q3'22)
i3-12300HL	8	P-core:4.4GHz; E-core:3.3 GHz	45 W	12MB	MI997	10 years (Q3'22)
i7-1265UL	10	P-core:4.8GHz; E-core:3.6 GHz	15 W	12MB	MI997	10 years (Q3'22)
i7-1255UL	10	P-core:4.7GHz; E-core:3.5 GHz	15 W	12MB	MI997	10 years (Q3'22)
i5-1245UL	10	P-core:4.3GHz; E-core:3.3 GHz	15 W	12MB	MI997	10 years (Q3'22)
i5-1235UL	10	P-core:4.4GHz; E-core:3.3 GHz	15 W	12MB	MI997	10 years (Q3'22)
i3-1215UL	6	P-core:4.4GHz; E-core:3.3 GHz	15 W	10MB	MI997	10 years (Q3'22)
Celeron® Processor 7305L	5	N/A	15 W	8MB	MI997	10 years (Q3'22)
Processor	Core number	Base ~ Turbo (Max.)	TDP	L3 Cache	Compatible IBASE M/B, Mini-ITX, CPU Card Models	Use Condition Embedded
Core 7-160HL	14	P-core:5.2GHz; E-core:4.0GHz	45 W	24MB	MI997	10 years (Q2'24)
Core 7-150HL	14	P-core:5.0GHz; E-core:3.7 GHz	45 W	24MB	MI997	10 years (Q2'24)
Core 5-130HL	12	P-core:4.8GHz; E-core:3.6 GHz	45 W	18MB	MI997	10 years (Q2'24)
Core 5-120HL	12	P-core:4.7GHz; E-core:3.5 GHz	45 W	18MB	MI997	10 years (Q2'24)
Core 3-100HL	8	P-core:4.6GHz; E-core:3.4 GHz	45 W	12MB	MI997	10 years (Q2'24)
Core 7-160UL	10	P-core:5.2GHz; E-core:3.9 GHz	15 W	12MB	MI997	10 years (Q2'24)
Core 7-150UL	10	P-core:5.0GHz; E-core:3.7 GHz	15 W	12MB	MI997	10 years (Q2'24)
Core 5-130UL	10	P-core:4.7GHz; E-core:3.5 GHz	15 W	12MB	MI997	10 years (Q2'24)
Core 5-120UL	10	P-core:4.6GHz; E-core:3.4 GHz	15 W	12MB	MI997	10 years (Q2'24)
Core 3-100UL	6	P-core:4.5GHz; E-core:3.3 GHz	15 W	10MB	MI997	10 years (Q2'24)
Processor	Core number	Speed @ Turbo (Max.)	TDP	Smart Cache	Compatible IBASE M/B, Mini-ITX, CPU Card Models	Use Condition Embedded
CoreTM Ultra 7 165HL	16	5.0 GHz	45W	24 MB	MI1002	10 years (Q2'24)
CoreTM Ultra 7 155HL	16	4.8 GHz	45W	24 MB	MI1002	10 years (Q2'24)
CoreTM Ultra 5 135HL	14	4.6 GHz	45W	18 MB	MI1002	10 years (Q2'24)
CoreTM Ultra 5 125HL	14	4.5 GHz	45W	18 MB	MI1002	10 years (Q2'24)
CoreTM Ultra 7 165UL	12	4.9 GHz	15W	12 MB	MI1002	10 years (Q2'24)
CoreTM Ultra 7 155UL	12	4.8 GHz	15W	12 MB	MI1002	10 years (Q2'24)
CoreTM Ultra 5 135UL	12	4.4 GHz	15W	12 MB	MI1002	10 years (Q2'24)
CoreTM Ultra 5 125UL	12	4.3 GHz	15W	12 MB	MI1002	10 years (Q2'24)
CoreTM Ultra 3 105UL	8	4.2 GHz	15W	10 MB	MI1002	10 years (Q2'24)

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Processor	Core number	Speed @ Turbo (Max.)	TDP	Cache	Compatible IBASE M/B, Mini-ITX, CPU Card Models	Availability after launch
i9-12900TE	16	4.8GHz	35W	30MB	MBB-1000/MB998/MI1000/MI1001/IB996	5 years (Q1'22)
i9-12900E	16	5.0GHz	65W	30MB	MBB-1000/MB998/MI1000/IB996	5 years (Q1'22)
i9-12900	16	5.1GHz	65W	30MB	MBB-1000/MB998/MI1000/IB996	5 years (Q1'22)
i7-12700TE	12	4.6GHz	35W	25MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'22)
i7-12700E	12	4.8GHz	65W	25MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'22)
i7-12700	12	4.9GHz	65W	25MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'22)
i5-12500TE	6	4.3GHz	35W	18MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'22)
i5-12500E	6	4.5GHz	65W	18MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'22)
i5-12500	6	4.6GHz	65W	18MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'22)
i5-12400	6	4.4GHz	65W	18MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'22)
i3-12100TE	4	4.0GHz	35W	12MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'22)
i3-12100E	4	4.2GHz	65W	12MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'22)
i3-12100	4	4.3GHz	65W	12MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'22)
Pentium® Gold G7400TE	2	3.0GHz	35W	6MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'22)
Pentium® Gold G7400E	2	3.6GHz	46W	6MB	MBB-1000/MB998/MI1000	10 years (Q1'22)
Celeron® Processor G6900TE	2	2.40GHz	35W	4MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'22)
Celeron® Processor G6900E	2	3.00GHz	46W	4MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'22)

Processor	Core number	Speed @ Turbo (Max.)	TDP	L3 Cache	Compatible IBASE M/B, Mini-ITX, CPU Card Models	Use Condition Embedded
i9-13900TE	24	5.0GHz	35W	36MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'23)
i9-13900E	24	5.2GHz	65W	36MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'23)
i7-13700TE	16	4.8GHz	35W	30MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'23)
i7-13700E	16	5.1GHz	65W	30MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'23)
i5-13500TE	14	4.5GHz	35W	24MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'23)
i5-13500E	14	4.6GHz	65W	24MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'23)
i5-13400E	10	4.6GHz	65W	10MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'23)
i3-13100TE	4	4.1GHz	35W	12MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'23)
i3-13100E	4	4.4GHz	65W	12MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'23)

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Processor	Core number	Speed @ Turbo (Max.)	TDP	L3 Cache	Compatible IBASE M/B, Mini-ITX, CPU Card Models	Use Condition Embedded
i9-14901TE	8	5.5GHz	45W	36MB	MBB-1000/MB998/MI1000/IB996	10 years (Q3'24)
i9-14901E	8	5.6GHz	65W	36MB	MBB-1000/MB998/MI1000/IB996	10 years (Q3'24)
i9-14900T	24	5.5GHz	35W	36MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'24)
i9-14900	24	5.8GHz	65W	36MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'24)
i7-14701TE	8	5.2GHz	45W	33MB	MBB-1000/MB998/MI1000/IB996	10 years (Q3'24)
i7-14701E	8	5.4GHz	65W	33MB	MBB-1000/MB998/MI1000/IB996	10 years (Q3'24)
i7-14700T	20	5.2GHz	35W	33MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'24)
i7-14700	20	5.4GHz	65W	33MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'24)
i5-14501TE	6	5.1GHz	45W	24MB	MBB-1000/MB998/MI1000/IB996	10 years (Q3'24)
i5-14501E	6	5.2GHz	65W	24MB	MBB-1000/MB998/MI1000/IB996	10 years (Q3'24)
i5-14500T	14	4.8GHz	35W	24MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'24)
i5-14500	14	5GHz	65W	24MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'24)
i5-14401TE	6	4.5GHz	45W	24MB	MBB-1000/MB998/MI1000/IB996	10 years (Q3'24)
i5-14401E	6	4.7GHz	65W	24MB	MBB-1000/MB998/MI1000/IB996	10 years (Q3'24)
i5-14400T	10	4.5GHz	35W	20MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'24)
i5-14400	10	4.7GHz	65W	20MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'24)
i3-14100T	4	4.4GHz	35W	12MB	MBB-1000/MB998/MI1000/MI1001/IB996	10 years (Q1'24)
i3-14100	4	4.7GHz	60W	12MB	MBB-1000/MB998/MI1000/IB996	10 years (Q1'24)
300T	2	3.4GHz	35W	6MB	MBB-1000/MB998/MI1000/MI1001/IB996	N/A (Q1'24)
300	2	3.9GHz	46W	6MB	MBB-1000/MB998/MI1000/IB996	N/A (Q1'24)

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Processor	Core# (P+E)	Speed @ Turbo (Max.)	TDP	Cache	Compatible IBASE M/B, Mini-ITX, CPU Card Models	Use Condition Embedded
Ultra 9-285T	24 (8+16)	5.4GHz	35W	36MB	MBB1005	5 years (Q1'25)
Ultra 9-285	24 (8+16)	5.6GHz	65W	36MB	MBB1005	5 years (Q1'25)
Ultra 7-265T	20 (8+12)	5.3GHz	35W	30MB	MBB1005	5 years (Q1'25)
Ultra 7-265	20 (8+12)	5.3GHz	65W	30MB	MBB1005	5 years (Q1'25)
Ultra 5-245T	14 (6+8)	5.1GHz	35W	24MB	MBB1005	5 years (Q1'25)
Ultra 5-245	14 (6+8)	5.1GHz	65W	24MB	MBB1005	5 years (Q1'25)
Ultra 5-235T	14 (6+8)	5.0GHz	35W	24MB	MBB1005	5 years (Q1'25)
Ultra 5-235	14 (6+8)	5.0GHz	65W	24MB	MBB1005	5 years (Q1'25)
Ultra 5-225T	10 (6+4)	4.9GHz	35W	20MB	MBB1005	5 years (Q1'25)
Ultra 5-225	10 (6+4)	4.9GHz	65W	20MB	MBB1005	5 years (Q1'25)

Processor	Core number	Speed @ Turbo (Max.)	TDP	Smart Cache	Compatible IBASE M/B, Mini-ITX, CPU Card Models	Use Condition Embedded
Xeon® W-1250E	6	3.50 GHz ~ 4.70 GHz	80W	12 MB	MI999	Yes (15 years)
Xeon® W-1250TE	6	2.40 GHz ~ 3.80 GHz	35W	12 MB	MI999	Yes (15 years)
Xeon® W1270TE	8	2.00 GHz ~ 4.40 GHz	35W	16 MB	MI999	Yes (15 years)
i9-10900E	10	1.80 GHz ~ 4.40 GHz	65W	20MB	MI999	Yes (15 years)
i9-10900TE	10	2.80 GHz ~ 4.70 GHz	35W	20 MB	MI999	Yes (15 years)
i7-10700E	8	1.80 GHz ~ 4.50 GHz	65W	20 MB	MI999	Yes (15 years)
i7-10700TE	8	2.90 GHz ~ 4.50 GHz	35W	16 MB	MI999	Yes (15 years)
i5-10500E	6	2.00 GHz ~4.40 GHz	65W	16 MB	MI999	Yes (15 years)
i5-10500TE	6	3.10 GHz ~ 4.20 GHz	35W	12 MB	MI999	Yes (15 years)
i3-10100E	4	2.30 GHz ~ 3.70 GHz	65W	12 MB	MI999	Yes (15 years)
i3-10100TE	4	3.20 GHz ~ 3.80 GHz	35W	6 MB	MI999	Yes (15 years)
Pentium Gold G6400E	2	2.30 GHz ~ 3.60 GHz	58W	6 MB	MI999	Yes (15 years)
Pentium Gold G6400TE	2	3.80GHz	35W	4MB	MI999	Yes (15 years)
Celeron G5900E	2	3.20GHz	58W	4MB	MI999	Yes (15 years)
Celeron G5900TE	2	3.20GHz	35W	2MB	MI999	Yes (15 years)

Comparison Table

ATX Motherboard

Models	PI800	MBB1005	MBB1002	MBB1001
Form Factor	PICO ITX (2.5")	ATX	eATX	ATX
CPU Socket	CPU onboard	LGA1851	AMD SP6	AMD AM5
CPU	Intel® Atom® Processor x7835RE (8-Core)	Intel® Core™ Ultra 200S series DT CPU	EPYC embedded 8004 series	Ryzen™ embedded 7000 series
CPU Max. Frequency	Up to 3.6GHz	Up to 5.6GHz	Up to 3.15 GHz	Up to 3.8GHz
PCH	N/A	Intel® Q870 PCH	AMD SP6 LGA 4844	AMD B665
Memory	1x DDR5 SO-DIMM	4x DDR5 DIMM	6x DDR5 DIMM	4x DDR5 DIMM
Max. Memory Size	16GB	192GB	96 GB	128GB
BIOS	AMI	AMI	AMI	AMI
Graphics Controller	Intel® Gen UHD Graphics	Intel® Core™ Ultra 200S series DT processors integrated	N/A	Navi2 Integrated Graphics
Video Output	HDMI (2.0b)/ DisplayPort (1.2a) on board	HDMI (2.0b)/ 3 x DisplayPort (1.4) on board	N/A	1x HDMI 2.1/1x DP 2.0/ 1x DVI-D on board
Ethernet	2x Realtek RTL-8125BI 2.5G LAN	Intel® I226LM 2.5G LAN Intel® I226V 2.5G LAN	2x Intel® X710-AT2 (Dual 10GbE port)	2x Intel I226-V
Audio	N/A	Built-in ALC888S HD audio codec	N/A	Built-in ALC888S HD audio codec
SATA	1x SATA III port	4x SATA III ports	4x SATA III ports	4x SATA III ports
I/O Chipset	F81804U-I	F81964D-I	TBD	F81956D-I
Parallel Port	N/A	N/A	N/A	N/A
Serial Port	2x RS232/422/485 (Jumper-less selection)	2x RS232 2x RS232/422/485 (Jumper-less selection)	1x External serial port (RS232)	1x Dual DB9 stack connector for COM #1 (RS232/422/485) (Jumper-less selection) COM #2 (RS232) 4x COM Port Header (RS232)
USB 2.0	2x USB 2.0	2x USB 2.0	TBD	2x USB 2.0 via pin header 2x USB 2.0 type A vertical connector)
USB 3.X	4x USB 3.2 (10Gbps)	3x USB 3.2 (10Gbps) 2x USB 3.1 (5Gbps)	2x (USB 3.2 Gen1) with PDPC	4x USB 3.2 Gen 2 2x USB 3.2 Gen1 (with PDPC support)
TPM	2.0	2.0	2.0	2.0
KB / MS	N/A	N/A	N/A	N/A
Hardware Monitor	Yes	Yes	Yes	Yes
Storage Device Interface	1x M.2 (M2242)	NVMe	NVMe: 1x 2280 (by PCI-E Gen.5 interface) NVMe: 2x M.2 x4 (Test by Gen.5 SSD)	NVMe
Watchdog Timer	256 levels	256 levels	256 levels	256 levels
Digital I/O	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out
Expansion Slots	N/A	1x PCI-E (x16)(Gen5.0), 2x PCI-E (x4)(Gen4.0), 1x PCI-E(x1)(Gen3.0), 2x PCI	1x PCI-E (x16)_SLOT1 (Gen4) 1x PCI-E (x16)_SLOT3 (Gen4) 1x PCI-E (x16)_SLOT5 (Gen5), CXL support 1x PCI-E (x16)_SLOT6 (Gen5), CXL support 1x PCI-E (x16)_SLOT7 (Gen5), CXL support	1x PCI-E (x16) support (Gen5) 1x PCI-E (x4) support (Gen5) 1x PCI-E (x4) support (Gen4) 1x PCI-E (x1) support (Gen3) 1x PCI
Mini Type Slots	2x M.2 (E-Key/ M-Key)	4x M.2 (B-Key, E-Key/2x M-Key)	1x M.2 2280	2x M.2 2280 (PCI-E x2 gen 4, supports NVMe) supports RAID 0, 1 / UEFI and Windows 10 x64 Only (9.2 based driver)
Power input	DC-in 12V	ATX type	ATX type	ATX type
Power Consumption	TBD	TBD	TBD	MBB1001-7645 / 7745 / 7945: AMD Ryzen™ 5 PRO 7645 3.8GHz AMD Ryzen™ 7 PRO 7745 3.8GHz AMD Ryzen™ 9 PRO 7945 3.7GHz w/ 1x 8GB DDR5-5200 UDIMM +12V: ~6.5A / +12V: ~7.0A / +12V: ~7.5A
Dimensions (L x W)	100mm x 72mm	305mm x 244mm	305 x 330 mm	305mm x 244mm
Extra Features	LAN Wakeup, PDPC	Built-in iAMT (19.0), iSMART(4.0), LAN Wakeup, RAID, PDPC	LAN Wakeup PDPC	LAN Wakeup, RAID
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Single Board Computers

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CPU Modules

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Motherboards

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CPU Cards

Comparison Table

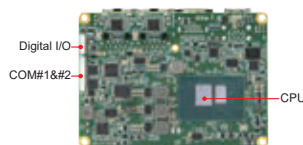
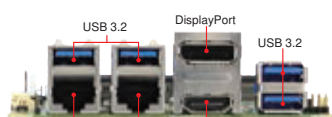
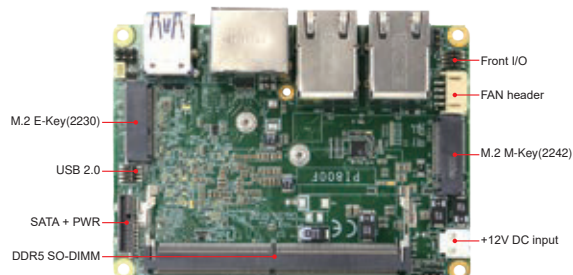
ATX Motherboard

Models	MB8-1000	MB997	MB995	MB998
Form Factor	ATX	ATX	ATX	Micro ATX
CPU Socket	LGA1700	LGA1151	LGA1151	LGA1700
CPU	14th/13th/12th Gen Intel® Core™ i9/ i7/i5/i3/ Pentium® Gold/ Celeron® DT CPU	9th/8th Gen Intel® Core™ i7/i5/i3/ Pentium® / Celeron® DT CPU	8th Gen Intel® Xeon® E/ Core™ i7/i5/i3 DT processors	14th/13th/12th Gen Intel® Core™ i9/ i7/i5/i3/ Pentium® Gold/ Celeron® DT CPU
CPU Max. Frequency	Up to 5.6GHz	Up to 4.7GHz	Up to 4.7GHz	Up to 5.6GHz
PCH	Intel® R680E / Q670E PCH	Intel® C246 / Q370 / H310 PCH	Intel® C246 / Q370 PCH	Intel® R680E / Q670E / W680 PCH
Memory	4x DDR4 DIMM	4x DDR4 DIMM	4x DDR4 DIMM	2x DDR5 DIMM
Max. Memory Size	128GB	64GB	64GB	64GB
BIOS	AMI	AMI	AMI	AMI
Graphics Controller	13th Gen Intel® Core™ i9/i7/i5/i3 processors integrated	9th Gen Intel® Xeon® E/ Core™ i7/i5/i3 processors integrated	8th Gen Intel® Xeon® E/ Core™ i7/i5/i3 processors integrated	13th Gen Intel® Core™ i9/i7/i5/i3 processor integrated
Video Output	HDMI (2.0b)/ DisplayPort (1.4a)/ DVI-D on board	HDMI (2.0a)/ DisplayPort/ DVI-D on board	HDMI(2.0a)/ DisplayPort/ DVI-D on board	1x HDMI (2.0b) + 2x DisplayPort (1.4b) (DP++) + DVI-D
Ethernet	Intel® I225LM 2.5G LAN Intel® I225V 2.5G LAN	LAN 1: Intel® I219V GbE PHY for MB997EF; Intel® I219LM GbE PHY for MB997AF/ MB997AF-10G LAN 2: Intel® I210AT GbE	Intel® I219LM GbE PHY Intel® I210AT GbE as 2nd LAN	Intel® I226LM, supports 2.5G and iAMT Intel® I226V, supports 2.5G only
Audio	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec
SATA	4x SATA III ports	4x SATA III ports	6x SATA III ports (MB995VF-C246) 4x SATA III ports (MB995VF)	4x SATA III ports
I/O Chipset	F81966D-I	NC T6686D-T	F81966D-I	F81964D-I
Parallel Port	N/A	N/A	N/A	N/A
Serial Port	2x RS232 2x RS232/422/485 (jumper-less selection)	4x RS232 2x RS232/422/485 (jumper-less selection)	4x RS232 2x RS232/422/485 (jumper-less selection)	2x RS232 2x RS232/422/485 (jumper-less selection)
USB 2.0	2x USB 2.0	N/A	N/A	2x USB 2.0
USB 3.X	4x USB 3.1 Gen2 (10Gbps) 4x USB 3.1 Gen1 (5Gbps)	4x USB 3.1 Gen2 (10Gbps) 5x USB 3.1 Gen1 (5Gbps)	4x USB 3.1 5x USB 3.0	4x USB 3.2(10Gbps) 2x USB 3.1(5Gbps)
TPM	2.0	2.0	2.0	2.0
KB / MS	N/A	N/A	box header	N/A
Hardware Monitor	Yes	Yes	Yes	Yes
Storage Device Interface	NVMe	NVMe	NVMe	NVMe
Watchdog Timer	256 levels	256 levels	256 levels	256 levels
Digital I/O	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out
Expansion Slots	1x PCI-E (x16)(Gen5.0), 2x PCI-E (x4), 1x PCI-E(x1)(Gen3.0), 2x PCI	1x PCI-E (x16), 1x PCI-E (x4), 1x PCI-E (x1), 2x PCI	1x PCI-E (x16), 1x PCI-E (x4), 1x PCI-E (x1), 3x PCI	1x PCI-E (x16) [Gen.5.0], 1x PCI-E (x4) [Gen.4.0], 1x PCI-E (x4) [Gen.3.0]
Mini Type Slots	4x M.2 (B-Key, E-Key/ 2x M-Key)	1x MiniPCI-E, 2x M.2 (E/ M-Key)	1x MiniPCI-E, 2x M.2 (E/ M-Key)	2x M.2 (M-Key, 2280) 1x M.2 (E-Key, 2230) 1x M.2 (B-Key, 3052)
Power input	ATX type	ATX type	ATX type	ATX type
Power Consumption	Intel® Core™ i7-13700 2.10GHz w/ 4x 16GB DDR4 3200 DIMM Innodisk M4U0-AGS1KCEM-A35 + 12V:20.26A	Intel® Core™ i7-9700K, 3.6GHz w/ 4x 4GB DDR4-2400 + 12V: 12.64A + 5V: 1.19A + 5VSB: 0.132A + 3.3V: 0.88A	Intel® Core™ i7-8700 3.4GHz w/ 4x 4GB DDR4-2400 + 12V: 5.56A + 5V: 1.65A + 5VSB: 0.25A + 3.3V: 0.65A	Intel® Core™ i7-13700 2.10GHz w/ 2x 32GB DDR5 5600 + 12V:20.09A + 5V:8.76A + 3.3V:4.73A + 5VSB:0.78A
Dimensions (L x W)	305mm x 244mm	305mm x 244mm	305mm x 244mm	244mm x 244mm
Extra Features	Built-in iAMT (16.0), LAN Wakeup, RAID	Built-in iAMT (11.6), LAN Wakeup, iSMART, TPM (2.0), RAID	Built-in iAMT (11.6), LAN Wakeup, iSMART, TPM (2.0), vPro, RAID	Built-in iAMT (16.1), LAN Wakeup, RAID
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- 2 CPU Modules
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Preliminary



PI800 Board with heatsink

Features

- Onboard Intel® Atom® x7000RE Series Processors
- 1x DDR5-4800 SO-DIMM, Max. 16GB
- supports HDMI (2.0b) and DisplayPort (1.2a)
- 2x RTL-8125BI PCI-E 2.5G LAN, 2x COM (RS232/422/485)
- 4x USB 3.2 (Type-A), 2x USB 2.0, 1x SATA III
- 2x M.2 sockets (M2242 [SATA + PCI-E] + E2230 [USB + PCI-E])
- Watchdog timer, Digital I/O, TPM (2.0), +12V DC input only
- PCB dimensions: 100mm x 72mm

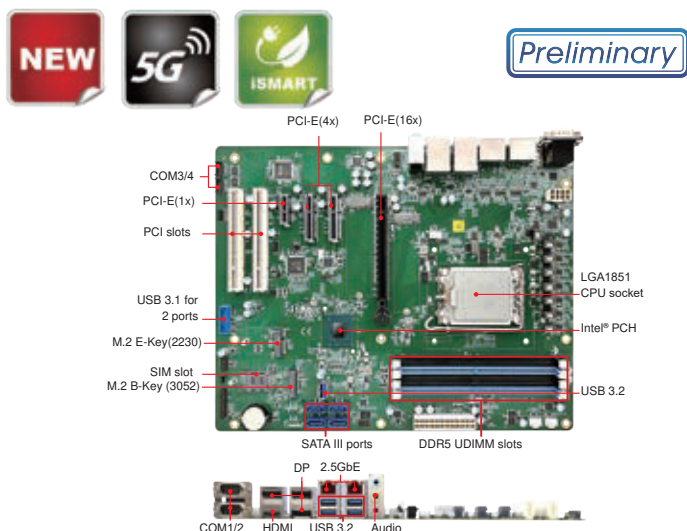
Specifications

CPU	Intel® Atom® 8-Core x7835RE SoC
PCH	N/A
Memory	1x DDR5-4800 MHz, Max. 16GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x M.2 M-Key 2242 (SATA)
Expansion Slots	1x M.2 (M2242), 1x M.2 (E2230)
Mini Type Slots	1x M.2 (M-Key, type:2242, supports SATA & PCI-E(x1) signal) 1x M.2 (E-Key, type: 2230, supports USB 2.0 & PCI-E(x1) signal)
Graphics Controller	Intel® SoC integrated graphics
Video Output	1x HDMI (2.0b) 1x DisplayPort 1.2a (DP++)
Ethernet	2x Realtek RTL-8125BI PCI-E 2.5GbE LAN ports
I/O Chipset	Fintek F81804U-I
Serial Port	2x RS232/422/485
USB 2.0	2x USB 2.0 via pin header
USB 3.X	4x USB 3.1 Gen2 (10Gbps)
Serial ATA	1x SATA 3.0
Audio	N/A
TPM	TPM (2.0)
Others	Digital I/O (4-in/4-out)
Dimensions (L x W)	100mm x 72mm (3.94" x 2.84")
Power Consumption	TBD
Operating Temperature	-40°C ~ +70°C (-40°F ~ +158°F)

Storage Temperature	-40°C ~ +80°C (-4°F ~ +176°F)
Relative Humidity	95% (non-condensing @60°C)

Ordering Information

PI800F-7835RE	Intel® Atom® x7835RE SoC onboard PICO-ITX board, w/ dual 2.5Gb, HDMI + DP, 2x COM, 2x M.2, TPM, single +12V DC-in
HSPI800-A	Heatsink with fan for PI800



Features

- Intel® LGA1851 Core™ Ultra 9/7/5 200S Series Processors, up to 65W
- 4x DDR5 U-DIMM sockets, Max. 192GB
- Intel® Core™ Ultra 200S processor integrated graphic supports HDMI(2.0b) and 3x DisplayPort(1.4a) (DP++)
- LAN 1: Intel® I226LM, supports 2.5G and iAMT
LAN 2: Intel® I226V, supports 2.5G only
- 7x USB 3.2, 2x USB 2.0, 4x COM, 4x SATA III
- 1x PCI-E (x16) [Gen.5.0]; 2x PCI-E(x4) [Gen.4.0] ; 1x PCI-E(x1) [Gen.4.0]; 2x PCI
- 4x M.2, including E-Key (2230), B-Key (3052) and 2x M-Key (2280)
- Watchdog timer, Digital I/O, iAMT(19.0) , fTPM(2.0)

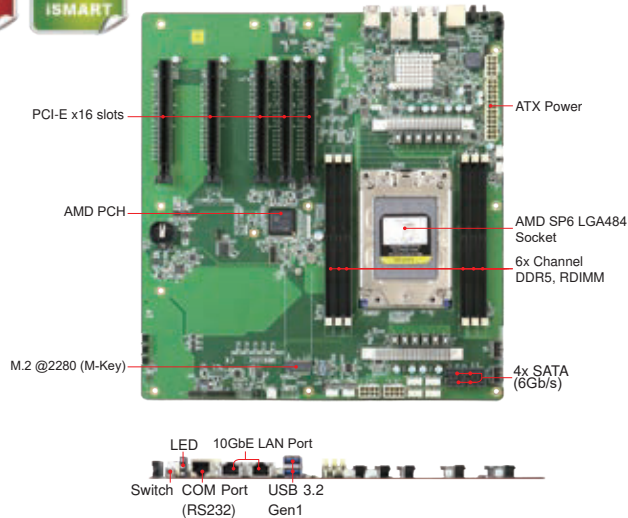
Specifications

CPU Socket	LGA1851
CPU	Intel® LGA1851 Core™ Ultra 200S Series DT Processors (Arrow Lake-S)
PCH	Q870
Memory	4x DDR5 U-DIMM sockets, Up to DDR5 -5600 memory module, Max. 192GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	SATA III & NVMe
Expansion Slots	1x PCI-E (x16) [Gen 5.0] 2x PCI-E(x4) 1x PCI-E(x1) 2x PCI
Mini Type Slots	2x M.2 (M-Key, type:2280, PCI-E(4x)) 1x M.2 (E-Key, type:2230, USB 2.0 + PCI-E(1x)) 1x M.2 (B-Key, type:3052, USB 3.2 + PCI-E(1x))
Graphics Controller	Intel® LGA1851 Core™ Ultra 200S Series DT processor integrated graphics
Video Output	1x HDMI (2.0b) + 3x DisplayPort (1.4a) (DP++)
Ethernet	LAN 1: Intel® I226LM, Support 2.5G and iAMT LAN 2: Intel® I226V, support 2.5G only
I/O Chipset	Fintek F81964D-I
Serial Port	4x COM ports: 2x RS232/422/485 + 2x RS232
USB 2.0	2x USB 2.0 via pin-headers
USB 3.X	6x USB3.2 (10G bps) @ edge connector, 1x USB3.2 (10G bps) @ onboard Type-A connector
Serial ATA	4x SATA III
Audio	Built-in HD Audio controller + Realtek ALC888S w/ 7.1 channels
TPM	Support fTPM

Others	Digital I/O (4-in/4-out), Watchdog timer PDPC, iSMART(4.0)
Dimensions (L x W)	305mm x 244mm (12"x 9.6")
Power Consumption	TBD
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MBB1005AF-Q	LGA1851 Q870 ATX Motherboard w /HDMI, 2x DisplayPort, 2x 2.5GbE, 4x SATA, RAID, iAMT (19.0), fTPM (2.0), iSMART(4.0)
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Features

- AMD EPYC Embedded 8004 series CPU
- 6x DDR5 4800 up to 576GB ECC support
- 5x PCI-E x16 slots
- 2x (USB 3.2 Gen1) with PDPC Support
- 4x SATA 6Gb/s
- 1x PCI-E Gen5 22110/ 2280, 2x MCIO x4
- 2x Intel® X710-AT2 (Dual 10GbE port)

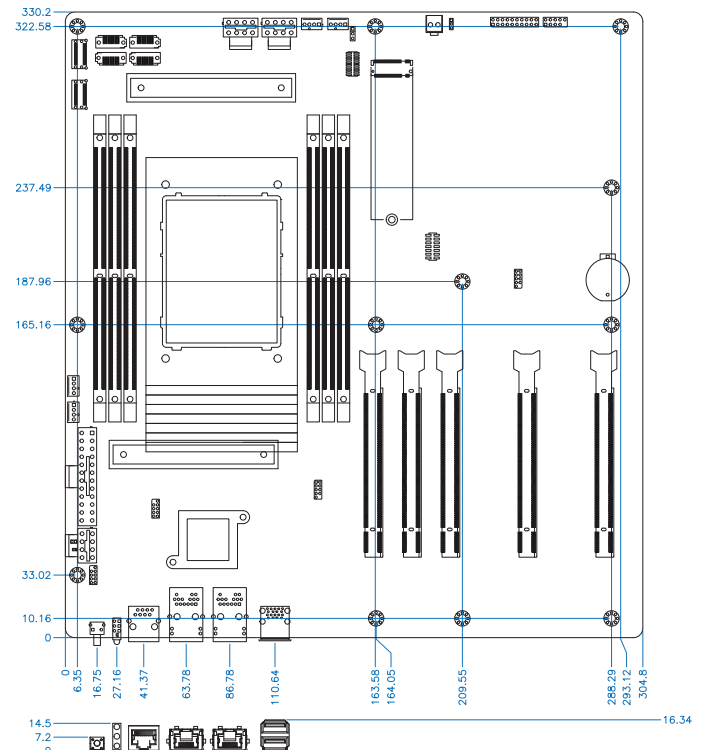
Specifications

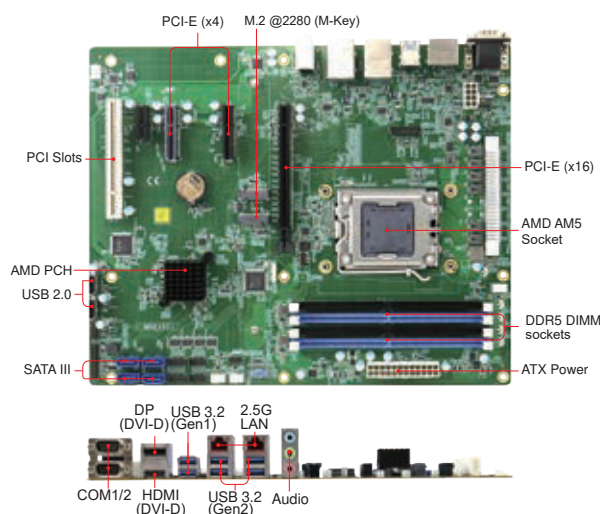
CPU Socket	AMD SP6 LGA 4844 (EPYC SP6 processors)
CPU	AMD EPYC Embedded 8004 series
PCH	AMD PCH
Memory	Six-Channel DDR5 4800, 6 slots RDIMM, Max. 576GB, supports ECC 3600/4000/4400/4800MHz, 16GB, 32GB, 64GB, 96GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	4x SATA(6Gb/s) NVMe: 1x 2280 (by PCIe Gen.5 interface) NVMe: 2x MCIO x4 (Test by Gen.5 SSD)
Expansion Slots	5x PCI-E(x16) (Gen5.0), 5x PCI-E(x16)(Gen5.0)
Mini Type Slots	N/A
Graphics Controller	N/A
Video Output	N/A
Ethernet	2x Intel® X710-AT2 (Dual 10GbE port)
I/O Chipset	TBD
Serial Port	1x External serial port (RS232)
USB 2.0	TBD
USB 3.X	2x (USB 3.2 Gen1) with PDPC
Serial ATA	4x SATA (6Gb/s)
Audio	N/A
TPM	TPM 2.0
Others	1x 24-pin SSI power connector 3x 8-pin SSI 12V power connector 4x Fan header 4-pin (3 for system + 1 for CPU) 1x SMBus 3x LED (Power+HDD+Status refer to Genoa) 1x RTC battery on board
Dimensions (L x W)	eATX (30.4 cm x 24.4 cm)
Power Consumption	TBD
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	0%~90% (non-condensing @60°C)

Ordering Information

MBB1002	AMD EPYC Embedded 8004 series eATX Motherboard w/o CPU, memory, storage, supports EEC
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Dimensions and Drawing





Features

- AMD Ryzen™ Embedded 7000 Processors with B650 chipset
- Dual-Channel DDR5 5200, UDIMM 4 slots, Max. up to 128GB supports ECC
- Triple display DP/HDMI/DVI-D and Dual GbE LAN
- 1x PCI-E x16 support (Gen5) / 1x PCI-E x4 support (Gen5) / 1x PCI-E x4 support (Gen4) / 1x PCI-E x1 support (Gen3) / 1x PCI
- 2x M.2 2280 (PCI-E x2 Gen 4, supports NVMe) support RAID 0, 1

Specifications

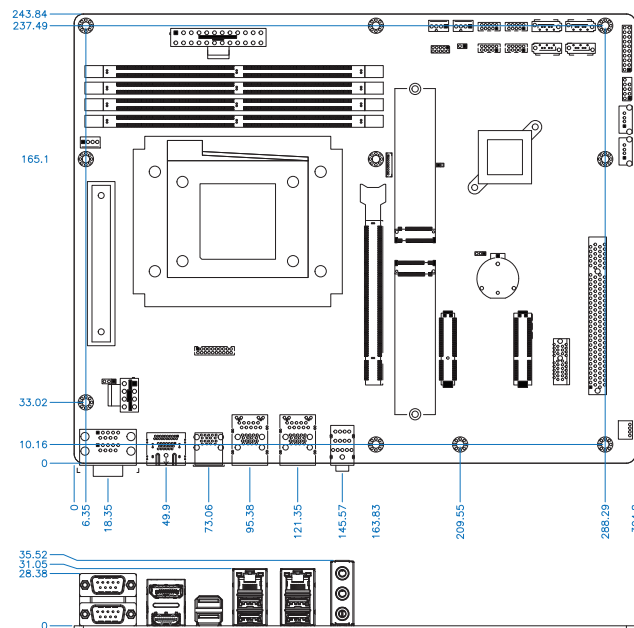
CPU Socket	LGA1718
CPU	AMD Ryzen™ Embedded 7000 series
PCH	B650
Memory	Dual-Channel DDR5 5200, UDIMM 4 slots, Max. 128GB ECC support
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	NVMe
Expansion Slots	1x PCI-E x16 (Gen5) / 1x PCI-E x4 (Gen5) 1x PCI-E x4 (Gen4) / 1x PCI-E x1 (Gen3) / 1x PCI
Display Interface	1x HDMI 2.1 1x DP 2.0 1x DVI-D
Mini Type Slots	N/A
Graphics Controller	N/A
Video Output	N/A
Ethernet	2x Gigabit LAN / Intel I226-V
Serial Port	1x Dual DB9 stack connector for - COM #1 (RS232/422/485) (jumper-less selection) - COM #2 (RS232) 4x COM Port Header (RS232)
USB 2.0	2x USB 2.0 via pin header, 2x USB 2.0 type A vertical connector
USB 3.X	4x USB 3.2 Gen 2, + 2 x USB 3.2 Gen1 With PDPC support
Serial ATA	4x SATA 6Gb/s SUPPORT RAID 0, 1, 10 / UEFI and Windows 10 x64 Only (9.2 based driver)
Audio	1x Triplet type jack 3 x 1 for HD audio port [Line-in / Line-out / Mic-in] Realtek ALC888S for 5.1 channel.
TPM	N/A
Others	Digital I/O (4-in/4-out)
Dimensions (L x W)	305mm x 244mm (12" x 9.6")
Power Consumption	MBB1001-7645 / 7745 / 7945: AMD Ryzen™ 5 PRO 7645 3.8GHz AMD Ryzen™ 7 PRO 7745 3.8GHz AMD Ryzen™ 9 PRO 7945 3.7GHz w/ 1x 8GB DDR5-5200 UDIMM +12V: ~6.5A / +12V: ~7.0A / +12V: ~7.5A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	20°C~80°C (-4°F~176°F)
Relative Humidity	95% (non-condensing @60°C)

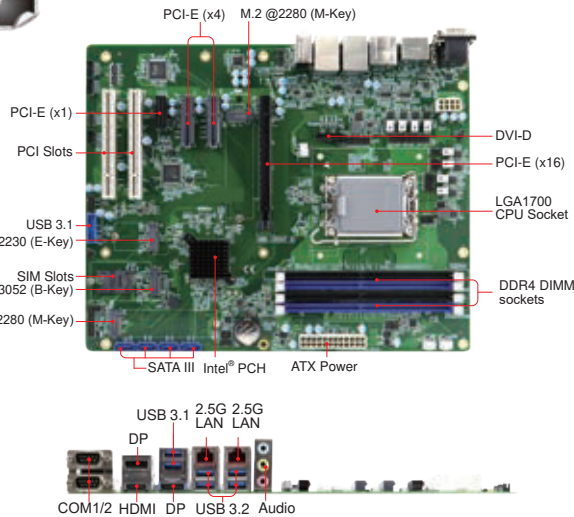
Ordering Information

MBB1001	AMD Ryzen™ Embedded 7000 series ATX Motherboard w/ HDMI, DisplayPort, DVI-D, Dual Giga-LAN, RAID, TPM (2.0), supports ECC
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*Specifications are subject to change without prior notice

Dimensions and Drawing





Features

- 14th/13th/12th Gen Intel® Core™ i9/i7/i5/i3 / Pentium® / Celeron® processors
- 4x DDR4 DIMM, Max. 128GB
- Intel® processor integrated graphics supports HDMI (2.0b), DVI-D, and DisplayPort (1.4) (DP++)
- Dual Intel® 2.5G LAN
- 8x USB 3.1, 2x USB 2.0, 4x SATA 3.0, 4x COM
- 1x PCI-E(x16) (Gen5.0), 2x PCI-E(x4) (Gen4.0), 1x PCI-E(x1) (Gen3.0), 2x PCI
- 4x M.2 (B-Key, E-Key/ 2x M-Key)
- Watchdog timer, Digital I/O, iAMT (16.1), TPM (2.0)

Specifications

CPU Socket	LGA1700
CPU	14th/13th/12th Gen Intel® Core™ i9/i7/i5/i3 and Pentium®/ Celeron® processors
PCH	MBB-1000AF-R: Intel® R680E PCH MBB-1000AF-Q: Intel® Q670E PCH
Memory	4x DDR4-3200 MHz, Max. 128GB (Supports ECC by CPU SKUs + PCH R680E)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	NVMe
Expansion Slots	1x PCI-E(x16) (Gen5.0), 2x PCI-E(x4) (Gen4.0), 1x PCI-E(x1) (Gen3.0), 2x PCI
Mini Type Slots	1x M.2 (M-Key, type:2280, supports NVMe with PCI-E(x4) signal only) 1x M.2 (M-Key, type:2280) 1x M.2 (E-Key, type: 2230, supports CNVi) 1x M.2 (B-Key, type:3052, supports 4G/5G/LTE)
Graphics Controller	12th Gen Intel® Core™ i9/i7/i5/i3 processors integrated
Video Output	1x HDMI (2.0b), 1x DVI-D, 2x DisplayPort (1.4a) (DP++)
Ethernet	Intel® I226LM 2.5GbE Intel® I226V 2.5GbE
I/O Chipset	Fintek F81964D-I
Serial Port	2x RS232, 2x RS232/422/485
USB 2.0	2x USB 2.0 via pin header
USB 3.0	4x USB 3.1 Gen2 (10Gbps), 2x USB 3.1 Gen1 (5Gbps), 2x USB 3.1 Gen1 (via box-header)
Serial ATA	4x SATA 3.0
Audio	Intel® R680E/ Q670E PCH-H built-in HD audio + Realtek ALC888S codec
TPM	TPM (2.0)
Others	Digital I/O (4-in/4-out), iAMT (16.1), RAID
Dimensions (L x W)	305mm x 244mm (12" x 9.6")
Power Consumption	Intel® Core™ i7-13700 2.10GHz w/ 4x 16GB DDR4 3200 DIMM Innodisk M4U0-AGS1KCEM-A35 + 12V:20.26A

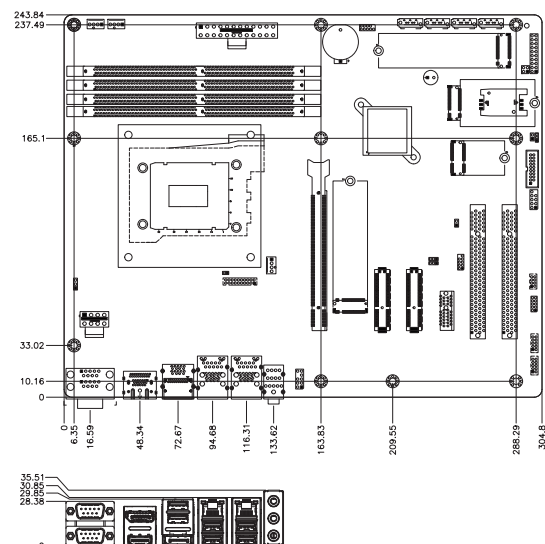
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	95% (non-condensing @60°C)

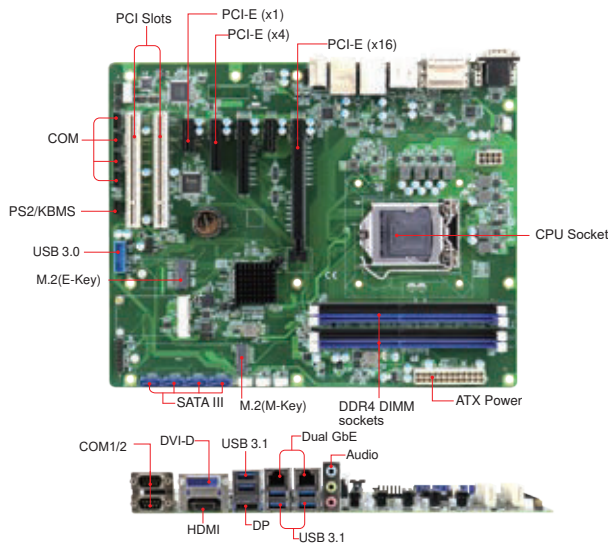
Ordering Information

MBB-1000AF-R	LGA1700 R680E ATX Motherboard w/ HDMI, DisplayPort, DVI-D, Dual 2.5G LAN, RAID, iAMT (16.0), TPM (2.0), supports ECC
MBB-1000AF-Q	LGA1700 Q670E ATX Motherboard w/ HDMI, DisplayPort, DVI-D, Dual 2.5G LAN, RAID, iAMT (16.0), TPM (2.0)

*CPU List can refer to P.3-1 & P.3-2

Dimensions and Drawing





Features

- 9th Gen Intel® Xeon® E/ Core™ i7/i5/i3 processors
- 4x DDR4 DIMM, Max.128GB
- Intel® processor integrated graphics supports HDMI(2.0a), DVI-D, and DisplayPort
- Dual Intel® Gigabit LAN
- 6x USB 3.1, 2x USB 2.0, 4x SATA 3.0, 6x COM
- 1x PCI-E(x16), 1x PCI-E(x8)(Gen3.0), 1x PCI-E(x4), 2x PCI-E(x1), 2x PCI
- Watchdog timer, Digital I/O, iAMT (11.6), TPM(2.0), iSMART (4.0)

Specifications

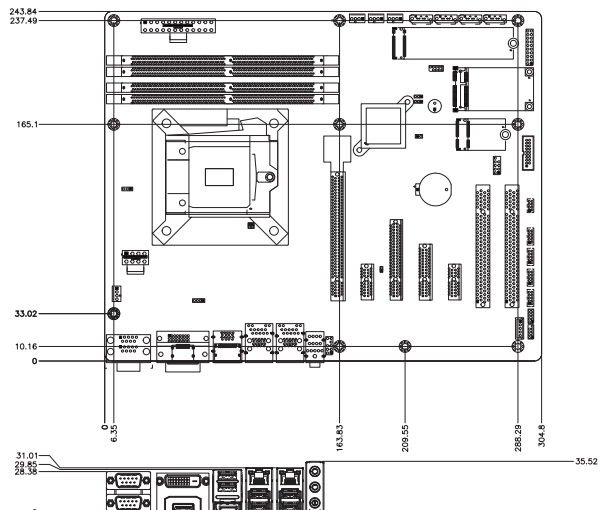
CPU Socket	LGA1151
CPU	9th Gen Intel® Xeon® E/ Core™ i7/i5/i3 HC/QC/DC processors, up to 5.0GHz
PCH	MB997AF-C246: Intel® C246 PCH MB997AF: Intel® Q370 PCH MB997EF: Intel® H310 PCH
Memory	4x DDR4-2666 / 2400 MHz, Max. 128GB (Supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	NVMe
Expansion Slots	MB997AFS-C246/ MB997AFS: 1x PCI-E (x16), 1x PCI-E(x8), 1x PCI-E(x4), 2x PCI-E (x1), 2x PCI MB997EFS: 1x PCI-E (x16), 2x PCI-E (x1), 2x PCI
Mini Type Slots	1x MiniPCI-E, 1x M.2 (M-Key, type:M2280), 1x M.2 (E-Key, type: E2230)
Graphics Controller	9th Gen Intel® Core™ i7/i5/i3 processors integrated
Video Output	1x HDMI2.0a, 1x DVI-D, 1x DisplayPort (1.2)(DP++)
Ethernet	LAN 1: MB997AF-C246/MB997AF: Intel® I219LM GbE PHY MB997EF: Intel® I219V GbE PHY LAN 2: MB997AF-C246: Intel® I210AT GbE MB997AF/ EF: Intel® I211AT or I210AT GbE
I/O Chipset	Nuvoton NC T6686D-T
Serial Port	4x RS232, 2x RS232/422/485
USB 2.0	2x USB 2.0 via pin header
USB 3.X	MB997AF-C246/MB997AF: 4x USB 3.1 Gen2 (10Gbps), 2x USB 3.1 Gen1 (5Gbps), 2x USB 3.1 Gen1 (5Gbps) via box-header MB997EF: 4x USB 3.1 Gen2 (10Gbps)
Serial ATA	4x SATA 3.0
Audio	Intel® CNL PCH-H built-in HD audio + Realtek ALC888S codec
TPM	TPM (2.0)
Others	Digital I/O(4-in/4-out), iAMT (11.6), RAID, iSMART (4.0), EuP/ErP

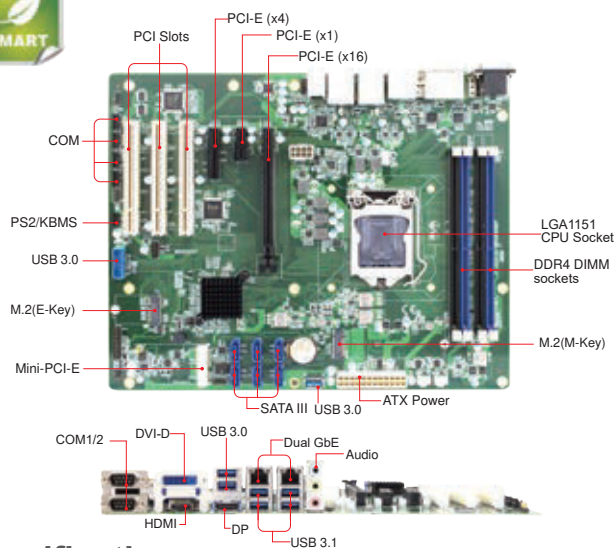
Dimensions (L x W)	305mm x 244mm (12" x 9.6")
Power Consumption	Intel® Core™ i7-9700K, 3.6GHz w/ 4x 4GB DDR4-2400 +12V: 12.64A +5V: 1.19A +5VSB: 0.132A +3.3V: 0.88A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	95% (non-condensing @60°C)

Ordering Information

MB997AFS-C246	LGA1151 C246 ATX Motherboard w/ HDMI, DisplayPort, DVI-D, dual Gigabit LAN, RAID, iAMT (11.6), TPM (2.0), iSMART (4.0)
MB997AFS	LGA1151 Q370 ATX Motherboard w/ HDMI, DisplayPort, DVI-D, dual Gigabit LAN, RAID, iAMT (11.6), TPM (2.0), iSMART (4.0)
MB997EFS	LGA1151 H310 ATX Motherboard w/ HDMI, DisplayPort, DVI-D, dual Gigabit LAN, TPM (2.0), EuP/ErP

Dimensions and Drawing





Specifications

CPU Socket	LGA1151
CPU	8th Gen Intel® Xeon® E / Core™ i7/i5/i3 HC/QC/DC processors, up to 4.7GHz
PCH	MB995VF-C246: Intel® C246 PCH MB995VF: Intel® Q370 PCH
Memory	4x DDR4-2666/ 2400 DIMM, Max. 64GB (supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	mSATA , NVMe
Expansion Slots	1x PCI-E (x16), 1x PCI-E (x4), 1x PCI-E (x1)
Mini Type Slots	3x PCI, 1x MiniPCI-E, 1x M.2 (M-Key, type:2280) 1x M.2 (E-Key, type:2230)
Graphics Controller	8th Gen Intel® Core™ i7/i5/i3 processors integrated
Video Output	1x HDMI (2.0a), 1x DisplayPort (1.2)(DP++), 1x DVI-D
Ethernet	LAN 1: Intel® I219LM GbE PHY LAN 2: MB995VF-C246: Intel® I210AT GbE MB995VF: Intel® I211AT or I210AT GbE
I/O Chipset	Fintek F81966D-I
Serial Port	4x RS232, 2x RS232/422/485 (jumper-less selection)
USB 2.0	2x USB 2.0 via pin-header
USB 3.X	4x USB 3.1 on board 5x USB 3.0: 2x ports on board, 2 ports via box-headers 1x port via on board vertical type connector
Serial ATA	MB995VF-C246: 6x SATA III MB995VF: 4x SATA III
Audio	Intel® C246/Q370 PCH built-in HD audio + Realtek ALC888S codec
TPM	TPM (2.0)

Features

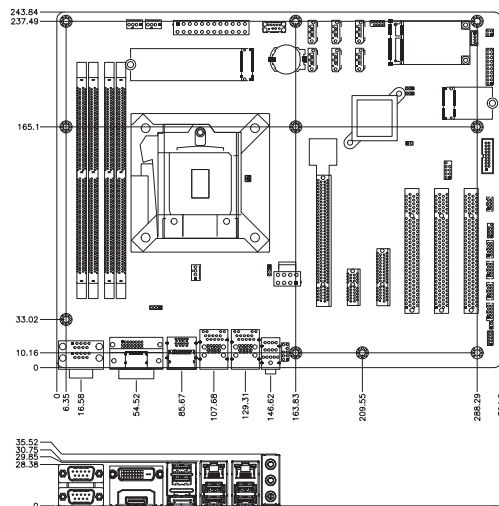
- 8th Gen Intel® Xeon® E / Core™ i7/i5/i3 HC/QC/DC processors, up to 4.7GHz
- 4x DDR4 DIMM, Max. 64GB
- Intel® processor integrated graphics supports DVI-D, HDMI (2.0a) and DisplayPort
- Dual Intel® Gigabit LAN
- 4x USB 3.1, 5x USB 3.0, 6x COM, 6x SATA III
- 1x PCI-E (x16), 1x PCI-E (x4), 1x PCI-E (x1), 3x PCI, 1x Mini PCI-E, 2x M.2 (E/ M-Key)
- Watchdog timer, Digital I/O, iAMT (11.6), TPM(2.0), vPro, iSMART

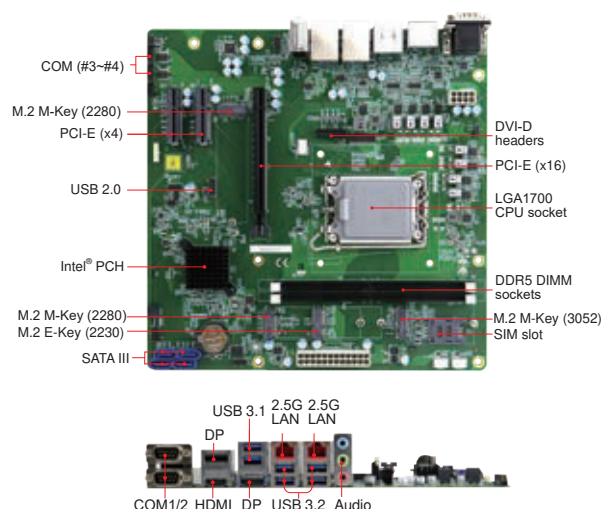
Others	Digital I/O (4-in/4-out), iAMT (11.6), RAID, iSMART (3.5), EuP/ErP
Dimensions (L x W)	305mm x 244mm (12" x 9.6")
Power Consumption	Intel® Core™ i7-8700 3.4GHz w/ 4x 4GB DDR4-2400 +12V: 5.56A +5V: 1.65A +5VSB: 0.25A +3.3V: 0.65A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MB995VF-C246	LGA1151 C246 ATX motherboard w/ HDMI, DVI-D, DisplayPort (1.2), dual Gigabit LAN, RAID, iAMT (11.6), TPM (2.0), iSMART (3.5)
MB995VF	LGA1151 Q370 ATX motherboard w/ HDMI, DVI-D, DisplayPort (1.2), dual Gigabit LAN, RAID, iAMT (11.6), TPM (2.0), iSMART (3.5)

Dimensions and Drawing





Specifications

CPU Socket	LGA1700
CPU	14th/13th/12th Gen Intel® Core™ i9/i7/i5/i3 and Pentium® / Celeron® Processors
PCH	MB998AF-R : Intel® R680E PCH (support ECC) MB998AF-Q : Intel® Q670E PCH MB998AF-W : Intel® W680 PCH (not IoTG sku)
Memory	2x DDR5 DIMM sockets, supports DDR5-4800/5600 memory module, Max. 64GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	SATA III & NVMe
Expansion Slots	1x PCI-E (x16) [Gen.5.0], 1x PCI-E (x4) [Gen.4.0], 1x PCI-E (x4) [Gen.3.0]
Mini Type Slots	2x M.2 (M-Key, type:2280, PCI-E) 1x M.2 (E-Key, type:2230, USB 2.0 + PCI-E) 1x M.2 (B-Key, type:3052, USB 3.1 + PCI-E)
Graphics Controller	13th Gen Intel® Core™ i7/i5/i3 processor integrated
Video Output	1x HDMI (2.0b) + 2x DisplayPort (1.4b) (DP++) + DVI-D
Ethernet	LAN 1: Intel® I226LM, supports 2.5G and iAMT LAN 2: Intel® I226V, supports 2.5G only
I/O Chipset	Fintek F81964D-I
Serial Post	4x COM port : 2x RS232/422/485 + 2x RS232
USB 2.0	2x USB 2.0 via pin-header
USB 3.X	4x USB 3.2(10Gbps), 2x USB 3.1(5Gbps) @edge connector
Serial ATA	4x SATA III
Audio	Built-in HD Audio controller + Realtek ALC888S with 7.1 channels
TPM	Supports fTPM
Others	Digital I/O (4-in/4-out) , Watchdog timer, SIM slot
Dimensions (L x W)	244mm x 244mm (9.6" x 9.6")
Power Consumption	Intel® Core™ i7-13700 2.10GHzw/ w/2x 32GB DDR5 5600 +12V:20.09A +5V:8.76A +3.3V:4.73A +5VSB:0.78A

Features

- 14th/13th/12th Gen Intel® Core™ i9/i7/i5/i3 and Pentium® / Celeron® Processors
- 2x **DDR5** DIMM sockets, Max. 64GB
- Intel® processor integrated graphics supports HDMI (2.0b), DVI-D and 2x DisplayPort(1.4) (DP++)
- Dual Intel 2.5G LAN
- 4x USB 3.2, 2x USB 3.1, 2x USB 2.0, 4x COM, 4x SATA III
- 1x PCI-E (x16) [Gen.5.0], 1x PCI-E (x4) [Gen.4.0], 1x PCI-E (x4) [Gen.3.0]
- 4x M.2 (B-Key, E-Key and 2x M-Key)
- Watchdog timer, Digital I/O, iAMT(16.1), fTPM

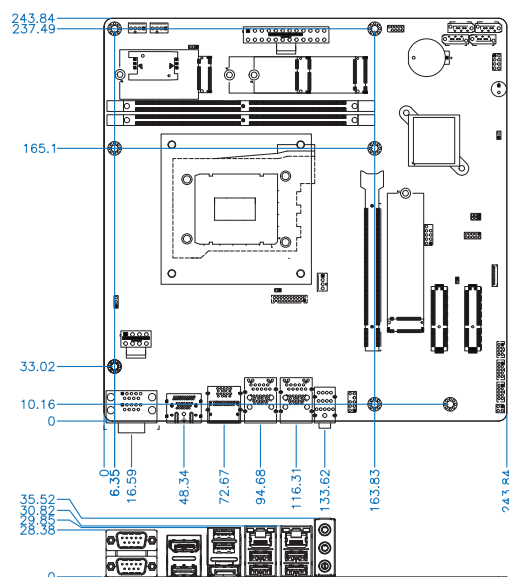
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MB998AF-R	LGA1700 R680E (support ECC) MicroATX Motherboard with 1x HDMI, 2x DisplayPort, 1x DVI-D, dual 2.5GbE, 4x SATA, RAID, iAMT (16.1), fTPM
MB998AF-Q	LGA1700 Q670E MicroATX Motherboard with 1x HDMI, 2x DisplayPort, 1x DVI-D, dual 2.5GbE, 4x SATA, RAID, iAMT (16.1), fTPM
MB998AF-W (Not IoTG sku)	LGA1700 W680 MicroATX Motherboard with 1x HDMI, 2x DisplayPort, 1x DVI-D, dual 2.5GbE, 4x SATA, RAID, iAMT (16.1), fTPM

*CPU List can refer to P.3-1 & P.3-2

Dimensions and Drawing



Comparison Table

Mini-ITX Motherboard

Models	MI1005	MI1002	MI1001	MI1000	MI999	MI998
Form Factor	Mini-ITX	Mini-ITX	Mini-ITX	Mini-ITX	Mini-ITX	Mini-ITX
CPU Socket	CPU onboard	LGA1851	LGA1700	LGA1700	LGA1200	LGA1151
CPU	Intel® Core™ Ultra 200U/H MB processors	14th Gen Intel® Core™ Ultra DT processors	14th/13th/12th Gen Intel® Core™ DT processors	14th/13th/12th Gen Intel® Core™ DT processors	10th Gen Intel® Xeon®-E / Core™ / Pentium® / Celeron® processors	9th/8th Gen Intel® Xeon®-E / Core™ / Pentium® / Celeron® processors
CPU Max. Frequency	Up to 5.4GHz	Up to 4.2GHz	Up to 5.8GHz	Up to 5.8GHz	Up to 4.7GHz	Up to 4.9GHz
PCH	N/A	N/A	Intel® Q670E	Intel® R680E	Intel® W480E, Q470E, H470E	Intel® C246, Q370, H310
Memory	2x DDR5 SO-DIMM	2x DDR5 SO-DIMM	2x DDR5 SO-DIMM	2x DDR5 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM
Max. Memory Size	96GB	64GB	64GB	64GB	64GB	32GB
BIOS	AMI	AMI	AMI	AMI	AMI	AMI
Graphics Controller	Intel® Core™ Ultra 200U/H MB processors integrated graphics	Intel® Core™ Ultra DT processor integrated Iris® 8Xe graphics	Intel® RPLS Refresh DT processor integrated Xe graphics	Intel® RPLS Refresh DT processor integrated Xe graphics	10th Gen Intel® Core™ DT processor integrated HD Gfx	9th/8th Gen Intel® Core™ DT processor integrated HD Gfx
Video Output	DisplayPort, HDMI 2x Type-C	DisplayPort, HDMI 2x USB3.2 Type-C	eDP or 24-bit dual-channel ,LVDS 1x DisplayPort, HDMI	eDP or 24-bit dual-channel ,LVDS 2x DisplayPort	eDP or 24-bit dual-channel LVDS DVI-D, HDMI1.4, DisplayPort	eDP or 24-bit dual-channel LVDS DVI-D, HDMI1.4, DisplayPort
Ethernet	Intel® I226LM 2.5 Gigabit LAN 2x Intel® I226V 2.5 Gigabit LAN	Intel® I226LM 2.5 Gigabit LAN 2x Intel® I226V 2.5 Gigabit LAN	Intel® I226LM 2.5 Gigabit LAN Intel® I226V 2.5 Gigabit LAN 2x Intel® X550-AT2 10G LAN	Intel® I226LM 2.5 Gigabit LAN Intel® I226V 2.5 Gigabit LAN	Intel® I219LM GbE PHY Intel® I219V GbE PHY Intel® I210AT	Intel® I219LM GbE PHY Intel® I219V GbE PHY Intel® I210AT
Audio	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	NA	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec
SATA	2x SATA III ports	2x SATA III ports	2x SATA III ports	4x SATA III ports	4x SATA III ports	4x SATA III ports
I/O Chipset	F8196AB-I	F81964D-I	F81964AB-I	F81964AD-I	F81964D-I	F81964D-I
Parallel Port	N/A	N/A	N/A	N/A	N/A	N/A
Serial Port	2x RS232/422/485 (Jumper-less selection) 2x RS232	2x RS232/422/485 (Jumper-less selection) 2x RS232	2x RS232/422/485 (Jumper-less selection)	2x RS232/422/485 (Jumper-less selection) 2x RS232	2x RS232/422/485 (Jumper-less selection) 2x RS232	2x RS232/422/485 (Jumper-less selection) 2x RS232
USB 2.0	4x USB 2.0 (via pin header)	4x USB 2.0 (via pin header)	2x USB 2.0 (via pin header)	4x USB 2.0 (via pin header)	4x USB 2.0 (via pin header)	2x USB 2.0 (via pin header)
USB 3.0/3.1	4x USB 3.2 via rear I/O	4x USB 3.2 via rear I/O	4x USB 3.2 via rear I/O	6x USB 3.2 via rear I/O	6x USB 3.2 (Gen1)	6x USB 3.0 (MI998AF) 4x USB 3.0 (MI998EF)
TPM	2.0	2.0	2.0	2.0	2.0	2.0
KB / MS	N/A	N/A	N/A	N/A	N/A	N/A
Hardware Monitor	Yes	Yes	Yes	Yes	Yes	Yes
Storage Device Interface	SATA III & NVMe	1x M.2 (E-Key) 1x M.2 (M-Key) 1x M.2 (B-Key)	1x M.2 (E-Key) 1x M.2 (M-Key)	1x M.2 (E-Key) 1x M.2 (M-Key)	1x M.2 (E-Key@2230), supports CNVi 1x M.2 (M-Key@2280), supports NVMe (for MI999AF-W/ MI999AF-Q Series only)	1x M.2 (E-Key) 1x M.2 (M-Key)
Watchdog Timer	256 levels	256 levels	256 levels	256 levels	256 levels	256 levels
Digital I/O	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out
Expansion Slots	1x PCI-E (x4)	1x PCI-E (x4)	1x PCI-E (x16)	1x PCI-E (x16)	1x PCI-E (x16)	1x PCI-E (x16)
Mini Type Slots	1x M.2 (E-Key, type:2230) 1x M.2 (M-Key, type:2280) 1x M.2 (M-Key, type:2242)	1x M.2 (E-Key, type:2230) 1x M.2 (M-Key, type:2280) 1x M.2 (B-Key, type:3052)	1x M.2 (E-Key, type:2230) 2x M.2 (M-Key, type:2280)	1x M.2 (E-Key, type:2230) 2x M.2 (M-Key, type:2280)	2x M.2	1x M.2 (E-Key, type:2230) 1x M.2 (M-Key, type:2280)
Power input	ATX type	DC-IN (+12V~+24V)	DC-IN (Single 24V only)	ATX type	ATX type	ATX type
Power Consumption	TBD	Intel® Core™ Ultra 7 165HL w/ 2x DDR5 5600 16GB +24V : 6.98A	Intel® Core™ i9-14900 processor Up to 5.80GHz w/2 x 32G DDR5-5600 +24V: 7.15A	14th Gen Intel® Core™ i9-14900 w/ 2x DDR5 32GB 5600 +12V:23.17A	Intel® Core™ i5-10500E 3.0GHz w/ 2x DDR4 2133 4GB +12V:6.08A, +5Vsb:0.11A, +5V:1.19A, +3.3V:0.90A	Intel® i7-8700, w/ DDR4-2400 8GB +12V: 6.36A; +5V:1.46A; +5VSB: 0.07A; +3.3V: 0.37A
Dimensions (L x W)	170mm x 170mm	170mm x 170mm	170mm x 170mm	170mm x 170mm	170mm x 170mm	170mm x 170mm
Extra Features	LAN Wakeup, iAMT(19.0), RAID, PDPC	N/A	N/A	N/A	iAMT (14.0), LAN Wakeup, EuP/ErP	iAMT (11.6), LAN Wakeup, EuP/ErP
Page No.	P.3-18	P.3-19	P.3-20	P.3-21	P.3-22	P.3-23

Comparison Table

Mini-ITX Motherboard

MI997	MI996	MI995	MI993	MI992	MI990
Mini-ITX	Mini-ITX	Mini-ITX	Mini-ITX	Mini-ITX	Mini-ITX
LGA1700	FCBGA1440	BGA 1440 CPU on board	BGA 1440 CPU on board	BGA 1440 CPU on board	BGA 1440 CPU on board
12th Gen Intel® Core™ i7/i5/i3 and Celeron® socket SoC Processors	9th Gen Intel® Xeon® E / Core™ i7/i5/i3 Celeron® processors	8th Gen Intel® Xeon® / Core™ i7/i5/i3 processors	AMD Embedded Zen Core processors	7th Gen Intel® Xeon® / Core™ i7/i5/i3 processors	6th Gen Intel® Xeon® / Core™ i7/i5/i3 / Celeron® processors
Up to 5.8GHz	Up to 4.2GHz	Up to 4.2GHz	Up to 2.7GHz	Up to 3.7GHz	Up to 3.70GHz
TBD	Intel® CM246 PCH: MI996VF-X28/26 Intel® QM370 PCH: MI996VF-9850/ 9400 Intel® HM370 PCH: MI996EF-9100/ 4930	Intel® CM246 PCH Intel® QM370 PCH	N/A	Intel® CM238 / HM175	Intel® CM236 (MI990VF) Intel® HM170 (MI990EF)
2x DDR5 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM
32GB	32GB	32GB	32GB	32GB	32GB
AMI	AMI	AMI	AMI	AMI	AMI
12th Gen Intel® Core™ i7/i5/i3 and Celeron® Processors	9th Gen Intel® Xeon® / Core™ i7/i5/i3 integrated graphics	Intel® Core™ i integrated graphics	AMD R-series APU built-in GPU	Intel® Core™ i integrated graphics	Intel® Core™ i integrated graphics
1x HDMI (2.0a) + 2x DisplayPort (1.4a) (DP++) + LVDS	eDP, HDMI(2.0a), DisplayPort (1.2) and DVI-D	HDMI(2.0a) / DVI-D/ DP/ eDP on board	HDMI(2.0b)/ DP on board	DVI-D/ HDMI(1.4) / DP on board	HDMI(2.0), DVI-D and DP on board
LAN 1: Intel® I226LM, supports 2.5G and iAMT LAN 2: Intel® I226V, supports 2.5G only Built-in HD Audio controller + Realtek ALC888S w/ 7.1 channels	Intel® I219LM/V Gigabit LAN PHY Intel® I210AT Gigabit LAN	Intel® I219LM/V Gigabit LAN PHY Intel® I210AT Gigabit LAN	Intel® I225V 2.5 Gigabit LAN Intel® I225V 2.5 Gigabit LAN	Intel® I219LM/V Gigabit LAN PHY Intel® I210AT Gigabit LAN	Intel® I219LM/V Gigabit LAN PHY Intel® I210AT Gigabit LAN
2x SATA III ports	MI996VF-X26/28: 4x SATA III MI996VF-9850 MI996EF-9100: 2x SATA III	MI995VF-X27: 4x SATA III MI995VF-8850/8400, MI995EF-8100: 2x SATA III	1x SATA III port	MI992VF: 4x SATA III ports MI992EF: 2x SATA III ports	MI990VF: 4x SATA III ports MI990EF: 2x SATA III ports
F81964D-I	F81964D-I	F81964D-I	NCT6116D	F81866AD-I	F81866AD-I
N/A	N/A	N/A	N/A	N/A	N/A
2x RS232/422/485 (Jumper-less selection) 2x RS232	2x RS232/422/485 (Jumper-less selection) 2x RS232	2x RS232 2x RS232/422/485 (Jumper-less selection)	2x RS232 2x RS232/422/485 (Jumper-less selection)	4x RS232 2x RS232/422/485 (Jumper-less selection)	5x RS232 1x RS232/422/485 (Jumper-less selection)
2x USB 2.0 (via pin header)	4x USB 2.0 (via pin header)	4x USB 2.0 (via pin header)	2x USB 2.0 (via pin header)	4x USB 2.0 via rear I/O	4x USB 2.0 (4x via pin header)
6x USB 3.2 (10 Gbps)	6x USB 3.1 (via rear I/O)	6x USB 3.1 (on board)	2x USB 3.1 via rear I/O	6x USB 3.0 via rear I/O	6x USB 3.0 (6x rear I/O)
2.0	2.0	2.0	2.0	2.0	2.0
N/A	N/A	N/A	N/A	N/A	N/A
Yes	Yes	Yes	Yes	Yes	Yes
1x M.2 (E-Key) 2x M.2 (M-Key) 1x M.2 (B-Key)	mSATA 1x M.2 (E-Key) 1x M.2 (M-Key)	mSATA, M.2	M.2 (M-Key)	mSATA, M.2	mSATA, M.2
256 levels	256 levels	256 levels	256 levels	256 levels	256 levels
4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out
1x PCI-E (x16)	1x PCI-E (x16)	1x PCI-E (x16)	1x PCI-E (x8)	1x PCI-E (x16)	1x PCI-E (x16)
1x M.2 (E-Key, type:2230) 2x M.2 (M-Key, type:2280) 1x M.2 (B-Key, type:3052)	1x Mini PCI-E 1x M.2 (M-Key, type:2280, NVMe) 1x M.2 (E-Key, type:2230, CNVI)	1x Mini PCI-E 2x M.2	1x M.2 (B-Key, type:3052) 1x M.2 (M-Key, type:2280) 1x M.2 (E-Key, type:2230)	1x Mini PCI-E 1x M.2	2x Mini PCI-E (x1) 1x M.2
ATX type	ATX type	ATX type	DC-IN	ATX type	ATX type
Intel® Core™ i7-12700HL w/ 2x 32GB DDR5-4800 +12V:13.21A	Intel® Xeon E-2176G, 3.7GHz w/ 8GB DDR4-2400 +12V: 7.73A +5V: 1.59A +5VBS: 0.17A +3.3V: 0.32A	Intel® Core™ i5-8400H, 2.50GHz, w/ 2x 16GB DDR4-2133 +12V: 3.01A +5V: 1.43A +5VBS: 0.15A +3.3V: 0.32A	AMD Ryzen™ Embedded R2514 3.35GHz / R2314 2.1GHz / R2312 2.1GHz w/ 1x 8GB DDR4-2666 +12V: ~2.9A +12V: ~2.2A +12V: ~1.9A	Intel® Xeon E3-1505M v6, 3.00GHz, w/ 2x 4GB DDR4-2133 +12: 3.95A +5V: 1.50A +5VBS: 0.06A +3.3V: 0.35A	Intel® Core™ i5-6400EQ 2.4GHz w/ 2x 8GB DDR4-2133 +12V: 2.84A; +5V: 1.45A +5VBS: 0.058A; +3.3V: 0.52A
170mm x 170mm	170mm x 170mm	170mm x 170mm	170mm x 170mm	170mm x 170mm	170mm x 170mm
iAMT (16.0)	iAMT (11.6), LAN Wakeup, iSMART, EuP/ErP, RAID, vPro(MI996VF)	iAMT (11.6)/ vPro(MI995VF), LAN Wakeup, iSMART, RAID, EuP/ErP (MI995EF)	LAN wakeup	iAMT (11.6), LAN Wakeup, iSMART, RAID	iAMT (11.0) / vPro [MI990VF], LAN Wakeup, iSMART
P3-24	P3-25	P3-26	P3-27	P3-28	P3-29

1 Single Board Computers

2 CPU Modules

3 Motherboards

4 CPU Cards

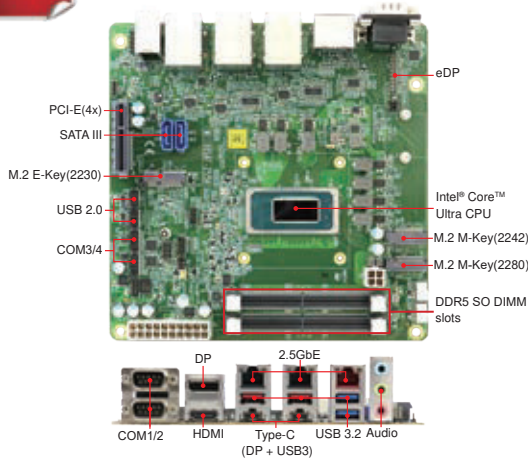
Comparison Table

Mini-ITX Motherboard

Models	MI989	MI988	MI836	MI808	MI805
Form Factor	Mini-ITX	Mini-ITX	Mini-ITX	Mini-ITX	Mini-ITX
CPU Socket	BGA 1140 APU on board	BGA1140 APU on board	TBD	FCBGA1170	FCBGA1170
CPU	AMD Embedded Zen Core processors	AMD Embedded Zen Core CPU	Intel® Atom® QC x6425E Intel® Atom® QC x6413E Intel® Atom® DC x6211E	Intel® Pentium® N3710 / Celeron® N3010 SoC	Intel® Celeron® QC J1900 SoC
CPU Max. Frequency	Up to 4.15GHz	Up to 3.8GHz	TBD	Up to 2.56GHz/ 2.24GHz	2.0GHz
PCH	N/A	N/A	Intel® Atom® SoC	N/A	N/A
Memory	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR3L SO-DIMM	2x DDR3L SO-DIMM
Max. Memory Size	64GB	32GB	32GB	8GB	16GB
BIOS	AMI	AMI	AMI	AMI	AMI
Graphics Controller	AMD V-series APU built-in GPU	AMD V-series APU built-in GPU	Intel® Atom® SoC integrated	Intel® Gen8 w/ 16 EUs graphics	Intel® Gen7 w/ 4EUs graphics
Video Output	4x DisplayPort	HDMI(2.0)/ DP on board	1x HDMI (2.0b) + 1x VGA + LVDS or eDP	VGA, DVI-D on board	DVI-D on board
Ethernet	Intel® I210AT Gigabit LAN	Intel® I210AT Gigabit LAN	LAN 1: Intel® I226IT LAN 2: Intel® I226IT	2x Intel® I210AT Gigabit LAN	2x Intel® I210AT Gigabit LAN
Audio	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	Built-in HD audio controller + Realtek ALC888S with class-D amplifier	Built-in ALC269 audio codec w/ 2W amplifier	Built-in ALC269 audio codec w/ 2.3W amplifier
SATA	1x SATA III port	1x SATA III port	1x SATA III port	2x SATA III ports	2x SATA II ports
I/O Chipset	F81966D-I	NCT6116D	F81964D-I	F81866AD-I	NCT6106D
Parallel Port	N/A	N/A	N/A	N/A	N/A
Serial Port	2x RS232/422/485 (jumper-less selection) 2x RS232	2x RS232/422/485 (jumper-less selection) 4x RS232	4 COM ports: 2x RS232/422/485 2x RS232	3x RS232 1x RS232/422/485 (jumper-less selection)	5x RS232 1x RS232/422/485 (jumper-less selection)
USB 2.0	2x USB 2.0 via rear I/O	N/A	4x USB 2.0 via pin-header	2x USB 2.0 via pin header	2x USB 2.0 on rear I/O 2x USB 2.0 via pin header
USB 3.X	2x USB 3.1 (Gen.2) via rear I/O	4x USB 3.1 rear I/O	3x USB 3.1 (5Gbps)	4x USB 3.0 on rear I/O	1x USB 3.0 on rear I/O
TPM	N/A	N/A	2.0	2.0 (option)	N/A
KB / MS	N/A	N/A	N/A	PS/2	N/A
Hardware Monitor	Yes	Yes	Yes	Yes	Yes
Storage Device Interface	mSATA, M.2	mSATA, M.2	mSATA, M.2	mSATA or CFast	mSATA
Watchdog Timer	256 levels	256 levels	256 levels	256 levels	256 levels
Digital I/O	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out
Expansion Slots	1x PCI-E (x16)	1x PCI-E (x8)	1x PCI-E (x1)	1x PCI-E (x1)	1x PCI-E (x1)
Mini Type Slots	3x M.2	1x Mini PCI-E 1x M.2	1x Mini PCI-E (x1) 1x SATA III	1x Mini PCI-E (x1)	1x Mini PCI-E (x1)
Power input	ATX type	ATX type/ DC-IN (12V~24V)	+12V ~+24V DC-in	DC In 12V or DC in 18V~ 24V	DC In 12V ~ 24V
Power Consumption	AMD Ryzen™ Embedded V2748 2.9GHz w/ 1x 8GB DDR4-3200 (Onboard or SO-DIMM) +12V: ~3.5A AMD Ryzen™ Embedded V2718 1.7GHz w/ 1x 8GB DDR4-3200 (Onboard or SO-DIMM) +12V: ~2.7A	AMD Ryzen™ Embedded V1807B 3.35GHz w/ 2x 8GB DDR4-2133 +24V: 2.55A	Intel® Atom® x6425E 2.00 GHz Transcend TS1GSH64V4B-I w/ 2x DDR4-2400 8GB [SEC Chipset] +12V : 1.74A	Intel® Pentium® N3700 1.6GHz w/ 2x 4GB DDR3L-1600 +19V: 1.01A	Intel® Celeron® J1900 2GHz 8GB DDR3L-1600 +12V: 1.28A
Dimensions (L x W)	170mm x 170mm	170mm x 170mm	170mm x 170mm	170mm x 170mm	170mm x 170mm
Extra Features	LAN wakeup, EuP/ErP	LAN wakeup iSMART	LAN wakeup	LAN Wakeup, SIM card slot iSMART(3.1)	iSMART(3.0), LAN Wakeup
Page No.	P.3-30	P.3-31	P.3-32	P. 3-33	P. 3-34



Preliminary



Features

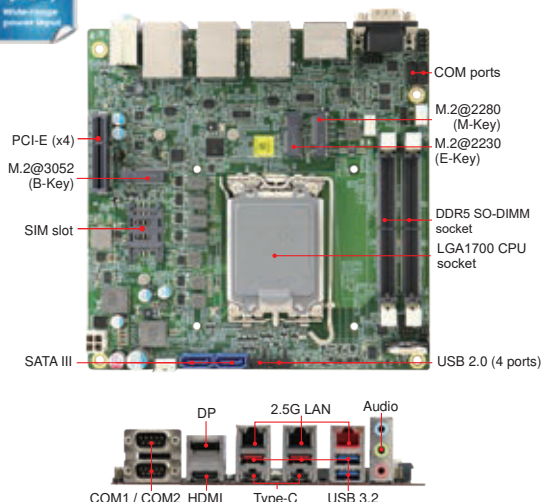
- Intel® BGA2049 Core™ Ultra 9/7/5 200 U/H series mobile onboard processors, up to 65W
- 2x DDR5 SO-DIMM, Max. 96GB, Non-ECC
- supports eDP(1.4b), 2x Type-C, HDMI (2.1) and DisplayPort(1.4a) (DP++)
- LAN 1: Intel® I226LM, supports 2.5G and iAMT
LAN 2 / LAN 3: Intel® I226V, supports 2.5G only
- 4x USB 3.2 (Type A), 2x USB Type-C, 4x USB 2.0, 4x COM, 2x SATA III
- 1x PCI-E (x4) [Gen.4.0]; 3x M.2 (E-Key @2230 and 2x M-Key @2280 & 2242)
- Watchdog timer, Digital I/O, iAMT(19.0) , fTPM(2.0)

Specifications

CPU Socket	BGA2049 CPU onboard
CPU	Intel® Core™ Ultra 9/7/5 200 U/H Mobile Processors (Arrow Lake – U/H)
PCH	N/A
Memory	2x DDR5 SO-DIMM sockets, Up to DDR5-6400 CSO-DIMM memory module, Max. 96GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	SATA III & NVMe
Expansion Slots	1x PCI-E (x4) [Gen 4]
Mini Type Slots	2x M.2 (M-Key, type:2280 + 2242, PCI-E(4x) Gen.4) 1x M.2 (E-Key, type:2230, USB 2.0 + PCI-E(1x) Gen.4)
Graphics Controller	Intel® Core™ Ultra 9/7/5 200 U/H Mobile Processors integrated graphics
Video Output	1x eDP + HDMI + 2 x DisplayPort (1.4a) (DP++) + 2x Type-C
Ethernet	LAN 1 : Intel® I226LM, Support 2.5G and iAMT LAN 2 / LAN 3: Intel® I226V, support 2.5G only
I/O Chipset	Fintek F81966AB-I
Serial Port	4x COM ports: 2x RS232/422/485 + 2x RS232
USB 2.0	4x USB 2.0 via pin-header
USB 3.X	4x USB3.2 Type A (10bps) + 2x USB Type-C (10 bps) @ edge connector
Serial ATA	2x SATA III
Audio	Built-in HD Audio controller + Realtek ALC888S w/ 7.1 channels
TPM	Supports fTPM
Others	Digital I/O (4-in/4-out) , Watchdog timer, PDPC, CPU cooler
Dimensions (L x W)	170mm x 170mm (6.7"x 6.7")
Power Consumption	TBD
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MI1005AF-285H	Intel® Core™ Ultra 9 285H CPU onboard MiniITX board w/ eDP, HDMI, 2x DisplayPort, 2x Type-C (for DP & USB 3.2), 3x 2.5GbE, 2x SATA, iAMT (19.0), fTPM (2.0)
MI1005AF-255H	Intel® Core™ Ultra 7 255H CPU onboard MiniITX board w/ eDP, HDMI, 2x DisplayPort, 2x Type-C (for DP & USB 3.2), 3x 2.5GbE, 2x SATA, iAMT (19.0), fTPM (2.0)
MI1005AF-225H	Intel® Core™ Ultra 5 225H CPU onboard MiniITX board w/ eDP, HDMI, 2x DisplayPort, 2x Type-C (for DP & USB 3.2), 3x 2.5GbE, 2x SATA, iAMT (19.0), fTPM (2.0)



Features

- Intel® Core Ultra 100HL/100UL series DT processors (Meteor Lake-PS)
- 2x DDR5 SO-DIMM, Max. 64GB
- supports HDMI, DisplayPort(DP++), 2x Type-C
- 1x Intel® I226LM 2.5G LAN, 2x Intel® I226V 2.5G LAN
- 4x USB 3.2, 2x USB Type-C, 4x USB 2.0, 4x COM, 2x SATA III
- 1x PCI-E (x4), 3x M.2 (M-Key + E-Key + B-Key)
- supports 5G & watchdog timer, Digital I/O, iAMT (18.0), TPM (2.0)
- 12V~24V DC input

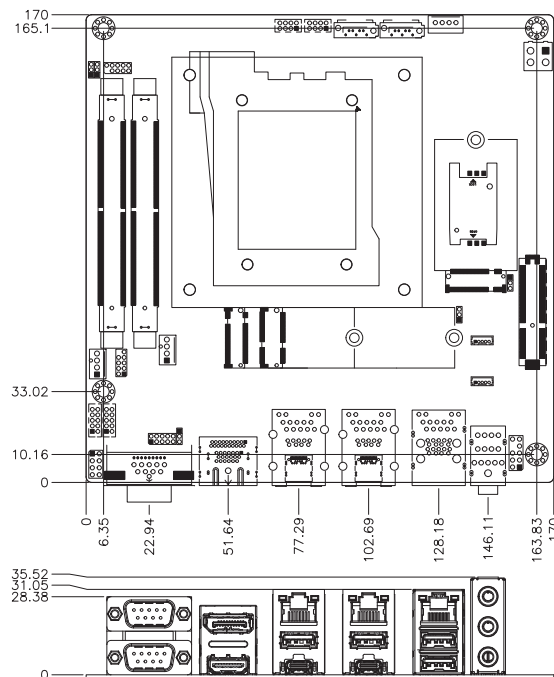
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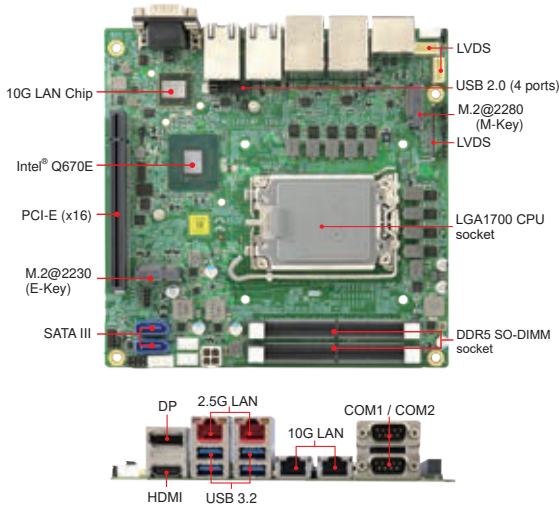
CPU Socket	LGA1851
CPU	Intel® Core Ultra 100HL/100UL series DT processors
PCH	N/A
Memory	2x DDR5 SO-DIMM, Max. 64GB, Non-ECC
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	M.2 SSD (M2280 for NVMe)
Expansion Slots	1x PCI-E (x4)
Mini Type Slots	1x M.2 (M-Key, Type:2280, supports NVMe) 1x M.2 (E-Key, Type:2230, supports CNVi) 1x M.2 (B-Key, Type:3052, supports 5G/LTE)
Graphics Controller	14th Gen Intel® Core™ Ultra Processor integrated Iris® Xe graphics
Video Output	HDMI, DisplayPort, 2x Type-C
Ethernet	Intel® I226LM as 1st LAN, I226V as 2nd and 3rd LAN
I/O Chipset	Fintek F81964D-I on board
Serial Port	COM1/COM2 (RS232/422/485); COM3/COM4 (RS232 only)
USB 2.0	4x USB 2.0 via pin-header
USB 3.X	6x USB 3.2 (4x Type-A+ 2x Type-C)
Serial ATA	2x SATA III
Audio	HDA controller + Realtek codec ALC888S-VD2
TPM	dTPM, fTPM is option
Others	Digital I/O (4-in/4-out); RAID, iAMT(18.0), +12V~+24V DC-in
Dimensions (L x W)	170mm x 170mm
Power Consumption	Intel® Core™ Ultra 7 165HL w/ 2x DDR5 5600 16GB +24V : 6.98A
Operating Temperature	0°C ~ 60°C (32°F~140°F)
Storage Temperature	-20°C ~ 80°C (-4°F ~ 176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MI1002AF	LGA1851 MiniITX Motherboard w/ HDMI, DisplayPort, 2x Type-C, 3x 2.5GbE, 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230/B3052), supports iAMT(18.0) & dTPM(2.0), DC-in (12V~24V)
MI1002AF-1	LGA1851 MiniITX Motherboard w/ HDMI, DisplayPort, 2x Type-C, 3x 2.5GbE, 2x SATA III, 2x COM, 3x M.2 (M2280/ E2230/B3052), supports iAMT(18.0) & fTPM(2.0), DC-in (12V~24V)

Dimensions and Drawing





Features

- 14th/13th/12th Gen Intel® Core i9/i7/i5/i3 DT processors
- 2x DDR5 SO-DIMM sockets, Max. 64GB
- Intel processor integrated graphic supports eDP, LVDS and 1x DisplayPort(1.4a) (DP++), HDMI(2.0)
- 2x Intel® 2.5G LAN & 2x Intel® 10G LAN
- 4x USB 3.2, 2x USB 2.0, 2x COM, 2x SATA III
- 1x PCI-E (x16) [Gen.5.0]; 2x M.2 (E-Key and M-Key)
- supports watchdog timer, Digital I/O, iAMT(16.1), TPM (2.0), **+24V only DC input**



MI1001AF-10G Board with heatsink

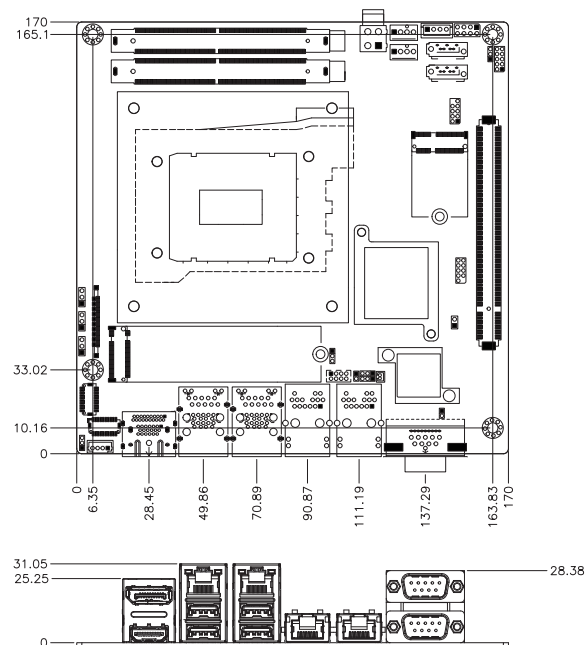
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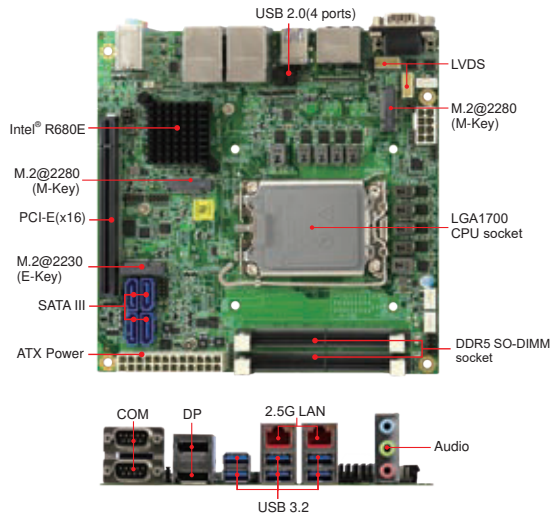
CPU Socket	LGA1700
CPU	14th/13th/12th Gen Intel® RPL-S Refresh Core i/DT processors
PCH	Q670E
Memory	2x DDR5 SO-DIMM sockets, supports DDR5 -5600 memory module, Max. 64GB *DDR5-5600 only by Core i9/i7 Processor & 1R memory module*
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	SATA III & NVMe
Expansion Slots	1x PCI-E (x16) [Gen 5.0]
Mini Type Slots	1x M.2 (M-Key, type:2280, PCI-E(4x) Gen.4) 1x M.2 (E-Key, type:2230, USB 2.0 + PCI-E 3.0)
Graphics Controller	14th Gen Intel® RPL-S Refresh DT processor integrated Xe graphics architecture
Video Output	1x eDP + 1x DisplayPort (1.4a) (DP++) + LVDS + 1x HDMI (2.0)
Ethernet	LAN 1: Intel® i226LM, supports 2.5G and iAMT LAN 2: Intel® i226V, supports 2.5G only LAN 3&4: Intel® X550-AT2, supports 10G (For MI1001AF-10G only)
I/O Chipset	Fintek F81966AB-I
Serial Port	2x COM ports: 1x RS232/422/485 + 1x RS232
USB 2.0	2x USB 2.0 via pin-header
USB 3.X	4x USB 3.2 (10Gbps) @ edge connector
Serial ATA	2x SATA III
Audio	N/A
TPM	dTPM
Others	Digital I/O (4-in/4-out), Watchdog timer
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	Intel® Core™ i9-14900 processor, Up to 5.80GHz w/2 x 32G DDR5-5600 +24V: 7.15A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MI1001AF-10G	LGA1700 MiniITX Motherboard, Q670E PCH, w/ Dual 10GbE, Dual 2.5GbE, HDMI + DisplayPort + eDP + LVDS, 2x SATA III, 2x COM, 2x M.2 (M2280/ E2230), supports iAMT(16.1) & dTPM(2.0), DC-in (24V only)
MI1001AF-Q	LGA1700 MiniITX Motherboard, Q670E PCH, w/ Dual 2.5GbE, HDMI + DisplayPort + eDP + LVDS, 2x SATA III, 2x COM, 2x M.2 (M2280/E2230), supports iAMT(16.1) & dTPM (2.0), DC-in (24V only)

Dimensions and Drawing





Features

- 14th/13th/12th Gen Intel® Core™ i9/i7/i5/i3 DT processors, up to 65W
- 2x DDR5 SO-DIMM sockets, Max. 64GB, support ECC
- Intel® processor integrated graphic supports eDP, LVDS and 2x DisplayPort (1.4a) (DP++)
- 1x LAN 1: Intel® I226LM, supports 2.5G and iAMT
1x LAN 2: Intel® I226V, supports 2.5G
- 6x USB 3.2, 4x USB 2.0, 2x COM, 4x SATA III
- 1x PCI-E (x16) [Gen.5.0]; 3x M.2 (1x E-Key for WiFi/BT and 2x M-Key for NVMe)
- supports watchdog timer, Digital I/O, iAMT (16.1), TPM (2.0)

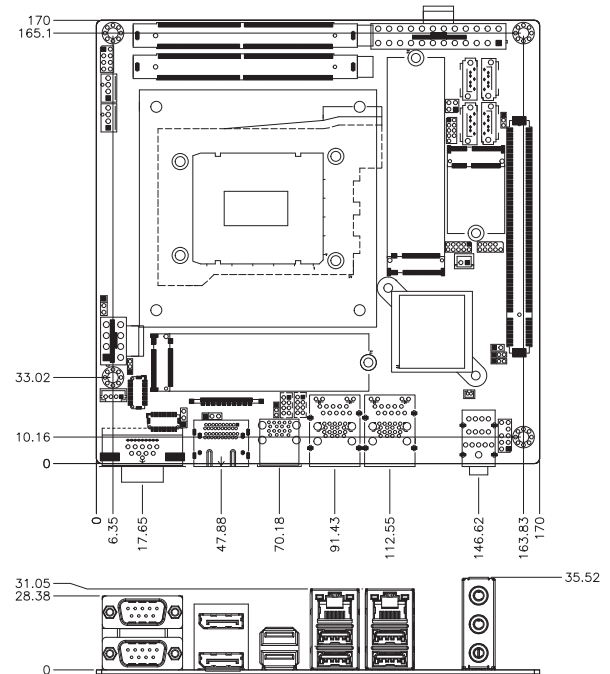
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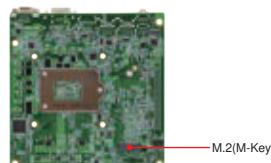
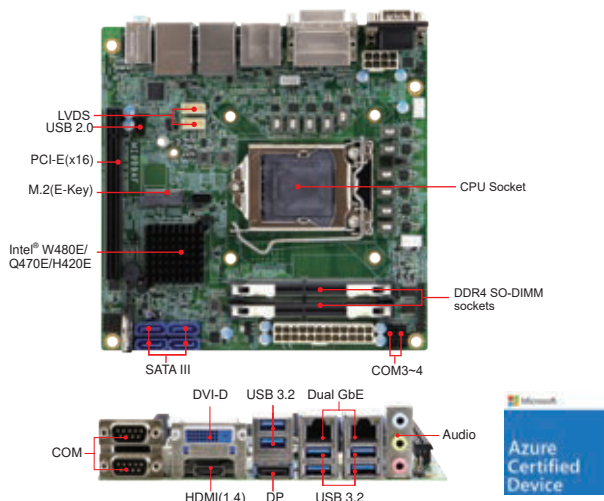
CPU Socket	LGA1700
CPU	14th/13th/12th Gen Intel® Core™ i DT processors
PCH	R680E
Memory	2x DDR5 SO-DIMM sockets, supports DDR5 -5600 memory module , Max. 64GB *DDR5-5600 only by Core i7 Processor & 1R memory module*
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	SATA III & NVMe
Expansion Slots	1x PCI-E (x16) [Gen 5.0]
Mini Type Slots	2x M.2 (M-Key, type:2280, PCI-E(4x) Gen.4) 1x M.2 (E-Key, type:2230, USB 2.0 + PCI-E 3.0)
Graphics Controller	14th Gen Intel® RPL-S Refresh DT processor integrated Xe graphics architecture
Video Output	1x eDP + 2 x DisplayPort (1.4a) (DP++) + LVDS
Ethernet	LAN 1: Intel® I226LM , supports 2.5G and iAMT LAN 2: Intel® I226V, supports 2.5G only
I/O Chipset	Fintek F81964D-I
Serial Port	2x COM ports: 1x RS232/422/485 + 1x RS232
USB 2.0	4x USB 2.0 via pin-headers
USB 3.X	2x USB 3.2 (10Gbps)+ 4x USB 3.2 (5Gbps) @edge connector
Serial ATA	4x SATA III
Audio	Built-in HD audio controller + Realtek ALC888S w/ 7.1 channels
TPM	Supports dTPM/ fTPM
Others	Digital I/O (4-in/4-out) , Watchdog timer, PDPC
Dimensions (L x W)	170mm x 170mm (6.7"x 6.7")
Power Consumption	14th Gen Intel® Core™ i9-14900 w/ 2x DDR5 32GB 5600 +12V:23.17A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MI1000AF-R	LGA1700 Mini-ITX Motherboard w /eDP, LVDS, 2x DisplayPort, 2x Dual 2.5GbE, 4x SATA, RAID, iAMT (16.1), dTPM
MI1000AF-R-1	LGA1700 Mini-ITX Motherboard w /eDP, LVDS, 2x DisplayPort, 2x Dual 2.5GbE, 4x SATA, RAID, iAMT (16.1), fTPM (2.0)

Dimensions and Drawing





Specifications

CPU Socket	LGA1200
CPU	10th Gen Intel® Xeon® W / Core™ / Pentium® / Celeron® processors, up to 4.8GHz
PCH	MI999AF-W: W480E MI999AF-Q: Q470E MI999EF-H: H420E
Memory	2x DDR4 SO-DIMM socket, Max. 64GB (supports ECC by CPU SKU)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x M.2 (M2280) NVMe
Expansion Slots	1x PCI-E (X16)
Mini Type Slots	1x M.2(E-Key@2230), supports CNVI 1x M.2(M-Key@2280), supports NVMe (for MI999AF-W/MI999AF-Q Series only)
Graphics Controller	Intel® UHD Graphics 630
Video Output	Supports, DVI-D, HDMI (1.4b), DisplayPort (1.2), and eDP or 24-bit dual channel LVDS
Ethernet	1st LAN MI999AF-W/ MI999AF-Q: Intel® I219LM MI999EF-H: Intel® I219V 2nd LAN MI999AF-W: Intel® I210AT MI999AF-Q/ MI999EF-H: Intel® I211AT or I210AT
I/O Chipset	Fintek F81964D-I
Serial Port	MI999AF-W/ MI999AF-Q: COM1 ~ COM2 (RS232/422/485) MI999EF-H: COM1 ~ COM2 (RS232) COM3 ~ COM4: RS232
USB 2.0	4x USB 2.0 onboard
USB 3.X	6x USB 3.2 (Gen1, 5Gbps)
Serial ATA	4x SATA III
Audio	Built-in HD audio + Realtek ALC888S codec
TPM	2.0
Others	Digital I/O (4-in/4-out), RAID, iAMT (14) or Eup/ErP
Dimensions (L x W)	170mm x 170mm
Power Consumption	Intel® Core™ i5-10500E, 3.00GHz, with 2x 4GB DDR4 2133 +12V: 6.08A +5V: 1.19A +5Vsb: 0.11A +3.3V: 0.90A

Features

- 10th Gen Intel® Xeon® W / Core™ / Pentium® / Celeron® processors, up to 4.8GHz
- 2x DDR4 SO-DIMM, Max. 64GB, ECC compatible
- Intel® Processor integrated graphics, supports DVI-D, HDMI, DisplayPort and 24-bit dual-channel LVDS or eDP
- Dual Intel® Gigabit LAN
- 6x USB 3.2, 4x USB 2.0, 4x COM, 4x SATA III
- 1x PCI-E (x16), 2x M.2 (E-Key, M-Key)
- Watchdog timer, Digital I/O, iAMT (14), TPM (2.0)

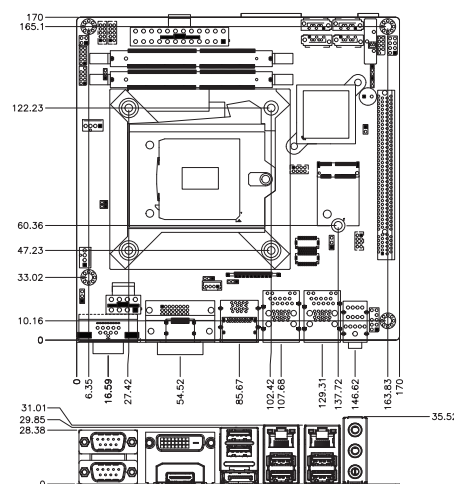
Operating Temperature	0°C ~ 60°C (32°F~140°F)
Storage Temperature	-20°C ~ 80°C (-4°F ~ 176°F)
Relative Humidity	95% (non-condensing @60°C)

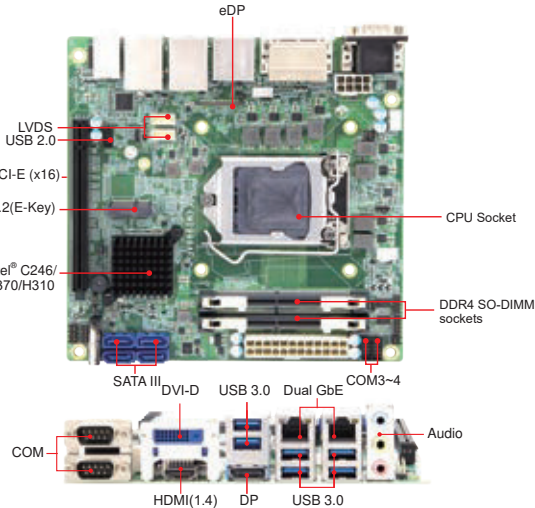
Ordering Information

MI999AF-W	LGA1200 W480E Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, LVDS, Dual Gigabit LAN, RAID, iAMT(14), TPM(2.0)
MI999AFE-W	LGA1200 W480E Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, eDP, Dual Gigabit LAN, RAID, iAMT(14), TPM(2.0)
MI999AF-Q	LGA1200 Q470E Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, LVDS, Dual Gigabit LAN, RAID, iAMT(14), TPM(2.0)
MI999AFE-Q	LGA1200 Q470E Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, eDP, Dual Gigabit LAN, RAID, iAMT(14), TPM(2.0)
MI999EF-H	LGA1200 H420E Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, LVDS, Dual Gigabit LAN, EuP/ErP, TPM(2.0)
MI999EFE-H	LGA1200 H420E Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, eDP, Dual Gigabit LAN, EuP/ErP, TPM(2.0)

*CPU List can refer to P.3-1 & P.3-2

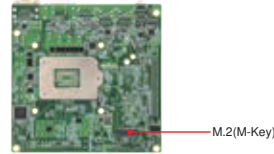
Dimensions and Drawing





Features

- 9th/8th Gen Intel® Xeon® E / Core™ / Pentium® / Celeron® processors, up to 4.7GHz
- 2x DDR4 SO-DIMM, Max. 32GB, ECC compatible
- Intel® Processor integrated graphics, supports DVI-D, HDMI, DisplayPort and 24-bit dual-channel LVDS or eDP
- Dual Intel® Gigabit LAN
- 6x USB 3.0, 2x USB 2.0, 4x COM, 4x SATA III
- 1x PCI-E (x16), 2x M.2
- Watchdog timer, Digital I/O, iAMT (11.6), TPM (2.0)



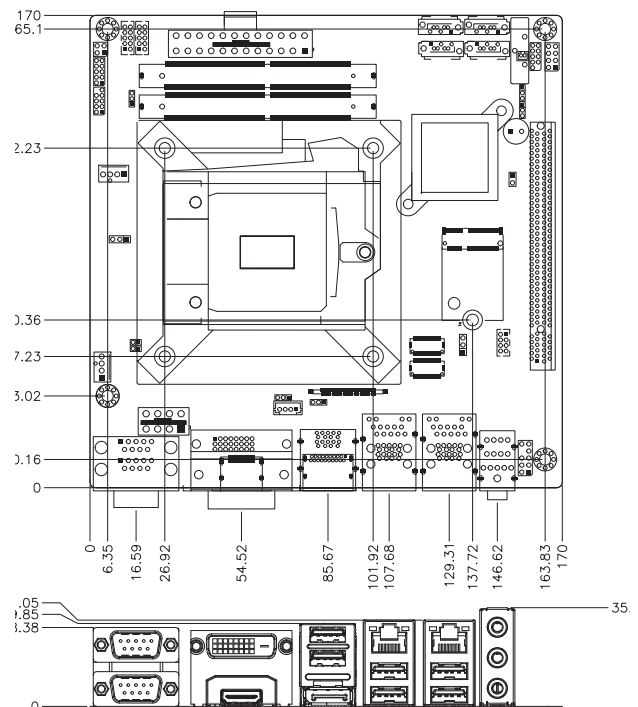
Specifications

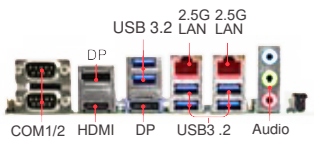
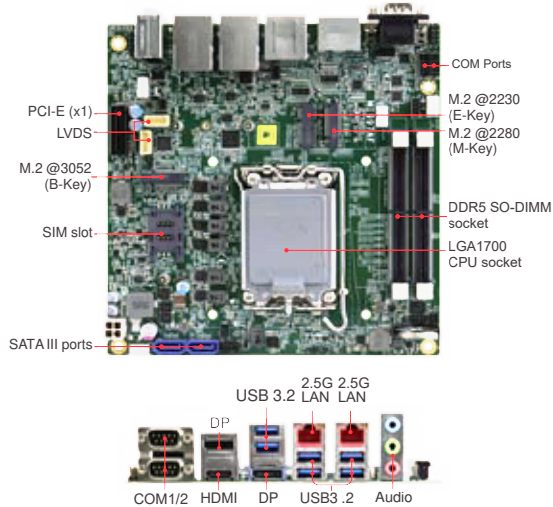
CPU Socket	LGA1151
CPU	9th/8th Gen Intel® Xeon® E / Core™ / Pentium® / Celeron® processors, up to 4.7GHz
PCH	MI998AF(E)-C246: Intel® C246 PCH MI998AF(E): Intel® Q370 PCH MI998EF(E): Intel® H310 PCH
Memory	2x DDR4 SO-DIMM, Max. 32GB (supports ECC by CPU SKU)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	NVMe
Expansion Slots	1x PCI-E (x16)
Mini Type Slots	1x M.2 (E-Key, type:2230) 1x M.2 (M-Key, type:2280)
Graphics Controller	Intel® UHD Graphics P630
Video Output	Supports, DVI-D, HDMI (1.4), DisplayPort(1.2), and eDP or 24-bit dual channel LVDS
Ethernet	1st LAN MI998AF-C246 & MI998AF: Intel® I219LM MI998EF: Intel® I219V 2nd LAN MI998AF-C246: Intel® I210AT MI998AF & MI998EF: Intel® I211AT or I210AT
I/O Chipset	Fintek F81964D-I
Serial Port	MI998AF(E)-C246: COM1 ~ COM2 (RS232/422/485) MI998AF(E): COM1 ~ COM2 (RS232/422/485) (Jumper-less selection) MI998EF(E): COM1 ~ COM2 (RS232) COM3 ~ COM4: RS232
USB 2.0	MI998AF-C246 / MI998AF: 2x USB 2.0 MI998EF: 2x USB 2.0
USB 3.X	MI998AF-C246 / MI998AF: 6x USB 3.0 MI998EF: 4x USB 3.0
SATA	4x SATA III
Audio	Intel® C246/ Q370/ H310 PCH-H built-in HD audio + Realtek ALC888S codec
TPM	TPM (2.0)
Others	Digital I/O (4-in/4-out); RAID, iAMT (11.6) or Eup/ErP
Dimensions (L x W)	170mm x 170mm
Power Consumption	Intel® i7-8700, w/ DDR4-2400 8GB +12V: 6.36A; +5V: 1.46A; +5VSB: 0.07A; +3.3V: 0.37A
Operating Temperature	0°C ~ 60°C (32°F~140°F)
Storage Temperature	-20°C ~ 80°C (-4°F ~ 176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MI998AF-C246	LGA1151 C246 Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, LVDS, Dual Gigabit LAN, RAID, iAMT(11.6), TPM(2.0)
MI998AFE-C246	LGA1151 C246 Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, eDP, Dual Gigabit LAN, RAID, iAMT(11.6), TPM(2.0)
MI998AF	LGA1151 Q370 Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, LVDS, Dual Gigabit LAN, RAID, iAMT(11.6), TPM(2.0)
MI998AFE	LGA1151 Q370 Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, eDP, Dual Gigabit LAN, RAID, iAMT(11.6), TPM(2.0)
MI998EF	LGA1151 H310 Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, LVDS, Dual Gigabit LAN, TPM(2.0)
MI998EFE	LGA1151 H310 Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, eDP, Dual Gigabit LAN, TPM(2.0)

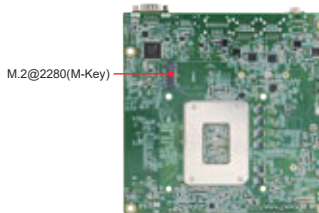
Dimensions and Drawing





Features

- 12th Gen Intel® Core i7/i5/i3 and Celeron® DT Processors
- 2x **DDR5** SO-DIMM sockets, Max. 64GB
- Intel® processor integrated graphics supports HDMI (2.0a), LVDS and 2x DisplayPort (1.4a) (DP++)
- Dual Intel® 2.5G LAN
- 4x USB 3.2, 2x USB 3.1, 2x USB 2.0, 4x COM, 2x SATA III
- 1x PCI-E (x1) [Gen.3.0]; 4x M.2 (B-Key, E-Key and 2x M-Key)
- Watchdog timer, Digital I/O, iAMT(16.0), fTPM
- 12V~24V DC input



Specifications

CPU Socket	LGA1700
CPU	12th Gen Intel® Core™ i7/i5/i3 and Celeron® socket SoC Processors
PCH	N/A
Memory	2x DDR5 SO-DIMM sockets, supports DDR5-4800 memory module, Max. 64GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	SATA III & NVMe
Expansion Slots	1x PCI-E (x1) [Gen.3.0]
Mini Type Slots	2x M.2 (M-Key, type:2280, PCI-E(4x) Gen.4) 1x M.2 (E-Key, type:2230, USB 2.0 + PCI-E(1x)) 1x M.2 (B-Key, type:3052, USB 3.2 + PCI-E(1x))
Graphics Controller	12th Gen Intel® Core™ i7/i5/i3 and Celeron® Processors
Video Output	1x HDMI (2.0a) + 2x DisplayPort (1.4a) (DP++) + LVDS
Ethernet	LAN 1: Intel® I226LM, supports 2.5G and iAMT LAN 2: Intel® I226V, supports 2.5G only
I/O Chipset	Fintek F81964D-I
Serial Port	4 COM ports : 2x RS232/422/485 + 2x RS232
USB 2.0	2x USB 2.0 via pin-header
USB 3.X	6x USB 3.2 (10 Gbps) @ edge connector
Serial ATA	2x SATA III
Audio	Built-in HD Audio controller + Realtek ALC888S w/ 7.1 channels
TPM	Supports fTPM
Others	12V~24V DC-in, Digital I/O (4-in/4-out), Watchdog timer, SIM socket
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	Intel® Core™ i7-12700HL w/ 2x 32GB DDR5-4800 + 12V:13.21A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

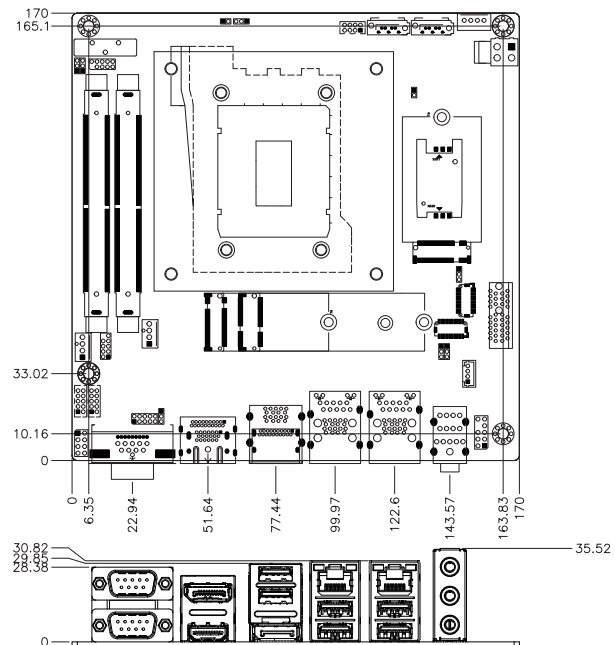
Ordering Information

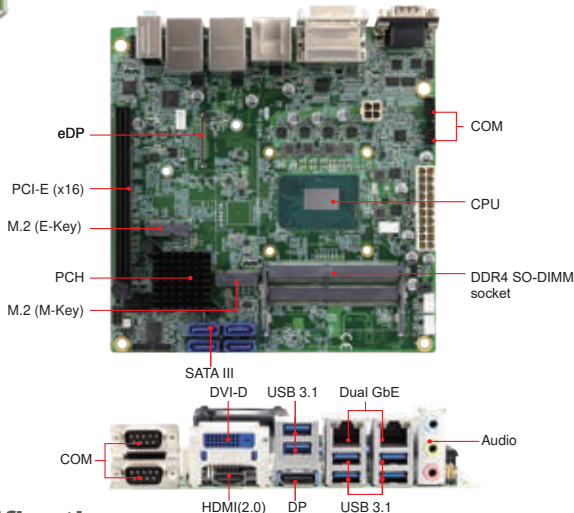
MI997AF

LGA1700 Mini-ITX Motherboard w/ HDMI, LVDS, 2x DisplayPort, Dual 2.5GbE, 2x SATA, iAMT (16.0), TPM (2.0)

*CPU List can refer to P.3-1 & P.3-2

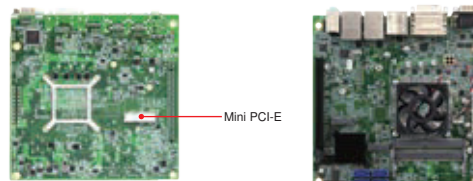
Dimensions and Drawing





Features

- Onboard 9th Gen Intel® Xeon® E / Core™ i7/i5/i3 / Celeron® processors
- 2x DDR4 SO-DIMM sockets, Max. 32GB
- supports eDP, HDMI(2.0a) / DVI-D and DisplayPort
- 2x Intel® Gigabit LAN
- 6x USB 3.1, 4x USB 2.0, 4x COM, 4x SATA III
- 1x PCI-E (x16), 1x Mini PCI-E, 2x M.2
- Watchdog timer, Digital I/O, iAMT (11.6), TPM(2.0), iSMART, vPRO (MI996VF series)



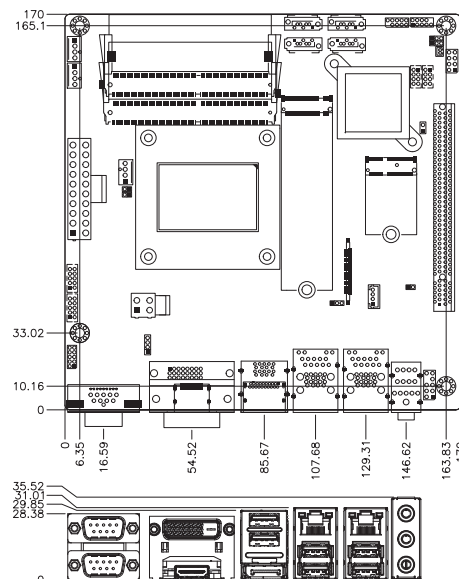
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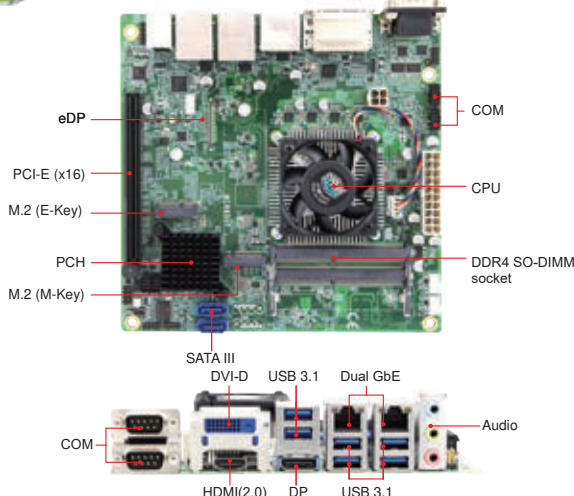
CPU Socket	FCBGA1440
CPU	9th Gen Intel® Xeon® E / Core™ i7/i5/i3 / Celeron® processors
PCH	MI996VF-X28/26: Intel® CM246 PCH MI996VF-9850: Intel® QM370 PCH MI996EF-9100/ 4930: Intel® HM370 PCH
Memory	2x DDR4-2666 SO-DIMM socket, Max. 32GB (supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	mSATA, M.2
Expansion Slots	1x PCI-E (x16)
Mini Type Slots	1x Mini PCI-E 1x M.2 (M-Key, type:2280, NVMe) 1x M.2 (E-Key, type:2230, CNVi)
Graphics Controller	9th Gen Intel® Xeon® / Core™ i7/i5/i3 processor integrated
Video Output	Supports eDP, HDMI(2.0a), DisplayPort and DVI-D
Ethernet	LAN 1: MI996VF-Series: Intel® I219LM Gigabit LAN PHY MI996EF: Intel® I219V Gigabit LAN PHY LAN 2: MI996VF-X26/28: Intel® I210AT Gigabit LAN MI996VF-9100/MI996EF-9100: Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Fintek F81964D-I
Serial Port	2x RS232/422/485, 2x RS232
USB 2.0	4x USB 2.0 via pin header
USB 3.X	6x USB 3.1 on board
Serial ATA	MI996VF-X26/28: 4x SATA III MI996VF-9850, MI996EF-9100: 2x SATA III
Audio	Intel® [CNL PCH-H integrated] built-in HD audio + Realtek ALC888S codec
TPM	TPM (2.0)
Others	Digital I/O (4-in/4-out); TPM 2.0, iSMART, EuP/ErP, RAID, iAMT (11.6), ATX
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	Intel® Xeon E-2176G, 3.7GHz w/ 8GB DDR4-2400 +12V: 7.73A, +5V: 1.59A, +5VBS: 0.17A, +3.3V: 0.32A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MI996VF-X28	FCBGA1440 Intel® CM246/ Xeon® E-2276ME Mini-ITX motherboard, w/ HDMI (2.0a), DisplayPort, DVI-D and eDP, dual Gigabit LAN, TPM (2.0), RAID, vPro, iAMT (11.6), iSMART (3.8), CPU cooler on board
MI996VF-9850	FCBGA1440 Intel® QM370/ Core™ i7-9850HE Mini-ITX motherboard, w/ HDMI (2.0a), DisplayPort, DVI-D and eDP, dual Gigabit LAN, TPM (2.0), RAID, vPro, iAMT (11.6), iSMART (3.8), CPU cooler on board
MI996EF-9100	FCBGA1440 Intel® HM370/ Core™ i3-9100HL Mini-ITX motherboard, w/ HDMI (2.0a), DisplayPort, DVI-D and eDP, dual Gigabit LAN, TPM (2.0), EuP/ErP, CPU cooler on board
MI996EF-4930	FCBGA1440 Intel® HM370/ Celeron® G4930E Mini-ITX motherboard, w/ HDMI (2.0a), DisplayPort, DVI-D and eDP, dual Gigabit LAN, TPM (2.0), EuP/ErP, CPU cooler on board

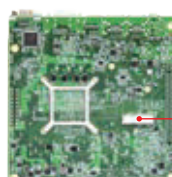
Dimensions and Drawing





Features

- 8th Gen Intel® Xeon® E / Core™ i7/i5/i3
- 2x DDR4 SO-DIMM sockets, Max. 32GB
- supports eDP, HDMI(2.0a) / DVI-D and DisplayPort
- 2x Intel® Gigabit LAN
- 6x USB 3.1, 4x USB 2.0, 4x COM, 4x SATA III
- 1x PCI-E (x16), 1x Mini PCI-E, 2x M.2
- Watchdog timer, Digital I/O, iAMT (11.6), TPM(2.0), iSMART, vPRO (MI995VF series)



Specifications

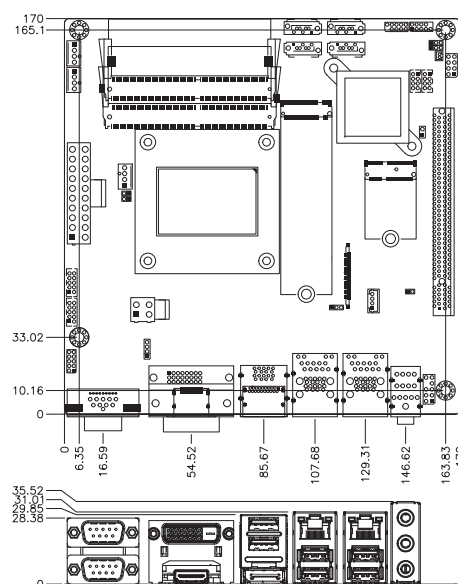
CPU Socket	FCBGA1440
CPU	8th Gen Intel® Xeon® E / Core™ i7/i5/i3 processors
PCH	MI995VF-X27: Intel® CM246 PCH MI995VF-8850/8400: Intel® QM370 PCH MI995EF-8100: Intel® HM370 PCH
Memory	2x DDR4-2666 SO-DIMM socket, Max. 32GB (supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	mSATA, M.2
Expansion Slots	1x PCI-E (x16)
Mini Type Slots	1x Mini PCI-E 1x M.2 (M-Key, type:2280, NVMe) 1x M.2 (E-Key, type:2230, CNVi)
Graphics Controller	8th Gen Intel® Xeon® / Core™ i7/i5/i3 processor integrated
Video Output	Supports eDP, HDMI(2.0a), DisplayPort and DVI-D
Ethernet	LAN 1: MI995VF-Series: Intel® I219LM Gigabit LAN PHY MI995EF: Intel® I219V Gigabit LAN PHY LAN 2: MI995VF-X27: Intel® I210AT Gigabit LAN MI995VF-8850/8400/MI995EF-8100: Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Fintek F81964D-I
Serial Port	2x RS232/422/485, 2x RS232
USB 2.0	4x USB 2.0 via pin header
USB 3.X	6x USB 3.1 on board
Serial ATA	MI995VF-X27: 4x SATA III MI995VF-8850/8400, MI995EF-8100: 2x SATA III
Audio	Intel® [CNL PCH-H integrated] built-in HD audio + Realtek ALC888S codec
TPM	TPM (2.0)
Others	Digital I/O (4-in/4-out); TPM 2.0, iSMART, EuP/ErP, RAID, iAMT (11.6), ATX
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	Intel® Core™ i5-8400H, 2.50GHz, w/ 2 x 16GB DDR4-2133 +12V: 3.01A +5V: 1.43A +5VSB: 0.15A +3.3V: 0.32A

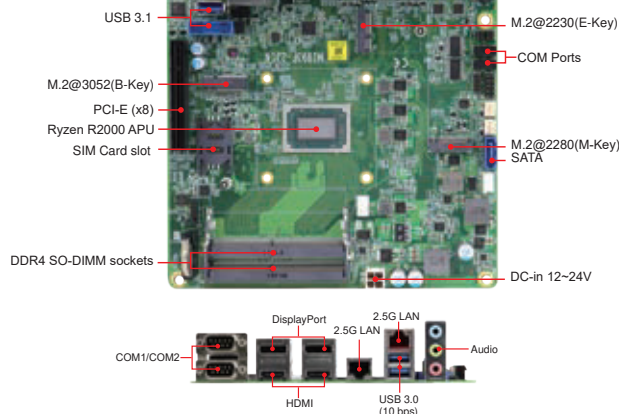
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MI995VF-X27	FCBGA1440 Intel® CM246/ Xeon® E-2176M Mini-ITX motherboard, w/ HDMI (2.0a), DisplayPort, DVI-D and eDP, dual Gigabit LAN, TPM (2.0), RAID, vPro, iAMT (11.6), iSMART (3.5), CPU cooler on board
MI995VF-8850	FCBGA1440 Intel® QM370/ Core™ i7-8850H Mini-ITX motherboard, w/ HDMI (2.0a), DisplayPort, DVI-D and eDP, dual Gigabit LAN, TPM (2.0), RAID, vPro, iAMT (11.6), iSMART (3.5), CPU cooler on board
MI995VF-8400	FCBGA1440 Intel® QM370/ Core™ i5-8400H Mini-ITX motherboard, w/ HDMI (2.0a), DisplayPort, DVI-D and eDP, dual Gigabit LAN, TPM (2.0), RAID, vPro, iAMT (11.6), iSMART (3.5), CPU cooler on board
MI995EF-8100	FCBGA1440 Intel® HM370/ Core™ i3-8100H Mini-ITX motherboard, w/ HDMI (2.0a), DisplayPort, DVI-D and eDP, dual Gigabit LAN, TPM (2.0), EuP/ErP, CPU cooler on board

Dimensions and Drawing





Specifications

CPU Socket	BGA1440
CPU	AMD Ryzen™ Embedded R2514 / R2314 / R2312
PCH	N/A
Memory	2x DDR4-2666/2400 SO-DIMM socket, Max. 32GB, ECC compatible
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	M.2 (M-Key)
Expansion Slots	1x PCI-E (x8) [R2514 & R2314] or 1x PCI-E(x4) [R2312]
Mini Type Slots	1x M.2 (M-Key, type:2280, SATA + PCI-E) 1x M.2 (E-Key, type:2230, USB 2.0 + PCI-E) 1x M.2 (B-Key, type:3052, USB 3.1 + PCI-E + SMBus) [R2514 & R2314]
Graphics Controller	AMD Radeon™ Graphics
Video Output	2x HDMI + 2x DP (R2514 & R2314) 2x HDMI + 1x DP (R2312)
Ethernet	LAN 1: Intel® I226V LAN 2: Intel® I226V (R2514 & R2314)
I/O Chipset	Nuvoton NCT6116D
Serial Port	4x COM ports: 2x RS232/422/485, 2x RS232
USB 2.0	2x USB 2.0 via pin header
USB 3.X	2x USB 3.2 (10Gbps)@ edge connector; 2x USB 3.1 (5Gbps) via onboard box-header 1x USB 3.1 (5Gbps) via onboard connector (R2514 & R2314)
Serial ATA	1x SATA III
Audio	Built-in HD Audio controller + Realtek ALC888S w/ 5.1 channels
TPM	2.0
Others	Digital I/O (4-in/4-out) , Watchdog timer, SIM
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	AMD Ryzen™ Embedded R2514 3.35GHz / R2314 2.1GHz / R2312 2.1GHz w/ 1x 8GB DDR4-2666 +12V: ~2.9A +12V: ~2.2A +12V: ~1.9A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

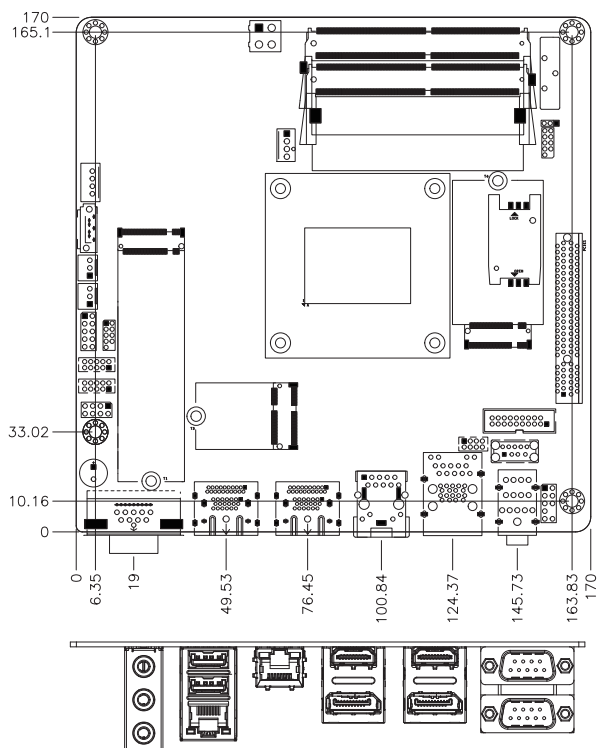
Features

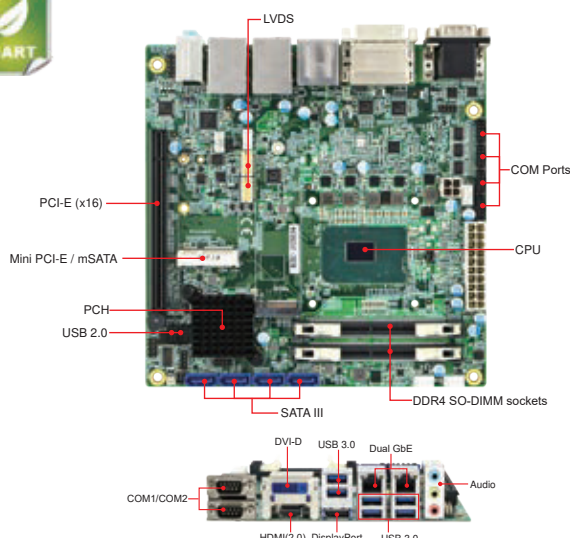
- AMD Ryzen™ Embedded R2000 series APU on board
- 2x DDR4 SO-DIMM sockets, Max. 32GB
- Dual Intel® 2.5G LAN
- 2x HDMI + 2x DisplayPort
- 5x USB 3.1, 2x USB 2.0, 4x COM, 1x SATA III
- 1x PCI-E (x8), 3x M.2 (B-Key, E-Key and M-Key)
- Watchdog timer, Digital I/O, TPM (2.0)

Ordering Information

MI993F-2514	AMD Ryzen™ R2514 (2.1GHz~3.7GHz) APU onboard, 2x HDMI, 2x DisplayPort, 1x SATA, 2x 2.5G LAN, TPM (2.0), CPU cooler on board
MI993F-2314	AMD Ryzen™ R2314 (2.1GHz~3.5GHz) APU onboard, 2x HDMI, 2x DisplayPort, 1x SATA, 2x 2.5G LAN, TPM (2.0), CPU cooler on board
MI993F-2312	AMD Ryzen™ R2312 (2.7GHz~3.5GHz) APU onboard, 2x HDMI, 1x DisplayPort, 1x SATA, 1x 2.5G LAN, TPM (2.0), CPU cooler on board

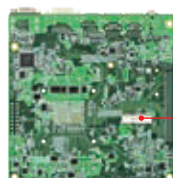
Dimensions and Drawing





Features

- Onboard 7th Gen Intel® Xeon® E3 / Core™ i7/i5/i3
- 2x DDR4 SO-DIMM, Max.32GB, ECC
- Intel® processor integrated graphics, supports DVI-D, HDMI 1.4, DisplayPort and 24-bit dual-channel LVDS
- 2x Intel® Gigabit LAN
- 6x USB 3.0, 4x USB 2.0, 4x SATA III, 4x COM
- 1x PCI-E (x16), 2x Mini PCI-E, 1x mSATA, 1x M.2
- Watchdog timer, Digital I/O, iAMT 11.6, TPM 2.0, vPro, iSMART



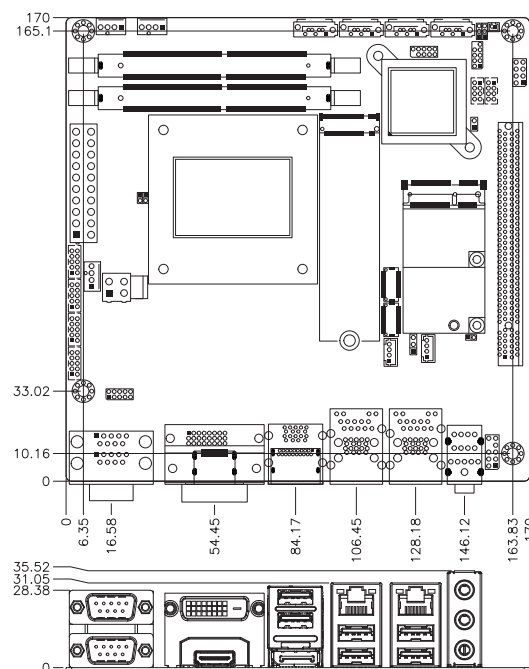
Ordering Information

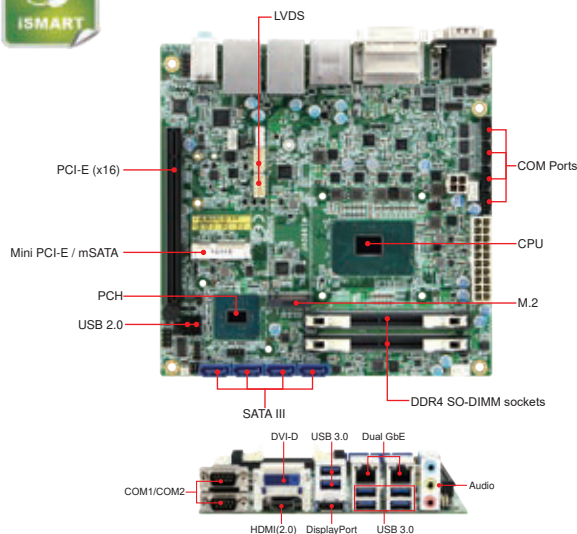
MI992VFS-X3G	BGA1440 Intel® CM238/ Xeon® E3-1505M v6(3.0GHz) Mini-ITX Motherboard w/ DVI-D, HDMI (1.4), DisplayPort, LVDS, dual Gigabit LAN, RAID, iAMT (11.6), TPM (2.0), vPro, iSMART, CPU cooler on board
MI992VFS-7820	BGA1440 Intel® CM238/ Core™ i7-7820EQ(3.0GHz) Mini-ITX Motherboard w/ DVI-D, HDMI (1.4), DisplayPort, LVDS, dual Gigabit LAN, RAID, iAMT (11.6), TPM (2.0), vPro, iSMART, CPU cooler on board
MI992VFS-7440	BGA1440 Intel® CM238/ Core™ i5-7440EQ(2.9GHz) Mini-ITX Motherboard w/ DVI-D, HDMI (1.4), DisplayPort, LVDS, dual Gigabit LAN, RAID, iAMT (11.6), TPM (2.0), vPro, iSMART, CPU cooler on board
MI992EFS-7100	BGA1440 Intel® HM175/ Core™ i3-7100E(2.9GHz) Mini-ITX Motherboard w/ DVI-D, HDMI (1.4), DisplayPort, LVDS, dual Gigabit LAN, RAID, EuP/ErP compliant, iSMART, CPU cooler on board

Specifications

CPU Socket	BGA1440
CPU	7th Gen Intel® Xeon® E3 / Core™ i7/i5/i3 processors, up to 3.7GHz
PCH	MI992VF series: Intel® CM238 PCH MI992EF series: HM175 PCH
Memory	2x DDR4 SO-DIMM, Max.32GB (supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA via Mini PCI-E (via SATA III and PCI-E) 1x M.2 slot (via SATA III and PCI-E)
Expansion Slots	1x PCI-E (x16)
Mini Type Slots	2x Mini PCI-E 1x M.2
Graphics Controller	7th Gen Intel® Xeon® / Core™ i7/i5/i3 processor integrated
Video Output	Supports DVI-D, HDMI (1.4), DisplayPort and 24-bit dual-channel LVDS
Ethernet	MI992VF series: Intel® I219LM Gigabit LAN PHY MI992EF series: Intel® I219V Gigabit LAN PHY Intel® I211AT or I210AT Gigabit LAN (as 2nd LAN)
I/O Chipset	Fintek F81846AD-I
USB 2.0	4x USB 2.0 via pin-header
USB 3.X	6x USB 3.0 on board
Serial ATA	MI992VF series: 4x SATA III MI992EF series: 2x SATA III
Audio	Intel® CM238 / HM175 PCH built-in HD audio + Realtek ALC888S codec
TPM	TPM (2.0)
Others	Digital I/O (4-in/4-out), RAID, iAMT (11.6), iSMART
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	Intel® Core i7-7820EQ, 3.00GHz, w / 2x 4GB DDR4-2133 +12V: 4.67A +5V: 1.39A +5VSB: 0.05A +3.3V: 0.35A
Operating Temperature	0°C ~ 60°C (32°F ~ 140°F)
Storage Temperature	-20°C ~ 80°C (-4°F ~ 176°F)
Relative Humidity	90% (non-condensing @60°C)

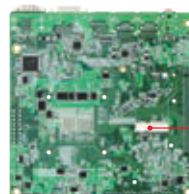
Dimensions and Drawing





Features

- Onboard 6th Gen Intel® Xeon® E3 / Core™ i7/i5/i3 / Celeron® QC/DC processors, up to 3.7GHz
- 2x DDR4 SO-DIMM, Max. 32GB, ECC compatible
- Intel® Processor integrated graphics device, supports DVI-D, HDMI (2.0), DisplayPort and 24-bit dual-channel LVDS
- 2x Intel® Gigabit LAN
- 4x USB 2.0, 6x USB 3.0, 6x COM, 4x SATA III
- 1x PCI-E (x16), 2x Mini PCI-E, 1x mSATA, 1x M.2
- Watchdog timer, Digital I/O, iAMT (11.0), TPM (2.0), vPro, iSMART 3.0



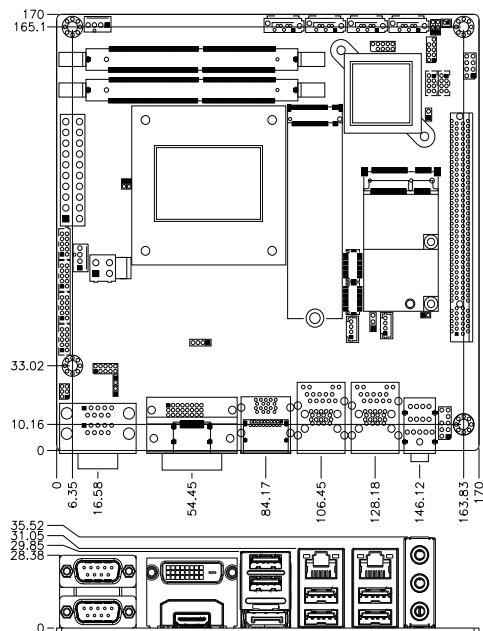
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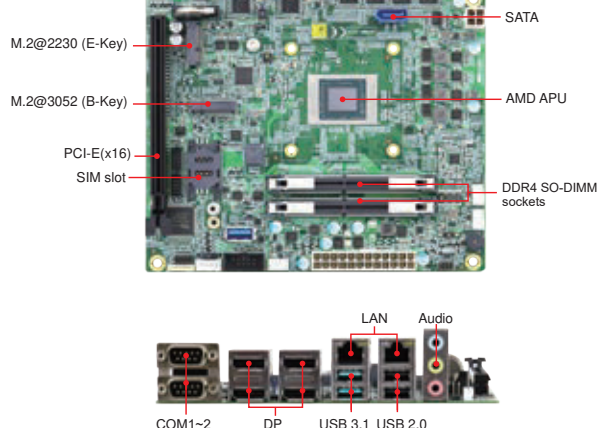
CPU Socket	BGA1440
CPU Socket	6th Gen Intel® Xeon® E3 / Core™ i7/i5/i3 / Celeron® QC/ DC processors, up to 3.7GHz
PCH	MI990VF series: Intel® CM236 PCH MI990EF series: Intel® HM170 PCH
Memory	2x DDR4 SO-DIMM, Max. 32GB (supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA via Mini PCI-E (via SATA III) 1x M.2 slot (via SATA III & PCI-E)
Expansion Slots	1x PCI-E (x16)
Mini Type Slots	2x Mini PCI-E 1x M.2
Graphics Controller	6th Gen Intel® Xeon® / Core™ i7/ i5/ i3 / Celeron® processor integrated
Video Output	Supports DVI-D, HDMI (2.0), DisplayPort and 24-bit dual-channel LVDS
Ethernet	MI990VF series: Intel® I219LM Gigabit LAN PHY MI990EF series: Intel® I219V Gigabit LAN PHY Intel® I211AT or I210AT Gigabit LAN (as 2nd LAN)
I/O Chipset	Fintek F81866AD-I
Serial Port	5x RS232 1x RS232/422/485 (jumper-less selection)
USB 2.0	4x USB 2.0 via pin-header
USB 3.X	6x USB 3.0 on board
Serial ATA	MI990VF series: 4x SATA III MI990EF series: 2x SATA III
Audio	Intel® CM236 / HM170 PCH built-in HD audio + Realtek ALC888S codec
TPM	TPM (2.0)
Others	Digital I/O(4-in/4-out), RAID, iAMT (11.0), iSMART
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	Intel® Core™ i5-6400EQ 2.4GHz w/ 2x 8GB DDR4-2133 +12V: 2.84A; +5V: 1.45A; +5VSB: 0.058A; +3.3V: 0.52A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MI990VF-X28E	BGA1440 Intel® CM236/ Xeon® E3-1505M v5(2.8GHz) Mini-ITX motherboard w/ DVI-D, HDMI (2.0), DisplayPort, LVDS, dual Gigabit LAN, RAID, iAMT (11.0), TPM (2.0), vPro, iSMART (3.0), CPU cooler on board
MI990VF-6820E	BGA1440 Intel® CM236/ Core™ i7-6820EQ(2.8GHz) Mini-ITX motherboard w/ DVI-D, HDMI (2.0), DisplayPort, LVDS, dual Gigabit LAN, RAID, iAMT (11.0), TPM (2.0), vPro, iSMART (3.0), CPU cooler on board
MI990VF-6440E	BGA1440 Intel® CM236/ Core™ i5-6440EQ(2.7GHz) Mini-ITX motherboard w/ DVI-D, HDMI (2.0), DisplayPort, LVDS, dual Gigabit LAN, RAID, iAMT (11.0), TPM (2.0), vPro, iSMART (3.0), CPU cooler on board
MI990EF-6100E	BGA1440 Intel® HM170/ Core™ i3-6100E(2.7GHz) Mini-ITX motherboard w/ DVI-D, HDMI (2.0), DisplayPort, LVDS, dual Gigabit LAN, RAID, EuP/ErP compliant, iSMART (3.0), CPU cooler on board

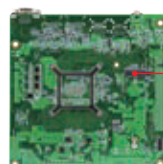
Dimensions and Drawing





Features

- AMD Ryzen™ Embedded V2000 Series on board
- 2x DDR4 SO-DIMM, Max. 64GB, ECC compatible
- Dual Intel® Gigabit LAN
- 4x DisplayPort 1.4
- 3x USB 3.1, 2x USB 2.0, 4x COM, 1x SATA III
- 1x PCI-E(x16), 3x M.2 (B-Key, E-Key and M-Key)
- Watchdog timer, Digital I/O, TPM (2.0)



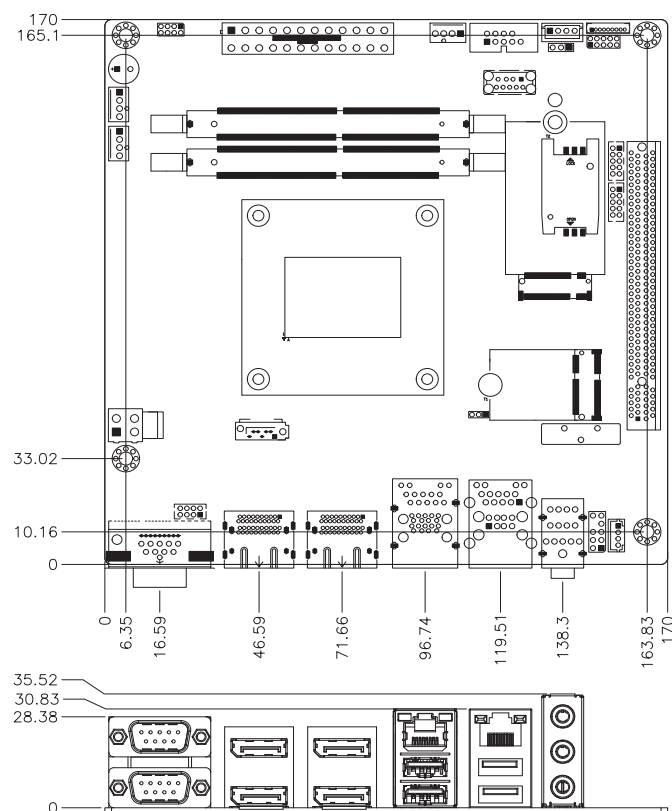
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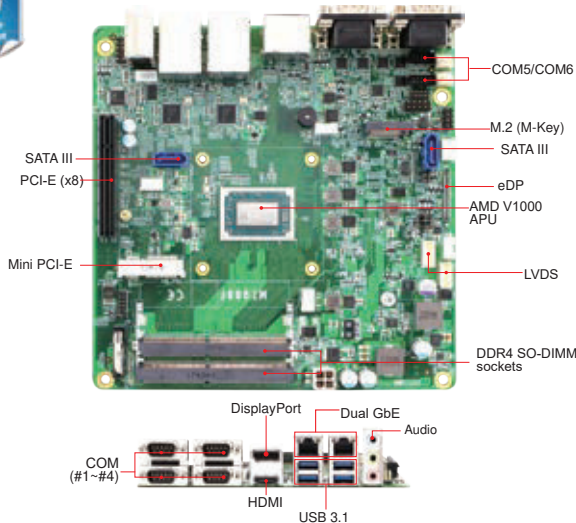
CPU Socket	BGA1140
CPU	AMD V2000 series APU on board
PCH	N/A
Memory	2x DDR4-3200 SO-DIMM socket, Max. 64GB, ECC compatible
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	2x M.2 (B-Key/ M-Key)
Expansion Slots	1x PCI-E (x16)
Mini Type Slots	1x M.2 (E-Key, type:2230) 1x M.2 (B-Key, type:3052) 1x M.2 (M-Key, type:2280, NVMe)
Graphics Controller	AMD Radeon™ Graphics
Video Output	4x DisplayPort 1.4
Ethernet	2x Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	F81966D-I
Serial Port	4x COM port
USB 2.0	2x USB 2.0
USB 3.X	3x USB 3.1 (10Gbps)
Serial ATA	1x SATA 3.0
Audio	Built-in HD audio + Realtek ALC888S codec
TPM	2.0
Others	Digital I/O, SIM socket
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	AMD Ryzen™ Embedded V2748 2.9GHz w/ 1x 8GB DDR4-3200 (Onboard or SO-DIMM) + 12V: ~3.5A AMD Ryzen™ Embedded V2718 1.7GHz w/ 1x 8GB DDR4-3200 (Onboard or SO-DIMM) + 12V: ~2.7A
Operating Temperature	0°C ~ 60°C (32°F ~ 140°F)
Storage Temperature	-20°C ~ 80°C (-4°F ~ 176°F)
Relative Humidity	95% (non-condensing @60°C)

Ordering Information

MI989F-2718	AMD Ryzen™ V2718 APU (1.7GHz~4.15GHz) on board Mini-ITX motherboard, with 4x DisplayPort, dual Gigabit LAN, TPM (2.0), EuP/ErP, CPU cooler on board
MI989F-2748	AMD Ryzen™ V2748 APU (2.9GHz~4.15GHz) on board Mini-ITX motherboard, with 4x DisplayPort, dual Gigabit LAN, TPM(2.0), EuP/ErP, CPU cooler on board

Dimensions and Drawing





Features

- AMD Ryzen™ Embedded R2000/V1000 Series on board
- 2x DDR4 SO-DIMM, Max. 32GB
- 2x Gigabit LAN
- 1x HDMI(2.0a), 1x DisplayPort (1.2), 1x eDP or 1x 24-bit dual-channel LVDS
- 4x USB 3.1, 2x SATA III, 6x COM
- 1x PCI-E (x8), 1x Mini PCI-E socket, 1x M.2 (M-Key)

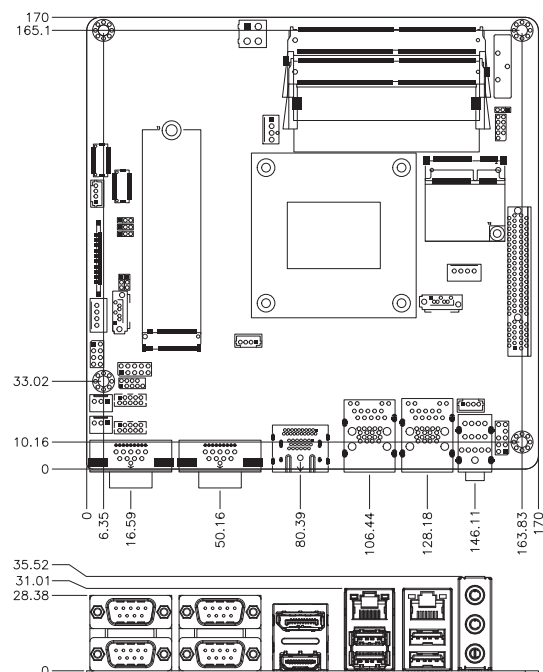
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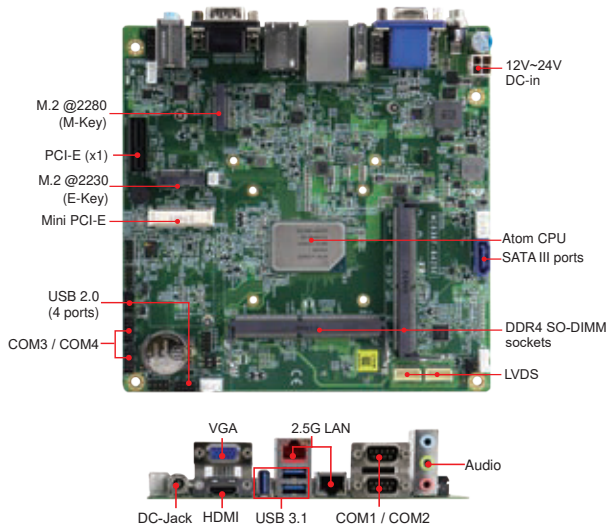
CPU Socket	BGA 1140 APU on board
CPU	AMD Ryzen™ Embedded R2000/V1000 Series on board
PCH	N/A
Memory	DDR4 SO-DIMM, supports ECC 2x DDR4-2666, Max. 32GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x M.2 (supports NVMe)
Expansion Slots	1x PCI-E (x8), 1x M.2 (M-Key, type: 2280)
Mini Type Slots	1x Mini PCI-E
Graphics Controller	AMD Radeon™ Vega GPU integrated
Video Output	1x HDMI (2.0a), 1x DisplayPort (1.2) 1x eDP or 1x 24-bit dual-channel LVDS
Ethernet	2x Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Nuvoton NCT6116D
Serial Port	2x RS232/422/485 (jumper-less selection) 4x RS232
USB 2.0	N/A
USB 3.X	4x USB 3.1 on board
Serial ATA	2x SATA III
Audio	Built-in HD audio + Realtek ALC888S codec
TPM	N/A
Others	Digital I/O (4-in/4-out), iSMART, +12V~+24V DC-in
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	AMD Ryzen™ Embedded V1807B 3.35GHz w/ 2x 8GB DDR4-2133 +24V: 2.55A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MI988FS-2514	AMD Ryzen™ R2514 (2.1GHz~3.7GHz) APU on board Mini-ITX motherboard, with HDMI (2.0), DP, eDP or LVDS, dual Gigabit LAN, iSMART, +12V~+24V DC-in
MI988FS-1807	AMD Ryzen™ V1807B QC APU (3.35GHz/3.8GHz) on board Mini-ITX motherboard, with HDMI (2.0), DP, eDP or LVDS, dual Gigabit LAN, iSMART, +12V~+24V DC-in
MI988FS-1756	AMD Ryzen™ V1756B QC APU (3.25GHz/3.6GHz) on board Mini-ITX motherboard, with HDMI (2.0), DP, eDP or LVDS, dual Gigabit LAN, iSMART, +12V~+24V DC-in
MI988FS-1605	AMD Ryzen™ V1605B QC APU (2.0GHz~3.6GHz) on board Mini-ITX, with HDMI(2.0), DP, eDP or LVDS, dual Gigabit LAN, iSMART, +12V~+24V DC-in
MI988FS-1202	AMD Ryzen™ V1202B DC APU (2.3GHz/3.3GHz) on board Mini-ITX motherboard, with HDMI (2.0), DP, eDP or LVDS, dual Gigabit LAN, iSMART, +12V~+24V DC-in

Dimensions and Drawing





Features

- Onboard Intel® Atom® x6000 series processors
- 2x DDR4-3200 SO-DIMM sockets, Max. 32GB, supports IBEC
- Intel® Atom® processor integrated graphics HDMI (2.0b), VGA and LVDS or eDP
- Dual Intel® 2.5G LAN (I226IT)
- 3x USB 3.1, 4x USB 2.0, 4x COM, 1x SATA III
- 1x PCI-E (x1) [Gen 3.0], 1x mPCI-E, 2x M.2 sockets (M-Key & E-Key)
- Watchdog timer, Digital I/O, fTPM
- Wide-range operating temperature from -40°C to +70°C



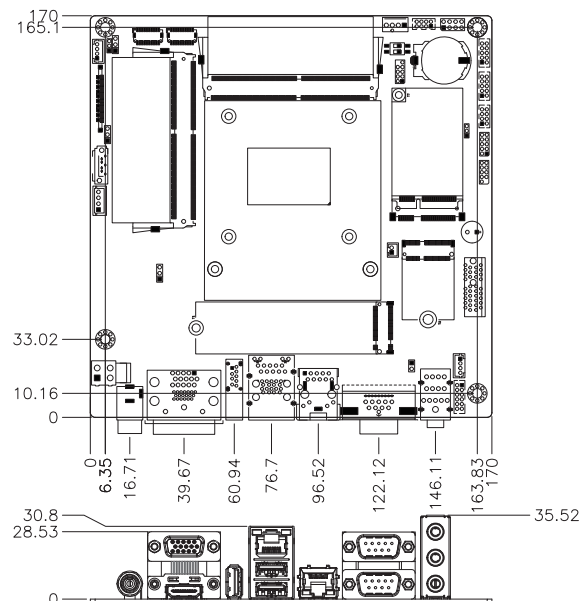
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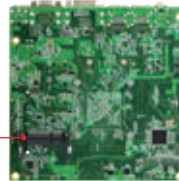
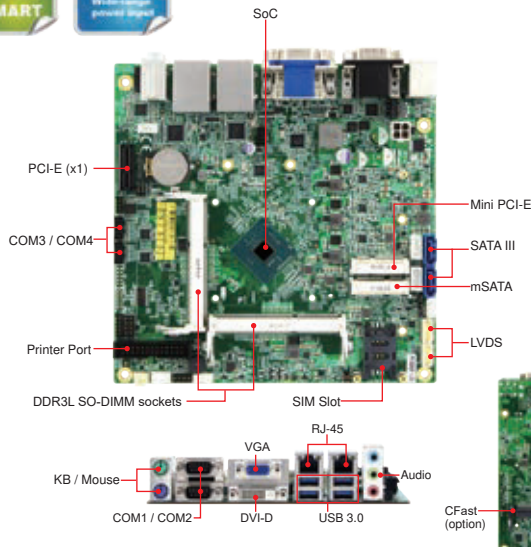
CPU	Intel® Atom® QC x6425E (2.0GHz / 3.0GHz) Intel® Atom® QC x6413E (1.5GHz / 3.0GHz) Intel® Atom® DC x6211E (1.3GHz / 3.0GHz)
PCH	Integrated in Intel® Atom® SoC
Memory	2x DDR4 SO-DIMM sockets, supports DDR4-3200 memory module, Max. 32GB
BIOS	AMI
Watchdog Timer	256 levels
Storage Device Interface	1x SATA III (shared with M.2)
H/W Monitor	Yes
Mini Type Slots	1x M.2 (M-Key, type:2280, SATA III) 1x M.2 (E-Key, type:2230, USB 2.0 + PCI-E) 1x MiniPCI-E (full-size, USB 2.0 + PCI-E)
Expansion Slots	1x PCI-E (x1) [Gen.3.0]
Graphics Controller	Intel® Atom® SoC integrated
Video Output	1x HDMI (2.0b) + 1x VGA + LVDS or eDP
Ethernet	LAN 1: Intel® I226IT LAN 2: Intel® I226IT
I/O Chipset	Fintek F81964D-I
Serial Port	4 COM ports: 2x RS232/422/485 + 2x RS232
USB 2.0	4x USB 2.0 via pin-header
USB 3.X	3x USB 3.1 (5Gbps) @ edge connector
Serial ATA	1x SATA III
Audio	Built-in HD audio controller + Realtek ALC888S with class-D amplifier
TPM	Supports fTPM
Others	Digital I/O (4-in/4-out), Watchdog timer, +12V ~ +24V DC-in, with fanless heatsink
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	Intel® Atom® x6425E 2.00 GHz w/ 2x DDR4-2400 8GB [SEC Chipset] +12V : 1.74A
Operating Temperature	-40°C ~ +70°C (-40°F ~ 158°F)
Storage Temperature	-40°C ~ +80°C (-40°F ~ 176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MI836F-6425E	Intel Atom® x6425E (2.0GHz~3.0GHz) + fanless heatsink onboard MiniITX, w/ Intel I226IT LAN x2, HDMI, VGA, LVDS, 12~24V DC-in, wide-temperature support
MI836FE-6425E	Intel Atom® x6425E (2.0GHz~3.0GHz) + fanless heatsink onboard MiniITX, w/ Intel I226IT LAN x2, HDMI, VGA, eDP, 12~24V DC-in, wide-temperature support
MI836F-6413E	Intel Atom® x6413E (1.5GHz~3.0GHz) + fanless heatsink onboard MiniITX, w/ Intel I226IT LAN x2, HDMI, VGA, LVDS, 12~24V DC-in, wide-temperature support
MI836FE-6211E	Intel Atom® x6211E (1.3GHz~3.0GHz) + fanless heatsink onboard MiniITX, w/ Intel I226IT LAN x2, HDMI, VGA, eDP, 12~24V DC-in, wide-temperature support

Dimensions and Drawing





Features

- Onboard Intel® Pentium® QC N3710, up to 2.56GHz or Celeron® DC N3010, up to 2.24GHz
- 2x DDR3L SO-DIMM sockets, Max. 8GB
- supports VGA, DVI-D and 24-bit dual-channel LVDS
- Dual Intel® Gigabit LAN
- Watchdog timer, Digital I/O, iSMART, TPM (2.0)
- 4x USB 3.0, 2x USB 2.0, 4x COM, 2x SATA III
- 1x PCI-E (x1), 1x Mini PCI-E, 1x mSATA, 1x CFAST

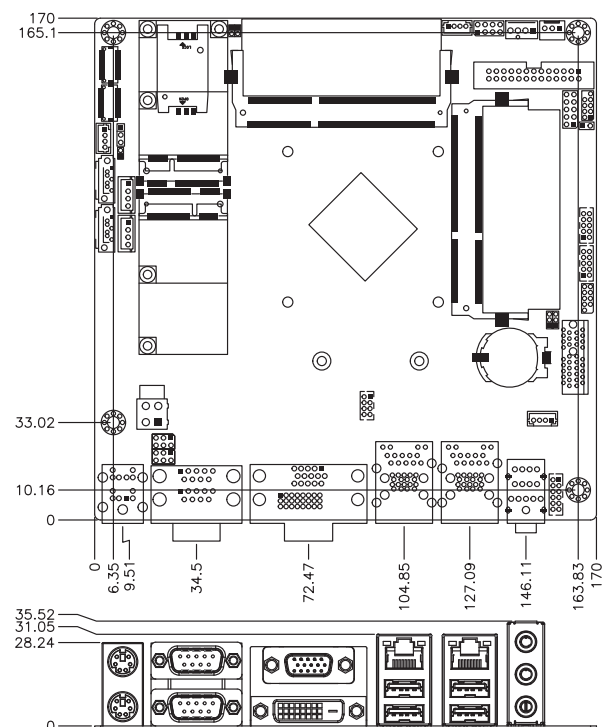
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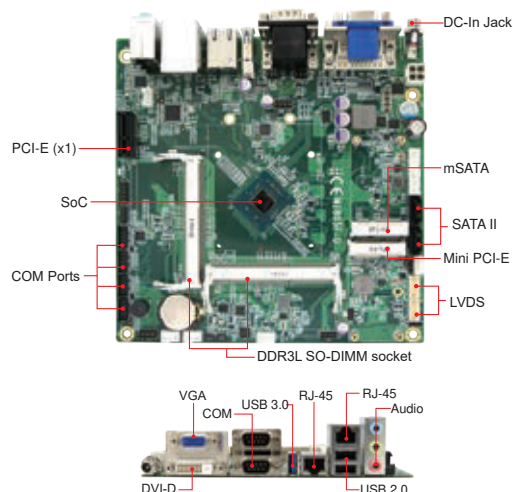
CPU Socket	FCBGA1170
CPU	Intel® Pentium® N3710, up to 2.4GHz or Celeron® N3010, up to 2.24GHz
PCH	N/A
Memory	2x DDR3L-1600 SO-DIMM socket, Max. 8GB
BIOS	AMI
Watchdog Timer	256 levels
Storage Device Interface	1x mSATA, 1x CFAST (option)
H/W Monitor	Yes
Expansion Slots	1x PCI-E (x1)
Mini Type Slots	1x Mini PCI-E
Graphics Controller	Intel® Pentium® SoC integrated Intel® Gen-8 graphics
Video Output	Supports DVI-D, CRT 24-bit dual-channel LVDS
Ethernet	Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Fintek F81846AD-I
Serial Port	1x RS232/422/485 (jumper-less selection) 3x RS232, PS/2 keyboard/mouse 1x printer port
USB 2.0	2x USB 2.0 via pin-header
USB 3.X	4x USB 3.0 on board
Serial ATA	2x SATA III
Audio	Intel® Pentium SoC built-in HD audio + Realtek ALC269 codec
TPM	TPM(2.0)
Others	Digital I/O (4-in/4-out); 12V DC-in or 18V~24V DC-In; iSMART; TPM(2.0); SIM card slot, CFAST (option)
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	Intel® Pentium® Processor N3710 1.6GHz w/ 2x 4GB DDR3L-1600 +19V: 1.01A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

Ordering Information

MI808F-371	Intel® Pentium® N3710 (2.56GHz) Mini-ITX motherboard with heatsink, DVI-D, VGA & LVDS, 2x Gigabit LAN, iSMART 3.2, TPM(2.0), DC-in 12V only
MI808FW-371	Intel® Pentium® N3710 (2.56GHz) Mini-ITX motherboard with heatsink, DVI-D, VGA & LVDS, 2x Gigabit LAN, iSMART 3.2, TPM(2.0), 18V~24V DC-in
MI808F-301 (w/ MOQ)	Intel® Celeron® N3010 (2.24GHz) Mini-ITX motherboard with heatsink, DVI-D, VGA & LVDS, 2x Gigabit LAN, iSMART 3.2, TPM(2.0), DC-in 12V only
MI808FW-301 (w/ MOQ)	Intel® Celeron® N3010 (2.24GHz) Mini-ITX motherboard with heatsink, DVI-D, VGA & LVDS, 2x Gigabit LAN, iSMART 3.2, TPM(2.0), 18V~24V DC-in

Dimensions and Drawing





Specifications

CPU Socket	FCBGA1170
CPU	Intel® Celeron® J1900 SoC (2.0GHz, 2MB cache)
PCH	N/A
Memory	2x DDR3L-1333 SO-DIMM, Max. 8GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	mSATA
Expansion Slots	1x PCI-E (x1)
Mini Type Slots	1x Mini PCI-E
Graphics Controller	Intel® Celeron® J1900 integrated Gen7 graphics
Video Output	Supports DVI-D, CRT 24-bit dual-channel LVDS
Ethernet	Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Nuvoton NCT6106D
Serial Port	1x RS232/422/485, 5x RS232
USB 2.0	2x USB 2.0 on board 2x USB 2.0 via pin header
USB 3.X	1x USB 3.0 on board
Serial ATA	2x SATA III
Audio	Intel® Celeron® J1900 built-in audio + Realtek ALC269 codec
TPM	N/A
Others	12V~24V DC-In, iSMART, Digital I/O (4-in/4-out)
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	Intel® Celeron® J1900 2GHz w/ 8GB DDR3L-1600 + 12V: 1.28A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

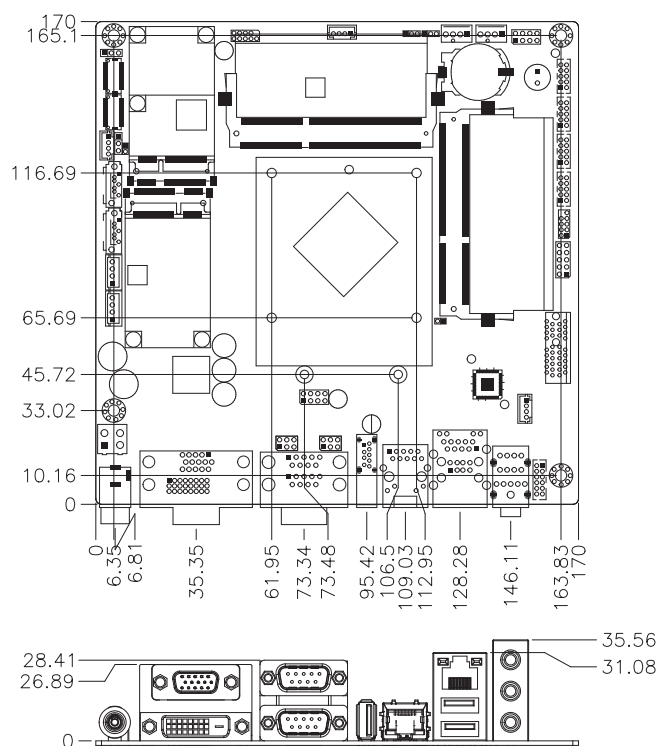
Features

- Onboard Intel® Celeron® J1900(2.0GHz) SoC
- 2x DDR3L SO-DIMM, Max. 8GB
- supports VGA, DVI-D and 24-bit dual-channel LVDS
- Onboard dual Gigabit LAN
- Watchdog timer, Digital I/O, iSMART
- 1x USB 3.0, 4x USB 2.0, 6x COM, 2x SATA II
- 1x PCI-E (x1), 1x Mini PCI-E, 1x mSATA

Ordering Information

MI805F-D	Intel® Celeron® J1900 2.0GHz SoC Mini-ITX motherboard w/ DVI-D, VGA & LVDS, 2x Gigabit LAN, iSMART, with heatsink
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Dimensions and Drawing



Comparison Table

Full-Size CPU Card

Models	IB996	IB995
Form Factor	Full-Size CPU Card (PICMG® 1.3)	Full-Size CPU Card (PICMG® 1.3)
CPU Socket	LGA1700	LGA1151
CPU	14th/13th/12th Gen Intel® Core™ i DT processors	9th/8th Gen Intel® Xeon® E / Core™ i7/i5/i3 / Pentium® / Celeron® DT processors
CPU Max. Frequency	Up to 5.8GHz	Up to 4.7GHz
PCH	Intel® Q670E	IB995AF-C246: Intel® C246 IB995AF: Intel® Q370 IB995EF: Intel® H310
Memory	2x DDR5 DIMM	2x DDR4 DIMM
Max. Memory Size	64GB	32GB
BIOS	AMI	AMI
Graphics Controller	Intel® DT processor integrated Xe graphics	Intel UHD Graphics P630
Video Output	24-bit dual-channel LVDS CRT DVI-D	24-bit dual-channel LVDS DVI-D and DVI-I on board
Ethernet	Intel® I226LM 2.5 Gigabit LAN Intel® I226V 2.5 Gigabit LAN	LAN 1: Intel® I219LM Gigabit LAN PHY (IB995AF-C246/IB995AF) Intel® I219V Gigabit LAN PHY (IB995EF) LAN2: Intel® I210AT Gigabit LAN
Audio	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec
SATA	5x SATA III ports	5x SATA III ports (IB995AF-C246) 3x SATA III ports (IB995AF) 2x SATA III ports (IB995EF)
I/O Chipset	F81966AB-I	F81964D-I
Parallel Port	1x SPP/EPP/ECP port	1x SPP/EPP/ECP port
Serial Port	1x RS232/422/485 (jumper-less selection) 3x RS232	3x RS232 1x RS232/422/485
USB 2.0	N/A	6x USB 2.0 (via pin header for IB995AF-C246/IB995AF, 1x via M.2, 1x via onboard Vertical type-A)
USB 3.0/3.1	7x USB 3.2 via rear I/O (4x via onboard pin header, 2x via rear I/O vertical type-A, 1x via onboard vertical type-A)	5x USB 3.0 (1x via rear panel, 4x via box-header for IB995AF-C246/IB995AF, 2x via box header for IB995EF)
KB / MS	NA	Combo PS/2
Hardware Monitor	Yes	Yes
Storage Device Interface	2x M.2	2x M.2
Watchdog Timer	256 levels	256 levels
Digital I/O	4-in/4-out	4-in/4-out
Expansion Slots	4x PCI, 4x PCI-E (x1) or 1x PCI-E (x4), 1x PCI-E (x16) from backplane	4x PCI, 4x PCI-E (x1) or 1x PCI-E (x4), 1x PCI-E (x16) from backplane
Mini Type Slots	1x M.2 (M-Key, type:2280, supports CNVI) 1x M.2 (E-Key, type:2230, supports NVMe)	1x M.2 (M-Key, type:2280, supports CNVI) 1x M.2 (E-Key, type:2230, supports NVMe)
TPM	1x M.2 (E-Key, type:2230) 2x M.2 (M-Key, type:2280)	2.0
Power Input	ATX type	ATX type
Power Consumption	Intel® Core™ i9-14900 Processor, Up to 5.80 GHz ATLA AD5LHC16PBA1-CCA w/ 2x DDR5 5600 16GB +3.3V : 1.24A +5V : 0.35A +5VSB : 0.08A +12V : 23.45A	Intel® Core™ i7-9700K 3.60GHz Innodisk M4U0-BGS2KCIK-A35 w/ 2x DDR4-2666 32G +3.3V : 0.76A +5V : 0.93A +5VSB : 0.08A +12V : 12.08A
Dimensions (L x W)	338mm x 126mm	338mm x 126mm
Extra Features	iAMT (1.6), RAID(0&1, 5), LAN Wakeup	iAMT (1.6), RAID(0&1, 5), LAN Wakeup
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Single Board Computers

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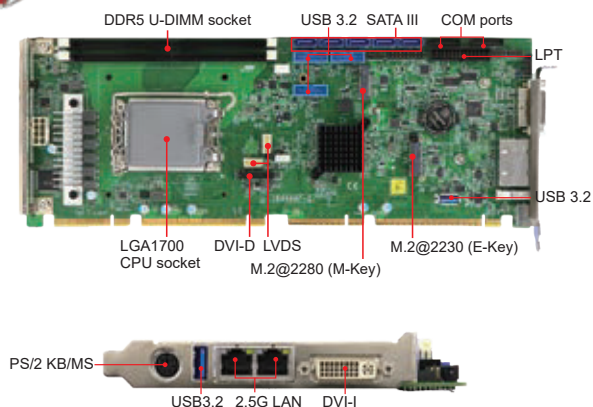
CPU Modules

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Motherboards

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CPU Cards



Specifications

CPU Socket	LGA1700
CPU	14th/13th/12th Gen Intel® Core™ i9/i7/i5/i3 processors
PCH	Intel® Q670E PCH
Memorys	2x DDR5-5600MHz DIMM, Max. 64GB, Non-ECC
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x M.2 (supports NVMe)
Expansion Slots	4x PCI, 4x PCI-E (x1) or 1x PCI-E (x4) 1x PCI-E (x16) from backplane
Mini Type Slots	1x M.2 (M-Key, type:2280, supports NVMe) 1x M.2 (E-Key, type:2230, supports CNVi)
Graphics Controller	Intel® DT processor integrated Xe graphics
Video Output	Supports DVI-I, DVI-D, 24-bit dual channel LVDS
Ethernet	Intel® I226LM 2.5G LAN Intel® I226V 2.5G LAN (as 2nd LAN)
I/O Chipset	Fintek F81966AB-I
Serial Port	1x RS232/422/485 (jumperless selection), 3x RS232
USB 2.0	1x USB 2.0 via M.2 (E-Key)
USB 3.X	6x USB 3.2 on board 1x USB 3.2 on edge I/O 1x USB 3.2 Type-A on board (vertical type)
Serial ATA	5x SATA III
Audio	Intel® PCH built-in HD audio controller + Realtek ALC888S codec
TPM	dTPM (2.0)
Others	Printer port, Digital I/O (4-in/ 4-out), RAID, iAMT (16.1)
Dimensions (L x W)	338mm x 126mm (13.3" x 4.96")
Max. Power Requirement	Intel® Core™ i9-14900 Processor, Up to 5.80 GHz ATLA AD5LHC16PBA1-CCA w/ 2x DDR5 5600 16GB +3.3V : 1.24A +5V : 0.35A +5VSB : 0.08A +12V : 23.45A
Operating Temperature	0°C ~ 60°C(32°F ~ 140°F)
Storage Temperature	-20°C ~ 80°C(-4°F ~ 140°F)
Relative Humidity	90%(non-condensing @60°C)

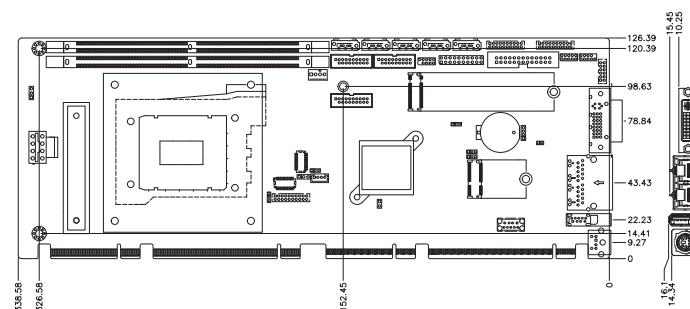
Features

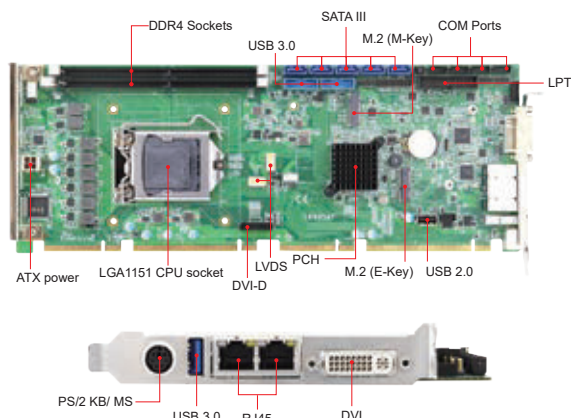
- 14th/13th/12th Gen Intel® Core™ i9/i7/i5/i3 Desktop Processors
- 2x DDR5 DIMM, Max. 64GB
- 2x Intel® 2.5G LAN
- Intel® processor integrated Xe graphics, supports DVI-I & LVDS & DVI-D
- 8x USB 3.2, 5x SATA III, 4x COM, 1x PS/2 for KB/MS
- 2x M.2 socket (M-Key/E-Key)
- supports dTPM(2.0) & iAMT(16.1)

Ordering Information

IB996AF-Q	LGA1700 Q670E PICMG1.3 Full-Size CPU Card w/ DVI-I, LVDS, DVI-D, 2.5G LAN, iAMT (16.1), 5x SATA III
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Dimensions and Drawing





Specifications

CPU Socket	LGA1151
CPU	9th/8th Gen Intel® Xeon® E / Core™ i7/i5/i3 DT processors
PCH	IB995AF-C246: Intel® C246 PCH IB995AF: Intel® Q370 PCH IB995EF: Intel® H310 PCH
Memorys	2x DDR4-2166/2400MHz DIMM, Max. 32GB (ECC compatible)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x M.2 (supports NVMe)
Expansion Slots	4x PCI, 4x PCI-E (x1) or 1x PCI-E (x4) 1x PCI-E (x16) from backplane
Mini Type Slots	1x M.2 (M-Key, type:2280, supports NVMe) 1x M.2 (E-Key, type:2230, supports CNVi)
Graphics Controller	Intel® UHD Graphics P630
Video Output	Supports DVI-D, DVI-I, 24-bit dual-channel LVDS
Ethernet	IB995AF-C246& IB995AF: Intel® I219LM Gigabit LAN PHY IB995EF: Intel® I219V Gigabit LAN PHY Intel® I211AT or I210AT Gigabit LAN (as 2nd LAN) IB995AF-C246: Intel® I210AT Gigabit LAN (as 2nd LAN)
I/O Chipset	Fintek F81964D-I
Serial Port	1x RS232/422/485 (jumperless selection) 3x RS232
USB 2.0	2x USB 2.0 on board 1x USB 2.0 via on board USB vertical connector 1x USB 2.0 via M.2 (E-Key)
USB 3.X	5x USB 3.0 on board for IB995AF series 3x USB 3.0 on board for IB995EF
Serial ATA	5x SATA III for IB995AF-C246 3x SATA III for IB995AF 2x SATA III for IB995EF
Audio	Intel® PCH built-in HD audio controller + Realtek ALC888S codec
TPM	TPM (2.0)
Others	Digital I/O (4-in/ 4-out), RAID, iAMT (11.6)
Dimensions (L x W)	338mm x 126mm (13.3" x 4.96")

Features

- 9th/8th Gen Intel® Xeon® E / Core™ i7/i5/i3 Pentium® QC/DC Processor, up to 4.7GHz
- 2x DDR4 DIMM, Max. 32GB
- 2x Gigabit LAN
- Intel® processor integrated graphics, supports DVI-I/ DVI-D/ LVDS
- 3x USB 2.0, 5x USB 3.0, 5x SATA III, 4x COM
- 2x M.2 socket (M-Key/E-Key)

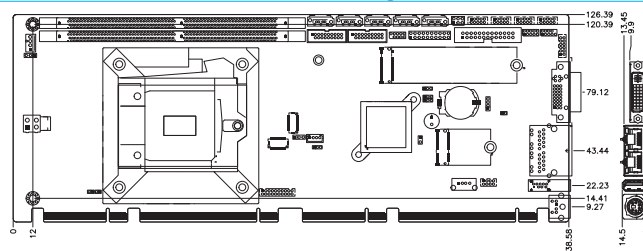
Power Consumption	Intel® Core™ i7-9700K 3.60GHz Innodisk M4U0-BGS2KCIK-A35 w/ 2x DDR4-2666 32G +3.3V : 0.76A +5V : 0.93A +5VSB : 0.08A +12V : 12.08A
Operating Temperature	0°C ~ 60°C(32°F ~ 140°F)
Storage Temperature	-20°C ~ 80°C(-4°F ~ 140°F)
Relative Humidity	90%(non-condensing @60°C)

Ordering Information

IB995AFS-C246	LGA1151 C246 PICMG1.3 Full-Size CPU Card w/ DVI-I, DVI-D, LVDS, Dual Gigabit LAN, iAMT (11.6), 5x SATA III
IB995AFS	LGA1151 Q370 PICMG1.3 Full-Size CPU Card w/ DVI-I, DVI-D, LVDS, Dual Gigabit LAN, iAMT (11.6), 3x SATA III
IB995EFS	LGA1151 H310 PICMG1.3 Full-Size CPU Card w/ DVI-I, DVI-D, LVDS, Dual Gigabit LAN, 2x SATA III

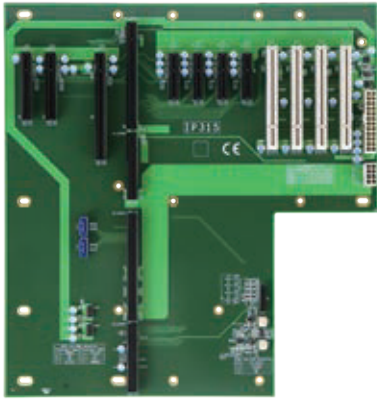
*(S) means with Realtek ALC888S codec

Dimensions and Drawing



IP315

PICMG 1.3 12-Slot Backplane



Features

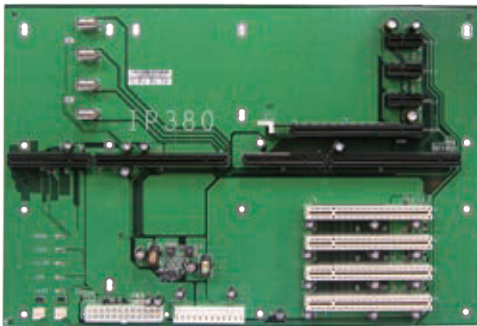
- 4-layer PCB
- AT / ATX power connector, ATX power outlet
- 4x CPI, 1x PCI-E(x16), 2x PCI-E(x8), 4x PCI-E(x4)
- Size: 310mm x 327 mm (12.2" x 12.9")

Ordering Information

IP315	PICMG 1.3 12-slot Backplane W/ 1x PCI-E(16x), 2x (PCI-Ex8), 4x PCI-E(x4), 4x PCI slot
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IP380L

PICMG 1.3 8-Slot Backplane



Features

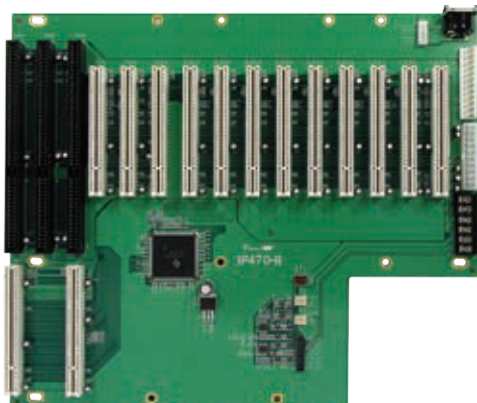
- 4-layer PCB
- AT / ATX power connector
- 1x PCI-E 16-lane slot, 3x PCI-E 1-lane slots
- PICMG 1.3 connector(A: PCI-E x16, B: PCI-E x8, C: PCI-E x16, D: PCI-E x8), 4x PCI(32-bit) slots
- Size: 221mm x 328mm (8.7" x 12.9")

Ordering Information

IP380L	PICMG 1.3 8-slot Backplane with 1x PCI-E 16-lane and 3x PCI-E 1-lane, 4x PCI
--------	--

IP470

PICMG 1.0 14-Slot Backplane



Features

- 4-layer PCB
- AT / ATX power connector, DC power outlet terminal
- 12x PCI, 2x ISA
- LED power indicators for +5V, -5V, +12V, -12V, 3.3V, +5VSB
- Size: 264.2mm x 311.2mm (10.4"x 12.3")

Ordering Information

IP470	PICMG 1.0 14-Slot Backplane w/ 12 PCI, 2 ISA lane slots
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Mini PCI-E Cards with Expansion

IBD182



Features:

- PCI-E to 2x RS232
- XR17V352 chipset
- 50.95mm x 30mm

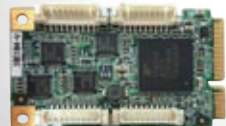
IBD183



Features:

- USB to UART,
1x RS232 + 1x RS422/485
- XR21V1412 chipset
- 50.95mm x 30mm

IBD184



Features:

- PCI-E to 4x RS232
- XR17V354 chipset
- 50.95mm x 30mm

IBD185



Features:

- USB to GPIO
- 16-in / 16-out
- STM32F103V8 chipset
- 50.95mm x 30mm

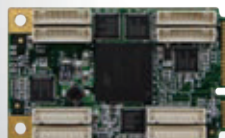
IBD186



Features:

- PCI-E to 2x RS232
w/ isolation
- XR17V352 &
2x LTM2882CY-3
chipset
- 50.95mm x 30mm

IBD188



Features:

- PCI-E to 8x RS232
- XR17V358 chipset
- 50.95mm x 30mm

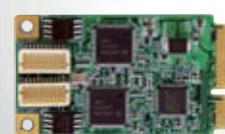
IBD190



Features:

- PCI-E to 1x GbE LAN
- 1x Intel® I211-AT chipset
- 50.95mm x 30mm

IBD192



Features:

- PCI-E to 2x GbE LAN
- 2x Intel® I211-AT or
2x Intel® I210-AT chipset
- 50.95mm x 30mm

IBD193



Features:

- PCI-E to MRAM storage
- 1x MR2A16ACYS35 chipset
- 50.95mm x 30mm

IBD194



Features:

- USB to 2nd VGA Display
- Resolution up to 1920x
1080 (Max.)
- DisplayLink DL-165
chipset
- 50.95 mm x 30 mm

IBD195



Features:

- PCI-E to 2x CAN Bus
- dual-channel isolation
- 50.95mm x 30mm

IBD196



Features:

- Mini-PCI-E to M.2 E key
- 54.5mm x 30mm

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Single Board
Computers

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CPU Cards

Embedded Function Cards

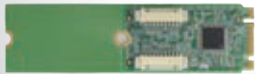
IMD101



Features:

- M.2 B-M to 2x 2.5GbE LAN
- 2x Intel® I226-IT Chipset
- 22mm x 80 mm

IMD102



Features:

- M.2 B-M to 2x RS232
- F81504U Chipset
- 22mm x 80 mm

IMD103

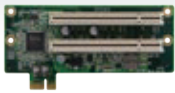


Features:

- M.2 B-M to 1x CAN bus
- F81601AN Chipset
- 22mm x 42 mm

Riser Cards

IP245



Features

- 130mm x 60mm
- IT8893E chipset
- PCI-E (x1) interface to 2x PCI slot

IP246



Features

- 30mm x 60mm
- IT8893E & PEX8603 chipset
- 1x PCI-E (x1) to PCI + 1x PCI-E (x1)

IP271



Features

- 129.97mm x 51.25mm
- 1x PCI interface to PCI slot

IP340



Features

- 110mm x 62.5mm
- 2x PCI interface to PCI slot

IP404



Features

- 139.7mm x 75.74mm
- PCI-E (x16) interface to 2x PCI-E (x8)

IP405



Features

- 139.25mm x 62.78mm
- PCI-E (x16) interface to 2x PCI-E (x8)

IP115



Features

- 139.7mm x 51.38mm
- 1x PCI interface to PCI

IP116-R



Features

- 139.7mm x 55.34mm
- 1x PCI-E (x16) interface to PCI-E (x16) slot

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Single Board Computers

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Embedded Function Cards

Riser Card



IP118

Features

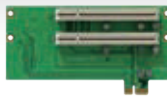
- 119.63mm x 64.5mm
- 1x PCI-E (x16) interface to PCI-E (x16) slot



IP119

Features

- 123.96mm x 55.50mm
- 1x PCI-E (x16) interface to PCI-E (x16) slot



IP155

Features

- 139.7mm x 75.74mm
- ASM1083 chipset
- 1x PCI interface to 2x PCI slot

Daughter Boards



ID107

Features

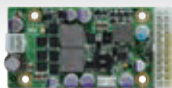
- 55mm x 47mm
- Amplifier board
- TPA3110D2 on board



ID600

Features

- 90 mm x 70mm
- +19V ~ +24V DC to DC converter
- 300W ATX power board



ID452

Features

- 90 mm x 45mm
- +12V ~ +24V DC to DC converter
- 120W ATX power board

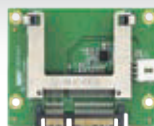


ID450-R

Features

- 90 mm x 45mm
- +12V only DC to DC converter
- 120W ATX power board

Function Card



IB-CFAST

Features

- 72.4mm x 57.5mm
- SATA + power connector (CFast socket)

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CPU Cards

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