

Vol.23

EMBEDDED COMPUTING

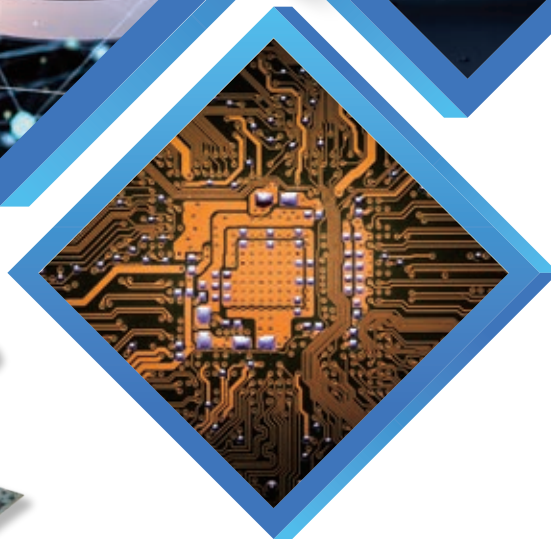
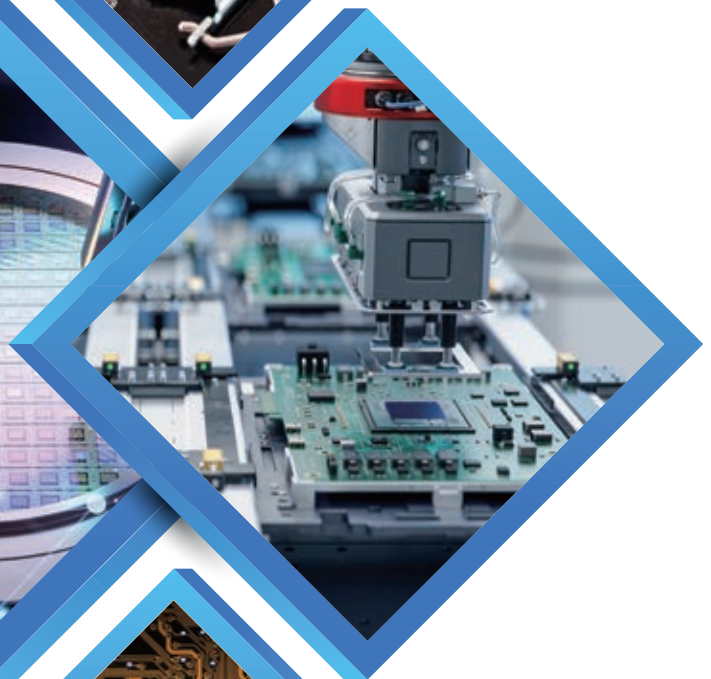


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About IBASE



Company Profile

IBASE Technology specializes in the design and manufacture of robust industrial PC, products since its establishment in 2000. IBASE carries out manufacturing and quality control at its own facilities in Taiwan that are certified with ISO 9001, ISO 13485, ISO 14001 and ISO 27001 standards. Current offerings comprise x86 and RISC-based industrial motherboards, embedded systems, panel PCs, network appliances and digital signage players. The company is publicly listed in the Taipei Exchange (TPEX: 8050) and is now a leading global provider of innovative industrial and embedded computing solutions.



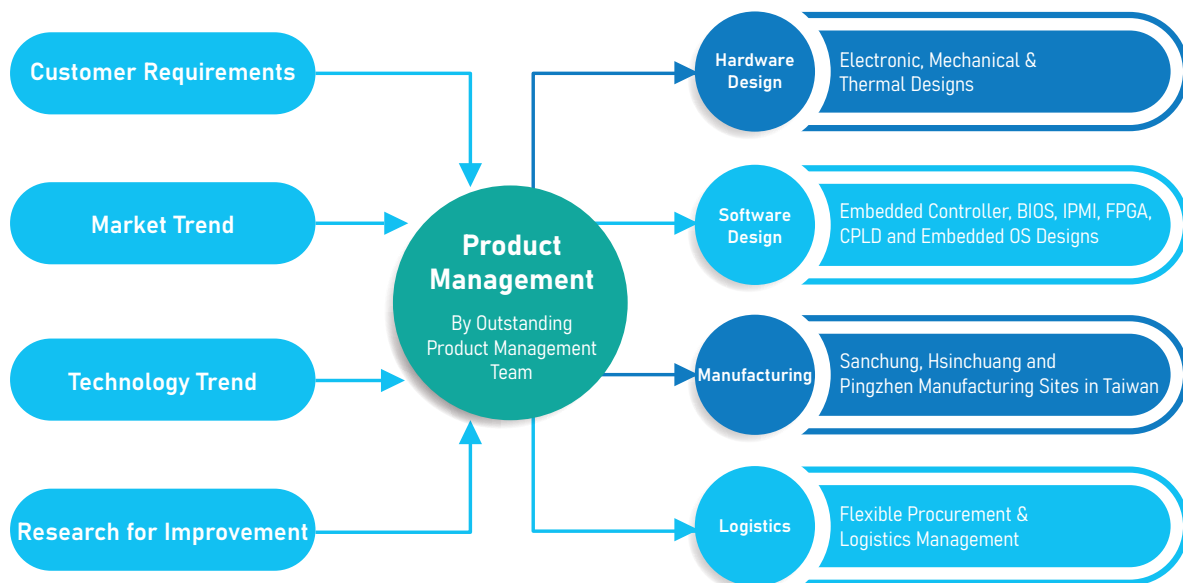
Core Competence

IBASE has three manufacturing sites in Taiwan, with two in New Taipei City and another one in Taoyuan City. We manufacture and implement strict quality control to supply excellent industrial computer products that are 100% made in Taiwan. In addition to off-the-shelf products, IBASE also specializes in OEM/ODM/JDM services, tailoring products to fully meet customers' expectations and the needs of various applications. With manufacturing and quality control capabilities recognized by major international companies, IBASE boasts of strong innovative R&D teams and flexible and timely products delivery.



Design & Manufacturing Services

Set up to become a global leading provider of embedded board and system solutions, IBASE manufacturers and supplies cutting-edge products based on the latest technologies to match market demands. Our R&D and product management teams have the expertise to design and develop products that are innovative and meet customers' requirements and design specifications. We attach great importance to research and development, investing heavily in manpower and resources to continuously provide high-quality innovative products. IBASE is also committed to compliance with environmental policies by working to prevent pollution with non-use of banned or restricted substances in our production process and products, helping our customers respond to their environmental challenges.



IBASE Manufacturing Sites

Design & Manufacturing in Taiwan

SANCHUNG

- Board Production
- Validation

3,124 m² / 945 Ping

HSINCHUANG

- System Assembly
- Validation

6,070 m² / 1,840 Ping

NEW

PINGZHEN

- Board Production
- System Assembly
- Validation

18,481 m² / 5,591 Ping

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



Comparison Table

3.5"/2.5" Single Board Computer

Models	IB962	IB961	IB956
Form Factor	3.5" SBC	3.5" SBC	3.5" SBC
CPU Socket	CPU on board	CPU on board	CPU on board
CPU	14th Gen Intel® Core™ Ultra7/5 mobile processors	13th Gen Intel® Core™ i7/i5/i3 mobile processors	11th Gen Intel® Core™ H-Series processor
CPU Max. Frequency	Up to 5.0GHz	Up to 4.8GHz	Up to 4.7GHz
PCH	N/A	N/A	QM580E HM570E
Memory	2x DDR5 SO-DIMM	1x DDR5 SO-DIMM	1x DDR4 SO-DIMM
Max. Memory Size	64GB	32GB	32GB
BIOS	AMI	AMI	AMI
Graphics Controller	14th Gen® Core™ Ultra 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	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 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® I225-LM 2.5GbE (IB956AF series) 1x Intel® I225-V 2.5GbE (IB956EF series) Intel® I2225-V as 2nd GbE
Audio	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
I/O Chipset	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)	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)	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	5x USB 3.1 (Gen.2) via rear I/O 1x USB 3.1 (Gen2) via Type-C
Hardware Monitor	Yes	Yes	Yes
TPM	dTPM/TPM	fTPM	2.0
Storage Device Interface	M.2 (M2280 for NVMe)	M.2 (M2280 for NVMe)	1x M.2 (M-Key)
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	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
Power Consumption	TBD	Intel® Core™ i7-2600 3.4GHz w/ 2x 2GB DDR3-1333 +12V:7.66A	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
Extra Features	Built-in iAMT (18.0)	Built-in iAMT (16.1)	Built-in iAMT (15)
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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

3.5"/2.5" Single Board Computer

IB953	IB952	IB919	IB918
3.5" SBC	3.5" SBC	3.5" SBC	3.5" SBC
CPU on board	CPU on board	CPU on board	CPU on board
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
Up to 4.7GHz	Up to 4.15GHz	Up to 4.7GHz	3.6GHz/ 2.3GHz
N/A	N/A	N/A	N/A
2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM
64GB	64GB	32GB	32GB
AMI	AMI	AMI	AMI
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
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
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
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
2x SATA III ports	2x SATA III ports	2x SATA III ports	2x SATA III ports
Fintek F81804U-I	Fintek F81804U-I	Fintek F81964D-I	F81964D-I
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)
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
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
Yes	Yes	Yes	Yes
2.0	2.0	2.0	2.0
1x M.2 (M-Key)	1x M.2 (M-Key)	1x M.2 (M-Key)	1x M.2 (M-Key)
256 levels	256 levels	256 levels	256 levels
4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out
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)
DC-in 9V~24V	DC-in 12V~24V	DC-in 9V~24V	DC-in 12V~24V
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
147mm x 102mm	147mm x 102mm	147mm x 102mm	147mm x 102mm
Built-in iAMT (15), EuP/ErP	EuP/ErP, LAN Wakeup	EuP/ErP, LAN Wakeup	EuP/ErP, LAN Wakeup
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Remarks: 1. Specifications are subject to change without prior notice. 2. ODM/OEM is available. 3. For user's manual & datasheet download, visit www.ibase.com.tw.

Comparison Table

3.5"/2.5" Single Board Computer

Models	IB917	IB916	IB915
Form Factor	3.5" SBC	3.5" SBC	3.5" SBC
CPU Socket	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
CPU Max. Frequency	Up to 3.9GHz	Up to 3.9GHz	Up to 3.4GHz
PCH	N/A	N/A	N/A
Memory	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR3L SO-DIMM
Max. Memory Size	32GB	32GB	16GB
BIOS	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
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
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
Audio	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
I/O Chipset	F81846AD-I	F81846AD-I	F81846AD-I
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)
USB 2.0	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
Hardware Monitor	Yes	Yes	Yes
TPM	2.0	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 Mini PCI-E(x1)	1x Mini PCI-E(x1)
Power input	DC-in 9V~24V	DC-in 9V~24V	DC-in 9V~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
Dimensions (L x W)	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
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Comparison Table

3.5"/2.5" Single Board Computer

Models	IB899	IB898	IB897
Form Factor	3.5" SBC	3.5" SBC	3.5" SBC
CPU Socket	CPU on board	CPU on board	CPU on board
CPU	Intel® Pentium® Processor N3710 / Intel® Celeron® Processor N3010	Intel® Atom® Processor E3825/E3815	Intel® Atom® Processor E3845/E3827/E3815
CPU Max. Frequency	Up to 2.56GHz/ 2.24GHz	1.33GHz / 1.46GHz	1.91GHz / 1.75GHz / 1.46GHz
PCH	N/A	N/A	N/A
Memory	2x DDR3L SO-DIMM	1x DDR3L SO-DIMM	2x DDR3L SO-DIMM
Max. Memory Size	8GB	8GB	16GB
BIOS	AMI	AMI	AMI
Graphics Controller	Intel® Gen8 graphics	Intel® Gen7 w/ 4EUs graphics	Intel® Gen7 w/4EUs graphics
Video Output	24-bit dual-channel LVDS DVI-D & VGA on board	24-bit dual-channel LVDS DisplayPort & VGA on board	24-bit dual-channel LVDS DisplayPort on board
Ethernet	2x Intel® I210AT Gigabit LAN	1x Intel® I210IT Gigabit LAN	2x Intel® I210IT Gigabit LAN
Audio	Built-in ALC888S HD audio codec	Built-in ALC269 HD audio codec with integrated 2 amplifier	Built-in ALC269 HD audio codec 2W amplifier
SATA	2x SATA III ports	2x SATA II ports	2x SATA II ports
I/O Chipset	NCT5523D	NCT5523D	NCT5523D
Serial Port	1x RS232 1x RS232/422/485 (jumper-less selection)	1x 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)	3x USB 2.0 (1x rear I/O + 2x via pin header)	3x USB 2.0 (1x rear I/O + 2x via pin header)
USB 3.X	4x USB 3.0 via rear I/O	1x USB 3.0 via rear I/O	1x USB 3.0 via rear I/O
Hardware Monitor	Yes	Yes	Yes
TPM	N/A	N/A	N/A
Storage Device Interface	mSATA via Mini PCI-E	mSATA via Mini PCI-E	mSATA via Mini PCI-E, MicroSD slot
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	2x Mini PCI-E(x1)	3x Mini PCI-E(x1)	2x Mini PCI-E(x1)
Power input	DC-in 12V~24V	DC-in 12V	DC-in 9V~30V
Power Consumption	Intel® Pentium® N3700 1.6GHz w/ 2x 4GB DDR3L-1600 +12V : 1.5A	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
Dimensions (L x W)	147mm x 102mm	147mm x 102mm	147mm x 102mm
Extra Features	LAN Wakeup, iSMART	LAN Wakeup, iSMART	LAN Wakeup, iSMART
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Comparison Table

3.5"/2.5" Single Board Computer

Models	IB839	IB838	IB837
Form Factor	3.5" SBC	3.5" SBC	3.5" SBC
CPU Socket	CPU on board	CPU on board	CPU on board
CPU	Intel® Atom® Processor x7835RE Intel® Atom® Processor x7211RE	Intel® Core i3-N305 Intel® Processor N50	Intel® Celeron QC J6412 Intel® Celeron QC N6210
CPU Max. Frequency	Up to 3.6GHz	Up to 3.8GHz	Up to 2.6GHz
PCH	N/A	N/A	N/A
Memory	1x DDR5 SO-DIMM	2x DDR5 SO-DIMM	1x DDR4 SO-DIMM
Max. Memory Size	16GB	16GB	16GB
BIOS	AMI	AMI	AMI
Graphics Controller	Intel® Gen12 UDH graphics	Intel® Gen12-AL w/ 32 EUs graphics	Intel® Gen11 w/ 32 EUs graphics
Video Output	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	2x 24-bit dual-channel LVDS 1x DisplayPort on board
Ethernet	2x Intel® I226IT Gigabit LAN	2x Intel® I226V Gigabit LAN	2x Intel® I226V 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 port	1x SATA III ports	1x SATA III ports
I/O Chipset	F81964D-I	F81964D-I	F81966D-I
Serial Port	3x RS232 1x RS232/422/485	3x RS232 1x RS232/422/485	5x RS232 1x RS232/422/485
USB 2.0	2x USB 2.0 via pin header	2x USB 2.0 via pin header	2x USB 2.0 via pin header
USB 3.X	1x Type-C 3x Type-A	1x Type-C 3x Type-A	4x USB3.1 Type-A
Hardware Monitor	Yes	Yes	Yes
TPM	fTPM	fTPM	fTPM
Storage Device Interface	M.2 SSD via B-Key	M.2 SSD via B-Key	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 M.2(E-Key), 1x M.2(B-Key)	1x M.2(E-Key), 1x M.2(B-Key)	1x Mini PCI-E(x1) , 1x M.2(E-Key), 1x M.2(B-Key)
Power input	DC-In 9V~36V	DC-In 9V~36V	DC-In 12V
Power Consumption	TBD	Intel® Core™ i3-N305 1.80 GHz w/ 4800 8GB DDR5 ADATA AD5S48008G-S +12V:2.8A	Intel® Celeron® J6412 2.00GHz w/ 8GB DDR4-3200 +12V:1.57A
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
Page No.	P.1-20	P.1-21	P.1-22

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Single Board Computers

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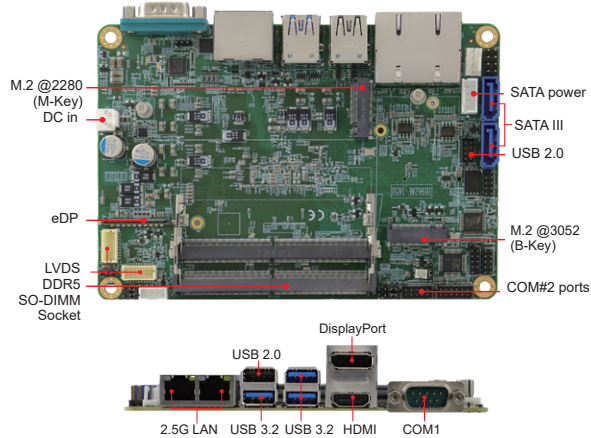
CPU Cards

Comparison Table

3.5"/2.5" Single Board Computer

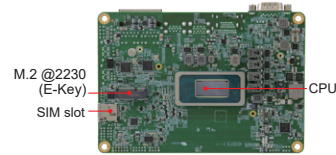
IB836	IB818	IB811	IB200
3.5" SBC	3.5" SBC	3.5" SBC	2.5" SBC
CPU on board	CPU on board	CPU on board	APU on board
Intel® Atom® Processor x6211E Intel® Atom® Processor x6413E Intel® Atom® Processor x6425E	Intel® Atom® Processor E3950/E3930 Intel® Pentium® Processor N4200 Intel® Celeron® Processor N3350	Intel® Atom® Processor E3950/E3930 Intel® Pentium® Processor N4200 Intel® Celeron® Processor N3350	AMD Ryzen™ Embedded R2514 AMD Ryzen™ Embedded R2314 AMD Ryzen™ Embedded R2312
Up to 3.0GHz	up to 2.0GHz/ 1.8GHz/ 2.5GHz/ 2.4GHz	up to 2.0GHz/ 1.8GHz/ 2.5GHz/ 2.4GHz	up to 2.7GHz
N/A	N/A	N/A	N/A
2x DDR4 SO-DIMM	1x DDR3L SO-DIMM	2x DDR3L SO-DIMM	Onboard Memory, DDR4
32GB	8GB	16GB	8GB
AMI	AMI	AMI	AMI
Intel® Gen11-LP w/ 32 EUs graphics	Intel® Gen9-LP w/ 18 EUs graphics	Intel® Gen9-LP w/ 18 EUs graphics	Radeon™ Graphics
24-bit dual-channel LVDS or eDP 2x DisplayPort on board	18/24-bit dual-channel LVDS HDMI on board	24-bit dual-channel LVDS or eDP HDMI & DisplayPort on board	24bits dual-channel LVDS (LVDS: 1920 x 1200 1080 at 60 Hz) 2x HDMI 2.0b
3x Intel® I225IT 2.5G LAN	2x Intel® I210IT Gigabit LAN or 1x Intel® I210AT Gigabit LAN	2x Intel® I210IT Gigabit LAN or 2x Intel® I210AT Gigabit LAN	2x Intel® I226IT Gigabit LAN
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	Built-in ALC888S HD audio codec
2x SATA III ports	2x SATA III ports	2x SATA III ports	1x SATA III port
F81946D-I	F81946D-I	F81946D-I	F81966AB-I
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)	COM 1 & 2 : RS-232/422/485 can be set by BIOS setting Default is RS-232. COM 3 & 4 : RS232
2x USB 2.0 via pin header	2x USB 2.0 ports via pin header	2x USB 2.0 via pin header	3x USB 2.0 via pin header
3x USB 3.1 via rear I/O 1x USB 3.1 via Type-C	4x USB 3.0 ports on board	4x USB 3.0 via rear I/O	2x USB 3.2 gen2
Yes	Yes	Yes	Yes
dTPM 2.0	N/A	N/A	2.0
mSATA via Mini PCI-E	mSATA via Mini PCI-E	mSATA via Mini PCI-E	1x M.2 (M-Key, type:2280, supports PCI-E Gen.3)
256 levels	256 levels	256 levels	256 levels
4-in / 4-OUT	4-in/4-out	4-in / 4-OUT	4-in/4-out
1x Mini PCI-E(x1), 1x M.2(E-Key)	2x Mini PCI-E(x1)	1x Mini PCI-E(x1), 1x M.2(B-Key)	1x M.2 (E-Key, type: 2230, 1x PCI-Ex1, USB 2.0)
DC-in 9V~36V	DC-in 12V~24V	DC-in 9V~36V	DC-in 12V
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	Intel® Atom® E3900 1.3GHz w/ 2x Transcend DDR3L 1600 4GB + 12V: 1.2A	TBD
147mm x 102mm	147mm x 102mm	147mm x 102mm	100mm x 72mm
LAN Wakeup, Eup / Erp	LAN Wakeup, Eup / Erp	LAN Wakeup, Eup / Erp	LAN Wakeup, Eup / Erp
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- 1 Single Board Computers
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Features

- Onboard 14th Gen Intel® Core™ Ultra 7/5 100 Series 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



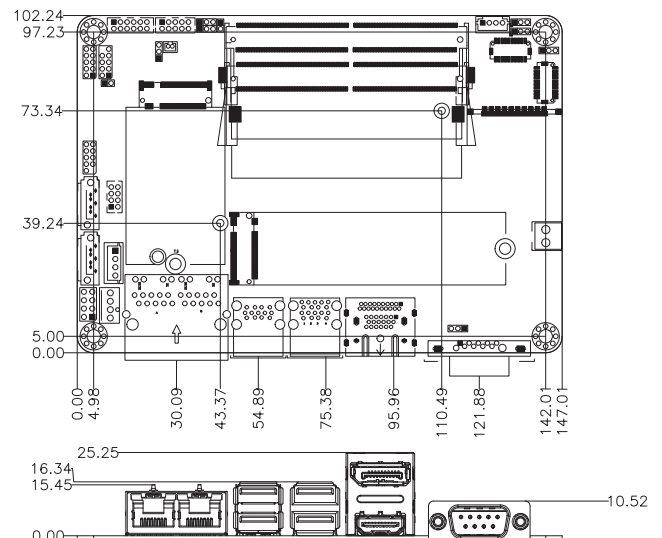
Specifications

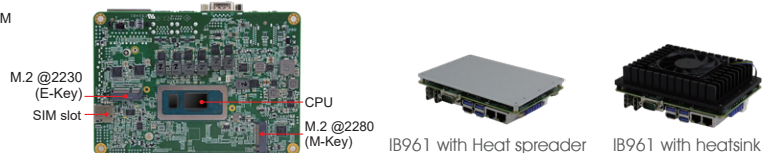
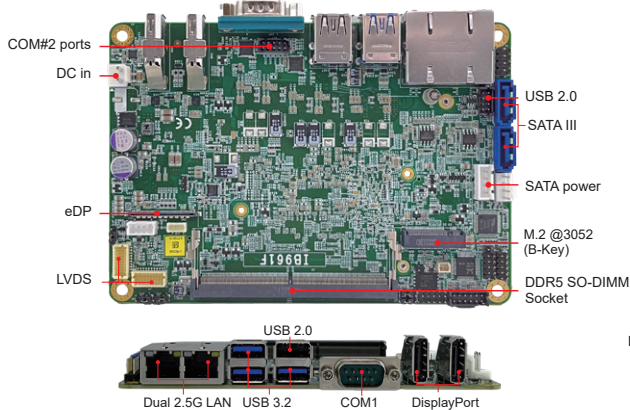
CPU	14th Gen Intel® Core™ Ultra 7/5 100 Series processors
PCH	N/A
Memory	2x DDR5 SO-DIMM, 5600MT/s, Non-ECC, Max.96GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	M.2 (M2280 for NVMe)
Mini Type Slots	1x M.2 (M-Key, Type:2280, supports NVMe with PCI-E(4x) signal only) 1x M.2 (E-Key, Type:2230, supports CNVi) 1x M.2 (B-Key, Type:3052, supports 5G/LTE)
Graphics Controller	14th Gen Intel® Core™ 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	14th Gen Intel® Core™ Ultra Series 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 processor 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





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)

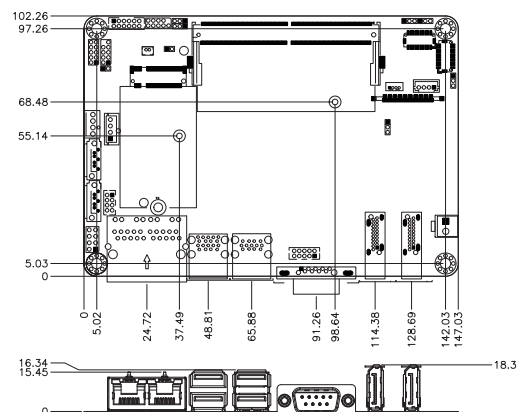
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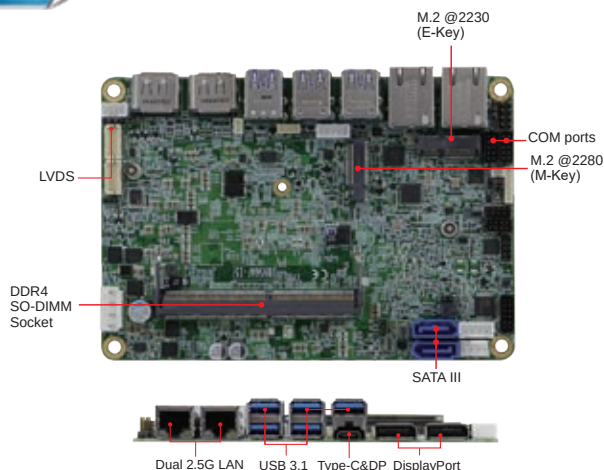
- Onboard 13th Gen Intel® Core™ i7/i5/i3 mobile processors
- 1x DDR5 SO-DIMM, Max. 32GB
- Supports 2x DisplayPort (1.2), LVDS and eDP
- 2x Intel® PCI-E 2.5G LAN
- 3x USB 2.0, 3x USB 3.2, 2x COM, 2x SATA III
- 3x M.2 slots (M-Key + E-Key + B-Key)
- Supports 5G, digital I/O (4-in/4-out), fTPM & watchdog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

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 for IB961
HSIB961-B	Heatsink 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

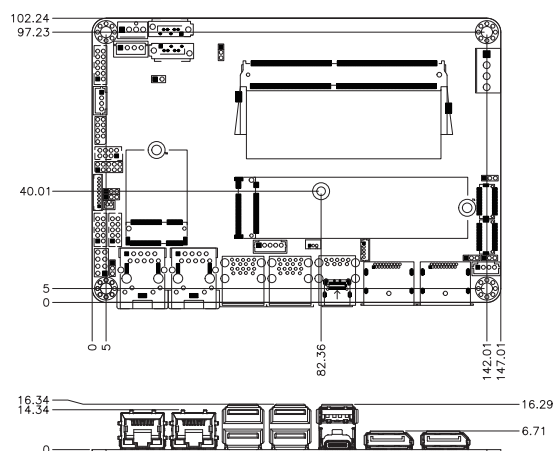
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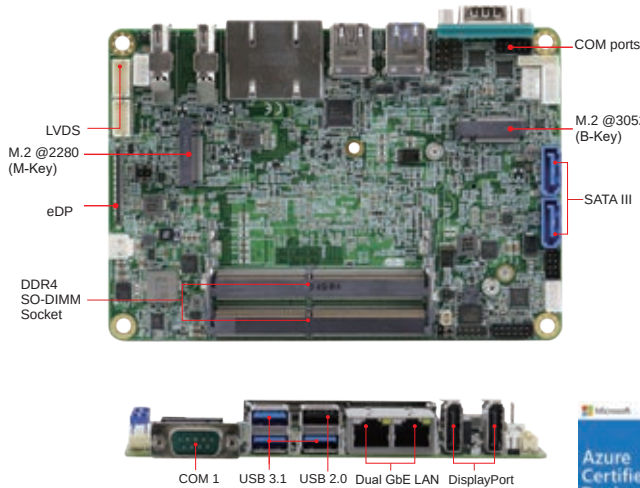
CPU	11th Gen Intel® Core™ i7-11850HE 11th Gen Intel® Core™ i5-11500HE 11th Gen Intel® Core™ i3-11100HE Intel® Celeron®-6600HE
PCH	IB956AF series: Intel® QM580E IB956EF series: Intel® HM570E
Memory	1x DDR4 SO-DIMM, Max.32GB
BIOS	AMI
Watchdog Timer	256 Levels
H/W Monitor	Yes
Storage Device Interface	NVMe
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® I225-LM IB956EF series: Intel® I225-V 2nd LAN: Intel® I225-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/ I225-LM 2.5GbE LAN + I225V 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/ I225-LM 2.5GbE LAN + I225V 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 I225V 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



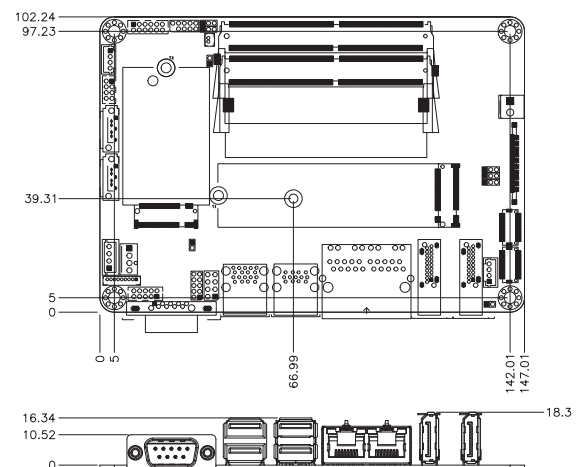
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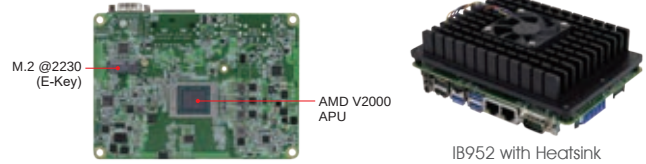
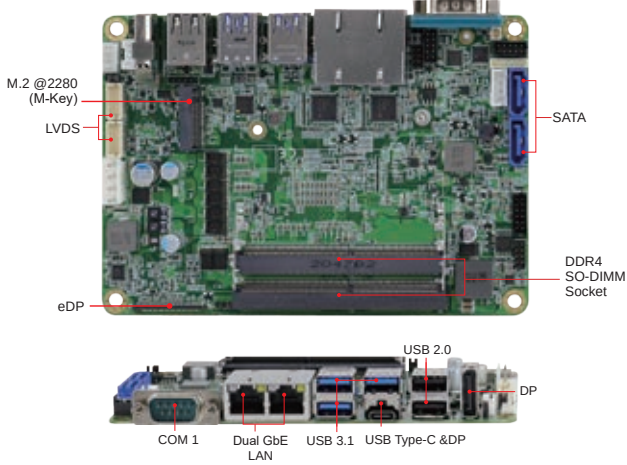
CPU	11th Gen Intel® Core™ i7-1185G7E 11th Gen Intel® Core™ i5-1145G7E 11th Gen Intel® Core™ i3-1115G4E Intel® Celeron® 6305E
PCH	Integrated in 11th Gen Intel® Core™ / Celeron® processor
Memory	DDR4-3200 SO-DIMM, Max. 64GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x 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 IBECC (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 for IB953
HSIB953-1	Heat spreader for IB953
IB76A-2	Cable kit w/ USB, COM, Power, SATA + Power

Dimensions and Drawing





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)

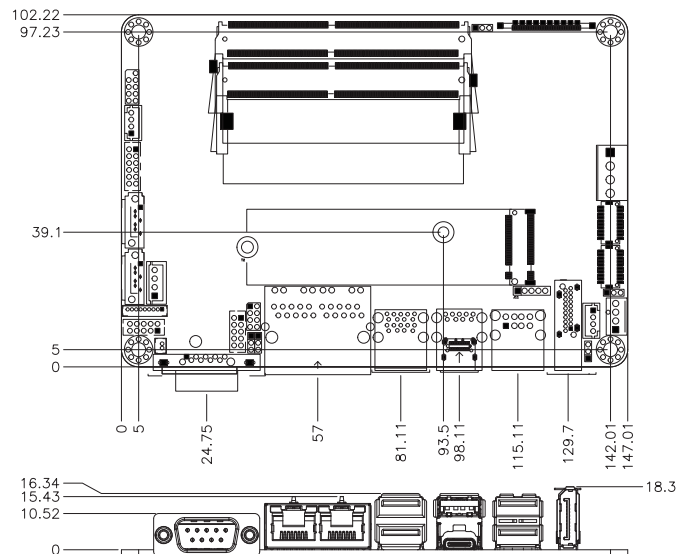
Specifications

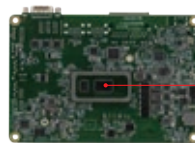
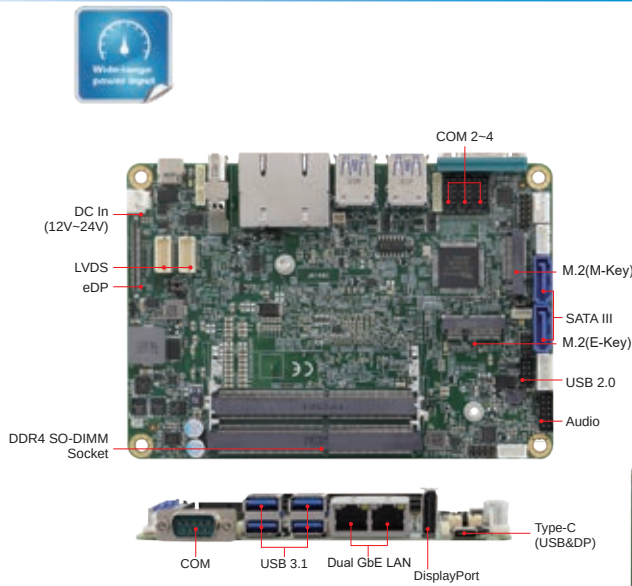
CPU	AMD Ryzen™ Embedded V2000 on board
PCH	N/A
Memory	DDR4-3200 SO-DIMM, Max. 64GB, supports ECC
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x M.2 (M-Key)
Mini Type Slots	1x M.2 (M-Key, type:2280, NVMe) 1x M.2 (E-Key, type:2230)
Graphics Controller	AMD Raden™ Vega integrated
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) 1x 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)

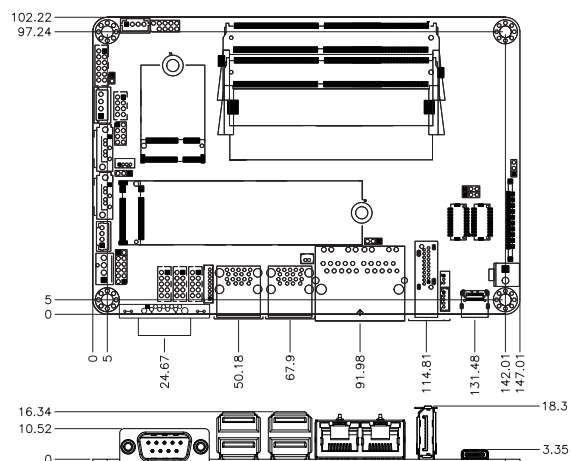
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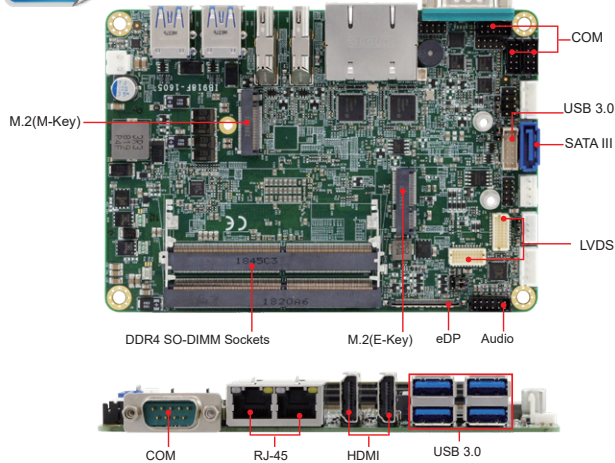
CPU	8th Gen Intel® Core™ i7-8665UE (1.7GHz/4.4GHz) 8th Gen Intel® Core™ i5-8365UE (1.6GHz/4.1GHz) 8th Gen Intel® Core™ i3-8145UE (2.2GHz/3.9GHz) Intel® Celeron® 4305UE (2.0GHz)
PCH	Integrated in 8th Gen Intel® Core™ / Celeron® processor
Memory	DDR4-2400 SO-DIMM, Max. 32GB (Non-ECC)
BIOS	AMI
Watchdog 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

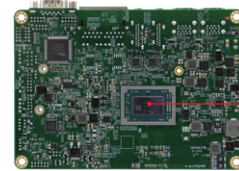
Dimensions and Drawing





Features

- AMD Ryzen™ Embedded V1000/R1000 Series on board
- 2x DDR4 SO-DIMM, Max. 32GB
- 2x 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/ E key)



IB918 with heatsink

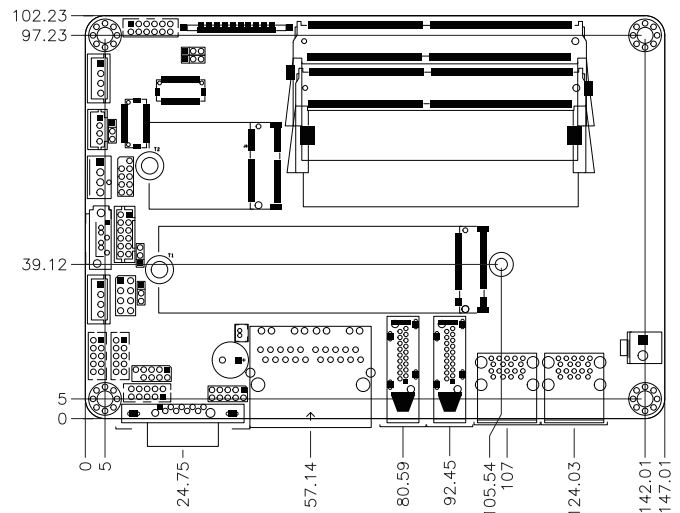
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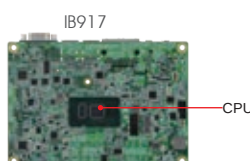
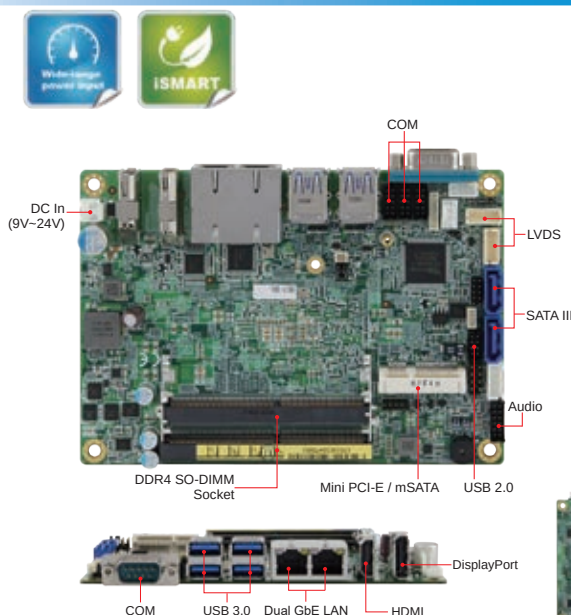
CPU	AMD Ryzen™ Embedded R2000 series	AMD Ryzen™ Embedded V1000 series	AMD Ryzen™ Embedded R1000 series
PCH	N/A		
Memory	DDR4-2400 SO-DIMM, Max. 32GB, supports ECC		
BIOS	AMI		
Watchdog Timer	256 levels		
H/W Monitor	Yes		
Storage Device Interface	1x M.2 (M-Key)		
Mini Type Slots	1x M.2 (M-Key, type:2280, 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 3.2 on board	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





Features

- Onboard 7th Gen Intel® Core™ U-Series 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

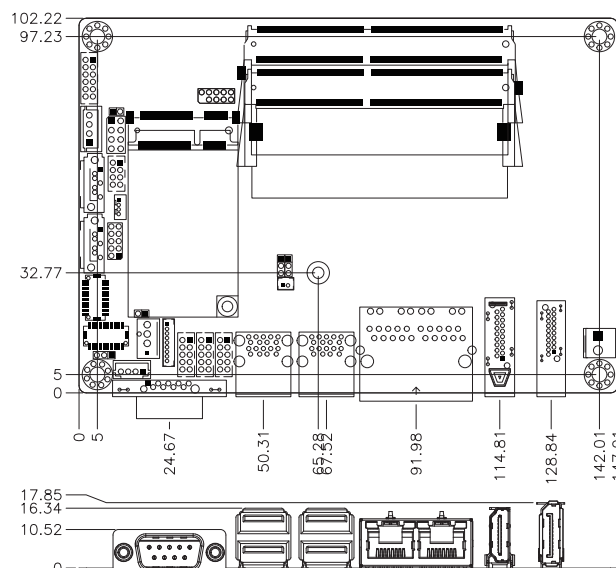
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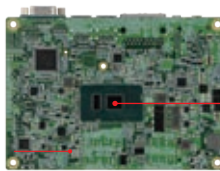
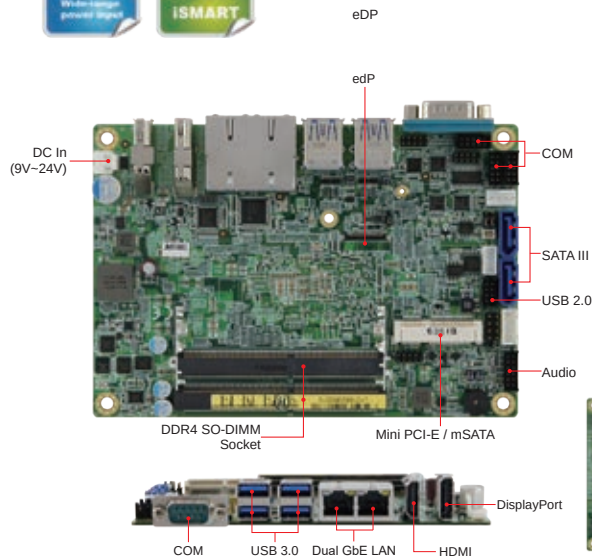
CPU	BGA1356 for 7th Gen Intel® Core™ U-Series i7/i5/i3/ Celeron® DC processors, up to 3.4GHz
PCH	Integrated in 7th Gen Intel® Core™ U-Series processor
Memory	2x DDR4-2133 SO-DIMM, Max 32GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA
Mini Type Slots	1x 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)

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





IB916 with Heat spreader



IB916 with Heatsink

Features

- Onboard 7th Gen Intel® Core™ U-Series 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

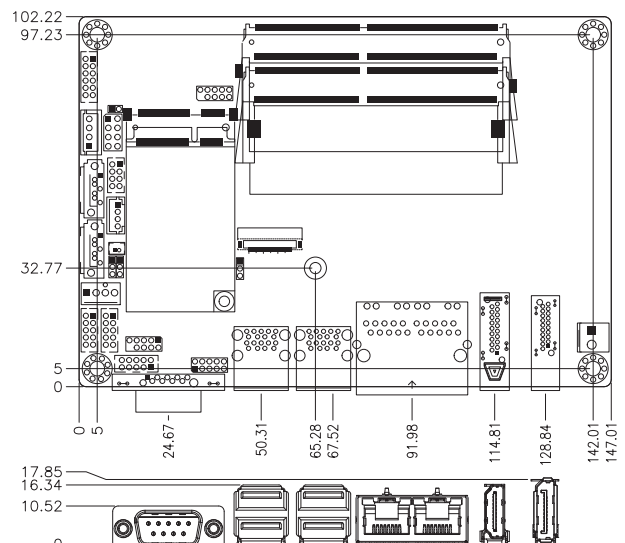
CPU	BGA1356 for 7th Gen Intel® Core™ U-Series i7/i5/i3/ Celeron® DC processors, up to 3.4GHz
PCH	Integrated in 7th Gen Intel® Core™ U-Series processor
Memory	2x DDR4-2133 SO-DIMM, Max 32GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA
Mini Type Slots	1x 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)

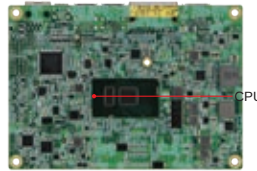
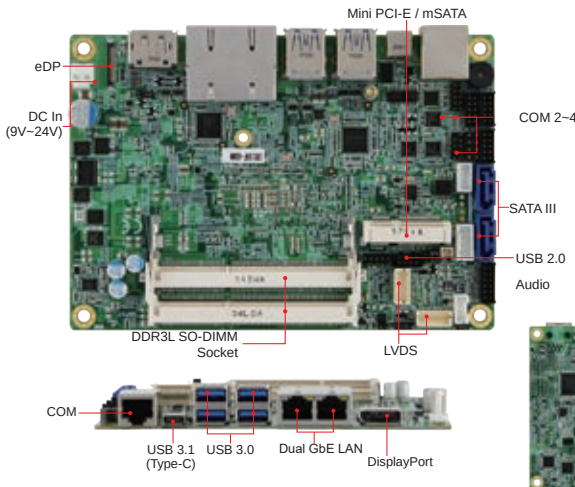
Ordering Information

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 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



IB915 with Heat spreader



IB915 with Heatsink

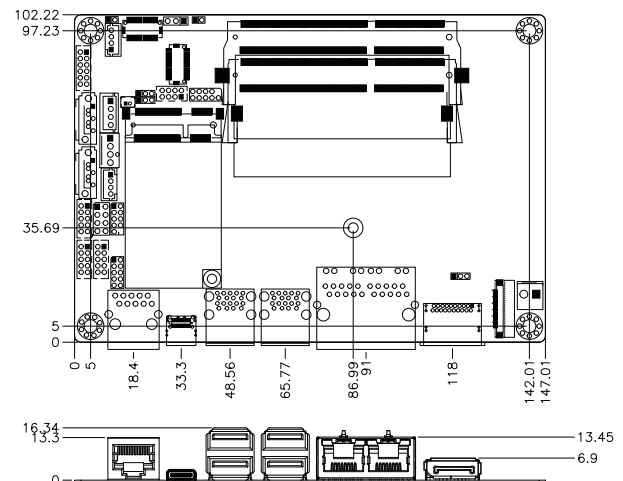
Specifications

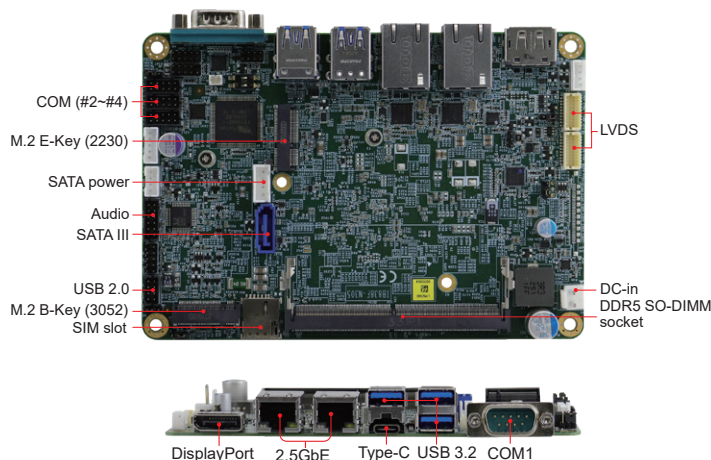
CPU	BGA1356 for 6th Gen Intel® Core™ U-Series i7/i5/i3/Celeron® DC processors, up to 3.4GHz
PCH	Integrated in 6th Gen Intel® Core™ U-Series processor
Memory	2x DDR3L-1600 SO-DIMM, Max 16GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA
Mini Type Slots	1x 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

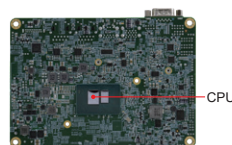
Dimensions and Drawing





Features

- 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

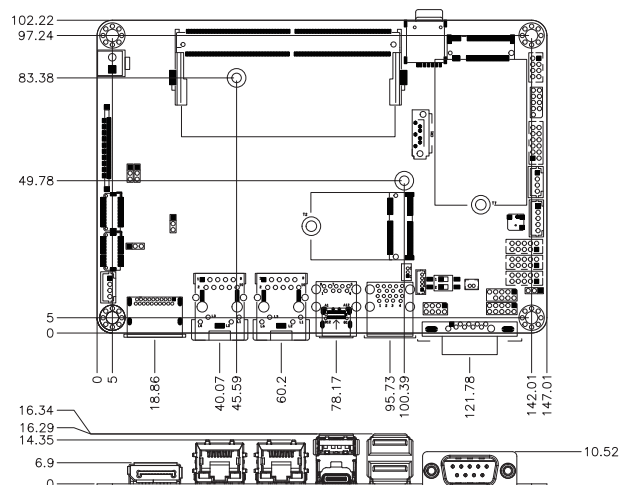
Specifications

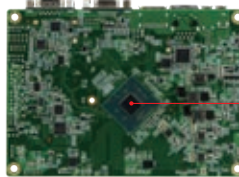
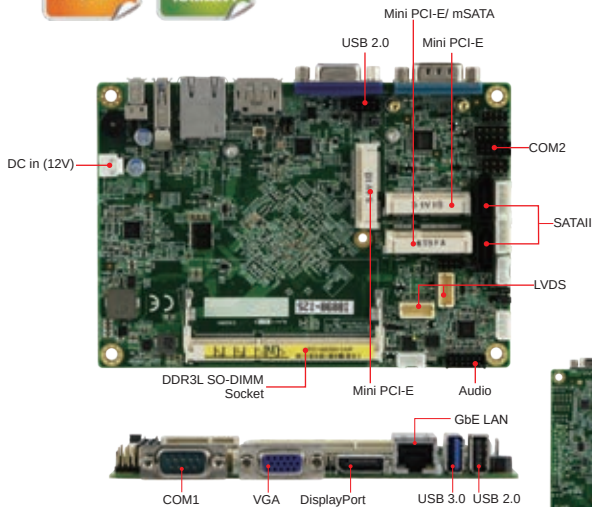
CPU	Intel® Processor N series SoC (Alder Lake-N)
PCH	N/A
Memory	1x DDR5 SO-DIMM, Max. 16GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	M.2(B-Key)
Mini Type Slots	2x M.2 sockets (E-Key+B-Key)
Graphics Controller	Intel® SoC integrated Gen12 graphics
Video Output	3x Display [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 + LVDS, 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





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

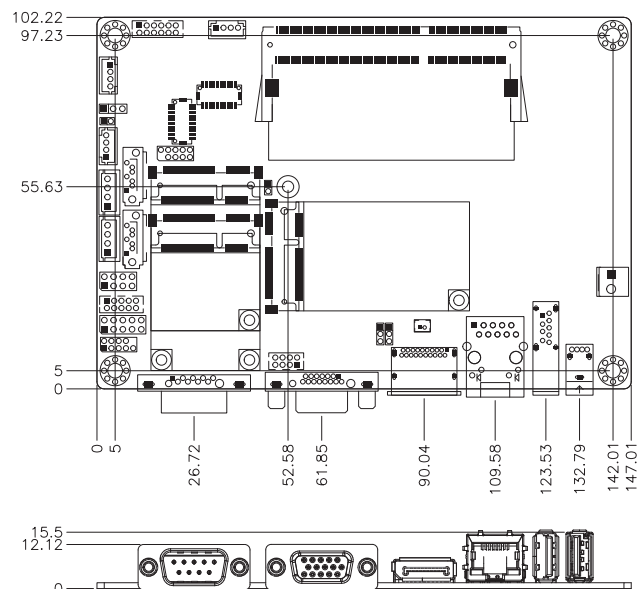
Specifications

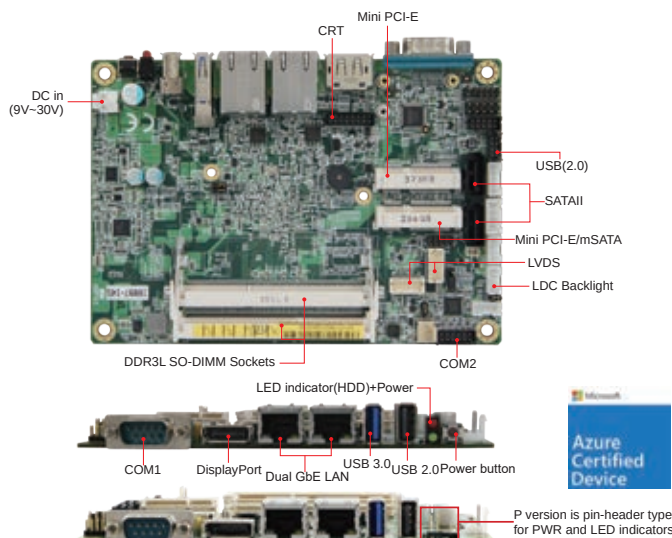
CPU	Intel® Atom® DC E3825 (1.33GHz, 1MB cache) Intel® Atom® SC E3815 (1.46GHz, 512KB cache)
PCH	Integrated in Intel® Atom® SoC
Memory	1x DDR3L-1066 SO-DIMM, Max 8GB (Non-ECC)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA
Mini Type Slots	3x Mini PCI-E (2x full-size, 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





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)

Features

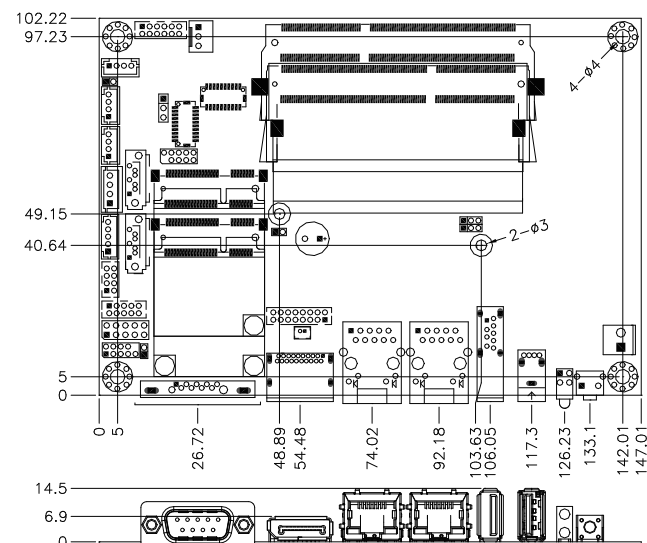
- Onboard Intel® Atom® E3845/E3827/E3815 SoC, 1.91GHz/1.75GHz/1.46GHz
- 2x DDR3L-1333 SO-DIMM, Max. 8GB
- Supports VGA, DisplayPort and 24-bit dual-channel LVDS
- 2x Intel® I210IT Gigabit LAN
- Watchdog timer, Digital I/O, mSATA, iSMART
- 3x USB 2.0, 1x USB 3.0, 2x COM, 2x SATA II, 1x MicroSD slot
-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

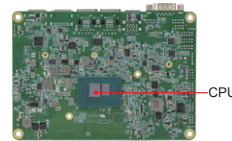
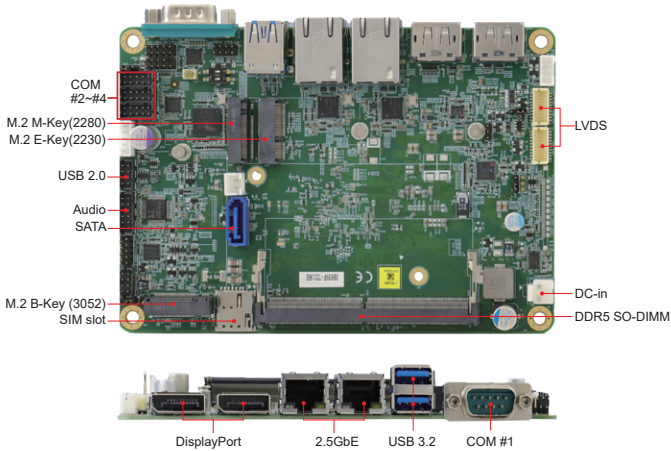


Ordering Information

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

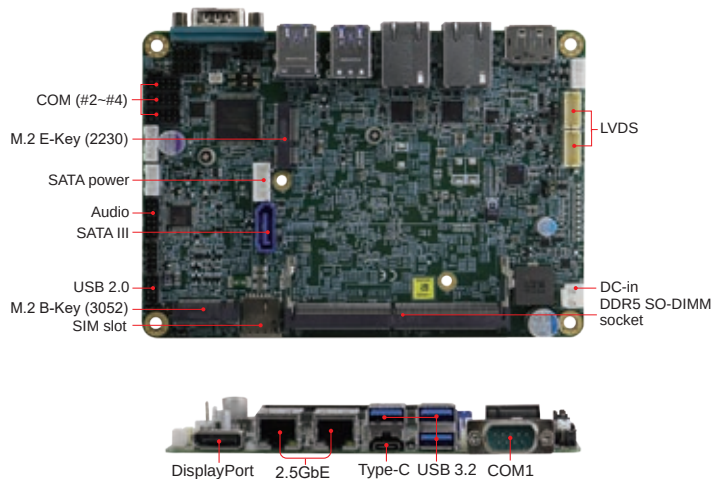
- Onboard Intel® Atom® x7000RE Series or N-Series processor
- 1x DDR5-4800 SO-DIMM, Max. 16GB
- Supports 2x DisplayPort (DP++) and eDP or LVDS
- 2x PCI-E 2.5G LAN, 4x COM ports
- 2x USB 3.2 (Type-A), 4x USB 2.0, 1x SATA III
- 3x M.2 sockets (M-key, E-key & B-key)
- +12V~+24V DC wide-range power input
- 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	TBD
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
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-A	Heatsink for IB839 Quad-core & Dual-core processors
HSIB838-1	Heat spreader for IB839
IB76A-2	Cable kit w/USB, COM, Power, SATA + Power



Specifications

CPU	New Gen Intel® Core™ i3 N-series processor
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® Core™ i3 Processor N-series & 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)

Features

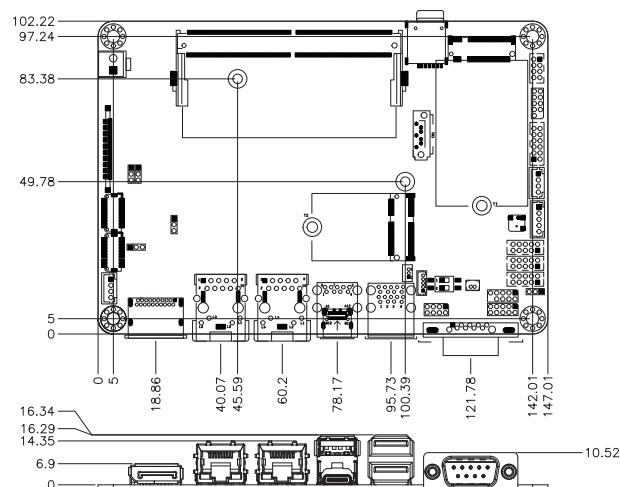
- New Gen Intel® Core™ i3 N-series processor (Alder Lake-N)
- 1x DDR5 SO-DIMM, Max. 16GB
- Supports Type-C & DP++ and eDP or LVDS
- 2x Intel® PCI-E 2.5G LAN
- 2x USB 2.0, 4x USB 3.2 (1x Type-C + 3x Type-A), 4x COM, 1x SATA III
- 2x M.2 sockets (E-Key + B-Key), supports CNVi
- 9V~36V wide-range DC input
- Supports fTPM, Watchdog timer, Digital I/O



Ordering Information

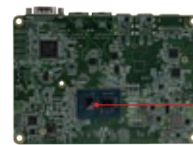
IB838F-N305	Intel® Core i3-N305 SoC on board 3.5" SBC w/ 2x 2.5GbE, DisplayPort + Type-C + LVDS, 4x COM, 2x M.2 (E-Key+B-Key), 1x SATA III, fTPM, DC-in (9V~36V)
IB838FE-N305	Intel® Core i3-N305 SoC on board 3.5" SBC w/ 2x 2.5GbE, DisplayPort + Type-C + eDP, 4x COM, 2x M.2 (E-Key+B-Key), 1x SATA III,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

Dimensions and Drawing



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

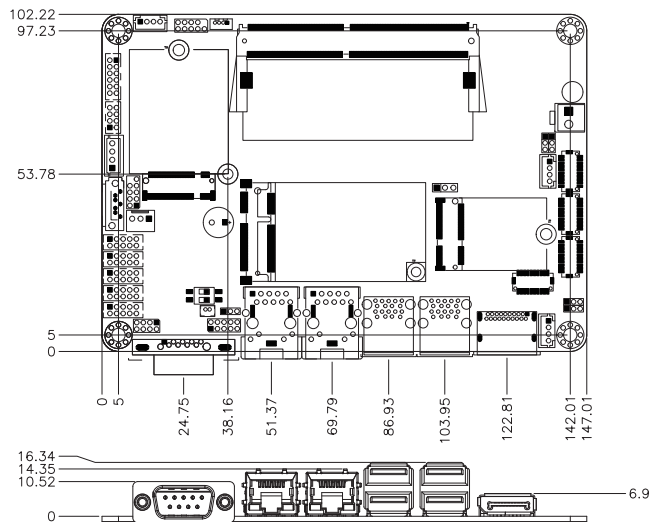
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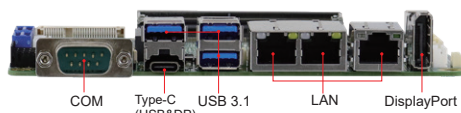
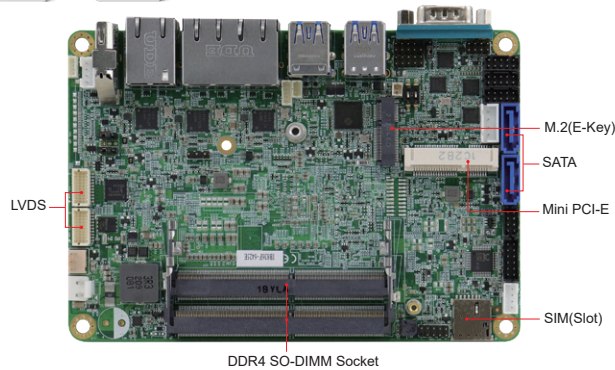
CPU	Intel® Celeron® QC J6412 (2.0GHz~2.6GHz) Intel® Celeron® DC N6210 (1.2GHz~2.6GHz)
PCH	N/A
Memory	1x DDR4 SO-DIMM, Max. 16GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA 1x M.2 B3042
Mini Type Slots	Mini PCI-E [for PCI-E (x1) + USB2.0 + SATA] 1x M.2 (B-Key, 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)

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

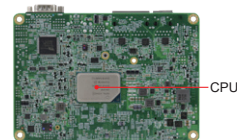
Dimensions and Drawing





Features

- Onboard Intel® Atom® x6000 Series processor
- 2x DDR4-3200 SO-DIMM, Max.32GB, supports IBECC
- 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

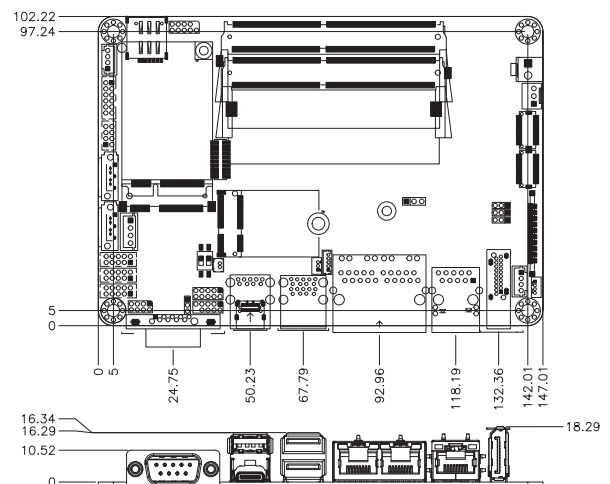
CPU	Intel® Atom® QC x6425E (1.8GHz~3.0GHz) Intel® Atom® QC x6413E (1.5GHz~3.0GHz)
PCH	Integrated in Intel® SoC
Memory	DDR4-3200 SO-DIMM, Max. 32GB, (supports IBECC based on CPU)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA (Share with SATA port)
Mini Type Slots	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® I225IT 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)

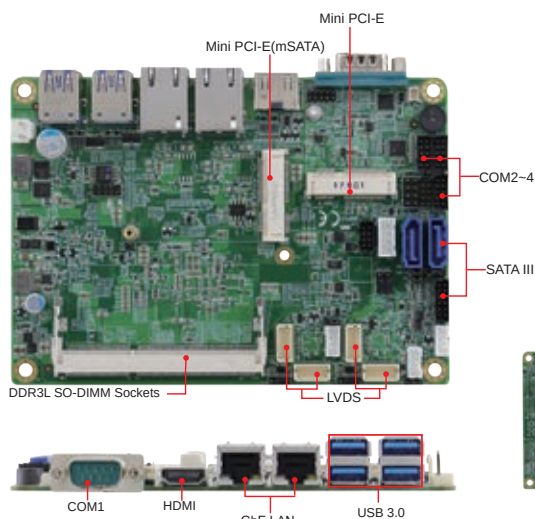
Ordering Information

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





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

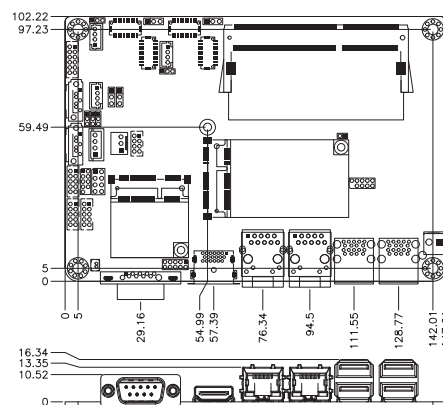
Specifications

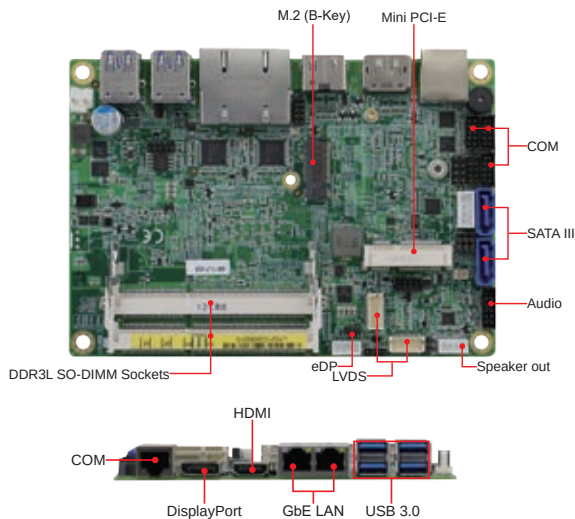
CPU	Intel Atom® x7-E3950 Processor (1.6GHz~2.0GHz) Intel Atom® x5-E3940 Processor (1.6 GHz~1.8GHz) Intel Atom® x5-E3930 Processor (1.3 GHz~1.8GHz) Intel® Pentium® Processor N4200 (1.1GHz~ 2.5GHz) Intel® Celeron® Processor N3350 (1.1GHz~ 2.4GHz) Intel® Celeron® Processor J3455(1.5GHz~ 2.3GHz)
PCH	Integrated 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~2.0 GHz) 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~1.8 GHz) 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~1.8 GHz) 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 LVDS Dual channel), 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

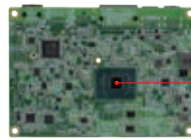
Dimensions and Drawing





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

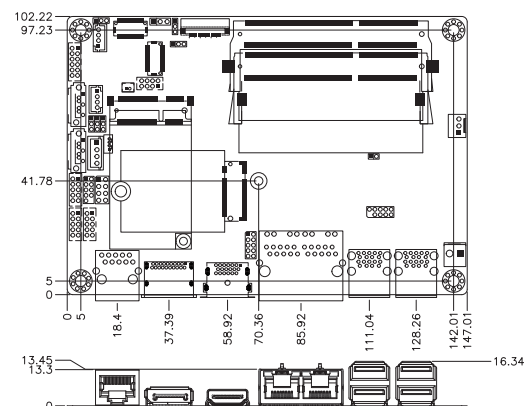
Specifications

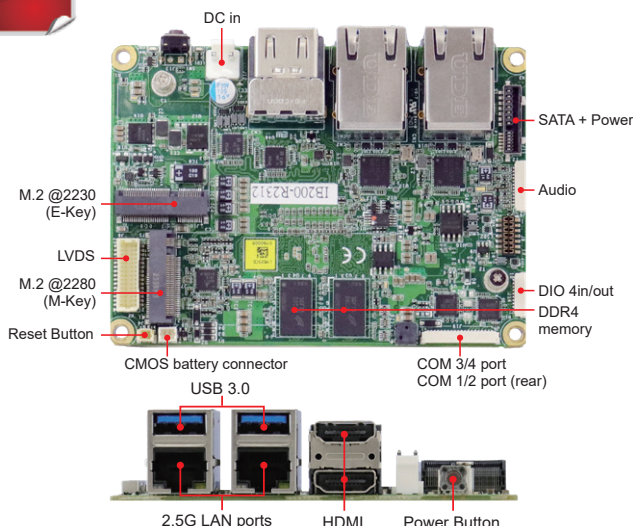
CPU	Intel Atom® x7-E3950 Processor (1.6GHz~2.0GHz) Intel Atom® x5-E3940 Processor (1.6 GHz~1.8GHz) Intel Atom® x5-E3930 Processor (1.3 GHz~1.8GHz) Intel® Pentium® Processor N4200 (1.1GHz~2.5GHz) Intel® Celeron® Processor N3350 (1.1GHz~2.4GHz)
PCH	Integrated in Intel® SoC
Memory	2x DDR3L SO-DIMM, Max 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





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

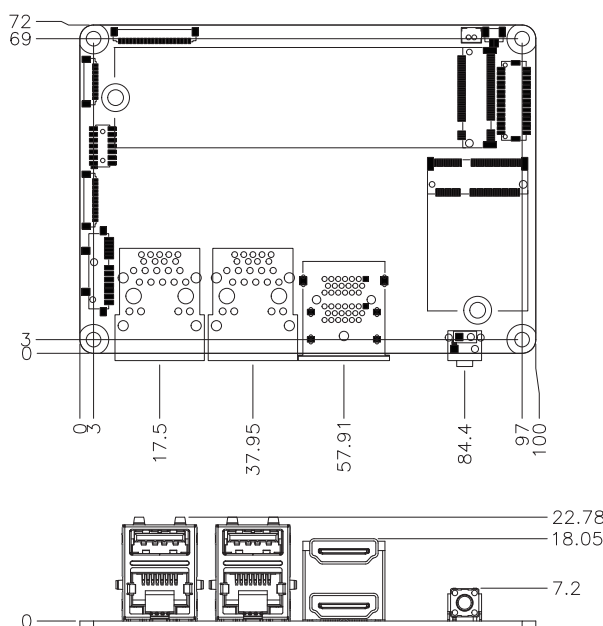
Specifications

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 III
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	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

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
Form Factor	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
CPU	13th Gen Intel® Core™ i7/i5/i3	12th Gen Intel® Core™ i7/i5/i3	AMD Ryzen™ 8000 series Hawk Point APUs
CPU Max. Frequency	Up to 4.8GHz	Up to 4.7GHz	Up to 5.2GHz
PCH	N/A	N/A	N/A
Memory	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR5 SO-DIMM
Max. Memory Size	64GB	64GB	64GB
BIOS	AMI	AMI	AMI
Graphics Controller	Intel® Core™ i integrated graphics	Intel® Core™ i integrated graphics	AMD Radeon™ 780M
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)
Ethernet	Intel® I226LM 2.5 Gigabit LAN	Intel® I226LM 2.5 Gigabit LAN	Intel® I225V 2.5 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)
SATA	2x SATA III (on Carrier Board)	2x SATA III ports (on Carrier Board)	2x SATA III ports (on Carrier Board)
I/O Chipset	F81804U-I (on board)	F81804U-I (on board)	F81804U-I (on board)
Parallel Port	N/A	N/A	N/A
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)
USB 2.0	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)
TPM	2.0	2.0	2.0
KB / MS	N/A	N/A	N/A
Hardware Monitor	Yes	Yes	Yes
Storage Device Interface	N/A	N/A	N/A
Watchdog Timer	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)
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
Power Input	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
Dimensions (L x W)	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
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Comparison Table

CPU Module

Models	ET977	ET976	ET975
Form Factor	COM Express Type-6 (R3.0)	COM Express Type-6	COM Express Type-6
CPU Socket	BGA1140 on board	BGA1140 on board	FCBGA1356 CPU on board
CPU	AMD Ryzen™ V1000 / R1000 series Embedded APU	AMD Ryzen™ V1000 series embedded APU	7th Gen Intel® Core™ i7/i5/i3
CPU Max. Frequency	Up to 3.8GHz	Up to 3.8GHz	Up to 3.9GHz
PCH	N/A	N/A	N/A
Memory	2x DDR4 SO-DIMM	DDR4 Memory on board	2x DDR4 SO-DIMM
Max. Memory Size	32GB	8GB	32GB
BIOS	AMI	AMI	AMI
Graphics Controller	AMD Radeon™ Vega GPU integrated	AMD Radeon™ Vega GPU integrated	Intel® Core™ i integrated graphics
Video Output	24-bit dual-channel LVDS or eDP (on carrier board)	24-bit dual-channel LVDS or eDP (on carrier board)	24-bit dual-channel LVDS (on carrier board)
Ethernet	Intel® I210AT Gigabit LAN	Intel® I211AT or I210AT Gigabit LAN	Intel® I219LM Gigabit LAN PHY
Audio	AMD Ryzen™ built-in HD audio controller	AMD V1000 series APU built-in HD interface	Realtek ALC662 or ALC888S (on carrier board)
SATA	2x SATA III (on carrier board)	2x SATA III ports (on carrier board)	2x SATA III ports (on carrier board)
I/O Chipset	Fintek F81804U-I	F81804U-I (on board)	NCT5523D (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)
Serial Port	2x UART (Tx/Rx only) (on carrier board)	2x RS-232 COM ports (on carrier board)	2x RS-232 COM ports (on carrier board)
USB 2.0	8x USB 2.0 ports (via carrier board)	8x USB 2.0 (via carrier board)	8x USB 2.0 (via carrier board)
USB 3.X	1x USB 3.1 (10G), 3x USB 3.1 (via carrier board)	4x USB 3.1 (via carrier board)	4x USB 3.0 (via carrier board)
TPM	2.0	2.0	2.0
KB / MS	N/A	N/A	On carrier board
Hardware Monitor	Yes	Yes	Yes
Storage Device Interface	N/A	N/A	eMMC5.0 (optional)
Watchdog Timer	256 levels	256 levels	256 levels
Expansion slots	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)	8x PCI-E(x1) 1x PCI-E(x1)	4x PCI-E(x1), 1x PCI-E(x4)
Digital I/O	4-in / 4-out on carrier board (IP418)	4-in / 4-out on carrier board (IP418)	N/A
Power Input	On carrier board	On carrier board	On carrier board
Power Consumption	AMD V1605B w/ 2x 8GB DDR4-2133, +12V: 3.28A AMD R1606G w/ 2x 8GB DDR4-2133, +12V: 3.43A	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
Dimensions (L x W)	125mm x 95mm	125mm x 95mm	95mm 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), Boot on LAN
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Comparison Table

CPU Module

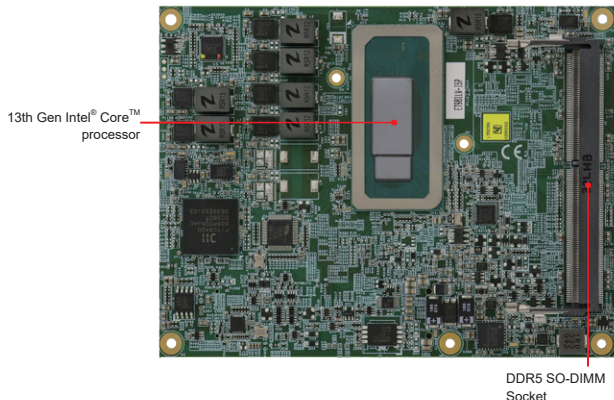
Models	ET970	ET880	ET876	ET875
Form Factor	COM Express Type-6	COM Express Type-6 (R3.0)	COM Express Type-10 (R3.0)	COM Express Type-10 (R3.0)
CPU Socket	BGA1440 CPU on board	FCBGA1296 SoC on board	FCBGA1296 SoC on board	FCBGA1296 SoC on board
CPU	7th Gen Intel® Xeon® / Core™ i7/i5/i3	Intel® Atom® QC x6425E Intel® Atom® DC x6211E	Intel® Atom® Processor E3950/E3940/ E3930	Intel® Atom® Processor E3950/E3940/ E3930 Intel® Pentium® QC N4200 Intel® Celeron® DC N3350
CPU Max. Frequency	Up to 3.7GHz	Up to 3.0GHz	Up to 2.5GHz	Up to 2.5GHz
PCH	Intel® CM238/QM175/QM170 PCH	N/A	N/A	N/A
Memory	2x DDR4 SO-DIMM	DDR4 8GB memory onboard + 1x DDR4 SO-DIMM	Onboard DDR3L memory	LPDDR4 Onboard Memory
Max. Memory Size	32GB	24GB	4GB	8GB
BIOS	AMI	AMI	AMI	AMI
Graphics Controller	Intel® Core™ i integrated graphics	Intel® SoC integrated Gen11 graphics	Intel® SoC integrated Gen9-LP graphics	Intel® Gen9-LP w/ 18 EUs graphics
Video Output	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)	24-bit dual-channel LVDS (on carrier board)
Ethernet	Intel® I219LM Gigabit LAN PHY	Intel I226IT Gigabit LAN	Intel® I210IT Gigabit LAN	Intel® I210IT Gigabit LAN
Audio	Realtek ALC662 or ALC888S (on carrier board)	Intel® Atom® SoC built-in HD audio controller	Intel® Atom® SoC built-in HD audio controller	Realtek ALC662 or ALC888S HD audio codec (on carrier board)
SATA	4x SATA III ports (on carrier board)	2x SATA III (on Carrier Board)	2x SATA III (on Carrier Board)	2x SATA III ports (on carrier board)
I/O Chipset	NCT5523D (on board)	F81804U-I (on board)	F81804U-I (on board)	F81804U-I (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)	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)	2x UART (Tx/Rx only) (on carrier board)
USB 2.0	8x 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)
USB 3.X	4x USB 3.0 (via carrier board)	2x USB 3.1 (via Carrier Board)	2x USB 3.0 (via carrier board)	2x USB 3.0 (via carrier board)
TPM	2.0	2.0	2.0	2.0
KB / MS	On carrier board	N/A	N/A	N/A
Hardware Monitor	Yes	Yes	Yes	Yes
Storage Device Interface	N/A	N/A	eMMC 5.0 up to 32GB (optional)	eMMC5.0 (optional)
Watchdog Timer	256 levels	256 levels	256 levels	256 levels
Expansion slots	8x PCI-E(x1), 1x PCI-E(x16)	5x PCI-E(x1)	4x PCI-E(x1)	4x PCI-E(x1)
Digital I/O	4-in / 4-out on carrier board (IP413)	4-in/ 4-out on Carrier Board (IP419)	4-in/ 4-out on carrier board (IP417)	4-in / 4out on carrier board (IP417)
Power Input	On carrier board	On Carrier Board	On carrier board	On carrier board
Power Consumption	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	Intel® Atom® Processor E3950 1.60GHz w/ Onboard LPDDR4 2400MHz 8GB +12V: 1.587A
Dimensions (L x W)	95mm x 125mm	95mm x 95mm	84mm x 55mm	84mm x 55mm
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, 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	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
Page No.	P2-11	P2-12	P2-13	P2-14

Comparison Table

CPU Module

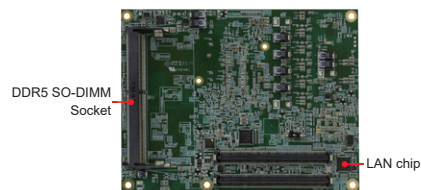
ET870	ET860	IBQ800	ET839
COM Express Type-6 (R3.0)	COM Express Type-6	QSeven (R2.1)	ETX (3.0)
FCBGA1296 SoC on board	BGA1170 SoC on board	FCBGA1296 SoC on board	BGA1170 SoC on board
Intel® Atom® Processor E3950/ E3940/ E3930 Intel® Pentium® QC N4200 Intel® Celeron® DC N3350	Intel® Atom® Processor E3845/ E3827	Intel® Atom® Processor E3950/ E3940/ E3930	Intel® Atom® Processor E3845
Up to 2.5GHz	Up to 1.91GHz	Up to 2.5GHz	1.91GHz
N/A	N/A	N/A	N/A
2x DDR3L SO-DIMM	2x DDR3L SO-DIMM	LPDDR4 on board Memory	1x DDR3L SO-DIMM
16GB	16GB	8GB	8GB
AMI	AMI	AMI	AMI
Intel® Gen9-LP w/ 18 EUs graphics	Intel® Gen7 graphics	Intel® Gen9-LP w/ 18 EUs graphics	Intel® Gen7 graphics
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)
Intel® I210IT Gigabit LAN	Intel® I210IT Gigabit LAN	Intel® I210IT Gigabit LAN	Realtek RTL8106E 10/100M LAN
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)
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)
F81804U-I (on board)	NCT5523D (on board)	F81804U-I (on board)	NCT6102D (on 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)
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)
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)
3x USB 3.0 (via carrier board)	1x USB 3.0 (via carrier board)	3x USB 3.0 (via carrier board)	N/A
2.0	N/A	2.0	N/A
N/A	On carrier board	N/A	On carrier board
Yes	Yes	Yes	Yes
N/A	MicroSD	eMMC5.0 (optional)	N/A
256 levels	256 levels	256 levels	256 levels
4x PCI-E(x1)	1x PCI-E (x1) on carrier board (IP411)	4x PCI-E(x1)	3x PCI + 1x ISA on carrier board (IP412)
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)
On carrier board	On carrier board	On carrier board	On carrier board
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 LDDR4 1600 +12V: 1.7121A	Intel® Atom® E3845 1.91GHz w/ 2x 4GB DDR3L-1600 +5V: 1.92A
95mm x 95mm	95mm x 95mm	70mm x 70mm	95mm x 114mm
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
P2-15	P2-16	P2-17	P2-18

Remarks: 1. Specifications are subject to change without prior notice. 2. ODM/OEM is available. 3. For user's manual & datasheet download, visit www.ibase.com.tw.



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)



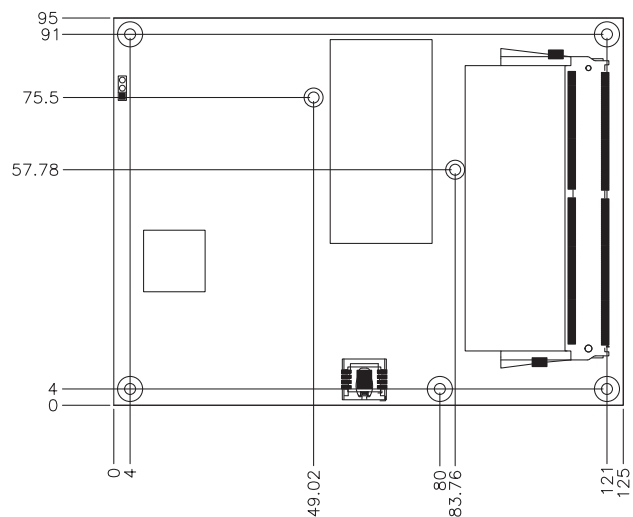
Specifications

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

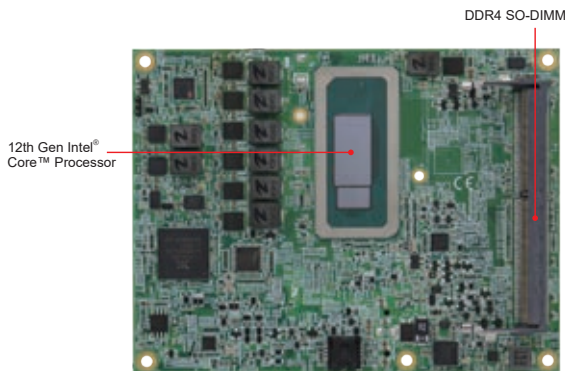
ET981LV-I7P	COM Express (Type 6) module w/ Intel® i7-1370PE onboard, LVDS support
ET981LV-I7PRE	COM Express (Type 6) Module w/ Intel® Core™ i7-1370PRE onboard, LVDS support (wide temperature)
ET981LV-I5U	COM Express (Type 6) module w/ Intel® i5-1335UE onboard, LVDS support
ET981-I5U	COM Express (Type 6) module w/ Intel® i5-1335UE onboard, support eDP
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 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



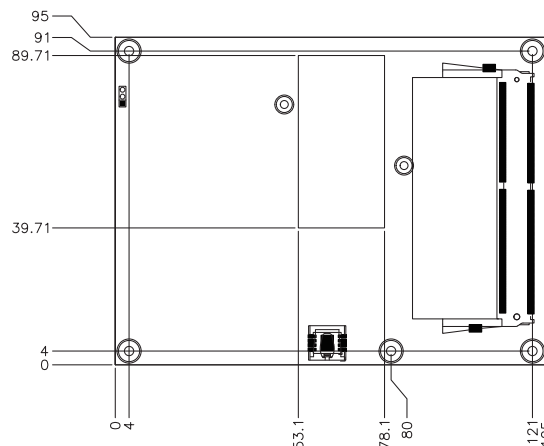
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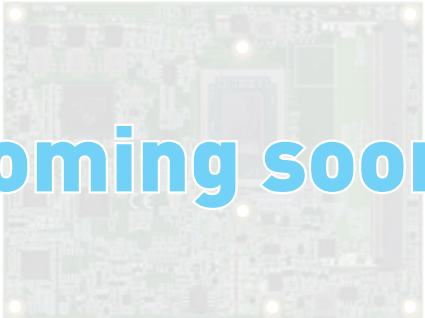
CPU	BGA1744 for 12th Gen Intel® Core™ i7/i5/i3 processors
PCH	N/A
Memory	2x DDR4-3200 SO-DIMM sockets, Max. 64GB, ECC compatible
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	1x PCI-E(x16), 1x PCI-E(x4), 4x PCI-E(x1) to carrier board
Graphics Controller	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: +12 V and +5 VSB 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, support eDP
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, support eDP
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 for ET980
HSET980-1	Heat spreader for ET980

Dimensions and Drawing



Coming soon

Features

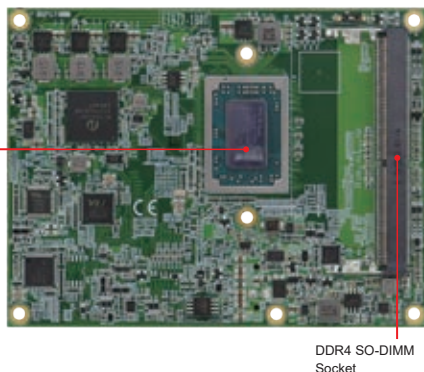
- Onboard AMD Ryzen™ 8000 series (Hawk Point APUs)
- Onboard DDR5 memory, Max. 8GB
- Supports 3x independent displays, HDMI/DVI/DisplayPort & LVDS or eDP via carrier board
- 4x USB 3.1, 8x USB 2.0, 2x SATA III
- Supports TPM (2.0)

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 (By 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)

AMD Ryzen™ V1000 / R1000
series Embedded APU



DDR4 SO-DIMM
Socket

Specifications

CPU	Onboard 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 up to 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)

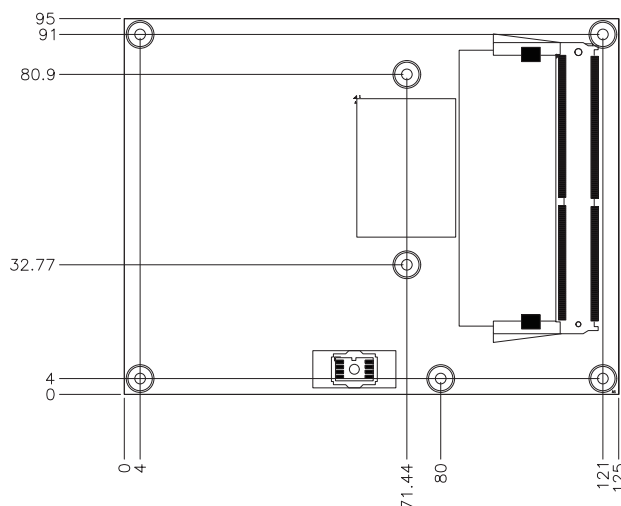


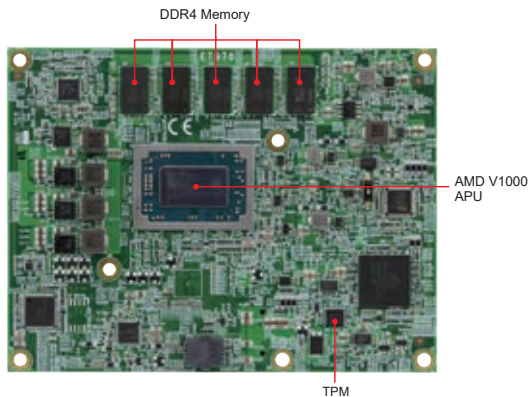
DDR4 SO-DIMM
Socket

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





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)



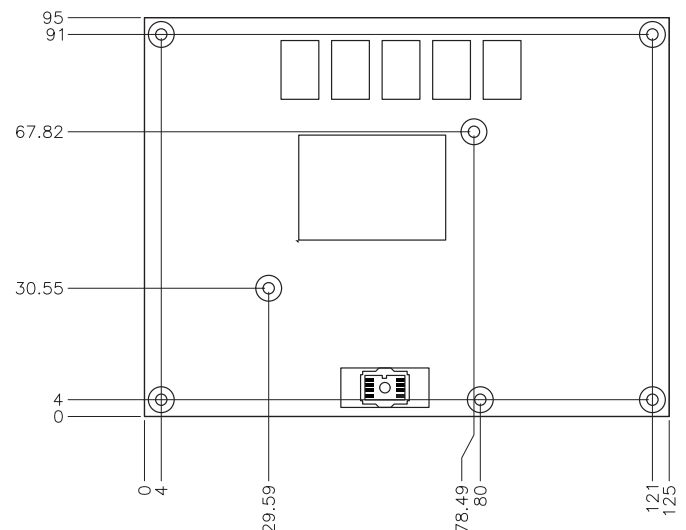
Specifications

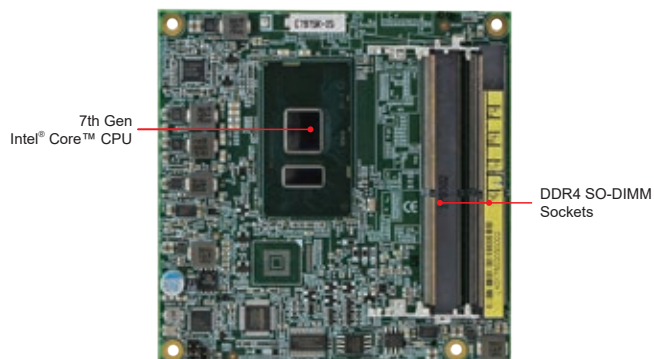
CPU	Onboard AMD Ryzen™ Embedded V1000 Series
PCH	N/A
Memory	Onboard Memory 4GB/8GB DDR4
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	1x PEG(x8) 8x PCI-E(x1)
Graphics Controller	AMD Radeon™ Vega GPU integrated
Video Output	2x DDI 1x LVDS or 1x eDP (option)
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 (optional)

Specifications

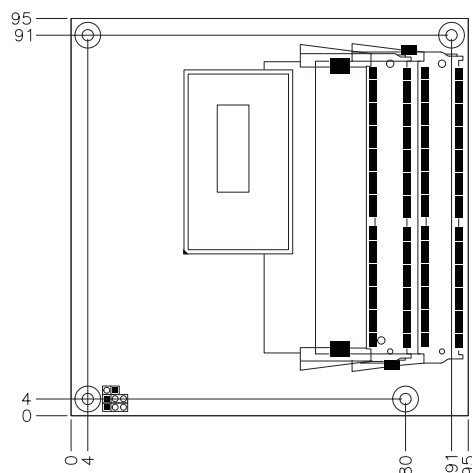
CPU	Onboard 7th Gen Intel® Core™ U-Series processors
PCH	N/A
Memory	2x DDR4 SO-DIMM, Max. 32GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	eMMC 5.0 up to 32GB (optional)
Expansion Slots	4x PCI-E(x1), 1x PCI-E(x4)
Graphics Controller	7th Gen Intel® Core™ U-Series processor integrated graphics, Supports DVI, HDMI, DisplayPort, LVDS
Video Output	24-bit dual-channels 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

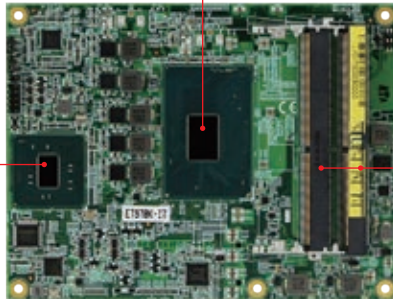
*(S) means with Realtek ALC888S codec

Dimensions and Drawing





7th Gen Intel® Core™ CPU

Intel® QM175
ChipsetDDR4-2400
SO-DIMM Sockets

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

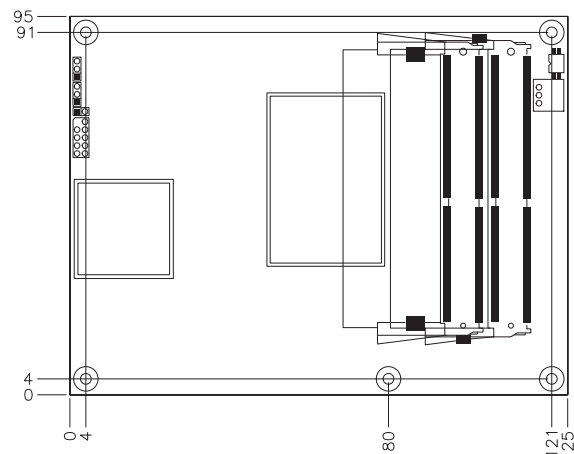
CPU	BGA1440 for 7th Gen Intel® Xeon® E3/ Core™ i7/i5/i3 processors
PCH	Intel® QM175 & CM238 & HM175 PCH
Memory	2x DDR4-2400 SO-DIMM, Max 32GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	8x PCI-E (x1), 1x PCI-E(x16)
Graphics Controller	7th Gen Intel® 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	(supports Tx/Rx only) 2x COM port
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)

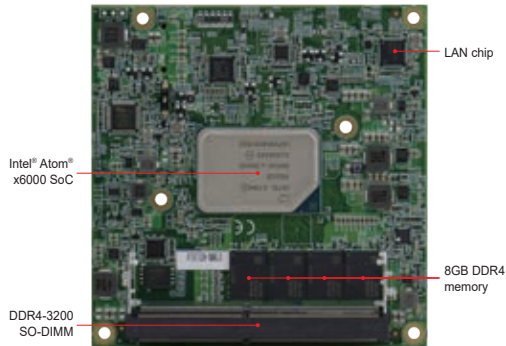
Ordering Information

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™ i3-71001E (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





Specifications

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)

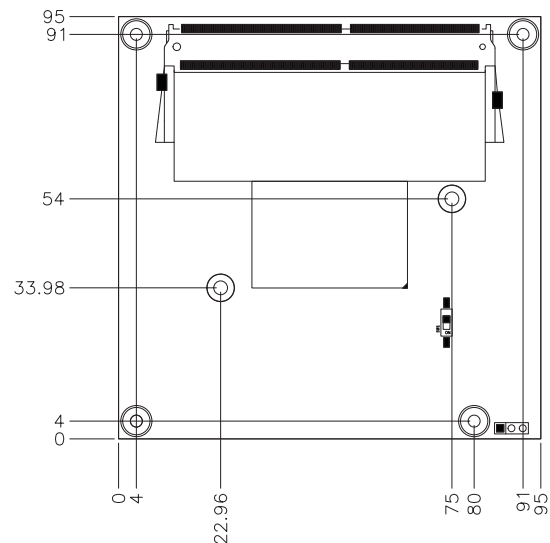
Features

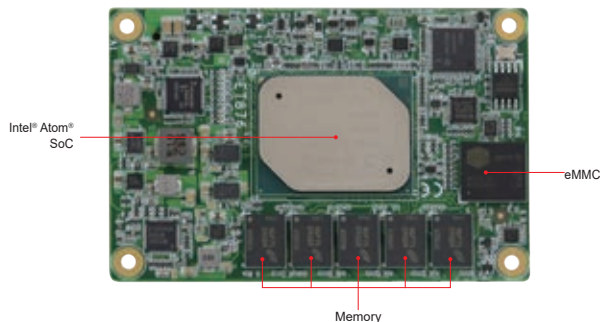
- Onboard Intel® Atom® x6000 series processors
- Onboard 8GB DDR4 memory + 1x DDR4 SO-DIMM, IB ECC compatible
- 1x I226IT PCI-E 2.5G LAN
- 2x USB 3.1, 4x USB 2.0, 2x SATA III, 2x UART (Tx/Rx only)
- 3x independent displays, DisplayPort /DVI-D / LVDS or eDP via carrier board (IP419)
- Wide-range operating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

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 for ET880 with Atom® x6000 series SoC
HSET880-1	Heat spreader for ET880 with Atom® x6000 series SoC

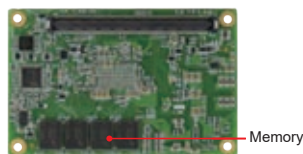
Dimensions and Drawing





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 (optional)
- Wide-range operating temperature from -40°C to 85°C



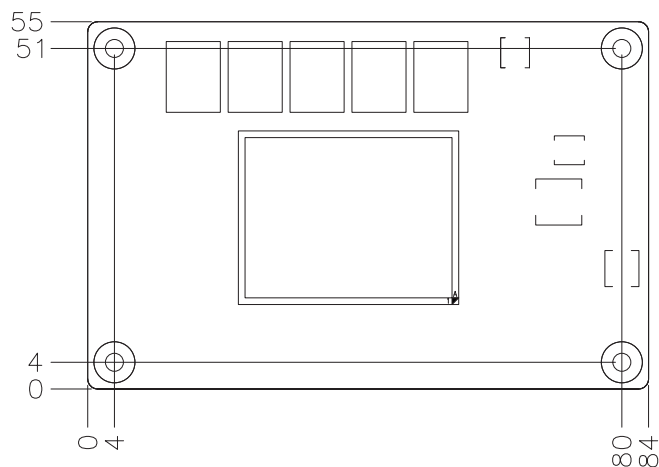
Specifications

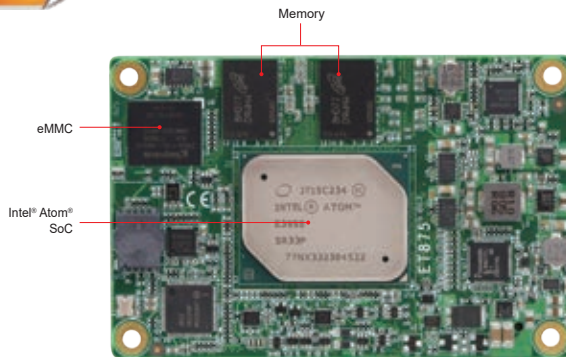
CPU	Intel Atom® x7-E3950 Processor (1.6GHz~2.0GHz) Intel Atom® x5-E3940 Processor (1.6 GHz~1.8GHz) Intel Atom® x5-E3930 Processor (1.3 GHz~1.8GHz)
PCH	Integrated in Intel® SoC
Memory	Onboard 4GB memory, DDR3L 1600MHz with ECC
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	eMMC 5.0 up to 32GB (optional)
Expansion Slots	4x PCI-E(x1)
Graphics Controller	Intel® SoC integrated Gen9-LP graphics
Video Output	1x DDI 1x LVDS or 1x eDP (optional)
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 (optional)
- Wide-range operating temperature in certain models

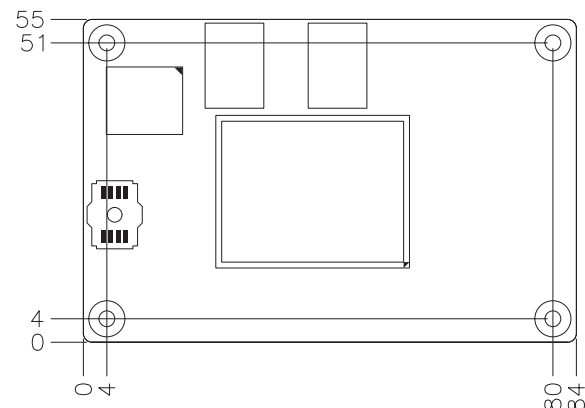
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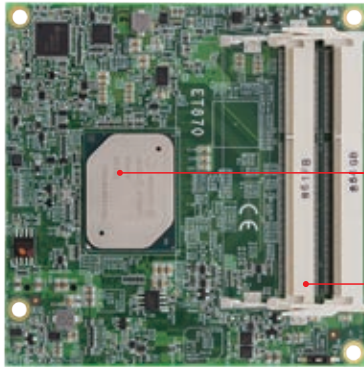
CPU	Intel Atom® x7-E3950 Processor (1.6GHz~2.0GHz) Intel Atom® x5-E3940 Processor (1.6 GHz~1.8GHz) Intel Atom® x5-E3930 Processor (1.3 GHz~1.8GHz) Intel® Pentium® Processor N4200 (1.1GHz~ 2.5GHz) Intel® Celeron® Processor N3350 (1.1GHz~ 2.4GHz)
PCH	Integrated in Intel® SoC
Memory	Onboard memory, LPDDR4, Max 8GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	eMMC 5.0 up to 32GB (optional)
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 CPUDDR3L 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



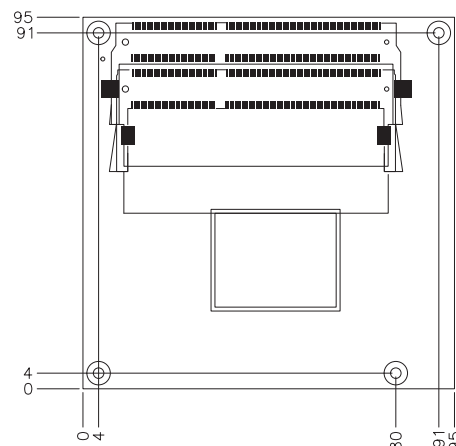
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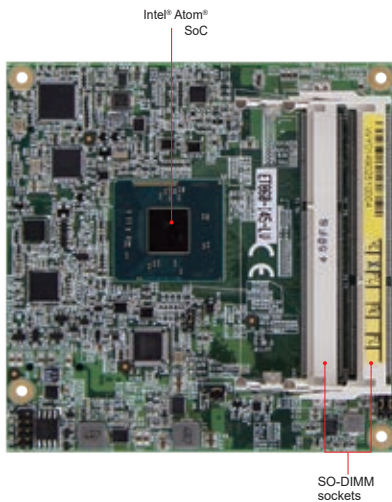
ET870-I50	COM Express (Type-6) CPU Module with Intel® Atom® x7-E3950 (2.0GHz), DDR3L dual-channel memory, eDP support
ET870-I50LV	COM Express (Type-6) CPU Module with Intel® Atom® x7-E3950 (2.0GHz), DDR3L dual-channel memory, LVDS support
ET870-I40	COM Express (Type-6) CPU Module with Intel® Atom® x5-E3940 (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 for ET870
HSET870-1	Heat Spreader for ET870

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)

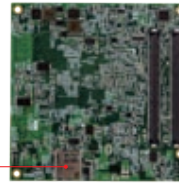
Dimensions and Drawing





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



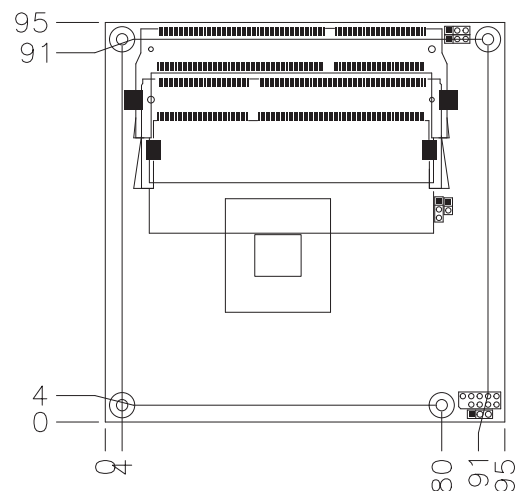
Ordering Information

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 for ET860
HSET860-BGA-1	Heat spreader for ET860

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)

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 (optional)
- Wide-range operating temperature from -40°C to 85°C

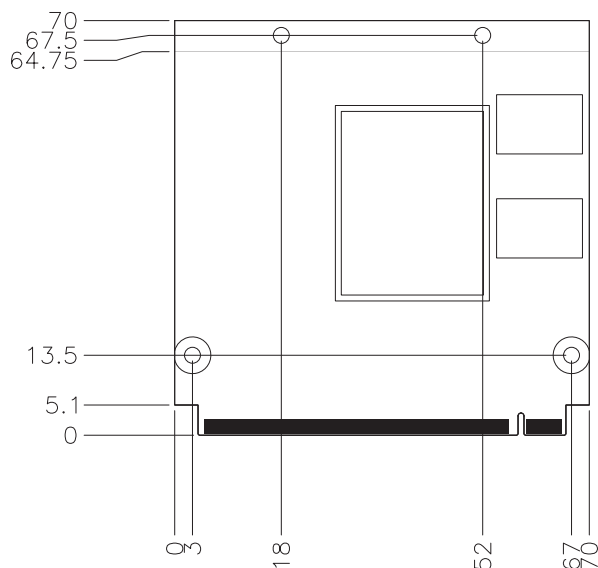
Specifications

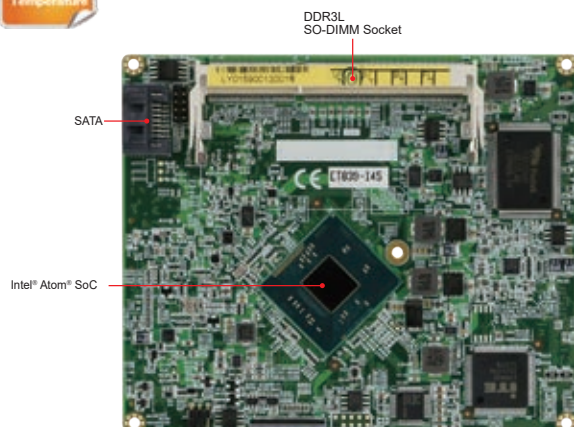
CPU	Intel® Atom® QC x5/ E3930 (1.3 GHz~1.8GHz) Intel® Atom® QC x5/ E3940 (1.6 GHz~1.8GHz) Intel® Atom® QC x7/ E3950 (1.6 GHz~2.0GHz)
PCH	Integrated in Intel® SoC
Memory	Onboard memory, LPDDR4, Max 8GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	eMMC 5.0 up to 32GB (optional)
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 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

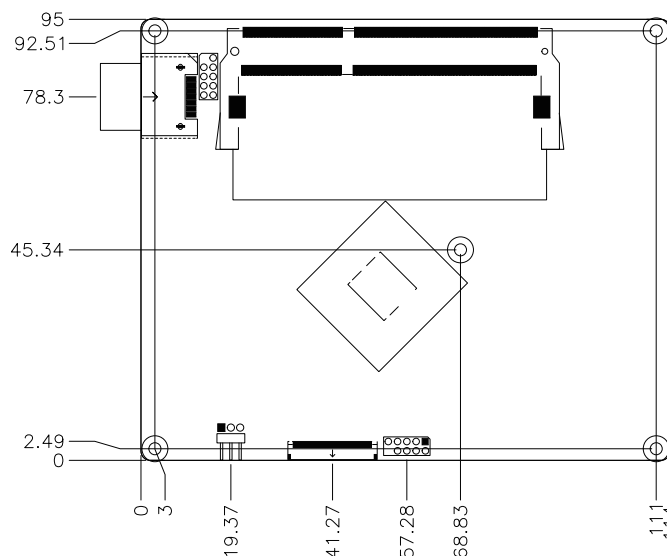
CPU	Intel® Atom® Processor E3845 SoC, 1.91GHz
PCH	Integrated in Intel® Atom® SoC
Memory	1x DDR3L SO-DIMM, Max. 8GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	4x ETX connectors for PCI bus, USB, audio, CRT, LVDS, LAN, COM ports, LPT, IDE, PS/2 keyboard/mouse 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

1

Single Board Computers

2

CPU Modules

3

Motherboards

4

CPU Cards

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, 2 ports via onboard pin header, 1 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 port via onboard vertical, 1 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 PCIe16 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"x 9.6")	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
Page No.	P2-21	P2-22	P2-23	P2-24

Comparison Table

Carrier Board

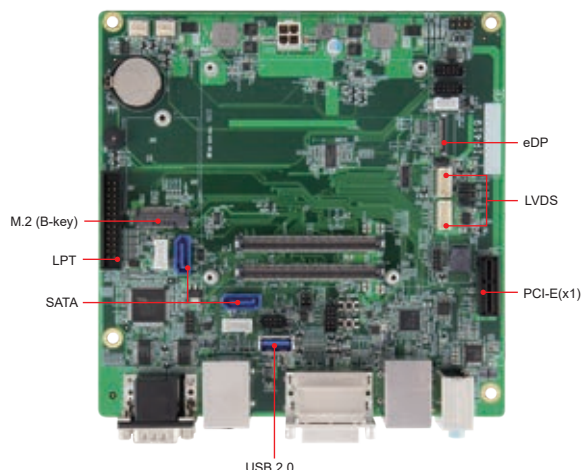
Models	IP414	IP413	IP412	IP411
Form Factor	ATX form factor	ATX form factor	Micro ATX form factor	Mini-ITX form factor
Module Interface	COM Express Type-6	COM Express Type-6	ETX (3.0)	COM Express Type-6
Video Output	18/24-bit dual-channel LVDS VGA / eDP / DisplayPort on board	18/24-bit dual-channel LVDS DVI-D / HDMI / 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	1x RJ45 connector	2x RJ45 connector
Audio	Built-in ALC888S HD audio codec	Built-in ALC662 or ALC888S HD audio codec	N/A	Built-in ALC662 or ALC888S HD audio codec
SATA	4x SATA III	4x SATA III	N/A	2x SATA III
I/O Chipset	Fintek F81946D-I	Fintek F81846AD-I	N/A	Fintek F81846AD-I
Parallel Port	N/A	1x Parallel port	1x Parallel port	1x Parallel port
Serial Port	COM ports x2 via onboard box-headers (RS232 only) 2x COM ports 2x COM ports (from CPU module, Tx/Rx only)	4x COM ports (2 ports on rear I/O, 2-ports via pin header)	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	4x USB 2.0 (2 ports via rear I/O, 2 ports via pin header)	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	4x USB 3.0 via rear I/O	N/A	1x USB 3.0 via rear I/O
KB / MS	1x KB/MS connector	1x KB/MS connector	1x PS/2 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(x16) slot [up to Gen.5] 2x PCI-E(x4) slot 2x PCI-E(x1) slot	1x PCI-E(x16) slot 1x PCI-E(x4) slot 3x PCI-E(x1) slots 1x Mini PCI-E socket (full-size)	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	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 or DC-in 12V only	20+4-pin connector for ATX	20+4-pin connector for ATX
Dimensions (L x W)	305mm x 244mm (12" x 9.6")	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 ET970/ET975	Compatible with ET839	Compatible with ET860
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Single Board Computers

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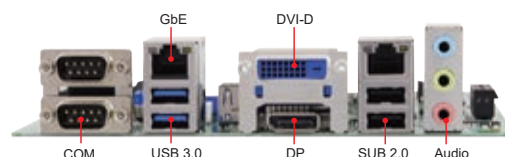
Specifications

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 ALC662 or 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)

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

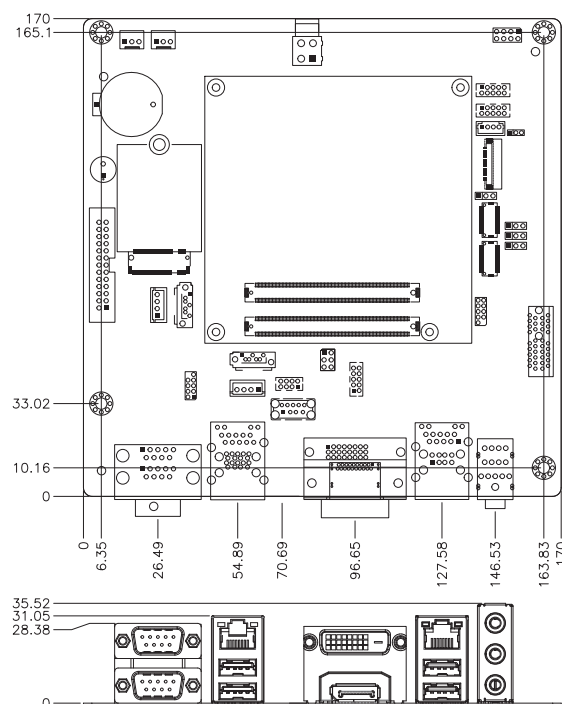
I/O View

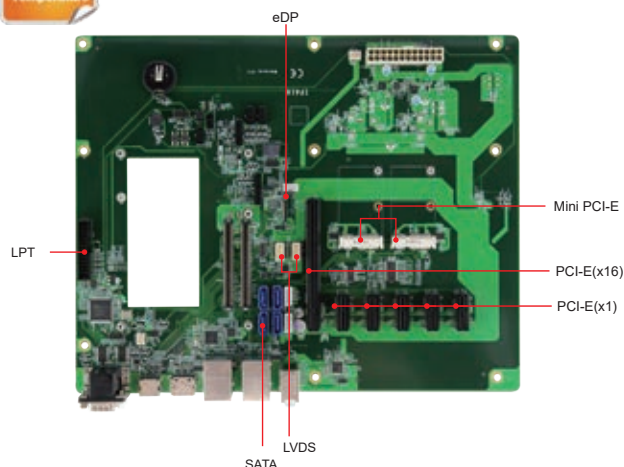


Ordering Information

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

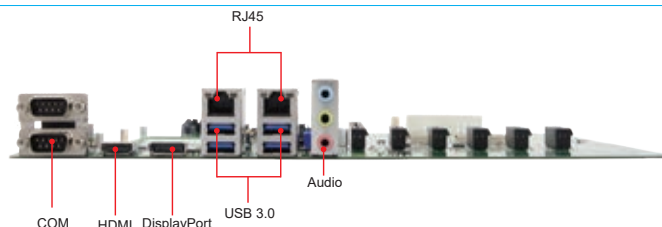




Features

- 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



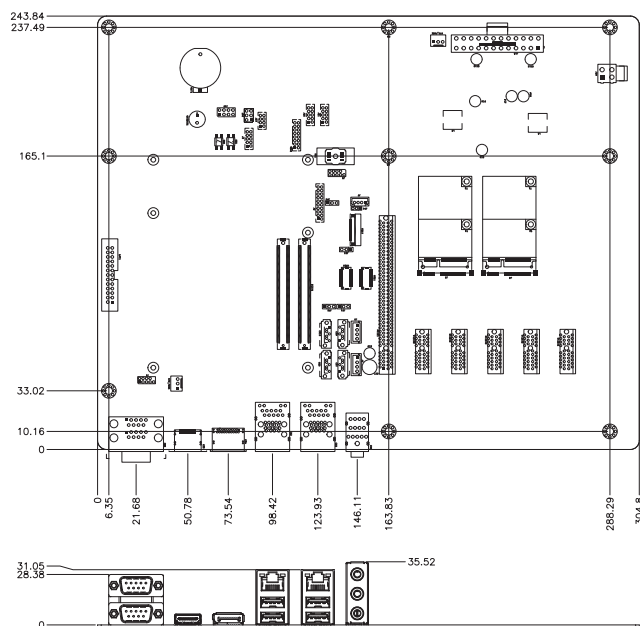
Specifications

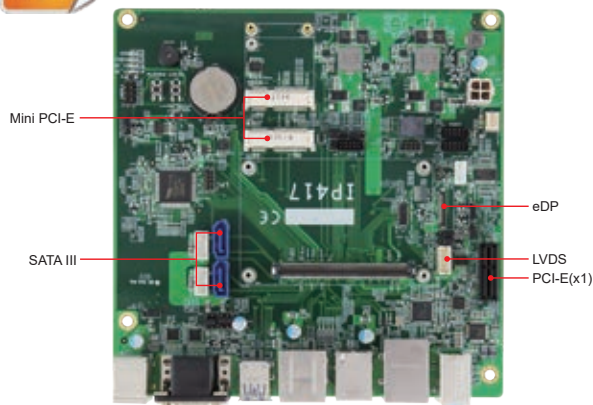
Form Factor	ATX
Module Interface	COM Express Type-6 (R3.0)
Expansions slots	1x PCI-E(16x) slot 5x PCI-E(1x) slot
Mini Type Slots	2x MiniPCI-E socket
Video Output	1x VGA 3x DDI (1xDisplayPort, 1x HDMI, 1x DVI-D) 1x dual channel LVDS or 1x eDP (Depends on CPU module)
Ethernet	LAN1: Derived from COM Express 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 ALC662 or 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

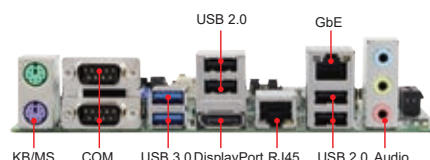




Features

- 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



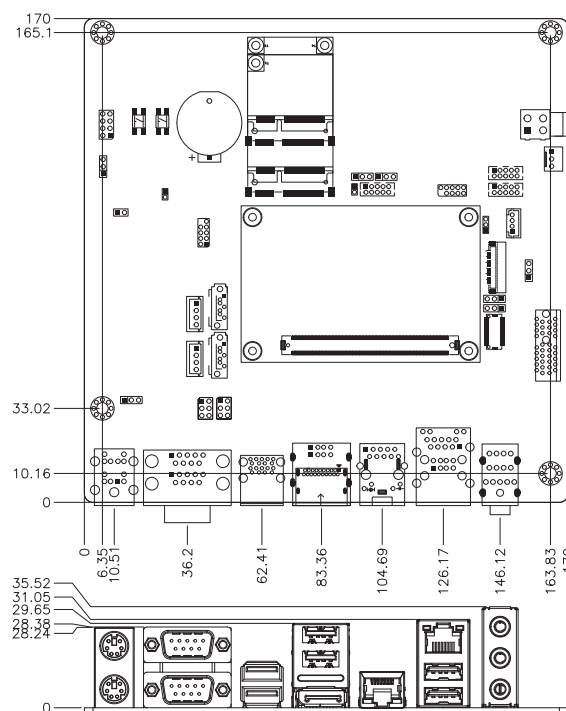
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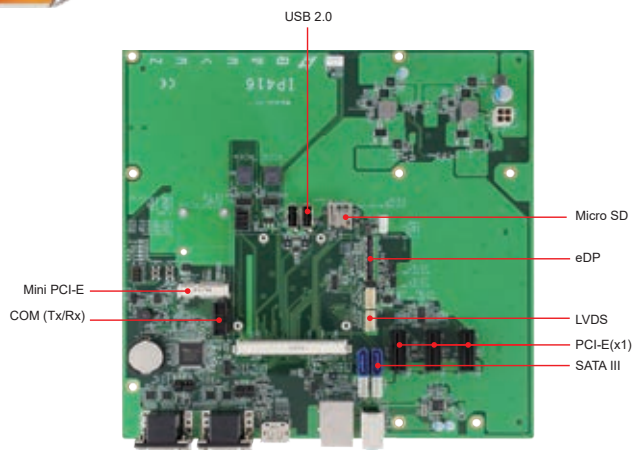
Form Factor	Mini ITX
Module Interface	COM Express Type-10 (R3.0)
Expansions slots	1x PCI-E(x1) slot
Mini Type Slots	1x MiniPCI-E socket (full-size) 1x MiniPCI-E socket (half-size)
Video Output	1x DisplayPort 1x LVDS or 1 x eDP (By option)
Ethernet	LAN1: Derived from COM Express CPU module LAN2: 1x Intel 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 ALC662 or 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

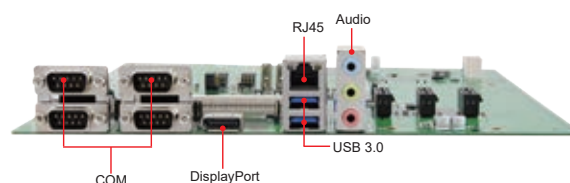




Features

- 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



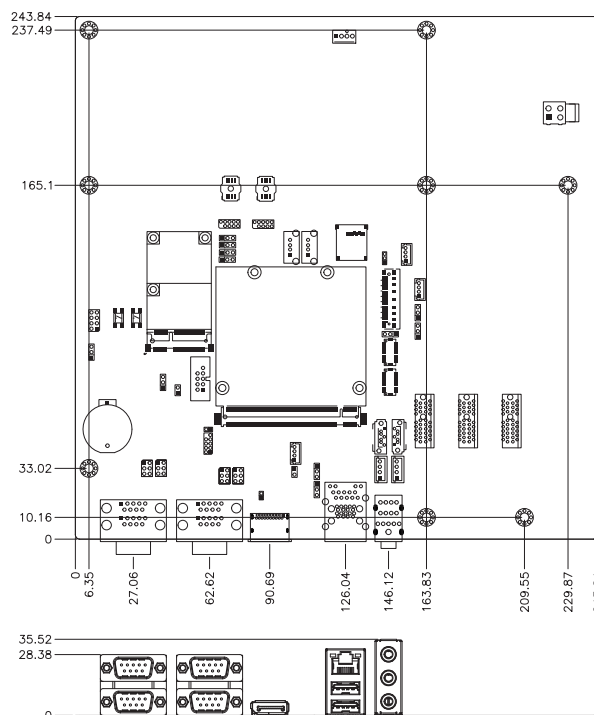
Specifications

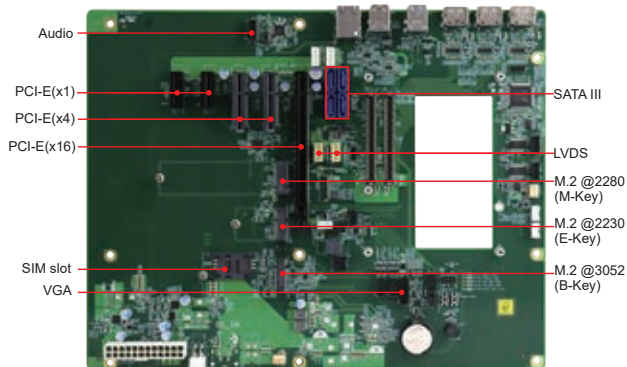
Form Factor	Micro ATX
Module Interface	Qseven CPU Module (R2.1)
Expansion Slots	3x PCI-E(x1) slot
Mini Type Slots	1x MiniPCI-E socket (full-size, reserved one hole for half-size)
Video Output	1x DisplayPort, 1x LVDS or 1x eDP (option)
Ethernet	LAN: Derived from Qseven CPU module
I/O Chipset	Fintek F81846D-I
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 ALC662 or 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



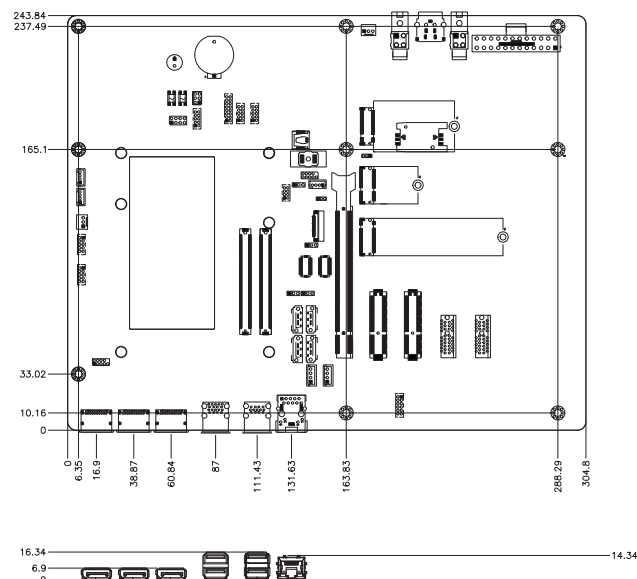
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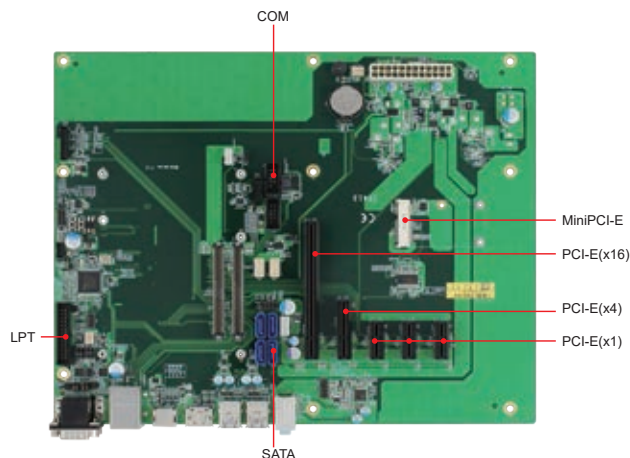
Form Factor	ATX
Module Interface	COM Express Type-6
Expansion Slots	1x PCI-E(x16) slot [up to Gen.5] 2x PCI-E(x4) slot 2x PCI-E(x1) slot
Mini Type Slots	1x M.2 (B3052) 1x M.2 (M2080) 1x M.2 (E2230)
Video Output	3x DisplayPort 1x VGA 1x 24-bit dual-channel LVDS 1x eDP
Ethernet	Derived from COM Express 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

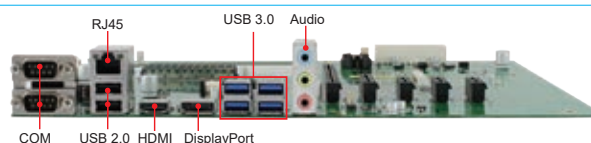




Features

- 1x PCI-E(x16), 1x PCI-E(x4), 3x PCI-E(x1) expansion slots
- Edge connectors for dual COM, RJ45+ 1x dual USB (2.0), 1x DP, 1x HDMI, 2x dual USB 3.0, audio connector (Line-out, Line-in & Mic.)
- Onboard headers for 2x COM (from COMe module), 1x KB/MS, 2x USB (2.0), DVI-D, CRT, LVDS, 4x SATA III, 1x LPT, COM Express (Type-6) connectors
- ATX power connector / DC-in (12V only)

I/O View



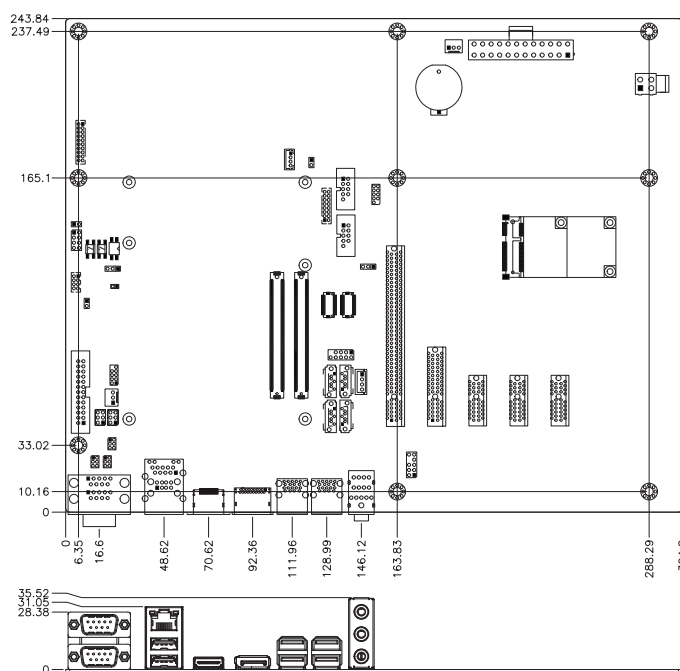
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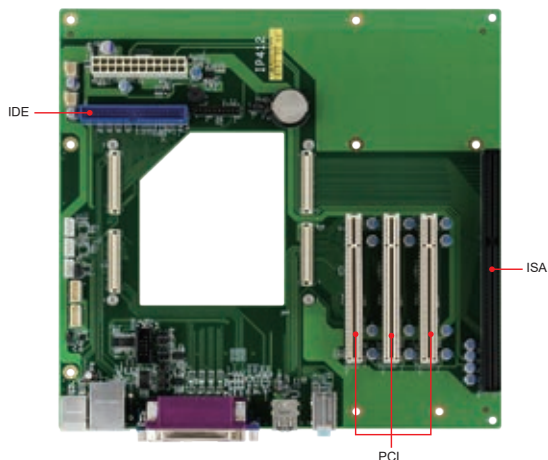
Form Factor	ATX
Module Interface	COM Express Type-6
Expansion Slots	1x PCI-E(x16) slot 1x PCI-E(x4) slot 3x PCI-E(x1) slots
Mini Type Slots	1x MiniPCI-E socket (full-size, reserved one hole for half-size)
Video Output	1x VGA 3x DDI (1x DisplayPort, 1x DVI-D, 1x HDMI) 1x 18/24-bit dual-channel LVDS
Ethernet	Derived from COM Express CPU module
I/O Chipset	Fintek F81846D-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
USB 3.X	4x USB 3.0
Serial ATA	Derived from COM Express CPU module 4x SATA III
Audio	Built-in ALC662 or ALC888S HD audio codec
Digital I/O	4-in/4-out
Watchdog	256 levels
KB/MS	Yes
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 (IP413-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

IP413	ATX COM Express Type-6 carrier board, Supports ATX
IP413-DC	ATX COM Express Type-6 carrier board, Supports DC-in

Dimensions and Drawing

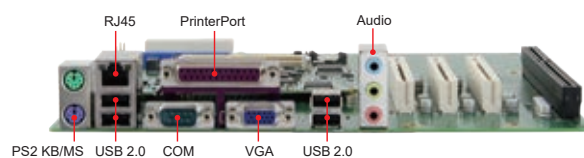




Features

- 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



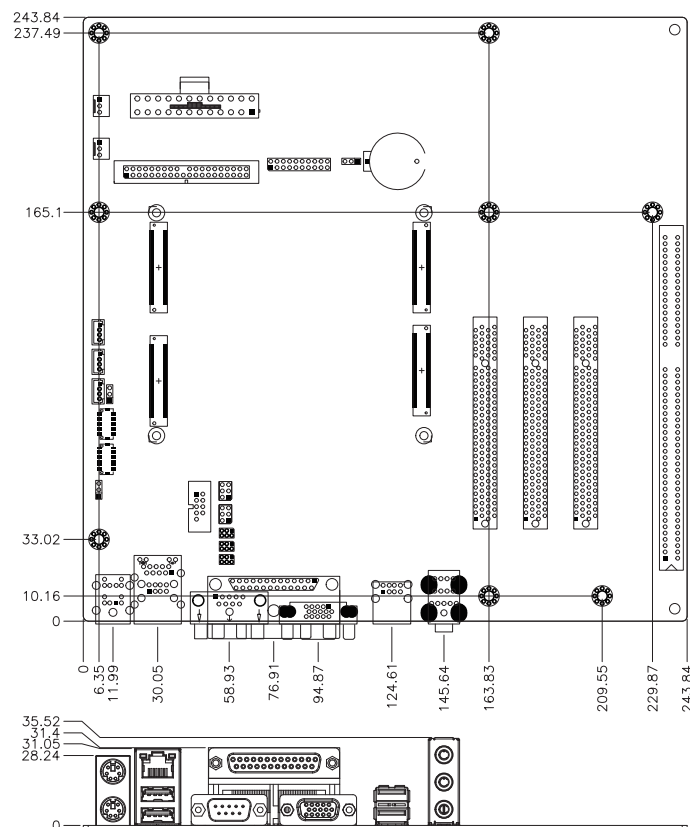
Specifications

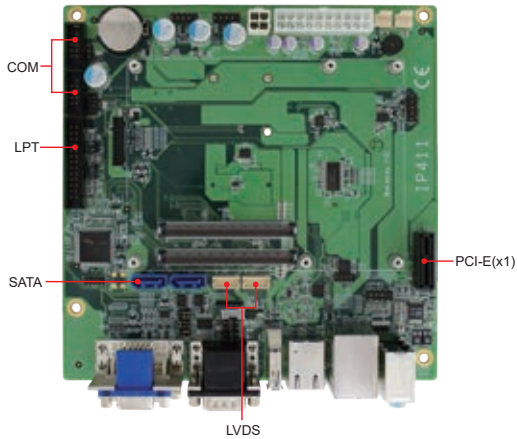
Form Factor	Micro ATX
Module Interface	ETX (3.0)
Expansion Slots	3x PCI slot 1x ISA slot
Mini Type Slots	N/A
Video Output	Derived from ETX module 1x CRT 1x 18/24-bit dual-channel LVDS
Ethernet	Derived from ETX module for 10/100 LAN
I/O Chipset	N/A
Serial Port	1x DB-9 connector for COM1 (RS232/422/485) 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

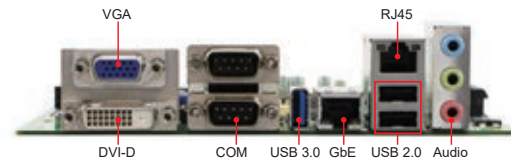




Features

- 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



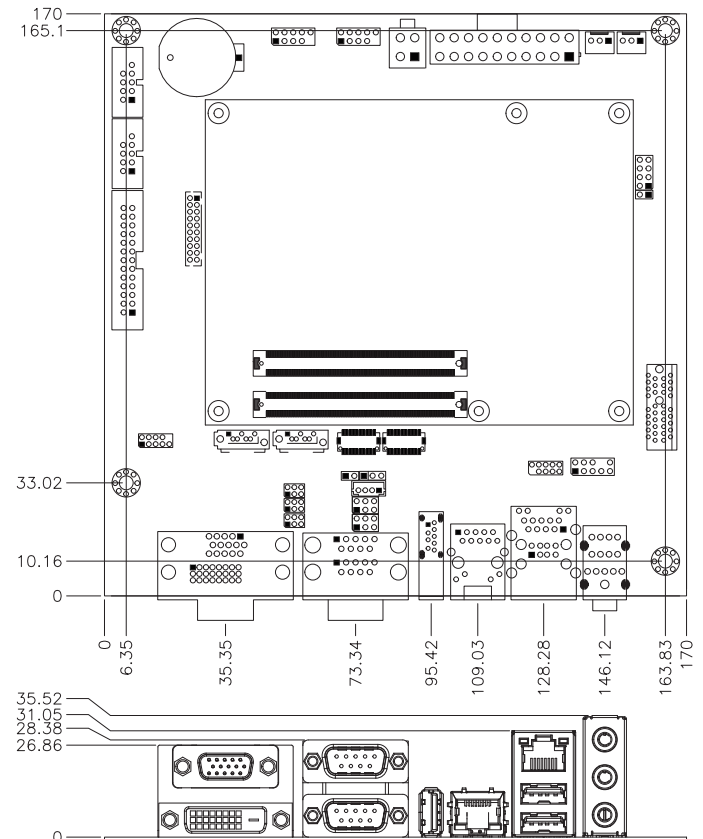
Specifications

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 ALC662 or 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)

Ordering Information

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



Recommended 13th/12th Gen Intel® Desktop Processors List

Processor	Number of Core	Base ~ 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	Yes (5 years)
i9-13900E	24	5.2GHz	65W	36MB	MBB-1000/MB998	Yes (10 years)
i7-13700TE	16	4.8GHz	35W	30MB	MBB-1000/MB998	Yes (10 years)
i7-13700E	16	5.1GHz	65W	30MB	MBB-1000/MB998	Yes (10 years)
i5-13500TE	14	4.5GHz	35W	24MB	MBB-1000/MB998	Yes (10 years)
i5-13500E	14	4.6GHz	65W	24MB	MBB-1000/MB998	Yes (10 years)
i3-13100TE	4	4.1GHz	35W	12MB	MBB-1000/MB998	Yes (10 years)
i3-13100E	4	4.4GHz	65W	12MB	MBB-1000/MB998	Yes (10 years)
Pentium® Gold G7400TE	4	3.0GHz	35W	6MB	MBB-1000/MB998	Yes (10 years)
Pentium® Gold G7400E	2	3.6GHz	46W	6MB	MBB-1000/MB998	Yes (10 years)
Celeron® Processor G6900TE	2	2.4GHz	35W	4MB	MBB-1000/MB998	Yes (10 years)
Celeron® Processor G6900E	2	3.0GHz	46W	4MB	MBB-1000/MB998	Yes (10 years)
Processor	Number of Core	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	Yes (10 years)
i7-12700HL	14	P-core:4.7GHz; E-core:3.5 GHz	45 W	24MB	MI997	Yes (10 years)
i5-12600HL	12	P-core:4.5GHz; E-core:3.3 GHz	45 W	18MB	MI997	Yes (10 years)
i5-12500HL	12	P-core:4.5GHz; E-core:3.3 GHz	45 W	18MB	MI997	Yes (10 years)
i3-12300HL	8	P-core:4.4GHz; E-core:3.3 GHz	45 W	12MB	MI997	Yes (10 years)
i7-1265UL	10	P-core:4.8GHz; E-core:3.6 GHz	15 W	12MB	MI997	Yes (10 years)
i7-1255UL	10	P-core:4.7GHz; E-core:3.5 GHz	15 W	12MB	MI997	Yes (10 years)
i5-1245UL	10	P-core:4.3GHz; E-core:3.3 GHz	15 W	12MB	MI997	Yes (10 years)
i5-1235UL	10	P-core:4.4GHz; E-core:3.3 GHz	15 W	12MB	MI997	Yes (10 years)
i3-1215UL	6	P-core:4.4GHz; E-core:3.3 GHz	15 W	10MB	MI997	Yes (10 years)
Celeron® Processor 7305L	5	1.1GHz	15 W	8MB	MI997	Yes (10 years)

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Recommended 12th/10th Gen Intel® Desktop Processors List

Processor	Number of Core	Base ~ Turbo (Max.)	TDP	Smart Cache	Compatible IBASE M/B, Mini-ITX, CPU Card Models	Use Condition Embedded
i9-12900TE	16	4.8GHz	35W	30MB	MBB-1000/MB998	Yes (5 years)
i9-12900E	16	5.0GHz	65W	30MB	MBB-1000/MB998	Yes (5 years)
i7-12700TE	12	4.6GHz	35W	25MB	MBB-1000/MB998	Yes (10 years)
i7-12700E	12	4.8GHz	65W	25MB	MBB-1000/MB998	Yes (10 years)
i5-12500TE	6	4.3GHz	35W	18MB	MBB-1000/MB998	Yes (10 years)
i5-12500E	6	4.5GHz	65W	18MB	MBB-1000/MB998	Yes (10 years)
i3-12100TE	4	4.0GHz	35W	12MB	MBB-1000/MB998	Yes (10 years)
i3-12100E	4	4.2GHz	65W	12MB	MBB-1000/MB998	Yes (10 years)
Pentium® Gold G7400TE	2	3.0GHz	35W	6MB	MBB-1000/MB998	Yes (10 years)
Pentium® Gold G7400E	2	3.6GHz	65W	6MB	MBB-1000/MB998	Yes (10 years)
Celeron® Processor G6900TE	2	2.40GHz	35W	4MB	MBB-1000/MB998	Yes (10 years)
Celeron® Processor G6900E	2	3.00GHz	46W	4MB	MBB-1000/MB998	Yes (10 years)
Processor	Number of Core	Base ~ Turbo	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	12MB	MI999	Yes (15 years)
Xeon® W-1250TE	6	2.40 GHz ~ 3.80 GHz	35W	12MB	MI999	Yes (15 years)
Xeon® W1270TE	8	2.00 GHz ~ 4.40 GHz	35W	16MB	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	20MB	MI999	Yes (15 years)
i7-10700E	8	1.80 GHz ~ 4.50 GHz	65W	20MB	MI999	Yes (15 years)
i7-10700TE	8	2.90 GHz ~ 4.50 GHz	35W	16MB	MI999	Yes (15 years)
i5-10500E	6	2.00 GHz ~ 4.40 GHz	65W	16MB	MI999	Yes (15 years)
i5-10500TE	6	3.10 GHz ~ 4.20 GHz	35W	12MB	MI999	Yes (15 years)
i3-10100E	4	2.30 GHz ~ 3.70 GHz	65W	12MB	MI999	Yes (15 years)
i3-10100TE	4	3.20 GHz ~ 3.80 GHz	35W	6MB	MI999	Yes (15 years)
Pentium Gold G6400E	2	3.80GHz	58W	4MB	MI999	Yes (15 years)
Pentium Gold G6400TE	2	3.20GHz	35W	4MB	MI999	Yes (15 years)
Celeron G5900E	2	3.20GHz	58W	2MB	MI999	Yes (15 years)
Celeron G5900TE	2	3.00GHz	35W	2MB	MI999	Yes (15 years)

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ATX Motherboard

Models	MBB-1000	MB997	MB995
Form Factor	ATX	ATX	ATX
CPU Socket	LGA1700	LGA1151	LGA1151
CPU	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
CPU Max. Frequency	Up to 5.6GHz	Up to 4.7GHz	Up to 4.7GHz
PCH	Intel® R680E / Q670E PCH	Intel® C246 / Q370 / H310 PCH	Intel® C246 / Q370 PCH
Memory	4x DDR4 DIMM	4x DDR4 DIMM	4x DDR4 DIMM
Max. Memory Size	128GB	64GB	64GB
BIOS	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
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
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
Audio	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)
I/O Chipset	F81966D-I	NC T6686D-T	F81966D-I
Parallel Port	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)
USB 2.0	2x USB 2.0	N/A	N/A
USB 3.X	4x USB 3.1 Gen2 (10Gpbs) 4x USB 3.1 Gen1 (5Gbps)	4x USB 3.1 Gen2 (10Gpbs) 5x USB 3.1 Gen1 (5Gbps)	4x USB 3.1 5x USB 3.0
TPM	2.0	2.0	2.0
KB / MS	N/A	N/A	box header
Hardware Monitor	Yes	Yes	Yes
Storage Device Interface	NVMe	NVMe	NVMe
Watchdog Timer	256 levels	256 levels	256 levels
Digital I/O	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
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)
Power input	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
Dimensions (L x W)	305mm x 244mm	305mm x 244mm	305mm 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
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ATX Motherboard

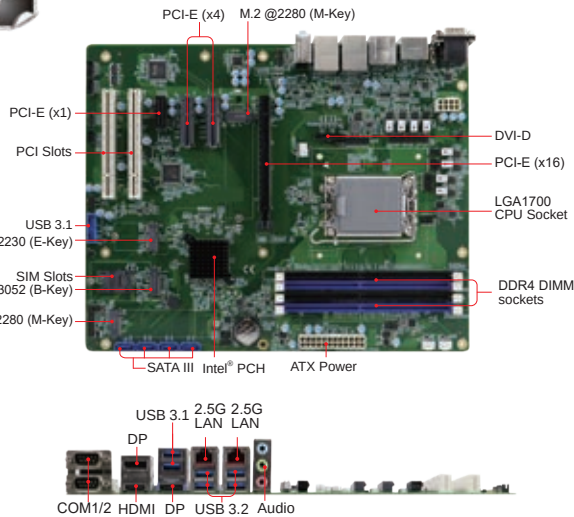
MB990	MBB1001	MB998	MB991
ATX	ATX	Micro ATX	Micro ATX
LGA1151	AMD AM5	LGA1700	LGA1151
7th/6th Gen Intel® Core™ i7/i5/i3 / Pentium® / Celeron® DT CPU	Ryzen™ embedded 7000 series	13th/12th Gen Intel® Core™ i9/i7/i5/i3 / Pentium® Gold/ Celeron® DT CPU	7th/6th Gen Intel® Xeon® / Core™ i7/i5/i3 / Pentium® / Celeron® DT CPU
Up to 4.0GHz	Up to 3.8GHz	Up to 5.6GHz	Up to 4.0GHz
Intel® Q170 PCH	AMD B665	Intel® R680E / Q670E / W680 PCH	Intel® C236 / Q170 PCH
4x DDR4 DIMM	4x DDR5 DIMM	2x DDR5 DIMM	2x DDR4 DIMM
64GB	128GB	64GB	64GB
AMI	AMI	AMI	AMI
Intel® Core™ i integrated graphics	Navi2 Integrated Graphics	13th Gen Intel® Core™ i9/i7/i5/i3 processor integrated	Intel® Core™ i integrated graphics
HDMI(2.0)/ DVI-D/ DisplayPort on board	1x HDMI 2.1/1x DP 2.0/ 1x DVI-D on board	1x HDMI (2.0b) + 2x DisplayPort (1.4b) (DP++) + DVI-D	2x HDMI
Intel® I219LM Gigabit LAN PHY, Intel® I210AT Gigabit LAN	2x Intel I226-V	Intel® I226LM, supports 2.5G and iAMT Intel® I226V, supports 2.5G only	Intel® I219LM Gigabit LAN PHY, Intel® I210AT Gigabit LAN
Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec
6x SATA III ports	4x SATA III ports	4x SATA III ports	6x SATA III ports
F81866AD-I	F81956D-I	F81964D-I	F81846AD-I
N/A	N/A	N/A	N/A
5x RS232 1x RS232/422/485 (jumper-less selection)	1x Dual DB9 stack connector for COM #1 (RS232/422/485) (jumper-less selection) COM #2 (RS232) 4x COM Port Header (RS232)	2x RS232 2x RS232/422/485 (jumper-less selection)	6x RS232 2x RS232/422/485 (jumper-less selection)
4x USB 2.0	2x USB 2.0 via pin header 2x USB 2.0 type A vertical connector)	2x USB 2.0	4x USB 2.0
6x USB 3.0	4x USB 3.2 Gen 2 2x USB 3.2 Gen1 (with PDPC support)	4x USB 3.2 (10Gbps) 2x USB 3.1 (5Gbps)	6x USB 3.0
1.2	2.0	2.0	2.0
N/A	N/A	N/A	N/A
Yes	Yes	Yes	Yes
N/A	NVMe	NVMe	NVMe
256 levels	256 levels	256 levels	256 levels
4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out
1x PCI-E (x16), 1x PCI-E (x8) 1x PCI-E (x4), 1x PCI-E (x1) 3x PCI	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	1x PCI-E (x16) [Gen.5.0], 1x PCI-E (x4) [Gen.4.0], 1x PCI-E (x4) [Gen.3.0]	1x PCI-E (x16) 1x PCI-E (x8) 2x PCI-E (x4)
1x Mini PCI-E	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)	2x M.2 (M-Key, 2280) 1x M.2 (E-Key, 2230) 1x M.2 (B-Key, 3052)	1x Mini PCI-E 1x M.2 (M-Key, 2280)
ATX type	ATX type	ATX type	ATX type
Intel® Core™ i7-6700 3.4GHz w/ 4x 4GB DDR4-2133 +12V: 7.12A; +5V: 1.99A +3.3V: 0.43A; +5VSB: 0.15A	TBD	Intel® Core™ i7-13700 2.10GHzw/ w/ 2x 32GB DDR5 5600 +12V: 20.09A +5V: 8.76A +3.3V: 4.73A +5VSB: 0.78A	Intel® Core™ i7-6700, 3.4GHz, w/ 4x 8GB DDR4-2133 12V: 7.1A +5V: 1.81A +5VSB: 0.11A +3.3V, 0.70A
305mm x 244mm	305mm x 244mm	244mm x 244mm	244mm x 244mm
Built-in iAMT (11.0), LAN Wakeup, iSMART, vPro, RAID	LAN Wakeup, RAID	Built-in iAMT (16.1), LAN Wakeup, RAID	Built-in iAMT (11.6), LAN Wakeup, TPM (2.0), iSMART, RAID
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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

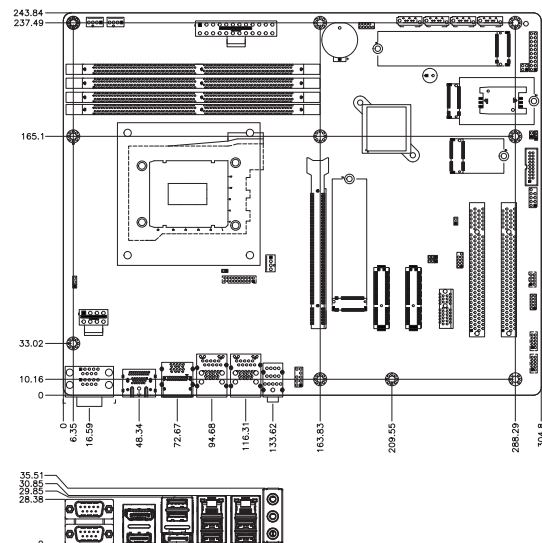
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	95% (non-condensing @60°C)

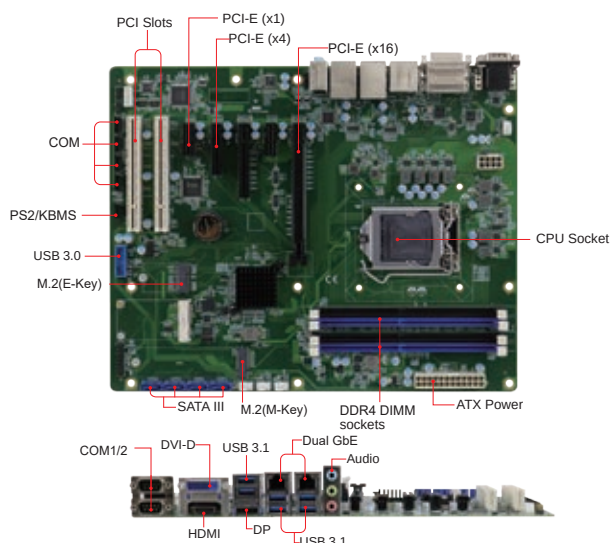
Ordering Information

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

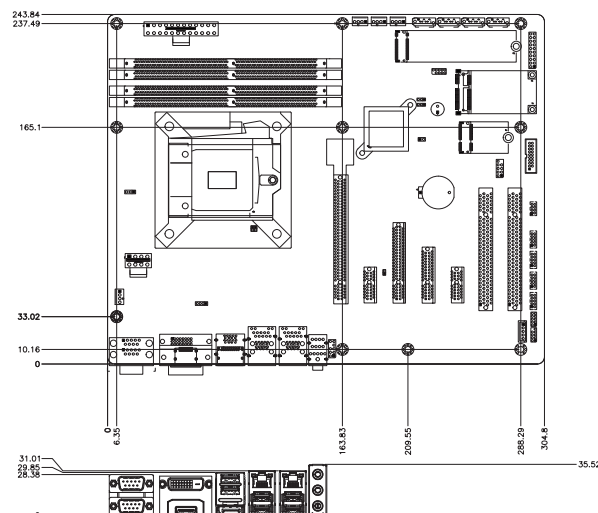
CPU Socket	LGA1151
CPU	9th Gen Intel® Xeon® E/ Core™ i7/i5/i3 HC/QC/DC processors, up to 5.0GHz
PCH	MB997AF-C246: Intel® C246 PCH MB997AF: Intel® Q370 PCH MB997EF: Intel® H310 PCH
Memory	4x DDR4-2666 / 2400 MHz, Max. 128GB (Supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
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 (10Gpbs), 2x USB 3.1 Gen1 (5Gpbs), 2x USB 3.1 Gen1 (5Gpbs) via box-header MB997EF: 4x USB 3.1 Gen2 (10Gpbs)
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

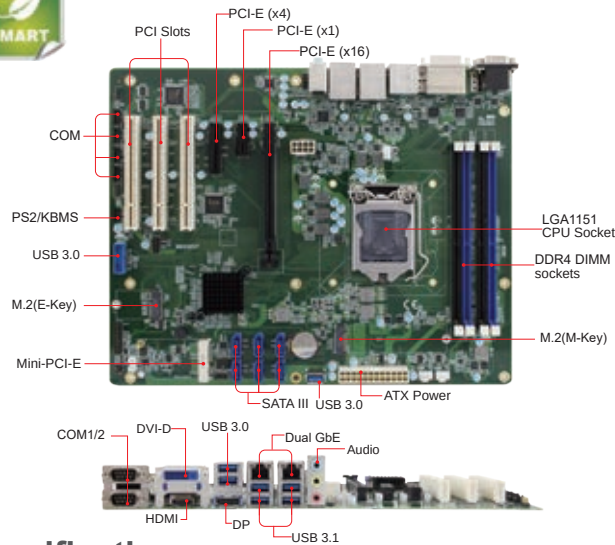
Dimensions (L x W)	305mm x 244mm (12" x 9.6")
Power Consumption	Intel® Core™ i7-9700K, 3.6GHz w/ 4x 4GB DDR4-2400 +12V: 12.64A +5V: 1.19A +5VSB: 0.132A +3.3V: 0.88A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	95% (non-condensing @60°C)

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: -2 ports on board, 2 ports via box-headers -1 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

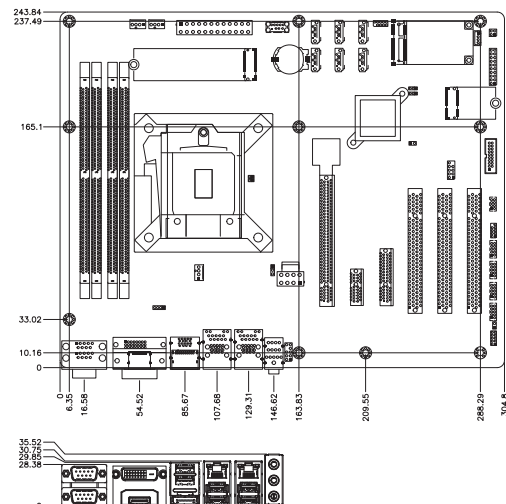
- 8th Gen Intel® Xeon® E / Core™ i7/i5/i3 HC/QC/DC processors, up to 4.7GHz
- 4x DDR4 DIMM, Max. 64GB
- Intel® processor integrated graphics supports DVI-D, HDMI (2.0a) and DisplayPort
- Dual Intel® Gigabit LAN
- 4x USB 3.1, 5x USB 3.0, 6x COM, 6x SATA III
- 1x PCI-E (x16), 1x PCI-E (x4), 1x PCI-E (x1),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

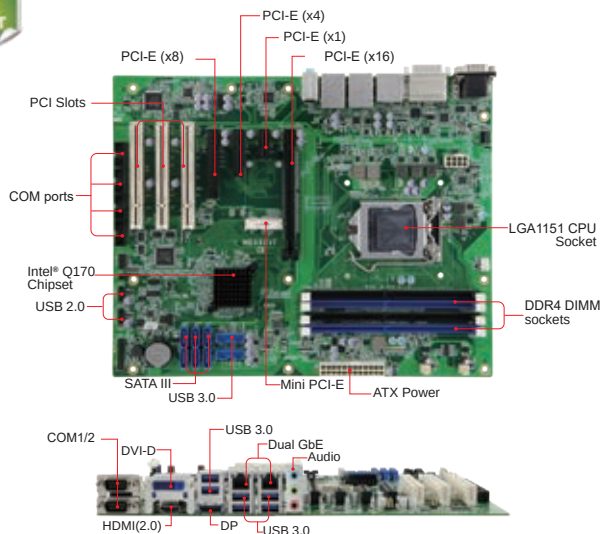
Others	Digital I/O (4-in/4-out), iAMT (11.6), RAID, iSMART (3.5), EuP/ErP
Dimensions (L x W)	305mm x 244mm (12" x 9.6")
Power Consumption	Intel® Core™ i7-8700 3.4GHz w/ 4x 4GB DDR4-2400 +12V: 5.56A +5V: 1.65A +5VSB: 0.25A +3.3V: 0.65A
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C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





Features

- 7th/6th Gen Intel® Core™ i7/i5/i3 / Pentium® / Celeron® QC/DC processors, up to 4.0GHz
- 4x DDR4 DIMM, Max. 64GB, ECC compatible
- Intel® processor integrated graphics supports DVI-D, HDMI and DisplayPort
- Dual Intel® Gigabit LAN
- 4x USB 2.0, 10x USB 3.0, 6x COM, 6x SATA III
- 1x PCI-E (x16), 1x PCI-E (x8) [(x4) Link], 1x PCI-E (x4) [(x1) Link], 1x PCI-E (x1), 3x PCI
- 1x Mini PCI-E
- Watchdog timer, Digital I/O, iAMT (11.0), TPM(1.2), vPro, iSMART

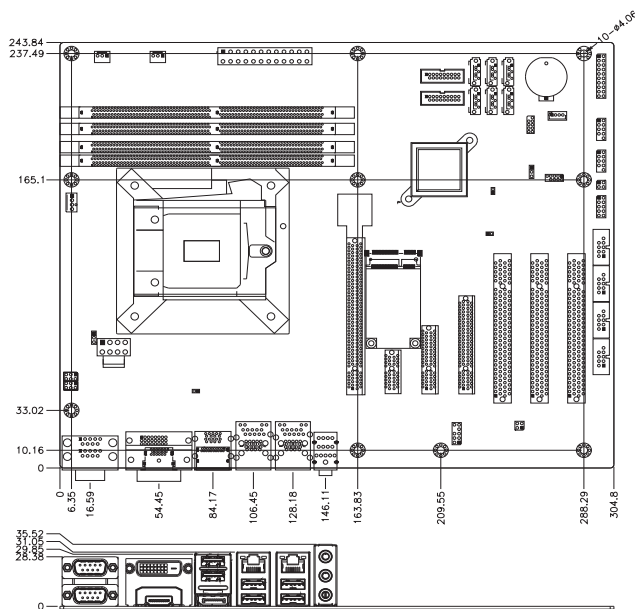
Specifications

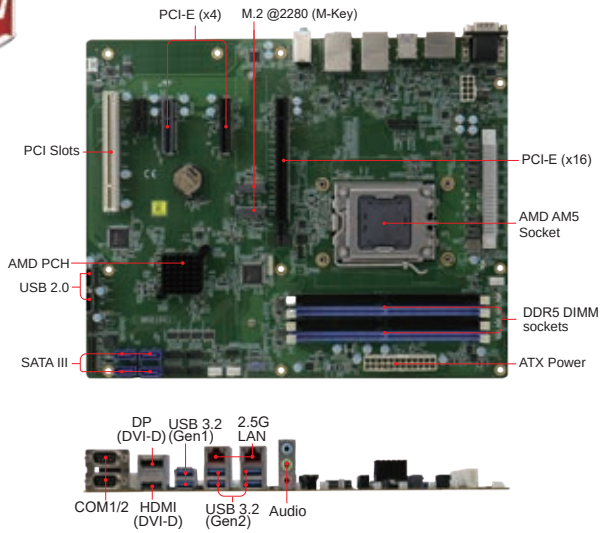
CPU Socket	LGA1151
CPU	7th/6th Gen Intel® Core™ i7/i5/i3/ Pentium® / Celeron® QC/ DC processors, up to 4.0GHz
PCH	Intel® Q170 PCH
Memory	4x DDR4 DIMM, Max. 64GB (supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	1x PCI-E (x16), 1x PCI-E (x8), 1x PCI-E (x4), 1x PCI-E (x1), 3x PCI
Mini Type Slots	1x Mini PCI-E
Graphics Controller	7th/6th Gen Intel® Core™ i7/i5/i3/ Pentium®/ Celeron® QC/ DC processors integrated
Video Output	Supports DVI-D, HDMI and DisplayPort
Ethernet	MB990VF: Intel® I219LM Gigabit LAN PHY Intel® I211AT or I210AT Gigabit LAN (as 2nd LAN)
I/O Chipset	Fintek F8186AD-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	10x USB 3.0 6 ports on board 4 ports via pin-header
Serial ATA	6x SATA III
Audio	Intel® Q170 PCH built-in HD audio + Realtek ALC888S codec
TPM	TPM (1.2)
Others	Digital I/O (4-in/4-out), RAID, iAMT (11.0), iSMART
Dimensions (L x W)	305mm x 244mm (12" x 9.6")
Power Consumption	Intel® Core™ i7-6700 3.4GHz w/ 4x 4GB DDR4-2133 +12V: 7.12A ; +5V: 1.99A; +5VSB: 0.15A; +3.3V: 0.43A
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

MB990VFS-A	LGA1151 Q170 ATX motherboard w/ DVI-D, HDMI, DisplayPort, dual Gigabit LAN, RAID, iAMT (11.0), TPM (1.2), vPro, iSMART
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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

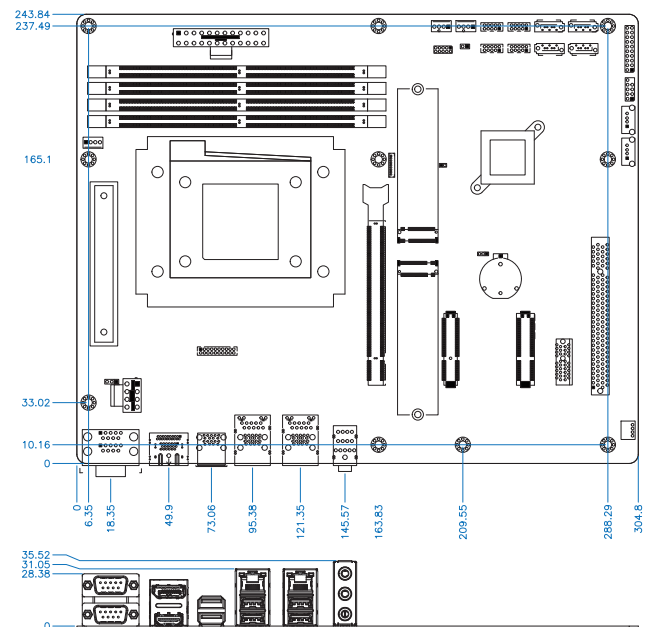
CPU Socket	LGA1718
CPU	AMD Ryzen™ Embedded 7000 series
PCH	B650
Memory	Dual Channel DDR5 5200, UDIMM 4 slots, Max. up to 128GB Supports ECC
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	NVMe
Expansion Slots	1x PCI-E x16 support (Gen5) / 1x PCI-E x4 support (Gen5) / 1x PCI-E x4 support (Gen4) / 1x PCI-E x1 support (Gen3) / 1x PCI
Display Interface	1x HDMI 2.1 1x DP 2.0 1x DVI-D
LAN Controller	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 3.0	4x USB 3.2 Gen2, + 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.
Others	Digital I/O (4-in/4-out)
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	95% (non-condensing @60°C)

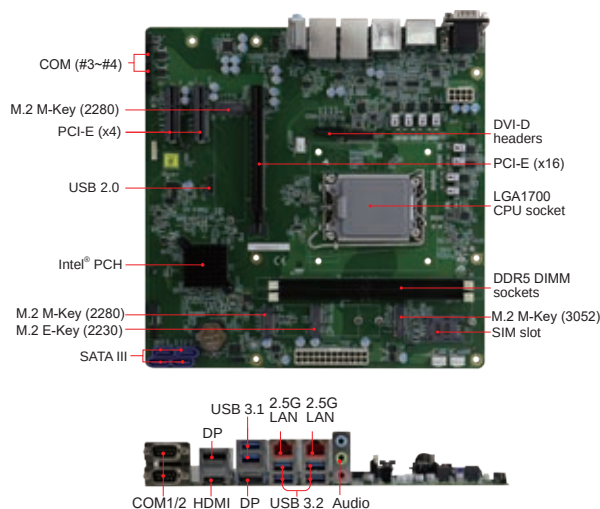
Ordering Information

MBB1001

AMD Ryzen™ Embedded 7000 series ATX Motherboard w/ HDMI, DisplayPort, DVI-D, Dual Giga-LAN, RAID, TPM (2.0), supports ECC

Dimensions and Drawing





Specifications

CPU Socket	LGA1700
CPU	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 Port	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

- 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

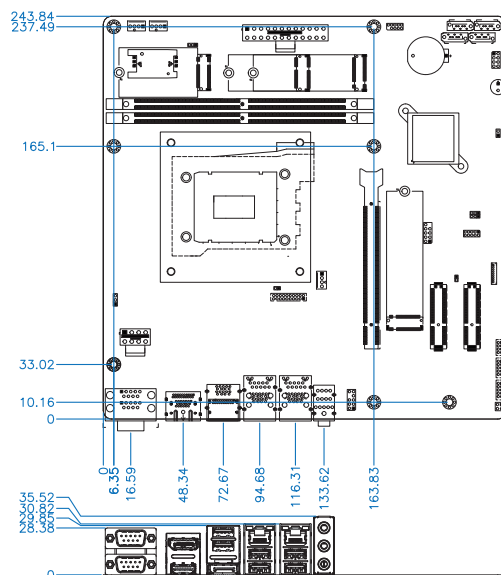
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

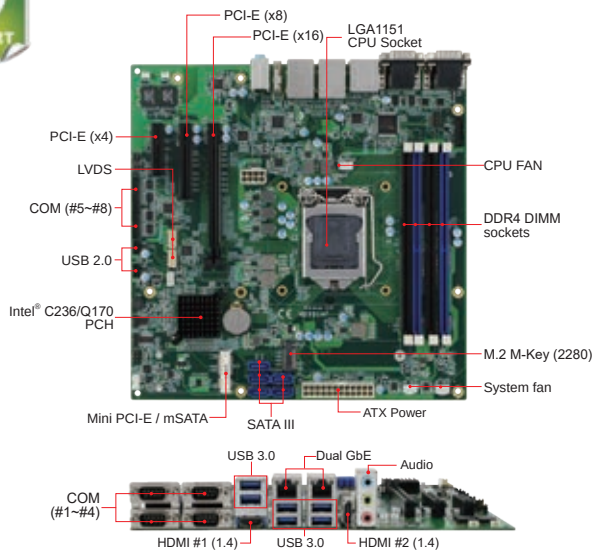
Ordering Information

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





Specifications

CPU Socket	LGA1151
CPU	7th/6th Gen Intel® Xeon E3/Core™ i7/i5/i3/ Pentium® / Celeron® QC/ DC processors, up to 4.2GHz
PCH	MB991AF-C236: Intel® C236 PCH MB991AF: Intel® Q170 PCH
Memory	4x DDR4 DIMM, Max. 64GB (supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA via Mini PCI-E (thru SATA III) 1x M.2 slot [thru PCI-E (x1) x4](NVMe)
Expansion Slots	1x PCI-E (x16), 1x PCI-E (x8), 1x PCI-E (x4) 1x M.2 (2280)
Mini Type Slots	1x Mini PCI-E
Graphics Controller	7th/6th Gen Intel® Core™ i7/i5/i3/ Pentium®/ Celeron® processor Integrated
Video Output	2x HDMI (1.4) and LVDS
Ethernet	Intel® I219LM Gigabit LAN PHY Intel® I211AT or I210AT Gigabit LAN
I/O Chipset	Fintek F81846AD-I + F81504D
Serial Port	6x RS232, 2x 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	5x SATA III
Audio	Intel® C236 / Q170 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)	244mm x 244mm (9.6" x 9.6")
Power Consumption	Intel® Core i7-6700, 3.4GHz, w/ 4x 8GB DDR4-2133 12V: 7.1A +5V: 1.81A +5VSB: 0.11A +3.3V, 0.70A
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)

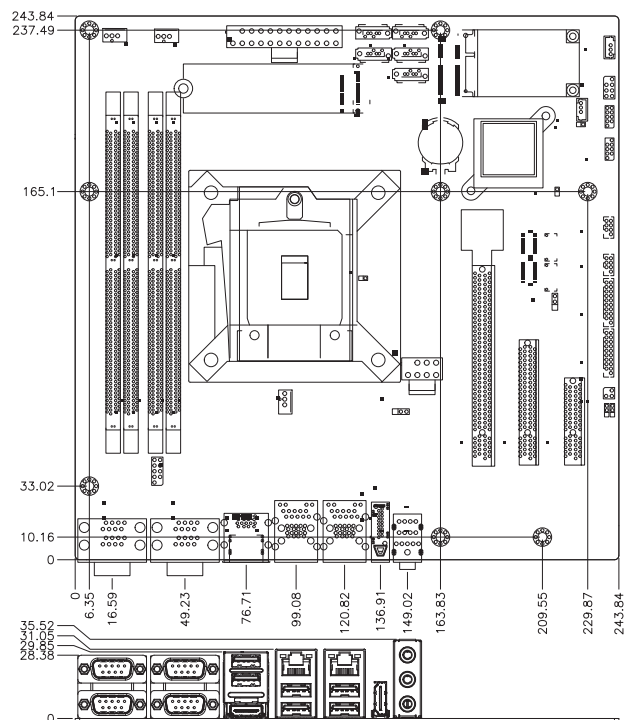
Features

- 7th/ 6th Gen Intel® Xeon E3/Core™ i7/i5/i3 / Pentium® / Celeron® QC/DC processors, up to 4.2GHz
- 4x DDR4 DIMM, Max. 64GB
- Intel® processor integrated graphics, supports HDMI, LVDS
- Dual Intel® Gigabit LAN
- 4x USB 2.0, 6x USB 3.0, 8x COM, 5x SATA III
- 1x PCI-E (x16) [(x8) Link], 1x PCI-E (x8), 1x PCI-E (x4)
- 1x Mini PCI-E, 1x M.2 M-Key (2280)
- Watchdog timer, Digital I/O, iAMT (11.6), TPM (2.0), iSMART

Ordering Information

MB991AFS-236	LGA1151 C236 Micro ATX motherboard w/ 2x HDMI (1.4) and LVDS, dual Gigabit LAN, RAID, iAMT (11.6), TPM (2.0), iSMART
MB991AFS	LGA1151 Q170 Micro ATX motherboard w/ 2x HDMI (1.4) and LVDS, dual Gigabit LAN, RAID, iAMT (11.6), TPM (2.0), iSMART

Dimensions and Drawing



Comparison Table

Mini-ITX Motherboard

Models	MI1002	MI1001	MI1000
Form Factor	Mini-ITX	Mini-ITX	Mini-ITX
CPU Socket	LGA1851	LGA1700	LGA1700
CPU	14th Gen Intel® Core™ Ultra DT processors	14th/13th/12th Gen Intel® Core™ DT processors	14th/13th/12th Gen Intel® Core™ DT processors
CPU Max. Frequency	Up to 4.2GHz	Up to 5.8GHz	Up to 5.8GHz
PCH	N/A	Intel® Q670E	Intel® R680E
Memory	2x DDR5 SO-DIMM	2x DDR5 SO-DIMM	2x DDR5 SO-DIMM
Max. Memory Size	64GB	64GB	64GB
BIOS	AMI	AMI	AMI
Graphics Controller	Intel® Core™ Ultra DT processor integrated Iris® 8Xe graphics	Intel® RPL-S Refresh DT processor integrated Xe graphics	Intel® RPL-S Refresh DT processor integrated Xe graphics
Video Output	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
Ethernet	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
Audio	Built-in ALC888S HD audio codec	NA	Built-in ALC888S HD audio codec
SATA	2x SATA III ports	2x SATA III ports	4x SATA III ports
I/O Chipset	F81964D-I	F81964AB-I	F81964AD-I
Parallel Port	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 RS232/422/485 (Jumper-less selection) 2x RS232
USB 2.0	4x USB 2.0 (via pin header)	2x USB 2.0 (via pin header)	4x 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	6x USB 3.2 via rear I/O
TPM	2.0	2.0	2.0
KB / MS	N/A	N/A	N/A
Hardware Monitor	Yes	Yes	Yes
Storage Device Interface	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)
Watchdog Timer	256 levels	256 levels	256 levels
Digital I/O	4-in/4-out	4-in/4-out	4-in/4-out
Expansion Slots	1x PCI-E (x4)	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 (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)
Power input	DC-IN (+12V~+24V)	DC-IN (Single 24V only)	ATX type
Power Consumption	TBD	TBD	14th Gen Intel® Core™ i9-14900 w/ 2x 32GB DDR5 Transcend TS4GSA64V6E +12V:23.17A
Dimensions (L x W)	170mm x 170mm	170mm x 170mm	170mm x 170mm
Extra Features	N/A	N/A	N/A
Page No.	P.3-17	P.3-18	P.3-19

1
Single Board
Computers

2
CPU Modules

3
Motherboards

4
CPU Cards

Comparison Table

Mini-ITX Motherboard

Models	MI999	MI998	MI996
Form Factor	Mini-ITX	Mini-ITX	Mini-ITX
CPU Socket	LGA1200	LGA1151	FCBGA1440
CPU	10th Gen Intel® Xeon®-E / Core™ / Pentium® / Celeron® processors	9th /8th Gen Intel® Xeon®-E / Core™ / Pentium® / Celeron® processors	9th Gen Intel® Xeon® E / Core™ i7/i5/i3, Celeron® processors
CPU Max. Frequency	Up to 4.7GHz	Up to 4.9GHz	Up to 4.2GHz
PCH	Intel® W480E, Q470E, H470E	Intel® C246, Q370, H310	Intel® CM246 PCH: MI996VF-X28/26 Intel® QM370 PCH: MI996VF-9850/ 9400 Intel® HM370 PCH: MI996EF-9100/ 4930
Memory	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM
Max. Memory Size	64GB	32GB	32GB
BIOS	AMI	AMI	AMI
Graphics Controller	10th Gen Intel® Core™ DT processor integrated HD Gfx	9th /8th Gen Intel® Core™ DT processor integrated HD Gfx	9th Gen Intel® Xeon® / Core™ i7/i5/i3 integrated graphics
Video Output	eDP or 24-bit dual-channel LVDS DVI-D, HDMI 1.4, DisplayPort	eDP or 24-bit dual-channel LVDS DVI-D, HDMI 1.4, DisplayPort	eDP, HDMI(2.0a), DisplayPort (1.2) and DVI-D
Ethernet	Intel® I219LM GbE PHY Intel® I219V GbE PHY Intel® I210AT	Intel® I219LM GbE PHY Intel® I219V GbE PHY Intel® I210AT	Intel® I219LM/V Gigabit LAN PHY Intel® I210AT Gigabit LAN
Audio	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	MI996VF-X26/28: 4x SATA III MI996VF-9850 MI996EF-9100: 2x SATA III
I/O Chipset	F81964D-I	F81964D-I	F81964D-I
Parallel Port	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
USB 2.0	4x USB 2.0 (via pin header)	2x USB 2.0 (via pin header)	4x USB 2.0 (via pin header)
USB 3.X	6x USB 3.2 (Gen1)	6x USB 3.0 (MI998AF) 4x USB 3.0 (MI998EF)	6x USB 3.1 (via real I/O)
TPM	2.0	2.0	2.0
KB / MS	N/A	N/A	N/A
Hardware Monitor	Yes	Yes	Yes
Storage Device Interface	1x M.2 (M-Key)	1x M.2 (E-Key) 1x M.2 (M-Key)	mSATA 1x M.2 (E-Key) 1x M.2 (M-Key)
Watchdog Timer	256 levels	256 levels	256 levels
Digital I/O	4-in/4-out	4-in/4-out	4-in/4-out
Expansion Slots	1x PCI-E (x16)	1x PCI-E (x16)	1x PCI-E (x16)
Mini Type Slots	2x M.2	2x M.2	1x Mini PCI-E 1x M.2 (M-Key, type:2280, NVMe) 1x M.2 (E-Key, type:2230, CNVI)
Power input	ATX type	ATX type	ATX type
Power Consumption	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	Intel® Xeon E-2176G, 3.7GHz w/ 8GB DDR4-2400 +12V: 7.73A +5V: 1.59A +5VSB: 0.17A +3.3V: 0.32A
Dimensions (L x W)	170mm x 170mm	170mm x 170mm	170mm x 170mm
Extra Features	iAMT (14.0), LAN Wakeup, EuP/ErP	iAMT (11.6), LAN Wakeup, EuP/ErP	iAMT (11.6), LAN Wakeup, iSMART, EuP/ ErP, RAID, vPro(MI996VF)
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Comparison Table

Mini-ITX Motherboard

Models	MI995	MI993	MI992
Form Factor	Mini-ITX	Mini-ITX	Mini-ITX
CPU Socket	BGA 1440 CPU on board	BGA 1440 CPU on board	BGA 1440 CPU on board
CPU	8th Gen Intel® Xeon® / Core™ i7/i5/i3 processors	AMD Embedded Zen Core CPU	7th Gen Intel® Xeon® / Core™ i7/i5/i3 processors
CPU Max. Frequency	Up to 4.2GHz	Up to 2.7GHz	Up to 3.7GHz
PCH	Intel® CM246 PCH Intel® QM370 PCH	N/A	Intel® CM238 / HM175
Memory	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM
Max. Memory Size	32GB	32GB	32GB
BIOS	AMI	AMI	AMI
Graphics Controller	Intel® Core™ i integrated graphics	AMD R-series APU built-in GPU	Intel® Core™ i integrated graphics
Video Output	HDMI(2.0a) / DVI-D/ DP/ eDP on board	HDMI(2.0b)/ DP on board	DVI-D/ HDMI(1.4) / DP on board
Ethernet	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
Audio	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec
SATA	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
I/O Chipset	F81964D-I	NCT6116D	F81866AD-I
Parallel Port	N/A	N/A	N/A
Serial Port	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)
USB 2.0	4x USB 2.0 (via pin header)	2x USB 2.0 (via pin header)	4x USB 2.0 via rear I/O
USB 3.X	6x USB 3.1 (on board)	2x USB 3.1 via rear I/O	6x USB 3.0 via rear I/O
TPM	2.0	2.0	2.0
KB / MS	N/A	N/A	N/A
Hardware Monitor	Yes	Yes	Yes
Storage Device Interface	mSATA, M.2	M.2 (M-Key)	mSATA, M.2
Watchdog Timer	256 levels	256 levels	256 levels
Digital I/O	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 (x16)
Mini Type Slots	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
Power input	ATX type	DC-IN	ATX type
Power Consumption	Intel® Core™ i5-8400H, 2.50GHz, w/ 2x 16GB DDR4-2133 +12V: 3.01A +5V: 1.43A +5VSB: 0.15A +3.3V: 0.32A	TBD	Intel® Xeon E3-1505M v6, 3.00GHz, w/ 2x 4GB DDR4-2133 +12: 3.95A +5V: 1.50A +5VSB: 0.06A +3.3V: 0.35A
Dimensions (L x W)	170mm x 170mm	170mm x 170mm	170mm x 170mm
Extra Features	iAMT (11.6)/ vPro(MI995VF), LAN Wakeup, iSMART, RAID, EuP/ErP (MI995EF)	LAN wakeup	iAMT (11.6), LAN Wakeup, iSMART, RAID
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Remarks: 1. Specifications are subject to change without prior notice. 2. ODM/OEM is available. 3. For user's manual & datasheet download, visit www.ibase.com.tw.

Comparison Table

Mini-ITX Motherboard

Models	MI991	MI990	MI989
Form Factor	Mini-ITX	Mini-ITX	Mini-ITX
CPU Socket	LGA1151	BGA 1440 CPU on board	BGA 1140 APU on board
CPU	7th/6th Gen Intel® Xeon® / Core™ i7/i5/i3 / Pentium® / Celeron® DT CPU	6th Gen Intel® Xeon® / Core™ i7/i5/i3 / Celeron®	AMD Embedded Zen Core CPU
CPU Max. Frequency	Up to 4.0GHz	Up to 3.70GHz	Up to 4.15GHz
PCH	Intel® C236(MI991AF-C236) Intel® Q170(MI991AF) Intel® H110(MI991EF)	Intel® CM236 (MI990VF) Intel® HM170 (MI990EF)	N/A
Memory	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM	2x DDR4 SO-DIMM
Max. Memory Size	32GB	32GB	64GB
BIOS	AMI	AMI	AMI
Graphics Controller	Intel® Core™ i integrated graphics	Intel® Core™ i integrated graphics	AMD V-series APU built-in GPU
Video Output	HDMI/ DVI-D/ DP on board	HDMI(2.0), DVI-D and DP on board	4x DisplayPort
Ethernet	Intel® I219LM/V Gigabit LAN PHY Intel® I210AT Gigabit LAN	Intel® I219LM/V Gigabit LAN PHY Intel® I210AT Gigabit LAN	Intel® I210AT Gigabit LAN
Audio	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec	Built-in ALC888S HD audio codec
SATA	MI991VF: 4x SATA III ports MI991EF: 3x SATA III ports	MI990VF: 4x SATA III ports MI990EF: 2x SATA III ports	1x SATA III port
I/O Chipset	F81846AD-I	F81866AD-I	F81966D-I
Parallel Port	N/A	N/A	N/A
Serial Port	3x RS232 1x RS232/422/485 (jumper-less selection)	5x RS232 1x RS232/422/485 (jumper-less selection)	2x RS232/422/485 (jumper-less selection) 2x RS232
USB 2.0	MI991AF: 2x USB 2.0 via pin header MI991EF: 2x USB 2.0 on board 2x USB 2.0 via pin header	4x USB 2.0 (4x via pin header)	2x USB 2.0 via rear I/O
USB 3.X	MI991AF: 6x USB 3.0 on board MI991EF: 4x USB 3.0	6x USB 3.0 (6x rear I/O)	2x USB 3.1 (Gen.2) via rear I/O
TPM	1.2	2.0	N/A
KB / MS	N/A	N/A	N/A
Hardware Monitor	Yes	Yes	Yes
Storage Device Interface	mSATA	mSATA, M.2	mSATA, M.2
Watchdog Timer	256 levels	256 levels	256 levels
Digital I/O	4-in/4-out	4-in/4-out	4-in/4-out
Expansion Slots	1x PCI-E (x16)	1x PCI-E (x16)	1x PCI-E (x16)
Mini Type Slots	2x Mini PCI-E (x1)	2x Mini PCI-E (x1) 1x M.2	3x M.2
Power input	ATX type	ATX type	ATX type
Power Consumption	Intel® Core™ i5-6500TE 2.3GHz w/ 2x DDR4-2133 4GB +12V: 3.56A; +5V: 1.28A +5VSB: 0.08A; +3.3V: 0.32A	Intel® Core™ i5-6400EQ 2.4GHz w/ 2x 8GB DDR4-2133 +12V: 2.84A; +5V: 1.45A +5VSB: 0.058A; +3.3V: 0.52A	TBD
Dimensions (L x W)	170mm x 170mm	170mm x 170mm	170mm x 170mm
Extra Features	iAMT (11.0), LAN Wakeup, iSMART	iAMT (11.0) / vPro [MI990VF], LAN Wakeup, iSMART	LAN wakeup, EuP/ErP
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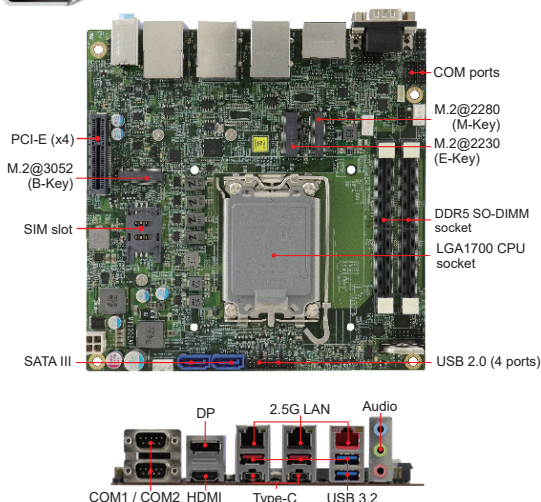
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CPU Cards

Comparison Table

Mini-ITX Motherboard

MI988	MI811	MI808	MI805
Mini-ITX	Mini-ITX	Mini-ITX	Mini-ITX
BGA 1140 APU on board	FCBGA1296	FCBGA1170	FCBGA1170
AMD Embedded Zen Core CPU	Intel® Pentium® N4200 / Celeron® N3350 SoC	Intel® Pentium® N3710 / Celeron® N3010 SoC	Intel® Celeron® QC J1900 SoC
Up to 3.8GHz	Up to 2.5GHz/ 2.4GHz	Up to 2.56GHz/ 2.24GHz	2.00GHz
N/A	N/A	N/A	N/A
2x DDR4 SO-DIMM	2x DDR3L SO-DIMM	2x DDR3L SO-DIMM	2x DDR3L SO-DIMM
32GB	8GB	8GB	16GB
AMI	AMI	AMI	AMI
AMD V-series APU built-in GPU	Intel® Gen9-LP w/ 18 EUs graphics	Intel® Gen8 w/ 16 EUs graphics	Intel® Gen7 w/ 4EUs graphics
HDMI(2.0)/ DP on board	HDMI, DVI-D on board	VGA, DVI-D on board	DVI-D on board
Intel® I210AT Gigabit LAN	2x Intel® I210AT Gigabit LAN	2x Intel® I210AT Gigabit LAN	2x Intel® I210AT Gigabit LAN
Built-in ALC888S HD audio codec	Built-in ALC283 audio codec w/ 2W amplifier	Built-in ALC269 audio codec w/ 2W amplifier	Built-in ALC269 audio codec w/ 2.3W amplifier
1x SATA III port	2x SATA III ports	2x SATA III ports	2x SATA II ports
NCT6116D	F81846AD-I	F81866AD-I	NCT6106D
N/A	N/A	N/A	N/A
2x RS232/422/485 (jumper-less selection) 4x RS232	3x RS232 1x RS232/422/485 (jumper-less selection)	3x RS232 1x RS232/422/485 (jumper-less selection)	5x RS232 1x RS232/422/485 (jumper-less selection)
N/A	2x USB 2.0 (2 ports via rear I/O + 2 ports 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
4x USB 3.1 rear I/O	4x USB 3.0 on rear I/O	4x USB 3.0 on rear I/O	1x USB 3.0 on rear I/O
N/A	N/A	2.0 (option)	N/A
N/A	N/A	PS/2	N/A
Yes	Yes	Yes	Yes
mSATA, M.2	mSATA	mSATA or CFast	mSATA
256 levels	256 levels	256 levels	256 levels
4-in/4-out	4-in/4-out	4-in/4-out	4-in/4-out
1x PCI-E (x8)	1x PCI-E (x1)	1x PCI-E (x1)	1x PCI-E (x1)
1x Mini PCI-E 1x M.2	1x Mini PCI-E (x1)	1x Mini PCI-E (x1)	1x Mini PCI-E (x1)
ATX type/ DC-IN (12V~24V)	ATX or DC in 12V~ 24V	DC In 12V or DC in 18V~ 24V	DC In 12V ~ 24V
AMD Ryzen™ Embedded V1807B 3.35GHz w/ 2x 8GB DDR4-2133 +24V: 2.55A	Intel® Pentium® N4200 2.5GHz w/ 2x DDR3L-1600 4GB +12V: 1.27A	Intel® Pentium® N3700 1.6GHz w/ 2x 4GB DDR3L-1600 +19V: 1.01A	Intel® Celeron® J1900 2GHz 8GB DDR3L-1600 +12V: 1.28A
170mm x 170mm	170mm x 170mm	170mm x 170mm	170mm x 170mm
LAN wakeup iSMART	LAN Wakeup	LAN Wakeup, SIM card slot iSMART(3.1)	iSMART(3.0). LAN Wakeup
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Features

- Intel® Core Ultra 100 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

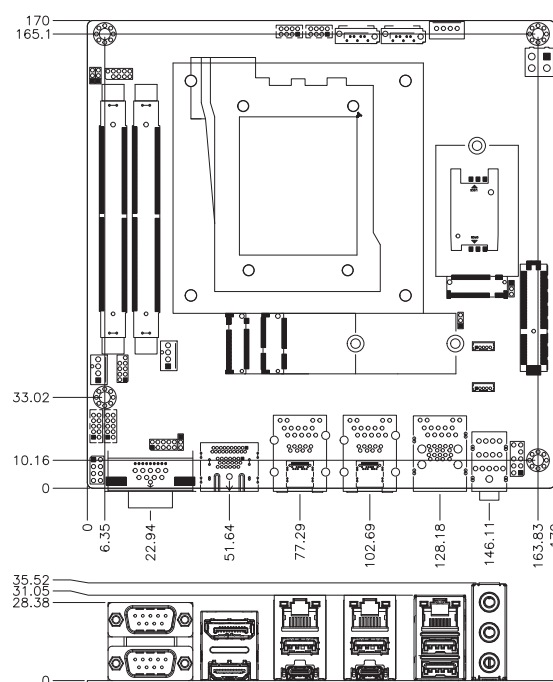
Specifications

CPU Socket	LGA1851
CPU	Intel® Core Ultra 100 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	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)

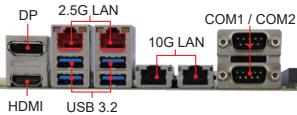
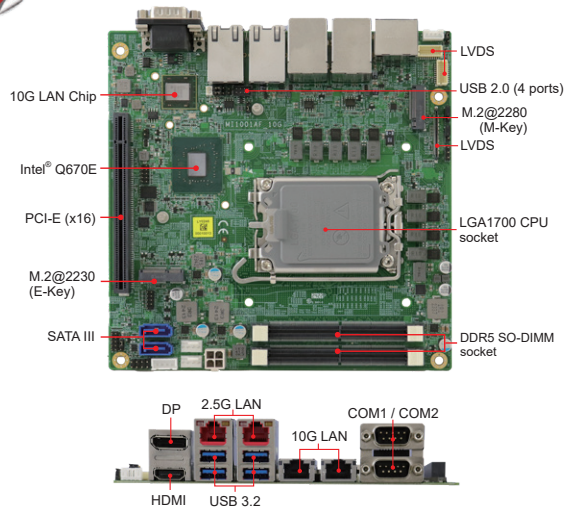
Ordering Information

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

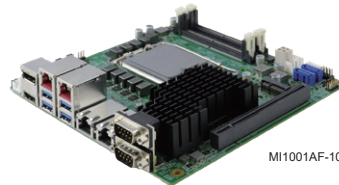


NEW



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

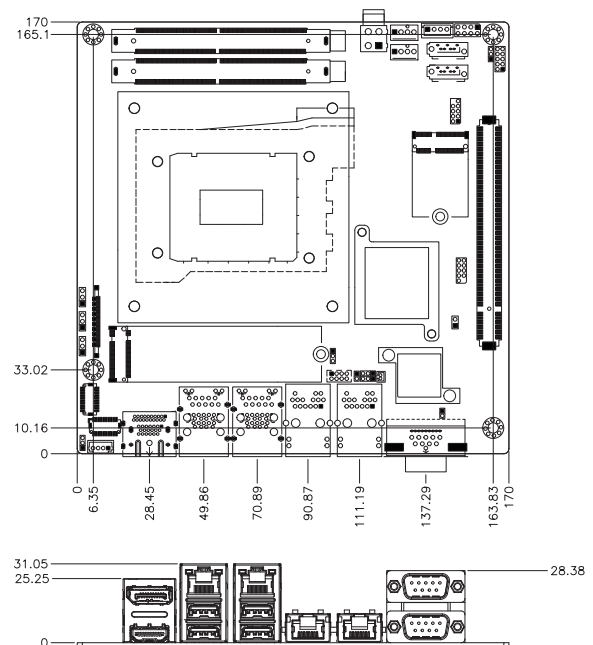
Specifications

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 processor 14900, Up to 5.80GHz w/2 x 32G DDR5-5600 memory module +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)

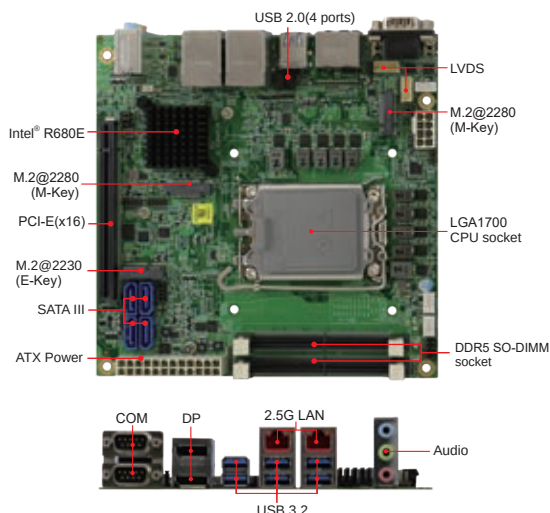
Ordering Information

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



NEW



Specifications

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 32GB DDR5 Transcend TS4GSA64V6E + 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)

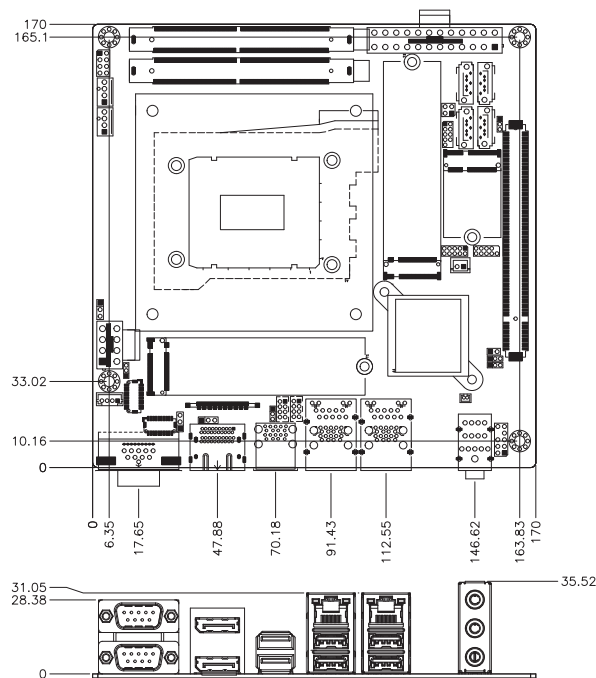
Features

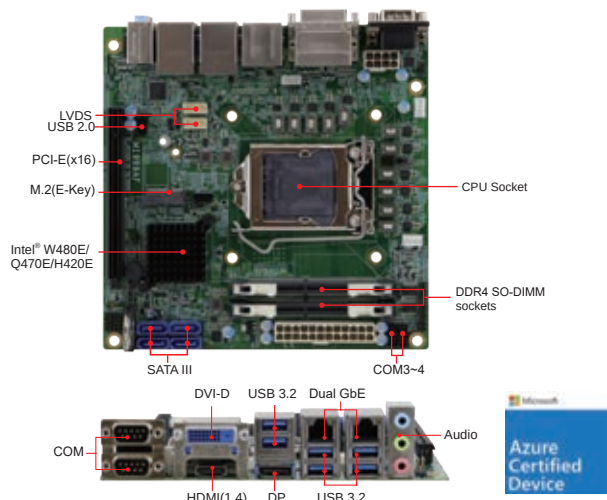
- 14th/13th/12th Gen Intel® Core™ i9/i7/i5/i3 / DT processors, up to 65W
- 2x DDR5 SO-DIMM sockets, Max. 64GB, support ECC
- Intel® processor integrated graphic supports eDP, LVDS and 2x DisplayPort(1.4a) (DP++)
- LAN 1: Intel® I226LM, supports 2.5G and iAMT
LAN 2: Intel® I226V, supports 2.5G only
-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

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)

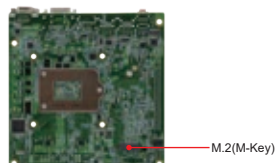
Dimensions and Drawing





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)



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

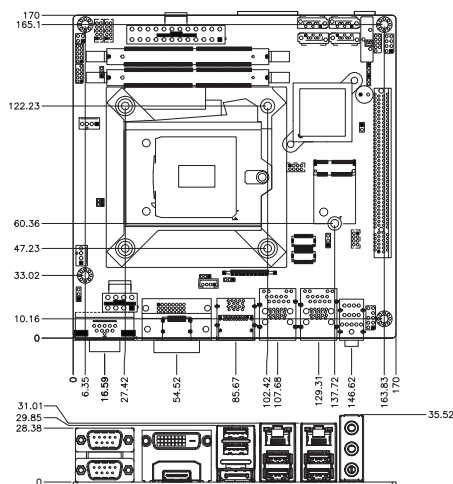
Operating Temperature	0°C ~ 60°C (32°F ~ 140°F)
Storage Temperature	-20°C ~ 80°C (-4°F ~ 176°F)
Relative Humidity	95% (non-condensing @60°C)

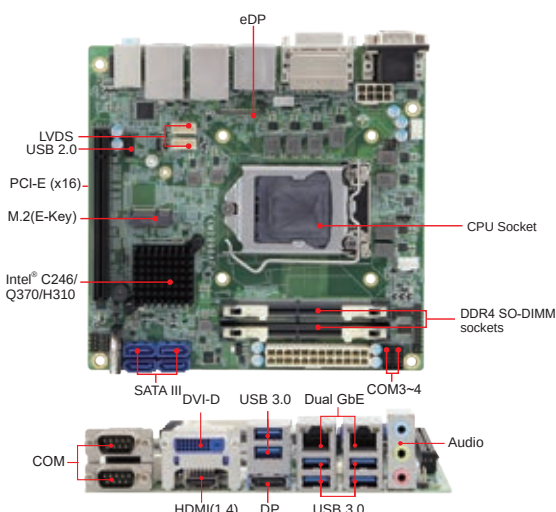
Ordering Information

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)



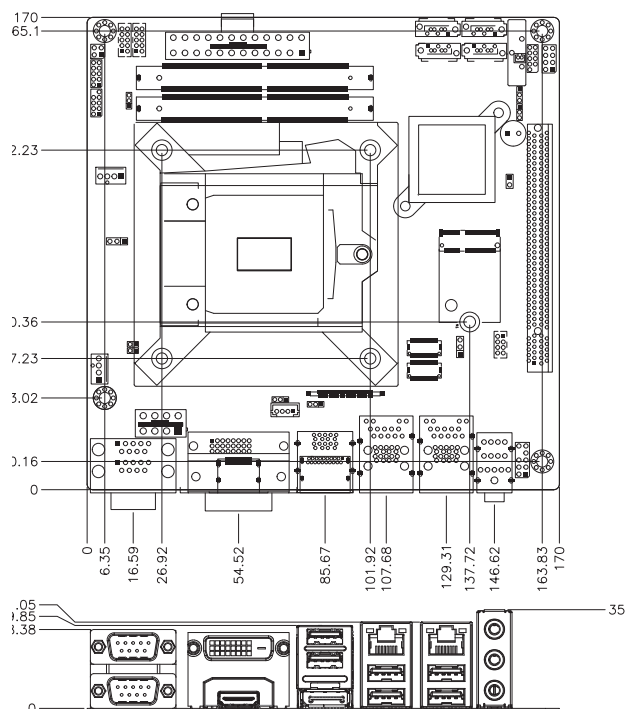
Specifications

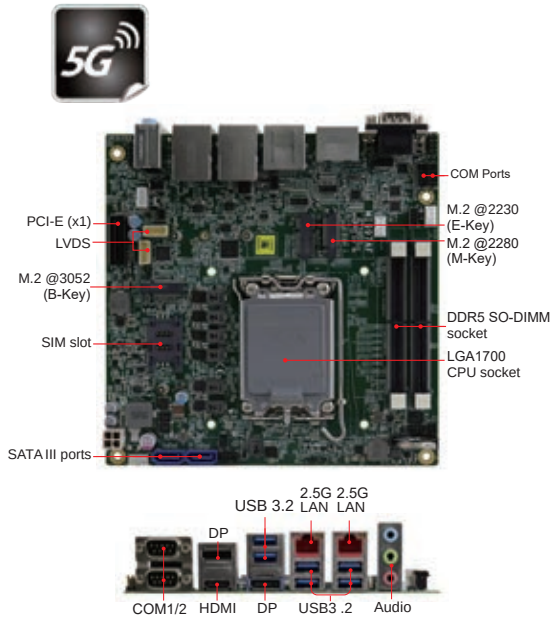
CPU Socket	LGA1151
CPU	9th/8th Gen Intel® Xeon® E / Core™ / Pentium® / Celeron® processors, up to 4.7GHz
PCH	MI998AF(E)-C246: Intel® C246 PCH MI998AF(E): Intel® Q370 PCH MI998EF(E): Intel® H310 PCH
Memory	2x DDR4 SO-DIMM, Max. 32GB (supports ECC by CPU SKU)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	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)

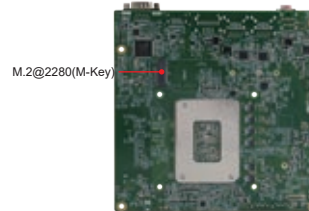
Dimensions and Drawing





Features

- 12th Gen Intel® Core i7/i5/i3 and Celeron® 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

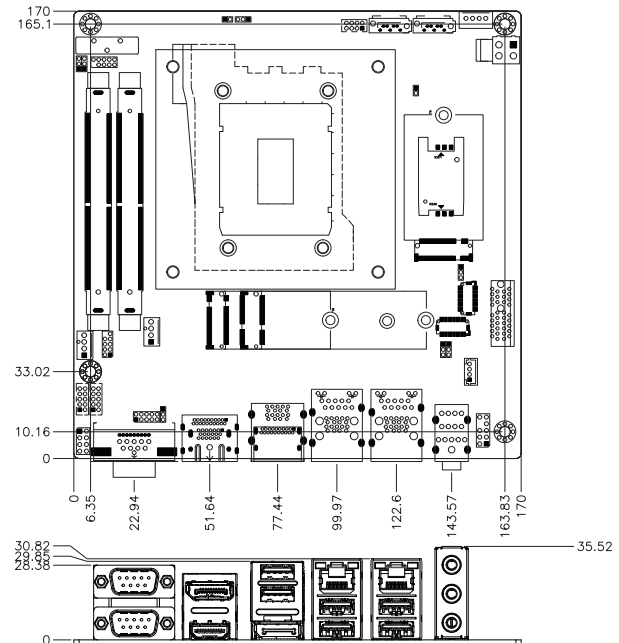
CPU Socke	LGA1700
CPU	12th Gen Intel® Core™ i7/i5/i3 and Celeron® socket SoC Processors
PCH	N/A
Memory	2x DDR5 SO-DIMM sockets, supports DDR5-4800 memory module, Max. 64GB
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	SATA III & NVMe
Expansion Slots	1x PCI-E (x1) [Gen.3.0]
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-headers
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)

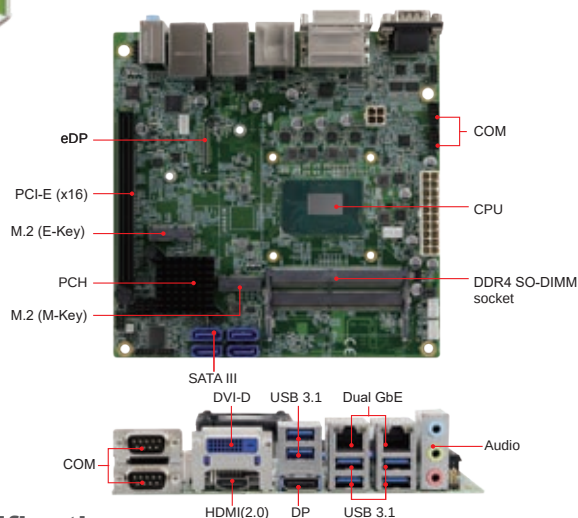
Ordering Information

MI997AF	LGA1700 Mini-ITX Motherboard w/ HDMI, LVDS, 2x DisplayPort, Dual 2.5GbE, 2x SATA, iAMT (16.0), TPM (2.0)
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*CPU List can refer to P.3-1 & P.3-2

Dimensions and Drawing



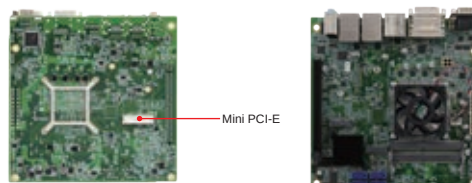


Specifications

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)

Features

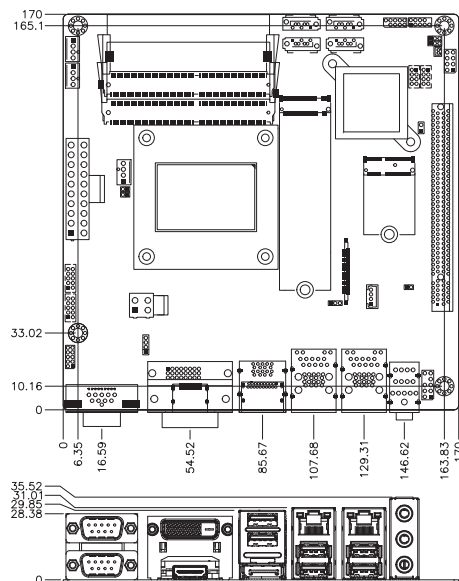
- Onboard 9th Gen Intel® Xeon® E / Core™ i7/i5/i3 / Celeron® processors
- 2x DDR4 SO-DIMM sockets, Max. 32GB
- Supports eDP, HDMI(2.0a) / DVI-D and DisplayPort
- 2x Intel® Gigabit LAN
- 6x USB 3.1, 4x USB 2.0, 4x COM, 4x SATA III
- 1x PCI-E (x16), 1x Mini PCI-E, 2x M.2
- Watchdog timer, Digital I/O,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

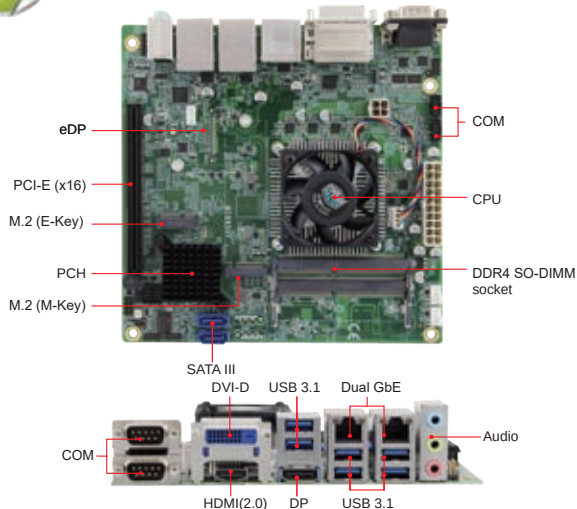


Ordering Information

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

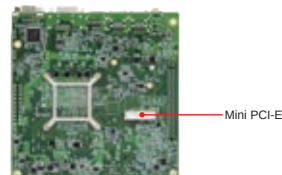
Dimensions and Drawing





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

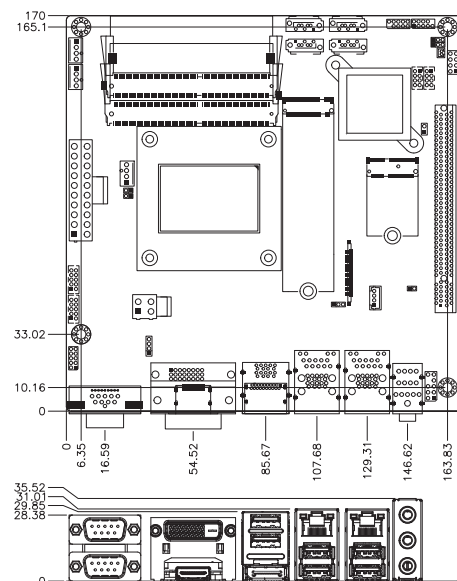
CPU Socket	FCBGA1440
CPU	8th Gen Intel® Xeon® E / Core™ i7/i5/i3 processors
PCH	MI995VF-X27: Intel® CM246 PCH MI995VF-8850/8400: Intel® QM370 PCH MI995EF-8100: Intel® HM370 PCH
Memory	2x DDR4-2666 SO-DIMM socket, Max. 32GB (supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
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

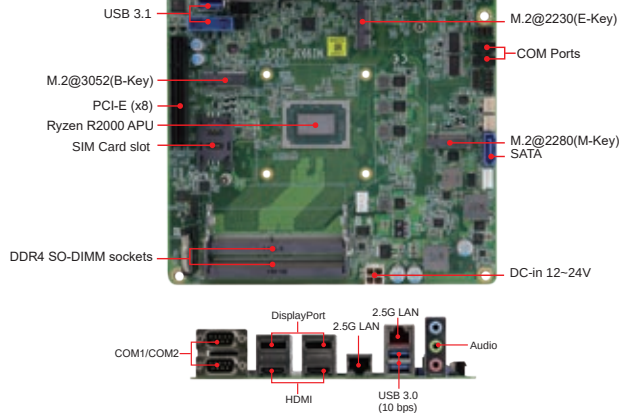
Operating Temperature	0°C~60°C (32°F~140°F)
Storage Temperature	-20°C~80°C (-4°F~176°F)
Relative Humidity	90% (non-condensing @60°C)

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 R2000 series APU onboard
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 + 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) thru 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	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)

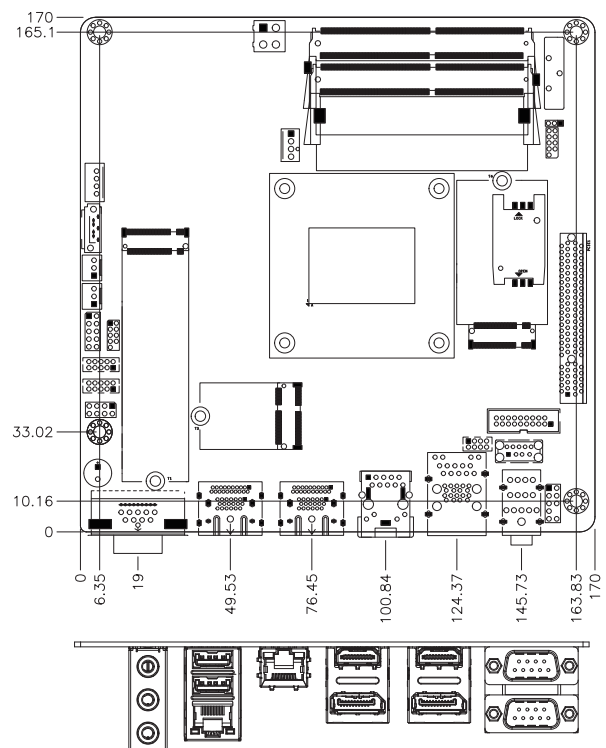
Features

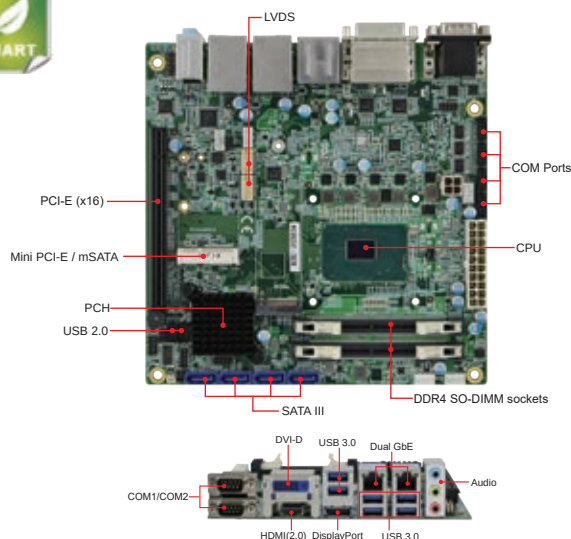
- AMD Ryzen™ Embedded R2000 series APU on board
- 2x DDR4 SO-DIMM sockets, Max. 32GB
- Dual Intel® 2.5G LAN
- 2x HDMI + 2x DisplayPort
- 5x USB 3.1, 2x USB 2.0, 4x COM, 1x SATA III
- 1x PCI-E (x8), 3x M.2 (B-Key, E-Key and M-Key)
- Watchdog timer, Digital I/O, TPM (2.0)

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

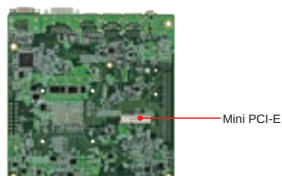
Dimensions and Drawing





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



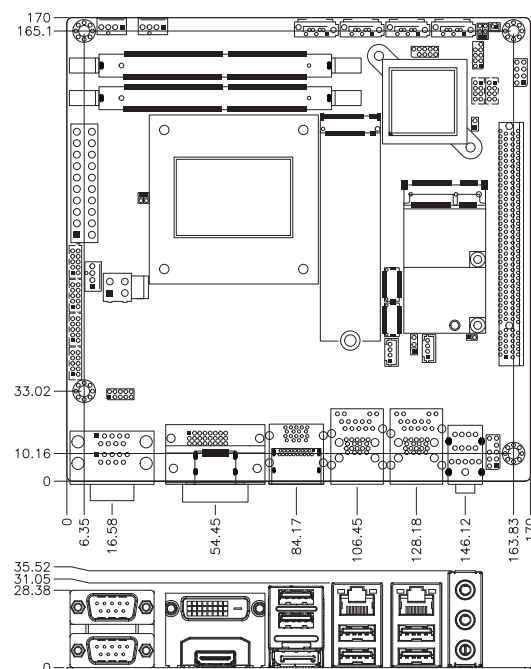
Specifications

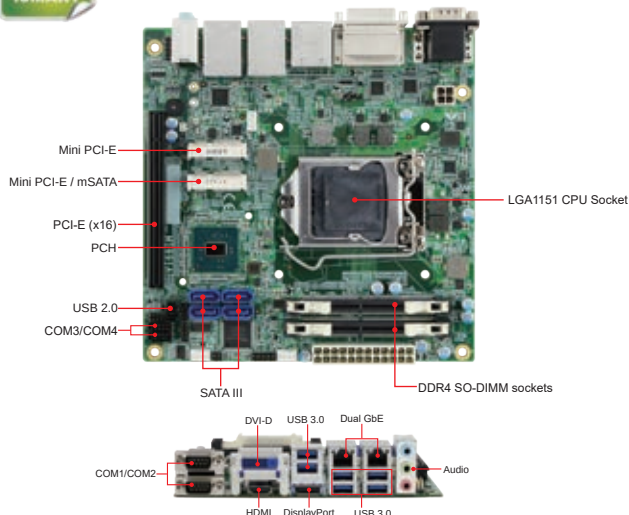
CPU Socket	BGA1440
CPU	7th Gen Intel® Xeon® E3 / Core™ i7/i5/i3 processors, up to 3.7GHz
PCH	MI992VF series: Intel® CM238 PCH MI992EF series: HM175 PCH
Memory	2x DDR4 SO-DIMM, Max.32GB (supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA via Mini PCI-E (via SATA III and PCI-E) 1x M.2 slot (Thru 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)

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

Dimensions and Drawing





Features

- 7th/6th Gen Intel® Xeon® E3 / Core™ i7/i5/i3/ Pentium® / Celeron® QC/DC processors, up to 4.0GHz
- 2x DDR4 SO-DIMM, Max. 32GB, ECC compatible
- Intel® Processor integrated graphics, supports DVI-D, HDMI and DisplayPort
- Dual Intel® Gigabit LAN
- 2x USB 2.0, 6x USB 3.0, 4x COM, 4x SATA III
- 2x Mini PCI-E slots, 1x mSATA, 1x PCI-E (x16)
- Watchdog timer, Digital I/O, iAMT (11.0), TPM (1.2), iSMART

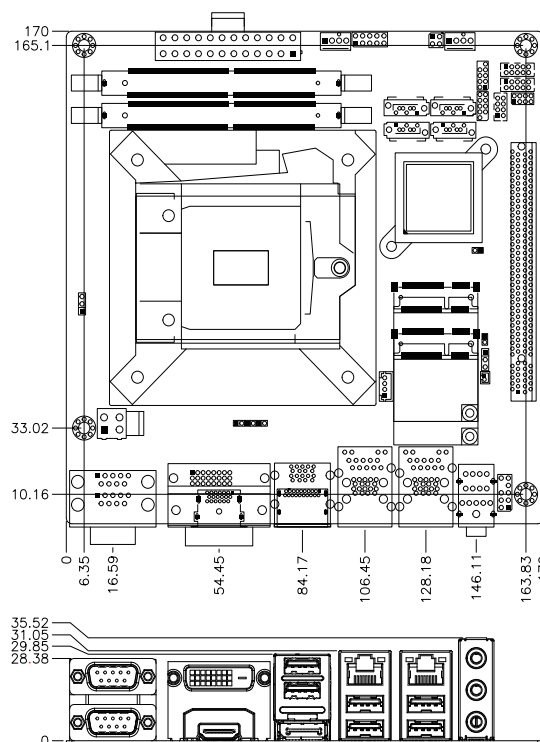
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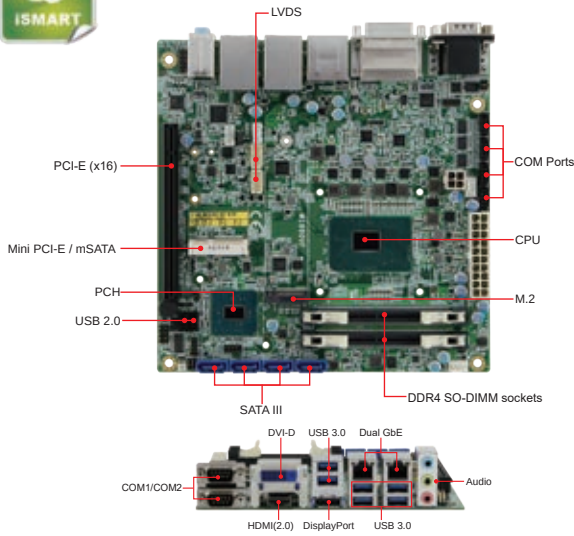
CPU Socket	LGA1151
CPU	7th/6th Gen Intel® Xeon® E3/ Core™ i7/i5/i3/ Pentium® / Celeron® QC/ DC processors, up to 4.0GHz
PCH	MI991AF-C236: Intel® C236 PCH MI991AF: Intel® Q170 PCH MI991EF: Intel® H110 PCH
Memory	2x DDR4 SO-DIMM, Max. 32GB (supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA
Expansion Slots	1x PCI-E (x16)
Mini Type Slots	2x Mini PCI-E
Graphics Controller	7th/6th Gen Intel® Xeon® / Core™ i7/i5/i3/ Pentium® processor Integrated
Video Output	Supports DVI-D, HDMI and DisplayPort
Ethernet	MI991AF: Intel® I219LM Gigabit LAN PHY MI991EF: Intel® I219V Gigabit LAN PHY Intel® I211AT or I210AT Gigabit LAN(as 2nd LAN)
I/O Chipset	Fintek F81846D-I
Serial Port	3x RS232, 1x RS232/422/485 (jumper-less selection)
USB 2.0	MI991EF: 2x USB 2.0 on board 2x USB 2.0 via pin-header
USB 3.X	MI991AF series: 6x USB 3.0 on board MI991EF: 4x USB 3.0
Serial ATA	MI991AF series: 4x SATA III MI991EF: 3x SATA III
Audio	Intel® C236/ Q170/ H110 PCH built-in HD audio + Realtek ALC888S codec
TPM	TPM (1.2)
Others	Digital I/O(4-in/4-out), EuP/ErP, RAID, iAMT (11.0), iSMART
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	Intel® Core™ i5-6500TE 2.3GHz w/ 2x DDR4-2133 4GB +12V: 3.56A; +5V: 1.28A; +5VSB: 0.08A; +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

MI991AFS-C236	LGA1151 C236 Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, dual Gigabit LAN, RAID, iAMT (11.0), TPM (1.2), iSMART (3.0)
MI991AFS	LGA1151 Q170 Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, dual Gigabit LAN, RAID, iAMT (11.0), TPM (1.2), iSMART (3.0)
MI991EFS	LGA1151 H110 Mini-ITX motherboard w/ DVI-D, HDMI, DisplayPort, dual Gigabit LAN, EuP/ErP, iSMART (3.0)

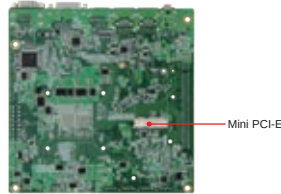
Dimensions and Drawing





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



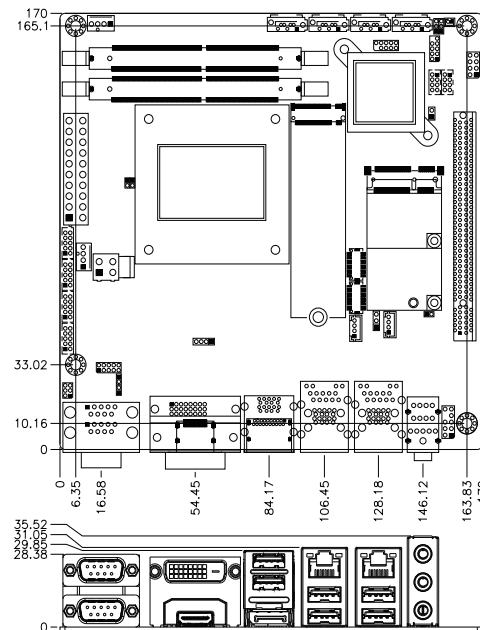
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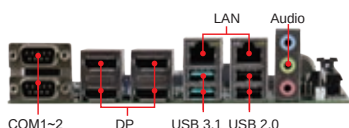
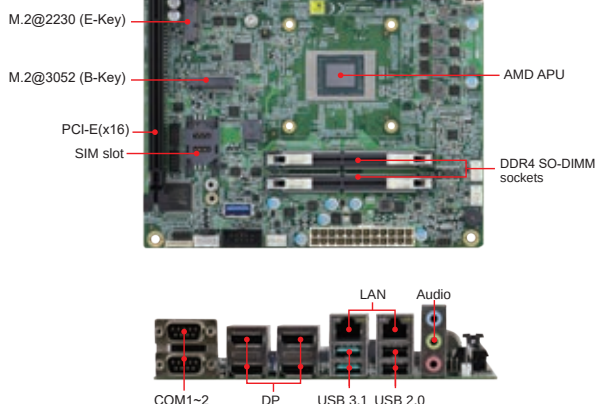
CPU Socket	BGA1440
CPU Socket	6th Gen Intel® Xeon® E3 / Core™ i7/i5/i3 / Celeron® QC/ DC processors, up to 3.7GHz
PCH	MI990VF series: Intel® CM236 PCH MI990EF series: Intel® HM170 PCH
Memory	2x DDR4 SO-DIMM, Max. 32GB (supports ECC by CPU SKUs)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	1x mSATA via Mini PCI-E (Thru SATA III) 1x M.2 slot (Thru 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)



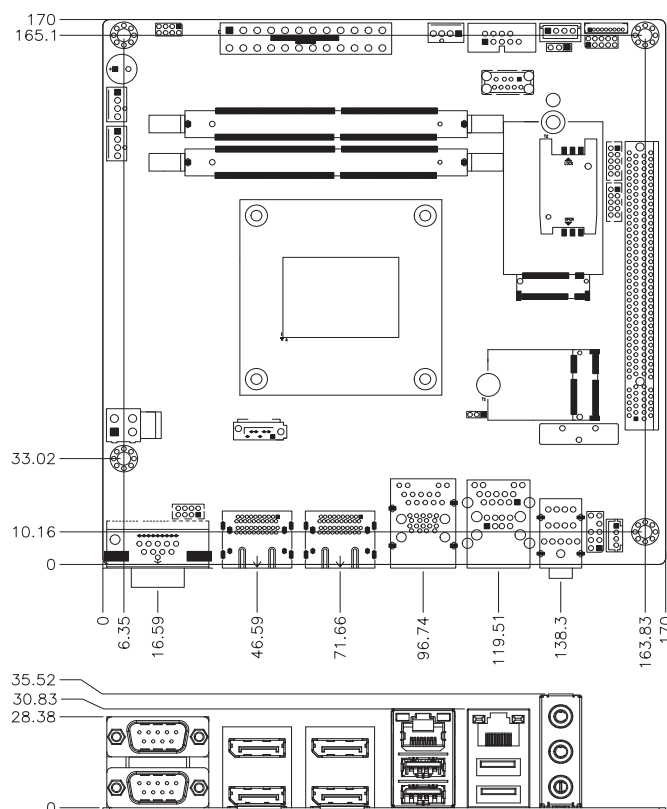
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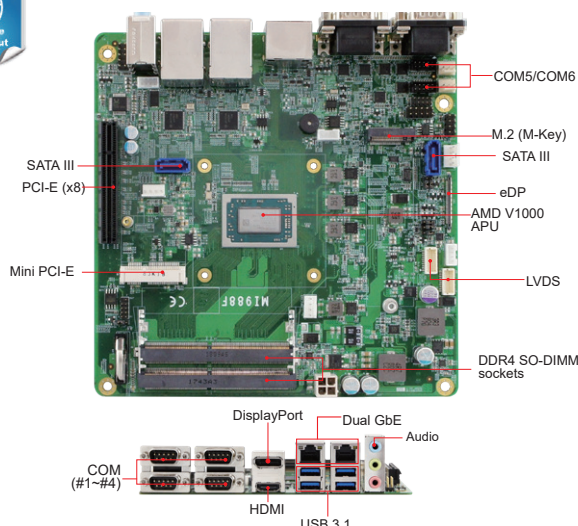
CPU Socket	BGA1140
CPU	AMD V2000 series APU on board
PCH	N/A
Memory	2x DDR4-3200 SO-DIMM socket, Max 64GB, ECC compatible
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	2x M.2 (B-Key/ M-Key)
Expansion Slots	1x PCI-E (x16)
Mini Type Slots	1x M.2 (E-Key, type:2230) 1x M.2 (B-Key, 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	TBD
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





Specifications

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)

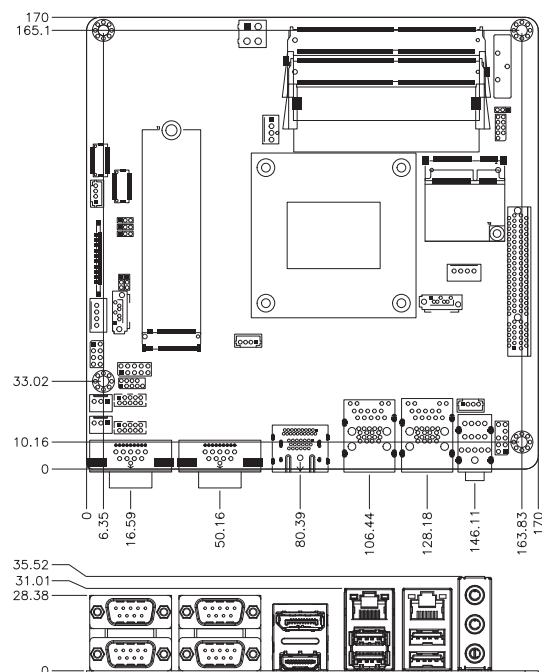
Features

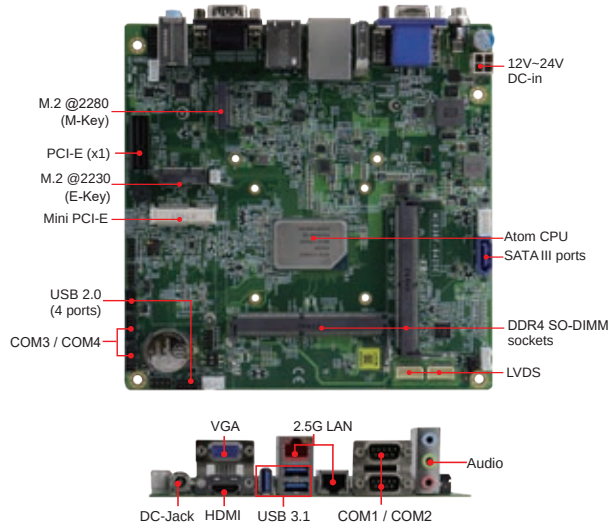
- AMD Ryzen™ Embedded R2000/V1000 Series on board
- 2x DDR4 SO-DIMM, Max. 32GB
- 2x Gigabit LAN
- 1x HDMI(2.0a), 1x DisplayPort (1.2), 1x eDP or 1x 24-bit dual-channel LVDS
- 4x USB 3.1, 2x SATA III, 6x COM
- 1x PCI-E (x8), 1x Mini PCI-E socket, 1x M.2 (M-Key)

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 IB ECC
- 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



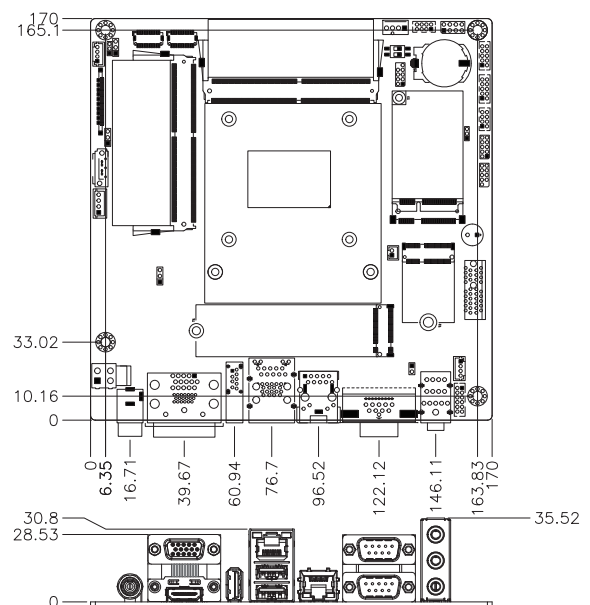
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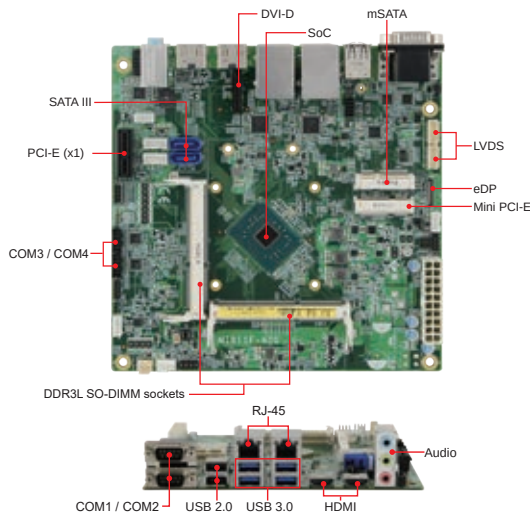
CPU	Intel® Atom® QC x6425E (2.0GHz / 3.0 GHz) Intel® Atom® QC x6413E (1.5GHz / 3.0 GHz) Intel® Atom® DC x6211E (1.3GHz / 3.0 GHz)
PCH	Integrated in Intel® Atom® SoC
Memory	2x DDR4 SO-DIMM sockets, Supports DDR4-3200 memory module, Max. 32GB
BIOS	AMI
Watchdog Timer	256 levels
Storage Device Interface	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	TBD
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





Specifications

CPU Socket	FCBGA1296
CPU	Intel® Pentium® QC N4200 @ 1.1GHz ~ 2.5GHz Intel® Celeron® DC N3350 @ 1.1GHz ~ 2.4GHz
PCH	N/A
Memory	2x DDR3L-1866 SO-DIMM socket, Max. 8GB
BIOS	AMI
Watchdog Timer	256 levels
Storage Device Interface	1x mSATA
H/W Monitor	Yes
Mini Type Slots	1x Mini PCI-E
Expansion Slots	1x PCI-E (x1)
Graphics Controller	Intel® Pentium® SoC integrated Intel® Gen-9 graphics
Video Output	Supports HDMI, 2nd HDMI or DVI-D, eDP or 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
USB 2.0	2x USB 2.0 ports on board 2x USB 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 ALC283 codec
TPM	N/A
Others	Digital I/O (4-in/4-out); ATX or 12V~24V DC-in; EuP/ErP
Dimensions (L x W)	170mm x 170mm (6.7" x 6.7")
Power Consumption	Intel® Pentium® N4200 2.5GHz w/ 2x DDR3L 1600 4GB +12V: 1.27A
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)

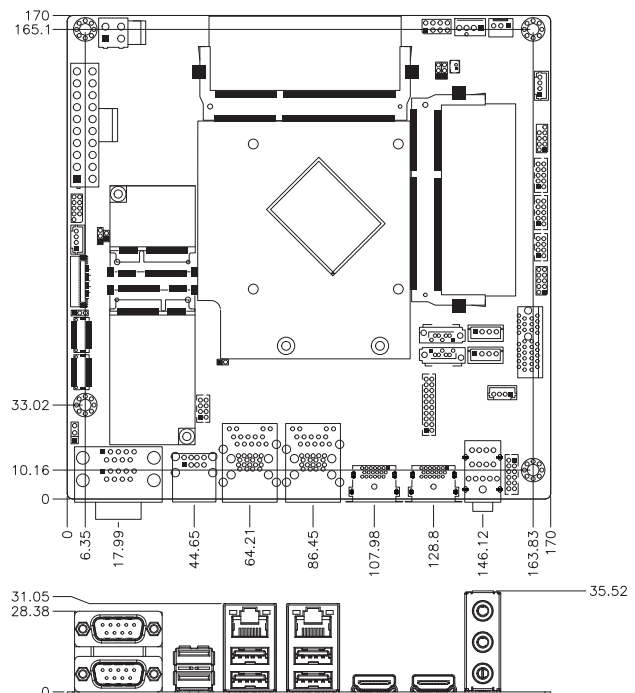
Features

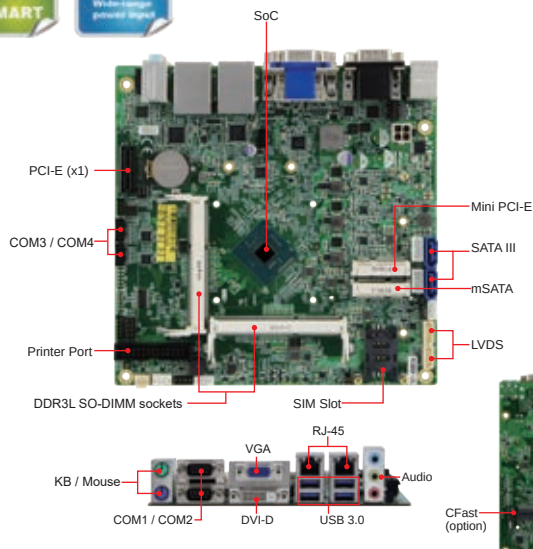
- Onboard Intel® Pentium® QC N4200 2.5GHz or Celeron® DC N3350 2.4GHz on board
- 2x DDR3L SO-DIMM sockets, Max. 8GB
- Supports HDMI, HDMI / DVI-D and eDP / 24-bit dual channel LVDS
- Dual Intel® Gigabit LAN
- Watchdog timer, Digital I/O
- 4x USB 3.0, 4x USB 2.0, 4x COM, 2x SATA III
- 1x PCI-E (x1), 1x Mini PCI-E, 1x mSATA

Ordering Information

MI811F-420	Intel® Pentium® N4200(1.1~2.5GHz) on board Mini-ITX motherboard with heatsink, w/ HDMI#1, HDMI#2 or DVI-D, eDP or LVDS, 2x Gigabit LAN, ATX-in
MI811F-420D	Intel® Pentium® N4200(1.1~2.5GHz) on board Mini-ITX motherboard with heatsink, w/ HDMI#1, HDMI#2 or DVI-D, eDP or LVDS, 2x Gigabit LAN, 12V~24V DC-in
MI811F-335	Intel® Celeron® N3350(1.1~2.4GHz) on board Mini-ITX motherboard with heatsink, w/ HDMI#1, HDMI#2 or DVI-D, eDP or LVDS, 2x Gigabit LAN, ATX-in
MI811F-335D	Intel® Celeron® N3350(1.1~2.4GHz) on board Mini-ITX motherboard with heatsink, w/ HDMI#1, HDMI#2 or DVI-D, eDP or LVDS, 2x Gigabit LAN, 12V~24V DC-in

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

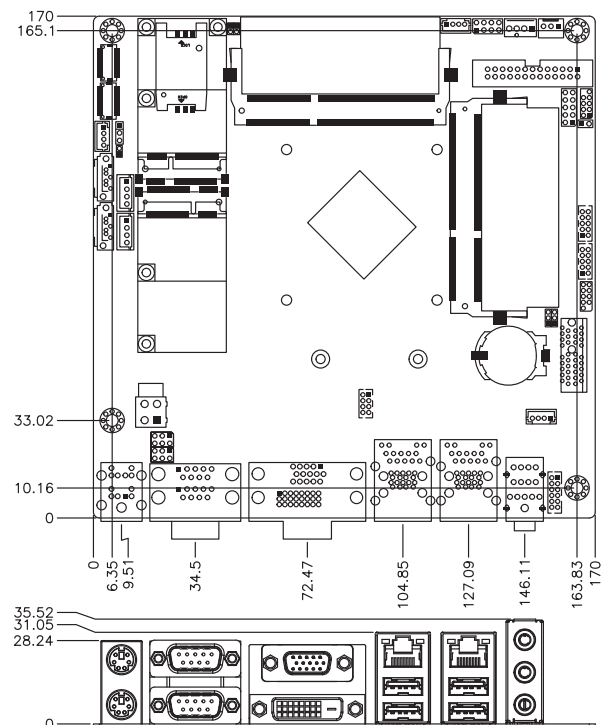
Specifications

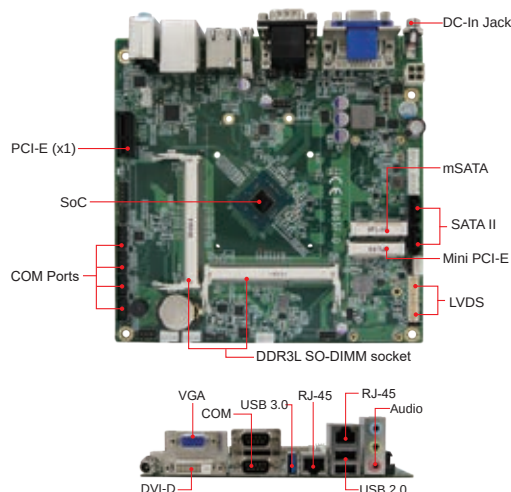
CPU Socket	FCBGA1170
CPU	Intel® Pentium® N3710, up to 2.4GHz or Celeron® N3010, up to 2.24GHz
PCH	N/A
Memory	2x DDR3L-1600 SO-DIMM socket, Max. 8GB
BIOS	AMI
Watchdog Timer	256 levels
Storage Device Interface	1x mSATA, 1x CFAST (option)
H/W Monitor	Yes
Expansion Slots	1x PCI-E (x1)
Mini Type Slots	1x 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)

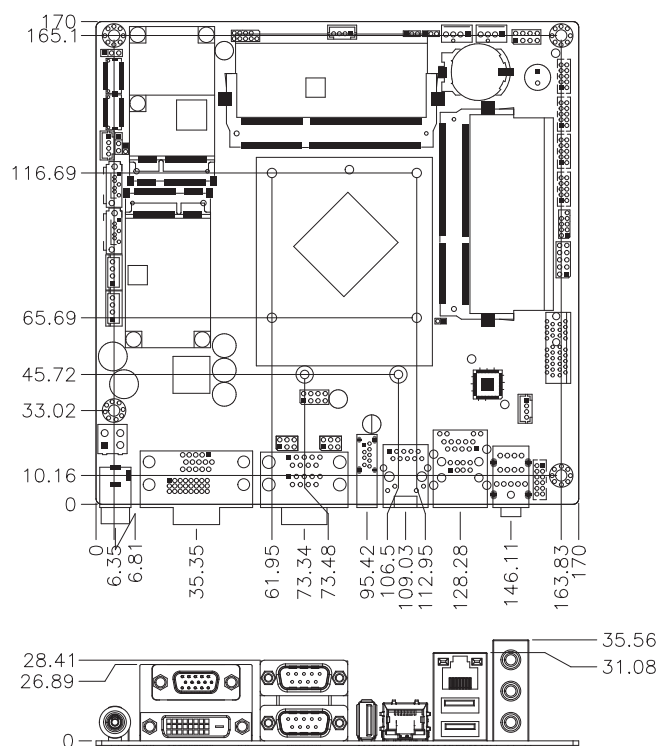
Features

- 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	IB990
Form Factor	Full-Size CPU Card (PICMG®1.3)	Full-Size CPU Card (PICMG®1.3)	Full-Size CPU Card(PICMG®1.3)
CPU Socket	LGA1700	LGA1151	LGA1151
CPU	14th/13th/12th Gen Intel® Core™ i DT processors	9th/8th Gen Intel® Xeon® E / Core™ i7/i5/i3 / Pentium® / Celeron® DT CPU	6th Gen Intel® Xeon® / Core™ i7/i5/i3 / Pentium® / Celeron® DT CPU
CPU Max. Frequency	Up to 5.8GHz	Up to 4.7GHz	Up to 4.0GHz
PCH	Intel® Q670E	IB995AF-C246: Intel® C246 IB995AF: Intel® Q370 IB995EF: Intel® H310	IB990AF-C236: Intel® C236 IB990AF: Intel® Q170
Memory	2x DDR5 DIMM	2x DDR4 DIMM	2x DDR4 DIMM
Max. Memory Size	64GB	32GB	32GB
BIOS	AMI	AMI	AMI
Graphics Controller	Intel® DT processor integrated Xe graphics	Intel UHD Graphics P630	Intel® Core™ i integrated graphics
Video Output	24-bit dual-channel LVDS CRT DVI-D	24-bit dual-channel LVDS DVI-D and DVI-I on board	N/A DVI-D, VGA 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	Intel® I219LM Gigabit LAN PHY Intel® I210AT Gigabit LAN
Audio	Built-in ALC888S HD audio codec	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)	6x SATA III ports (IB990AF-C236) 4x SATA III port (IB990AF)
I/O Chipset	F81966AB-I	F81964D-I	F81846AD-I
Parallel Port	1x SPP/EPP/ECP 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	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)	2x USB 2.0 via pin header Optional 4x ports through IP314 backplane
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)	3x USB 3.0 (1x rear I/O + 2x via pin header)
KB / MS	NA	Combo PS/2	Combo PS/2
Hardware Monitor	Yes	Yes	Yes
Storage Device Interface	2x M.2	2x M.2	N/A
Watchdog Timer	256 levels	256 levels	256 levels
Digital I/O	4-in/4-out	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	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)	1x Mini PCI-E socket on board
TPM	1x M.2 (E-key, type:2230) 2x M.2 (M-key, type:2280)	2.0	1.2 (IB990VF)
Power Input	ATX type	ATX type	ATX type
Power Consumption	TBD	TBD	Intel® Xeon® Processor E3-1225 v5 w/ 2x DDR4-2133 4GB +12V: 5.67A; +5V: 1.88A +5VSB: 0.09A; +3.3V: 0.08A
Dimensions (L x W)	338mm x 126mm	338mm x 126mm	338mm x 126mm
Extra Features	iAMT (1.6.1), RAID(0&1, 5), LAN Wakeup	iAMT (1.1.6), RAID(0&1, 5), LAN Wakeup	iAMT (1.1.0), RAID(0&1, 5), LAN Wakeup
Page No.	P. 4-2	P. 4-3	P. 4-4

1

Single Board
Computers

2

CPU Modules

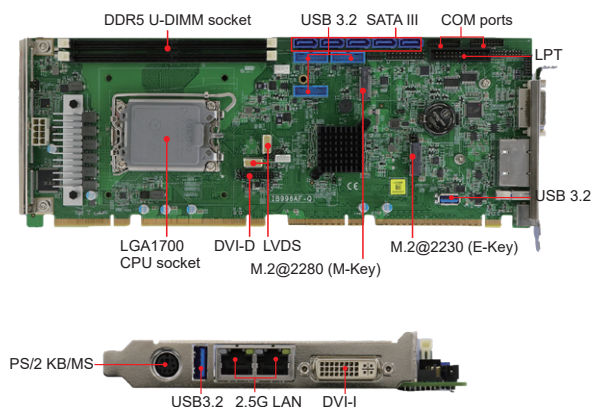
3

Motherboards

4

CPU Cards

14th/13th/12th Gen Intel® Core™ DT processors (RPL-S Refresh Platform)
PICMG 1.3 Full-Size CPU Card with Q670E PCH



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 CNV)
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 IO 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	TBD
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)

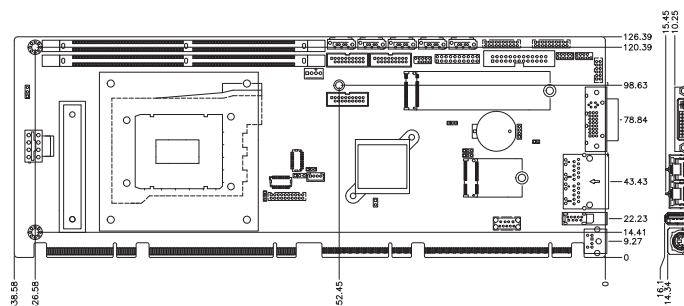
Features

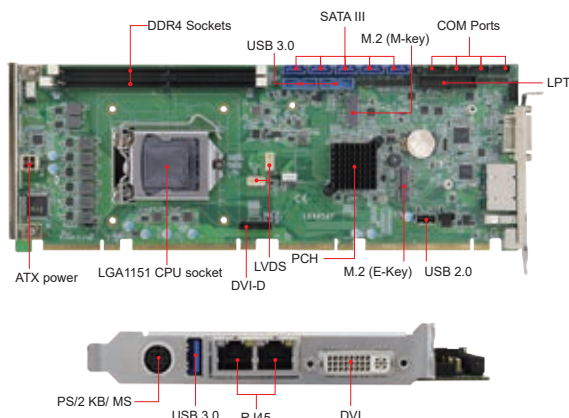
- 14th/13th/12th Gen Intel® Core™ i9/i7/i5/i3 Desktop Processors
- 2x DDR5 DIMM, Max. 64GB
- 2x Intel® 2.5G LAN
- Intel® processor integrated Xe graphics, supports DVI-I & LVDS & DVI-D
- 8x USB 3.2, 5x SATA III, 4x COM, 1x PS/2 for KB/MS
- 2x M.2 socket (M-Key/E-Key)
- Supports dTPM(2.0) & iAMT(16.1)

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





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)

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")

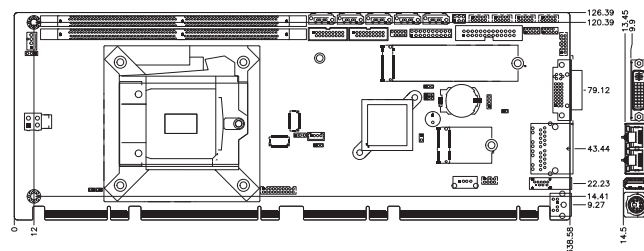
Power Consumption	Intel® Xeon processor i7-9700K w/ 2x DDR4 2133 16GB +12V: 8.21A +5VSB: 0.26A +5V: 1.16A +3.3V: 0.6A
Operating Temperature	0°C ~ 60°C(32°F ~ 140°F)
Storage Temperature	-20°C ~ 80°C(-4°F ~ 140°F)
Relative Humidity	90%(non-condensing @60°C)

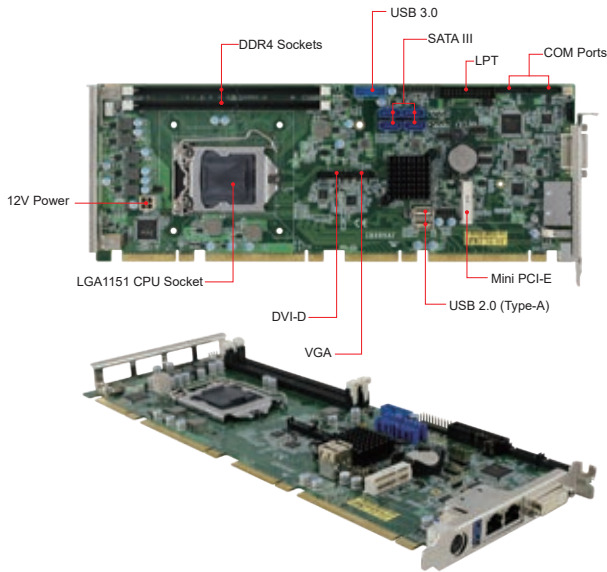
Ordering Information

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

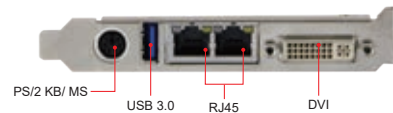
Dimensions and Drawing





Features

- 7th/6th Gen Intel® Xeon® E3 /Core™ i7/i5/i3 / Pentium® QC/DC Processor, up to 4.0 GHz
- 2x DDR4- 2133 DIMM, Max. 32GB, ECC compatible
- Intel® processor integrated graphics, supports DVI-I, CRT, DVI-D
- 2x Intel® Gigabit LAN
- 3x USB 3.0, 2x USB 2.0, 4x COM, 6x SATA III
- 1x Mini PCI-E slot
- Watchdog timer, Digital I/O, iAMT (11.0)



Specifications

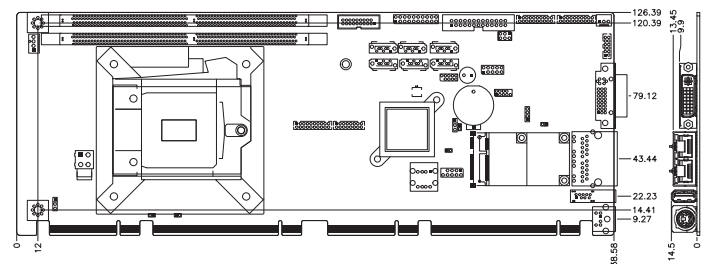
CPU Socket	LGA1151
CPU	7th/6th Gen Intel® DT Xeon® E3 & Core™ i7/i5/i3 / Pentium® / Celeron® QC/DC processors
PCH	IB990AF-C236: Intel® C236 PCH IB990AF: Intel® Q170 PCH
Memorys	2x DDR4-2133 DIMM, Max 32GB (ECC compatible)
BIOS	AMI
Watchdog Timer	256 levels
H/W Monitor	Yes
Storage Device Interface	N/A
Expansion Slots	4x PCI, 4x PCI-E (x1) or 1x PCI-E (x4) 1x PCI-E (x16) from backplane
Mini Type Slots	1x Mini PCI-E
Graphics Controller	7th/6th Gen Intel® Core™ DT Xeon® E3 & Core™ i7/i5/i3/ Pentium® / Celeron® integrated graphics
Video Output	Supports DVI-I, VGA, DVI-D
Ethernet	Intel® I219LM Gigabit LAN PHY Intel® I211AT or I210AT Gigabit LAN(as 2nd LAN)
I/O Chipset	Fintek F81846AD-I 1x RS232/422/485 (jumperless selection) 3x RS232, 1x LPT
USB 2.0	2x USB 2.0 (Type-A) 1x USB 2.0 via Mini PCI-E
USB 3.X	3x USB 3.0 on board
Serial ATA	6x SATA III
Audio	Intel® C236 PCH built-in HD audio controller + Realtek ALC888S codec
TPM	TPM (1.2) (IB990VF)
Others	Digital I/O(4-in/4-out), RAID, iAMT (11.0), TPM (1.2) (IB990AF only)
Dimensions (L x W)	338mm x 126mm (13.31" x 4.96")
Max. Power Requirement	Intel® Xeon® processor E3-1225 v5 w/ 2x DDR4-2133 4GB +12V: 5.67A; +5V: 1.88A; +5VSB: 0.09A; +3.3V: 0.08A
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

IB990AFS-C236	LGA1151 C236 PICMG 1.3 Full-Size CPU Card w/ DVI-I, VGA, DVI-D, dual Gigabit LAN, iAMT (11.0), 6x SATA III
IB990AFS	LGA1151 Q170 PICMG 1.3 Full-Size CPU Card w/ DVI-I, VGA, DVI-D, dual Gigabit LAN, iAMT (11.0), 4x SATA III

*(S) means with Realtek ALC888S codec

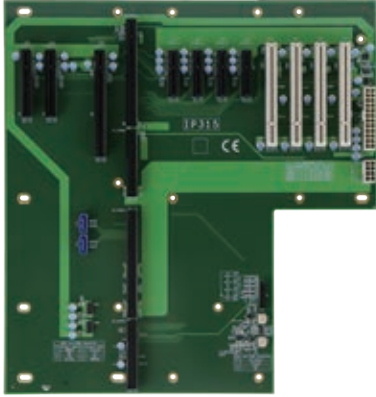
Dimensions and Drawing



Backplane

IP315

PICMG 1.3 12-Slot Backplane



Features

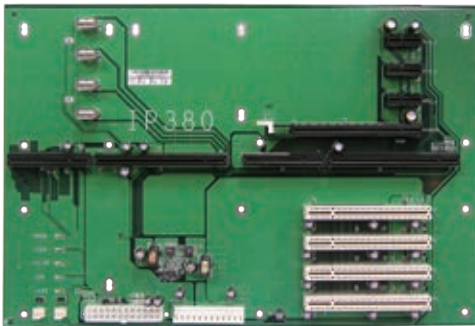
- 4-layer PCB
- AT / ATX power connector, ATX power outlet
- 4x CPI, 1x PCI-E(x16), 2x PCI-E(x8), 4x PCI-E(x4)
- Size: 310mm x 327 mm (12.2" x 12.9")

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

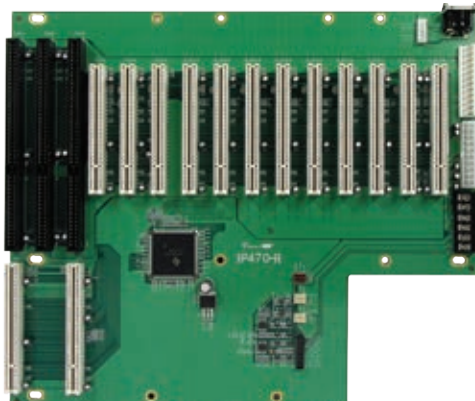
- 4-layer PCB
- AT / ATX power connector
- 1x PCI-E 16-lane slot, 3x PCI-E 1-lane slots
- PICMG 1.3 connector(A: PCI-E x16, B: PCI-E x8, C: PCI-E x16, D: PCI-E x8), 4x PCI(32-bit) slots
- Size: 221mm x 328mm (8.7" x 12.9")

Ordering Information

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

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CPU Cards

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

Embedded Function Cards

Daughter Boards and Function Cards



ID107

Features

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



ID600

Features

- 90 mm x 60mm
- +19V ~+24V DC to DC converter
- 300W ATX power board



ID452

Features

- 90 mm x 60mm
- +12V ~+24V DC to DC converter
- 120W ATX power board



ID450-R

Features

- 90 mm x 60mm
- +12V only DC to DC converter
- 100W ATX power board



IB-CFAST

Features

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



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



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

Riser Cards

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Riser Cards



IP245

Features

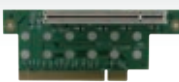
- 130mm x 60mm
- IT8893E chipset
- PCI-E (x1) interface to 2x PCI slot



IP246

Features

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



IP271

Features

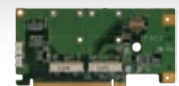
- 129.97mm x 51.25mm
- 1x PCI interface to PCI slot



IP340

Features

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



IP403

Features

- 144.6 mm x 68.3mm
- PCI-E (x16) interface to 2x Mini PCI-E



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)



IP406

Features

- 123mm x 50.77mm
- 1x PCI-E (x1) interface to Mini PCI-E + 1x SIM card slot

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MEMO

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