

# PICMG 1.3

The PICMG 1.3 allows users to protect their investment in PCI technology while taking advantage of the speed and increased bandwidth of PCI Express

## What is PICMG 1.3 ?

- Bringing PCI Express to your SBC with increased speed and bandwidth**

PICMG 1.3 is designed to interface with PCI Express peripherals on a backplane. The PCI Express interconnects with the backplane and can operate at x1, x4, x8, x16, and more, depending on the capabilities of both the SHB and the backplane.

- Support PCI on board with flexibility**

The optional PCI portion of the SHB interconnected with the backplane allows for 32-bit operation. The clock rate can be 33 MHz, 66 MHz, 100 MHz, and 133 MHz, depending on how the backplane and SHB are designed.

- Miscellaneous IO**

SATA, USB, IPMB, SMBus, Geographic Addressing, and PCI Wake Up to the backplane are specified, simplifying the cabling on SHB for the system.

## PICMG 1.3 Key Features

- PCI Express**

20 PCI Express lanes are supported, including PCI Express x16, x4 and x1 configurations

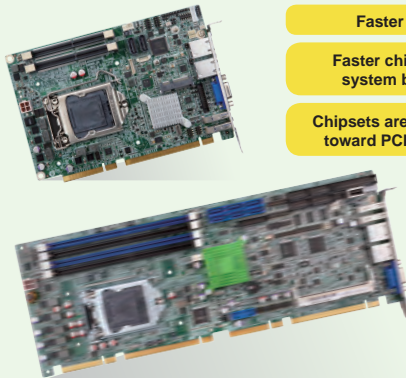
- ATX power signals are supported**

Provides AUX voltages for standby power and sleep states (soft starts, wake on LAN), supports PSON#, PWRGD, PWRRBT# and ACPI states

## Why PICMG 1.3?

- This new technology is expected to allow PCIe transmission rates to keep pace with processor and I/O advances for the next 10 years or more.
- Same basic mechanical dimensions are maintained to minimize chassis redesign expense
- Better host board power management and simplified I/O cabling
- Supports PCI Express and PCI option cards without driver changing

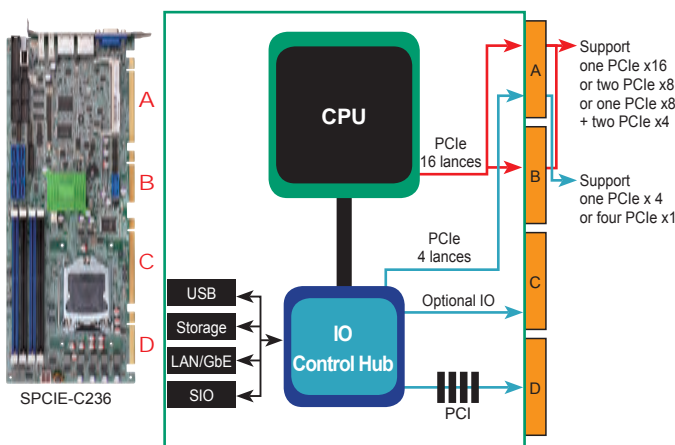
**The future will be....**



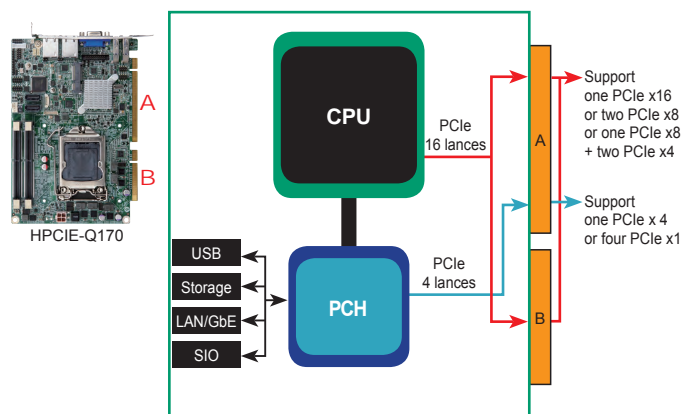
- Faster CPU**
- Faster chipsets & system busses**
- Chipsets are migrating toward PCI Express**

## Graphic & Server Grade PICMG 1.3 Solutions

### Full-size PICMG 1.3 Solutions



### Half-size PICMG 1.3 Solutions



Full-Size PICMG 1.3 PCIe Slot Configuration

Half-Size PICMG 1.3 PCIe Slot Configuration

Full-size SBC Type		Server & Graphic Grade		Server Grade			
Combination		A	B	C	D	E	F
PCIe Slots Available (Non-switch)	CPU or NB	x16	1	1	-	-	-
		x8	-	-	2	2	1
		x4	-	-	-	-	2
	PCH or SB	x4	-	1	-	1	-
		x1	4	-	4	-	4
Backplane Solution		IEI PE/PXE series		IEI SPE/SPXE series			

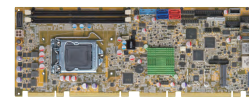
Half-size SBC Type		Any Type		High Performance			
Combination		A	B	C	D	E	F
PCIe Slots Available (Non-switch)	CPU	x16	1	1	-	-	-
		x8	-	-	2	2	1
		x4	-	-	-	-	2
	PCH	x4	-	1	-	1	-
x1		4	-	4	-	4	

# PICMG 1.3 Selection Guide



Model Name	HPCIE-C236	HPCIE-Q170	SPCIE-C236	SPCIE-C2260-i2
<b>CPU Socket</b>	LGA 1151	LGA 1151	LGA1151	LGA 1150
<b>CPU Type</b>	Intel® Xeon® E3, Core™ i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Xeon® E3, Core™ i3, Pentium®, Celeron® processor	Intel® Xeon® E3, Core™ i3, Pentium®, Celeron® processor
<b>Chipset</b>	Intel® C236	Intel® Q170	Intel® C236	Intel® C226
<b>Memory</b>	Two 260-pin 1866/2133 MHz dual-channel DDR4 SO-DIMMs (system max. 32 GB)	Two 260-pin 1866/2133 MHz dual-channel DDR4 SO-DIMMs (system max. 32 GB)	Four 288-pin 1866/2133 MHz Dual-Channel DDR4 ECC & non-ECC unbuffered DIMM supported up to 64GB	Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 32 GB)
<b>Display Interface</b>	Dual display supported 1 x VGA 1 x iDP interface	Dual display supported 1 x VGA 1 x iDP interface	Triple display supported 1 x VGA 1 x iDP interface	Dual display supported 1 x VGA 1 x iDP interface
<b>Ethernet</b>	LAN1: Intel® I219-LM with Intel® AMT 11.0 support LAN2: Intel® I211-AT Ethernet controller	LAN1: Intel® I219-LM with Intel® AMT 11.0 support LAN2: Intel® I211-AT Ethernet controller	LAN1: Intel® I219LM Clarkville-V with Intel® AMT 11.0 supported LAN2: Intel® I210 PCIe controller	LAN1: Intel® I217LM with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe controller with NCSI support
<b>iRIS Remote Management Module</b>	N/A	N/A	1 x iRIS-2400 slot (Optional)	1 x iRIS-2400 slot
<b>I/O Interface</b>	1 x 6-pin wafer for KB/MS 2 x RS-232/422/485 2 x USB 3.0 4 x USB 2.0	1 x 6-pin wafer for KB/MS 2 x RS-232/422/485 2 x USB 3.0 4 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 2 x RS-232 2 x RS-232/422/485 4 x USB 3.0 7 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 4 x RS-232 4 x USB 3.0 8 x USB 2.0
<b>Storage Interface</b>	1 x mSATA (SATA & USB signal) 2 x SATA 6Gb/s (RAID 0/1 supported)	1 x mSATA (SATA & USB signal) 2 x SATA 6Gb/s (RAID 0/1 supported)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)
<b>Audio</b>	Supports by IEI AC-KIT-892HD-R10 audio kit			
<b>Digital I/O</b>	8-bit programmable digital I/O			
<b>Power Consumption</b>	5V@0.13A, 12V@7.89A, 3.3V@0.10A, 5VSB@0.20A (Intel® Xeon® E3-1275 v5 3.60 GHz with two 16 GB 2133 MHz DDR4 memory)	5V@0.15A, 12V@8.39A, 3.3V@0.11A, 5VSB@0.21A (Intel® Core™ i7-6700K 4.0GHz with two 16 GB 2133 MHz DDR4 memory)	5V@3.22A, 12V@6.81A, 3.3V@1.21A, 5VSB@0.18A (Intel® Xeon® E3-1275 v5 3.60 GHz CPU with 64GB (four 16GB) 2133 MHz DDR4 memory)	5V@3.55A, 12V@0.37A, Vcore_12V@7.61A, 3.3V@1.55A, 5VSB@0.13A (Intel® E3-1240 v3 3.4GHz CPU with 16 GB (four 4GB) 1333 MHz DDR3 memory)
<b>Watchdog Timer</b>	Software programmable supports 1~255 sec. system reset			
<b>Operation Environment</b>	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing			
<b>Expansion Slot</b>	N/A	N/A	1 x Full-size PCIe Mini card slot (support mSATA)	1 x Full-size PCIe Mini card slot (support mSATA)
<b>CPU Cooler</b>	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11 CF-1150SF-R10

# PICMG 1.3 Selection Guide



Model Name	SPCIE-C2160	SPCIE-C2060-R21	PCIE-Q170	PCIE-H810
<b>CPU Socket</b>	LGA 1155	LGA 1155	LGA1151	LGA 1150
<b>CPU Type</b>	Intel® Xeon® E3, Core™ i3, Pentium®, Celeron® processor	Intel® Xeon® E3, Core™ i3, Pentium®, Celeron® processor	6th generation Intel® Core™ i7/i5/i3, Celeron® and Pentium® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor
<b>Chipset</b>	Intel® C216	Intel® C206	Intel® Q170	Intel® H81
<b>Memory</b>	Two 240-pin 1600/1333 MHz dual-channel ECC and non-ECC unbuffered DDR3 SDRAM DIMMs supported (system max. 16 GB)	Two 240-pin 1333/1066 MHz dual-channel ECC and non-ECC unbuffered DDR3 SDRAM DIMMs (system max. 16 GB)	Four 288-pin 1866/2133 MHz dual-channel non-ECC unbuffered DDR4 DIMMs (system max. 64 GB)	Two 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 16 GB)
<b>Display Interface</b>	1 x VGA 1 x DVI-D (via header to IO-KIT-001-R20 DVI-D/USB module) (optional)	1 x VGA 1 x DVI-D (via header to IO-KIT-001-R20 DVI-D/USB module) (optional)	Triple display supported 1 x VGA 1 x iDP interface	Dual display supported 1 x VGA 1 x iDP interface
<b>Ethernet</b>	LAN1: Intel® 82574L PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 8.0 support	LAN1: Intel® 82574L PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 7.0 support	LAN1: Intel® I219LM Clarkville-V with Intel® AMT 11.0 supported LAN2: Intel® I210 PCIe controller	LAN1: Realtek RTTL8111E PCIe controller LAN: Realtek RTTL8111E PCIe controller
<b>iRIS Remote Management Module</b>	N/A	N/A	1 x iRIS-2400 slot (optional)	N/A
<b>I/O Interface</b>	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 4 x RS-232 8 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 4 x RS-232 8 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 2 x RS-232 2 x RS-232/422/485 4 x USB 3.0 7 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 2 x RS-232 2 x USB 3.0 8 x USB 2.0
<b>Storage Interface</b>	2 x SATA 6Gb/s (RAID 0/1/5/10 supported) 4 x SATA 3Gb/s	2 x SATA 6Gb/s (RAID 0/1/5/10 supported) 4 x SATA 3Gb/s	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)	2 x SATA 3Gb/s 2 x SATA 6Gb/s
<b>Audio</b>	Supports by IEI AC-KIT-892HD-R10 audio kit			
<b>Digital I/O</b>	8-bit programmable digital I/O			
<b>Power Consumption</b>	5V@3.98A, 12V@0.38A, Vcore_12V@7.81A, 3.3V@1.61A, 5VSB@0.15A (3.4GHz Intel® Xeon® 2.2GHz with two 2 GB 1333 MHz DDR3 memory)	5V@3.98A, 12V@0.38A, Vcore_12V@7.81A, 3.3V@1.61A, 5VSB@0.15A (3.4GHz Intel® Core™ i7-2600K with two 2 GB 1333 MHz DDR3 memory)	5V@3.12A, 12V@6.85A, 3.3V@1.13A, 5VSB@0.15A (Intel® Core™ i7-6700K 4.0GHz CPU with 64GB (four 16GB) 2133 MHz DDR4 memory)	5V@3.41A, 12V@0.35A, Vcore_12V@7.52A, 3.3V@1.41A, 5VSB@0.12A (Intel® Core™ i7-4770K 3.90 GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)
<b>Watchdog Timer</b>	Software programmable supports 1~255 sec. system reset			
<b>Operation Environment</b>	Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing		Temperature Range: -20°C ~ 60°C (-4°F~140°F) Relative Humidity: 5% ~ 95% non-condensing	
<b>Expansion Slot</b>	1 x Full-size PCIe Mini card slot	1 x Full-size PCIe Mini card slot	1 x Full/Half-size PCIe Mini card slot 4 x PCI signal via golden finger	1 x Full-size PCIe Mini card slot (support mSATA)
<b>CPU Cooler</b>	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11 CF-1150SF-R10

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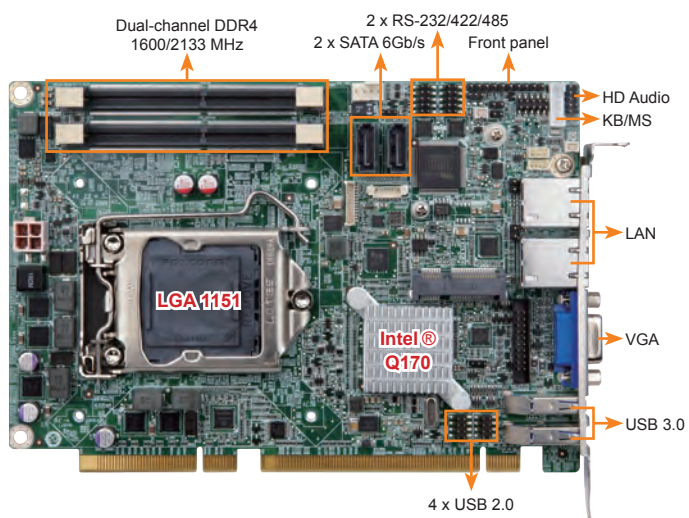


Model Name	PCIE-Q870-I2	PCIE-Q670-R20	PCIE-H610	PCIE-Q57A
<b>CPU Socket</b>	LGA 1150	LGA 1155	LGA 1155	LGA 1156
<b>CPU Type</b>	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium® processor
<b>Chipset</b>	Intel® Q87	Intel® Q67	Intel® H61	Intel® Q57
<b>Memory</b>	Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 32 GB)	Two 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM DIMMs (system max. 16 GB)	Two 240-pin 1333/1066 MHz dual-channel DDR3/DDR3L (1.35V) SDRAM DIMMs (system max. 16 GB)	Two 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM DIMMs (system max. 8 GB)
<b>Display Interface</b>	Dual display supported 1 x VGA 1 x iDP interface	1 x VGA 1 x DVI-D (via header to IO-KIT-001-R20 DVI-D/USB module) (optional)	1 x VGA 1 x DVI-D (via header to IO-KIT-001-R20 DVI-D/USB module) (optional)	1 x VGA
<b>Ethernet</b>	LAN1: Intel® I217LM with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe controller with NCSI support	LAN1: Intel® 82583V PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 7.0 support	LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller	LAN1: Intel® 82583V PCIe GbE controller LAN2: Intel® 82578DM with Intel® AMT 6.0 supported by iEZman software UI
<b>iRIS Remote Management Module</b>	1 x iRIS-2400 slot	N/A		
<b>I/O Interface</b>	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 4 x RS-232 4 x USB 3.0 8 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 4 x RS-232 8 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x FDD 1 x LPT 1 x RS-422/485 2 x RS-232 10 x USB 2.0	1 x Infrared interface 1 x LPT 1 x PS/2 KB & MS 2 x RS-232 14 x USB 2.0
<b>Storage Interface</b>	6 x SATA 6Gb/s (RAID 0, 1, 5, 10 supported)	2 x SATA 6Gb/s (RAID 0/1/5/10 supported) 4 x SATA 3Gb/s	4 x SATA 3Gb/s	1 x FDD 6 x SATA 3Gb/s (RAID 0/1/5/10 supported)
<b>Audio</b>	IEI AC-KIT-892HD-R10 7.1-channel HD Audio kit via the on-board 10-pin header connector			
<b>Digital I/O</b>	8-bit programmable digital I/O			
<b>Power Consumption</b>	5V@3.55A, 12V@0.37A, Vcore_12V@7.61A, 3.3V@1.55A, 5VSB@0.13A (3.4GHz Intel® Qual CoreCPU with four GB 1333 MHz DDR3 memory)	5V@3.98A, 12V@0.38A, Vcore_12V@7.81A, 3.3V@1.61A, 5VSB@0.15A (3.4GHz Intel® Core™ i7- 2600K with two 2 GB 1333 MHz DDR3 memory)	5V@4.41A, 12V@0.21A, Vcore_12V@7.72A, 3.3V@1.71A, 5VSB@0.16A (3.4GHz Intel® Core™ i7- 2600K with two 2 GB 1333 MHz DDR3 memory)	3.3V@0.89A, 5V@4.62A, 12V@4.35. A, 5Vsb@0.14A (Intel® Core™ i5 660 3.3GHz CPU with two 2 GB 1066 MHz DDR3 memory)
<b>Watchdog Timer</b>	Software programmable supports 1~255 sec. system reset			
<b>Operation Environment</b>	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing		Temperature Range: 0°C ~ 60°C (32°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing
<b>Expansion Slot</b>	1 x Full-size PCIe Mini card slot (support mSATA)		N/A	
<b>CPU Cooler</b>	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11 CF-1150SF-R10	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	CF-115XA-R10 CF-115XE-R10



# HPCIE-Q170

Half-size PICMG 1.3 CPU Card supports LGA 1151 Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU with Intel® Q170, DDR4 SO-DIMM, VGA/iDP, Dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, mSATA, HD Audio, Intel® AMT and RoHS



## Specifications

- ◆ CPU  
LGA 1151 socket supports Intel® 6th/7th generation Core™ i7/i5/i3, Pentium® or Celeron® processor
- ◆ Chipset  
Intel® Q170
- ◆ Memory  
Two 260-pin 1866/2133 MHz dual-channel DDR4 non-ECC unbuffered SO-DIMMs support up to 32 GB
- ◆ BIOS  
UEFI BIOS
- ◆ Graphics Engine  
Intel® HD Graphics Gen 9 supports DX11/12, OpenCL 2.x and OpenGL 4.3/4.4 Decode/Encode for HEVC, VP8, VP9, VDENC
- ◆ Display Output  
1 x VGA (up to 1920x1200@60 Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60 Hz)
- ◆ Ethernet  
LAN1: Intel® I219LM Clarkville-V with Intel® AMT 11.0 support  
LAN2: Intel® I211 PCIe controller
- ◆ External I/O Interface  
2 x USB 3.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin)  
1 x mSATA (SATA & USB signal)  
2 x RS-232/422/485 (2x5 pin, P=2.0)
- ◆ Front Panel  
1 x Front panel (1x10 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED  
2 x LAN LED (1x2 pin)
- ◆ Audio  
Support 7.1-channel HD Audio by IEI AC-KIT-892HD kit
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C  
1 x I<sup>2</sup>C (1x4 pin)
- ◆ Expansion  
16-lane PCIe signal from CPU via golden finger (supports x16, or x8 + x8, or x4 + x4 + x8)  
4-lane PCIe signal from Q170 via golden finger  
1 x Full/Half-size PCIe Mini card slot (supports mSATA)
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O  
8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)
- ◆ Power Supply  
5V/12V, AT/ATX support
- ◆ Power Consumption  
5V@0.15A, 12V@8.39A, 3.3V@0.11A, 5VSB@0.21A  
(Intel® Core™ i7-6700K 4.0GHz with two 16 GB 2133 MHz DDR4 memory)
- ◆ Operating Temperature  
-20°C ~ 60°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Dimensions  
169 mm x 126 mm
- ◆ Weight  
GW: 1000g / NW: 420g
- ◆ CE/FCC compliant

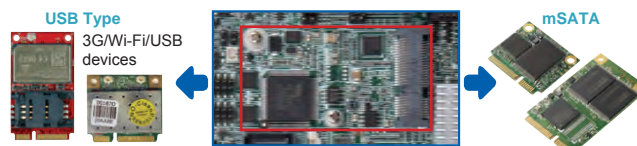
## Intel® 6th generation Core™ CPU + Intel® Q170 support 3 controllers of PCI Express Gen 3

Number of PCIe Controller	Configuration
1	PCIe x16
2	PCIe x8, PCIe x8
3	PCIe x4, PCIe x4, PCIe x8

Sets PCIe x16 signal via BIOS

PEG port configuration	
USB Power SW1	[1 x8, 2 x4 PCIe]
USB Power SW2	[+5V DUAL]

PCIe Mini slot provides mSATA and USB signal for full-size or half-size mSATA SSD and wireless LAN card.



## Features

- PICMG 1.3 half-size CPU card
- LGA 1151 Intel® 6th/7th generation Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Two 260-pin 1866/2133 MHz dual-channel DDR4 SO-DIMMs support up to 32 GB
- Supports dual independent display by VGA & internal DP pin header
- PCIe Mini card slot supports mSATA & USB 2.0
- Intel® PCIe GbE with Intel® AMT 11.0 supported
- Supports RAID 0, 1 function via SATA 6Gb/s
- IEI jumper-less function

## Packing List

1 x HPCIE-Q170 single board computer
1 x SATA cable
1 x QIG
1 x Utility CD

## Ordering Information

Part No.	Description
HPCIE-Q170-R10	Half-size PICMG 1.3 CPU card supports LGA 1151 Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU with Intel® Q170, DDR4 SO-DIMM, VGA, iDP, dual Intel® PCIe GbE, USB 3.0, mSATA, SATA 6Gb/s, PCIe Mini, HD Audio, Intel® AMT and RoHS
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-002700-200-RS	RS-232/422/485 cable, 200mm, P=2.0
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams
CF-115XA-R10	High-performance LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 65W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
SAIDE-KIT01-R10	SATA to IDE/CF converter board

# PICMG 1.3 Passive Backplane for Half-Size CPU Card

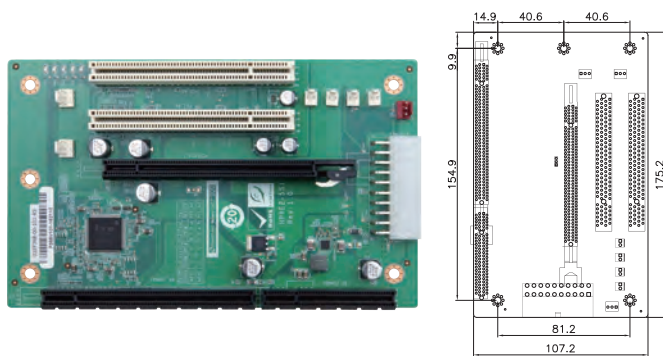
## Selection Guide

PAC series wall-mount chassis

4U rack-mount chassis

PICMG 1.3 (PCIe+PCI)	Model	HPXE2-5S1	HPXE2-6S1	HPXE2-7S1	HPXE2-8S1
<b>Total Slot</b>		5	6	7	8
<b>Expansion Slots</b>	PCIe x16	1	1		2
	PCIe x8			2	
	PCIe x4				
	PCIe x1				
	PCI-X				
	PCI	2	3	3	4
<b>PSU Type</b>		24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX
<b>Chassis Option</b>		PR-1500G	PAC-1000 PAC-106G	PAC-700G PAC-1700G	PAC-125G RACK-3000G RACK-360G
		RACK-500G			
<b>Note</b>		ATX power	ATX power	ATX power	ATX power

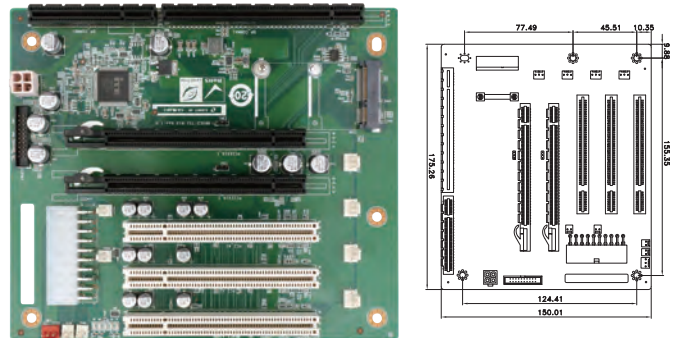
### HPXE2-5S1-R10



#### Ordering Information

HPXE2-5S1-R10	5-slot PICMG 1.3 backplane for half-size SBC, with two PCI slots and one PCIe x16 slot (x16 signal)
PR-1500G	5-slot half-size compact chassis
RACK-500G	5U 5-slot full-size rackmount chassis

### HPXE2-7S1-R10

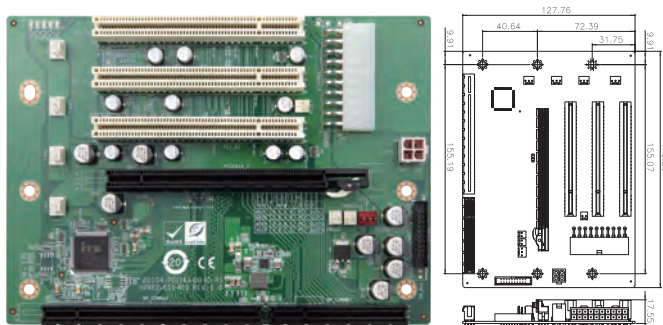


#### Ordering Information

HPXE2-7S1-R10	7-slot PICMG 1.3 backplane for half-size SBC, with three PCI slots and two PCIe x16 slots (x8 signal)
PAC-700G	7-slot half-size compact chassis
PAC-1700G	7-slot full-size compact chassis

### HPXE2-6S1-R10

**New**

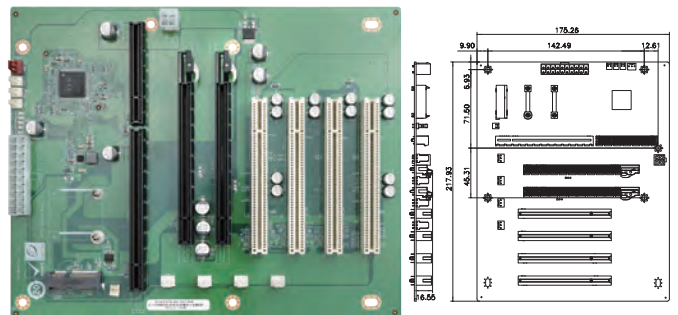


#### Ordering Information

HPXE2-6S1-R10	6-slot PICMG 1.3 backplane for half-size SBC, with three PCI slots and one PCIe x16 slot (x16 signal)
PAC-1000G	6-slot full-size compact chassis
PAC-106G	6-slot full-size compact chassis

### HPXE2-8S1-R10

**New**

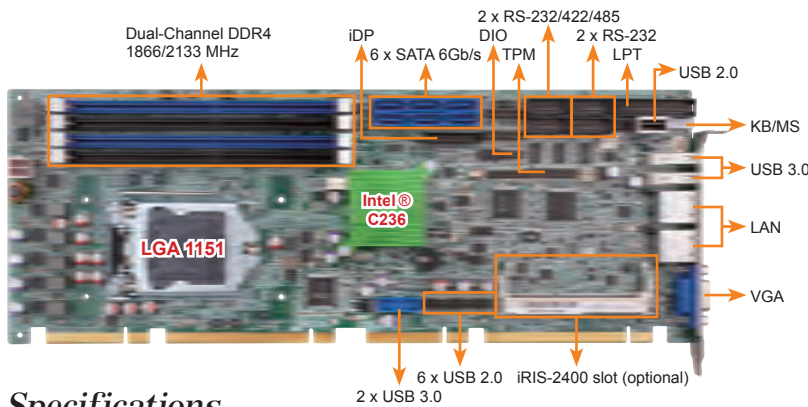


#### Ordering Information

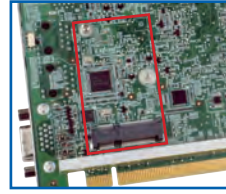
HPXE2-8S1-R10	8-slot PICMG 1.3 backplane for half-size SBC, with four PCI slots and two PCIe x16 slot (x8 signal)
PAC-125G	10-slot full-size compact chassis
RACK-3000G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis

## SPCIE-C236

Full-size PICMG 1.3 CPU Card supports LGA 1151 Intel® Xeon® E3, Core™ i3/Pentium®/Celeron® CPU per Intel® C236, ECC & non-ECC DDR4, VGA/iDP, Dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, PCIe Mini, mSATA, HD Audio, Intel® AMT, iRIS-2400 and RoHS



## PCIe Mini &amp; mSATA colay



PCIe Mini interface provides SATA, PCIe x1 and USB signals to support full-size or half-size devices, such as mSATA, PCIe devices, and wireless LAN cards.



## Specifications

- ◆ CPU
  - LGA 1151 socket supports Intel® Xeon® E3 v5/v6, 6th/7th generation Core™ i3, Pentium® or Celeron® processor
- ◆ Chipset
  - Intel® C236
- ◆ Memory
  - Four 288-pin 1866/2133 MHz dual-channel ECC & non-ECC unbuffered DDR4 DIMMs support up to 64GB
- ◆ BIOS
  - UEFI BIOS
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 9 supports DX11/12, OpenCL 2.x and OpenGL 4.3/4.4
  - Decode/Encode for HEVC, VP8, VP9, VDENC
- ◆ Display Output
  - Dual independent display
  - 1 x VGA (up to 1920x1200@60 Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI and DisplayPort (up to 3840x2160@60 Hz)
- ◆ Ethernet
  - LAN1: Intel® I219LM Clarkville-V with Intel® AMT 11.0 supported
  - LAN2: Intel® I210 PCIe controller
- ◆ External I/O Interface
  - 2 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x LPT (2x13 pin)
  - 1 x mSATA (SATA & USB signal)
  - 1 x USB 2.0 (180° Type-A)
  - 2 x RS-232 (2x5pin, P=2.54)
- ◆ Front Panel
  - 1 x Front Panel (1x10 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED
  - 2 x LAN LED (1x2 pin)
- ◆ Audio
  - Support 7.1 channel HD audio by IEI AC-KIT-892HD kit
- ◆ TPM
  - 1 x TPM (2x10 pin)
- ◆ SMBus
  - 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C
  - 1 x I<sup>2</sup>C (1x4 pin)
- ◆ iRIS Remote Management Module
  - 1 x iRIS-2400 slot (optional)
- ◆ Expansion
  - 16-lane PCIe link from CPU via golden finger:**
    - Supports one PCIe x16, or two PCIe x8, or one PCIe x8 + two PCIe x4 on the backplane (configured via BIOS)
  - 4-lane PCIe link from PCH via golden finger:**
    - Supports four PCIe x1 slots or one PCIe x4 slot on the backplane (configured via BIOS switch)
  - 1 x Full/Half-size PCIe Mini card slot (supports mSATA)**
- ◆ Watchdog Timer: Software programmable, supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x3 pin)
- ◆ Power Supply
  - 5V/12V, AT/ATX support
- ◆ Power Consumption
  - 5V@3.22A, 12V@6.81A, 3.3V@1.21A, 5VSB@0.18A (Intel® Xeon® E3-1275 v5 3.60 GHz CPU with 64GB (16GBx4) 2133 MHz DDR4 memory)
- ◆ Operating Temperature
  - 20°C ~ 60°C
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimensions
  - 338 mm x 126 mm
- ◆ Weight
  - GW: 1000g / NW: 420g
- ◆ CE/FCC compliant



## Features

- PICMG 1.3 full-size CPU Card
- LGA 1151 Intel® Xeon® E3 v5/v6, 6th/7th generation Core™ i3, Pentium® or Celeron® processor supported
- Four 288-pin 1866/2133MHz DDR4 ECC & non-ECC unbuffered DIMM
- Supports dual independent display by VGA & internal DP pin header
- Supports PCIe Mini device & mSATA via PCIe Mini card slot
- Intel® PCIe GbE with Intel® AMT 11.0 supported
- Supports RAID 0, 1, 5, 10 function via SATA 6Gb/s
- TPM 1.2 & 2.0 hardware security function supported by TPM module

## Packing List

1 x SPCIE-C236 single board computer

1 x SATA cable

1 x QIG

1 x Mini jumper pack

1 x Utility CD

## Ordering Information

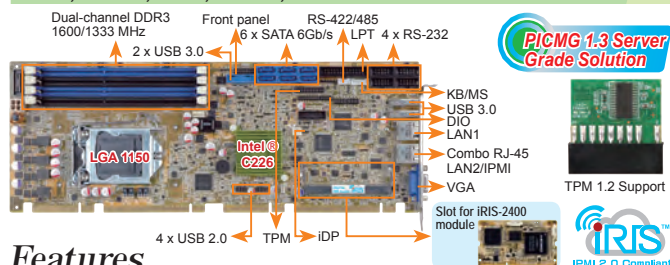
Part No.	Description
SPCIE-C236-R10	Full-size PICMG 1.3 CPU Card supports LGA 1151 Intel® Xeon® E3, Core™ i3/Pentium®/Celeron® CPU per Intel® C236, ECC & non-ECC DDR4, Dual Intel® PCIe GbE, USB 3.0, VGA/iDP, SATA 6Gb/s, PCIe Mini, mSATA, HD Audio, Intel® AMT and RoHS
SPCIE-C236-i2-R10**	Full-size PICMG 1.3 CPU Card supports LGA 1151 Intel® Xeon® E3, Core™ i3/Pentium®/Celeron® CPU per Intel® C236, ECC & non-ECC DDR4, Dual Intel® PCIe GbE, USB 3.0, VGA/iDP, SATA 6Gb/s, PCIe Mini, mSATA, HD Audio, Intel® AMT, iRIS-2400 and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
AC-KIT-892HD-R10	7.1 channel HD Audio kit with Realtek ALC892 support dual audio streams
CF-1150SA-R10	Special cooler kit for LGA1150, high-performance compatible, 95W
CF-1150SB-R11	Special cooler kit for LGA1150, high-performance compatible, 65W
CF-1150SC-R20	Special cooler kit for LGA1150, 1U chassis compatible, 65W
CF-1150SE-R11	Special cooler kit for LGA1150, high-performance compatible, 95W
CF-1150SF-R10	Special cooler kit for LGA1150, 1U chassis compatible, 54W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
SAIDE-KIT01-R10	SATA to IDE/CF converter board

\*\*By order production, MOQ: 100



## SPCIE-C2260-i2

Full-size PICMG 1.3 CPU Card supports LGA 1150 Intel® Xeon® E3, Core™ i3, Pentium® and Celeron® with Intel® C226, DDR3, VGA, iDP, Dual Intel® PCIe GbE, SATA 6Gb/s, mSATA, PCIe Mini, RS-232, HD Audio, iRIS-2400 and RoHS



### Features

- PICMG 1.3 full-size server grade solution
- LGA 1150 Intel® Xeon® E3, Core™ i3, Pentium® or Celeron® processor supported
- Four 240-pin 1600/1333 MHz dual-channel DDR3 DIMMs support up to 32 GB
- Supports dual independent display by VGA and iDP interfaces
- Supports PCIe Mini devices and mSATA via PCIe Mini socket
- Supports RAID function via SATA 6Gb/s
- Stiffener bars
- IEI jumper-less function
- Supports IPMI 2.0 via iRIS-2400 module

### Specifications

- ◆ CPU: LGA 1150 Intel® Xeon® E3, Core™ i3, Pentium® or Celeron® processor supported
- ◆ Chipset: Intel® C226
- ◆ Memory: Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM ECC and non-ECC unbuffered DIMMs support up to 32 GB
- ◆ BIOS: UEFI BIOS
- ◆ Graphics Engine: Intel® HD Graphics Gen 7.5 supports DX11.1 and OpenCL 1.2, OpenGL 3.2 Full MPEG-2, VC1, AVC Decode
- ◆ Display Output
  - 1 x VGA (up to 1920x1200@60 Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60 Hz)
- ◆ Ethernet
  - LAN1: Intel® I217LM with Intel® AMT 9.0 support
  - LAN2: Intel® I210-AT PCIe controller with NCSI support
- ◆ Audio: Supports 7.1-channel HD Audio by IEI AC-KIT-892HD-R10 kit
- ◆ External I/O Interface: 2 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x LPT (2x13 pin)
  - 1 x mSATA
  - 2 x USB 3.0 (2x10 pin)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 4 x USB 2.0 (Golden finger)
  - 4 x USB 2.0 (2x4 pin, P=2.54)
  - 4 x RS-232 (2x5pin, P=2.54)
  - 6 x SATA 6Gb/s (RAID 0/1/5/10 supported)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I²C: 1 x I²C (1x4 pin)
- ◆ Infrared Interface: 1 x Infrared Interface (1x5 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Front Panel: 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ iRIS Remote Management Module
  - 1 x iRIS-2400 slot
- ◆ Expansion: PCIe signal and PCI signal via golden finger
  - 1 x Full-size PCIe Mini card slot (colay mSATA)
- ◆ Watchdog Timer: Software programmable, supports 1~255 sec. system reset
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x3 pin)
- ◆ Power Supply: 5V/12V, AT/ATX support
- ◆ Power Consumption
  - 5V@3.55A, 12V@0.37A, Vcore\_12V@7.61A, 3.3V@1.55A, 5VSB@0.13A (Intel® E3-1240 v3 3.4GHz CPU with 16 GB (four 4 GB) 1333 MHz DDR3 memory)
  - ◆ Operating Temperature: -20°C ~ 60°C
  - ◆ Storage Temperature: -30°C ~ 70°C
  - ◆ Operating Humidity: 5% ~ 95%, non-condensing
  - ◆ Dimensions: 338 mm x 126 mm
  - ◆ Weight: GW: 1200g / NW: 420g
  - ◆ CE/FCC compliant

### Packing List

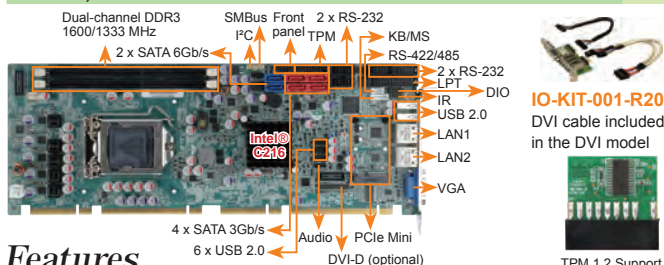
1 x SPCIE-C2260-i2 single board computer	2 x SATA cable
1 x Dual RS-232 cable	1 x QIG
1 x USB 2.0 cable	1 x Utility CD

### Ordering Information

Part No.	Description
SPCIE-C2260-i2-R10	Full-size PICMG 1.3 CPU card supports LGA 1150 Intel® Xeon® E3, Core™ i3, Pentium® and Celeron® with Intel® C226, DDR3, VGA, iDP, Dual Intel® PCIe GbE, SATA 6Gb/s, mSATA, RS-232, PCIe Mini, HD Audio, iRIS-2400 and RoHS
iRIS-2400-R10	IPMI 2.0 adapter card with AST2400 BMC chip for DDR3 SO-DIMM socket interface
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-010500-200-RS	USB 3.0 cable with bracket, 450mm
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams
CF-1150SB-R11	Special cooler kit for LGA 1150, high-performance compatible, 65W
CF-1150SC-R20	Special cooler kit for LGA1150, 1U chassis compatible, 65W
CF-1150SE-R11	Special cooler kit for LGA1150, high-performance compatible, 95W
CF-1150SF-R10	Special cooler kit for LGA1150, 1U chassis compatible, 54W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

## SPCIE-C2160

Full-size PICMG 1.3 CPU Card supports LGA 1155 Intel® Xeon® E3/Core™ i3/Pentium®/Celeron® CPU with Intel® C216, DDR3, VGA, DVI-D, Dual GbE, SATA, PCIe Mini, HD Audio and RoHS



### Features

- Full-size PICMG 1.3 server grade solution
- LGA 1155 Intel® Xeon® E3/Core™ i3/Pentium®/Celeron® processors supported
- Up to 16 GB 1600 MHz dual-channel DDR3 SDRAM
- Supports dual independent display by VGA and DVI-D (DVI model)
- Supports PCIe Mini expansion
- Intel® PCIe GbE with Intel® AMT 8.0 support
- Supports RAID function via SATA 6Gb/s and SATA 3Gb/s
- High-speed I/O interface provided through the 3rd gen PCIe add-on card and SATA 6Gb/s connectors
- TPM V1.2 hardware security provided by the TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

### Specifications

- ◆ CPU
  - LGA 1155 socket supports LGA 1155 Intel® Xeon® E3/Core™ i3/Pentium®/Celeron® processor
- ◆ Chipset: Intel® C216
- ◆ Memory
  - Two 240-pin 1600/1333 MHz dual-channel DDR3 SDRAM ECC and non-ECC unbuffered DIMMs support up to 16 GB
- ◆ BIOS: UEFI BIOS
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 7 supports DX11 and OpenCL 1.1
  - Full MPEG-2, VC1, AVC decoding
- ◆ Display Output
  - 1 x VGA (up to 2048x1536@75Hz)
  - 1 x DVI-D (via header to IO-KIT-001-R20 DVI-D/USB module) (optional)
- ◆ Ethernet
  - LAN1: Intel® 82574L PCIe controller
  - LAN2: Intel® 82579 PHY with Intel® AMT 8.0 support
- ◆ External I/O Interface: 2 x USB 2.0
- ◆ Internal I/O Interface
  - 1 x LPT (2x13 pin)
  - 1 x KB/MS (1x6 pin)
  - 1 x mSATA
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x SATA 6Gb/s (RAID 0/1/5/10 supported)
  - 4 x RS-232 (2x5pin, P=2.54)
  - 4 x SATA 3Gb/s (RAID 0/1/5/10 supported)
  - 6 x USB 2.0 (2x4 pin, P=2.0)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I²C: 1 x I²C (1x4 pin)
- ◆ Infrared Interface
  - 1 x Infrared Interface (1x5 pin)
- ◆ Front Panel
  - 1 x Front panel connector (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ Audio: Supports by IEI AC-KIT-892HD-R10 audio kit
- ◆ Expansion
  - PCIe signal and PCI signal via golden finger
  - 1 x PCIe Mini slot
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x Smart fan (1x4 pin)
- ◆ Power Supply
  - 5V/12V, AT/ATX support
- ◆ Power Consumption
  - 5V@3.98A, 12V@0.38A, Vcore\_12V@7.81A, 3.3V@1.61A, 5VSB@0.15A (3.4GHz Intel® Xeon® 2.2GHz with two 2 GB 1333 MHz DDR3 memory)
  - ◆ Operating Temperature: -10°C ~ 60°C
  - ◆ Storage Temperature: -20°C ~ 70°C
  - ◆ Operating Humidity
    - 5% ~ 95%, non-condensing
  - ◆ Dimensions: 338 mm x 126 mm
  - ◆ Weight: GW: 1200g / NW: 420g
  - ◆ CE/FCC compliant

### Packing List

1 x SPCIE-C2160 single board computer	1 x One Key Recovery CD
1 x Dual RS-232 cable	1 x Mini jumper pack
1 x USB cable	1 x QIG
4 x SATA cable	1 x Utility CD

### Ordering Information

Part No.	Description
SPCIE-C2160-R10	Full-size PICMG 1.3 CPU card supports 32nm LGA 1155 Intel® Xeon® E3 and Intel® Core™ i3/Pentium®/Celeron® CPU with Intel® C216, DDR3, VGA, dual Intel® PCIe GbE, SATA 6Gb/s, PCIe Mini, HD Audio and RoHS
SPCIE-C2160-DVI-R10	Full-size PICMG 1.3 CPU card supports 32nm LGA 1155 Intel® Xeon® E3 and Intel® Core™ i3/Pentium®/Celeron® CPU with Intel® C216, DDR3, DVI-D, dual Intel® PCIe GbE, SATA 6Gb/s, PCIe Mini, HD Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams
CF-115XA-R10	High-performance LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA 1155/LGA 1156 cooler kit, 95W
SAIDE-KIT01-R10	SATA to IDE/CF converter board

# PICMG 1.3 Backplane

## Selection Guide

PAC series wall-mount chassis

4U rack-mount chassis

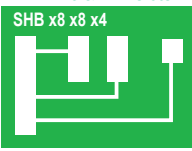

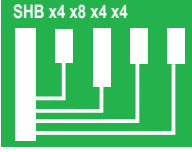

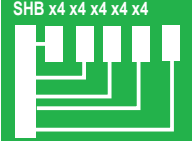

Backplane		SPE-4S	SPE-6S	SPE-9S	SPXE-11S	SPXE-14S
Total	Slot	4	6	7	11	14
PCIe	x16					
	x8	2 (x16 connector)		1 (x16 connector)		1 (x16 connector)
	x4	1	5	3	6 (x16 connector)	
	x1					12
	PCI-X					
	PCI			3		
PSU Type		24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+8-pin ATX	24+8-pin ATX
Chassis Option		PAC-106G PAC-1000G	PAC-106G PAC-1000G	PAC-125G	RACK-305G RACK-360G RACK-3000G	RACK-305G RACK-360G RACK-3000G

# IEI Server Grade Backplane Solution

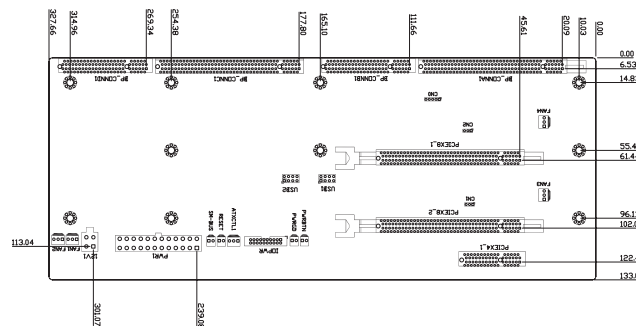
Server grade backplane accommodates PCIe x8 and multiple PCIe x4 add-on cards. It is specially designed for intensive data transfer applications such as server data storage and any application that requires more than one PCIe x4 or four PCIe x1 cards. Given the multiple PCIe x4 and x1 support, it provides a more cost effective solution for end-users by reducing the number of systems required.

## System Solution for options

Backplane	Total Slot	PCIe						PSU Type	Chassis Option
		x16	x8	x4	x1	PCI-X	PCI		
SPE-4S	4	-	2 (x16 connector)	1	-	-	24+4-pin ATX	PAC-106G PAC-1000G	
SPE-6S	6	-	-	5	-	-	24+4-pin ATX	PAC-106G PAC-1000G	
SPE-9S	7	-	1 (x16 connector)	3	-	3	24+4-pin ATX	PAC-125G	
SPXE-11S	11	-	-	6 (x16 connector)	-	4	24+8-pin ATX	RACK-305G RACK-360G RACK-3000G	
SPXE-14S	14	-	1 (x16 connector)	-	12	-	24+4-pin ATX	RACK-305G RACK-360G RACK-3000G	

Server Grade Backplane	
Example	Corresponding Model
<b>EX1: 2 x8 &amp; 1 x4 slots</b> 	<b>SPE-4S</b> 
<b>EX2: 1 x8 &amp; 3 x4 slots</b> 	<b>SPE-9S</b> 
<b>EX3: 5 x4 slots</b> 	<b>SPE-6S</b> 

## SPE-4S-R10

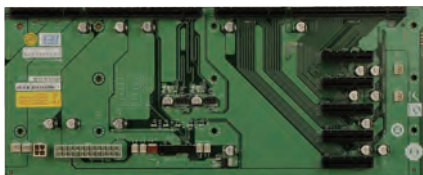


### Ordering Information

SPE-4S-R10	4-slot PICMG 1.3 backplane with two PCIe x16 slots (x8 signal) and one PCIe x4 slot
PAC-106G	6-slot full-size compact chassis
PAC-1000G	6-slot full-size compact chassis



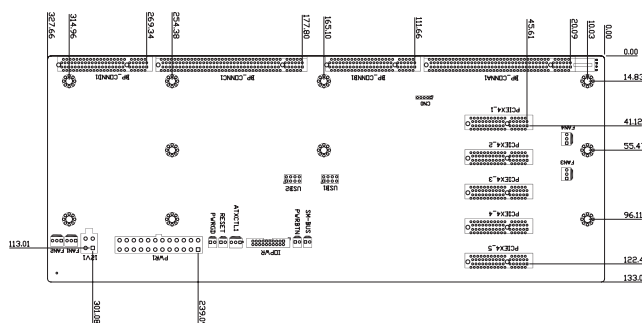
## SPE-6S-R10



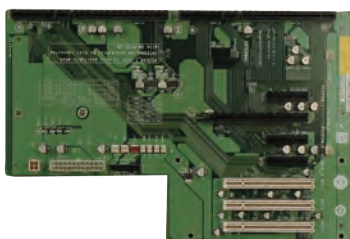
### Ordering Information

SPE-6S-R10	6-slot PICMG 1.3 backplane with five PCIe x4 slots
PAC-106G	6-slot full-size compact chassis
PAC-1000G	6-slot full-size compact chassis

Note: PCIeX4\_3 can not work with SPCIE-C2060, SPCIE-C2160, SPCIE-C22260, SPCIE-C236 & HPCIE-C236.

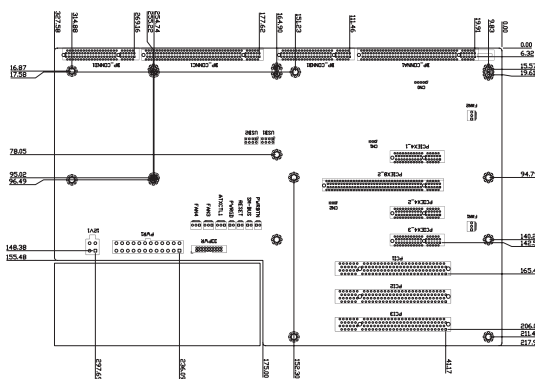


## SPE-9S-R11



### Ordering Information

SPE-9S-R11	7-slot PICMG 1.3 backplane with one PCIe x16 slot (x8 signal), three PCIe x4 slots and three PCI slots
PAC-125G	10-slot full-size compact chassis

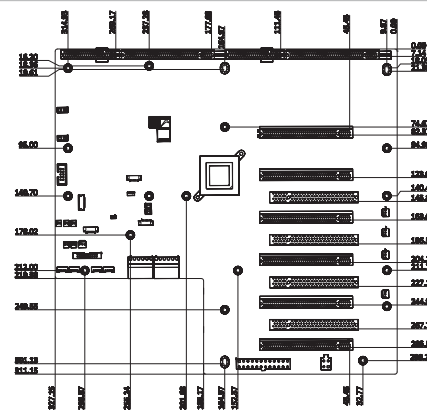


## SPXE-11S-R10 **New**



### Ordering Information

SPXE-11S-R10	11-Slot PICMG 1.3 PCIe to PCIe Switch (PLX PEX8724) Backplane, 6 PCIe Gen 3.0 x4 w/ x16 slot, 4 PCI, RoHS
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis
RACK-3000G	4U 14-slot full-size rack-mount chassis

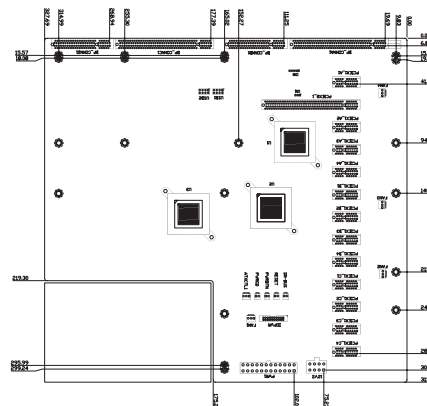


## SPXE-14S-R10



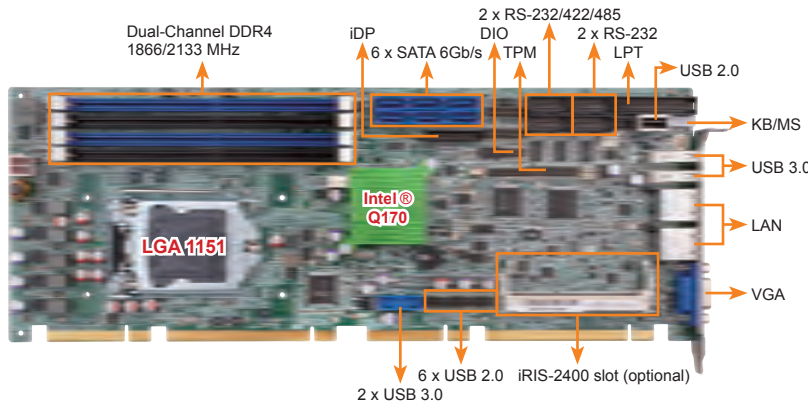
### Ordering Information

SPXE-14S-R10	14-slot PICMG 1.3 backplane with one PCIe x16 slot (x8 signal) and twelve PCIe x1 slots
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis
RACK-3000G	4U 14-slot full-size rack-mount chassis



# PCIE-Q170

Full-size PICMG 1.3 CPU Card supports LGA1151 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU per Intel® Q170, DDR4, VGA/iDP, Dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, PCIe Mini, mSATA, HD Audio, Intel® AMT, iRIS-2400 and RoHS



## Four 288-pin DDR4 SDRAM Supported



RAID 0, 1, 5, 10 function compatible with six ports of SATA 6Gb/s

## Specifications

- ◆ CPU  
LGA 1151 socket supports Intel® 6th/7th generation Core™ i7/i5/i3, Pentium® or Celeron® processor
- ◆ Chipset  
Intel® Q170
- ◆ Memory  
Four 288-pin 1866/2133 MHz dual-channel unbuffered DDR4 DIMMs support up to 64GB
- ◆ BIOS  
UEFI BIOS
- ◆ Graphic Engine  
Intel® HD Graphics Gen 9 supports DX11/12, OpenCL 2.x and OpenGL 4.3/4.4 Decode/Encode for HEVC, VP8, VP9, VDENC
- ◆ Display Output  
Dual independent display  
1 x VGA (up to 1920x1200@60 Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI and DisplayPort (up to 3840x2160@60 Hz)
- ◆ Ethernet  
LAN1: Intel® I219LM Clarkville-V with Intel® AMT 11.0 supported  
LAN2: Intel® I210 PCIe controller
- ◆ External I/O Interface  
2 x USB 3.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin) 2 x RS-232/422/485 (2x5 pin, P=2.54)  
1 x LPT (2x13 pin) 2 x USB 3.0 (2x10 pin)  
1 x mSATA (SATA & USB signal) 6 x SATA 6Gb/s (RAID 0/1/5/10 supported)  
1 x USB 2.0 (180° Type-A) 6 x USB 2.0 (2x4 pin, P=2.54)  
2 x RS-232 (2x5pin, P=2.54)
- ◆ Front Panel  
1 x Front Panel (1x10 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED  
2 x LAN LED (1x2 pin)
- ◆ Audio  
Support 7.1 channel HD audio by IEI AC-KIT-892HD kit
- ◆ TPM  
1 x TPM (2x10 pin)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ i°C  
1 x i°C (1x4 pin)
- ◆ iRIS Remote Management Module  
1 x iRIS-2400 slot (optional)
- ◆ Expansion  
**16-lane PCIe link from CPU via golden finger:**  
Supports one PCIe x16, or two PCIe x8, or one PCIe x8 + two PCIe x4 on the backplane (configured via BIOS)  
**4-lane PCIe link from PCH via golden finger:**  
Supports four PCIe x1 slots or one PCIe x4 slot on the backplane (configured via BIOS switch)  
1 x Full/Half-size PCIe Mini card slot  
**Four PCI signal via golden finger**
- ◆ Watchdog Timer  
Software programmable, supports 1~255 sec. system reset
- ◆ Digital I/O  
8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
1 x System smart fan (1x3 pin)
- ◆ Power Supply  
5V/12V, AT/ATX support
- ◆ Power Consumption  
5V@3.12A, 12V@6.85A, 3.3V@1.13A, 5VSB@0.15A  
(Intel® Core™ i7-6700K 4.0GHz CPU with 64GB (16GB x 4) 2133 MHz DDR4 memory)
- ◆ Operating Temperature  
-20°C ~ 60°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Dimensions: 338 mm x 126 mm
- ◆ Weight: GW: 1000g / NW: 420g
- ◆ CE/FCC compliant



## Features

- PICMG 1.3 full-size CPU Card
- LGA 1151 Intel® 6th/7th generation Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Four 288-pin 1866/2133MHz dual-channel DDR4 UDIMMs support up to 64GB
- Supports dual independent display by VGA & internal DP pin header
- Supports PCIe Mini device & mSATA via PCIe Mini card slot
- Intel® PCIe GbE with Intel® AMT 11.0 supported
- Supports RAID 0, 1, 5, 10 function via SATA 6Gb/s
- TPM 1.2 & 2.0 hardware security function supported by TPM module

## Packing List

1 x PCIE-Q170 single board computer	
1 x SATA cable	1 x QIG
1 x Mini jumper pack	1 x Utility CD

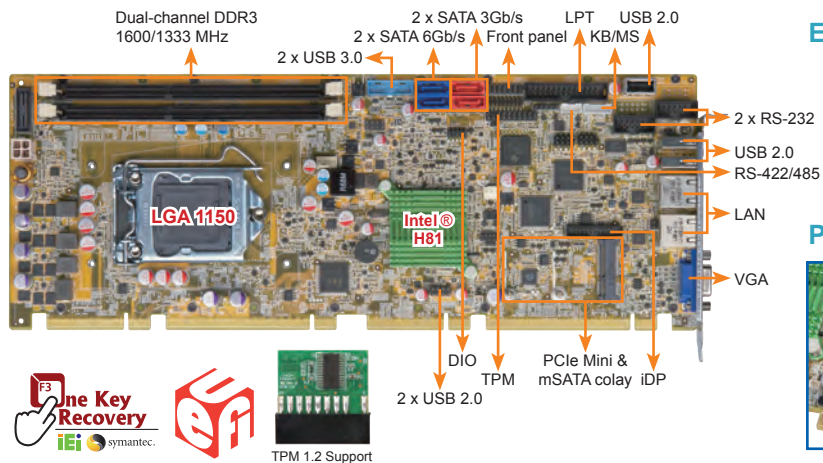
## Ordering Information

Part No.	Description
PCIE-Q170-R10	Full-size PICMG 1.3 CPU Card supports LGA1151 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU per Intel® Q170, DDR4, VGA/iDP, Dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, PCIe Mini, mSATA, HD Audio, iAMT and RoHS
PCIE-Q170-i2-R10**	Full-size PICMG 1.3 CPU Card supports LGA1151 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU per Intel® Q170, DDR4, VGA/iDP, Dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, PCIe Mini, mSATA, HD Audio, iAMT, iRIS-2400 and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
AC-KIT-892HD-R10	7.1 channel HD Audio kit with Realtek ALC892 support dual audio streams
CF-1150SA-R10	Special cooler kit for LGA1150, High-performance compatible, 95W
CF-1150SB-R11	Special cooler kit for LGA1150, High-performance compatible, 65W
CF-1150SC-R20	Special cooler kit for LGA1150, 1U chassis compatible, 65W
CF-1150SE-R11	Special cooler kit for LGA1150, high-performance compatible, 95W
CF-1150SF-R10	Special cooler kit for LGA1150, 1U chassis compatible, 54W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
SAIDE-KIT01-R10	SATA to IDE/CF Converter board

\*\*By order production, MOQ: 100

# PCIE-H810

Full-size PICMG 1.3 CPU card supports LGA 1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® with Intel® H81, DDR3, VGA, iDP, Dual PCIe GbE, SATA 6Gb/s, mSATA, USB 3.0, RS-232, HD Audio and RoHS



## Enhanced component protection

Prevent the damage of bottom components



## PCIe Mini & mSATA colay



The PCIe Mini interface provides PCIe x1, USB and mSATA signal for full-size or half-size PCIe Mini devices, such as SSD, mSATA and wireless LAN cards.



## Specifications

- ◆ CPU  
4th generation LGA 1150 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- ◆ Chipset  
Intel® H81
- ◆ Memory  
Two 240-pin 1600/1333 MHz dual-channel unbuffered DDR3 & DDR3L SDRAM DIMMs support up to 16 GB
- ◆ BIOS  
UEFI
- ◆ Graphics Engine  
Intel® HD Graphics Gen 7.5 supports DX11.1, OpenCL 1.2 and OpenGL 3.2  
Full MPEG2, VC1, AVC Decode
- ◆ Display Output  
Dual independent display  
1 x VGA (up to 1920x1200@60 Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60 Hz)
- ◆ Ethernet  
Dual Realtek RTL8111E PCIe GbE controllers supported
- ◆ External I/O Interface  
2 x USB 2.0
- ◆ Internal I/O Interface
 

1 x KB/MS (1x6 pin)	2 x SATA 3Gb/s (AHCI supported, no RAID)
1 x LPT (2x13 pin)	2 x SATA 6Gb/s
1 x RS-422/485 (1x4 pin, P=2.0)	2 x USB 3.0 (2x10 pin)
1 x USB 2.0 (180° Type-A)	4 x USB 2.0 (Golden finger)
2 x RS-232 (2x5 pin, P=2.54)	4 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Audio  
Support 7.1-channel HD Audio by IEI AC-KIT-892HD kit
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED  
2 x LAN LED (1x2 pin)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C  
1 x I<sup>2</sup>C (1x4 pin)
- ◆ Infrared Interface  
1 x Infrared Interface (1x5 pin)
- ◆ Expansion  
1 x Full/Half-size PCIe Mini slot (supports mSATA)  
One PCIe x16 & four PCIe x1 signal via golden finger
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O  
8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
1 x System smart fan (1x3 pin)
- ◆ Power Supply  
5V/12V, AT/ATX support
- ◆ Power Consumption  
5V@3.41A, 12V@0.35A, Vcore\_12V@7.52A, 3.3V@1.41A, 5VSB@0.12A  
(Intel® Core™ i7-4770K 3.90 GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 338 mm x 126 mm
- ◆ Weight: GW: 1000g / NW: 420g
- ◆ CE/FCC compliant

## Features

- PICMG 1.3 full-size solution
- 4th generation LGA 1150 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Two 1600/1333 MHz DDR3 SDRAM DIMMs support up to 16 GB
- Dual Realtek PCIe GbE supported
- TPM v1.2 hardware security function supported by TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery
- Stiffener bars
- IEI jumper-less function

## Packing List

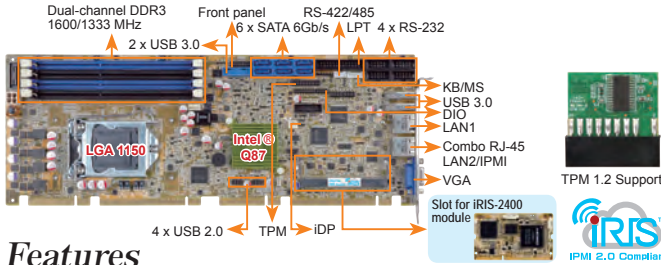
1 x PCIE-H810 single board computer
2 x SATA cable
1 x One Key Recover CD
1 x QIG
1 x Utility CD

## Ordering Information

Part No.	Description
PCIE-H810-R10	Full-size PICMG 1.3 CPU Card supports LGA 1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU with Intel® H81, DDR3, VGA, iDP, dual PCIe GbE, SATA 6Gb/s, mSATA, USB 3.0, RS-232, HD Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-300-RS	Dual port USB 2.0 cable with bracket, 300mm, P=2.54
19800-010500-200-RS	USB 3.0 cable with bracket, 450mm
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-000702-100-RS	RS-232 cable, 230mm, P=2.54
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams
CF-1150SB-R11	Special cooler kit for LGA 1150, high-performance compatible, 65W
CF-1150SC-R20	Special cooler kit for LGA 1150, 1U chassis compatible, 65W
CF-1150SE-R11	Special cooler kit for LGA 1150, high-performance compatible, 95W
CF-1150SF-R10	Special cooler kit for LGA 1150, high-performance compatible, 54W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

## PCIE-Q870-i2

Full-size PICMG 1.3 CPU Card supports LGA 1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU per Intel® Q87, DDR3, VGA, iDP, Dual PCIe GbE, SATA 6Gb/s, mSATA, PCIe Mini, RS-232, Audio, iRIS-2400 and RoHS



### Features

- PICMG 1.3 full-size graphics grade solution
- LGA 1150 Intel® 4th generation Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Four 240-pin 1600/1333 MHz dual-channel DDR3 DIMMs support up to 32 GB memory
- Supports dual independent display by VGA & iDP interfaces
- Supports PCIe Mini devices and mSATA via PCIe Mini socket
- Supports RAID function via SATA 6Gb/s
- Supports IPMI 2.0 via iRIS-2400 module

### Specifications

- ◆ CPU: LGA 1150 Intel® 4th generation Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- ◆ Chipset: Intel® Q87
- ◆ Memory: Four 240-pin 1600/1333 MHz dual-channel unbuffered DDR3 & DDR3L SDRAM DIMMs support up to 32 GB
- ◆ BIOS: UEFI BIOS
- ◆ Graphics Engine: Intel® HD Graphics Gen 7.5 supports DX11.1, OpenCL 1.2 and OpenGL 3.2 Full MPEG2, VC1, AVC Decode
- ◆ Display Output
  - 1 x VGA (up to 1920x1200@60 Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60 Hz)
- ◆ Ethernet
  - LAN1: Intel® I217LM with Intel® AMT 9.0 support
  - LAN2: Intel® I210-AT PCIe controller with NCSI support
- ◆ External I/O Interface: 2 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x LPT (2x13 pin)
  - 1 x mSATA
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 6 x SATA 6Gb/s (RAID 0/1/5/10 supported)
  - 2 x USB 3.0 (2x10 pin)
- ◆ Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Audio: Supports 7.1-channel HD Audio by IEL AC-KIT-892HD-R10 kit
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I²C: 1 x I²C (1x4 pin)
- ◆ Infrared Interface: 1 x Infrared Interface (1x5 pin)
- ◆ iRIS Remote Management Module
  - 1 x iRIS-2400 slot
- ◆ Expansion
  - PCIe signal and PCI signal via golden finger
  - 1 x Full-size PCIe Mini card slot (supports mSATA)
- ◆ Watchdog Timer: Software programmable, supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x3 pin)
- ◆ Power Supply: 5V/12V, AT/ATX support
- ◆ Power Consumption
  - 5V@3.55A, 12V@0.37A, Vcore\_12V@7.61A, 3.3V@1.55A, 5VSB@0.13A (Intel® Core™ i7-4770K 3.90 GHz CPU with 16 GB (4x4 GB) 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 338 mm x 126 mm
- ◆ Weight: GW: 1200g / NW: 420g
- ◆ CE/FCC compliant

### Packing List

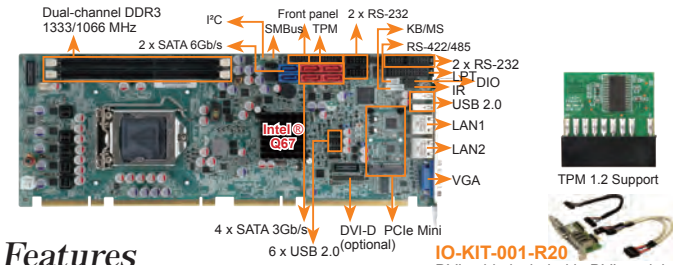
1 x PCIE-Q870-i2 single board computer	2 x SATA cable
1 x Dual RS-232 cable	1 x QIG
1 x USB 2.0 cable	1 x Utility CD

### Ordering Information

Part No.	Description
PCIE-Q870-i2-R10	Full-size PICMG 1.3 CPU card supports LGA 1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU with Intel® Q87, DDR3, VGA, iDP, dual Intel® PCIe GbE, SATA 6Gb/s, mSATA, RS-232, PCIe Mini, Audio, iRIS-2400 and RoHS
iRIS-2400-R10	IPMI 2.0 adapter card with AST2400 BMC chip for DDR3 SO-DIMM socket interface
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-010500-200-RS	USB 3.0 cable with bracket, 450mm
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams
CF-1150SB-R11	Special cooler kit for LGA 1150, high-performance compatible, 65W
CF-1150SC-R20	Special cooler kit for LGA 115X, 1U chassis compatible, 65W, copper
CF-1150SE-R11	Special cooler kit for LGA 115X, high-performance compatible, 95W, copper
CF-1150SF-R10	Special cooler kit for LGA 115X Intel® CPU, 107x70x35, 54W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

## PCIE-Q670-R20

Full-size PICMG 1.3 CPU Card supports LGA 1155 Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU with Intel® Q67, DDR3, VGA, DVI-D, Dual Intel® PCIe GbE, SATA 6Gb/s, PCIe Mini, HD Audio and RoHS



### Features

- PICMG 1.3 full-size graphics grade solution
- LGA 1155 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processors supported
- Up to 16 GB 1333 MHz dual-channel DDR3 SDRAM
- Supports dual independent display by VGA and DVI-D (DVI model)
- Supports RAID function via SATA 6Gb/s and SATA 3Gb/s
- TPM v1.2 hardware security provided by the TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

### Specifications

- ◆ CPU: LGA 1155 socket supports Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor
- ◆ Chipset: Intel® Q67
- ◆ Memory: Two 240-pin 1333/1066 MHz dual-channel unbuffered DDR3 & DDR3L SDRAM DIMMs support up to 16 GB
- ◆ BIOS: UEFI BIOS
- ◆ Graphics Engine: Intel® HD Graphics Gen 6 supports DX10.1 and OpenGL 3.0 Full MPEG2, VC1, AVC Decode
- ◆ Display Output
  - 1 x VGA (up to 2048x1536@75Hz)
  - 1 x DVI-D (via header to IO-KIT-001-R20 DVI-D/USB module) (optional)
- ◆ Ethernet
  - LAN1: Intel® 82563V PCIe controller
  - LAN2: Intel® 82579 PHY with Intel® AMT 7.0 support
- ◆ External I/O Interface: 2 x USB 2.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x LPT (2x13 pin)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x SATA 6Gb/s (RAID 0/1/5/10 supported)
  - 4 x RS-232 (2x5pin, P=2.54)
  - 4 x SATA 3Gb/s (RAID 0/1/5/10 supported)
  - 4 x USB 2.0 (Golden finger)
  - 6 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Front Panel: 1 x Front panel connector (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ Audio: Supports 7.1-channel HD Audio by IEL AC-KIT-892HD-R10 kit
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ Infrared Interface: 1 x Infrared Interface (1x5 pin)
- ◆ Expansion
  - PCIe signal and PCI signal via golden finger
  - 1 x Full-size PCIe Mini card slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x Smart fan (1x4 pin)
- ◆ Power Supply: AT/ATX power supply supported
- ◆ Power Consumption
  - 5V@3.45A, 12V@0.32A, Vcore\_12V@5.24A, 3.3V@1.69A, 5VSB@0.17A (3.4GHz Intel® Core™ i7-2600K with two 2 GB 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 338 mm x 126 mm
- ◆ Weight: GW: 1200g / NW: 420g
- ◆ CE/FCC compliant

### Packing List

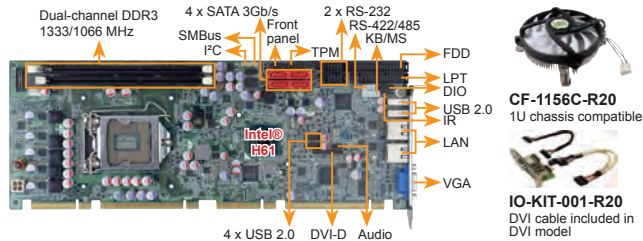
1 x PCIE-Q670 single board computer	1 x Mini jumper pack
1 x Dual RS-232 cable	1 x One Key Recovery CD
1 x USB cable	1 x QIG
4 x SATA cable	1 x Utility CD

### Ordering Information

Part No.	Description
PCIE-Q670-R20	Full-size PICMG 1.3 CPU card supports LGA 1155 32nm Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU with Intel® Q67, DDR3, VGA, dual Intel® PCIe GbE, SATA 6Gb/s, PCIe Mini, HD Audio and RoHS
PCIE-Q670-DVI-R20	Full-size PICMG 1.3 CPU card supports LGA 1155 32nm Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU with Intel® Q67, DDR3, DVI-D, dual Intel® PCIe GbE, SATA 6Gb/s, PCIe Mini, HD Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams
CF-115XA-R10	High-performance LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA 1155/LGA 1156 cooler kit, 95W
CPU-DT-C-G440	Intel® Celeron® G440 processor, LGA 1155, single core 1.6GHz, 1M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i3-2120T	Intel® Core™ i3-2120T processor, LGA 1155, dual core 2.6GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2390T	Intel® Core™ i5-2390T processor, LGA 1155, dual core 2.7GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2500T	Intel® Core™ i5-2500T processor, LGA 1155, quad core 2.3GHz, 6M cache, 45W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-P-G630T	Intel® Pentium® G630T processor, LGA 1155, dual core 2.3GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
SAIDE-KIT01-R10	SATA to IDE/CF converter board

# PCIE-H610

Full-size PICMG 1.3 CPU Card supports 32nm LGA 1155 Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU with Intel® H61, DDR3, VGA, USB 2.0, SATA 3Gb/s, Dual Realtek PCIe GbE, HD Audio and RoHS



## Features

- Full-size PICMG 1.3 graphics grade solution
- LGA 1155 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Dual-channel 1333/1066 MHz DDR3/DDR3L SDRAM supported up to 16 GB
- Intel® HD graphics technology integrates high-performance graphics and media processing
- TPM v1.2 hardware security function supported by TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU: LGA 1155 socket supports Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor
- ◆ Chipset: Intel® H61
- ◆ Memory: Two 240-pin 1333/1066 MHz dual-channel unbuffered DDR3 & DDR3L SDRAM DIMMs support up to 16 GB
- ◆ BIOS: UEFI BIOS
- ◆ Graphics Engine Intel® HD Graphics Gen 6 supports DX10.1 and OpenGL 3.0 Full MPEG2, VC1, AVC Decode
- ◆ Display Output 1 x VGA (up to 2048x1536@75Hz) 1 x DVI-D (up to 1920x1200@60Hz) (via header to IO-KIT-001-R20 DVI-D/USB module) (optional)
- ◆ Ethernet LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C: 1 x I<sup>2</sup>C (1x4 pin)
- ◆ Infrared Interface: 1 x Infrared Interface (1x5 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ External I/O Interface: 2 x USB 2.0
- ◆ Audio: Supports by IEI AC-KIT-892HD-R10 audio kit
- ◆ Internal I/O Interface 1 x FDD (2x17 pin) 1 x KB/MS (1x6 pin) 1 x LPT (2x13 pin) 4 x SATA 3Gb/s 1 x RS-422/485 (1x4 pin, P=2.0) 2 x RS-232 (2x5pin, P=2.54) 4 x USB 2.0 (2x4 pin, P=2.54) 4 x USB 2.0 (Golden finger)
- ◆ Front Panel 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ Expansion: PCIe signal and PCI signal via golden finger
- ◆ Watchdog Timer: Software programmable supports 1~255 sec, system reset
- ◆ Fan Connector: 1 x Smart fan (1x4 pin)
- ◆ Power Supply: 5V/12V, AT/ATX support
- ◆ Power Consumption 5V@4.41A, 12V@0.21A, Vcore\_12V@7.72A, 3.3V@1.71A, 5VSB@0.16A (3.4GHz Intel® Core™ i7-2600K with two 2 GB 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 338 mm x 126 mm
- ◆ Weight: GW: 1200g / NW: 420g
- ◆ CE/FCC compliant

## Packing List

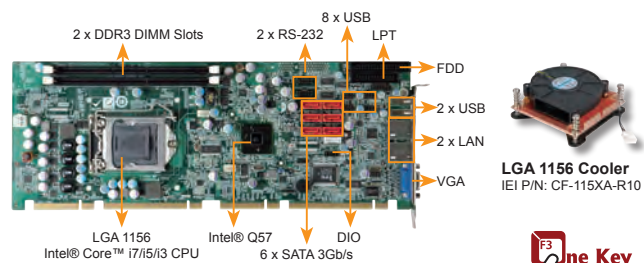
1 x PCIE-H610 single board computer	1 x One Key Recovery CD
1 x Dual RS-232 cable	1 x Mini jumper pack
1 x USB cable	1 x QIG
4 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
PCIE-H610-R10	Full-size PICMG 1.3 CPU card supports 32nm LGA 1155 Intel® Core™ i7/i5/i3 CPU with Intel® H61, DDR3, VGA, dual Realtek PCIe GbE, USB 2.0, SATA 3Gb/s, HD Audio and RoHS
PCIE-H610-DVI-R10	Full-size PICMG 1.3 CPU card supports 32nm LGA 1155 Intel® Core™ i7/i5/i3 CPU with Intel® H61, DDR3, VGA, DVI-D, dual Realtek PCIe GbE, USB 2.0, SATA 3Gb/s, HD Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32200-000017-RS	FDD Cable, 520mm, P=2.54
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams
CF-115XA-R10	High performance LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High performance LGA 1155/LGA 1156 cooler kit, 95W
CPU-DT-C-G440	Intel® Celeron® G440 processor, LGA 1155, single core 1.6GHz, 1M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-I3-2120T	Intel® Core™ i3-2120T processor, LGA 1155, dual core 2.6GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-I5-2390T	Intel® Core™ i5-2390T processor, LGA 1155, dual core 2.7GHz, 3M cache, 35W, AMT, compatible with CF-1156C-R20 CPU cooler
CPU-DT-I5-2500T	Intel® Core™ i5-2500T processor, LGA 1155, quad core 2.3GHz, 6M cache, 45W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-P-G630T	Intel® Pentium® G630T processor, LGA 1155, dual core 2.3GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
SAIDE-KIT01-R10	SATA to IDE/CF converter board
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# PCIE-Q57A

PICMG 1.3 CPU Card with LGA 1156 socket for Intel® Core™ i7/i5/i3 or Pentium® CPU with VGA, Dual Intel® GbE, SATA 3Gb/s, COM, USB 2.0 and Audio, RoHS



## Features

- PICMG 1.3 with LGA 1156 socket for Intel® Core™ i7/i5/i3 or Pentium® processor
- Supports 8 GB (max.) dual-channel 800/1066/1333 MHz DDR3 SDRAM
- Intel® GbE LAN controller with Intel® AMT 6.0 support
- Fourteen USB 2.0 ports and two COM ports
- Six SATA ports with RAID function
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU LGA 1156 socket supports Intel® Core™ i7/i5/i3 or Pentium® processor
- ◆ Chipset: Intel® Q57
- ◆ BIOS: AMI BIOS
- ◆ Memory Two 240-pin 1333/1066 MHz dual-channel unbuffered DDR3 SDRAM DIMMs support up to 8 GB
- ◆ Display Output 1 x VGA
- Note: The Intel® quad-core processor (e.g., i7-860 and i5-750) is a discrete processor which does not integrate a graphics engine. If a quad-core processor is used on the motherboard, an additional graphics card must be installed in order to support display output. Otherwise, the display will show "No display output" when connected to the on-board VGA port.
- ◆ Ethernet LAN1: Intel® 82583V PCIe GbE controller LAN2: Intel® 82578DM with Intel® AMT 6.0
- ◆ External I/O Interface: 2 x USB 2.0
- ◆ Internal I/O Interface 1 x FDD (2x17 pin) 1 x KB/MS (1x6 pin) 1 x LPT (2x13 pin) 2 x RS-232 (2x5pin, P=2.54) 4 x USB 2.0 (Golden finger) 6 x SATA 3Gb/s (RAID 0/1/5/10 supported) 8 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Infrared Interface 1 x Infrared Interface (1x5 pin)
- ◆ Digital I/O 8-bit digital I/O (2x5 pin)
- ◆ Audio Supports 7.1-channel HD Audio by IEI AC-KIT-892HD-R10 kit
- ◆ Watchdog Timer Software programmable supports 1~255 sec, system reset
- ◆ Fan Connector 1 x CPU smart fan (1x4 pin) 1 x System smart fan (1x4 pin)
- ◆ Power Supply ATX Power (supports AT/ATX mode)
- ◆ Power Consumption 3.3V@0.89A, 5V@4.62A, 12V@0.51A, Vcore\_12V@4.35A, 5VSB@0.14A (Intel® Core™ i5 660 3.3GHz CPU with two 2 GB 1066 MHz DDR3 memory)
- ◆ Operating Temperature 0°C ~ 60°C (32°F ~ 140°F)
- ◆ Storage Temperature: -10°C ~ 70°C
- ◆ Operating Humidity 5% ~ 95%, non-condensing
- ◆ Dimensions: 338 mm x 126 mm
- ◆ Weight: GW: 1100g
- ◆ CE/FCC compliant

## Packing List

1 x PCIE-Q57A single board computer	1 x Mini jumper pack
1 x Dual RS-232 cable	1 x One Key Recovery CD
1 x USB cable	1 x QIG
6 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
PCIE-Q57A-R10	PICMG 1.3 CPU card with LGA 1156 socket for Intel® Core™ processor with VGA, dual Intel® GbE, SATA 3Gb/s, USB 2.0, COM, Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-000100-100-RS	Quad-port USB cable, 300mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32200-000017-RS	FDD Cable, 520mm, P=2.54
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 codec and dual audio streams
CF-115XA-R10	High performance LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 73W
CF-115XE-R10	High performance LGA 1155/LGA 1156 cooler kit, 95W

# PICMG 1.3 Passive Backplane

## Selection Guide

PAC series wall-mount chassis

4U/5U rack-mount chassis

1U/2U rack-mount chassis

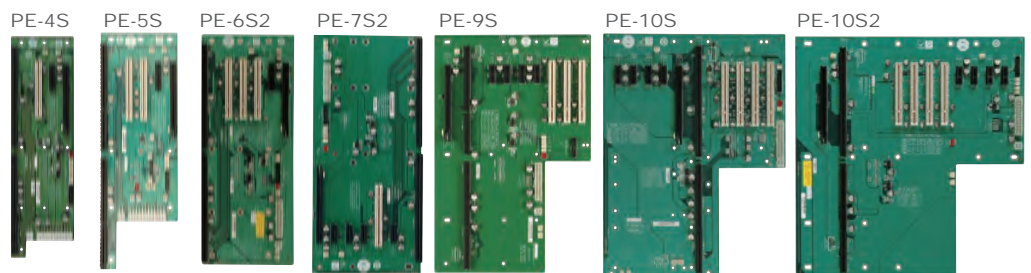
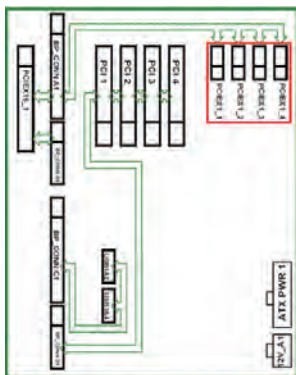
PICMG 1.3 (PCIe+PCI)	Model	PE-2SD1	PE-2SD2	PE-4S	PE-4S2	PE-5S	PE-5S2	PE-6S	PE-6S2	PE-6SD	PE-6SD3
Total Slot		2	2	4	4	5	5	6	6	5	5
Expansion Slots	PCIe Slots	x16 *	1	1	1	1	1	1	1	1	1
		x4			1		1		1		1
		x1						3	2		3
	PCI-X Slots										
PCI Slots			1	1	2	2		2	3		2
USB Connectors by Pin Header		4	4	4	4	4	4	4	4	4	4
PSU Type		24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX
Chassis		RACK-1150-PE	RACK-1150-PE	N/A	N/A	RACK-500G	RACK-500G	RACK-305G RACK-360G RACK-3000G PAC-1700G PAC-125	PAC-106G PAC-1000G	N/A	N/A
Note		1U Type	1U Type							2U Type	2U Type

PICMG 1.3 (PCIe+PCI)	Model	PE-7S	PE-7S2	PE-8S	PE-9S	PE-10S	PE-10S2	PE-13SD	PXE-9S2	PXE-12S	PXE-13S	PXE-19S2
Total Slot		7	7	8	9	10	10	13	9	12	13	19
Expansion Slots	PCIe Slots	x16 *	1	1	1	1	1	1/1	1	1	1	1
		x4			3	4			1/0	3		
		x1	2	4	3	4	4	4	0/4	0		3
	PCI-X Slots								0	4		
PCI Slots		3	1	3	3	4	4	2/2	4	4	8	16
USB Connectors by Pin Header		4	4	4	4	4	4	8	4	4	4	4
PSU Type		24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	Dual 24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX	24+4-pin ATX
Chassis		PAC-1700G	PAC-1700G	PAC-125G	N/A	RACK-305G RACK-360G RACK-3000G	RACK-3000G RACK-305G RACK-360G	RACK-3000G RACK-305G RACK-360G	RACK-3000G RACK-305G RACK-360G	RACK-3000G RACK-305G RACK-360G	RACK-3000G RACK-305G RACK-360G	N/A
Note								Dual System Backplane	PCIe to PCIe Switch Backplane	PCIe to PCI-X Bridge Backplane	PCIe to PCI Bridge Backplane	

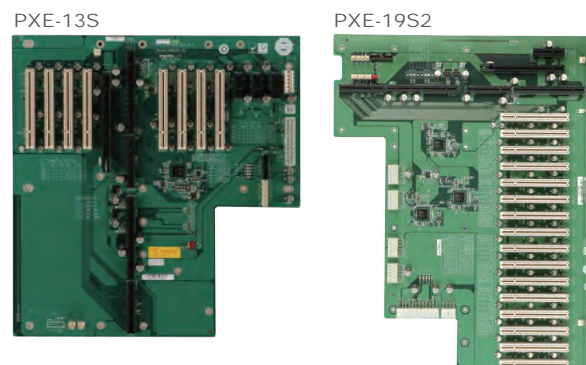
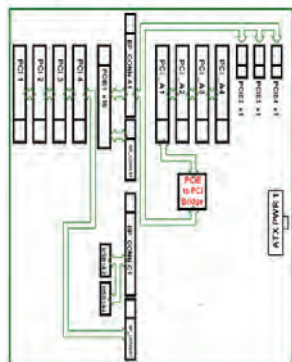
\*When using a PCIe x16 add-on card, the length of the card must not exceed 167mm or 6.57 inches.

# IEI Graphics Grade Backplane Solution

The graphics grade backplane solution targets the applications which concern system speed and performance. It has higher performance over cost ratio than the previous PICMG 1.0 solution.



- Twenty PCIe lanes in total
- One PCIe x16 slot
- Up to four PCIe x1 or one PCIe x4 slot
- Up to four local PCI slots (w/o bridge)

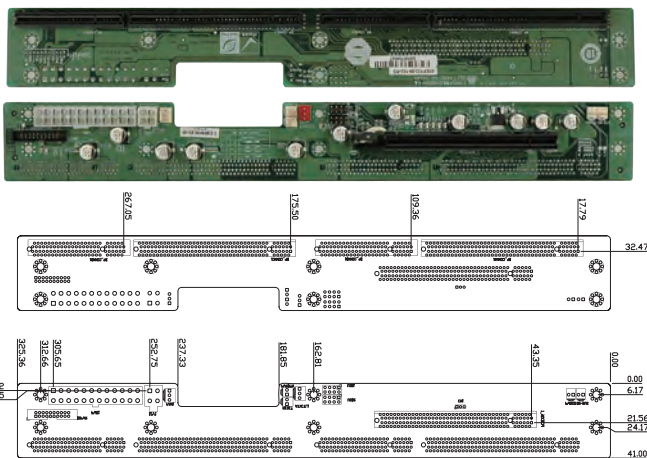


- Twenty PCIe lanes in total
- One PCIe x16 slot
- Up to four PCIe x1 slots
- PCI slots expandable via PCIe to PCI bridge



**PE-2SD1-R10**

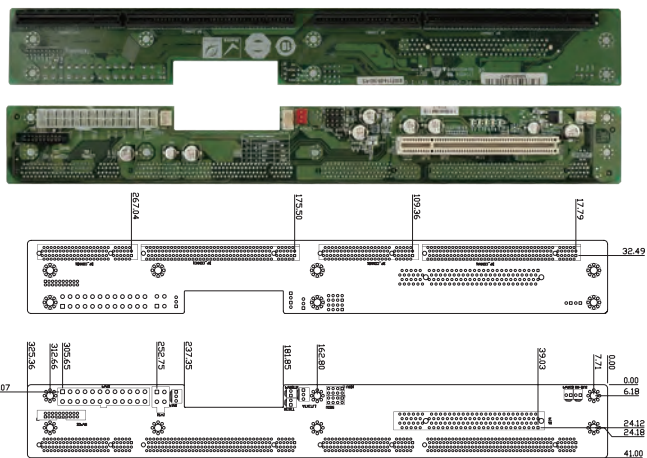
For 1U system!



**Ordering Information**  
 PE-2SD1-R10 2-slot backplane with one PCIe slot  
 RACK-1150G-PE 1U full-size rack-mount chassis

**PE-2SD2-R10**

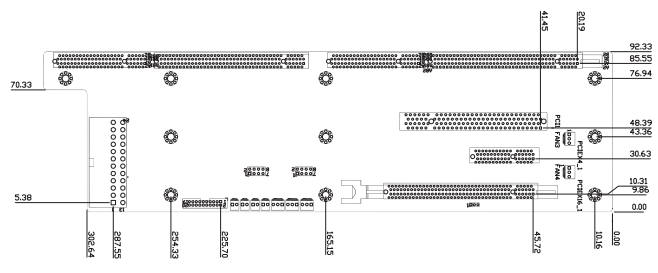
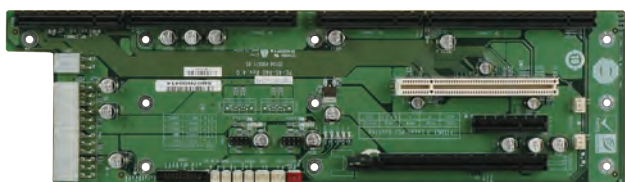
For 1U system!



**Ordering Information**  
 PE-2SD2-R10 2-slot backplane with one PCI slot  
 RACK-1150G-PE 1U full-size rack-mount chassis

**PE-4S-R40**

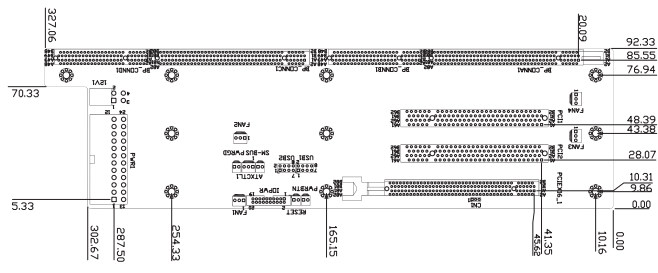
Mounting holes compatible with PCI-4S



**Ordering Information**  
 PE-4S-R40 4-slot backplane with one PCIe x16 slot, one PCIe x4 slot and one PCI slot

**PE-4S2-R40**

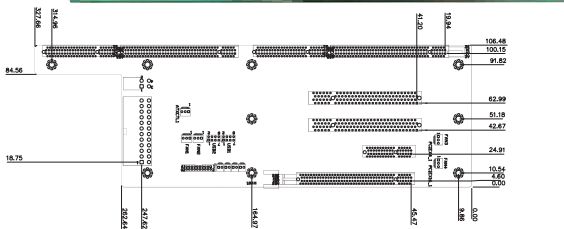
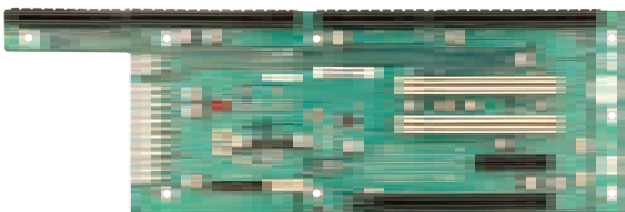
Mounting holes compatible with PCI-4S



**Ordering Information**  
 PE-4S2-R40 4-slot backplane with one PCIe x16 slot and two PCI slots

**PE-5S-R40**

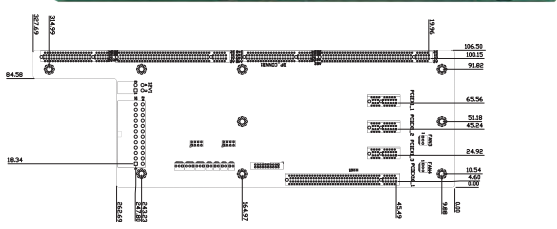
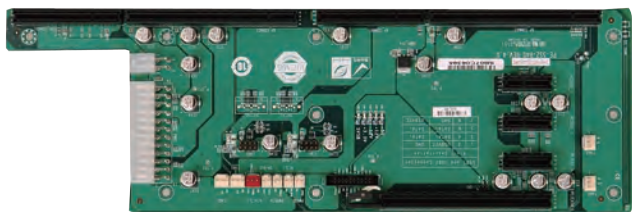
Mounting holes compatible with PCI-5S



**Ordering Information**  
 PE-5S-R40 5-slot backplane with one PCIe x16 slot, one PCIe x4 slot and two PCI slots  
 RACK-500G 5U 5-slot full-size rack-mount chassis

**PE-5S2-R40**

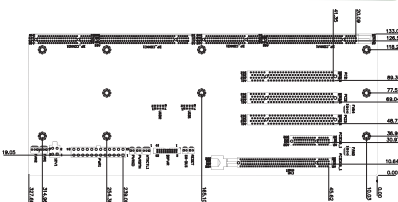
Mounting holes compatible with PCI-5S



**Ordering Information**  
 PE-5S2-R40 5-slot backplane with one PCIe x16 slot and three PCIe x1 slots  
 RACK-500G 5U 5-slot full-size rack-mount chassis

## PE-6S-R41

Mounting holes compatible with PCI-7S

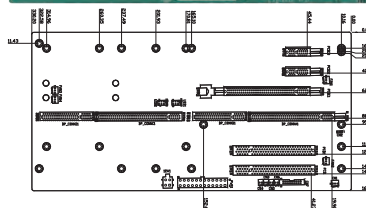


### Ordering Information

PE-6S-R41	6-slot backplane with one PCIe x16 slot, two PCIe x1 slots and two PCI slots
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis
RACK-3000G	4U 14-slot full-size rack-mount chassis
RACK-1700G	7-slot full-size compact chassis
PAC-125G	10-slot full-size compact chassis

## PE-6S2-R40

Mounting holes compatible with PCI-6S



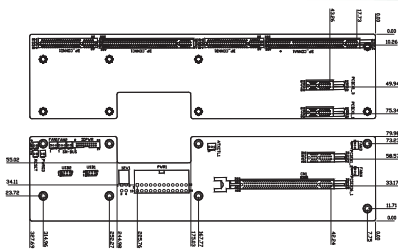
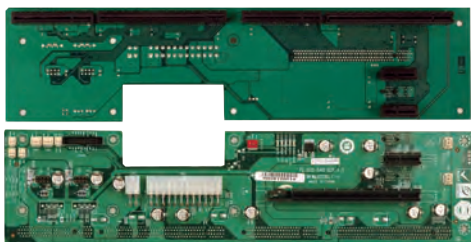
### Ordering Information

PE-6S2-R40	6-slot backplane with one PCIe x16 slot, one PCIe x4 slot and three PCI slots
PAC-106G *	6-slot full-size compact chassis
PAC-1000G	6-slot full-size compact chassis

\* When using a PCIe x16 add-on card, the length of the card must not exceed 167mm or 6.57 inches.

## PE-6SD-R40

Mounting holes compatible with PCI-6SD  
2U Type

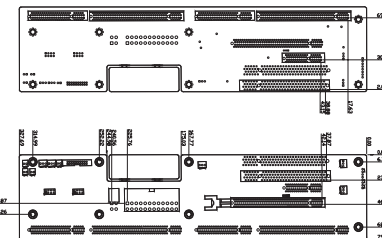
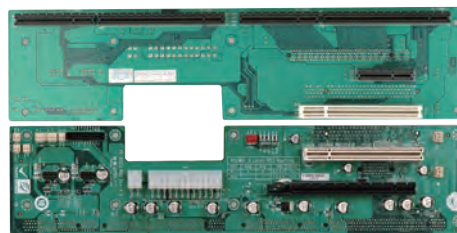


### Ordering Information

PE-6SD-R40	5-slot backplane with one PCIe x16 slot and three PCIe x1 slots
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## PE-6SD3-R40

Mounting holes compatible with PCI-6SD

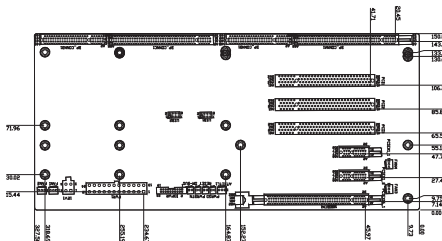
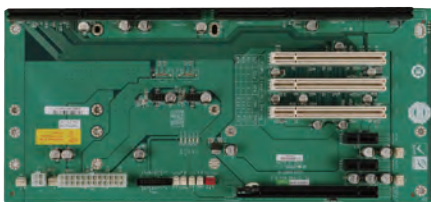


### Ordering Information

PE-6SD3-R40	5-slot backplane with one PCIe x16 slot, one PCIe x4 slot and two PCI slots
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## PE-7S-R40

Mounting holes compatible with PCI-7S

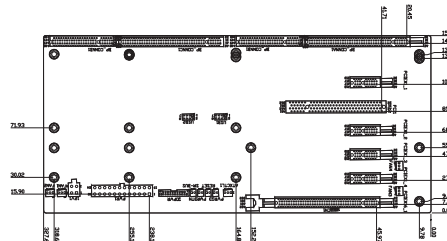
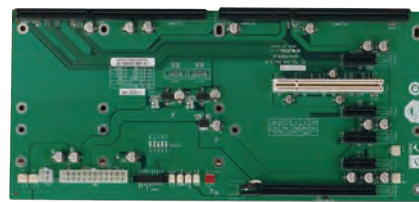


### Ordering Information

PE-7S-R40	7-slot backplane with one PCIe x16 slot, two PCIe x1 slots and three PCI slots
PAC-1700G	7-slot full-size compact chassis

## PE-7S2-R40

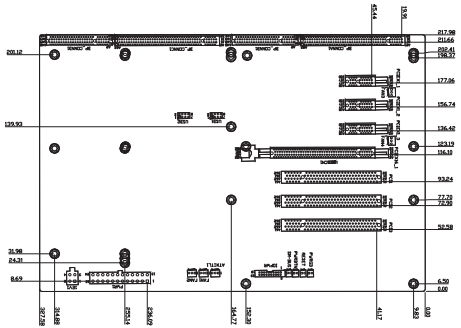
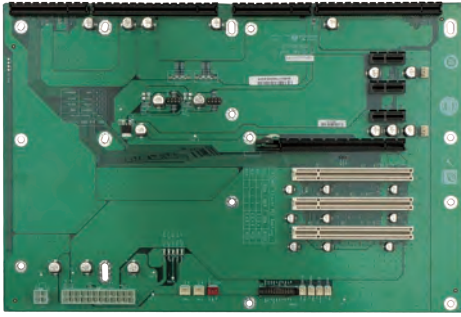
Mounting holes compatible with PCI-7S



### Ordering Information

PE-7S2-R40	7-slot backplane with one PCIe x16 slot, four PCIe x1 slots and one PCI slot
PAC-1700G	7-slot full-size compact chassis

## PE-8S-R40

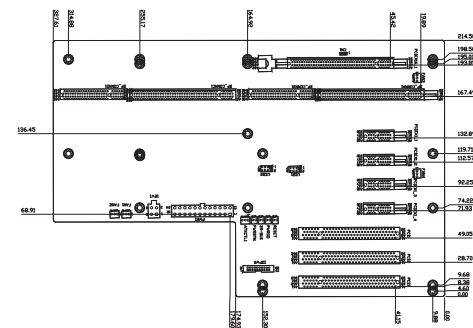
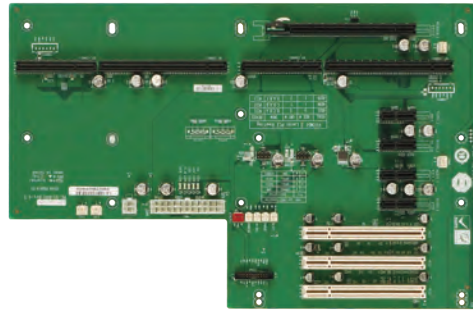


### Ordering Information

PE-8S-R40	8-slot backplane with one PCIe x16 slot, three PCIe x1 slots and three PCI slots
PAC-125G	10-slot full-size compact chassis

## PE-9S-R40

Mounting holes compatible with PCI-10S2

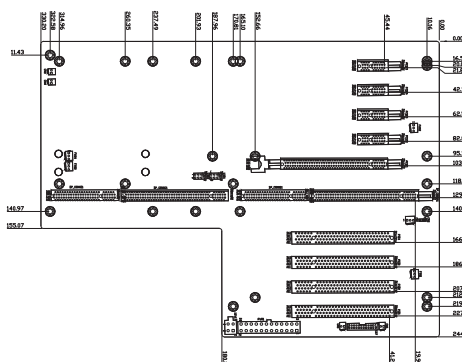
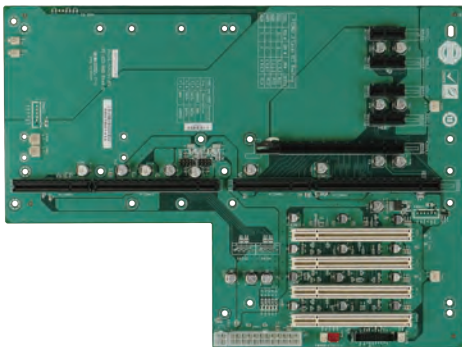


### Ordering Information

PE-9S-R40	9-slot backplane with one PCIe x16 slot, four PCIe x1 slots and three PCI slots
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## PE-10S-R40

Mounting holes compatible with PCI-14S

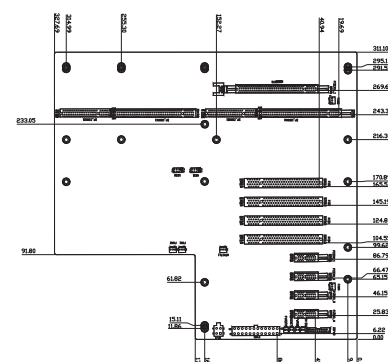
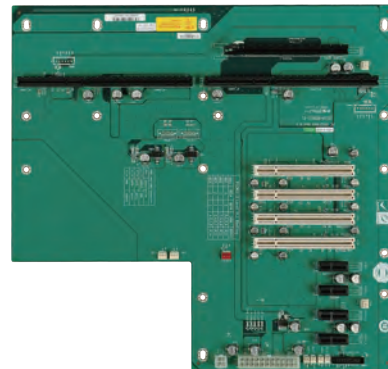


### Ordering Information

PE-10S-R40	10-slot backplane with one PCIe x16 slot, four PCIe x1 slots and four PCI slots
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis
RACK-3000G	4U 14-slot full-size rack-mount chassis

## PE-10S2-R40

Mounting holes compatible with PCI-14S



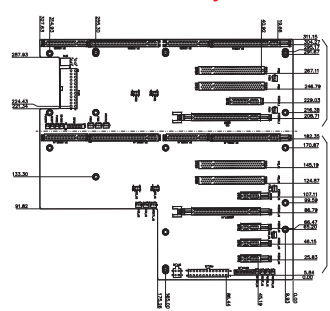
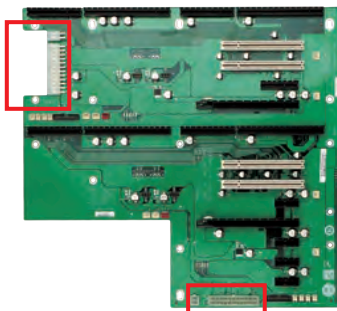
### Ordering Information

PE-10S2-R40	10-slot backplane with one PCIe x16 slot, four PCIe x1 slots and four PCI slots
RACK-3000G	4U 14-slot full-size rack-mount chassis
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis

## PE-13SD-R40

Mounting holes compatible with PCI-14S

Dual system



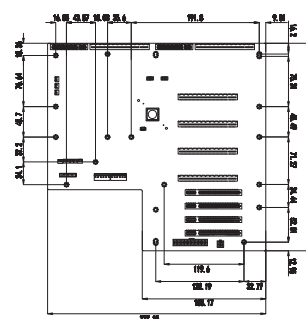
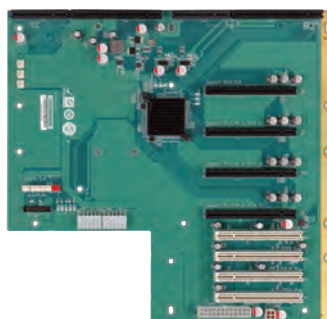
2 independent power resources

### Ordering Information

PE-13SD-R40	13-slot backplane with two PCIe x16 slots, one PCIe x4 slot, four PCIe x1 slot and four PCI slots
RACK-3000G	4U 14-slot full-size rack-mount chassis
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis

## PXE-9S2-R10

Mounting holes compatible with PCI-14S



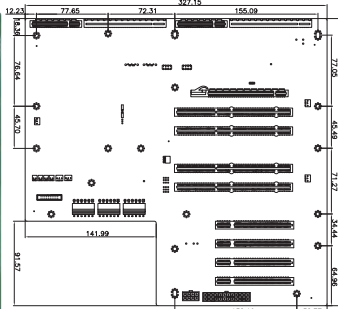
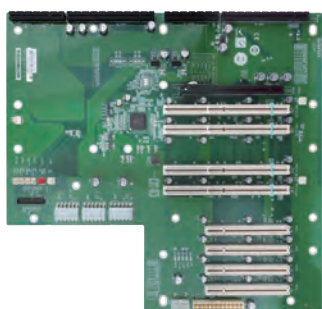
### Ordering Information

PXE-9S2-R10	9-slot PICMG 1.3 backplane with one PCIe x16 by x16 slot, three PCIe x4 by x16 slots, and four PCI slots RoHS
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis
RACK-3000G	4U 14-slot full-size rack-mount chassis

## PXE-12S-R11

Mounting holes compatible with PCI-14S

(PCIe to PCI-X Bridge)



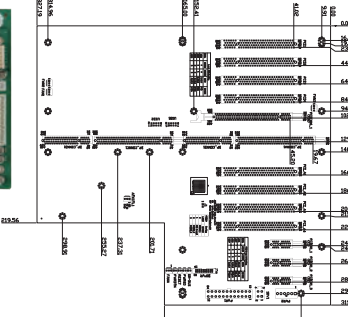
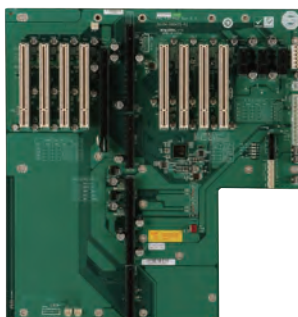
### Ordering Information

PXE-12S-R11	12-slot backplane with one PCIe x16 slot, four PCI-X slots and four PCI slots
RACK-3000G	4U 14-slot full-size rack-mount chassis
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis

## PXE-13S-R51

Mounting holes compatible with PCI-14S

(PCIe to PCI Bridge)



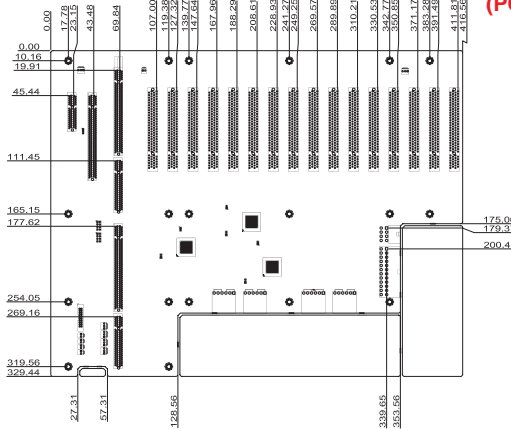
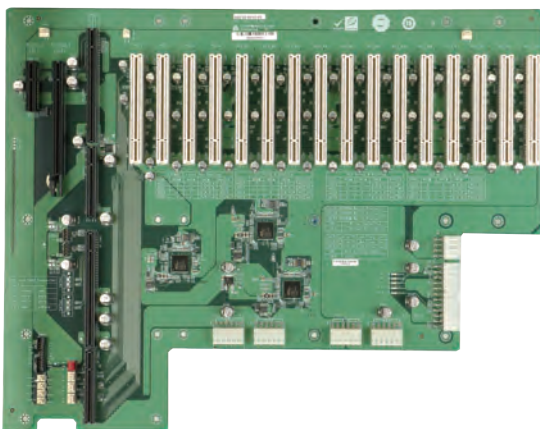
### Ordering Information

PXE-13S-R51	13-slot backplane with one PCIe x16 slot, three PCIe x1 slots and eight PCI slots
RACK-3000G	4U 14-slot full-size rack-mount chassis
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis

## PXE-19S2-R10

Mounting holes compatible with PCI-19S

(PCIe to PCI Bridge)



### Ordering Information

PXE-19S2-R10	19-slot backplane with one PCIe x16 slot, one PCIe x1 slot and sixteen PCI slots
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# Full-size PICMG 1.0 Selection Guide



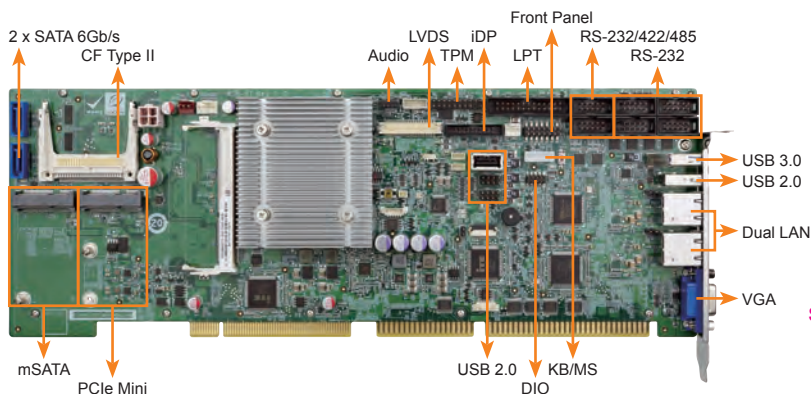
Model Name	WSB-BT <b>New</b>	WSB-H810	WSB-H610	WSB-PV-D4251/D5251
<b>CPU Socket</b>	On board	LGA 1150	LGA 1155	On board
<b>CPU Type</b>	Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W) Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.3W)	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Atom™ D525 1.8GHz Intel® Atom™ D425 1.8GHz
<b>Chipset</b>	N/A	Intel® H81	Intel® H61	Intel® ICH8M
<b>Memory</b>	One 204-pin 1066/1333 MHz single-channel DDR3L SDRAM unbuffered DIMM (system max. 8 GB)	Two 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 16 GB)	Two 240-pin 1333/1066 MHz dual-channel DDR3 & DDR3L (1.35V) DIMMs supported (system max. 16 GB)	Two 204-pin 800 MHz DDR3 SDRAM SO-DIMMs (system max. 4 GB)
<b>Display Interface</b>	Dual display supported 1 x VGA 1 x 18/24-bit dual-channel LVDS 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP	Dual display supported 1 x VGA 1 x iDP interface	1 x VGA 1 x DVI-D (via header to IO-KIT-001-R20 DVI-D/USB module) (optional)	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS
<b>Ethernet</b>	LAN1: Intel® I211-AT PCIe controller LAN2: Intel® I211-AT PCIe controller	LAN1: Intel® I217-V LAN PHY LAN2: Intel® I211-AT Ethernet controller	LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller	LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller
<b>I/O Interface</b>	1 x KB/MS 1 x LPT 2 x RS-232/422/485 4 x RS-232 1 x USB 3.0 6 x USB 2.0	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 2 x USB 3.0 4 x RS-232 8 x USB 2.0	1 x 6-pin wafer for KB & MS 1 x FDD 1 x LPT 1 x PS/2 KB/MS 1 x RS-422/485 2 x RS-232 7 x USB 2.0	1 x 6-pin wafer for PS/2 KB/MS 1 x LPT 1 x PS/2 KB & MS 4 x RS-232 7 x USB 2.0
<b>Storage Interface</b>	1 x mSATA (colay SATA2, supports SATA 3Gb/s signal only) 1 x CF Type II 2 x SATA 3Gb/s	1 x SATA 3Gb/s 2 x SATA 6Gb/s	4 x SATA 3Gb/s	1 x CF Type II 1 x FDD 1 x IDE 3 x SATA 3Gb/s
<b>Audio</b>	IEI AC-KIT-892HD-R10 7.1-channel HD Audio kit via the on-board 10-pin header connector			
<b>Digital I/O</b>	8-bit digital I/O			
<b>Power Consumption</b>	TBP	5V@3.41A, 12V@0.35A, Vcore_12V@7.52A, 3.3V@1.41A, 5VSB@0.12A (Intel® Core™ i7-4770K 3.90 GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)	5V@4.53A, 12V@0.19A, Vcore_12V@7.81A, 5VSB@0.18A (3.4GHz Intel® Core™ i7-2600K with two 2 GB 1333 MHz DDR3 memory)	5V@5.16A, 12@0.55A (Intel® Dual Core Atom™ D525 1.80GHz with two 2 GB 1066 MHz DDR3 memory)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset			
<b>Operation Environment</b>	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing		Temperature Range: -10°C ~ 60°C Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -20°C ~ 65°C (-4°F ~ 149°F) with free air for D425 CPU -20°C ~ 60°C (-4°F ~ 140°F) with free air for D525 CPU -20°C ~ 70°C (-4°F ~ 158°F) with force air for D425/D525 CPU Relative Humidity: 5% ~ 95%, non-condensing
<b>Expansion Slot</b>	1 x Full/Half-size PCIe Mini card slot (support mSATA)	1 x Full/Half-size PCIe Mini card slot (support mSATA)	1 x Full/Half-size PCIe Mini card slot	N/A
<b>CPU Cooler</b>	Heatsink	CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11 CF-1150SF-R10	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	Heatsink (optional CPU fan by 19FFD124010HB2A7-000001-RS)

# WSB-BT

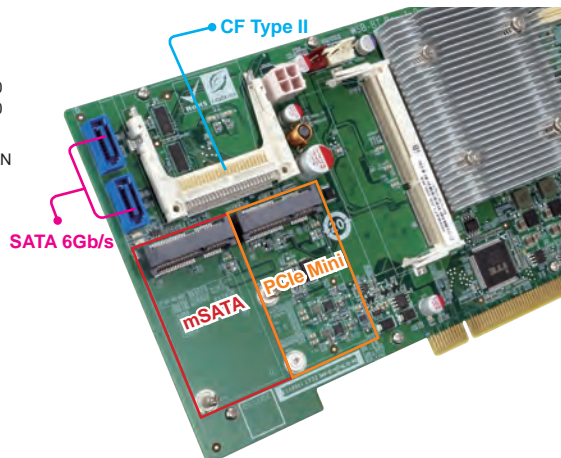
Full-size PICMG 1.0 CPU Card supports Intel® Celeron™ on-board SoC with VGA, iDP, Dual Intel® PCIe GbE, USB 3.0, PCIe Mini, SATA, mSATA, COM, CF, Audio and RoHS



**New**



## Multiple Choice for Storage



## Specifications

- ◆ CPU
  - Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.3W)
- ◆ Memory
  - One 204-pin 1333/1066MHz dual-channel DDR3L SDRAM unbuffered DIMM supports up to 8GB (J1900) or 4GB (N2807)
- ◆ BIOS
  - AMI UEFI BIOS
- ◆ Graphics
  - Intel® HD Graphics Gen 7 Engines with 4 execution units, supports DX11.1, OpenGL 4.2 and OpenCL1.2
- ◆ Display Output
  - 1 x VGA (up to 1920x1200@60Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 2560x1600@60Hz)
- ◆ Ethernet
  - LAN1: Intel® I211-AT PCIe controller
  - LAN2: Intel® I211-AT PCIe controller
- ◆ External I/O
  - 1 x USB 3.0
  - 1 x USB 2.0
- ◆ Internal I/O
  - 1 x CF Type II
  - 1 x KB/MS (1x6 pin)
  - 1 x LPT (2x13 pin)
  - 1 x mSATA (SATA 3Gb/s)
  - 1 x USB 2.0 (180° Type-A)
- ◆ Front Panel
  - 1 x Front panel (Power LED, HDD LED, Speaker, Power Button, Reset Button)
- ◆ Digital I/O
  - 8-bit digital I/O (2x5 pin)
- ◆ TPM
  - 1 x TPM (2x10 pin)
- ◆ Audio
  - 7.1 channel HD Audio supported by IEI AC-KIT-892HD kit
- ◆ SMBus
  - 1 x SMBus (1x4 pin)
- ◆ I²C
  - 1 x I²C (1x4 pin)
- ◆ Expansion
  - 1 x Full/Half-size PCIe Mini card slot
  - PCI and ISA signal via golden finger
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x3 pin)
- ◆ Power Supply
  - 5V/12V, AT/ATX support
- ◆ Operating Temperature
  - 20°C ~ 60°C
- ◆ Storage Temperature
  - 30°C ~ 70°C
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimensions
  - 338 mm x 122 mm
- ◆ Weight
  - GW: 1000g / NW: 260g
- ◆ CE/FCC compliant

## Features

- Full-size PICMG 1.0 with Intel® Celeron™ J1900 & N2807 on-board SoC
- Dual-channel 1066/1333MHz DDR3L SO-DIMM supports up to 8GB of memory
- Dual Gigabit Ethernet LAN controller
- SATA 6Gb/s, USB 3.0 5Gb/s, PCIe Mini, mSATA and CF card supported
- TPM v1.2 & 2.0 hardware security function supported by TPM module
- Stiffener bars

## Packing List

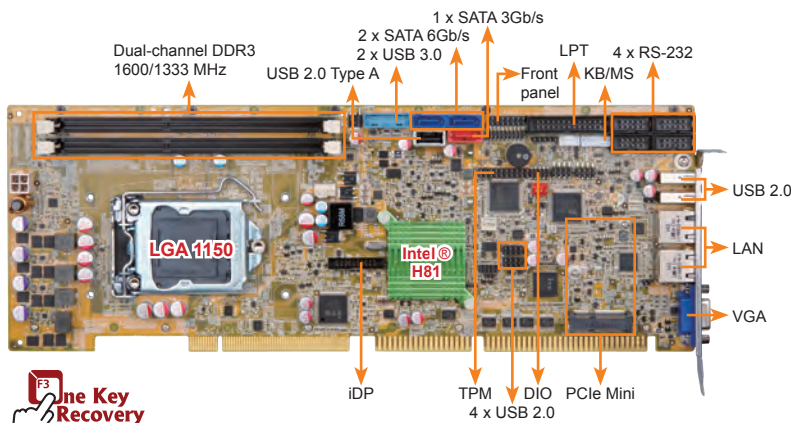
1 x WSB-BT single board computer
1 x Dual RS-232 cable with bracket
1 x SATA cable
1 x Utility CD
1 x QIG

## Ordering Information

Part No.	Description
WSB-BT-J1900-R10	Full-size PICMG 1.0 CPU card supports Intel® Celeron™ J1900 on-board SoC with VGA, iDP, Dual Intel® PCIe GbE, USB 3.0, PCIe Mini, SATA, mSATA, COM, CF, Audio and RoHS
WSB-BT-N2807-R10	Full-size PICMG 1.0 CPU card supports Intel® Celeron™ N2807 on-board SoC with VGA, iDP, Dual Intel® PCIe GbE, USB 3.0, PCIe Mini, SATA, mSATA, COM, CF, Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
AC-KIT-892HD-R10	7.1 channel HD Audio kit with Realtek ALC892 support dual audio stream
TPM-IN01-R20	20-pin Infineon TPM1.2 module, software management tool, firmware v3.17
TPM-IN02-R20	20-pin Infineon TPM2.0 module, software management tool, firmware v5.5

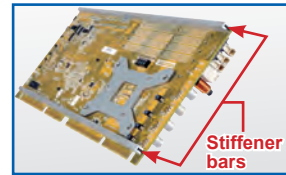
# WSB-H810

Full-size PICMG 1.0 CPU Card supports LGA 1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU with Intel® H81, DDR3, VGA, iDP, Dual Intel® GbE, USB 3.0, SATA 6Gb/s, PCIe Mini, mSATA, RS-232, HD Audio and RoHS



## Specifications

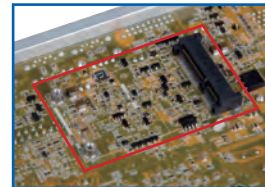
- ◆ CPU  
4th generation LGA 1150 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- ◆ Chipset  
Intel® H81
- ◆ Memory  
Twp 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs support up to 16 GB
- ◆ BIOS  
UEFI
- ◆ Graphics Engine  
Intel® HD Graphics Gen 7.5 supports DX11.1 and OpenCL 1.2, OpenGL 4.2  
Full MPEG2, VC1, AVC Decode
- ◆ Display Output  
Dual independent display  
1 x VGA (up to 1920x1200@60 Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60 Hz)
- ◆ Ethernet  
LAN1: Intel® I217-LM Ethernet controller  
LAN2: Intel® I211-AT Ethernet controller
- ◆ Audio  
Supports 7.1-channel HD Audio by IEI AC-KIT-892HD-R10 kit
- ◆ External I/O Interface  
2 x USB 2.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin)                                  2 x SATA 6Gb/s  
1 x LPT (2x13 pin)                                     2 x USB 3.0 (2x10 pin)  
1 x RS-422/485 (1x4 pin, P=2.0)                 4 x RS-232 (2x5 pin, P=2.54)  
1 x USB 2.0 (180° Type-A)                         4 x USB 2.0 (2x4 pin, P=2.54)  
1 x SATA 3Gb/s (AHCI supported, no RAID)
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED  
2 x LAN LED (1x2 pin)
- ◆ Digital I/O  
8-bit digital I/O (2x5 pin)
- ◆ TPM  
1 x TPM (2x10 pin)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C  
1 x I<sup>2</sup>C (1x4 pin)
- ◆ Infrared Interface  
1 x Infrared Interface (1x5 pin)
- ◆ Expansion  
1 x Full-size PCIe Mini card slot (support mSATA)  
PCI and ISA signal via golden finger
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
1 x System smart fan (1x3 pin)
- ◆ Power Supply: 5V/12V, AT/ATX support
- ◆ Power Consumption  
5V@3.4A, 12V@0.36A, Vcore\_12V@7.48A, 3.3V@1.42A, 5VSB@0.13A  
(Intel® Core™ i7-4770K 3.90 GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 338 mm x 122 mm
- ◆ Weight: GW: 1000g / NW: 260g
- ◆ CE/FCC compliant



## Enhanced stability

Strengthen the mechanism  
Prevent PCB bending

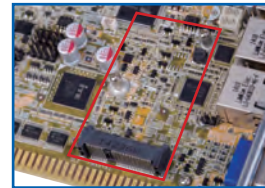
## PCIe Mini & mSATA connector



Support PCIe Mini & mSATA



◀ mSATA



Top-side PCIe Mini connector supports PCIe signal for half-size or full-size PCIe device. Solder-side PCIe Mini connector supports SATA 3Gb/s signal for full-size mSATA.



◀ PCIe Mini

## Features

- Full-size PICMG 1.0 with LGA 1150 Intel® CPU
- Two 1600/1333 MHz DDR3 SDRAM DIMM slots support up to 16 GB of memory
- Dual Intel® Gigabit Ethernet LAN controller
- SATA 6Gb/s and USB 3.0 supported
- IEI One Key Recovery solution for rapid OS backup and recovery
- TPM v1.2 hardware security function supported by TPM module
- Stiffener bars
- IEI jumper-less function

## Packing List

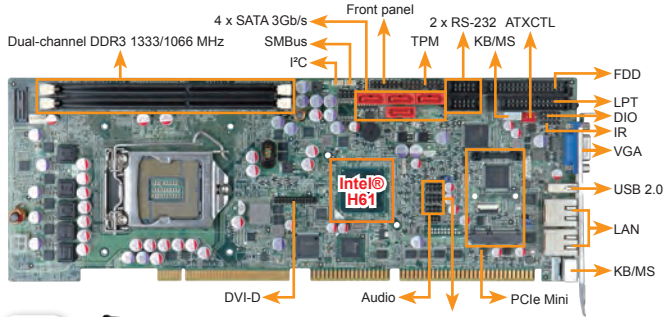
1 x WSB-H810 single board computer	
2 x SATA cable	1 x QIG
1 x One Key Recovery CD	1 x Utility CD

## Ordering Information

Part No.	Description
WSB-H810-R10	Full-size PICMG 1.0 CPU card supports LGA 1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU with Intel® H81, DDR3, VGA, iDP, dual Intel® GbE, USB 3.0, SATA 6Gb/s, PCIe Mini, mSATA, RS-232, HD Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-100-RS	Dual port USB 2.0 cable with bracket, 300mm, P=2.54
19800-010500-200-RS	USB 3.0 cable with bracket, 450mm
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32200-074800-RS	RS-422/485 cable, 200mm, P=2.0
32205-000702-100-RS	RS-232 cable, 230mm, P=2.54
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams
CF-1150SB-R11	Special cooler kit for LGA 1150, high-performance compatible, 65W
CF-1150SC-R20	Special cooler kit for LGA 1150, 1U chassis compatible, 65W
CF-1150SE-R11	Special cooler kit for LGA 1150, high-performance compatible, 95W
CF-1150SF-R10	Special cooler kit for LGA 1150, 1U chassis compatible, 54W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# WSB-H610-R11

Full-size PICMG 1.0 CPU Card supports 32nm LGA 1155 Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU with Intel® H61, DDR3, VGA, DVI-D, Dual Realtek PCIe GbE, USB 2.0, SATA 3Gb/s, COM, HD Audio and RoHS



## Features

- Full-size PICMG 1.0 CPU card with LGA 1155 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Two DDR3 & DDR3L 1333/1066 MHz DIMM SDRAM support up to 16 GB
- Embedded controller on board supports infrared and PECEI 2.0 technologies
- Dual Realtek PCIe GbE and LAN1 with ASF 2.0 support
- TPM V1.2 hardware security function supported by TPM module
- IEI One Key Recovery solution allows you to create raidp OS backup and recovery

## Specifications

- ◆ CPU: LGA 1155 socket supports Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor
- ◆ Chipset: Intel® H61
- ◆ Memory: Two 240-pin 1333/1066 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs support up to 16 GB
- ◆ BIOS: UEFI
- ◆ Graphics Engine Intel® HD Graphics Gen 6 supports DX10.1 and OpenGL 3.0 Full MPEG2, VC1, AVC Decode
- ◆ Display Output 1 x VGA (up to 2048x1536@75Hz) 1 x DVI-D (up to 1920x1200@60Hz) (via header to IO-KIT-001-R20 DVI-D/USB module) (optional)
- ◆ Ethernet LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller
- ◆ External I/O Interface 1 x KB/MS 1 x USB 2.0
- ◆ Internal I/O Interface 1 x FDD (2x17 pin) 1 x KB/MS (1x6 pin) 1 x LPT (2x13 pin) 1 x RS-422/485 (1x4 pin, P=2.0) 2 x RS-232 (2x5pin, P=2.54) 4 x SATA 3Gb/s (no AHCI & RAID support) 6 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Audio: Supports 7.1-channel HD Audio by IEI AC-KIT-892HD-R10 kit
- ◆ Front Panel 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I°C: 1 x I°C (1x4 pin)
- ◆ Expansion PCI signal and ISA signal via golden finger
- ◆ Watchdog Timer Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector 1 x CPU smart fan (1x4 pin) 1 x System smart fan (1x4 pin)
- ◆ Power Supply: 5V/12V, AT/ATX support
- ◆ Power Consumption 5V@4.53A, 12V@0.19A, Vcore\_12V@7.81A, 5VSB@0.18A (3.4GHz Intel® Core™ i7-2600K with two 2 GB 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity 5% ~ 95%, non-condensing
- ◆ Dimensions: 338 mm x 122 mm
- ◆ Weight: GW: 1000g / NW: 260g
- ◆ CE/FCC compliant

## Packing List

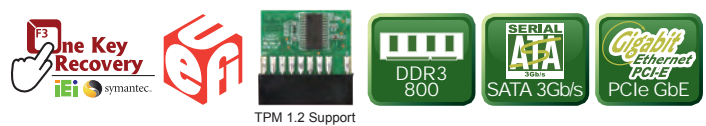
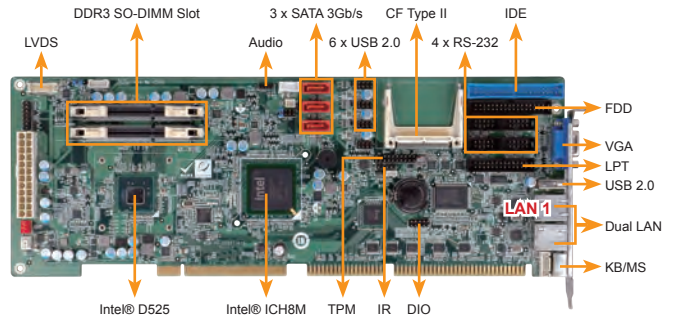
1 x WSB-H610 single board computer	
1 x Dual RS-232 cable with bracket	1 x One Key Recovery CD
1 x KB/MS Y cable	1 x Mini jumper pack
1 x USB cable	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
WSB-H610-R11	Full-size PICMG 1.0 CPU card supports 32nm LGA 1155 Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU with Intel® H61, DDR3, VGA, dual Realtek PCIe GbE, USB 2.0, SATA 3Gb/s, COM, HD Audio and RoHS
WSB-H610-DVI-R11	Full-size PICMG 1.0 CPU card supports 32nm LGA 1155 Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU with Intel® H61, DDR3, VGA, DVI-D, dual Realtek PCIe GbE, USB 2.0, SATA 3Gb/s, COM, HD Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
32006-000300-100-RS	PS/2 KB/MS Y-cable without bracket, 140mm/120mm
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32200-000017-RS	FDD cable, 520mm, P=2.54
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams
CF-115XA-R10	High performance LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High performance LGA 1155/LGA 1156 cooler kit, 95W
SAIDE-KIT01-R10	SATA to IDE/CF converter board
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# WSB-PV-D4251/D5251

Full-size PICMG 1.0 CPU Card with Intel® Atom™ D425/D525, DDR3, VGA, LVDS, Dual PCIe GbE, SATA 3Gb/s, COM, USB 2.0, Audio and RoHS



## Features

- PICMG 1.0 form factor and RoHS compliant
- Supports Intel® Atom™ D425/D525 1.80GHz processor
- Supports 800 MHz DDR3 SDRAM SO-DIMM up to 4 GB
- Dual PCIe Ethernet, three SATA 3Gb/s, and four RS-232 serial port connectors
- VGA and 18-bit single-channel LVDS for dual independent display support
- TPM V1.2 hardware security function supported by TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU Intel® Atom™ D525 dual-core processor (1.80GHz, dual-core, 1MB cache) Intel® Atom™ D425 single-core processor (1.80GHz, single-core, 512KB cache)
- ◆ Chipset: ICH8M
- ◆ BIOS: UEFI BIOS
- ◆ System Memory One 240-pin 800 MHz dual-channel DDR3 SDRAM unbuffered DIMMs support up to 4 GB
- ◆ Graphics Engine GMA 3150, Gen3.5 DX9, 400 MHz
- ◆ Display output 1 x VGA (up to 2048x1536@60Hz) 1 x 18-bit single channel LVDS (up to 1366x768@60Hz)
- ◆ Ethernet LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Infrared Interface: 1 x Infrared Interface (1x5 pin)
- ◆ External I/O Interface 1 x KB/MS 1 x USB 2.0
- ◆ Internal I/O Interface 1 x FDD (2x17 pin) 1 x IDE (2x20 pin, P=2.54) 1 x LPT (2x13 pin) 1 x KB (1x5 pin, P=2.5) 4 x RS-232 (2x5pin, P=2.54) 4 x SATA 3Gb/s 6 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Audio Supports 7.1-channel HD Audio by IEI AC-KIT-892HD-R10 kit
- ◆ Watchdog Timer Software programmable supports 1~255 sec. system reset
- ◆ Power Supply: AT/ATX power
- ◆ Power Consumption 5V@5.16A, 12@0.55A (Intel® dual core Atom™ D525 1.80GHz with two 2 GB 1066 MHz DDR3 memory)
- ◆ Operating Temperature -20°C ~ 60°C with free air, -20°C ~ 70°C with force air for D525 processor -20°C ~ 65°C with free air, -20°C ~ 70°C with force air for D425 processor
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 338 mm x 122 mm
- ◆ Weight: GW: 1100g
- ◆ CE/FCC compliant

## Packing List

1 x WSB-PV-D4251/D5251 single board computer	1 x Mini jumper pack
1 x Dual RS-232 cable	1 x One Key Recovery CD
1 x USB cable	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
WSB-PV-D5251-R10	Full-size PICMG 1.0 CPU card with Intel® dual-core Atom™ D525 1.80GHz/1MB L2 cache, DDR3, VGA, LVDS, dual PCIe GbE, SATA 3Gb/s, COM, USB 2.0, audio, RoHS
WSB-PV-D4251-R10	Full-size PICMG 1.0 CPU card with Intel® single-core Atom™ D425 1.80GHz/512KB L2 cache, DDR3, VGA, LVDS, dual PCIe GbE, SATA 3Gb/s, COM, USB 2.0, audio, RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000100-200-RS	Quad-port USB cable, 300mm, P=2.54
19FFDD124010HB2A7-000001-RS	CPU fan
32006-000300-100-RS	PS/2 KB/MS Y-cable without bracket, 140mm/120mm
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32200-000017-RS	FDD cable, 520mm, P=2.54
32225-002000-200-RS	ATA 66 flat cable, 457mm, P=2.54
34000-000510-RS	30mm higher heatsink
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

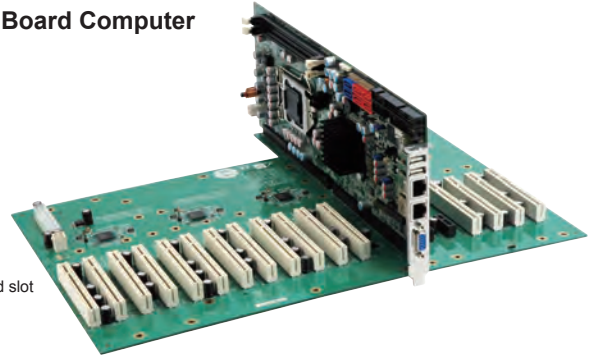


# PCI/PX Backplane

Supports PCI and ISA slot on one backplane! For PICMG 1.0 Single Board Computer

The advantages of using the PICMG 1.0 card are numerous:

1. Supports standard PICMG version 1.0 slot on the PCI/PX series passive backplane
2. Compatible with all available PCI/ISA cards. PCI/PX backplane is also integrated with the ROCKY series card slot















## Selection Guide





 PAC series wall-mount chassis





 4U/5U rack-mount chassis

 1U/2U rack-mount chassis

						
<b>Model</b>	PCI-4S-RS-R40	PCI-5S-RS-R40	PCI-5S2A-RS-R40 PCI-5S2-RS-R40	PCI-6S-RS-R40	PCI-7S-RS-R41	PCI-8S-RS-R40
<b>Total Slot</b>	4	5	5	6	7	8
<b>PCI Slot</b>	3	3	4	4	4	4
<b>ISA Slot</b>	1	2	1	2	3	4
<b>PSU Type</b>	ATX/AT	ATX/AT	ATX/AT	ATX/AT	ATX/AT	ATX/AT
<b>Chassis</b>	N/A	PAC-1000G	RACK-500G	PAC-106G PAC-1000G	PAC-1700G	N/A

						
<b>Model</b>	PCI-10S-RS-R41	PCI-10S2-RS-R41	PX-10S-RS-R50	PCI-12S-RS-R40	PCI-13SD-RS-R40	PCI-14S-RS-R40
<b>Total Slot</b>	10	10	10	12	13	14
<b>PCI Slot</b>	4	4	7	4	3+4	4
<b>ISA Slot</b>	5	5	3	7	3+3	9
<b>PSU Type</b>	ATX/AT	ATX/AT	ATX/AT	ATX/AT	ATX/AT	ATX/AT
<b>Chassis</b>	PAC-125G	N/A	PAC-125G	RACK-3000G	RACK-305G RACK-360G RACK-3000G	N/A
<b>Note</b>					For Dual System	

				
<b>Model</b>	PCI-14S2-RS-R40	PCI-14S3-RS-R40	PX-14S3-RS-R50	PX-14S5-RS-R50
<b>Total Slot</b>	14	14	14	14
<b>PCI Slot</b>	4	4	12	7
<b>ISA Slot</b>	8	9	2	6
<b>PSU Type</b>	ATX/AT	ATX/AT	ATX/AT	ATX/AT
<b>Chassis</b>	RACK-305G RACK-360G RACK-3000G	RACK-305G RACK-360G RACK-3000G	RACK-305G RACK-360G RACK-3000G	RACK-305G RACK-360G RACK-3000G

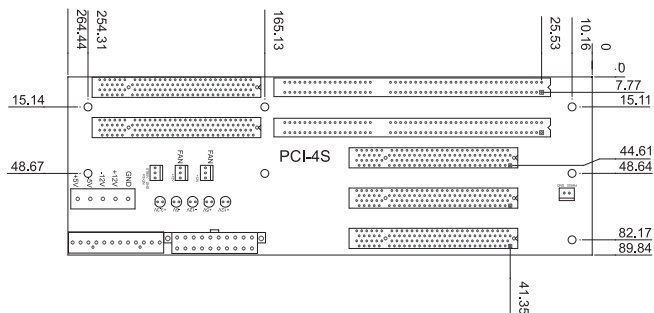
				
<b>Model</b>	PCI-2SD2-RS-R41	PCI-5SD6-RS-R40	PCI-5SDA-RS-R40	PCI-6SD-RS-R40/PCI-6SR-RS-R30
<b>Total Slot</b>	2	6	6	6
<b>PCI Slot</b>	R2	L2+R2	L2+R2	L1+R1
<b>ISA Slot</b>				L1+R1
<b>PSU Type</b>	ATX/AT	ATX	ATX/AT	ATX
<b>Chassis</b>	RACK-1150G	RACK-220G	RACK-220G	RACK-220G

## PCI-4S-RS-R40

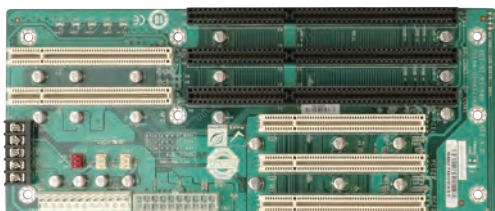


### Ordering Information

PCI-4S-RS-R40 4-slot backplane with three PCI slots and one ISA slot



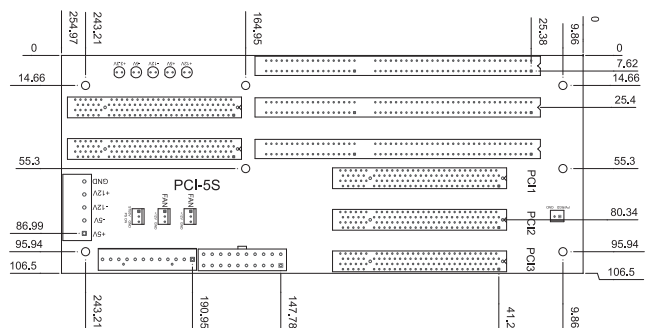
## PCI-5S-RS-R40



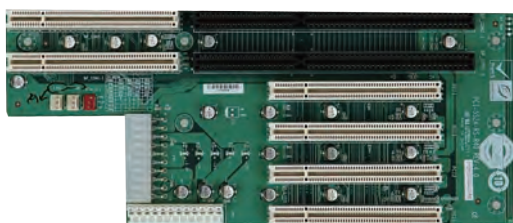
### Ordering Information

PCI-5S-RS-R40 5-slot backplane with three PCI slots and two ISA slots

PAC-1000G 6-slot full-size compact chassis



## PCI-5S2-RS-R40/PCI-5S2A-RS-R40

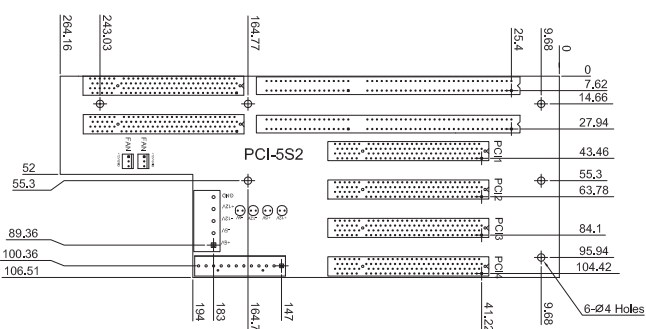


### Ordering Information

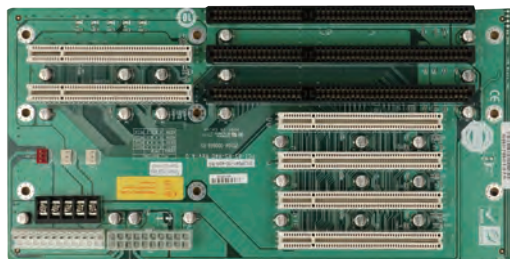
PCI-5S2-RS-R40 5-slot AT power backplane with four PCI slots and one ISA slot

PCI-5S2A-RS-R40 5-slot ATX power backplane with four PCI slots and one ISA slot

RACK-500G 5-slot full-size compact chassis



## PCI-6S-RS-R40

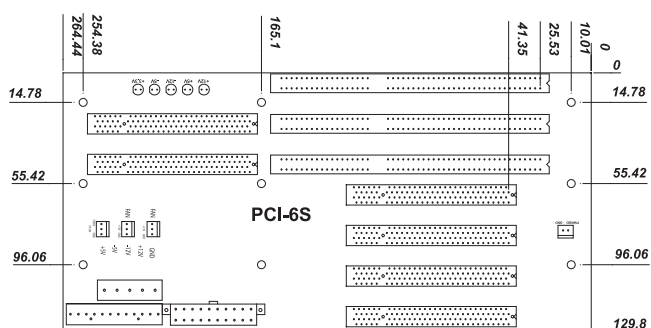


### Ordering Information

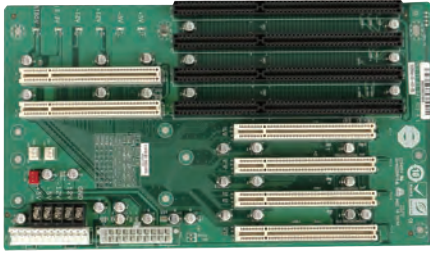
PCI-6S-RS-R40 6-slot backplane with four PCI slots and two ISA slots

PAC-106G 6-slot full-size compact chassis

PAC-1000G 6-slot full-size compact chassis

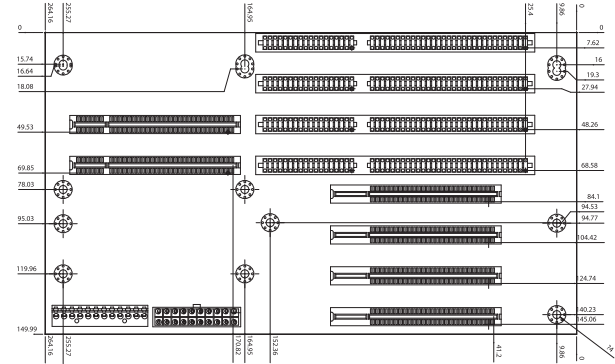


## PCI-7S-RS-R41

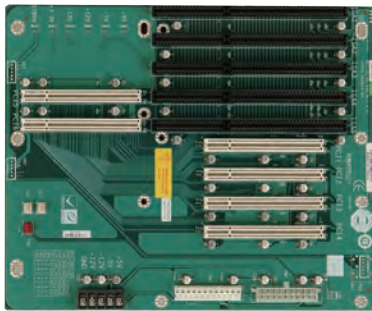


### Ordering Information

PCI-7S-RS-R41	7-slot backplane with four PCI slots and three ISA slots
PAC-1700G	7-slot full-size compact chassis

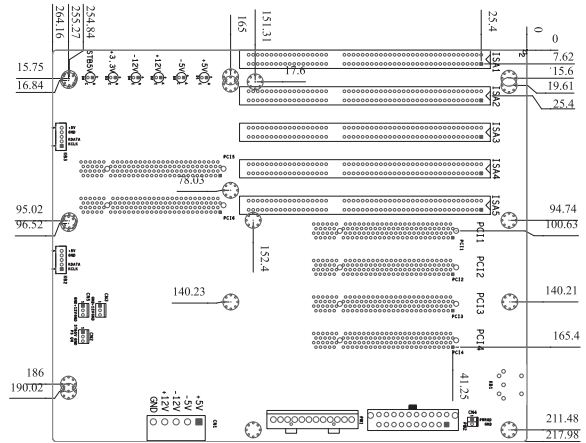


## PCI-8S-RS-R40

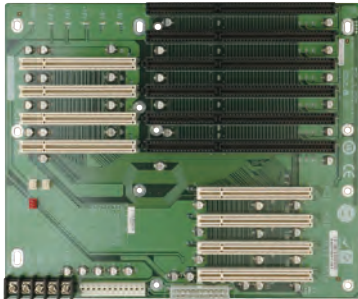


### Ordering Information

PCI-8S-RS-R40	8-slot backplane with four PCI slots and four ISA slots
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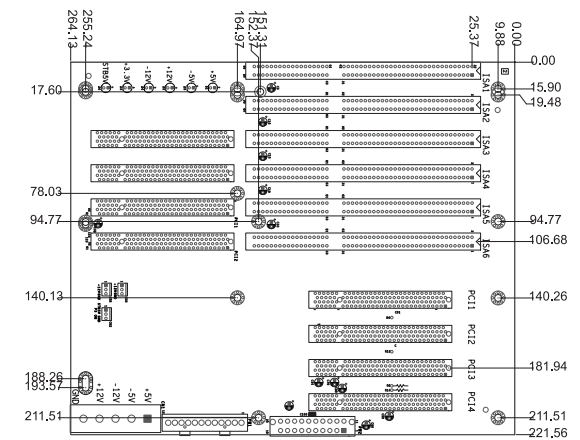


## PCI-10S-RS-R41

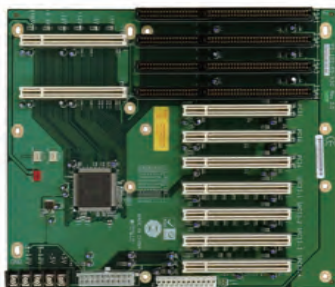


### Ordering Information

PCI-10S-RS-R41	10-slot backplane with four PCI slots and five ISA slots
PAC-125G	10-slot full-size compact chassis

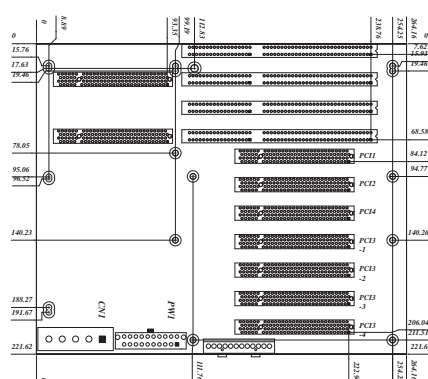


## PX-10S-RS-R50

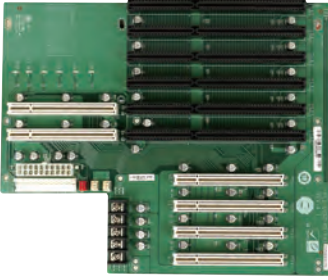


### Ordering Information

PX-10S-RS-R50	10-slot backplane with seven PCI slots and three ISA slots
PAC-125G	10-slot full-size compact chassis

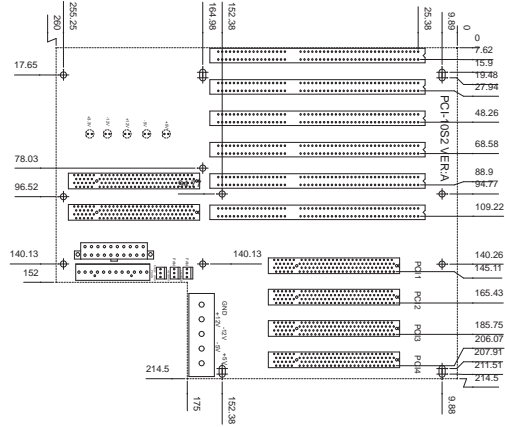


## PCI-10S2-RS-R41

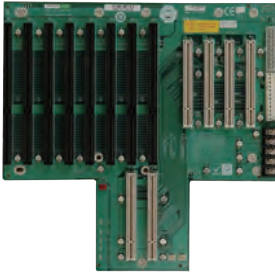


### Ordering Information

PCI-10S2-RS-R41 10-slot backplane with four PCI slots and five ISA slots

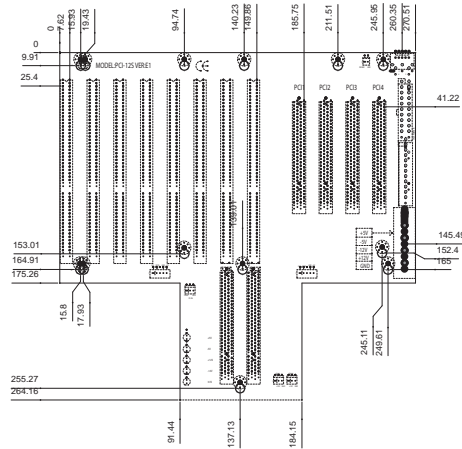


## PCI-12S-RS-R40

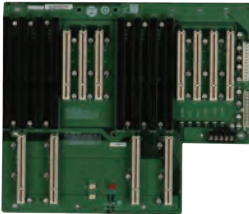


### Ordering Information

PCI-12S-RS-R40 12-slot backplane with four PCI slots and seven ISA slots  
 RACK-3000G 4U 14-slot full-size rack-mount chassis

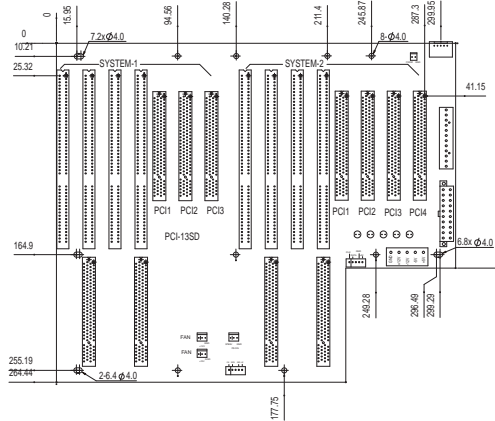


## PCI-13SD-RS-R40 Dual System

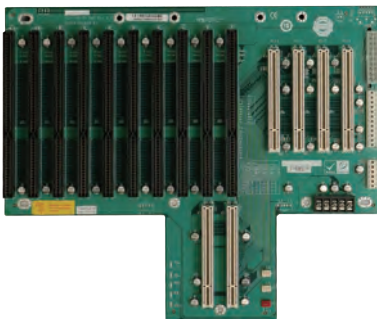


### Ordering Information

PCI-13SD-RS-R40 13-slot dual-system backplane with system 1 having three PCI slots and three ISA slots and system 2 having four PCI slots and three ISA slots  
 RACK-305G 4U 14-slot full-size rack-mount chassis  
 RACK-360G 4U 14-slot full-size rack-mount chassis  
 RACK-3000G 4U 14-slot full-size rack-mount chassis

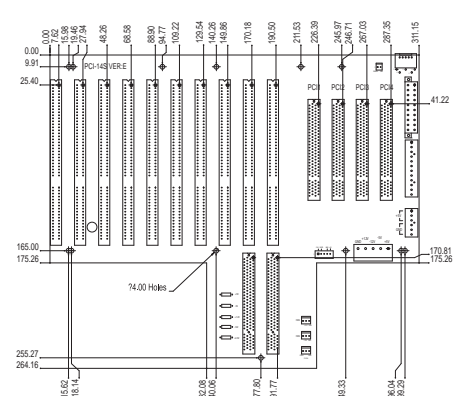


## PCI-14S-RS-R40

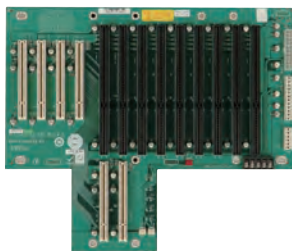


### Ordering Information

PCI-14S-RS-R40 14-slot backplane with four PCI slots and nine ISA slots

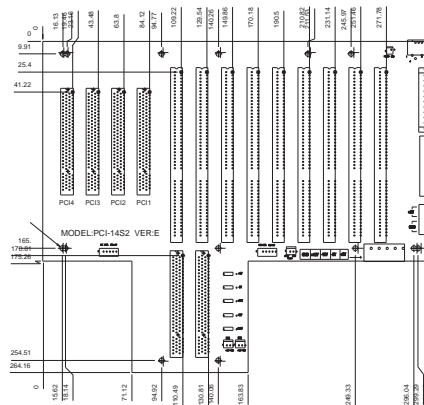


## PCI-14S2-RS-R40

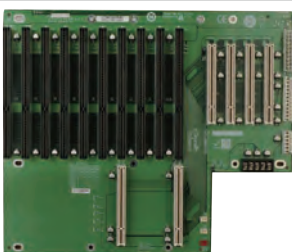


### Ordering Information

PCI-14S2-RS-R40	14-slot backplane with four PCI slots and eight ISA slots
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis
RACK-3000G	4U 14-slot full-size rack-mount chassis

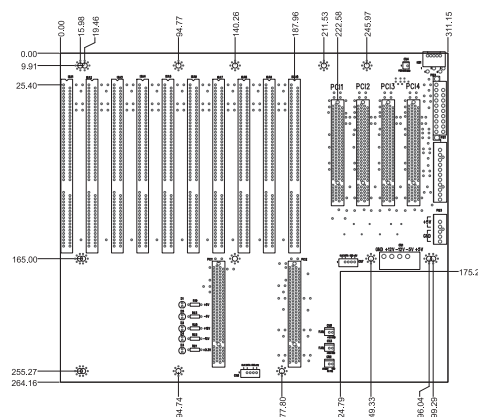


## PCI-14S3-RS-R40

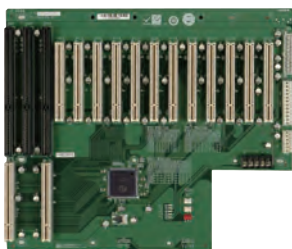


### Ordering Information

PCI-14S3-RS-R40	14-slot backplane with four PCI slots and nine ISA slots
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis
RACK-3000G	4U 14-slot full-size rack-mount chassis

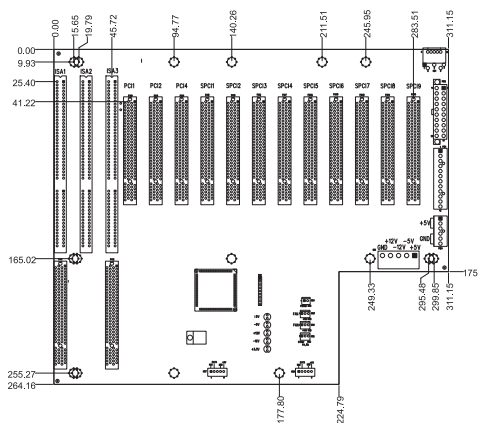


## PX-14S3-RS-R50

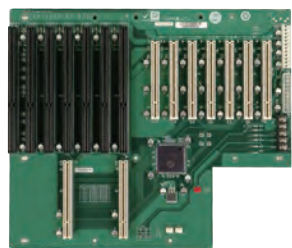


### Ordering Information

PX-14S3-RS-R50	14-slot backplane with twelve PCI slots and two ISA slots
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis
RACK-3000G	4U 14-slot full-size rack-mount chassis

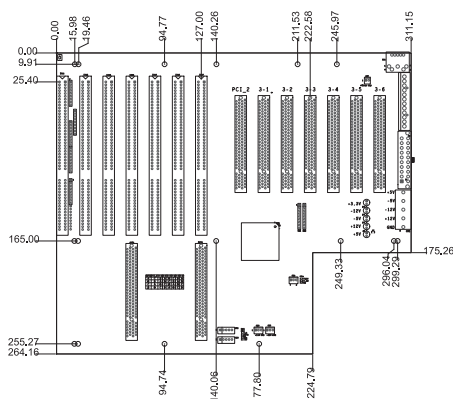


## PX-14S5-RS-R50



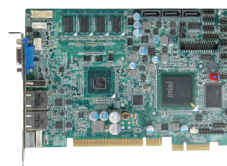
### Ordering Information

PX-14S5-RS-R50	14-slot backplane with seven PCI slots and six ISA slots
RACK-305G	4U 14-slot full-size rack-mount chassis
RACK-360G	4U 14-slot full-size rack-mount chassis
RACK-3000G	4U 14-slot full-size rack-mount chassis



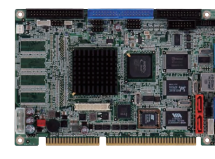


# Half-size PICOe, ISA Selection Guide



Model Name	PICOe-B650	PICOe-HM650	PICOe-PV-D4251/N4551/D5251-R11
<b>CPU Socket</b>	LGA 1155	Socket G2	On board
<b>CPU Type</b>	Socket LGA 1155 Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU	Socket 988B Intel® Mobile Core™ i7/i5/i3 or Celeron® CPU	Intel® Atom™ D525 1.80GHz Intel® Atom™ D425 1.80GHz Intel® Atom™ N455 1.66GHz
<b>Chipset</b>	Intel® B65	Intel® HM65	Intel® ICH8M
<b>Memory</b>	One 204-pin 1333/1066 MHz DDR3/DDR3L (1.35V) SO-DIMM supported (system max. 8 GB)	Two 204-pin 1333/1066 MHz dual-channel DDR3 SO-DIMMs supported (system max. 16 GB)	One 204-pin 800 MHz DDR3 SDRAM SO-DIMM (system max. 4 GB for D525/D425, 2 GB for N455) (compatible with 128MB*8 SDRAM) On-board 1 GB 800 MHz DDR3 memory
<b>Display Interface</b>	1 x VGA	Dual display supported 1 x VGA 1 x 18/24-bit dual-channel LVDS	Dual display supported 1 x VGA 1 x 18/24-bit single-channel LVDS
<b>Ethernet</b>	LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller	LAN1: Realtek RTL8111E GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E GbE controller	LAN1: Realtek RTL8111E GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E GbE controller
<b>I/O Interface</b>	1 x 6-pin wafer for KB & MS 2 x RS-232 4 x USB 2.0	1 x 6-pin wafer for KB & MS 1 x LPT 1 x RS-422/485 2 x RS-232 8 x USB 2.0	1 x 6-pin wafer for PS/2 KB & MS 1 x LPT 1 x PS/2 KB & MS 1 x RS-232/422/485 3 x RS-232 7 x USB 2.0
<b>Storage Interface</b>	1 x SATA 3Gb/s 1 x SATA 6Gb/s	2 x SATA 3Gb/s 2 x SATA 6Gb/s	1 x CF Type II 3 x SATA 3Gb/s
<b>Audio</b>	IEI AC-KIT-892HD-R10 7.1-channel HD Audio kit via the on-board 10-pin header connector		
<b>Digital I/O</b>	8-bit digital I/O		
<b>Power Consumption</b>	5V@3.17A, 12V@0.46A, Vcore_12V@7.26A, 5VSB@0.18A (3.4GHz Intel® Core™ i7-2600K with two 2 GB 1333 MHz DDR3 memory)	5V@3.99A, 12V@0.43A, Vcore_12V@3.80A, 5VSB@0.06A (2.70GHz Intel® Core™ i7-2620M with two 2 GB 1333 MHz DDR3 memory)	5V@3.38A, 12V@0.54A (Intel® dual-core Atom™ D525 1.80GHz CPU with 1 GB 800 MHz DDR3 on-board memory) 5V@3.28A, 12V@0.43A (Intel® single-core Atom™ D425 1.80GHz CPU with 1 GB 800 MHz DDR3 on-board memory) 5V@3.13A, 12V@0.32A (Intel® single-core Atom™ N455 1.66GHz CPU with 1 GB 800 MHz DDR3 on-board memory)
<b>Watchdog Timer</b>	Software programmable supports 1~255 sec. system reset		
<b>Operation Environment</b>	Temperature Range: -10°C ~ 60°C Relative Humidity: 5% ~ 95%, non-condensing		Temperature Range: -20°C ~ 65°C (-4°F ~ 149°F) with free air for D425 CPU -20°C ~ 60°C (-4°F ~ 140°F) with free air for D525 CPU -20°C ~ 70°C (-4°F ~ 158°F) with free air for D525 CPU -20°C ~ 70°C (-4°F ~ 158°F) with force air for D425/D525 CPU -20°C ~ 75°C (-4°F ~ 167°F) with force air for N455 CPU Relative Humidity: 5% ~ 95%, non-condensing
<b>Expansion Slot</b>	NA	NA	NA
<b>CPU Cooler</b>	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	CF-989A-RS-R12	Heatsink (fanless) (optional CPU fan by 19FFD124010HB2A7-000001-RS)

# Half-size PICOe, ISA Selection Guide



Model Name	PCISA-BT	PCISA-PV-D5251	IOWA-LX
<b>CPU Socket</b>	On board	On board	On board
<b>CPU Type</b>	Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W) Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)	Intel® Atom™ D525 1.80GHz	AMD Geode™ LX600
<b>Chipset</b>	N/A	Intel® ICH8M	AMD Geode™ CS5536
<b>Memory</b>	One 204-pin 1066/1333 MHz single-channel DDR3L SDRAM unbuffered DIMM (system max. 8 GB)	One 204-pin 800 MHz DDR3 SDRAM SO-DIMM (system max. 4 GB)	On-board 128MB 200/266 MHz DDR SDRAM One 200-pin 200/266 MHz DDR SO-DIMM (system max. 512MB)
<b>Display Interface</b>	Dual display supported 1 x VGA 1 x iDP interface	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS	1 x VGA
<b>Ethernet</b>	LAN1: Intel® I211-AT PCIe controller LAN2: Intel® I211-AT PCIe controller	LAN1: Realtek RT8111E with ASF 2.0 support LAN2: Realtek RT8111E	10/100Mbps Realtek RTL8100C Ethernet controller
<b>I/O Interface</b>	1 x 6-pin wafer for KB/MS 1 x LPT 1 x RS-422/485 2 x RS-232 2 x USB 3.0 8 x USB 2.0	1 x Infrared interface 1 x LPT 1 x PS/2 KB & MS 1 x RS-232/422/485 3 x RS-232 6 x USB 2.0	1 x Infrared interface 1 x LPT 1 x PS/2 KB/MS 1 x RS-422/485 2 x RS-232 4 x USB 2.0 (by pin header)
<b>Storage Interface</b>	1 x mSATA (colay SATA2, supports SATA 3Gb/s signal only) 2 x SATA 3Gb/s	1 x CF Type II 1 x FDD 1 x IDE 3 x SATA 3Gb/s	1 x CF Type II 1 x FDD 1 x IDE 2 x SATA (RAID 0, 1)
<b>Audio</b>	IEI AC-KIT-892HD-R10 7.1-channel HD Audio kit via the on-board 10-pin header connector		Realtek ALC203 with AC'97 codec
<b>Digital I/O</b>	8-bit digital I/O		
<b>Power Consumption</b>	5V@1.55A, 12V@0.74A (Intel® Atom™ E3845 1.91GHz CPU, one 8 GB 1600 MHz memory)	5V@3.36A, 12V@0.57A (Intel® dual-core Atom™ D525 1.80GHz with 1 GB 1066 MHz DDR3 memory)	5V@1.51A, 5VSb@0.09A (On-board AMD Geode™ LX600 CPU 366 MHz with on-board 128MB 200 MHz DDR memory and 512MB 333 MHz DDR memory)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset		
<b>Operation Environment</b>	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) with free air for D525 CPU -20°C ~ 70°C (-4°F ~ 158°F) with free air for D525 CPU -20°C ~ 70°C (-4°F ~ 158°F) with force air for D525 CPU Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: 0°C ~ 60°C (32°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing
<b>Expansion Slot</b>	1 x PCIe Mini slot	NA	NA
<b>CPU Cooler</b>	NA	Heatsink (fanless) (optional CPU fan by 19FFD124010HB2A7-000001-RS)	Heatsink (fanless)



# PIC0e CPU Card - The Future of Half-sized CPU Cards

ISA → PCISA → PCI → PIC0e

1990~

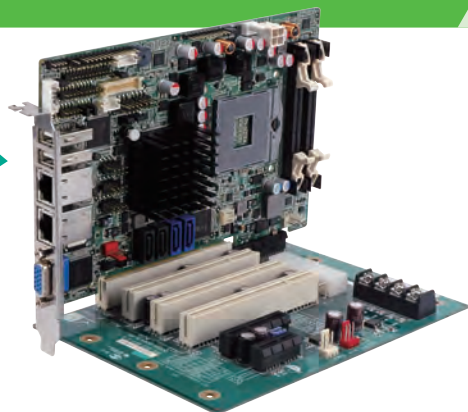
ISA

1996~

PCISA  
ISA + PCI

2016~

PIC0e  
PCI + PCIe x4



PIC0e-HM650

IEI Patent No CN.: 200986704Y  
From SIPO (State Intellectual Property Office of The P.R.C)

## The advantages of PIC0e

PIC0e = PCI + PCIe x4

- PCIe has excellent I/O bandwidth and performance
- Backwards compatible with half-sized CPU cards
- Backplane design for half-size PCIe CPU cards is easy

## The benefits of PIC0e

- Same dimensions, backwards compatible but half the size of PCI SBC
- Higher performance as PCI only solution for the same price
- More configuration options for the same price

## The advantages of PIC0e

### Increasing I/O bandwidth with leading technology

Specifications	ISA	PCI 33	PCIe x4
Support	(16 MB/s)	(132 MB/s)	(1250 MB/s)

### Backwards compatible with half-size PCI backplane and chassis

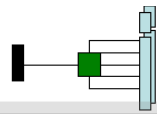
1. Dimensions: 185 mm x 122 mm  
= All half-size CPU cards  
Share the same chassis & I/O design
2. PCI pin definition same as PICMG 1.0 PCI  
= All half-size PCI CPU cards

Share all half-size PCI backplanes

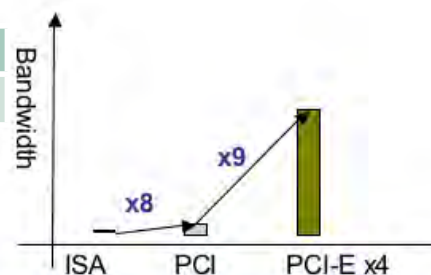
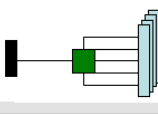
### Quick design backplane

1. Four PCI slots and one PCIe x4 or four PCIe x1 lanes  
More configuration options on the backplane with a PCI and PCIe slot
2. PCIe switches and bridges such as PLX or TI solutions

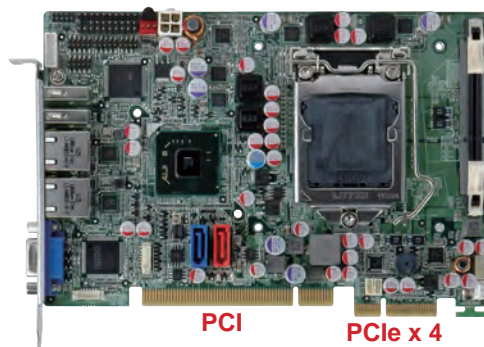
PCIe to PCI-X  
PCIe Bridge PCI-X



PCIe to PCI  
PCIe Bridge PCI



900% bandwidth from ISA to PCIe speed



PCI PCIe x 4

PIC0e-B650

## IEI PIC0e backplane solutions

Complete PIC0e backplane solutions fully support all kinds of chassis and power modes. PIC0e is the easiest way to upgrade current systems from slow ISA+PCI architecture to the latest high performance PCIe+PCI solution.

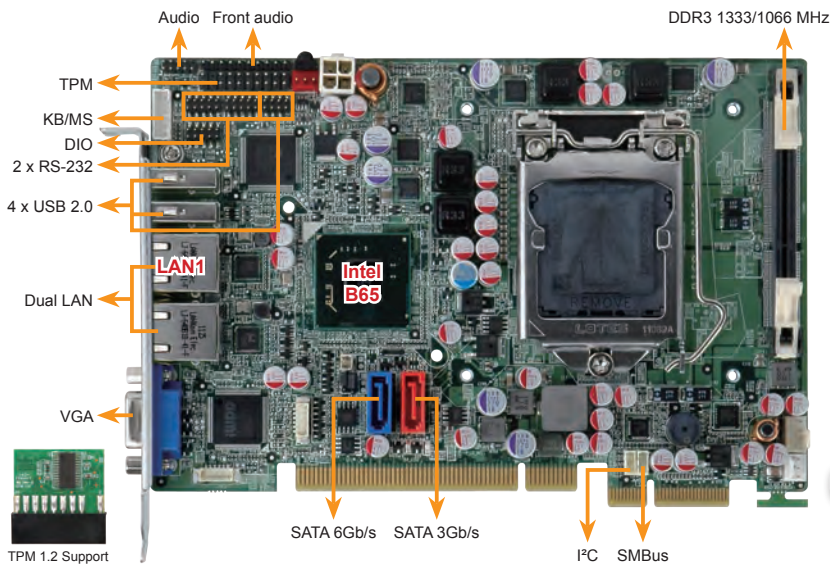


### CPU card (located on the right side of the first slot)

Model Name	PCI	PCIe x4	PCIe x1	PSU Type	Note
HPE-3S1	2			ATX/AT	CPU on R1st
HPE-3S2	1	1		ATX/AT	CPU on R1st
HPE-4S1	3			ATX/AT	CPU on R2nd
HPE-4S2	2	1		ATX/AT	CPU on R2nd
HPE-5S1	4			ATX/AT	CPU on R2nd
HPE-5S2	3	1		ATX/AT	CPU on R2nd
HPE-5S3	2	0	2	ATX/AT	CPU on R2nd
HPE-6S1	4	1		ATX/AT	CPU on R1st
HPE-7S1	4	0	2	ATX/AT	CPU on R2nd
HPE-8S0	4	0	2	ATX/AT	Reserved 1 Slot

# PIC0e-B650

Half-size PCIe CPU Card supports LGA 1155 32nm Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU with Intel® B65, DDR3, VGA, Dual Realtek PCIe GbE, USB 2.0, SATA 6Gb/s, HD Audio and RoHS



## 2nd Gen Intel® Core™ Processors (TDP=35W) Recommended List

CPU No.	Clock speed	Core	Smart cache	TDP
i5-2390T	2.7GHz	2	3M	35W
i3-2120T	2.6GHz	2	3M	35W
G630T	2.3GHz	2	3M	35W
G530T	2.0GHz	2	2M	35W
G440	1.6GHz	1	1M	35W



**45W**  
CF-115XA-R10  
1U chassis compatible



The 2nd generation Intel® processors provide advanced technology and intelligent performance.

## Specifications

- ◆ CPU  
LGA 1155 socket supports Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor
- ◆ Chipset  
Intel® B65
- ◆ Memory  
One 240-pin 1333/1066 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs support up to 8 GB
- ◆ BIOS  
UEFI
- ◆ Graphics Engine  
Intel® HD Graphics Gen 6 supports DX10.1 and OpenGL 3.0  
Full MPEG2, VC1, AVC decoding
- ◆ Display Output  
1 x VGA (up to 2048x1536@75Hz)
- ◆ Ethernet  
LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support  
LAN2: Realtek RTL8111E PCIe GbE controller
- ◆ External I/O Interface  
2 x USB 2.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin) 1 x SATA 6Gb/s  
1 x LPT (2x13 pin) 2 x RS-232 (2x5pin, P=2.0)  
1 x SATA 3Gb/s 2 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Audio  
Supports 7.1-channel HD Audio by IEI AC-KIT-892HD-R10 kit
- ◆ Front Panel  
1 x Front panel connector (1x10 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ TPM  
1 x TPM (2x10 pin)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ I²C  
1 x I²C (1x4 pin)
- ◆ Expansion  
PCIe signal and PCI signal via golden finger
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O  
8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
1 x System smart fan (1x4 pin)
- ◆ Power Supply  
5V/12V, AT/ATX support
- ◆ Power Consumption  
5V@3.17A, 12V@0.46A, Vcore\_12V@7.26A, 5VSB@0.18A  
(3.4GHz Intel® Core™ i7-2600K with two 2 GB 1333 MHz DDR3 memory)
- ◆ Operating Temperature  
-10°C ~ 60°C
- ◆ Storage Temperature  
-20°C ~ 70°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Dimensions  
185 mm x 122 mm
- ◆ Weight  
GW: 1000g / NW: 260g
- ◆ CE/FCC compliant



## Features

- Half-size PCIe CPU card with LGA 1155 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- One 1333/1066 MHz DDR3/DDR3L (1.35V) SDRAM SO-DIMM supports up to 8 GB
- On-board embedded controller supports infrared and PECI 2.0 technologies
- One SATA 6Gb/s and dual Realtek PCIe GbE
- TPM V1.2 hardware security provided by the TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

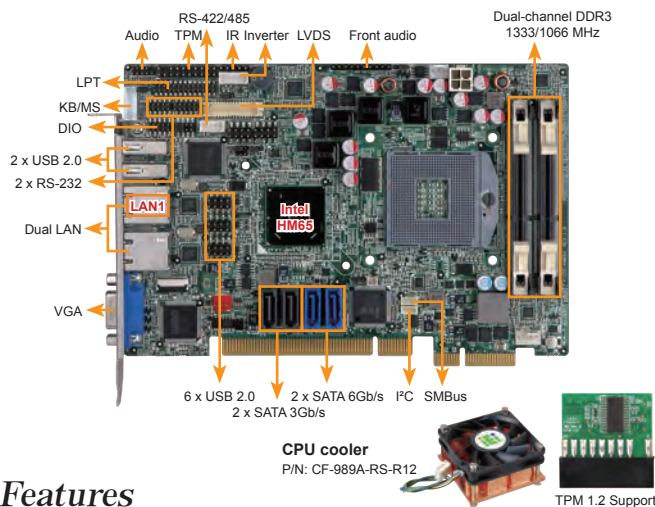
1 x PIC0e-B650 single board computer	
1 x Dual RS-232 cable with bracket	
1 x USB cable	1 x Mini jumper pack
2 x SATA cable	1 x QIG
1 x One Key Recovery CD	1 x Utility CD

## Ordering Information

Part No.	Description
PIC0e-B650-R10	Half-size PCIe CPU card supports 32nm LGA 1155 Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU with Intel® B65, DDR3, VGA, dual Realtek PCIe GbE, USB 2.0, SATA 6Gb/s, HD Audio and RoHS
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams
CF-115XA-R10	High-performance LGA 1155/LGA 1156 cooler kit, 1U chassis compatible, 73W
CPU-C-G440	Intel® Celeron® G440 processor, LGA -1155, single core 1.6GHz, 1M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i3-2120T	Intel® Core™ i3-2120T processor, LGA 1155, dual core 2.6GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2390T	Intel® Core™ i5-2390T processor, LGA -1155, dual core 2.7GHz, 3M cache, 35W, AMT, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2500T	Intel® Core™ i5-2500T processor, LGA -1155, quad core 2.3GHz, 6M cache, 45W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-P-G630T	Intel® Pentium® G630T processor, LGA 1155, dual core 2.3GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
SAIDE-KIT01-R10	SATA to IDE/CF converter board
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# PIC0e-HM650

Half-size PCIe CPU Card supports Socket 988B Intel® Mobile Core™ i7/i5/i3 or Celeron® CPU with Intel® HM65, DDR3, VGA, LVDS, Dual PCIe GbE, SATA 6Gb/s, HD Audio and RoHS



## Features

- Half-size PCIe CPU card supports Socket G2 32nm Intel® Core™ i7/i5/i3 or Celeron® processor
- Up to 16 GB 1333/1066 MHz dual-channel DDR3 SDRAM
- Supports 18/24-bit dual-channel LVDS and analog CRT output
- High-speed I/O interface provided through the 2nd gen PCIe add-on card and SATA 6Gb/s connectors
- Rich media acceleration for hardware encoding and decoding
- TPM V1.2 hardware security provided by the TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU: Socket 988B Intel® Mobile Core™ i7/i5/i3 or Celeron® CPU
- ◆ Chipset: Intel® HM65
- ◆ Memory: Two 204-pin 1333/1066 MHz dual-channel DDR3 SDRAM unbuffered DIMMs support up to 16 GB
- ◆ BIOS: UEFI
- ◆ Graphics Engine: Intel® HD Graphics Gen 6 supports DX10.1 and OpenGL 3.0 Full MPEG2, VC1, AVC Decode
- ◆ Display Output: Dual display supported 1 x VGA (up to 2048x1536@75Hz) 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
- ◆ Ethernet: LAN1: Realtek RTL8111E GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E GbE controller
- ◆ External I/O Interface: 2 x USB 2.0
- ◆ Internal I/O Interface: 1 x KB/MS (1x6 pin) 1 x RS-422/485 2 x SATA 3Gb/s 2 x SATA 6Gb/s 2 x RS-232 (2x5pin, P=2.0) 6 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Audio: Supports 7.1-channel HD Audio by IEI AC-KIT-892HD-R10 kit
- ◆ Front Panel: 1 x Front panel connector (1x10 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I²C: 1 x I²C (1x4 pin)
- ◆ Expansion: PCIe signal and PCI signal via golden finger
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector: 1 x CPU smart fan (1x4 pin) 1 x System smart fan (1x4 pin)
- ◆ Power Supply: 5V/12V, AT/ATX support
- ◆ Power Consumption: 5V@3.99A, 12V@0.43A, Vcore\_12V@3.80A, 5VSB@0.06A
- ◆ CPU: 1333 MHz Intel® Core™ i7-2620M with two 2 GB 1333 MHz DDR3 (memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 185 mm x 122 mm
- ◆ Weight: GW: 1000g / NW: 260g
- ◆ CE/FCC compliant

## Packing List

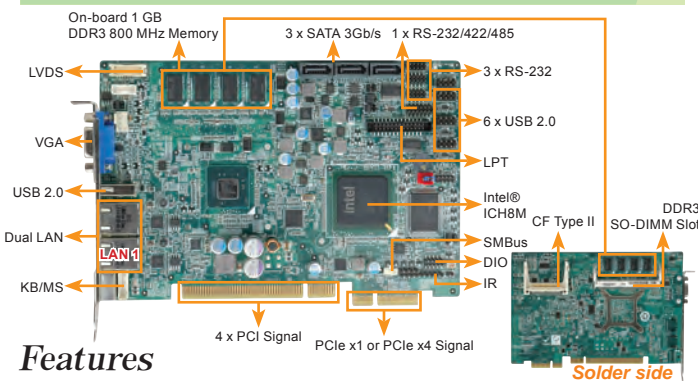
1 x PIC0e-HM650 single board computer	1 x Mini jumper pack
1 x Dual RS-232 cable	1 x One Key Recovery CD
1 x USB cable	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
PIC0e-HM650-R10	Half-size PCIe CPU card supports Socket 988B Intel® Mobile Core™ i7/i5/i3 or Celeron® CPU with Intel® HM65, DDR3, VGA, LVDS, dual PCIe GbE, SATA 6Gb/s, HD Audio and RoHS
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32200-015100-RS	LPT flat cable, 240mm, P=2.54
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams
CF-989A-RS-R12	CPU cooler for mobile socket 989 and 55W CPU
CF-989B-RS-R11	CPU cooler for mobile socket 989 and 50W CPU
SAIDE-KIT01-R10	SATA to IDE/CF converter board
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# PIC0e-PV-D4251/N4551/D5251

Half-size PCIe CPU Card with Intel® Atom™ D425/N455/D525, DDR3, 1 GB Memory on Board, VGA, LVDS, Dual PCIe GbE, USB 2.0, SATA 3Gb/s, Audio and RoHS



## Features

- PCIe CPU card supports four PCIe x1 or one PCIe x4, and four PCI
- Intel® Atom™ D525/D425/N455 processor
- 1 GB of DDR3 800 MHz SDRAM on board and one expansion SO-DIMM slot support
- Supports VGA and 18-bit single-channel LVDS with dual display support
- I/O includes three RS-232, one RS-232/422/485, seven USB 2.0 and three SATA 3Gb/s
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU: Intel® Atom™ Dual Core D525 processor (1.80GHz with 1MB L2 cache) Intel® Atom™ Single Core N455 processor (1.66GHz with 512K L2 cache) Intel® Atom™ Single Core D425 processor (1.80GHz with 512K L2 cache)
- ◆ Chipset: ICH8M
- ◆ BIOS: UEFI BIOS
- ◆ Memory: One 204-pin 800 MHz single-channel DDR3 SDRAM unbuffered DIMMs support up to 3 GB (D525/D425) or 1GB (N455) On-board 1 GB DDR3 800 MHz memory
- ◆ Graphics Engine: GMA 3150 Gen3.5 DX9, 400 MHz for D525/D425 Gen3.5 DX9, 200 MHz for N455
- ◆ Display Output: 1 x VGA (up to 2048x1536(D525/D425) or 1024x768(N455)@60Hz) 1 x 18-bit single channel LVDS (up to 1366x768(D525/D425) or 1024x768(N455)@60Hz)
- ◆ Ethernet: LAN1: Realtek RTL8111E GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E GbE controller
- ◆ External I/O Interface: 1 x KB/MS 1 x USB 2.0
- ◆ Internal I/O Interface: 1 x CF Type II 1 x KB/MS (1x6 pin) 1 x LPT (2x13 pin) 2 x SATA 3Gb/s 1 x RS-232/422/485 (2x7 pin, P=2.0) 3 x RS-232 (2x5pin, P=2.0) 6 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ Infrared Interface: 1 x Infrared Interface (1x5 pin)
- ◆ Fan Connector: 1 x CPU smart fan (1x4 pin) 1 x System smart fan (1x4 pin)
- ◆ Expansion: 4 x PCI 4 x PCIe x1 or 1 x PCIe x4
- ◆ Audio: Supports 7.1-channel HD Audio by IEI AC-KIT-892HD-R10 kit
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Power Consumption: 5V@3.38A, 12V@0.54A (Intel® Dual Core Atom™ D525 1.80GHz with 1 GB DDR3 800 MHz memory on board) 5V@3.28A, 12V@0.43A (Intel® Single Core Atom™ D425 1.80GHz with 1 GB DDR3 800 MHz memory on board) 5V@3.13A, 12V@0.32A (Intel® Single Core Atom™ N455 1.66GHz with 1 GB DDR3 800 MHz memory on board)
- ◆ Power Supply: 5V/12V, AT/ATX support
- ◆ Operating Temperature: -20°C ~ 60°C with free air, -20°C ~ 70°C with force air for D525 processor -20°C ~ 65°C with free air, -20°C ~ 70°C with force air for D425 processor -20°C ~ 70°C with free air, -20°C ~ 75°C with force air for N455 processor
- ◆ Storage Temperature: -30°C ~ 80°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 185 mm x 122 mm
- ◆ Weight: GW: 1000g / NW: 260g
- ◆ CE/FCC compliant

## Packing List

1 x PIC0e-PV-D4251/N4551/D5251 single board computer	1 x Mini jumper pack
1 x Dual RS-232 cable	1 x One Key Recovery CD
1 x KB/MS Y cable	1 x QIG
1 x USB cable	1 x Utility CD
3 x SATA cable	

## Ordering Information

Part No.	Description
PIC0e-PV-D5251-R11	Half-size PCIe CPU card with Intel® Atom™ dual-core D525 1.80GHz/1MB L2, 1 GB memory on board, VGA, LVDS, dual PCIe GbE, USB 2.0, SATA 3Gb/s, audio and RoHS
PIC0e-PV-N4551-R11	Half-size PCIe CPU card with Intel® Atom™ single-core N455 1.66GHz/512K L2, 1 GB memory on board, VGA, LVDS, dual PCIe GbE, USB 2.0, SATA 3Gb/s, audio and RoHS
PIC0e-PV-D4251-R11	Half-size PCIe CPU card with Intel® Atom™ single-core D425 1.80GHz/512K L2, 1 GB memory on board, VGA, LVDS, dual PCIe GbE, USB 2.0, SATA 3Gb/s, audio and RoHS
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-004300-100-RS	RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 250mm, P=2.0
19FFD124010HB2A7-000001-RS	CPU fan
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32200-015100-RS	LPT flat cable, 280mm, P=2.0
34000-000510-RS	30mm higher heatsink
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC892 supports dual audio streams

# PCI/PICoE Backplane

## Selection Guide

PAC series wall-mount chassis

4U rack-mount chassis

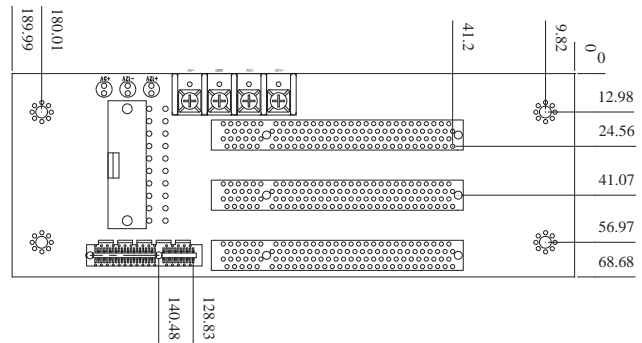
	PCIe/PCI	PCIe/ PCI	HPE-3S1	HPE-3S2	HPE-4S1	HPE-4S2	HPE-5S1	HPE-5S2	HPE-5S3	HPE-6S1	HPE-8S
Total Slot			3	3	4	4	5	5	5	6	7
Expansion Slots	PCI		2	1	3	2	4	3	2	4	4
	PCIe	x4		1		1		1		1	
		x1							2		2
Chassis			N/A	N/A	PAC-42GH PAC-400G	PAC-42GH PAC-400G	PR-1500G RACK-500G	PR-1500G RACK-500G	PR-1500G RACK-500G	N/A	N/A

### HPE-3S1-R41



#### Ordering Information

HPE-3S1-R41      3-slot backplane with two PCI slots

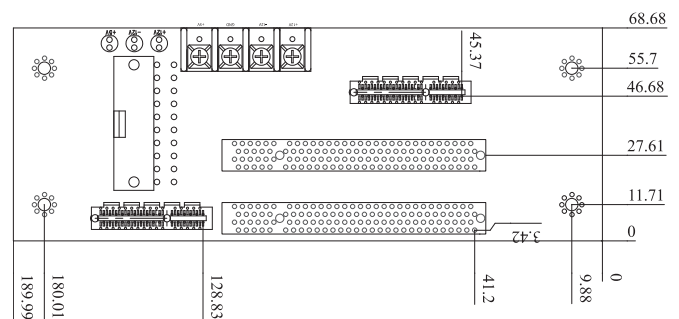


### HPE-3S2-R41

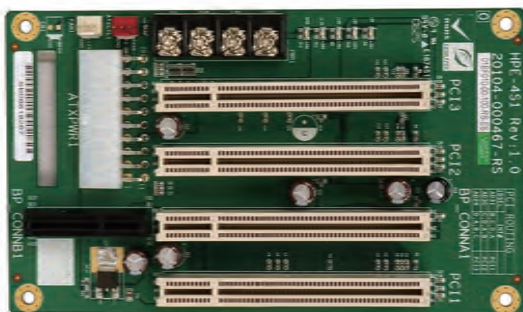


#### Ordering Information

HPE-3S2-R41      3-slot backplane with one PCI slot and one PCIe x4 slot

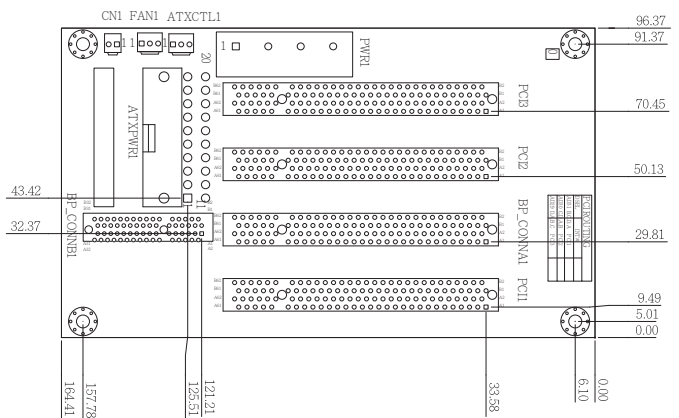


### HPE-4S1-R41

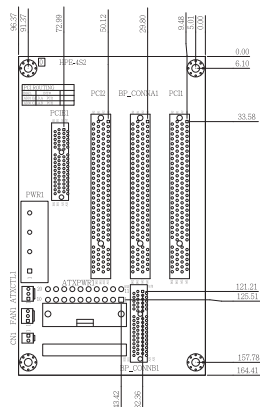
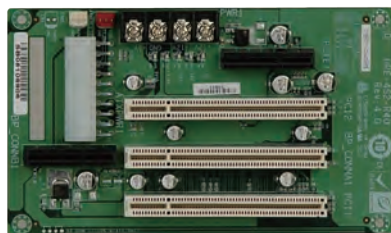


#### Ordering Information

HPE-4S1-R41      4-slot backplane with three PCI slots  
 PAC-42GH      4-slot half-size compact chassis  
 PAC-400G      4-slot half-size compact chassis



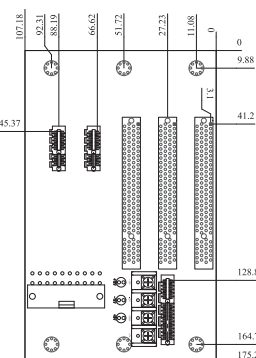
## HPE-4S2-R41



### Ordering Information

HPE-4S2-R41	4-slot backplane with two PCI slots and one PCIe x4 slot
PAC-42GH	4-slot half-size compact chassis
PAC-400G	4-slot half-size compact chassis

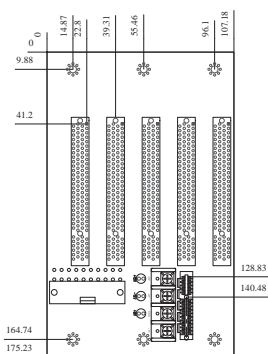
## HPE-5S3-R40



### Ordering Information

HPE-5S3-R40	5-slot backplane with two PCI slots and two PCIe x1 slots
PR-1500G	5-slot half-size compact chassis
RACK-500G	5U 5-slot full-size rack-mount chassis

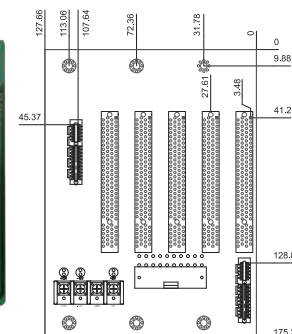
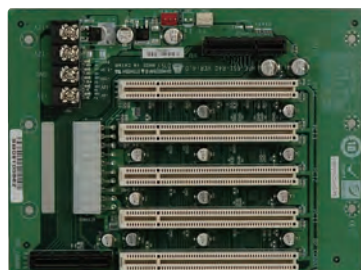
## HPE-5S1-R51



### Ordering Information

HPE-5S1-R51	5-slot backplane with four PCI slots
PR-1500G	5-slot half-size compact chassis
RACK-500G	5U 5-slot full-size rack-mount chassis

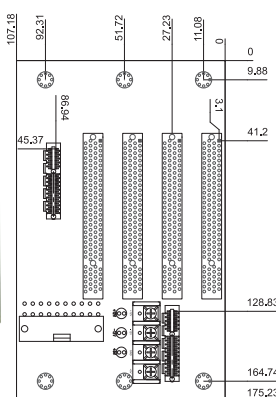
## HPE-6S1-R41



### Ordering Information

HPE-6S1-R41	6-slot backplane with four PCI slots and one PCIe x4 slot
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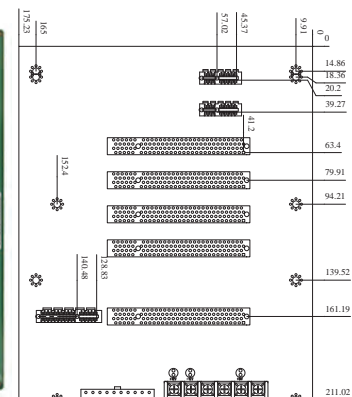
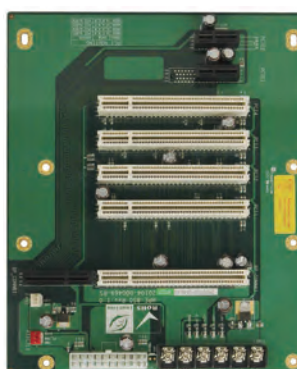
## HPE-5S2-R40



### Ordering Information

HPE-5S2-R40	5-slot backplane with three PCI slots and one PCIe x4 slot
PR-1500G	5-slot half-size compact chassis
RACK-500G	5U 5-slot full-size rack-mount chassis

## HPE-8S0-R41

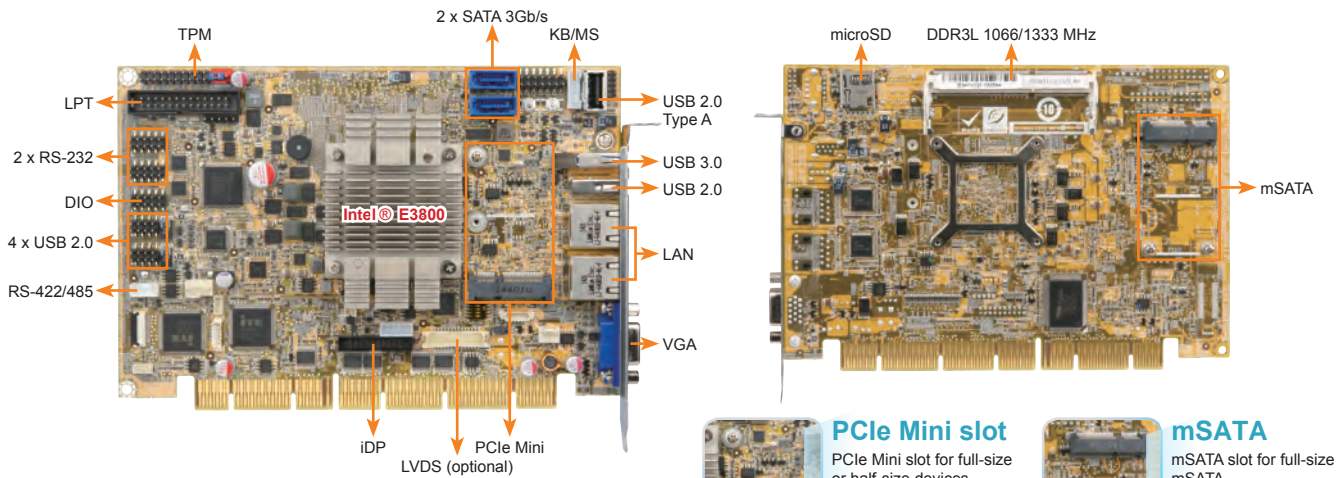


### Ordering Information

HPE-8S0-R41	7-slot backplane with four PCI slots and two PCIe x1 slots
-------------	--

# PCISA-BT

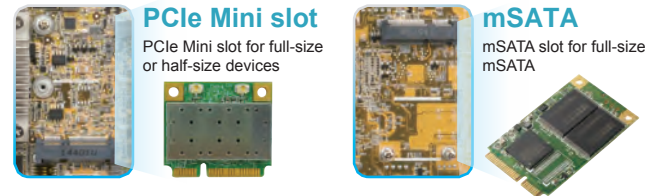
Half-size PCISA CPU Card supports 22nm Intel® Atom™ On-board SoC with VGA, iDP, Dual Intel® PCIe GbE, USB 3.0, PCIe Mini, SATA, mSATA, COM, Audio and RoHS



## Specifications

- ◆ SoC
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3827 on-board SoC (1.75GHz, dual-core, 1MB cache, TDP=8W)
  - Intel® Atom™ E3826 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=7W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
  - Intel® Atom™ E3815 on-board SoC (1.46GHz, single-core, 512KB cache, TDP=5W)
- ◆ Memory
  - One 204-pin 1333/1066 MHz single-channel DDR3L SDRAM unbuffered SO-DIMM slot supports up to 8GB
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 7 Engines with 4 execution units, supporting DX11.1, OpenGL 4.2 and OpenCL1.2
- ◆ Display Output
  - Dual independent display
  - 1 x VGA (up to 2560x1600@60Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz) (optional, MOQ: 100 pcs/lot)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 2560x1600@60Hz)
- ◆ Ethernet
  - LAN1: Intel® I211-AT PCIe controller
  - LAN2: Intel® I211-AT PCIe controller
- ◆ External I/O Interface
  - 1 x USB 2.0
  - 1 x USB 3.0
- ◆ Internal I/O Interface
 

1 x KB/MS (1x6 pin)	1 x USB 2.0 (180° Type-A)
1 x LPT (2x13 pin)	2 x RS-232 (2x5 pin, P=2.54)
1 x mSATA	2 x SATA 3Gb/s
1 x RS-422/485 (1x4 pin, P=2.0)	4 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Audio
  - Supports 7.1-channel HD Audio by IEI AC-KIT-892HD kit
  - 1 x Front Audio (2x5 pin)
- ◆ TPM
  - 1 x TPM (2x10 pin)
- ◆ SMBus
  - 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C
  - 1 x I<sup>2</sup>C (1x4 pin)
- ◆ Infrared Interface
  - 1 x Infrared interface (1x5 pin)
- ◆ Expansion
  - 1 x microSD socket
  - 1 x PCIe Mini slot
  - PCI and ISA signal via golden finger
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O
  - 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x3 pin)
- ◆ Power Supply
  - 5V/12V, AT/ATX support
- ◆ Power Consumption
  - 5V@1.55A, 12V@0.74A (Intel® Atom™ E3845 1.91GHz CPU with one 8 GB 1333 MHz memory)
- ◆ Operating Temperature
  - 20°C ~ 60°C
- ◆ Storage Temperature
  - 30°C ~ 70°C
- ◆ Dimensions
  - 185 mm x 128 mm
- ◆ Weight
  - GW: 1000g / NW: 250g
- ◆ CE/FCC compliant



## Features

- Half-size PCISA CPU card supports 22nm Intel® Atom™ or Celeron® on-board SoC
- Supports dual LAN by Intel® I211-AT PCIe controllers
- Supports 1.35 V 1333/1066 MHz DDR3L SDRAM up to 8 GB
- Supports dual independent display with one analog CRT, iDP and one 24-bit dual-channel LVDS (optional)
- COM, USB 3.0, SATA 3Gb/s, PCIe Mini, mSATA and HD Audio support
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x PCISA-BT single board computer	1 x QIG
1 x SATA cable	1 x Utility CD

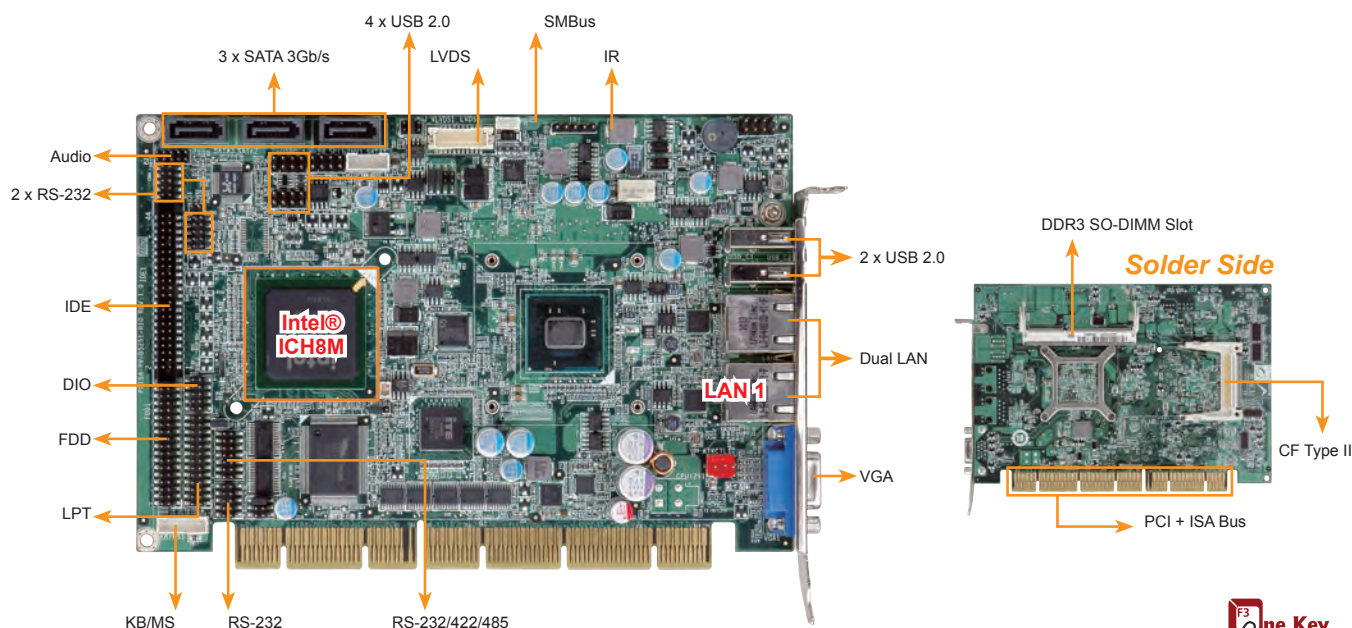
## Ordering Information

Part No.	Description
PCISA-BT-E38451-R11	Half-size PCISA CPU card supports Intel® Atom™ E3845 (10W) on-board SoC with VGA, iDP, dual Intel® PCIe GbE, USB 3.0, PCIe Mini, SATA, mSATA, COM, Audio and RoHS
PCISA-BT-E38251-R11	Half-size PCISA CPU card supports Intel® Atom™ E3825 (6W) on-board SoC with VGA, iDP, dual Intel® PCIe GbE, USB 3.0, PCIe Mini, SATA, mSATA, COM, Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-020100-100-RS	RS-232 cable with bracket, Dual 10-pin to dual DB-9, 230mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
AC-KIT-892HD-R10	Realtek ALC892 7.1-channel HD Audio peripheral board
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

Note: Models with other CPUs not listed in the table are requested by MOQ - 100 pcs/lot.

# PCISA-PV-D5251

Half-size PCISA CPU Card with Intel® Atom™ D425/N455/D525, DDR3, VGA, LVDS, Dual PCIe GbE, USB 2.0, Four COM, Three SATA 3Gb/s, Audio and RoHS



## Specifications

- ◆ CPU  
Intel® Atom™ D525 dual-core processor (1.80GHz/1MB L2 cache)
- ◆ Chipset  
Intel® ICH8M
- ◆ BIOS  
UEFI BIOS
- ◆ Memory  
One 204-pin 800 MHz single-channel DDR3L SDRAM unbuffered SO-DIMM slot supports up to 4GB
- ◆ Graphics Engine  
GMA 3150  
Gen 3.5 DX9, 400 MHz for D525
- ◆ Display Output  
1 x VGA (up to 2048x1536@60Hz)  
1 x 18-bit single channel LVDS (up to 1366x768@60Hz)
- ◆ Ethernet  
LAN1: Realtek RT8111E with ASF 2.0 support  
LAN2: Realtek RT8111E
- ◆ External I/O Interface  
2 x USB 2.0
- ◆ Internal I/O Interface
 

1 x CF Type II	1 x LPT (2x13 pin, P=2.0)
1 x FDD (2x17 pin)	1 x RS-232/422/485 (2x7 pin, P=2.0)
1 x IDE (2x10 pin, P=2.0)	3 x RS-232 (2x5pin, P=2.0)
1 x IR (1x5 pin)	4 x SATA 3Gb/s
1 x KB/MS (1x6 pin)	4 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Audio  
Realtek ALC888 HD codec  
1 x Front audio (2x5 pin)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ Expansion  
4 x PCI bus support
- ◆ Digital I/O  
8-bit digital I/O (2x5 pin)
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset
- ◆ Fan Connector  
1 x Smart fan (1x4 pin)
- ◆ Power Supply  
5V/12V, AT/ATX mode support
- ◆ Power Consumption  
5V@3.36A, 12V@0.57A (Intel® dual-core Atom™ D525 1.80GHz with 1 GB 1066 MHz DDR3 memory)
- ◆ Operating Temperature  
-20°C ~ 60°C with free air, -20°C ~ 70°C with force air for D525 processor
- ◆ Storage Temperature  
-30°C ~ 80°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Weight  
GW: 1000g / NW: 250g
- ◆ CE/FCC compliant

## Features

- PCISA CPU card supports PCI and ISA bus expansion
- Supports Intel® Atom™ D525 processor
- Supports VGA and 18-bit single-channel LVDS with dual display
- Supports 800 MHz DDR3 SDRAM SO-DIMM up to 4 GB
- Supports four COM, six USB 2.0, three SATA 3Gb/s, IDE and CF Type II
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x PCISA-PV-D5251 single board computer
1 x LPT/RS-232 cable
1 x USB cable
1 x Audio cable
3 x SATA cable
1 x Mini jumper pack
1 x One Key Recovery CD
1 x QIG
1 x Utility CD

## Ordering Information

Part No.	Description
PCISA-PV-D5251-R10	PCISA CPU card with Intel® Atom™ D525 1.80GHz, VGA, LVDS, dual PCIe GbE, USB 2.0, 4 COM, 3 SATA 3Gb/s, audio and RoHS
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-004300-100-RS	RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 250mm, P=2.0
19FFD124010HB2A7-000001-RS	CPU fan
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32200-000009-RS	IDE Flat Cable, 400mm, 44 pin to 44pin (P=2.0)
32221-001700-100-RS	IDE Flat Cable, 350mm, 44 pin to 40 pin to 40 pin (P=2.0, 2.54, 2.54)
32229-000400-100-RS	FDD Cable, 350mm, P=2.0
34000-000510-RS	30mm higher heatsink

# IP/IPX Series Backplane

**Supports PCI and ISA slot on one backplane!**  
**For half-size PCISA series single board computers**

The advantages of using the PCISA card are numerous:

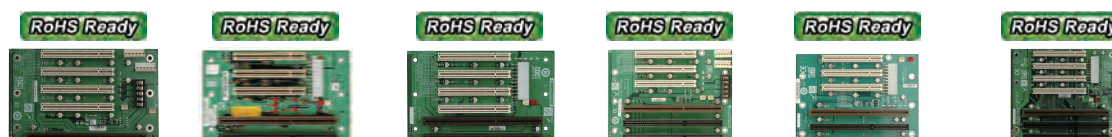
1. Supports standard PISA version 1.0 slot on the IP/IPX series passive backplane.
2. Compatible with all available PCI/ISA cards. IP/IPX backplane is also integrated with the PCISA series card slot.

## Selection Guide

 PAC series wall-mount chassis  4U rack-mount chassis



Model	IP-3S-RS	IP-3SA-RS	IP-4S-RS	IP-4S2-RS	IP-4S2A-RS	IP-4S4-RS
Total Slot	3	3	4	4	4	4
PCI Slot	2	2	3	2	3	
ISA Slot				1		3
PSU Type	AT	ATX	AT	AT	ATX	AT
Chassis	PAC-53GH	N/A	PAC-400G PAC-42GH	PAC-400G PAC-42GH	PAC-400G	PAC-400G PAC-42GH



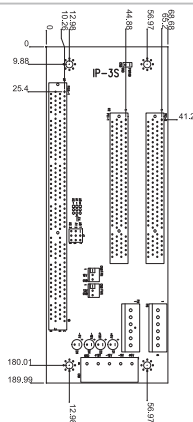
Model	IP-5S2-RS	IP-5SA-RS	IP-5SA2-RS	IP-6S-RS	IP-6SA-RS	IP-7SA-RS
Total Slot	5	5	5	6	6	7
PCI Slot	4	3	4	3	3	4
ISA Slot		1		2	2	2
PSU Type	AT	ATX	ATX	AT	ATX	ATX
Chassis	PR-1500G	PR-1500G	PR-1500G	PAC-1000G	PAC-106G PAC-1000G	PAC-700G PAC-1700G



Model	IP-8S-RS	IPX-9S-RS	IP-10S-RS	IPX-13S-RS
Total Slot	8	9	10	13
PCI Slot	4	8	4	12
ISA Slot	3		5	
PSU Type	ATX/AT	ATX/AT	ATX/AT	ATX/AT
Chassis	PAC-125G	PAC-125G	PAC-125G	RACK-305G RACK-360G RACK-3000G



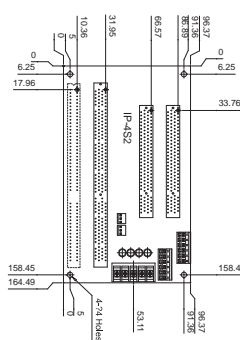
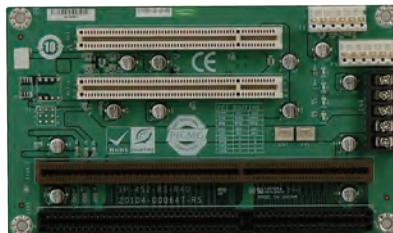
## IP-3S-RS-R40



### Ordering Information

IP-3S-RS-R40	3-slot backplane with two PCI slots
PAC-53GH	3-slot half-size compact chassis

## IP-4S2-RS-R40

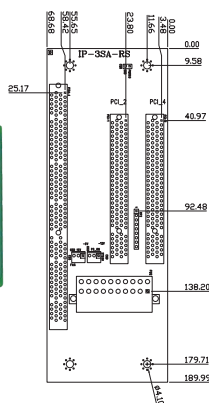
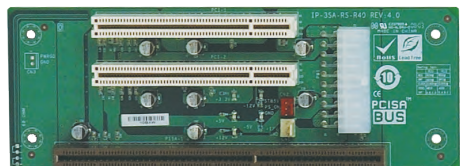


### Ordering Information

IP-4S2-RS-R40	4-slot backplane with two PCI slots and one ISA slot
PAC-400G	4-slot half-size compact chassis
PAC-42GH	4-slot half-size compact chassis

## IP-3SA-RS-R40

ATX power

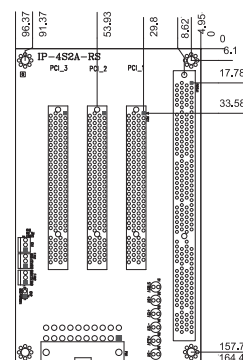
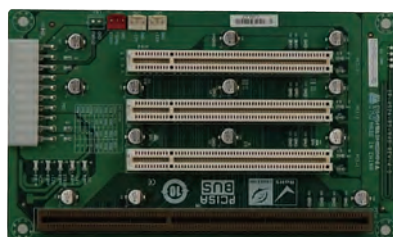


### Ordering Information

IP-3SA-RS-R40	3-slot backplane with two PCI slots
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## IP-4S2A-RS-R40

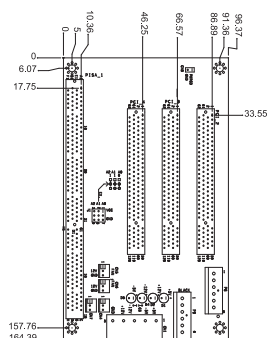
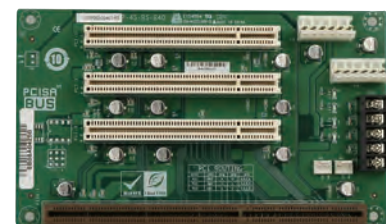
ATX power



### Ordering Information

IP-4S2A-RS-R40	4-slot backplane with three PCI slots
PAC-400G	4-slot half-size compact chassis

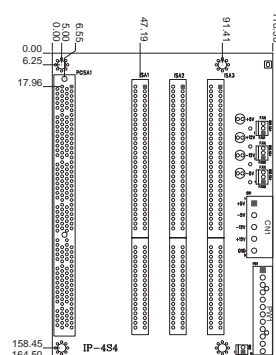
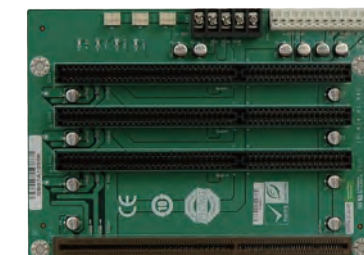
## IP-4S-RS-R40



### Ordering Information

IP-4S-RS-R40	4-slot backplane with three PCI slots
PAC-400G	4-slot half-size compact chassis
PAC-42GH	4-slot half-size compact chassis

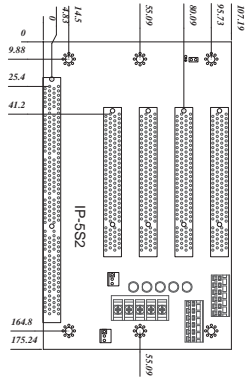
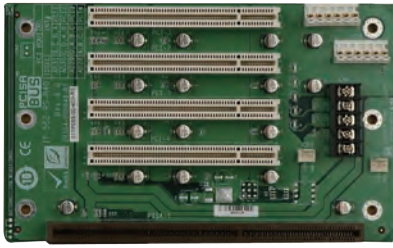
## IP-4S4-RS-R40



### Ordering Information

IP-4S4-RS-R40	4-slot backplane with three ISA slots
PAC-400G	4-slot half-size compact chassis
PAC-42GH	4-slot half-size compact chassis

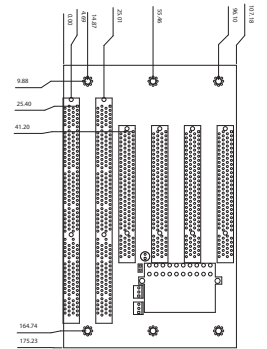
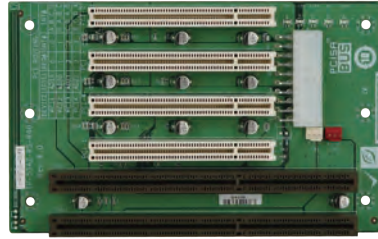
## IP-5S2-RS-R40



### Ordering Information

IP-5S2-RS-R40	5-slot backplane with three PCI slots
PR-1500G	5-slot half-size compact chassis

## IP-5SA2-RS-R40

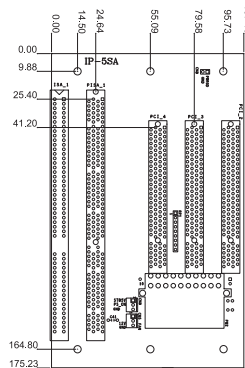
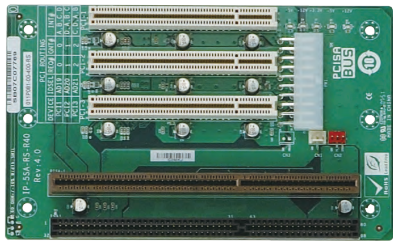


### Ordering Information

IP-5SA2-RS-R40	5-slot backplane with four PCI slots
PR-1500G	5-slot half-size compact chassis

## IP-5SA-RS-R40

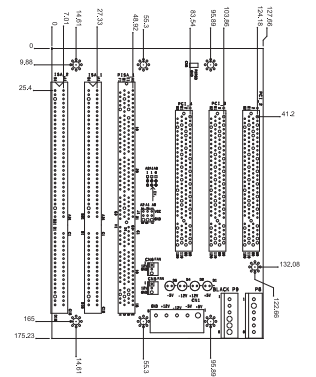
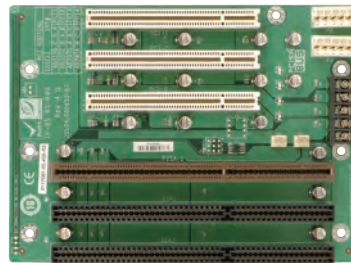
ATX power



### Ordering Information

IP-5SA-RS-R40	5-slot backplane with three PCI slots and one ISA slot
PR-1500G	5-slot half-size compact chassis

## IP-6S-RS-R40

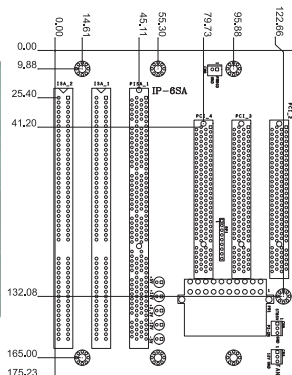
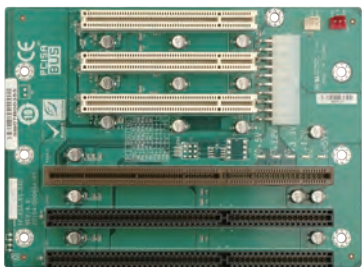


### Ordering Information

IP-6S-RS-R40	6-slot backplane with three PCI slots and two ISA slots
PAC-1000G	6-slot full-size compact chassis

## IP-6SA-RS-R40

ATX power

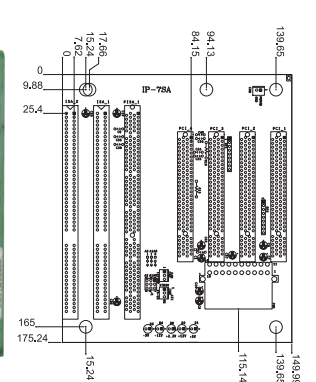
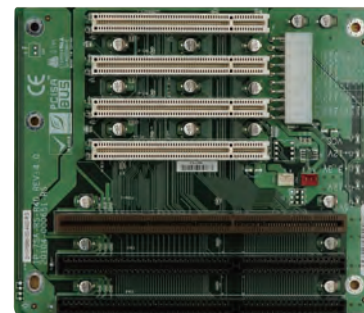


### Ordering Information

IP-6SA-RS-R40	6-slot backplane with three PCI slots and two ISA slots
PAC-106G	6-slot full-size compact chassis
PAC-1000G	6-slot full-size compact chassis

## IP-7SA-RS-R40

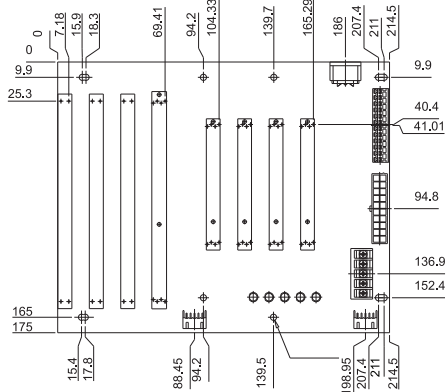
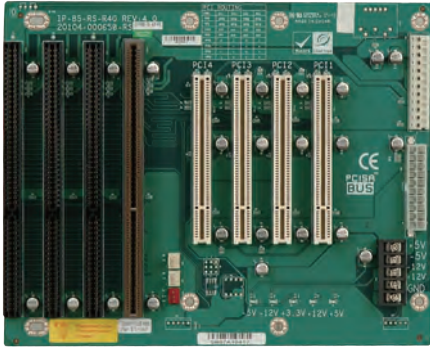
ATX power



### Ordering Information

IP-7SA-RS-R40	7-slot backplane with three PCI slots and two ISA slots
PAC-700G	7-slot half-size compact chassis
PAC-1700G	7-slot full-size compact chassis

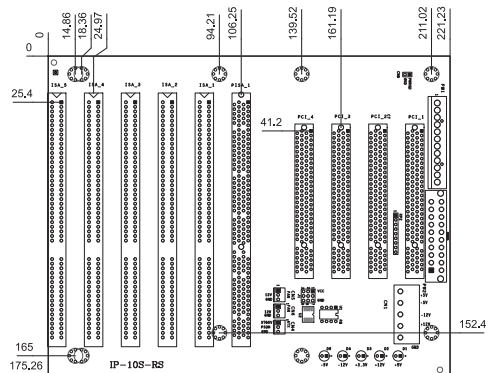
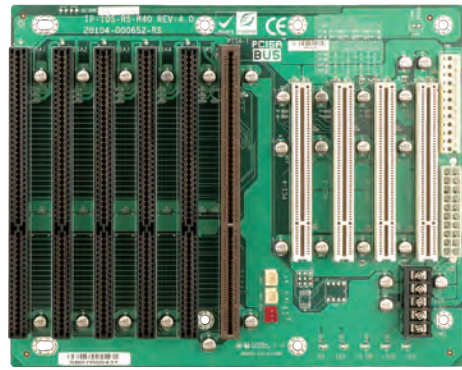
# IP-8S-RS-R40



### Ordering Information

IP-8S-RS-R40	8-slot backplane with four PCI slots and three ISA slots
PAC-125G	10-slot full-size compact chassis

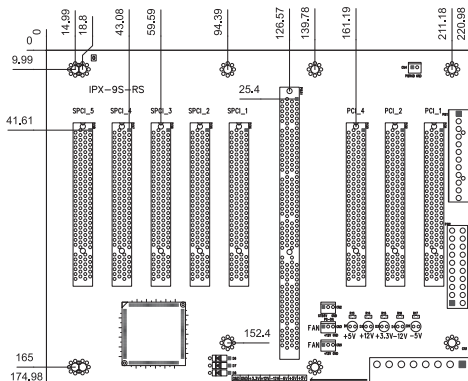
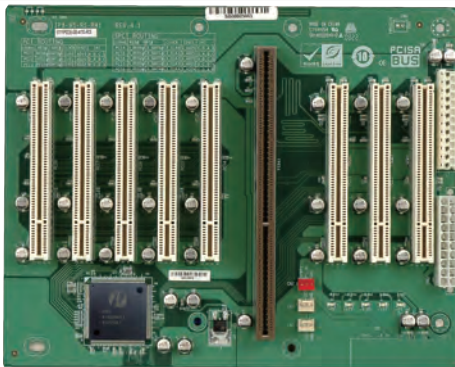
# IP-10S-RS-R40



### Ordering Information

IP-10S-RS-R40	10-slot backplane with four PCI slots and five ISA slots
PAC-125G	10-slot full-size compact chassis

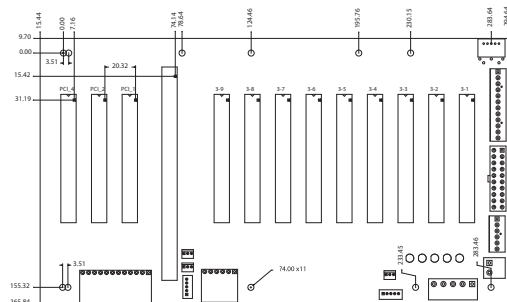
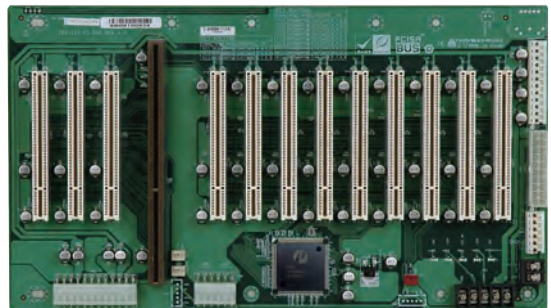
# IPX-9S-RS-R41



### Ordering Information

IPX-9S-RS-R41	9-slot backplane with eight PCI slots
PAC-125G	10-slot full-size compact chassis

# IPX-13S-RS-R40

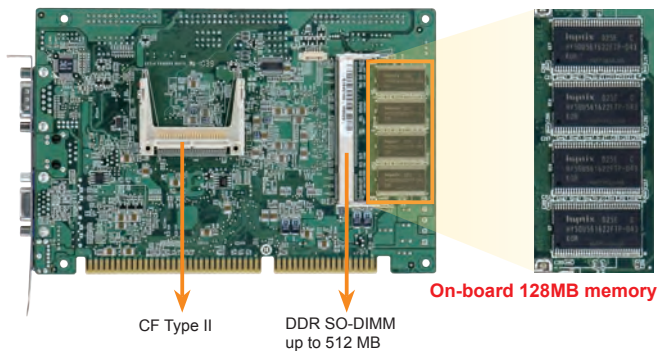
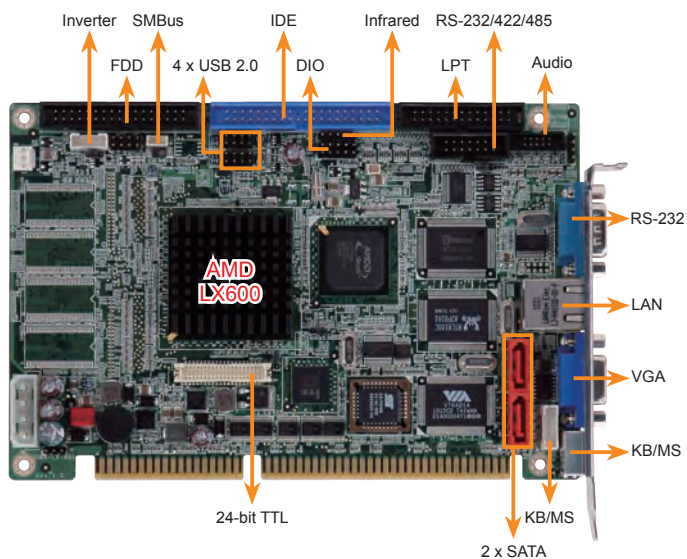


### Ordering Information

IPX-13S-RS-R40	13-slot backplane with twelve PCI slots
RACK-305G	4U 14-slot rack-mount chassis
RACK-360G	4U 14-slot rack-mount chassis
RACK-3000G	4U 14-slot rack-mount chassis

# IOWA-LX

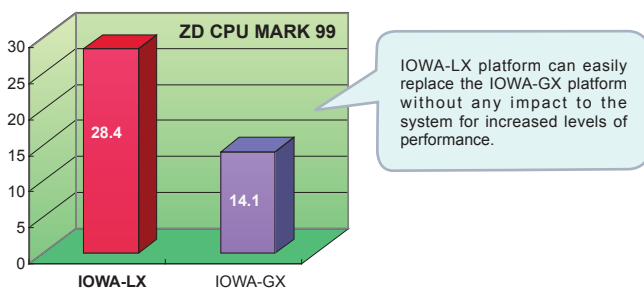
Half-size Pure ISA CPU Card with On-board AMD Geode™ LX600 Processor (366 MHz), 128KB L2 cache, On-board 128MB Memory, VGA, LAN, USB 2.0, CF, COM, LPT, Audio and RoHS



## Specifications

- ◆ CPU  
On-board AMD Geode™ LX600 processor (366 MHz), 128KB L2 cache
- ◆ Chipset  
AMD Geode™ CS5536
- ◆ BIOS  
Award BIOS
- ◆ Memory  
One 200-pin 266/200 MHz DDR SDRAM SO-DIMMs supports up to 512MB  
On-board 128MB DDR 266/200 MHz memory
- ◆ Graphics Engine  
VGA integrated in the AMD Geode™ LX600
- ◆ Display Output  
Single HD VOP 2.0 output  
1 x VGA (up to 1920x1440)  
1 x TFT (up to 1600x1200)
- ◆ External I/O Interface  
1 x KB/MS                      1 x RS-232
- ◆ Internal I/O Interface  
1 x CF Type II                1 x RS-232/422/485 (2x7 pin, P=2.54)  
1 x FDD (2x17 pin)        1 x LPT (2x13 pin)  
1 x IDE (2x10 pin)        4 x USB 2.0 (2x4 pin, P=2.54)  
4 x SATA (RAID 0/1 supported on IOWA-LX-600S-R10)
- ◆ Ethernet  
10/100Mbps Realtek RTL8100C Ethernet controller
- ◆ Audio  
Realtek ALC203 with AC'97 codec  
1 x Front audio (2x5 pin)
- ◆ Expansion  
ISA bus supported via golden finger
- ◆ Digital I/O  
8-bit digital I/O (2x5 pin)
- ◆ Infrared Interface  
1 x Infrared Interface (1x5 pin)
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset
- ◆ FAN connector  
1 x Smart fan (1x3 pin)
- ◆ Power supply  
5V/12V, AT/ATX support
- ◆ Power Consumption  
5V@1.51A, 5VSb@0.09A  
(On-board AMD Geode™ LX 600 CPU 366 MHz with 128MB 200 MHz on-board DDR memory and 512MB 333 MHz DDR memory)
- ◆ Operating Temperature  
-10°C ~ 60°C
- ◆ Storage Temperature  
-20°C ~ 70°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Weight  
GW: 1000g / NW: 250g
- ◆ CE/FCC compliant

## Performance Comparison Chart



## Features

- ISA CPU card with on-board AMD Geode™ LX600 processor (366 MHz), 128KB L2 cache
- Flexible on-board DDR SDRAM and one SO-DIMM slot
- Enhanced TTL, RS-232, RS-422/485 and USB 2.0 interfaces for extended connectivities
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x IOWA-LX-600 single board computer
1 x Audio cable
1 x IDE flat cable
1 x KB/MS Y cable
1 x USB cable
1 x Mini jumper pack
1 x One Key Recovery CD
1 x QIG
1 x Utility CD

## Ordering Information

Part No.	Description
IOWA-LX-600-R10	Half-size pure ISA CPU card with on-board AMD Geode™ LX600 processor (366 MHz), 128KB L2 cache, on-board 128MB memory, VGA, LAN, USB 2.0, COM, CF, LPT, audio and RoHS
IOWA-LX-600S-R10	Half-size pure ISA CPU card with on-board AMD Geode™ LX600 processor (366 MHz), 128KB L2 cache, on-board 128MB memory, VGA, LAN, USB 2.0, SATA, CF, COM, LPT, Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-004400-200-RS	RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 255mm, P=2.54
32801-000703-500-RS	SATA (7-pin to 7-pin) cable, 500mm
32200-000017-RS	FDD Cable, 520mm, P=2.54

# BP Series Backplane

## Selection Guide

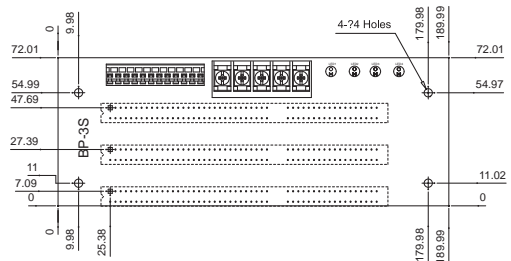
PAC series wall-mount chassis

4U rack-mount chassis



Model	BP-3S-RS-R40	BP-4S-RS-R40	BP-5S-RS-R40	BP-6S-RS-R40	BP-7S-RS-R40	BP-8S-RS-R41	BP-10S-RS-R40
Total Slot	3	4	5	6	7	8	10
ISA Slot	3	4	5	6	7	8	10
PSU Type	AT	AT	AT	AT	AT	AT	AT
Chassis	PAC-53GH	PAC-400G PAC-42GH	PR-1500G	PAC-106G PAC-1000G	PAC-700G PAC-1700G	N/A	PAC-125G

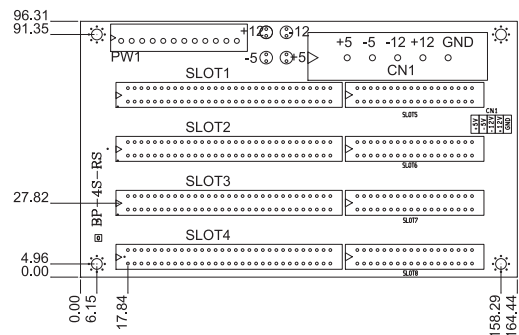
### BP-3S-RS-R40



#### Ordering Information

BP-3S-RS-R40 3-slot backplane with three ISA slots  
 PAC-53GH 3-slot half-size compact chassis

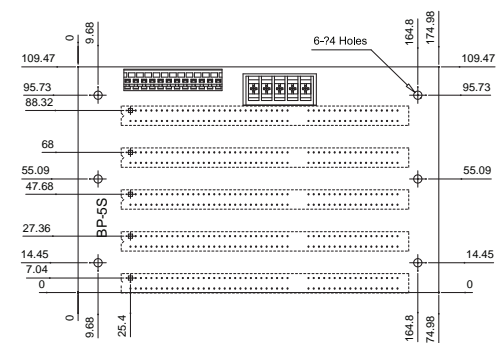
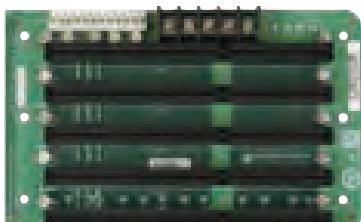
### BP-4S-RS-R40



#### Ordering Information

BP-4S-RS-R40 4-slot backplane with four ISA slots  
 PAC-400G 4-slot half-size compact chassis  
 PAC-42GH 4-slot half-size compact chassis

### BP-5S-RS-R40



#### Ordering Information

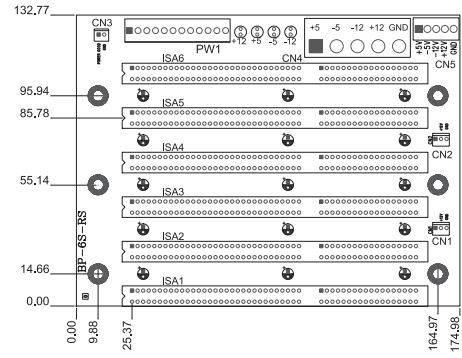
BP-5S-RS-R40 5-slot backplane with five ISA slots  
 PR-1500G 5-slot half-size compact chassis

## BP-6S-RS-R40

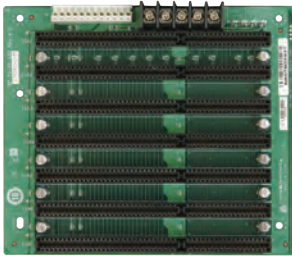


### Ordering Information

BP-6S-RS-R40	6-slot backplane with six ISA slots
PAC-106G	6-slot full-size compact chassis
PAC-1000G	6-slot full-size compact chassis

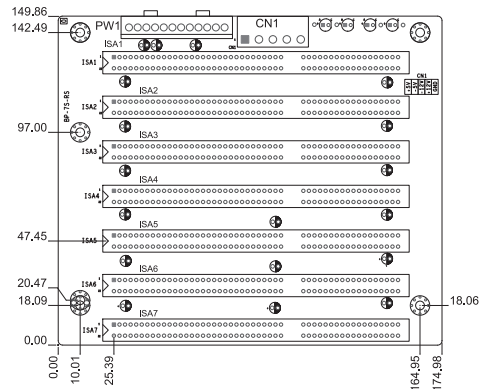


## BP-7S-RS-R40

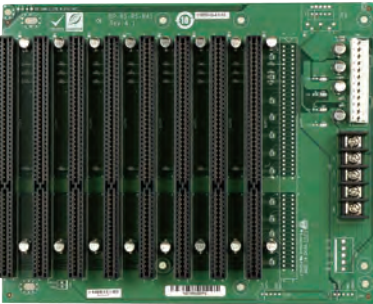


### Ordering Information

BP-7S-RS-R40	7-slot backplane with seven ISA slots
PAC-700G	7-slot half-size compact chassis
PAC-1700G	7-slot full-size compact chassis

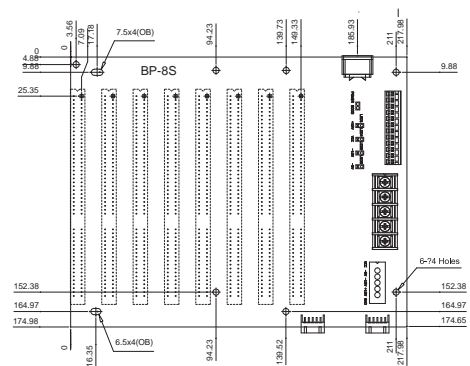


## BP-8S-RS-R41

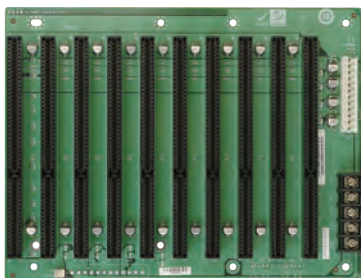


### Ordering Information

BP-8S-RS-R41	8-slot backplane with eight ISA slots
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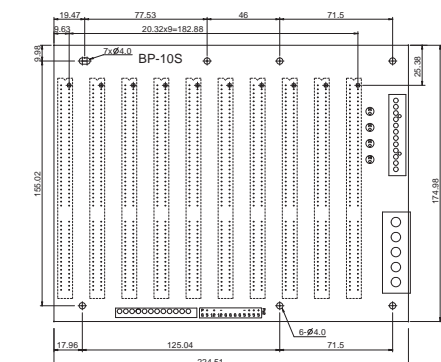


## BP-10S-RS-R40



### Ordering Information

BP-10S-RS-R40	10-slot backplane with ten ISA slots
PAC-125G	10-slot full-size compact chassis



# AC-KIT-892HD

Realtek ALC892 7.1-Channel HD Audio Peripheral Board, RoHS



## Features

- Realtek ALC892 HD Audio codec IC supported
- Five audio jacks for microphone, 7.1+2-channel high definition audio input and output
- High performance 7.1+2-channel high definition audio board provides 7.1-channel sound playback and multiple streaming through the front panel stereo outputs
- Digital to Analog Converter (DAC) with 97dB Signal to Noise Ratio (SNR)
- Analog to Digital Converter (ADC) with 90dB Signal to Noise Ratio (SNR)
- All the Digital to Analog Converter (DAC) supports 44.1k/48k/96k/192kHz sampling rate
- All the Analog to Digital Converter (ADC) supports 44.1k/48k/96kHz sampling rate
- Driver supports Windows® 2000/2003/XP/VISTA/7 (32/64 bits) and Linux (Ubuntu or Debian)
- CE/FCC compliant

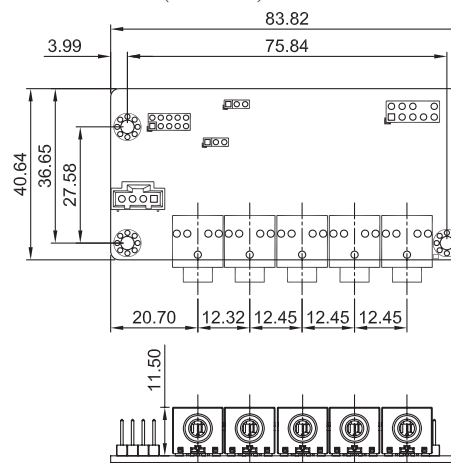
## Packing List

1 x AC-KIT-892HD audio peripheral board

1 x Audio cable

1 x QIG

## Dimensions (Unit: mm)



## Ordering Information

AC-KIT-892HD-R10

Realtek ALC892 7.1-channel HD Audio peripheral board

32107-001100-100-RS

Audio cable with length of 200 mm, 2 x 5-pin, pitch=2.0 mm

# AC-KIT08R

Audio Converter Card via Realtek ALC655 AC'97 5.1-Channel Audio Daughter Board, RoHS



## Features

- Realtek ALC655 AC'97 audio codec IC supported
- Three audio jacks for microphone, 5.1-channel AC'97 audio input and output
- Full duplex AC'97 2.3 compatible 5.1-channel audio codec designed for PC multimedia system
- Supports double sampling rate (96kHz) of DVD audio playback
- Driver supports Windows® 2000/2003/XP/VISTA/7 (32/64 bits) and Linux (Ubuntu or Debian)
- CE/FCC compliant

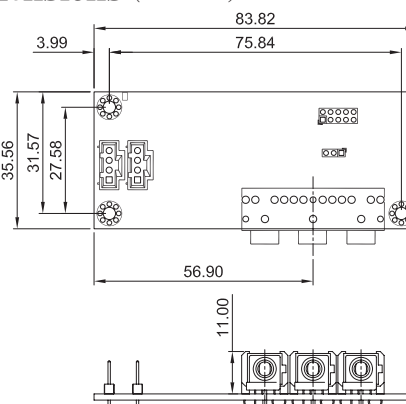
## Packing List

1 x AC-KIT08R audio peripheral board

1 x Audio cable

1 x QIG

## Dimensions (Unit: mm)



## Ordering Information

AC-KIT08R-R10

Realtek ALC655 AC'97 5.1-channel audio peripheral board

32107-001100-100-RS

Audio cable with length of 200 mm, 2 x 5-pin, pitch=2.0 mm

# IO-KIT-001-R20

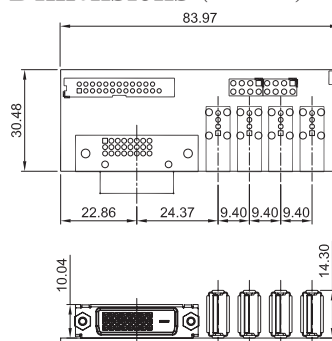
DVI and 4 x USB 1.1/2.0 Translation Daughter Board with Bracket, RoHS



## Features

- 26-pin header for DVI (from main board), pitch=2.0 mm
- 2 x 8-pin header for USB 1.1/2.0 (from main board, four sets), pitch=2.54 mm
- DVI-D connector on edge
- Four USB 1.1/2.0 connectors on edge
- CE/FCC compliant

## Dimensions (Unit: mm)



## Packing List

1 x IO-KIT-001-R20 (DVI and four USB 1.1/2.0 translation daughter board)

1 x DVI cable

1 x USB cable

1 x QIG

## Ordering Information

IO-KIT-001-R20

DVI and four USB 1.1/2.0 translation daughter board

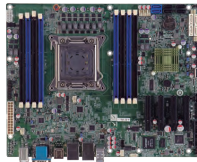
32001-009900-100-RS

USB cable with length of 200 mm, 2 x 8-pin, pitch=2.54 mm

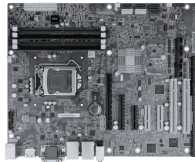
32104-000100-100-RS

DVI cable with length of 200 mm, 2 x 13-pin, pitch=2.0 mm

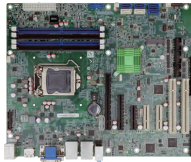
# Industrial Motherboard Selection Guide



Preliminary



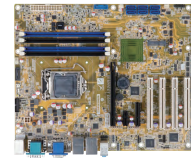
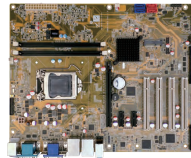
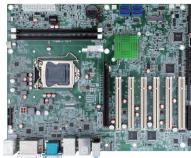
New



Model Name	IMBA-C604EP	IMBA-Q370	IMBA-Q170-TB3	IMBA-C2360-i2	IMBA-Q170-i2
<b>CPU Socket</b>	LGA2011	LGA1151	LGA1151	LGA1151	LGA1151
<b>CPU Type</b>	Intel® Xeon® E5 series processor	8th generation Intel® Core™ i7/i5/i3 Pentium® and Celeron® processor	6th generation Intel® Core™ i7/i5/i3 Pentium® and Celeron® processor	Intel® Xeon® E3, Core™ i3, Pentium®, Celeron® processor	6th generation Intel® Core™ i7/i5/i3 Pentium® and Celeron® processor
<b>Chipset</b>	Intel® C604	Intel® Q370	Intel® Q170	Intel® C236	Intel® Q170
<b>Memory</b>	Quad-channel memory architecture (2 DIMMs per channel), 240-pin 1600/1333 MHz DDR3 SDRAM ECC UDIMMs or non-ECC RDIMMs/LRDIMMs supported (system max. 64GB UDIMMs or 128GB RDIMMs or 256GB LRDIMMs)	Four 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs (system Max. 64 GB)	Four 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs (system Max. 64 GB)	Four 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs (system Max. 64 GB)	Four 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs (system Max. 64 GB)
<b>Display Interface</b>	1 x VGA driver form Aspeed AST2300	Triple independent display support 1 x HDMI 2.0 1 x DVI-I 1 x iDP interface	Triple independent display support 1 x DP++ 1 x DVI-D 1 x VGA 1 x iDP interface	Triple independent display support 1 x HDMI 2.0 1 x DVI-D 1 x VGA 1 x iDP interface	Triple independent display support 1 x HDMI 2.0 1 x DVI-D 1 x VGA 1 x iDP interface
<b>Ethernet</b>	Dual Intel® 82574L PCIe controller	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I219LM with Intel® AMT 11.0 support	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I219LM with Intel® AMT 11.0 support	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I219LM with Intel® AMT 11.0 support	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I219LM with Intel® AMT 11.0 support
<b>iRIS Remote Management Module</b>	N/A	N/A	N/A	1 x iRIS-2400 slot	1 x iRIS-2400 slot
<b>I/O Interface</b>	1 x 5-pin pin header for PSM1 1 x PS/2 KB/MS 1 x RS-232 1 x TPM (2x10 pin) 2 x USB 3.0 11 x USB 2.0	1 x PS/2 KB/MS 1 x LPT 2 x RS-232/422/485 4 x RS-232 8 x USB 3.0 4 x USB 2.0	1 x KB/MS 1 x LPT 2 x RS-232/422/485 4 x RS-232 6 x USB 3.0 6 x USB 2.0	1 x KB/MS 1 x LPT 2 x RS-232/422/485 4 x RS-232 5 x USB 3.0 7 x USB 2.0	1 x KB/MS 1 x LPT 2 x RS-232/422/485 4 x RS-232 5 x USB 3.0 7 x USB 2.0
<b>Storage Interface</b>	4 x SATA 3Gb/s 2 x SATA 6Gb/s 4 x SAS 3Gb/s	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported)
<b>Audio</b>	Realtek ALC662 HD Audio codec				
<b>Digital I/O</b>	8-bit digital I/O (4-bit input/4-bit output)	8-bit programmable digital I/O		8-bit programmable I/O (8-bit GPIO is for programming I/O)	
<b>Power Consumption</b>	Vcore_12V@5.86A, 12V@1.03A, 5V@1.72A, 3.3V@1.01A, 5VSB@0.47A (Intel® Xeon® E5-2658 2.1GHz with four 1333 MHz 4 GB DDR3 memory)	TBP	3.3V@1.65A, 5V@3.4A, 12V@8.58A, 5VSB@3.4A (Intel® Core™ i7 6700K 4.0GHz CPU with 32 GB (four 8 GB) 2133 MHz DDR4 memory)	3.3V@1.51A, 5V@3.31A, 12V@9.02A, 5VSB@3.7A (Intel® Xeon® E3-1275 v5 3.60 GHz CPU with 32 GB (four 8GB) 2133 MHz DDR4 memory)	3.3V@1.65A, 5V@3.4A, 12V@8.58A, 5VSB@3.4A (Intel® Core™ i7 6700K 4.0GHz CPU with 32 GB (Four 8 GB) 2133 MHz DDR4 memory)
<b>Watchdog Timer</b>	Software programmable and supports 1–255 sec. system reset				
<b>Operation Environment</b>	Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 10% ~ 95%, non-condensing	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing			
<b>Expansion Slot</b>	4 x PCIe x8	1 x Full-size PCIe Mini card slot (support mSATA) 1 x M.2 (A Key) 1 x M.2 (M Key) 1 x PCIe x16 (Gen3) (share x16 signal with 1 x8 & 1 x4 slot) 1 x PCIe x8 (Gen3) 2 x PCIe x4 (Gen3) 2 x PCI slot	1 x Full-size PCIe Mini card slot (support mSATA) 2 x PCIe x8 (Gen3) 3 x PCIe x4 (Gen3) 2 x PCI slot	1 x Full-size PCIe Mini card slot (support mSATA) 2 x PCIe x8 (Gen3) 3 x PCIe x4 (Gen3) 2 x PCI slot	1 x Full-size PCIe Mini card slot (support mSATA) 2 x PCIe x8 (Gen3) 3 x PCIe x4 (Gen3) 2 x PCI slot
<b>CPU Cooler</b>	CF-2011A-RS (for 1U chassis)/ CF-2011B-RS	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10

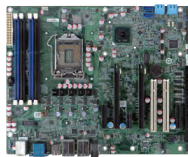
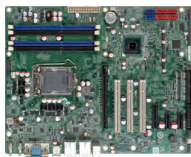


# Industrial Motherboard Selection Guide



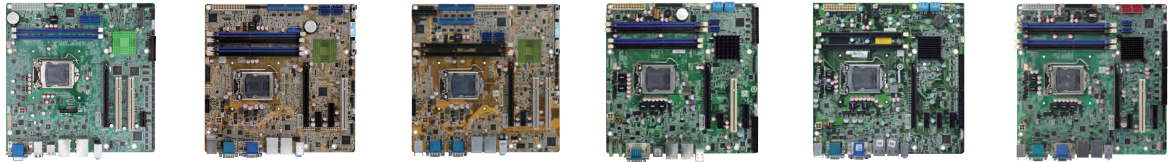
Model Name	IMBA-H110	IMBA-BDE	IMBA-H810	IMBA-C2260-i2-R11	IMBA-Q870-i2
<b>CPU Socket</b>	LGA1151	On board	LGA1150	LGA1150	LGA1150
<b>CPU Type</b>	6th generation Intel® Core™ i7/ i5/i3, Celeron® and Pentium® processor	Intel® Xeon processor D-1500 product family	4th generation Intel® Core™ i7/ i5/i3 Pentium® and Celeron® processor	Intel® Xeon® E3, Core™ i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor
<b>Chipset</b>	Intel® H110	Intel® Xeon processor D-1500 product family	Intel®H81	Intel® C226	Intel® Q87
<b>Memory</b>	Two 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs (system Max. 64 GB)	Four 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs (system max. 128 GB)	Two 240-pin 1333/1600 MHz dual-channel DDR3 SDRAM unbuffered DIMM (system max. 16 GB)	Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM ECC and non-ECC unbuffered DIMMs (system max. 32 GB)	Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 32 GB)
<b>Display Interface</b>	Dual independent display support 1 x DVI-I 1 x HDMI 1 x iDP interface	VGA via AST2510	Dual independent display support 1 x DVI-D 1 x VGA 1 x iDP interface	Dual display supported 1 x VGA 1 x iDP interface	Triple display supported 1 x VGA 1 x DVI-D 1 x HDMI 1 x iDP interface
<b>Ethernet</b>	LAN1: Intel® I219V PHY LAN2: Intel® I211 PCIe Controller	LAN1: Intel® I211-AT PCIe controller LAN2: Intel® I210-AT PCIe controller LAN3&4: Inphi CS4227 PHY (optional)	LAN1: Intel® I217-LM with Intel® AMT 9.0 support LAN2: Intel® I211-AT PCIe controller	LAN1: Intel® I217LM with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe controller with NCSI support	LAN1: Intel® I217LM with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe controller with NCSI support
<b>iRIS Remote Management Module</b>	N/A	N/A	N/A	1 x iRIS-2400 slot	1 x iRIS-2400 slot
<b>I/O Interface</b>	1 x KB/MS 1 x LPT 2 x RS-232/422/485 4 x RS-232 4 x USB 3.0 5 x USB 2.0	1 x PS/2 for KM/MS 1 x RS-232/422/485 1 x USB 2.0 Type A 4 x USB 3.0 5 x RS-232 6 x USB 2.0	1 x IR 1 x PS/2 for KB/MS 1 x RS-232/422/485 1 x USB 2.0 Type A 2 x USB 3.0 5 x RS-232 6 x USB 2.0	1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 4 x USB 3.0 5 x RS-232 8 x USB 2.0	1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 4 x USB 3.0 5 x RS-232 8 x USB 2.0
<b>Storage Interface</b>	4 x SATA 6Gb/s	6 x SATA 6Gb/s	2 x SATA 3Gb/s 2 x SATA 6Gb/s	6 x SATA 6Gb/s (RAID 0/1/5/10 supported) 1 x mSATA (colay SATA port 6) (support SATA 6Gb/s signal only)	6 x SATA 6Gb/s (RAID 0/1/5/10 supported) 1 x mSATA (colay SATA port 6) (support SATA 6Gb/s signal only)
<b>Audio</b>	Realtek ALC662 HD Audio codec				
<b>Digital I/O</b>	8-bit programmable I/O (8-bit GPIO is for programming I/O)				
<b>Power Consumption</b>	3.3V@1.53A, 5V@2.95A, 12V@8.38A, 5VSB@3.2A (Intel® Core™ i7 6700K 4.0GHz CPU with 16GB (two 8GB) 2133 MHz DDR4 memory)	3.3V@0.11A, 5V@2.83A, 12V@3.97A (Intel® Xeon D-1548 2.0GHz CPU with 32GB (four 4 GB) 2133MHz DDR4 memory)	3.3V@0.83A, 5V@2.2A, 12V@3.88A, 5VSB@0.3A (Intel® Core™ i7-4770K 3.90 GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)	3.3V@0.57A, 5V@4.50A, 12V@0.14A, Vcore_12V@5.20A, 5VSB@0.19A (Intel® E3-1240 v3 3.4GHz CPU with 16 GB (four 4 GB) 1333 MHz DDR3 memory)	3.3V@0.66A, 5V@4.34A, 12V@0.16A, Vcore_12V@4.01A, 5VSB@0.21A (Intel® Core™ i7-4770K 3.90 GHz CPU with four 1333 MHz 4 GB DDR3 DDR3 memory)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset				
<b>Operation Environment</b>	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: 0°C ~ 60°C (32°F ~ 140°F) Relative Humidity: 10% ~ 95%, non-condensing	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	
<b>Expansion Slot</b>	1 x Full-size PCIe Mini card slot (support mSATA) 1 x PCIe x16 slot (Gen3) 6 x PCI slot	1 x M.2 connector (M key) 1 x PCIe x4 slot (for 10GbE LAN card only) 5 x PCIe x4 Gen3 1 x PCIe x4 Gen2	1 x PCIe x16 2 x PCIe x1 4 x PCI 1 x PCIe Mini (support mSATA)	1 x PCIe x16 slot, 3 x PCIe x4 slot Default setting: 1 x PCIe x8, 2 x PCIe x4 Optional setting: 1 x PCIe x16 by BIOS setting 1 x PCIe x1 slot 2 x PCI slot	1 x PCIe x16 slot (Gen 3) 1 x PCIe x4 slot 1 x PCIe x1 slot 4 x PCI slots
<b>CPU Cooler</b>	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	XCF-989A-RS-R12	CF-115XA-R10 CF-115XE-R10	CF-115XA-R10 CF-115XE-R10	CF-115XA-R10 CF-115XE-R10

# Industrial Motherboard Selection Guide



Model Name	IMBA-Q770	IMBA-C2160	IMBA-H610	IMBA-C2060-R20	IMBA-Q670-R30
<b>CPU Socket</b>	LGA1155	LGA1155	LGA1155	LGA1155	LGA1155
<b>CPU Type</b>	Intel® Core™ i7/i5/i3 processor	Intel® Xeon® E3, Core™ i3 processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Xeon® E3, Core™ i3, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium® Dual, Celeron® processor
<b>Chipset</b>	Intel® Q77	Intel® C216	Intel® H61	Intel® C206	Intel® Q67
<b>Memory</b>	Four 240-pin 1600/1333 MHz dual-channel DDR3 SDRAM unbuffered DIMMs supported (system max. 32 GB)	Four 240-pin 1600/1333 MHz dual-channel DDR3 SDRAM ECC and non-ECC unbuffered DIMMs supported (system max. 32 GB)	Two 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM DIMM (system max. 16 GB)	Four 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM ECC Registered and non-ECC unbuffered DIMM (system max. 32 GB)	Four 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM unbuffered DIMM (system max. 32 GB)
<b>Display Interface</b>	Triple display supported 2 x HDMI 1 x DVI-I	Dual display supported 1 x VGA	Dual display supported 1 x VGA 1 x DVI-D	Dual display supported 1 x VGA 1 x HDMI 1 x DVI-D	Dual display supported 1 x VGA 1 x HDMI 1 x DVI-D
<b>Ethernet</b>	LAN1: Intel® 82583V PCIe controller LAN2: Intel® 82579L PHY with Intel® AMT 8.0 support	LAN1: Intel® 82579 PHY with Intel® AMT 8.0 support LAN2: Intel® 82574L PCIe controller	LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller	LAN1: Intel® 82574L PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 7.0 support	LAN1: Intel® 82583V PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 7.0 support
<b>iRIS Remote Management Module</b>	N/A				
<b>I/O Interface</b>	1 x I <sup>2</sup> C 1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 4 x USB 3.0 5 x RS-232 10 x USB 2.0	1 x I <sup>2</sup> C 1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 4 x USB 3.0 5 x RS-232 10 x USB 2.0	1 x I <sup>2</sup> C 1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 5 x RS-232 10 x USB 2.0	1 x I <sup>2</sup> C 1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 2 x USB 3.0 5 x RS-232 10 x USB 2.0	1 x I <sup>2</sup> C 1 x LPT 1 x PS/2 KB & MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 2 x USB 3.0 5 x RS-232 10 x USB 2.0
<b>Storage Interface</b>	2 x SATA 6Gb/s 4 x SATA 3Gb/s	2 x SATA 6Gb/s 4 x SATA 3Gb/s	4 x SATA 3Gb/s	2 x SATA 6Gb/s 4 x SATA 3Gb/s	2 x SATA 6Gb/s 4 x SATA 3Gb/s
<b>Audio</b>	Realtek ALC892 HD Audio codec	Realtek ALC662 HD Audio codec	Realtek ALC892 HD Audio codec		Realtek ALC662 HD Audio codec
<b>Digital I/O</b>	8-bit digital I/O (4-bit input/4-bit output)	8-bit programmable I/O (8-bit GPIO is for programming I/O)	8-bit digital I/O (4-bit input/4-bit output)		
<b>Power Consumption</b>	3.3V@1.39A, 5V@4.63A, Vcore@2.25A, 12V@0.47A, 5VSB@0.14A (Intel® 2.4GHz CPU with four 1333 MHz 2 GB DDR3 memory)	3.3V@1.55A, 5V@3.43A, Vcore@3.12A, 12V@0.20A, 5VSB@0.18A (Intel® Xeon® 2.2GHz CPU with two 1333 MHz 4 GB DDR3 memory)	3.3V@1.27A, 5V@3.87A, 12V@0.54A, Vcore@7.67A, 5VSB@0.15A (Intel® Core™ i7-2600K 3.40GHz CPU with two 1333 MHz 2 GB DDR3 Memory)	3.3V@1.61, 5V@2.79A, 12V@0.50A, Vcore@5.59A, 5VSB@0.16A (Intel® Xeon® E3-1275 3.40GHz CPU with four 1333 MHz 2 GB DDR3 memory)	3.3V@1.65A, 5V@6.31A, 12V@0.18A, Vcore@7.88A, 5VSB@0.15A (Intel® Core™ i5-2400 3.10GHz CPU with four 1333 MHz 4 GB DDR3 memory)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset				
<b>Operation Environment</b>	Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing				
<b>Expansion Slot</b>	1 x PCIe x16 1 x PCIe x4 2 x PCIe x1 3 x PCI slot	2 x PCIe x16 (share 1 PCIe x 16 signal) 2 x PCIe x4 1 x PCIe x1 2 x PCI	1 x PCIe x16 2 x PCIe x1 4 x PCI	2 x PCIe x16 (share 1 PCIe x 16 signal) 2 x PCIe x4 3 x PCI	1 x PCIe x16 1 x PCIe x4 1 x PCIe x1 4 x PCI
<b>CPU Cooler</b>	CF-115XA-R10 (for 1U chassis) CF-1156C-R20 CF-1156D-R20 CF-115XE-R10				

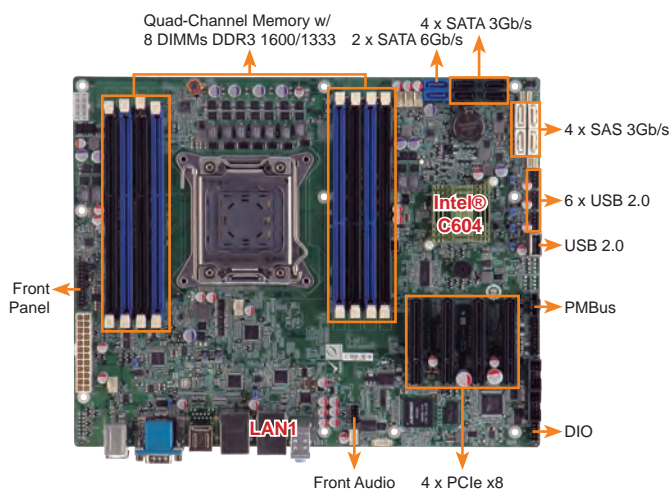
# Industrial Motherboard Selection Guide



Model Name	IMB-H110	IMB-Q870-i2	IMB-H810-i2-R11	IMB-Q770	IMB-H610	IMB-Q670-R30
<b>CPU Socket</b>	LGA1151	LGA1150	LGA1150	LGA1155	LGA1155	LGA1155
<b>CPU Type</b>	6th generation Intel® Core™ i7/i5/i3, Celeron® and Pentium® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3 processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor
<b>Chipset</b>	Intel® H110	Intel® Q87	Intel® H81	Intel® Q77	Intel® H61	Intel® Q67
<b>Memory</b>	Two 288-pin 2133MHz Dual-Channel DDR4 SDRAM Unbuffered DIMM supported up to 64GB	Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 32 GB)	Two 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 32 GB)	Four 240-pin 1600/1333 MHz dual-channel DDR3 SDRAM unbuffered DIMMs supported (system max. 32 GB)	Two 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM unbuffered DIMM supported (system max. 16 GB)	Four 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM unbuffered DIMM (system max. 32 GB)
<b>Display Interface</b>	Dual independent display support 1 x VGA 1 x DVI-I 1 x LVDS 1 x iDP	Triple display supported 1 x VGA 1 x DVI-D 1 x HDMI 1 x iDP interface	Triple display supported 1 x VGA1 1 x VGA2 1 x iDP interface	Triple display supported 2 x HDMI 1 x DVI-I	Dual display supported 1 x VGA (up to 2048x1536@75Hz) 1 x DVI-D (up to 1920x1200@60Hz)	Dual display supported 1 x VGA 1 x HDMI 1 x DVI-D
<b>Ethernet</b>	Dual LAN: RTL 8111GN controller	LAN1: Intel® I217LM with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe controller with NCSI support	LAN1: Intel® I217LM LAN2: Intel® I210-AT PCIe controller with NCSI support	LAN1: Intel® 82583V PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 8.0 support	LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller	LAN1: Intel® 82583V PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 7.0 support
<b>iRIS Remote Management Module</b>	N/A	1 x iRIS-2400 slot		N/A		
<b>I/O Interface</b>	1 x KB/MS 1 x LPT 2 x RS-232/422/485 4 x USB 3.0 4 x USB 3.0 8 x USB 2.0 10 x RS-232	1 x PS/2 for KB/MS 1 x RS-422/485 4 x USB 3.0 5 x RS-232 8 x USB 2.0	1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 by s/w selection 2 x RS-232 2 x USB 3.0 8 x RS-232 10 x USB 2.0	1 x I²C 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 4 x USB 3.0 6 x USB 2.0 9 x RS-232	1 x I²C 1 x PS/2 KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 5 x RS-232 (for IMB-H610A/IMB-H612A) 9 x RS-232 (for IMB-H610B/IMB-H612B) 10 x USB 2.0	1 x I²C 1 x Infrared interface 1 x PS/2 for KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 2 x USB 3.0 9 x RS-232 10 x USB 2.0
<b>Storage Interface</b>	4 x SATA 6Gb/s (RAID 0/1 supported)	4 x SATA 6Gb/s (RAID 0/1/5/10 supported)	2 x SATA 6Gb/s 2 x SATA 3Gb/s (AHCI supported)	2 x SATA 6Gb/s 4 x SATA 3Gb/s	4 x SATA 3Gb/s	2 x SATA 6Gb/s 4 x SATA 3Gb/s
<b>Audio</b>	Realtek ALC662 HD Audio codec					Realtek ALC892 HD Audio codec
<b>Digital I/O</b>	8-bit programmable digital I/O	8-bit programmable I/O (8-bit GPIO is for programming I/O)	N/A	24-bit digital I/O (12-bit input/12-bit output)	8-bit digital I/O (4-bit input/4-bit output)	24-bit digital I/O (12-bit input/12-bit output)
<b>Power Consumption</b>	3.3V@0.93A, 5V@2.99A, 12V@6.88A, 5VSB@0.02A (Intel® Core™ i7-6700K 4.0GHz CPU with 16GB (two 8GB) 2133 MHz DDR4 memory)	3.3V@0.53A, 5V@4.96A, 12V@0.12A, Vcore_12V@3.95A, 5VSB@0.18A (Intel® Core™ i7-4770K 3.90 GHz CPU with 16 GB four 1333 MHz 4 GB DDR3 memory)	3.3V@0.64A, 5V@4.20A, 12V@0.14A, Vcore_12V@3.88A, 5VSB@0.20A (Intel® Core™ i7-4770K 3.90 GHz CPU with 8 GB two 1333 MHz 4 GB DDR3 memory)	3.3V@0.31A, 5V@2.91A, 12V@0.51A, 12V@2.12A, -12V@0.10A (Intel® Core™ i3 3200 3.2GHz CPU with four 1333 MHz 1 GB DDR3 memory)	3.3V@1.75A, 5V@6.61A, Vcore@3.68A, 12V@0.09A, 5sb@0.12A (Intel® 2.60GHz CPU with four 1333 MHz 4 GB DDR3 memory)	3.3V@1.75A, 5V@6.61A, 12V@3.68A, 12V@0.09A, 5Vsb@0.12 (Intel® Core™ i3-2100 2.60GHz CPU with four 1333 MHz 4 GB DDR3 memory)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset					
<b>Operation Environment</b>	Temperature Range: -20°C ~ 60°C (-4°F~140°F) Relative Humidity: 5% ~ 95% non-condensing			Temperature Range: -10°C ~ 60°C (14°F~140°F) Relative Humidity: 5% ~ 95%, non-condensing		
<b>Expansion Slot</b>	1 x PCIe x16 slot (Gen3) 1 x Full-size PCIe Mini card slot 1 x PCIe x1 slot (Gen2) 2 x PCI slot	1 x PCIe x16 slot (Gen 3) 1 x PCIe x4 slot 1 x PCIe x1 slot 1 x PCI slot	1 x PCIe x16 slot (Gen 3) 1 x PCIe x1 slot 2 x PCI slot	1 x PCIe x16 1 x PCIe x4 1 x PCIe x1 1 x PCI	1 x PCIe x 16 3 x PCIe x 1	1 x PCIe x16 1 x PCIe x4 1 x PCIe x1 2 x PCI slot
<b>CPU Cooler</b>	CF-115XA-R10 CF-115XE-R10	CF-115XA-R10 CF-115XE-R10		CF-115XA-R10 (for 1U chassis) CF-1156C-R20 CF-1156D-R20 CF-115XE-R10		

# IMBA-C604EP

ATX Server Board Supports 32nm LGA2011 Intel® Xeon® E5 Series up to 8 Cores CPU with Intel® C604, DDR3, VGA, Dual Intel® PCIe GbE, PCIe Gen 3.0, SAS 3Gb/s, SATA 6Gb/s, SATA 3Gb/s, USB 2.0 and Audio



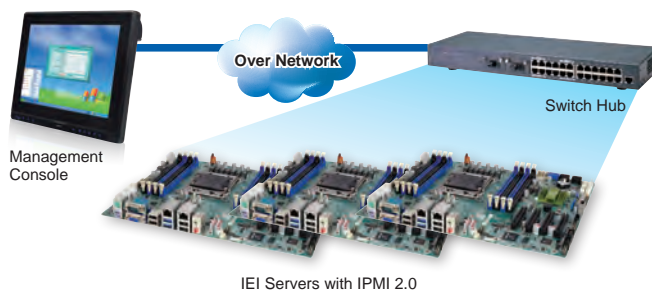
## Specifications

- ◆ CPU  
LGA2011 socket supports Intel® Xeon® E5-16xx, E5-26xx, E5-46xx series (up to 8 cores) processor
- ◆ Chipset  
Intel® C604
- ◆ Memory  
Eight 240-pin 1600/1333 MHz quad-channel DDR3 SDRAM ECC UDIMMs or non-ECC RDIMMs/LRDIMMs support up to 256GB (system max. 64GB UDIMMs, 128GB RDIMMs or 256GB LRDIMMs)
- ◆ BIOS  
UEFI BIOS
- ◆ Ethernet  
Dual Intel® 82574L PCIe controller
- ◆ Server Management  
1 x RJ-45 for Intelligent Platform Management Interface (IPMI) v.2.0  
IPMI 2.0 with virtual media over LAN and iKVM-over-LAN support
- ◆ Graphics Engine  
ASPEED AST2300  
PCIe VGA/2D controller, 1920x1200@60Hz 32bpp
- ◆ Display Output  
1 x VGA (up to 1920x1200@60Hz)
- ◆ Audio  
Realtek ALC662 HD Audio codec supports 5.1-channel  
2 x Audio jacks (line-out, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ External I/O Interface
 

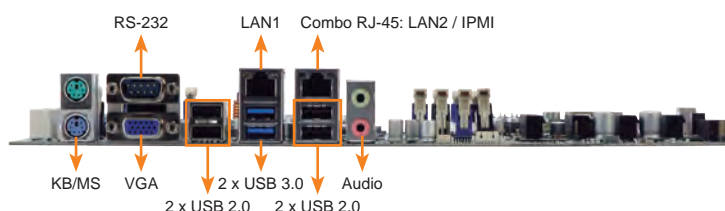
1 x KB/MS	2 x USB 3.0
1 x RS-232	4 x USB 2.0
- ◆ Internal I/O Interface
 

1 x KB/MS (1x6 pin)	1 x USB 2.0 (180° Type-A)
2 x SATA 6Gb/s (RAID 0/1/10/5)	6 x USB 2.0 (2x4 pin, P=2,54)
4 x SATA 3Gb/s (RAID 0/1/10/5)	4 x SAS 3Gb/s (RAID 0/1/10)
- ◆ Front Panel  
1 x Front panel connector (2x7 pin, Power LEC, HDD LED, LAN LED, speaker, power button, reset button)
- ◆ TPM  
1 x TPM (2x10 pin)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C  
1 x I<sup>2</sup>C (1x4 pin)
- ◆ SMBus  
1 x SMBus (1x5 pin)
- ◆ Expansion  
4 x PCIe x8 slots
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O  
8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
5 x System smart fan (1x4 pin)
- ◆ Power Supply  
ATX/AT power supply
- ◆ Power Consumption  
Vcore\_12V@5.86A, 12V@1.03A, 5V@1.72A, 3.3V@1.01A, 5VSb@0.47A (Intel® Xeon® E5-2658 2.1GHz with four 1333 MHz 4 GB DDR3 memory)
- ◆ Operating Temperature  
-10°C ~ 60°C
- ◆ Storage Temperature  
20°C ~ 70°C
- ◆ Operating Humidity  
10% ~ 95%, non-condensing
- ◆ Dimensions: 244 mm x 305 mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant

## Server management platform with universal processor



Server management features are supported by IPMI & iKVM protocols



## Features

- High performance LGA2011 Xeon® E5 series CPU (up to 8 cores) supported
- Support Quad-Channel memory technology, two DDR3 1600/1333MHz DIMM slots per channel up to 64GB UDIMMs, 128GB RDIMMs or 256GB LRDIMMs
- Server management features are supported by IPMI & iKVM protocols
- Integrated PCI Express Gen 3 for improved bandwidth and connectivity support up to 40 lanes at 8GT/s
- Intel® Matrix RAID supports 0/1/10/5 for SATA and 0/1/10 for SAS hard drive interfaces
- VGA display output driver form on-board IC via AST1300 for all Xeon® E5 series CPU
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x IMBA-C604EP single server board computer	
1 x I/O shielding	1 x Mini jumper pack
4 x SATA cable	1 x Utility CD
1 x One Key Recovery CD	1 x QIG

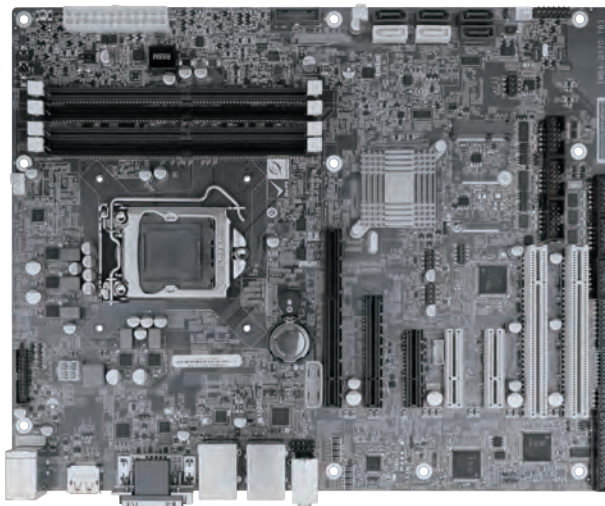
## Ordering Information

Part No.	Description
IMBA-C604EP-R10	ATX server board supports 32nm LGA2011 Intel® Xeon® E5 series up to 8 cores CPU with Intel® C604, DDR3, VGA, dual Intel® PCIe GbE, PCIe Gen 3.0, SAS 3Gb/s, SATA 6Gb/s, SATA 3Gb/s, USB 2.0, HD Audio and RoHS
19800-003100-100-RS	Dual port USB cable with bracket, 30mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
CF-2011A-RS	High performance LGA2011 cooler kit, 1U chassis compatible, 130W
CF-2011B-RS	High performance LGA2011 cooler kit, 2U chassis compatible, 130W
TPM-IN01-R20	20-pin Infineon TPM module, SW management tool, firmware V3.17

# IMBA-Q370

ATX Motherboard supports 14nm 8th Generation LGA1151 Intel® Core™ i7/i5/i3, Celeron® and Pentium® Processor, DDR4, Triple Independent Display, Dual GbE LAN, M.2, USB 3.0, SATA 6Gb/s, HD Audio and RoHS

Preliminary



## Specifications

- ◆ CPU  
8th generation LGA1151 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor
- ◆ Chipset: Intel® Q370
- ◆ BIOS: AMI UEFI BIOS
- ◆ Memory  
Four 288-pin 2666/2400 MHz dual-channel DDR4 SDRAM unbuffered DIMMs supported up to 64GB
- ◆ Graphics Engine  
Intel® HD Graphics Gen 9 engines with 16 low-power execution units, supports DX2015, OpenGL 5.X, OpenCL2.x, ES 2.0
- ◆ Display Output  
Triple independent display  
1 x HDMI (up to 4096x2304@60Hz)  
1 x DP++ (up to 4096x2304@60Hz)  
1 x VGA (up to 1920x1200@60Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 4096x2304@60Hz)
- ◆ Ethernet  
LAN1: Intel® I219LM PCIe controller with AMT 11.0 support  
LAN2: Intel® I210AT PCIe controller
- ◆ External I/O Interface  
1 x PS/2 KB/MS 2 x USB 2.0  
1 x RS-232/422/485 4 x USB 3.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin) 4 x RS-232 (2x5 pin, P=2.54)  
1 x LPT (2x13 pin, P=2.54) 6 x USB 2.0 (2x4 pin, P=2.54)  
1 x RS-232/422/485 (2x5 pin, P=2.54)  
6 x SATA 6Gb/s with 5V/12V SATA power connector (RAID 0/1/5/10 supported)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C: 1 x I<sup>2</sup>C (1x4 pin)
- ◆ Audio  
Realtek ALC662 HD codec  
2 x Audio jack (line-out, mic-in) (colay 3 x Audio jack)  
1 x Analog audio (2x5 pin)
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED  
2 x LAN LED (1x2 pin)
- ◆ Expansion  
1 x M.2 A key (2230/3030) 1 x PCIe x1  
1 x M.2 M key (PCIe, USB, SATA) 1 x PCIe x8  
1 x PCIe x16 (share x16 signal with 1 x8 & 1 x4 slots)  
2 x PCI 2 x PCIe x4 (1 support TB3)
- ◆ Digital I/O  
8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU fan connector (1x4 pin)  
1 x System fan connector (1x4 pin)
- ◆ Chassis Open: 1 x Chassis intrusion (1x2 pin)
- ◆ Power supply  
ATX/AT power supply  
Support AT/ATX mode  
ErP/EuP compliant
- ◆ Watchdog Timer: Software programmable, supports 1~255 sec. system reset
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244mm x 305mm
- ◆ Weight: GW:1200g / NW:700g
- ◆ CE/FCC compliant



## Features

- 8th generation LGA1151 Intel® Core™ i7/i5/i3, Celeron® and Pentium® processor
- Dual-channel DDR4 2666MHz
- Support DVI-I, DP++
- Support M.2 A key for WLAN expansion
- Support Thunderbolt 3 via TB3-40GDP-R10
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

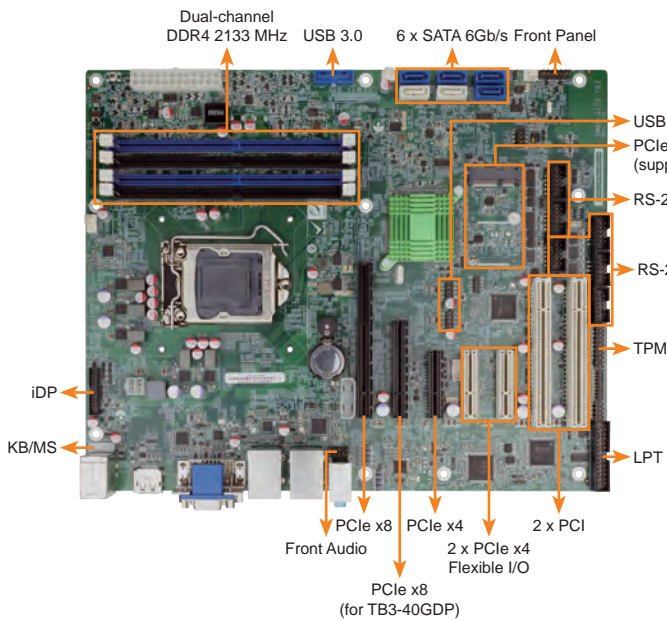
1 x IMBA-Q370 single board computer	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
IMBA-Q370-R10	ATX motherboard supports 14nm 8th generation LGA1151 Intel® Core™ i7/i5/i3, Celeron® and Pentium® processor, DDR4, triple independent displays, dual GbE LAN, M.2, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-100-RS	Dual port USB cable with bracket, 30mm, P=2.54
19800-010500-200-RS	USB 3.0 cable 457mm with bracket
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-000702-100-RS	RS-232 cable, 230mm, P=2.54
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA1155/1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN02-R20	20-pin Infineon TPM 2.0 module, software management tool, firmware v5.5

# IMBA-Q170-TB3

ATX Motherboard supports 14nm LGA1151 Intel® CPU, Intel® Q170, DDR4, Triple Independent Display via VGA, DVI-D, DP, Dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS

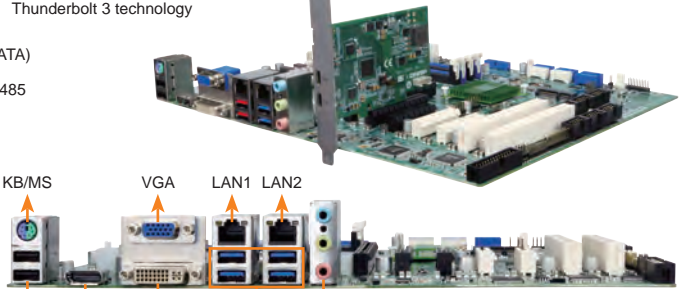


## Thunderbolt 3 Add-on Card Support

**New**

Dual Thunderbolt 3 by PCIe x4 card with Intel® Alpine Ridge DSL6540

More high speed applications through the latest USB Type-C and Thunderbolt 3 technology



Intel®  
AMT 11.0

Native  
PCIe  
Gen. 3

DDR4  
2133

Triple  
Display

SUPER SPEED  
USB  
3.0

SERIAL  
ATA  
6Gb/s

Gigabit  
Ethernet  
PCIe  
GbE

## Specifications

- ◆ CPU  
LGA 1151 socket supports 6th/7th generation Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor
- ◆ Chipset  
Intel® Q170
- ◆ Memory  
Four 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs support up to 64 GB
- ◆ BIOS  
UEFI BIOS
- ◆ Graphics Engine  
Intel® HD Graphics Gen 9 Engines with 16 low-power execution units, supports DX11/12, OpenGL 4.3/4.4, OpenCL2.x, ES 2.0
- ◆ Display Output  
Triple independent display  
1 x VGA (up to 1920x1200@60 Hz)  
1 x DVI-D (up to 1920x1200@60Hz)  
1 x DP++ (up to 4096x2304@60Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 4096x2304@60Hz)
- ◆ Ethernet  
LAN1: Intel® I219LM PCIe controller  
LAN2: Intel® I211AT PCIe with Intel® AMT 11.0 support
- ◆ External I/O Interface  
1 x RS-232  
2 x USB 2.0  
4 x USB 3.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin)  
2 x RS-232/422/485 (1x4 pin, P=2.54)  
2 x USB 3.0 (2x10 pin, P=2.0)  
4 x USB 2.0 (2x4 pin, P=2.0)  
1 x LPT (2x13 pin, P=2.54)  
4 x RS-232 (2x5 pin, P=2.54)  
4 x SATA 6Gb/s (RAID 0/1/5/10 supported)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Audio  
Realtek ALC662 HD Audio Codec supports 5.1 channel  
3 x Audio jacks (line-out, line-in, mic-in) on rear IO  
1 x Front Audio (2x5 pin)
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ PC: 1 x PC (1x4 pin)
- ◆ Expansion  
1 x Full-size PCIe Mini card slot  
2 x PCI slot  
2 x PCIe x8 slot  
1 x PCIe x4 slot (supports Thunderbolt 3 card)  
2 x PCIe x4 slot
- ◆ Watchdog Timer: Software programmable, supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
1 x System smart fan(1x4 pin)
- ◆ Power Supply: ATX/AT power supply
- ◆ Power Consumption  
3.3V@1.65A, 5V@3.4A, 12V@8.58A, 5VSB@3.4A  
(Intel® Core™ i7 6700K 4.0GHz CPU with 32GB 2133MHz DDR4 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244mm x 305mm
- ◆ Weight: GW:1200g, NW: 700g
- ◆ CE/FCC compliant

## Features

- 14nm LGA1151 Intel® 6th/7th Gen processor supported
- 2133 MHz dual-channel DDR4
- Intel® PCIe GbE
- Support for triple display with DP, DVI and VGA
- Support PCI Express generation 3.0 at 8GT/s I/O bandwidth
- USB 3.0 and SATA 6Gb/s
- Support Thunderbolt 3 card
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

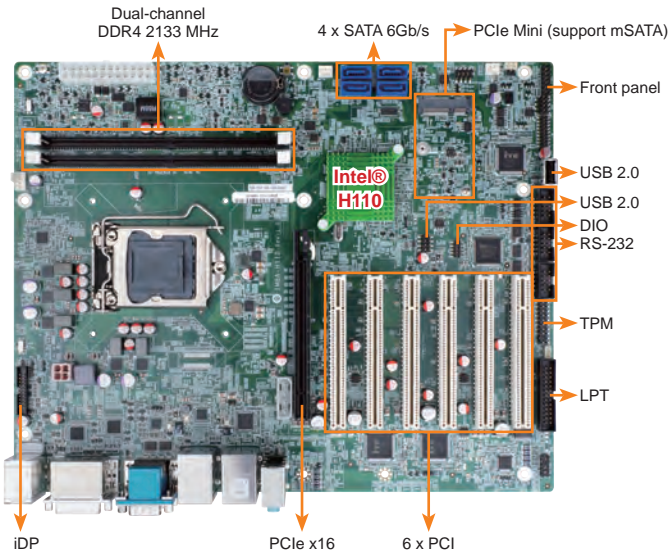
1 x IMBA-Q170-TB3-R10	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
IMBA-Q170-TB3-R10	ATX motherboard supports 14nm LGA1151 Intel® Skylake CPU, Intel® Q170 chipset, DDR4, triple independent displays with VGA, DVI-D, DP, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
TB3-40GDP-R10	PCI Express Thunderbolt expansion card with Intel® DSL6540, dual thunderbolt 3 port (USB Type-C), RoHS
PCIES-2PIMSATA-R10	Peripheral card for flexible I/O, 1 x PCIe Mini, 2 x mSATA expansion
PCIES-USB3-R10	Peripheral card for flexible I/O, USB 3.0 expansion
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-100-RS	Dual port USB cable with bracket, 30mm, P=2.54
19800-010500-200-RS	USB 3.0 cable 457mm with bracket
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-000702-100-RS	RS-232 cable, 230mm, P=2.54
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA1155/1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN02-R20	20-pin Infineon TPM 2.0 module, software management tool, firmware v5.5

# IMBA-H110

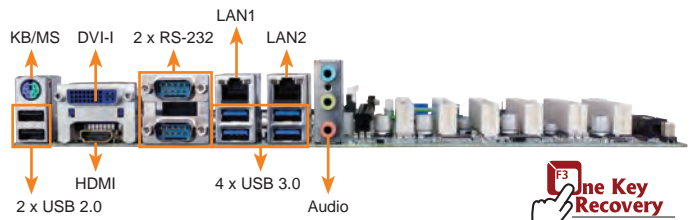
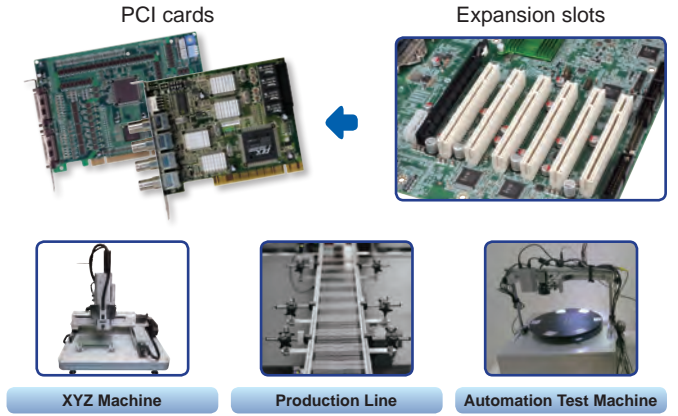
ATX motherboard supports 14nm LGA1151 6th Generation Intel® Core™ i7/i5/i3, Celeron® and Pentium® processor, DDR4, dual independent displays DVI-I/HDMI/iDP, dual Intel® GbE LAN, USB 3.0, SATA 6Gb/s, HD Audio and RoHS



## Specifications

- ◆ CPU  
LGA 1151 socket supports Intel® 6th/7th generation Core™ i7/i5/i3, Pentium® or Celeron® processor
- ◆ Chipset  
Intel® H110
- ◆ Memory  
Two 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs support up to 64 GB
- ◆ BIOS  
UEFI BIOS
- ◆ Graphics Engine  
Intel® HD Graphics Gen 9 engine with 16 low-power execution units supports DX2015, OpenGL 5.X and OpenCL2.x, ES 2.0
- ◆ Display Output  
Dual independent display  
1 x DVI-I (up to 1920x1200@60Hz)  
1 x HDMI 1.4 (up to 4096x2160@24Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60Hz)
- ◆ Ethernet  
LAN1: Intel® I219LM PCIe controller  
LAN2: Intel® I211 PCIe controller
- ◆ External I/O Interface  
4 x USB 3.0  
2 x USB 2.0  
2 x RS-232
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin)                      2 x RS-232 (2x5 pin, P=2.54)  
1 x LPT (2x13 pin, P=2.54)              2 x USB 2.0 (2x4 pin, P=2.54)  
1 x RS-232/422/485 (2x5 pin, P=2.54)    4 x SATA 6Gb/s  
1 x USB 2.0 (180° Type-A)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ I²C  
1 x I²C (1x4 pin)
- ◆ TPM  
1 x TPM (2x10 pin)
- ◆ Audio  
Realtek ALC662 HD codec supports 5.1-channel  
3 x Audio jacks (line-out, line-in, mic-in) on rear I/O  
1 x Front audio (2x5 pin)
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Expansion  
1 x Full-size PCIe Mini card slot (support mSATA)  
1 x PCIe x16 slot (Gen3)  
6 x PCI slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)                      2 x System fan (1x3 pin)
- ◆ Power Supply: ATX/AT power supply
- ◆ Power Consumption  
3.3V@1.53A, 5V@2.95A, 12V@8.38A, 5VSB@3.2A  
(Intel® Core™ i7 6700K 4.0GHz CPU with 16GB (two 8GB) 2133 MHz DDR4 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244mm x 305mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant

## Multiple PCI Expansion Support



## Features

- LGA 1151 Intel® 6th/7th generation Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Dual-channel DDR4 2133 MHz
- Support dual displays with DVI-I/HDMI/iDP
- Support USB 3.0 and SATA 6Gb/s
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

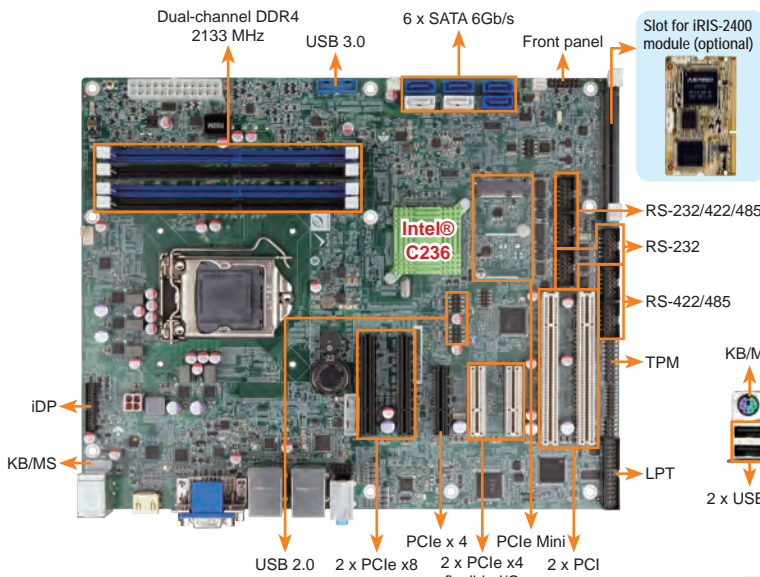
1 x IMBA-H110 single board computer	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
IMBA-H110-R10	ATX motherboard supports 14nm LGA1151 6th Generation Intel® Core™ i7/i5/i3, Celeron® and Pentium® processor, DDR4, dual independent displays DVI-I/HDMI/iDP, dual Intel® GbE LAN, SATA 6Gb/s, USB 3.0, HD Audio and RoHS
IMBA-H110-ECO-R10	ATX motherboard supports 14nm LGA1151 6th Generation Intel® Core™ i7/i5/i3, Celeron® and Pentium® processor, DDR4, dual independent displays DVI-I/HDMI/iDP, dual Intel® GbE LAN, SATA 6Gb/s, USB 3.0, HD Audio, ECO packing and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-020100-100-RS	RS-232 cable, 230mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN02-R20	20-pin Infineon TPM 2.0 module, software management tool, firmware v5.5

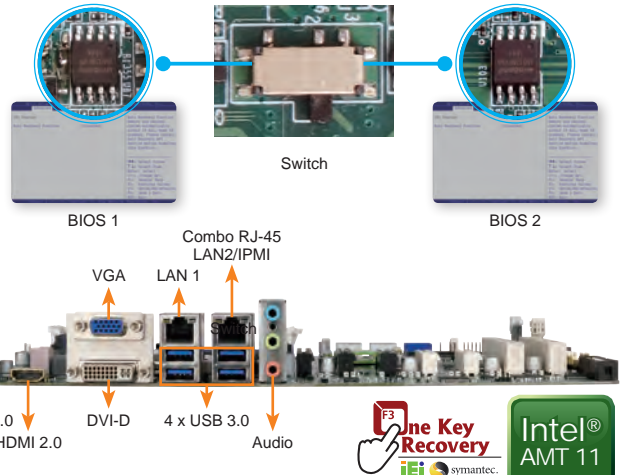
# IMBA-C2360-i2

ATX motherboard supports 14nm LGA1151 Intel® Xeon® E3 v5 series, Core™ i3, Pentium®, Celeron® processor per Intel® C236, DDR4, triple independent display, HDMI 2.0, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio, IPMI 2.0 and RoHS



## Dual BIOS (for flexible I/O only)

Easy for customer to switch different ME firmware to achieve I/O flexibility



## Specifications

- ◆ CPU  
LGA 1151 socket supports Intel® Xeon® E3 v5/v6, 6th/7th generation Core™ i3, Pentium® or Celeron® processor
- ◆ Chipset  
Intel® C236
- ◆ Memory  
Four 288-pin 2133 MHz dual-channel DDR4 SDRAM ECC and non-ECC unbuffered DIMMs support up to 64 GB
- ◆ BIOS  
UEFI BIOS
- ◆ Graphics Engine  
Intel® HD Graphics Gen 9 engine with 16 low-power execution units, supports DX11/12, OpenGL 4.3/4.4 and OpenCL2.x, ES 2.0
- ◆ Display Output  
Triple independent display  
1 x VGA (up to 1920x1200@60Hz)  
1 x DVI-D (up to 1920x1200@60Hz)  
1 x HDMI 2.0 (up to 4096x2160@60Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60Hz)
- ◆ Ethernet  
LAN1: Intel® I219LM PCIe controller  
LAN2: Intel® I210AT PCIe with Intel® AMT 11.0 support
- ◆ External I/O Interface  
2 x USB 2.0  
4 x USB 3.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin)  
1 x LPT (2x13 pin, P=2.54)  
2 x USB 3.0 (2x10 pin, P=2.0)  
2 x RS-232/422/485 (2x5 pin, P=2.54)  
4 x RS-232 (2x5 pin, P=2.0)  
4 x USB 2.0 (2x4 pin, P=2.0)  
6 x SATA 6Gb/s
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ PC: 1 x PC (1x4 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Audio  
Realtek ALC662 HD codec supports 5.1-channel  
3 x Audio jacks (line-out, line-in, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Expansion  
1 x Full-size PCIe Mini card slot (support mSATA)    2 x PCIe x8 slot (Gen3)  
2 x PCI slot    3 x PCIe x4 slot (Gen3)
- ◆ iRIS Remote Management Module: 1 x iRIS-2400 slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
2 x System smart fan (1x3 pin)
- ◆ Power Supply: ATX/AT power supply
- ◆ Power Consumption  
3.3V@1.51A, 5V@3.31A, 12V@9.02A, 5VSB@3.7A (Intel® Xeon® E3-1275 v5 3.60 GHz CPU with 32 GB (four 8GB) 2133 MHz DDR4 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244mm x 305mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant



## Features

- LGA 1151 Intel® Xeon® E3 v5/v6, 6th/7th generation Core™ i3, Pentium® or Celeron® processor supported
- Dual-channel DDR4 2133 MHz
- Intel® PCIe GbE with Intel® AMT11.0 support
- Support independent triple display with HDMI, DVI and VGA
- Support PCI Express generation 3.0 at 8GT/s I/O bandwidth
- USB 3.0 and SATA 6Gb/s
- Support IPMI 2.0 via iRIS-2400
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x IMBA-C2360-i2 single board computer	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

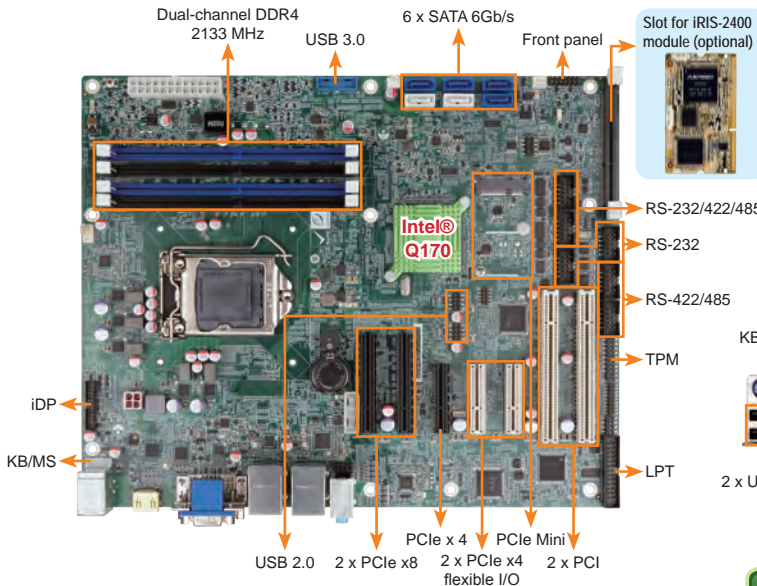
## Ordering Information

Part No.	Description
IMBA-C2360-i2-R10	ATX motherboard supports 14nm LGA1151 Intel® Xeon® E3 v5 series, Core™ i3, Pentium®, Celeron® processor per Intel® C236, DDR4, triple independent display VGA/DVI-D/HDMI 2.0, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio, IPMI 2.0 and RoHS
iRIS-2400-R10	IPMI 2.0 adapter card with AST2400 BMC chip for DDR3 SO-DIMM socket interface
PCIES-2PIMSATA-R10	Peripheral card for flexible I/O, 1 x PCIe Mini, 2 x mSATA expansion
PCIES-USB3-R10	Peripheral card for flexible I/O, USB 3.0 expansion
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-100-RS	Dual port USB cable with bracket, 30mm, P=2.54
19800-010500-200-RS	USB 3.0 cable with bracket, 457mm
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-001203-200-RS	RS-232 cable, 40-pin to four DB-9, 400mm, P=2.54
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN02-R20	20-pin Infineon TPM 2.0 module, software management tool, firmware v5.5



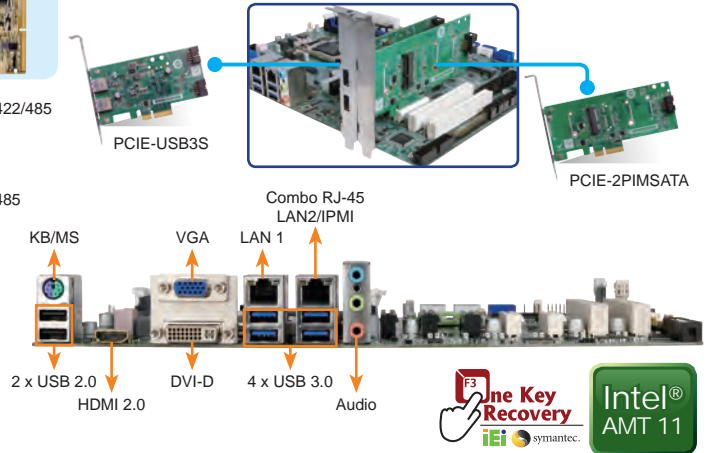
# IMBA-Q170-i2

ATX motherboard supports 14nm LGA1151 Intel® CPU, Intel® Q170, DDR4, triple independent display VGA/ DVI-D/ HDMI 2.0, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio, IPMI 2.0 and RoHS



## Flexible I/O support

**IEI USB 3.0 & mSATA/PCIe Mini expansion card**  
The expansion card can provide more choices to meet users demand



## Specifications

- ◆ CPU  
LGA 1151 socket supports Intel® 6th/7th generation Core™ i7/i5/i3, Pentium® or Celeron® processor
- ◆ Chipset  
Intel® Q170
- ◆ Memory  
Four 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs support up to 64 GB
- ◆ BIOS: UEFI BIOS
- ◆ Graphics Engine  
Intel® HD Graphics Gen 9 engine with 16 low-power execution units, supports DX11/12, OpenGL 4.3/4.4 and OpenCL 2.x, ES 2.0
- ◆ Display Output  
Triple independent display  
1 x VGA (up to 1920x1200@60 Hz)  
1 x DVI-D (up to 1920x1200@60Hz)  
1 x HDMI 2.0 (up to 4096x2160@60Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60Hz)
- ◆ Ethernet  
LAN1: Intel® I219LM PCIe controller  
LAN2: Intel® I210AT PCIe with Intel® AMT 11.0 support
- ◆ External I/O Interface  
2 x USB 2.0  
4 x USB 3.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin) 4 x RS-232 (2x5 pin, P=2.54)  
1 x LPT (2x13 pin, P=2.54) 4 x USB 2.0 (2x4 pin, P=2.0)  
2 x USB 3.0 (2x10 pin, P=2.0) 6 x SATA 6Gb/s (RAID 0/1/5/10 supported)  
2 x RS-232/422/485 (2x5 pin, P=2.54)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C: 1 x I<sup>2</sup>C (1x4 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Audio  
Realtek ALC662 HD codec supports 5.1-channel  
3 x Audio jacks (line-out, line-in, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Expansion  
1 x Full-size PCIe Mini card slot (support mSATA)  
2 x PCI slot  
2 x PCIe x 8 slot (Gen3)  
3 x PCIe x 4 slot (Gen3)
- ◆ iRIS Remote Management Module: 1 x iRIS-2400 slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
2 x System smart fan (1x3 pin)
- ◆ Chassis Open: 1 x Chassis intrusion (1x2 pin)
- ◆ Power Supply: ATX/AT power supply
- ◆ Power Consumption  
3.3V@1.65A, 5V@3.4A, 12V@8.58A, 5VSB@3.4A  
(Intel® Core™ i7 6700K 4.0GHz CPU with 32 GB (four 4 GB) 2133 MHz DDR4 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244mm x 305mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant



## Features

- LGA 1151 Intel® 6th/7th generation Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Dual-channel DDR4 2133 MHz
- Support triple display with HDMI, DVI and VGA
- Support USB 3.0, SATA 6Gb/s and PCI Express Gen3
- Support IPMI 2.0 via iRIS-2400 module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

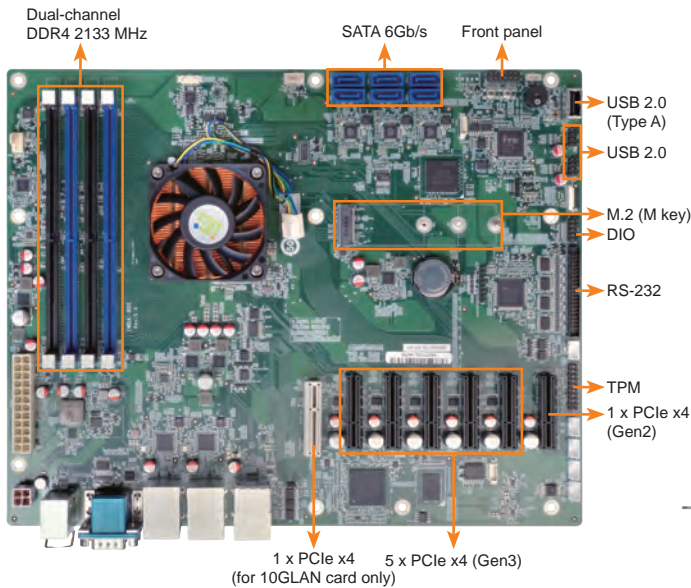
1 x IMBA-Q170-i2 single board computer	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
IMBA-Q170-i2-R10	ATX motherboard supports 14nm LGA1151 Intel® CPU, Intel® Q170, DDR4, triple independent display VGA/ DVI-D/ HDMI 2.0, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio, IPMI 2.0 and RoHS
IMBA-Q170-ECO-R10	ATX motherboard supports 14nm LGA1151 Intel® CPU, Intel® Q170, DDR4, triple independent display VGA/ DVI-D/ HDMI 2.0, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio, ECO packing and RoHS
iRIS-2400-R10	IPMI 2.0 adapter card with AST2400 BMC chip for DDR3 SO-DIMM socket interface
PCIES-2PIMSATA-R10	Peripheral card for flexible I/O, 1 x PCIe Mini, 2 x mSATA expansion
PCIES-USB3-R10	Peripheral card for flexible I/O, USB 3.0 expansion
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-100-RS	Dual port USB cable with bracket, 30mm, P=2.54
19800-010500-200-RS	USB 3.0 cable 457mm with bracket
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-000702-100-RS	RS-232 cable, 230mm, P=2.54
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA1155/1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN02-R20	20-pin Infineon TPM 2.0 module, software management tool, firmware v5.5

# IMBA-BDE

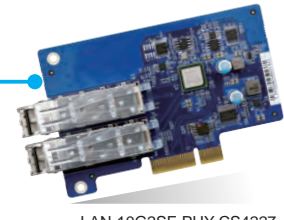
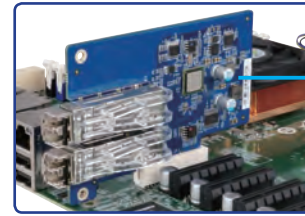
ATX motherboard supports 14nm Intel® Xeon® D1500 family, DDR4, VGA, dual Intel® GbE, dual 10GbE, four USB 3.0, six SATA 6Gb/s, HD Audio, and RoHS



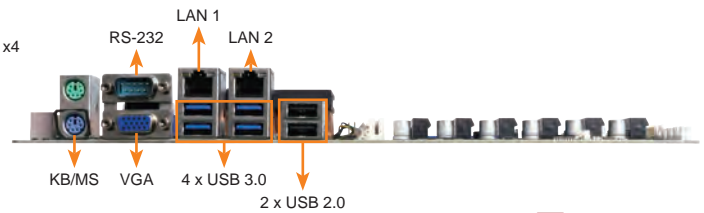
## High-speed 10GbE Add-on Card Support

### Integrated 10GbE LAN Interface

10GbE LAN card meets customer demand for high-speed internet



LAN-10G2SF-PHY-CS4227



## Specifications

- ◆ SoC
  - Intel® Xeon® processor D-1500 product family
  - Intel® Xeon® processor D-1548 (up to 8-core, 12M cache, TDP=45W)
  - Intel® Xeon® processor D-1518 (up to 4-core, 6M cache, TDP=35W)
- ◆ Memory
  - Four 288-pin 2133 MHz dual-channel DDR4 SDRAM unbuffered DIMMs support up to 128 GB
- ◆ BIOS
  - UEFI BIOS
- ◆ Ethernet
  - LAN1&2: Intel® I210-AT PCIe controller
  - LAN3&4: Inphi CS4227 PHY (optional)
- ◆ Display Output
  - 1 x VGA (up to 1920x1200@60 Hz)
- ◆ External I/O Interface
  - 1 x KB/MS 2 x USB 2.0
  - 1 x RS-232 4 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin) 1 x RS-232/RS-422/485 (2x5 pin, P=2.54)
  - 1 x USB 2.0 (180° Type-A) 4 x RS-232 (2x5 pin, P=2.54)
  - 4 x USB 2.0 (2x4 pin, P=2.54) 6 x SATA 6Gb/s (RAID 0/1/5/10 supported)
- ◆ Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED
  - 2 x LAN LED (1x2 pin)
- ◆ TPM
  - 1 x TPM (2x10 pin)
- ◆ SMBus
  - 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C
  - 1 x I<sup>2</sup>C (1x4 pin)
- ◆ Expansion
  - 1 x 10GbE LAN card slot
  - 1 x M.2 connector (M key, 2242~2280, SATA & PCIe x2 signal)
  - 1 x PCIe x4 Gen 2
  - 5 x PCIe x4 Gen 3
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O
  - 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x4 pin)
- ◆ Power Supply
  - ATX power supply, ATX/AT mode support
- ◆ Power Consumption
  - 3.3V@0.11A, 5V@2.83A, 12V@3.97A
  - (Intel® Xeon D-1548 2.0GHz CPU with 32GB (four 4 GB) 2133MHz DDR4 memory)
- ◆ Operating Temperature
  - 0°C ~ 60°C
- ◆ Storage Temperature
  - 10°C ~ 70°C
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimensions
  - 244mm x 305mm
- ◆ Weight
  - GW: 1200g / NW: 700g
- ◆ CE/FCC compliant



## Features

- Intel® Xeon processor D-1500 product family
- Dual-channel 2133 MHz DDR4 up to 128 GB (ECC SO-DIMM, UDIMM, RDIMM)
- 10 GbE LAN supported
- Support PCI Express generation 3.0 at 8GT/s I/O bandwidth
- High speed interface for USB 3.0 and SATA 6Gb/s
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

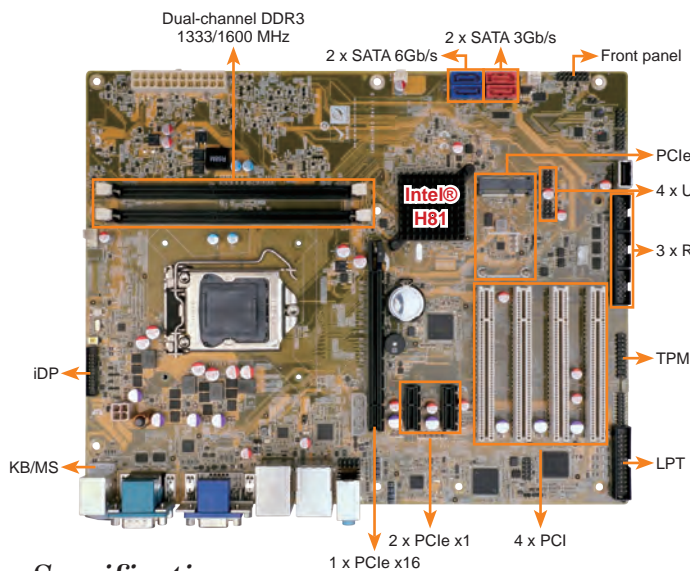
1 x IMBA-BDE single board computer
1 x I/O shielding
2 x SATA cable
1 x Utility CD
1 x QIG
1 x One Key Recovery CD

## Ordering Information

Part No.	Description
IMBA-BDE-D1548-R10	ATX motherboard supports 14nm Intel® Xeon® D-1548, DDR4, VGA, dual Intel® GbE, dual 10GbE, four USB 3.0, six SATA 6Gb/s, HD Audio and RoHS
IMBA-BDE-D1518-R10	ATX motherboard supports 14nm Intel® Xeon® D-1518, DDR4, VGA, dual Intel® GbE, dual 10GbE, four USB 3.0, six SATA 6Gb/s, HD Audio and RoHS
LAN-10G2SF-PHY-CS4227	10 GbE LAN card, dual port support, RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-100-RS	Dual port USB cable with bracket, 300mm, P=2.54
19800-020100-100-RS	RS-232 cable with bracket, Dual 10-pin to dual DB-9, 230mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# IMBA-H810

ATX motherboard supports 22nm LGA 1150 4th generation Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU with Intel® H81, DDR3, VGA/DVI-D/iDP, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS



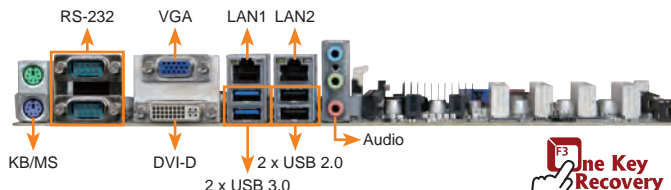
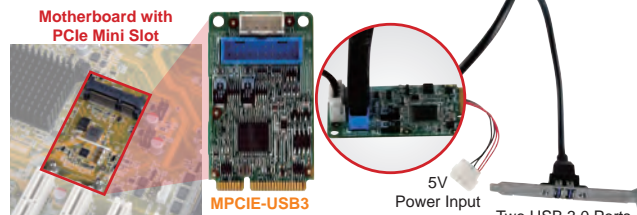
## Specifications

- ◆ CPU  
LGA1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® processor supported
- ◆ Chipset  
Intel® H81
- ◆ Memory  
Two 240-pin 1600/1333 MHz dual-channel DDR3 SDRAM ECC and non-ECC unbuffered DIMMs support up to 16GB
- ◆ BIOS  
UEFI BIOS
- ◆ Graphics Engine  
Intel® HD Graphics Gen 7.5 supports DX11.1 and OpenCL 1.2, OpenGL 3.2 Full MPEG2, VC1, AVC Decode
- ◆ Display Output  
Dual independent display  
1 x VGA (up to 1920x1200@60 Hz)  
1 x DVI-D (up to 2560x1600@60 Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60 Hz)
- ◆ Ethernet  
LAN1: Intel® I217-LM with Intel® AMT9.0 support  
LAN2: Intel® I211-AT PCIe Controller
- ◆ External I/O Interface  
1 x KB/MS 2 x USB 2.0  
2 x RS-232 2 x USB 3.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin) 1 x USB 2.0 (180° Type-A)  
1 x LPT (2x13 pin) 2 x SATA 3Gb/s (SATA3, SATA4) (Red)  
1 x mSATA (share with SATA4) 3 x RS-232 (2x5 pin, P=2.54)  
1 x RS-422/485 (1x4 pin, P=2.0) 4 x USB 2.0 (2x4 pin, P=2.54)  
2 x SATA 6Gb/s (SATA1, SATA2) (AHCI supported, no RAID) (Blue)
- ◆ Audio  
Realtek ALC662 HD codec supports 5.1-channel  
3 x Audio jacks (line-out, line-in, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED  
2 x LAN LED (1x2 pin)
- ◆ TPM  
1 x TPM (2x10 pin)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C  
1 x I<sup>2</sup>C (1x4 pin)
- ◆ Infrared Interface  
1 x Infrared Interface (1x5 pin)
- ◆ Expansion  
1 x Full-size PCIe Mini card slot (support mSATA) 2 x PCIe x1  
1 x PCIe x16 4 x PCI
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x 4 pin)  
1 x System fan (1x 3 pin)
- ◆ Chassis Intrusion Detection: 1 x Chassis intrusion connector (1x2 pin)
- ◆ Power Supply: ATX power supply, ATX/AT mode support
- ◆ Power Consumption  
3.3V@0.83A, 5V@2.2A, 12V@3.88A, 5VSB@0.3A  
(Intel® Core™ i7-4770K 3.90GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244 mm x 305 mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant

## PCIe Mini Add-on Value

### IEI USB 3.0 Expanded Solution

The MPCIE-USB3 board can be installed to add two additional SuperSpeed USB 3.0 ports for the motherboard via the PCIe Mini slot.



## Features

- 4th generation LGA1150 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Dual-channel DDR3 1333/1600 MHz support up to 16 GB
- Intel® HD Graphics technology integrates high-performance graphics and media processing
- USB 3.0, and SATA supported
- TPM V1.2 hardware security function supported by TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

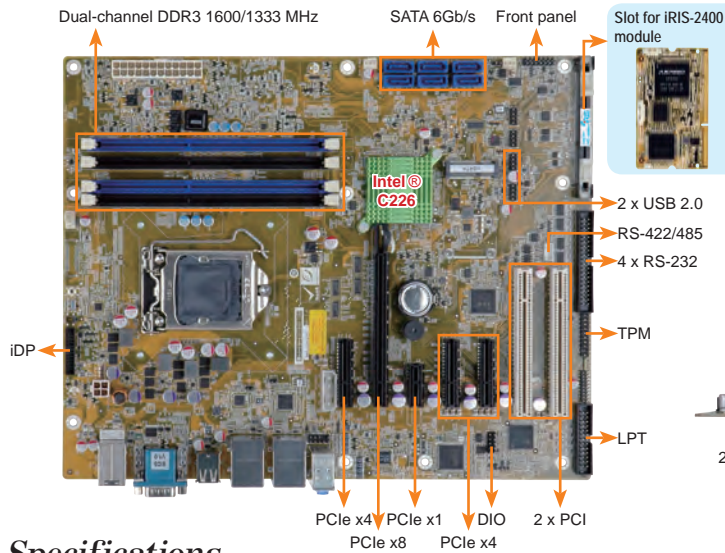
1 x IMBA-H810 single board computer	
1 x I/O shielding	
2 x SATA cable	1 x QIG
1 x One Key Recovery CD	1 x Utility CD

## Ordering Information

Part No.	Description
IMBA-H810-R10	ATX motherboard supports 22nm LGA 1150 4th generation Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU with Intel® H81, DDR3, VGA/DVI-D/iDP, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
IMBA-H810-ECO-R10	ATX motherboard supports 22nm LGA 1150 4th generation Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU with Intel® H81, DDR3, VGA/DVI-D/iDP, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio, ECO packing, RoHS (10 pce/pack)
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-010500-200-RS	USB 3.0 cable with bracket, 450mm
19800-020100-100-RS	RS-232 cable with bracket, Dual 10-pin to dual DB-9, 230mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-001203-100-RS	RS-232 cable with bracket, Dual 10-pin to dual DB-9, 230mm, P=2.54
32205-003800-200-RS	RS-422/485 cable, 200mm, P=2.0
CF-115XA-R10	High performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

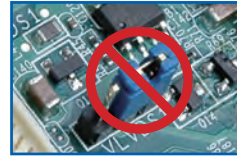
# IMBA-C2260-i2-R11

ATX motherboard supports 22nm LGA1150 Intel® Xeon E3, Core™ i3, Pentium® and Celeron®, DDR3, VGA, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, iRIS-2400 and RoHS

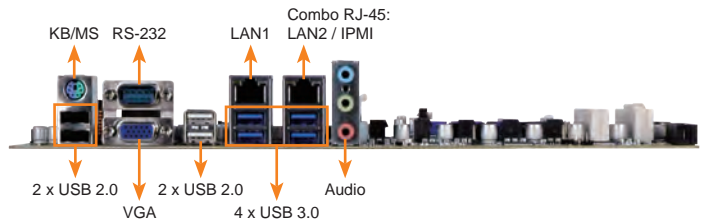


## Fully Jumper-less Support

NO jumper pin header



Jumper setting via BIOS menu



## Specifications

- ◆ CPU  
LGA1150 Intel® Xeon® E3, Core™ i3, Pentium® or Celeron® processor supported
- ◆ Chipset  
Intel® C226
- ◆ Memory  
Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM ECC and non-ECC unbuffered DIMMs support up to 32 GB
- ◆ BIOS  
UEFI BIOS
- ◆ Ethernet  
LAN1: Intel® I217LM with Intel® AMT 9.0 support  
LAN2: Intel® I210-AT PCIe controller with NCSI support
- ◆ Graphics Engine  
Intel® HD Graphics Gen 7.5 supports DX11.1 and OpenCL 1.2, OpenGL 3.2  
Full MPEG2, VC1, AVC Decode
- ◆ Display Output  
Triple independent display  
1 x VGA (up to 1920x1200@60 Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60 Hz)
- ◆ Audio  
Realtek ALC662 HD codec supports 5.1-channel  
3 x Audio jacks (line-out, line-in, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ External I/O Interface  
1 x KB/MS  
4 x USB 2.0  
1 x RS-232  
4 x USB 3.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin)  
1 x RS-422/485 (1x4 pin, P=2.0)  
1 x LPT (2x13 pin, P=2.54)  
4 x RS-232 (2x20 pin, P=2.54)  
1 x mSATA (colay SATA 6)  
4 x USB 2.0 (2x4 pin, P=2.54)  
6 x SATA 6Gb/s (RAID 0/1/5/10 supported)
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED  
2 x LAN LED (1x2 pin)
- ◆ TPM  
1 x TPM (2x10 pin)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ I²C  
1 x I²C (1x4 pin)
- ◆ iRIS Remote Management Module: 1 x iRIS-2400 slot
- ◆ Expansion  
1 x PCIe x16 slot  
3 x PCIe x4 slot (support PCIe x1)  
Default setting: 1 x PCIe x8 Gen 3 + 2 x PCIe x4 Gen 3 signal  
Optional setting: 1 x PCIe x16 Gen 3 by BIOS setting  
1 x PCIe x1 slot  
2 x PCI slot
- ◆ Watchdog Timer: Software programmable, support 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU fan (1x4 pin)      2 x System fan (1x3 pin)
- ◆ Power Supply: ATX power supply
- ◆ Power Consumption  
3.3V@0.57A, 5V@4.50A, 12V@0.14A, Vcore\_12V@5.20A, 5VSB@0.19A  
(Intel® E3-1240 v3 3.4GHz CPU with 16 GB (4x4 GB) 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244mm x 305mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant



## Features

1. LGA1150 Intel® Xeon® E3/Core™ i3/Pentium®/Celeron® processor supported
2. Dual-channel DDR3 1600/1333 MHz support up to 32 GB
3. Intel® PCIe GbE with Intel® AMT 9.0 support
4. Support PCI Express generation 3.0 at 8GT/s I/O bandwidth
5. USB 3.0, SATA 6Gb/s and mSATA supported
6. High-speed interface for one PCIe x8 or two PCIe x4 add-on cards
7. IEI jumper-less function
8. IEI One Key Recovery solution allows you to create rapid OS backup and recovery
9. Support IPMI 2.0 via iRIS-2400 module

## Packing List

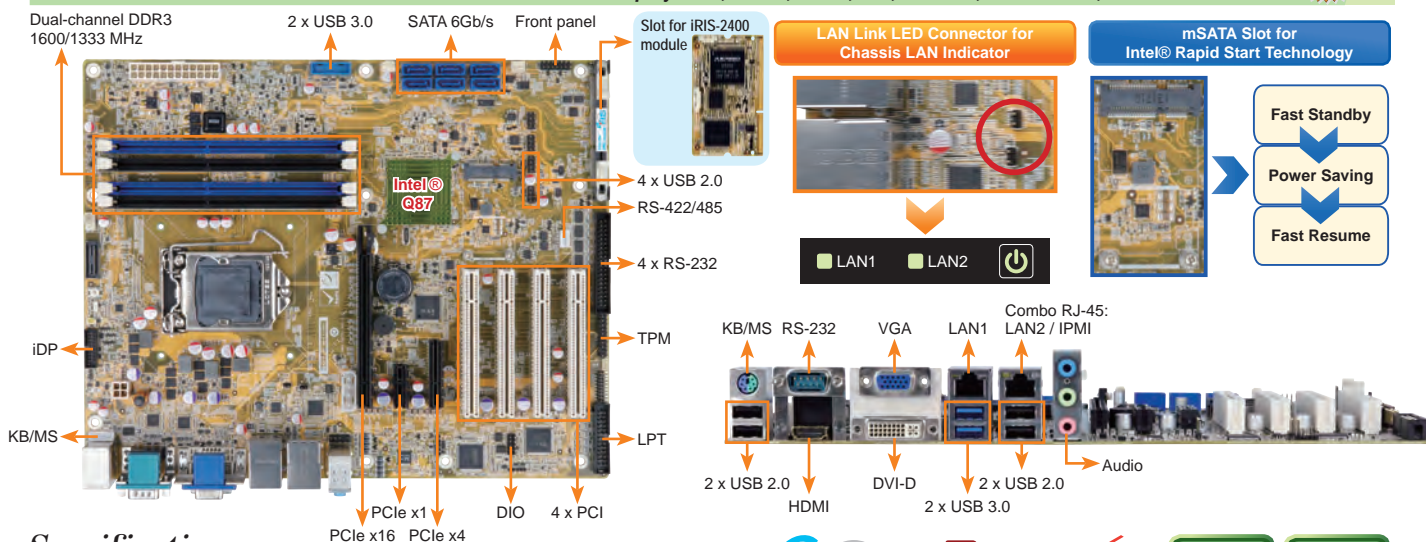
1 x IMBA-C2260-i2 single board computer	
1 x I/O shielding	1 x Utility CD
2 x SATA cable	1 x QIG

## Ordering Information

Part No.	Description
IMBA-C2260-i2-R11	ATX motherboard supports 22nm LGA1150 Intel® Xeon E3, Core™ i3, Pentium® and Celeron® per Intel® C226, DDR3, VGA, Dual Intel® PCIe GbE, four USB 3.0, six SATA 6Gb/s, HD Audio, iRIS-2400 and RoHS
iRIS-2400-R10	IPMI 2.0 adapter card with AST2400 BMC chip for DDR3 SO-DIMM socket interface
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-300-RS	Dual port USB cable with bracket, 300mm, P=2.54
19800-010500-200-RS	USB 3.0 cable 457mm with bracket
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-001203-200-RS	RS-232 cable, 40-pin to four DB-9, 400mm, P=2.54
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-115XA-R10	High performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

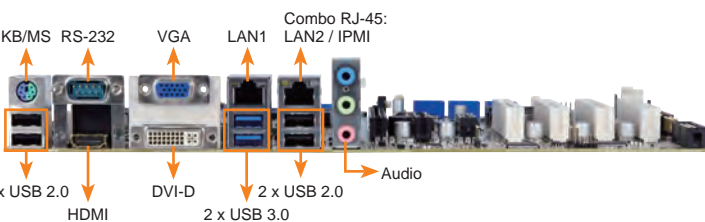
# IMBA-Q870-i2

ATX motherboard supports 22nm LGA1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU per Intel® Q87, DDR3, triple independent display VGA, DVI-D, HDMI, iDP, USB 3.0, SATA 6Gb/s, iRIS-2400



## Specifications

- ◆ CPU  
LGA1150 4th generation Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- ◆ Chipset  
Intel® Q87
- ◆ Memory  
Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs support up to 32 GB
- ◆ BIOS  
UEFI BIOS
- ◆ Ethernet  
LAN1: Intel® I217LM with Intel® AMT 9.0 support  
LAN2: Intel® I210-AT PCIe controller with NCSI support
- ◆ Graphics Engine  
Intel® HD Graphics Gen 7.5 supports DX11.1 and OpenCL 1.2, OpenGL 3.2 Full MPEG2, VC1, AVC Decode
- ◆ Display Output  
Triple independent display  
1 x VGA (up to 1920x1200@60 Hz)  
1 x DVI-D (up to 2560x1600@60 Hz)  
1 x HDMI (up to 2560x1600@60 Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60 Hz)
- ◆ Audio  
Realtek ALC662 HD codec supports 5.1-channel  
3 x Audio jacks (line-out, line-in, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ External I/O Interface  
1 x KB/MS 2 x USB 3.0  
1 x RS-232 4 x USB 2.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin) 2 x USB 3.0 (2x10 pin, P=2.0)  
1 x LPT (2x13 pin, P=2.54) 4 x RS-232 (2x20 pin, P=2.54)  
1 x mSATA (colay SATA 6) 4 x USB 2.0 (2x4 pin, P=2.54)  
1 x RS-422/485 (1x4 pin, P=2.54) 6 x SATA 6Gb/s (RAID 0/1/5/10 supported)
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED  
2 x LAN LED (1x2 pin)
- ◆ TPM  
1 x TPM (2x10 pin)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C  
1 x I<sup>2</sup>C (1x4 pin)
- ◆ iRIS Remote Management Module: 1 x iRIS-2400 slot
- ◆ Expansion  
1 x PCIe x16 slot (Gen 3) 1 x PCIe x4 slot  
1 x PCIe x1 slot 4 x PCI slots
- ◆ Watchdog Timer  
Software programmable, support 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
2 x System fan (1x3 pin)
- ◆ Power Supply: ATX Power Supply
- ◆ Power Consumption  
3.3V@0.66A, 5V@4.34A, 12V@0.16A, Vcore\_12V@4.01A, 5VSB@0.21A  
(Intel® Core™ i7-4770K 3.90 GHz CPU with 16 GB (4x4 GB) 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244mm x 305mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant



## Features

- LGA1150 4th generation Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Dual-channel DDR3 1600/1333 MHz
- Intel® PCIe GbE with Intel® AMT 9.0 support
- Support triple independent display with HDMI, DVI and VGA and iDP
- Support PCI Express generation 3.0 at 8GT/s I/O bandwidth
- USB 3.0 and SATA 6Gb/s mSATA supported
- IEI jumper-less function
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery
- Support IPMI 2.0 via iRIS-2400 module

## Packing List

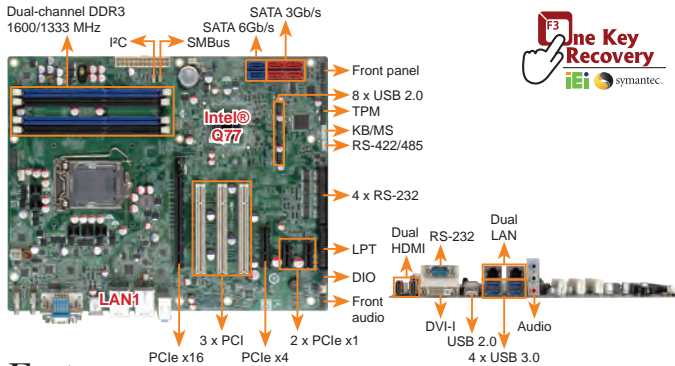
1 x IMBA-Q870-i2 single board computer	
1 x I/O shielding	1 x Utility CD
2 x SATA cable	1 x QIG

## Ordering Information

Part No.	Description
IMBA-Q870-i2-R10	ATX motherboard supports 22nm LGA1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU per Intel® Q87, DDR3, triple independent display VGA/DVI-D/HDMI/iDP, dual Intel® GbE, USB 3.0, SATA 6Gb/s, audio, iRIS-2400 and RoHS
IMBA-Q870-ECO-R10	LGA1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU per Intel® Q87, DDR3, triple independent display VGA, DVI-D, HDMI, iDP, USB 3.0, SATA 6Gb/s, ECO packing, RoHS (10 pce/pack)
iRIS-2400-R10	IPMI 2.0 adapter card with AST2400 BMC chip for DDR3 SO-DIMM socket interface
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-300-RS	Dual port USB cable with bracket, 300mm, P=2.54
19800-010500-200-RS	USB 3.0 cable 457mm with bracket
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-001203-200-RS	RS-232 cable, 40-pin to four DB-9, 400mm, P=2.54
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-115XA-R10	High performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# IMBA-Q770

ATX motherboard supports 22nm LGA1155 Intel® Core™ i7/i5/i3 CPU with Intel® Q77, DDR3, triple independent display via dual HDMI/DVI-I, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS



## Features

- LGA1155 Intel® Core™ i7/i5/i3 processor supported
- Dual-channel DDR3 1600/1333 MHz supports up to 32 GB
- Intel® PCIe GbE with Intel® AMT 8.0 supported
- Supports 3 displays with 2 displays in combination of HDMI, DVI and VGA
- Supports PCI Express generation 3.0 at 8GT/s I/O bandwidth
- USB 3.0 and SATA 6Gb/s supported
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU: LGA1155 socket supports Intel® Core™ i7/i5/i3 quad/dual core processor
- ◆ Chipset: Intel® Q77
- ◆ Memory: Four 240-pin 1600/1333 MHz dual-channel DDR3 SDRAM unbuffered DIMMs support up to 32 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet: LAN1: Intel® 82583V PCIe controller; LAN2: Intel® 82579L PHY with Intel® AMT 8.0 support
- ◆ Graphics Engine: Intel® HD Graphics Gen 7 supports DX11 and OpenCL 1.1; Full MPEG-2, VC1, AVC Decode
- ◆ Display Output: Triple independent display; 2 x HDMI (up to 1920x1200@60Hz); 1 x DVI-I (up to 1920x1200@60Hz)
- ◆ External I/O Interface: 1 x KB/MS, 4 x USB 2.0, 1 x RS-232, 4 x USB 3.0
- ◆ Internal I/O Interface: 1 x KB/MS (1x6 pin), 1 x LPT(2x13 pin, P=2.54), 1 x RS-422/485 (1x4 pin, P=2.0), 2 x SATA 6Gb/s (RAID 0/1/5/10 supported), 4 x RS-232 (2x20 pin, P=2.54), 4 x SATA 3Gb/s (RAID 0/1/5/10 supported), 8 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Audio: Realtek ALC662 HD Audio codec supports 5.1-channel; 3 x Audio jacks (line-out, line-in, mic-in) on rear IO; 1 x Front audio (2x5 pin)
- ◆ Front Panel: 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I²C: 1 x I²C (1x4 pin)
- ◆ Expansion: 1 x PCIe x16 slot, 2 x PCIe x1 slot, 1 x PCIe x4 slot, 3 x PCI slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector: 1 x CPU smart fan (1x4 pin), 2 x System fan (1x3 pin)
- ◆ Power Supply: ATX power supply; 3.3V@1.39A, 5V@4.63A, Vcore@2.25A, 12V@0.47A, 5VSB@0.14A (Intel® 2.4GHz CPU with four 1333 MHz 2 GB DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244 mm x 305 mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant

## Packing List

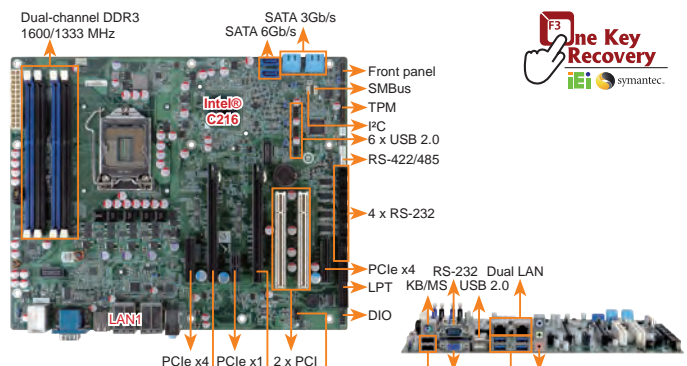
1 x IMBA-Q770 single board computer	1 x One Key Recovery CD
1 x DVI-I to VGA adapter	1 x Mini jumper pack
1 x I/O shielding	1 x Utility CD
4 x SATA cable	1 x QIG

## Ordering Information

Part No.	Description
IMBA-Q770-R10	ATX motherboard supports 22nm LGA1155 Intel® Core™ i7/i5/i3 CPU with Intel® Q77, DDR3, three independent displays via Dual HDMI/ DVI-I, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-300-RS	Dual port USB cable with bracket, 300mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-001203-200-RS	RS-232 cable, 40-pin to four DB-9, 400mm, P=2.54
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-115XA-R10	High performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# IMBA-C2160

ATX motherboard supports 22nm LGA1155 Intel® Xeon® E3/ Intel® Core™ i3 CPU with Intel® C216, DDR3, VGA, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS



## Features

- LGA1155 Xeon® E3 and Intel® Core™ i3 processor supported
- Dual-channel DDR3 1600/1333 MHz supports up to 32 GB
- Intel® PCIe GbE with Intel® AMT 8.0 supported
- Supports PCI Express generation 3.0 at 8GT/s I/O bandwidth
- USB 3.0 and SATA 6Gb/s supported
- High speed interface usage for two PCIe x8/two PCIe x4 add-on cards
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU: LGA1155 socket supports Xeon® E3 and Intel® Core™ i3 quad/dual core processor
- ◆ Chipset: Intel® C216
- ◆ Memory: Four 240-pin 1600/1333 MHz dual-channel DDR3 SDRAM ECC and non-ECC unbuffered DIMMs support up to 32 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet: LAN1: Intel® 82579 PHY with Intel® AMT 8.0 supported; LAN2: Intel® 82574L PCIe controller
- ◆ Graphics Engine: Intel® HD Graphics 2000 / 3000; Supports DX10.1 and OpenGL 3.0; Full MPEG-2, VC1 and AVC Decode
- ◆ Display Output: 1 x VGA (up to 2048x1536@75Hz)
- ◆ Audio: Realtek ALC662 HD audio codec supports 5.1-channel; 3 x Audio jacks (line-out, line-in, mic-in) on rear IO; 1 x Front audio (2x5 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I²C: 1 x I²C (1x4 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Front Panel: 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ External I/O Interface: 1 x KB/MS, 4 x USB 2.0, 1 x RS-232, 4 x USB 3.0
- ◆ Internal I/O Interface: 1 x KB/MS (1x6 pin), 1 x LPT (2x13 pin, P=2.54), 1 x RS-422/485 (1x4 pin, P=2.0), 2 x SATA 6Gb/s (RAID 0/1/5/10 supported), 4 x RS-232 (2x5 pin, P=2.54), 4 x SATA 3Gb/s, 6 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Expansion: 2 x PCI slot, 1 x PCIe x1 slot, 2 x PCIe x4 slot, 2 x PCIe x16 (share 1 PCIe x16 signal)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Fan Connector: 1 x CPU fan (1x4 pin), 2 x System fan (1x3 pin)
- ◆ Power Supply: ATX power supply
- ◆ Power Consumption: 3.3V@1.55A, 5V@3.43A, Vcore@3.12A, 12V@0.20A, 5VSB@0.18A (Intel® Xeon® 2.2GHz CPU with two 1333 MHz 4 GB DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244 mm x 305 mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant

## Packing List

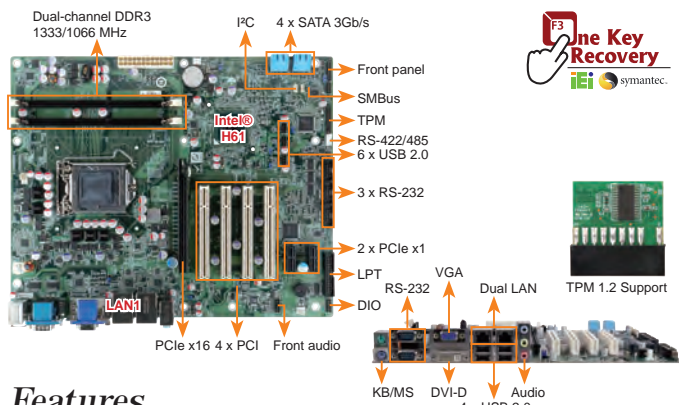
1 x IMBA-C2160 single board computer	
4 x SATA cable	1 x Mini jumper pack
1 x I/O shielding	1 x Utility CD
1 x One Key Recovery CD	1 x QIG

## Ordering Information

Part No.	Description
IMBA-C2160-R10	ATX motherboard supports 22nm LGA1155 Intel® Xeon® E3/ Intel® Core™ i3 CPU with Intel® C216, DDR3, VGA, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-100-RS	Dual port USB cable with bracket, 300mm, P=2.54
19800-020100-100-RS	RS-232 cable with bracket, Dual 10-pin to dual DB-9, 230mm, P=2.54
32006-000300-100-RS	PS/2 KB/MS Y-cable without bracket, 140mm/120mm
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-115XA-R10	High performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# IMBA-H610

ATX motherboard supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU with Intel® H61, DDR3, VGA/DVI-D, dual Realtek PCIe GbE, SATA 3Gb/s, USB 2.0, HD Audio and RoHS



## Features

- LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® processor supported
- Up to 32GB 1333 MHz dual-channel DDR3 SDRAM
- Intel® HD Graphics technology integrates high-performance graphics and media processing
- TPM V1.2 hardware security provided by the TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU  
LGA1155 socket supports Intel® Core™ i7/i5/i3/Pentium®/Celeron® processor
- ◆ Chipset: Intel® H61
- ◆ Memory  
Two 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM unbuffered DIMMs support up to 16 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet  
LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support  
LAN2: Realtek RTL8111E PCIe GbE controller Graphics Engine
- ◆ Intel® HD Graphics 2000/3000 (based on CPU type)  
Supports DX10.1 and OpenGL 3.0  
Full MPEG2, VC1, AVC Decode
- ◆ Display Output  
Dual independent display  
1 x VGA (up to 2048x1536@75Hz)  
1 x DVI-D (up to 1920x1200@60Hz)
- ◆ Audio  
Realtek ALC662 HD codec supports 5.1-channel  
3 x Audio jacks (line-out, line-in, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I²C: 1 x I²C (1x4 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ External I/O Interface  
1 x KB/MS 2 x RS-232 4 x USB 2.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin)  
1 x LPT(2x13 pin, P=2.54)  
1 x RS-422/485 (1x4 pin, P=2.0)  
4 x RS-232 (2x5 pin, P=2.54)  
4 x SATA 3Gb/s (AHCI supported)  
6 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ Expansion  
1 x PCIe x16 slot 2 x PCIe x1 slot  
4 x PCI slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
2 x System fan (1x3 pin)
- ◆ Power Supply: ATX power supply  
3.3V@1.27A, 5V@3.87A, 12V@0.54A, Vcore@7.67A, 5VSb@0.15A (Intel® Core™ i7-2600K 3.40GHz CPU with two 1333 MHz 2 GB DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244 mm x 305 mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant

## Packing List

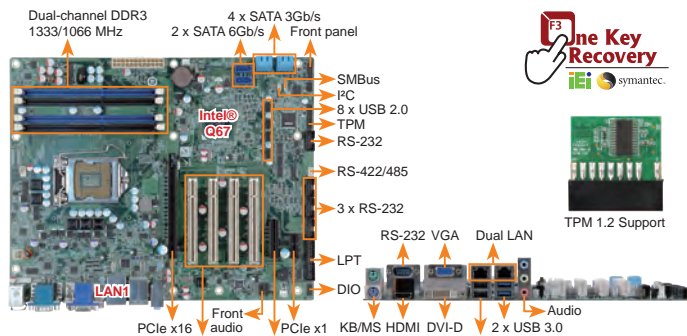
1 x IMBA-H610 single board computer	
4 x SATA cable	1 x Mini jumper pack
1 x I/O shielding	1 x Utility CD
1 x One Key Recovery CD	1 x QIG

## Ordering Information

Part No.	Description
IMBA-H610-R10	ATX motherboard supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU with Intel® H61, DDR3, VGA/DVI-D, dual Realtek PCIe GbE, USB 2.0, SATA 3Gb/s, HD Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-003100-100-RS	Dual port USB cable with bracket, 300mm, P=2.54
19800-020100-100-RS	RS-232 cable with bracket, Dual 10-pin to dual DB-9, 230mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-115XA-R10	High-performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA1155/LGA1156 cooler kit, 95W
CPU-DT-C-G440	Intel® Celeron® G440 processor, LGA1155, single core 1.6GHz, 1M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i3-2120T	Intel® Core™ i3-2120T processor, LGA1155, dual core 2.6GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2390T	Intel® Core™ i5-2390T processor, LGA1155, dual core 2.7GHz, 3M cache, 35W, AMT, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2500T	Intel® Core™ i5-2500T processor, LGA1155, quad core 2.3GHz, 6M cache, 45W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-P-G630T	Intel® Pentium® G630T processor, LGA1155, dual core 2.3GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# IMBA-Q670-R30

ATX motherboard supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU with Intel® Q67, DDR3, VGA/DVI-D/HDMI, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS



## Features

- LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® processor supported
- Up to 32 GB 1333 MHz dual-channel DDR3 SDRAM
- Intel® PCIe GbE with Intel® AMT 7.0 support
- USB 3.0 and SATA 6Gb/s supported
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU  
LGA1155 socket supports Intel® Core™ i7/i5/i3/Pentium®/Celeron® processor
- ◆ Chipset: Intel® Q67
- ◆ Memory  
Four 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM unbuffered DIMMs support up to 32 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet  
LAN1: Intel® 82583V PCIe controller  
LAN2: Intel® 82579 PHY with Intel® AMT 7.0 supported
- ◆ Graphics Engine  
Support for DX10.1 and OpenGL3.0  
Full MPEG2, VC1, AVC Decode
- ◆ Display Output  
Dual independent display  
1 x VGA (up to 2048x1536@75Hz)  
1 x HDMI (up to 1920x1200@60Hz)  
1 x DVI-D (up to 1920x1200@60Hz)
- ◆ Audio: Realtek ALC662 HD Audio codec  
3 x Audio jacks (line-out, line-in, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I²C: 1 x I²C (1x4 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ External I/O Interface  
1 x KB/MS 2 x USB 2.0  
1 x RS-232 2 x USB 3.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin)  
1 x LPT (2x13 pin, P=2.54)  
1 x RS-422/485 (1x4 pin, P=2.0)  
2 x SATA 6Gb/s (RAID 0/1/5/10 supported)  
4 x RS-232 (2x5 pin, P=2.54)  
4 x SATA 3Gb/s (RAID 0/1/5/10 supported)  
8 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Expansion  
1 x PCIe x16 slot 1 x PCIe x1 slot  
1 x PCIe x4 slot 4 x PCI slots
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
2 x System fan (1x3 pin)
- ◆ Power Supply: ATX/AT power supply
- ◆ Power Consumption  
3.3V@1.65A, 5V@6.31A, 12V@0.18A, Vcore@7.88A, 5VSb@0.15 (Intel® Core™ i5-2400 3.10GHz CPU with four 4 GB 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244mm x 305mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant

## Packing List

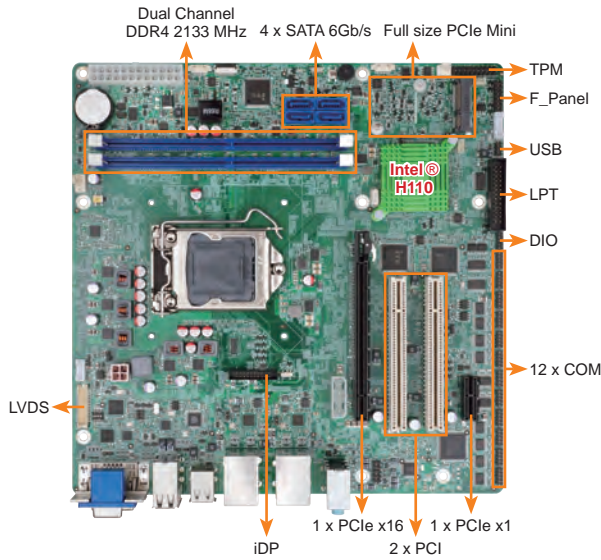
1 x IMBA-Q670 single board computer	
1 x I/O shielding	1 x Mini jumper pack
4 x SATA cable	1 x Utility CD
1 x One Key Recovery CD	1 x QIG

## Ordering Information

Part No.	Description
IMBA-Q670-R30	ATX motherboard supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU with Intel® Q67, DDR3, VGA/DVI-D/HDMI, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-003100-300-RS	Dual port USB cable with bracket, 300mm, P=2.54
19800-020100-100-RS	RS-232 cable with bracket, Dual 10-pin to dual DB-9, 230mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-003800-300-RS	RS-422/485 cable, 200mm
CF-115XA-R10	High-performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA1155/LGA1156 cooler kit, 95W
CPU-DT-C-G440	Intel® Celeron® G440 processor, LGA1155, single core 1.6GHz, 1M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i3-2120T	Intel® Core™ i3-2120T processor, LGA1155, dual core 2.6GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2390T	Intel® Core™ i5-2390T processor, LGA1155, dual core 2.7GHz, 3M cache, 35W, AMT, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2500T	Intel® Core™ i5-2500T processor, LGA1155, quad core 2.3GHz, 6M cache, 45W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-P-G630T	Intel® Pentium® G630T processor, LGA1155, dual core 2.3GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# IMB-H110

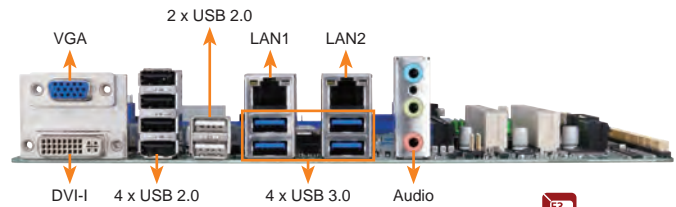
microATX Motherboard supports 14nm LGA1151 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor, DDR4, Dual Independent Displays VGA/ DVI-I/LVDS, Dual GbE LAN, USB 3.0, SATA 6Gb/s, HD Audio and RoHS



## Specifications

- ◆ CPU  
LGA 1151 socket supports Intel® 6th/7th generation Core™ i7/i5/i3, Pentium® or Celeron® processor
- ◆ Chipset  
Intel® skylake H110
- ◆ Memory  
Two 288-pin 2133MHz Dual-Channel DDR4 SDRAM Unbuffered DIMM supported up to 64GB
- ◆ BIOS  
UEFI BIOS
- ◆ Graphics Engine  
Intel® HD Graphics Gen 9 Engines with Low power 16 execution unit, supports DX2015, OpenGL 5.X and OpenCL2.x, ES 2.0
- ◆ Display Output  
Dual independent display  
1 x VGA (up to 1920x1200@60Hz)  
1 x DVI-I (up to 1920x1200@ 60Hz)  
1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60Hz)
- ◆ Ethernet  
LAN1: RTL 8111GN controller  
LAN2: RTL 8111GN controller
- ◆ External I/O Interface  
4 x USB 3.0  
6 x USB 2.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin)                    2 x RS-232/422/485 (2x5 pin, P=-2.0)  
1 x LPT (2x13 pin, P=2.54)        2 x USB 2.0 (2x4 pin, P=2.0)  
4 x SATA 6Gb/s                        10 x RS-232 (2x5 pin, P=2.0)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ TPM  
1 x TPM (2x10 pin)
- ◆ Audio  
Realtek ALC662 HD Audio codec supports 5.1-channel  
3 x Audio jacks (line-out, line-in, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ Front Panel  
1 x Front Panel (2x7 pin, Power LED, HDD LED, Speaker, Power Button, Reset Button)
- ◆ LAN LED  
2 x LAN LED (1x2 pin)
- ◆ I²C  
1 x I²C (1x4 pin)
- ◆ Expansion  
1 x PCIe x16 slot (Gen3)            1 x Full/Half-size PCIe Mini card slot  
1 x PCIe x1 slot (Gen2)            2 x PCI slot
- ◆ Watchdog Timer  
Software programmable, supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit Digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
1 x System fan (1x3 pin)
- ◆ Power Supply: ATX/AT Power Supply
- ◆ Power Consumption  
3.3V @ 0.93A, 5V @ 2.99A, 12V @ 6.88A, 5VSB @ 0.02A (Intel® Core™ i7-6700K 4.0GHz CPU with 16GB (two 8GB) 2133 MHz DDR4 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 9%, non-condensing
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant

## Multiple Expansion Support



## Features

- LGA 1151 Intel® 6th/7th generation Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Dual-channel DDR4 2133MHz support up to 64GB
- Support Dual displays via VGA/DVI-I/LVDS
- USB 3.0 and SATA 6Gb/s supported
- 12 COM & 12 USB
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x IMB-H110 motherboard	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

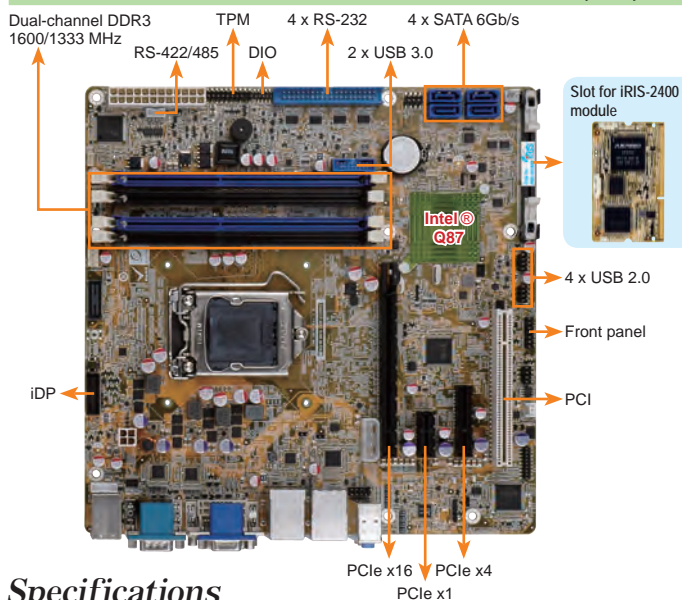
## Ordering Information

Part No.	Description
IMB-H110-R10	microATX motherboard supports 14nm LGA1151 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported, DDR4, Dual independent displays VGA/DVI-I/LVDS, Dual GbE LAN, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-000200-100-RS	RS-232 cable with bracket, Dual 10-pin to dual DB-9, 300mm, P=2.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
CF-115XA-R10	High performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN02-R20	20-pin Infineon TPM 2.0 module, software management tool, firmware v5.5



# IMB-Q870-i2

microATX motherboard supports 22nm LGA1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU per Intel® Q87, DDR3, HDMI, DVI-D, VGA, iDP, USB 3.0, SATA 6Gb/s, six serial ports, iRIS-2400

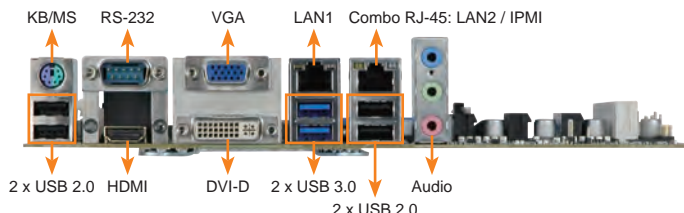


## Specifications

- ◆ CPU  
LGA1150 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- ◆ Chipset  
Intel® Q87
- ◆ Memory  
Four 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs support up to 32 GB
- ◆ BIOS  
UEFI BIOS
- ◆ Ethernet  
LAN1: Intel® I217LM with Intel® AMT 9.0 support  
LAN2: Intel® I210-AT PCIe controller with NCSI support
- ◆ Graphics Engine  
Intel® HD Graphics Gen 7.5 supports DX11.1 and OpenCL 1.2, OpenGL 3.2  
Full MPEG2, VC1, AVC Decode
- ◆ Display Output  
Triple independent display  
1 x VGA (up to 1920x1200@60Hz)  
1 x DVI-D (up to 2560x1600@60Hz)  
1 x HDMI (up to 2560x1600@60Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60Hz)
- ◆ Audio  
Realtek ALC662 HD Audio codec supports 5.1-channel  
3 x Audio jacks (line-out, line-in, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ External I/O Interface  
1 x KB/MS 2 x USB 3.0  
1 x RS-232 4 x USB 2.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin) 4 x SATA 6Gb/s (RAID 0/1/5/10 supported)  
1 x RS-422/485 (1x4 pin, P=2.0) 4 x RS-232 (2x5 pin, P=2.54)  
2 x USB 3.0 (2x10 pin) 4 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED  
2 x LAN LED (1x2 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ PC: 1 x PC (1x4 pin)
- ◆ iRIS Remote Management Module: 1 x iRIS-2400 slot
- ◆ Expansion  
1 x PCIe x16 slot (Gen 3) 1 x PCIe x4 slot  
1 x PCIe x1 slot 1 x PCI slot
- ◆ Watchdog Timer  
Software programmable, support 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
2 x System smart fan (1x3 pin)
- ◆ Power Supply: ATX power supply
- ◆ Power Consumption  
3.3V@0.53A, 5V@4.96A, 12V@0.12A, Vcore\_12V@3.95A, 5VSB@0.18A  
(Intel® Core™ i7-4770K 3.90 GHz CPU with 16 GB (4x4 GB) 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244mm x 244mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant

## New and More Powerful Graphics

2nd Generation Intel® Core™ Processor (Sandy Bridge)	3rd Generation Intel® Core™ Processor (Ivy Bridge)	4th Generation Intel® Core™ Processor (Haswell)	
Intel® HD Graphics 3000 series	Intel® HD Graphics 4000 series	GT3-Intel® HD Graphics 5000 series	Core i7
Intel® HD Graphics 2000 series	Intel® HD Graphics 2500 series	GT2-Intel® HD Graphics 4000 series	Core i5/ Core i3
Intel® HD Graphics series	Intel® HD Graphics series	GT1-Intel® HD Graphics series	Celeron/ Pentium



## Features

- LGA1150 4th generation Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- Dual-channel DDR3 1600/1333 MHz supported
- Intel® PCIe GbE with Intel® AMT 9.0 support
- Support triple display via HDMI, DVI, VGA and iDP
- Support PCI Express generation 3.0 at 8GT/s I/O bandwidth
- USB 3.0 and SATA 6Gb/s supported
- IEI jumper-less function
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery
- Support IPMI 2.0 via iRIS-2400 module

## Packing List

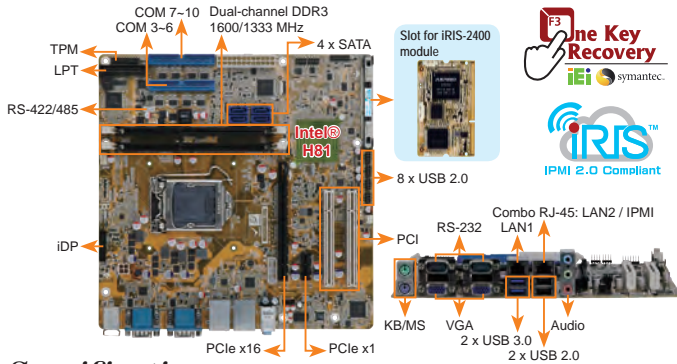
1 x IMB-Q870-i2 single board computer	
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
IMB-Q870-i2-R10	microATX motherboard supports 22nm LGA1150 Intel® Core™ i7/i5/i3/Pentium® and Celeron® CPU per Intel® Q87, DDR3, HDMI, DVI-D, VGA, DP, dual Intel® PCIe GbE, USB 3.0, audio, SATA 6Gb/s, six serial ports, iRIS-2400 and RoHS
iRIS-2400-R10	IPMI 2.0 adapter card with AST2400 BMC chip for DDR3 SO-DIMM socket interface
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-300-RS	Dual port USB cable with bracket, 300mm, P=2.54
19800-010500-200-RS	USB 3.0 cable with bracket, 450mm
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-001203-200-RS	RS-232 cable, 40-pin to four DB-9, 400mm, P=2.54
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-115XA-R10	High performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# IMB-H810-i2-R11

microATX motherboard supports 22nm LGA1150 Intel® Core™ i7/i5/i3, Pentium®, Celeron® CPU per Intel® H81, DDR3, VGA, dual GbE, LPT, COM, SATA 6Gb/s, iRIS-2400



## Specifications

- ◆ CPU: LGA1150 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- ◆ Chipset: Intel® H81
- ◆ Memory: Two 240-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs support up to 16 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet LAN1: Intel® I217LM with Intel® AMT9.0 support LAN2: Intel® I210-AT PCIe controller with NCSI support
- ◆ Graphics Engine Intel® HD Graphics Gen 7.5 supports DX11.1 and OpenCL 1.2, OpenGL 3.2 Full MPEG2, VC1, AVC Decode
- ◆ Display Output Dual independent display 2 x VGA (up to 1920x1200@60Hz) 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60Hz)
- ◆ Audio Realtek ALC662 HD Audio codec supports 5.1-channel 3 x Audio jacks (line-out, line-in, mic-in) on rear IO 1 x Front audio (2x5 pin)
- ◆ iRIS Remote Management Module 1 x iRIS-2400 slot
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I²C: 1 x I²C (1x4 pin)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ External I/O Interface 1 x KB/MS 2 x USB 2.0 2 x RS-232 2 x USB 3.0
- ◆ Internal I/O Interface 1 x LPT (2x13 pin, P=2.54) 1 x RS-422/485 (1x4 pin, P=2.0) 2 x SATA 3Gb/s x 8 x USB 2.0 (2x4 pin, P=2.54) 2 x SATA 6Gb/s 8 x RS-232 (2x20 pin, P=2.54) Front Panel: 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ Expansion 1 x PCIe x16 slot (Gen 3) 1 x PCIe x1 slot 2 x PCI slot
- ◆ Watchdog Timer: Software programmable, supports 1-255 sec system reset
- ◆ Fan Connector 1 x CPU smart fan (1x4 pin) 1 x System smart fan (1x3 pin)
- ◆ Power Supply: ATX power supply
- ◆ Power Consumption 3.3V@0.64A, 5V@4.20A, 12V@0.14A, Vcore\_12V@3.88A, 5VSB@0.20A (Intel® Core™ i7-4770K 3.90 GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244mm x 244mm
- ◆ Weight: GW: 1200g / NW: 680g
- ◆ CE/FCC compliant

## Packing List

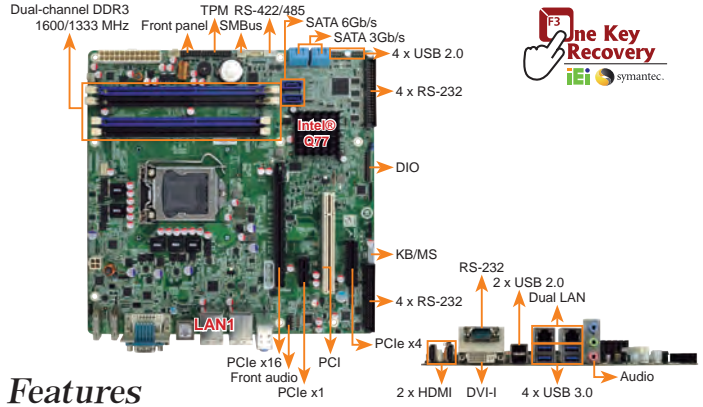
1 x IMB-H810-i2 single board computer	
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
IMB-H810-i2-R11	microATX motherboard supports 22nm LGA1150 Intel® Core™ i7/i5/i3/Pentium® and Celeron® CPU per Intel® H81, DDR3, VGA, Dual Intel® PCIe GbE, USB 2.0, PCI, COM, SATA 6Gb/s, LPT, HD Audio, iRIS-2400 and RoHS
IMB-H810-ECO-R11	LGA1150 Intel® Core™ i7/i5/i3, Pentium® and Celeron® CPU per Intel® H81, DDR3, VGA, Dual PCIe GbE, USB 2.0, COM, LPT, SATA 6Gb/s, HD Audio, ECO packing, RoHS (10 pce/pack)
iRIS-2400-R10	IPMI 2.0 adapter card with AST2400 BMC chip for DDR3 SO-DIMM socket interface
19800-000049-RS	LPT flat cable, 240mm, P=2.54
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-100-RS	Dual port USB cable with bracket, 30mm, P=2.54
19800-010500-200-RS	USB 3.0 cable with bracket, 450mm
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-001203-200-RS	RS-232 cable, 40-pin to four DB-9, 400mm, P=2.54
32205-003801-100-RS	RS-232/422/485, RS-422/485 cable, 500mm
CF-115XA-R10	High performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# IMB-Q770

microATX motherboard supports 22nm LGA1155 Intel® Core™ i7/i5/i3 CPU with Intel® Q77, DDR3, triple independent display via Dual HDMI/DVI-I, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, ten serial ports, HD Audio and RoHS



## Features

- ◆ LGA1155 Intel® Core™ i7/i5/i3 processor supported
- ◆ Dual-channel DDR3 1600/1333 MHz supports up to 32 GB
- ◆ Intel® PCIe GbE with Intel® AMT 8.0 supported
- ◆ Supports 3 displays with 2 displays in combination of HDMI, DVI and VGA
- ◆ Supports PCI Express generation 3.0 at 8GT/s I/O bandwidth
- ◆ USB 3.0 and SATA 6Gb/s supported
- ◆ Supports multiple scalable serial ports
- ◆ IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU: LGA1155 socket supports Intel® Core™ i7/ i5/i3 quad/dual core processor
- ◆ Chipset: Intel® Q77
- ◆ Memory Four 240-pin 1600/1333 MHz dual-channel DDR3 SDRAM unbuffered DIMMs support up to 32GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet LAN1: Intel® 82583V PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 8.0 support
- ◆ Graphics Engine Intel® HD Graphics Gen 7 supports DX11 and OpenCL 1.1 Full MPEG2, VC1, AVC Decode
- ◆ Display Output Triple independent display 2 x HDMI (up to 1920x1200@60Hz) 1 x DVI-I (up to 1920x1200@60Hz)
- ◆ Audio Realtek ALC662 HD Audio codec supports 5.1-channel 3 x Audio jacks (line-out, line-in, mic-in) on rear IO 1 x Front audio (2x5 pin)
- ◆ Front Panel: 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I²C: 1 x I²C (1x4 pin)
- ◆ Infrared Interface: 1 x Infrared Interface (1x5 pin)
- ◆ External I/O Interface 1 x RS-232 2 x USB 2.0 4 x USB 3.0
- ◆ Internal I/O Interface 1 x KB/MS (1x6 pin) 1 x RS-422/485 (1x4 pin, P=2.0) 2 x SATA 3Gb/s (RAID 0/1/5/10 supported) 2 x SATA 6Gb/s (RAID 0/1/5/10 supported) 4 x USB 2.0 (2x4 pin, P=2.54) 8 x RS-232 (2x20 pin, p=2.54)
- ◆ Expansion 1 x PCIe x16 slot 1 x PCIe x1 slot 1 x PCI slot
- ◆ Watchdog Timer: Software programmable supports 1-255 sec. system reset
- ◆ Digital I/O: 24-bit digital I/O (2x13 pin)
- ◆ Fan Connector 1 x CPU smart fan (1x4 pin) 1 x System smart fan (1x3 pin)
- ◆ Power Supply: ATX power supply 3.3V@0.31A, 5V@2.91A, 12V@0.51A, 12V@2.12A, -12V@0.10A (Intel® Core™ i3 3200 3.2GHz CPU with four 1333 MHz 1 GB DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity 5% ~ 95%, non-condensing
- ◆ Dimensions: 244 mm x 244 mm
- ◆ Weight: GW: 1200g / NW: 700g
- ◆ CE/FCC compliant

## Packing List

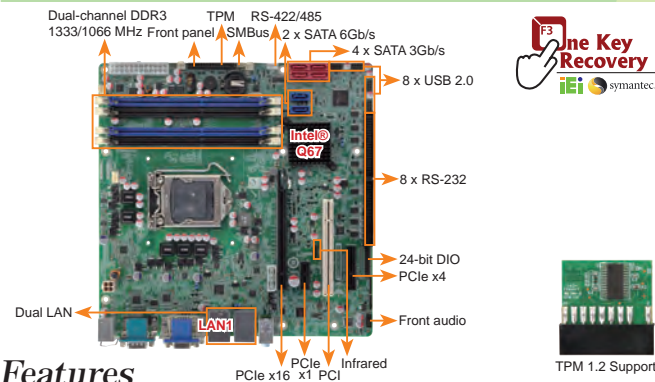
1 x IMB-Q770 single board computer	1 x Mini jumper pack
1 x DVI-I to VGA adapter	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
4 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
IMB-Q770-R10	microATX motherboard supports 22nm LGA1155 Intel® Core™ i7/i5/i3 CPU with Intel® Q77, DDR3, three independent displays via dual HDMI/DVI-I, dual Intel® PCIe GbE, USB 3.0, ten serial ports, SATA 6Gb/s, HD Audio and RoHS
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
19800-003100-300-RS	Dual port USB cable with bracket, 30mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-001203-200-RS	RS-232 cable, 40-pin to four DB-9, 400mm, P=2.54
32205-003800-300-RS	422/485 cable, 200mm, P=2.0
CF-115XA-R10	High performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

## IMB-Q670-R30

microATX motherboard supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU with Intel® Q67, DDR3, VGA/DVI-D/HDMI, dual Intel® PCIe GbE, USB 3.0, COM, SATA 6Gb/s, HD Audio and RoHS



### Features

- LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® processor supported
- Up to 32 GB 1333 MHz dual-channel DDR3 SDRAM
- Intel® PCIe GbE with Intel® AMT 7.0 support
- USB 3.0 and SATA 6Gb/s supported
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

### Specifications

- ◆ CPU  
LGA1155 socket supports Intel® Core™ i7/i5/i3 quad/dual, Pentium® dual, Celeron® dual/single core processor
- ◆ Chipset: Intel® Q67
- ◆ Memory  
Four 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM unbuffered DIMMs support up to 32GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet  
LAN1: Intel® 82583V PCIe controller  
LAN2: Intel® 82579 PHY with Intel® AMT 7.0 support
- ◆ Graphics Engine  
Support for DX10.1 and OpenGL3.0  
Full MPEG2, VC1, AVC Decode
- ◆ Display Output  
Dual independent display  
1 x VGA (up to 2048x1536@75Hz)  
1 x HDMI (up to 1920x1200@60Hz)  
1 x DVI-D (up to 1920x1200@60Hz)
- ◆ Audio: Realtek ALC892 HD Audio codec  
3 x Audio jacks (line-out, line-in, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ External I/O Interface  
1 x KB/MS 2 x USB 2.0  
1 x RS-232 2 x USB 3.0
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ Internal I/O Interface  
1 x RS-422/485 (1x4 pin, P=2.0)  
2 x SATA 6Gb/s (RAID 0/1/5/10 supported)  
4 x SATA 3Gb/s (RAID 0/1/5/10 supported)  
8 x USB 2.0 (2x4 pin, P=2.54)  
8 x RS-232 (2x20 pin, P=2.54)
- ◆ Expansion  
1 x PCIe x16 slot  
1 x PCIe x1 slot  
1 x PCIe x4 slot1 x PCI slot
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 24-bit digital I/O (2x13 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1 x 4 pin)  
1 x NB fan (1x3 pin)  
2 x System fan (1x3 pin)
- ◆ Power Supply: ATX power supply
- ◆ Power Consumption  
3.3V@1.75A, 5V@6.61A, 12V@3.68A, 12V@0.09A, 5VSb@0.12 (Intel® 2.60GHz CPU with four 1333 MHz 4 GB DDR3 DIMMs)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244mm x 244mm
- ◆ Weight: GW: 1200g / NW: 680g
- ◆ CE/FCC compliant

### Packing List

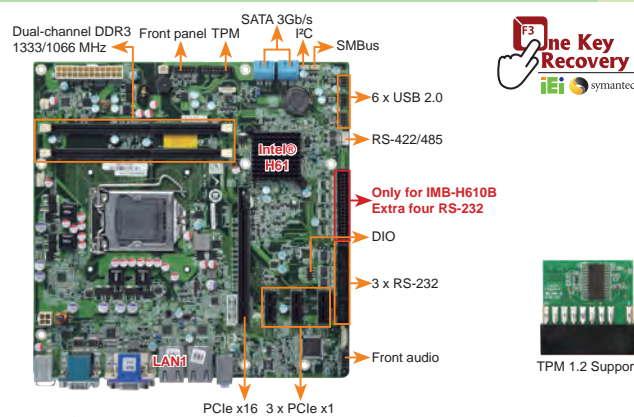
1 x IMB-Q670 single board computer	1 x Mini jumper pack
1 x I/O shielding	1 x One Key Recovery CD
2 x Quad-port RS-232 cable	1 x QIG
4 x SATA cable	1 x Utility CD

### Ordering Information

Part No.	Description
IMB-Q670-R30	microATX motherboard supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU with Intel® Q67, DDR3, VGA/DVI-D/HDMI, dual Intel® PCIe GbE, USB 3.0, COM, SATA 6Gb/s, HD Audio and RoHS
19800-003100-100-RS	Dual port USB cable with bracket, 300mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-115XA-R10	High-performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA1155/LGA1156 cooler kit, 95W
CPU-DT-C-G440	Intel® Celeron® G440 processor, LGA1155, single core 1.6GHz, 1M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i3-2120T	Intel® Core™ i3-2120T processor, LGA1155, dual core 2.6GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2390T	Intel® Core™ i5-2390T processor, LGA1155, dual core 2.7GHz, 3M cache, 35W, AMT, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2500T	Intel® Core™ i5-2500T processor, LGA1155, quad core 2.3GHz, 6M cache, 45W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-P-G630T	Intel® Pentium® G630T processor, LGA1155, dual core 2.3GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

## IMB-H610A

microATX motherboard supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU with Intel® H61, DDR3, VGA/DVI-D, dual Realtek PCIe GbE, USB 2.0, six COMs, SATA 3Gb/s, HD Audio and RoHS



### Specifications

- ◆ CPU  
LGA1155 socket supports Intel® Core™ i7/i5/i3 quad/dual, Pentium® dual and Celeron® dual/single core processors
- ◆ Chipset: Intel® H61
- ◆ Memory  
Two 240-pin 1333/1066 MHz dual-channel DDR3 SDRAM unbuffered DIMMs support up to 16GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet  
LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support  
LAN2: Realtek RTL8111E PCIe GbE controller
- ◆ Graphics Engine  
Intel® HD Graphics 2000/3000 (based on CPU type)  
Supports DX10.1 and OpenGL 3.0  
Full MPEG2, VC1, AVC Decode
- ◆ External I/O Interface  
1 x KB/MS 2 x RS-232 4 x USB 2.0
- ◆ Internal I/O Interface  
1 x RS-422/485 (1x4 pin, P=2.0)  
4 x SATA 3Gb/s 6 x USB 2.0 (2x4 pin, P=2.54)  
3 x RS-232 (2x5 pin, P=2.54, for IMB-H610A-R10)  
8 x RS-232 (2x5 pin, P=2.54, for IMB-H610B-R10)
- ◆ Display Output  
Dual independent display  
1 x VGA (up to 2048x1536@75Hz)  
1 x DVI-D (up to 1920x1200@60Hz)
- ◆ Audio  
Realtek ALC662 HD Audio codec  
3 x Audio jacks (line-out, line-in, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ Front Panel: 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ PC: 1 x PC (1x4 pin)
- ◆ Expansion  
1 x PCIe x16 slot  
3 x PCIe x1 slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
2 x System fan (1x3 pin)
- ◆ Power Supply: ATX power supply
- ◆ Power Consumption  
3.3V@1.75A, 5V@6.61A, Vcore@3.68A, 12V@0.09A, 5sb@0.12A (Intel® 2.60GHz CPU with two 1333 MHz 4 GB DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 244 mm x 244 mm
- ◆ Weight: GW: 1200g / NW: 680g
- ◆ CE/FCC compliant

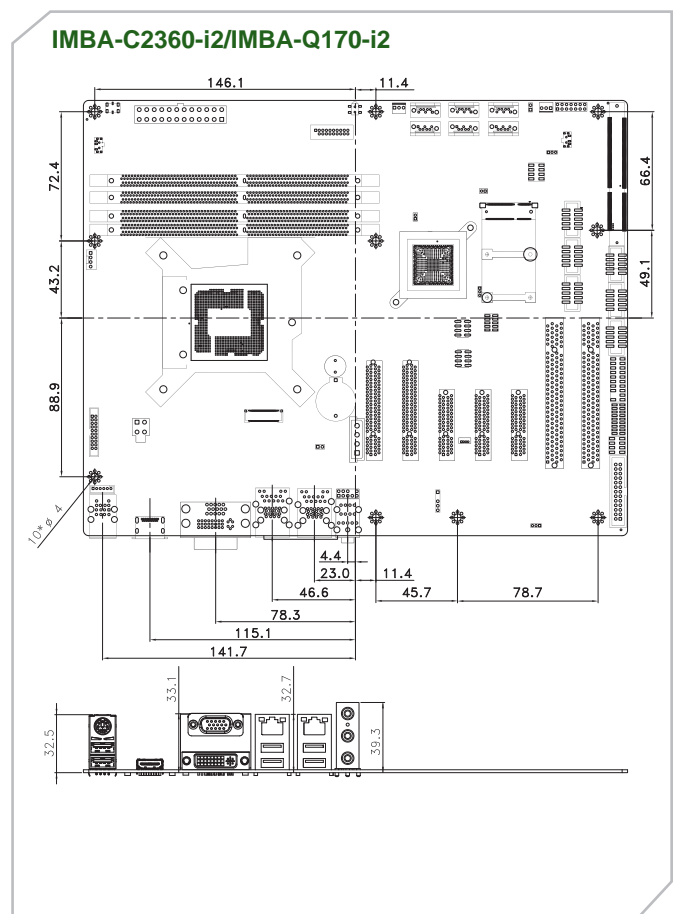
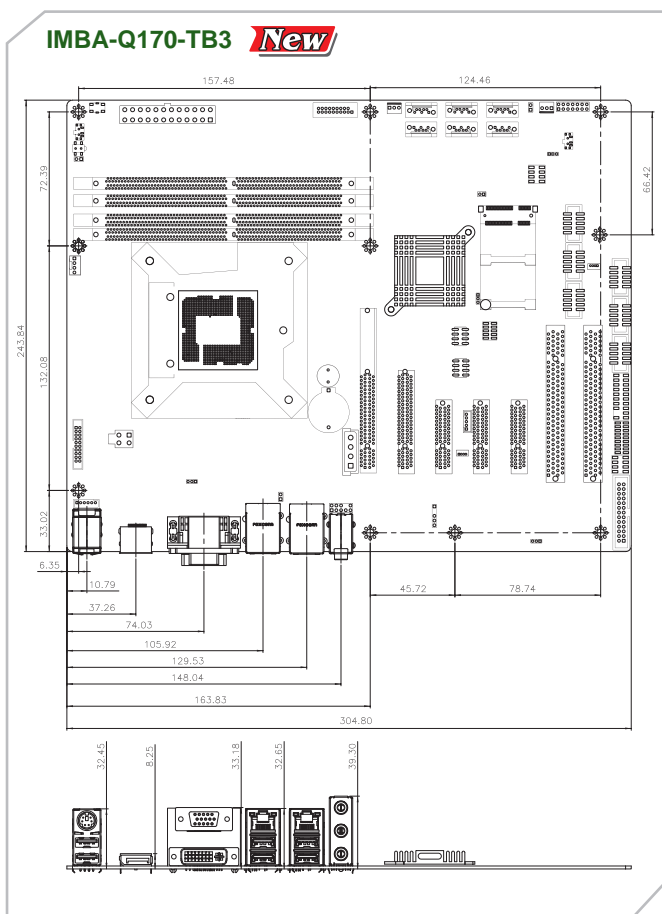
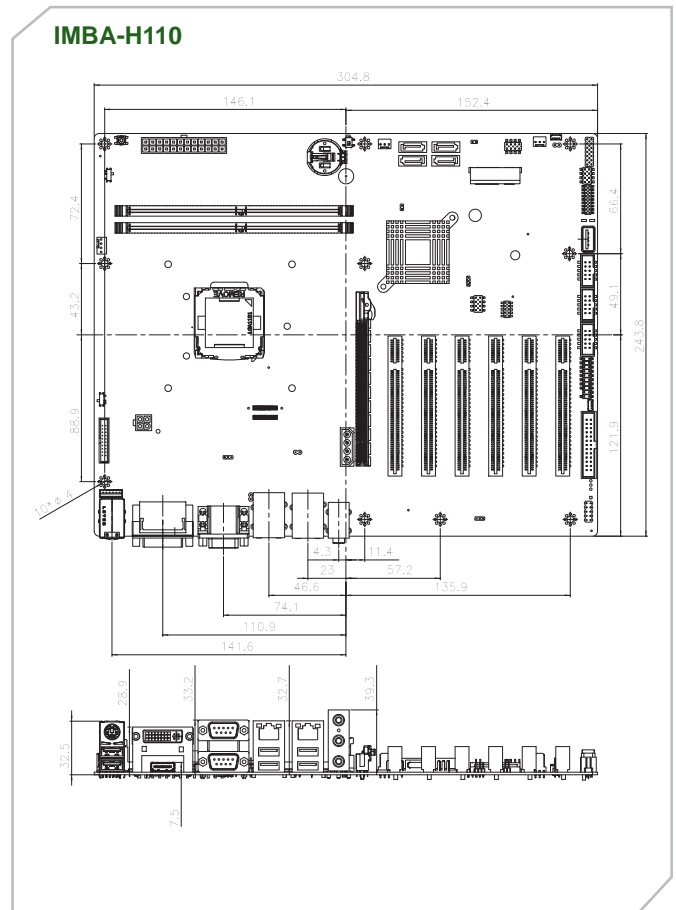
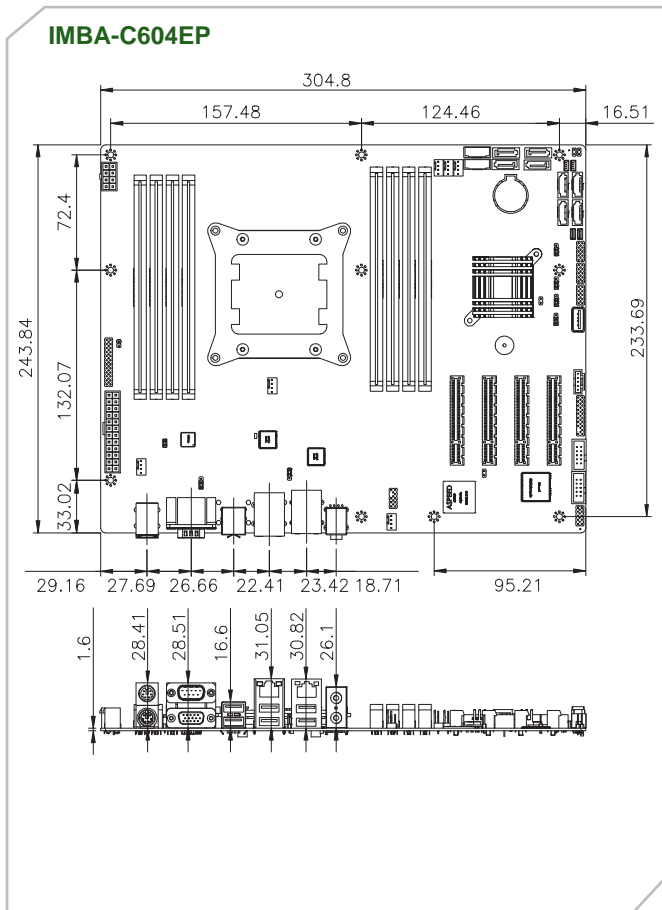
### Packing List

1 x IMB-H610 single board computer	
1 x I/O shielding	1 x One Key Recovery CD
4 x SATA cable	1 x QIG
1 x Mini jumper pack	1 x Utility CD

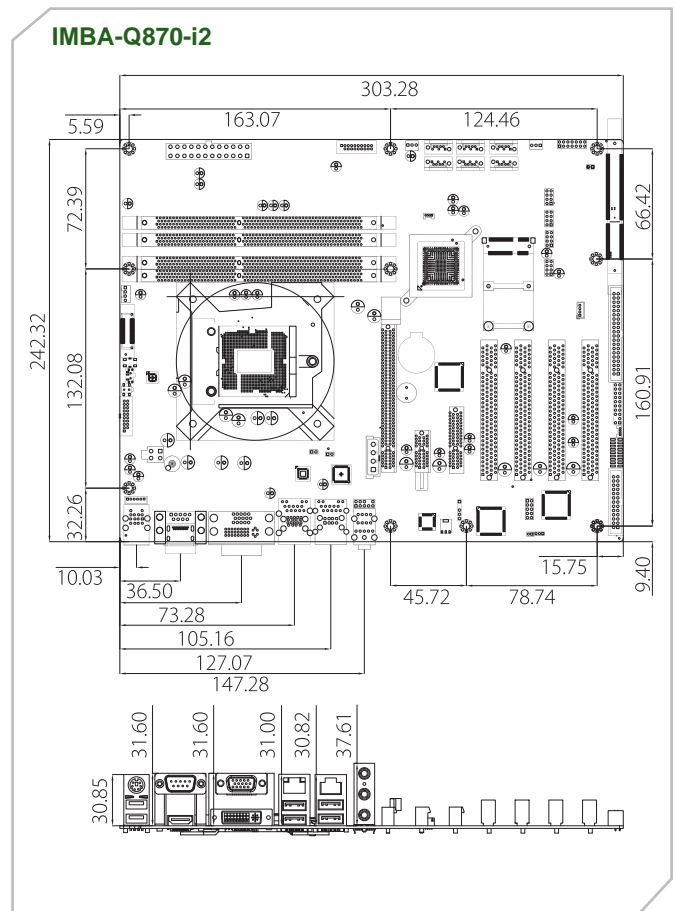
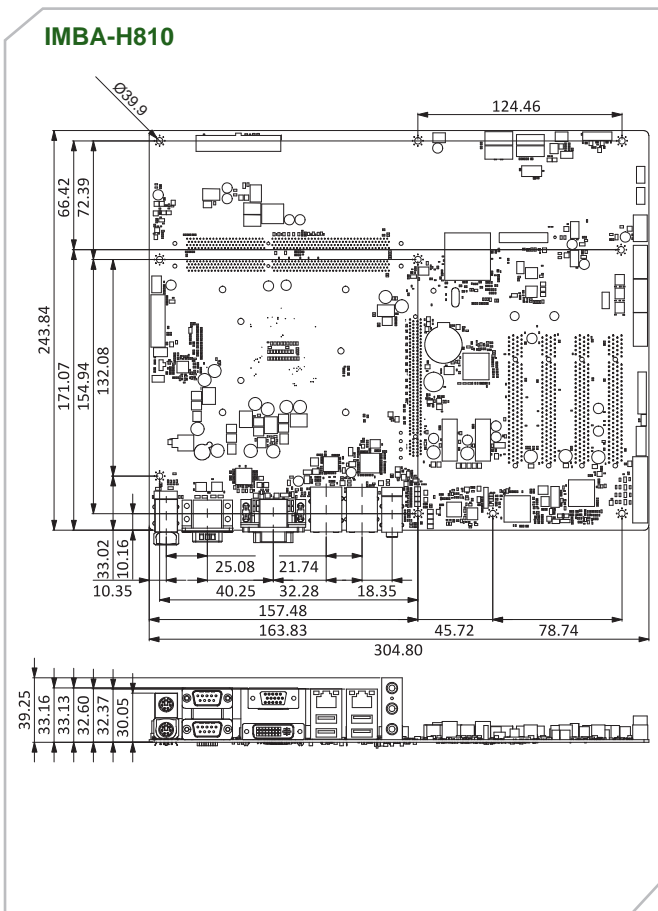
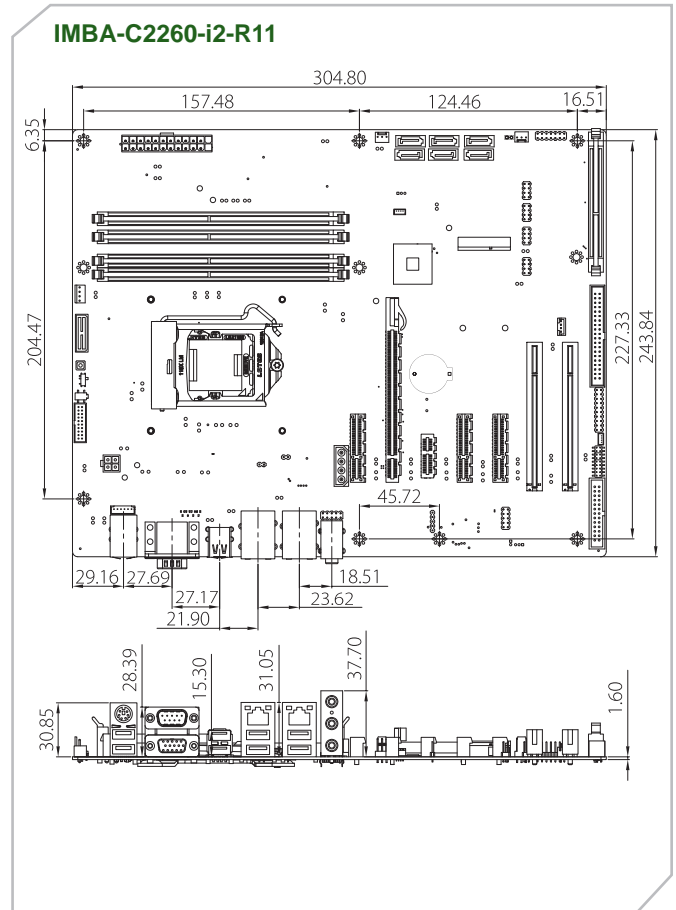
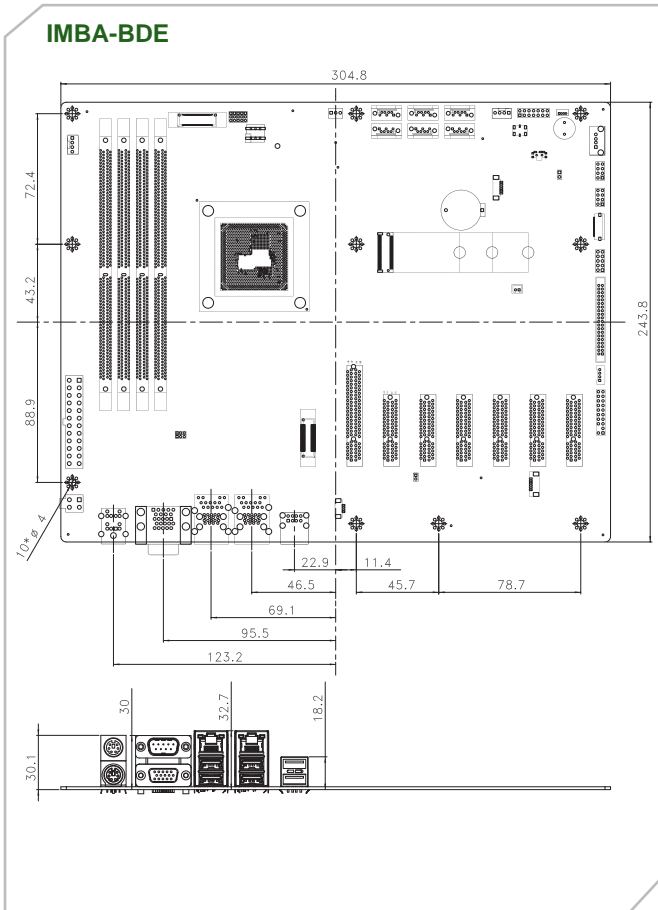
### Ordering Information

Part No.	Description
IMB-H610A-R10	microATX motherboard supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU with Intel® H61, DDR3, VGA/DVI-D, dual Realtek PCIe GbE, USB 2.0, 6 COM, SATA 3Gb/s, HD Audio and RoHS
IMB-H610B-R10	microATX motherboard supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU with Intel® H61, DDR3, VGA/DVI-D, dual Realtek PCIe GbE, USB 2.0, 10 COM, SATA 3Gb/s, HD Audio and RoHS
19800-003100-300-RS	Dual port USB cable with bracket, 300mm, P=2.54
19800-003600-100-RS	RS-232 cable with bracket, Dual 10-pin to dual DB-9, 400mm, P=2.54
19800-010900-200-RS	RS-232 cable with bracket, 230mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
32205-001203-200-RS	RS-232 cable, 40-pin to four DB-9, 400mm, P=2.54
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-115XA-R10	High-performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA1155/LGA1156 cooler kit, 95W
CPU-DT-C-G440	Intel® Celeron® G440 processor, LGA1155, single core 1.6GHz, 1M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i3-2120T	Intel® Core™ i3-2120T processor, LGA1155, dual core 2.6GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2390T	Intel® Core™ i5-2390T processor, LGA1155, dual core 2.7GHz, 3M cache, 35W, AMT, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2500T	Intel® Core™ i5-2500T processor, LGA1155, quad core 2.3GHz, 6M cache, 45W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-P-G630T	Intel® Pentium® G630T processor, LGA1155, dual core 2.3GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

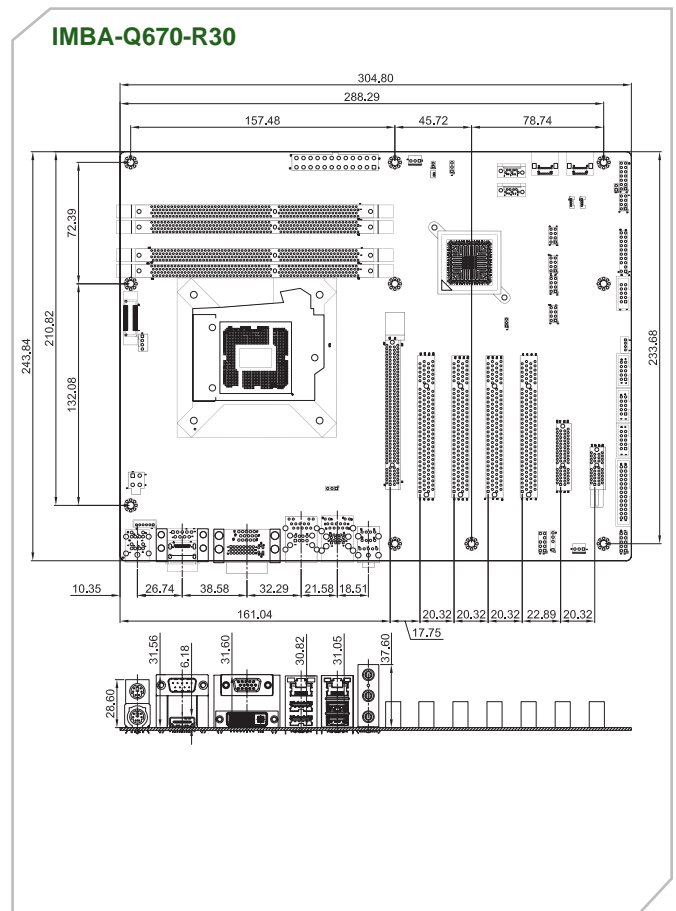
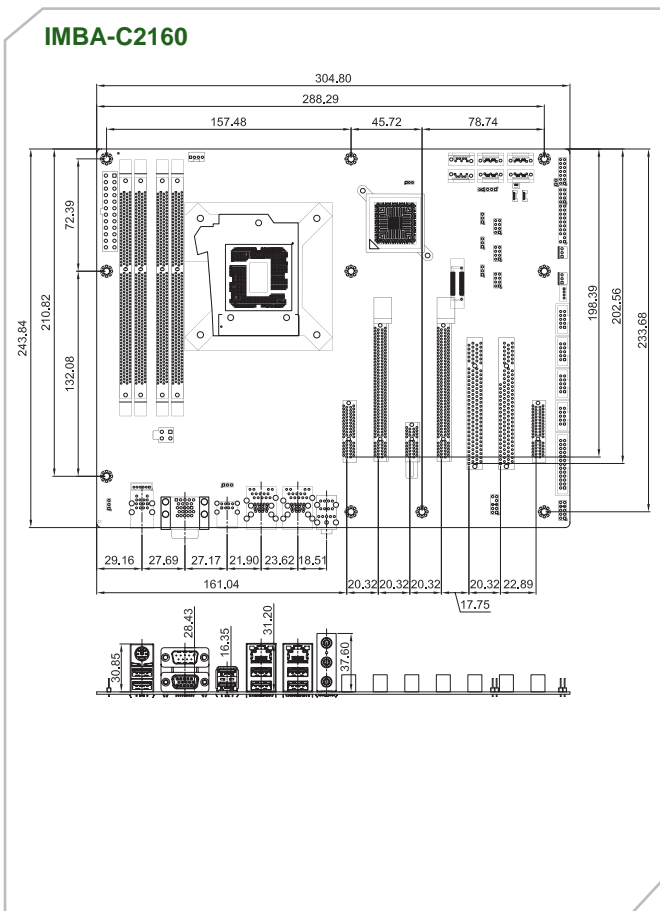
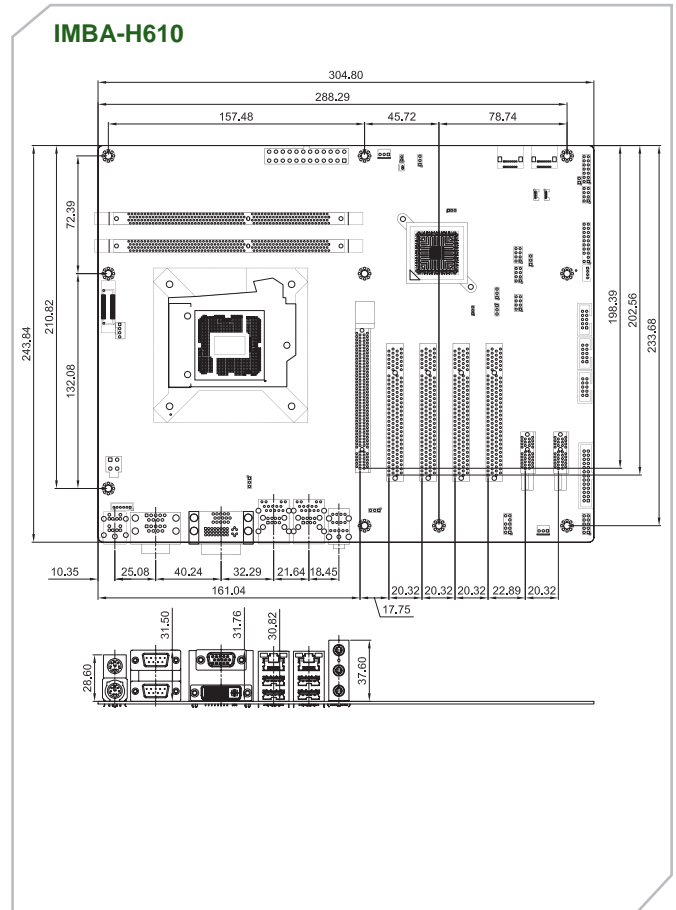
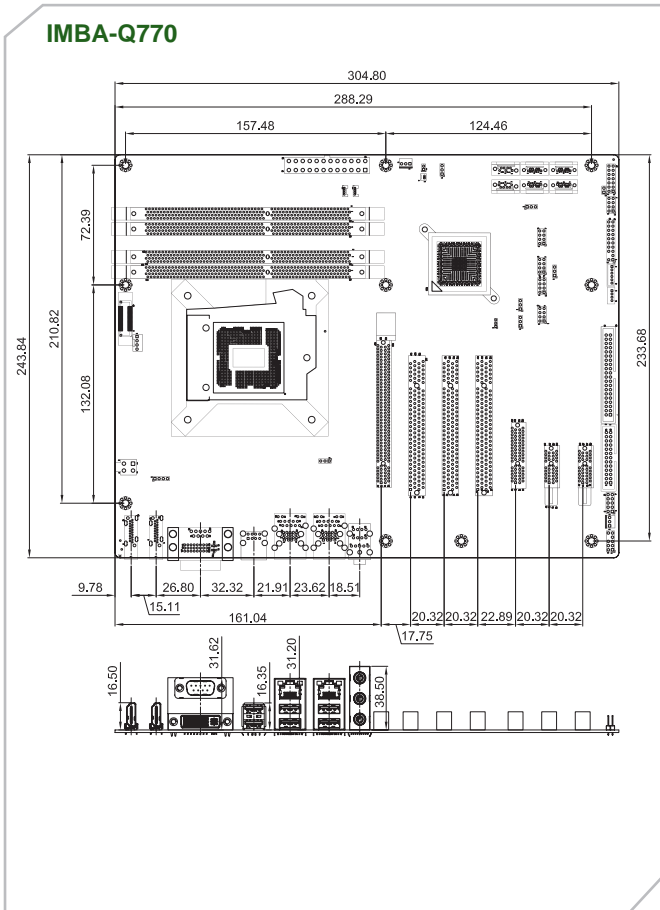
Dimensions (Unit: mm)



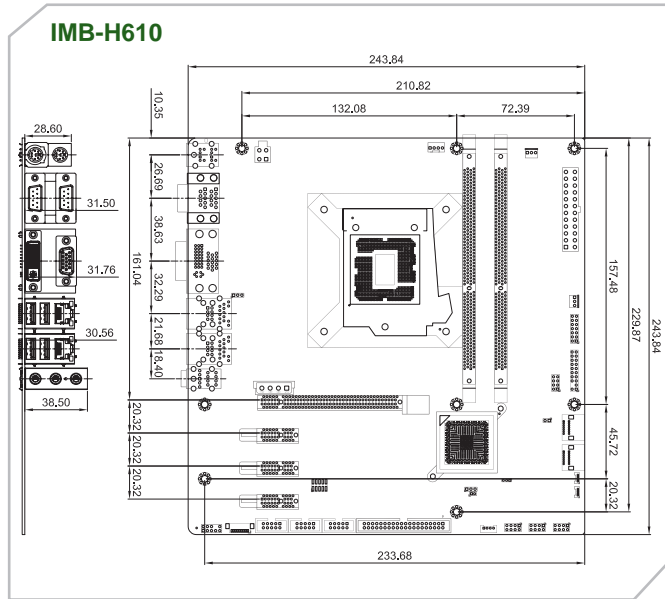
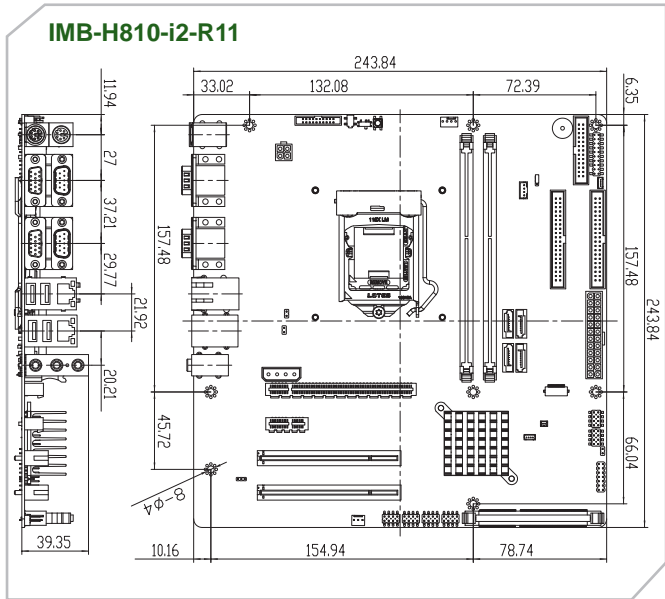
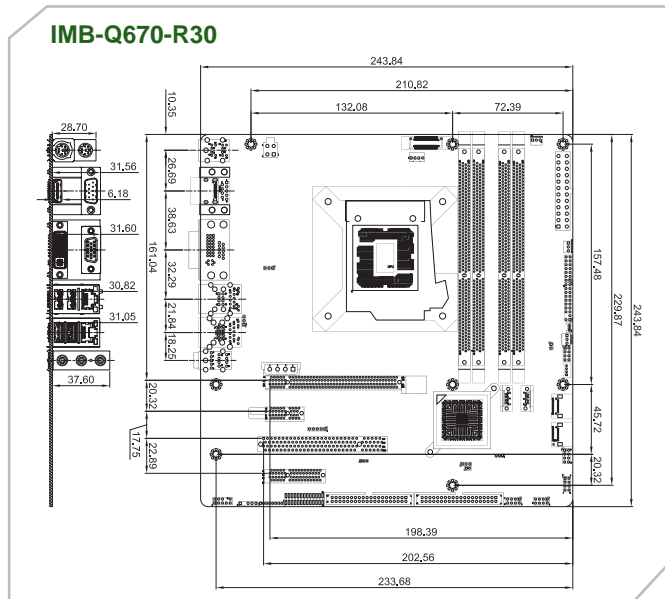
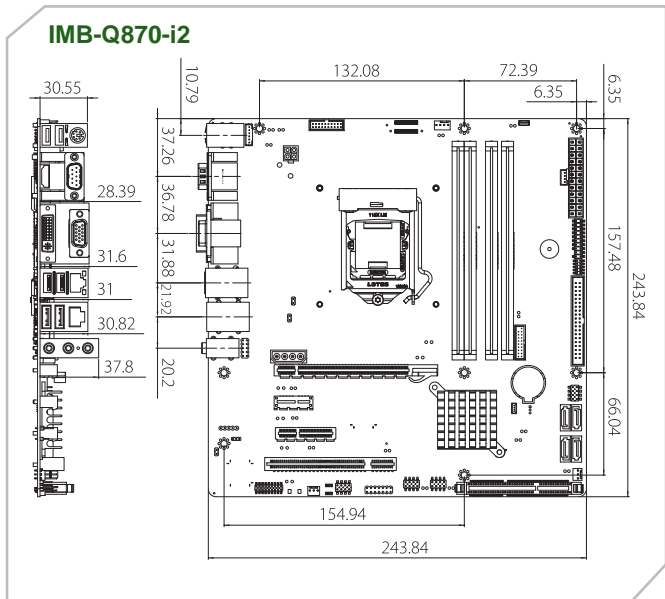
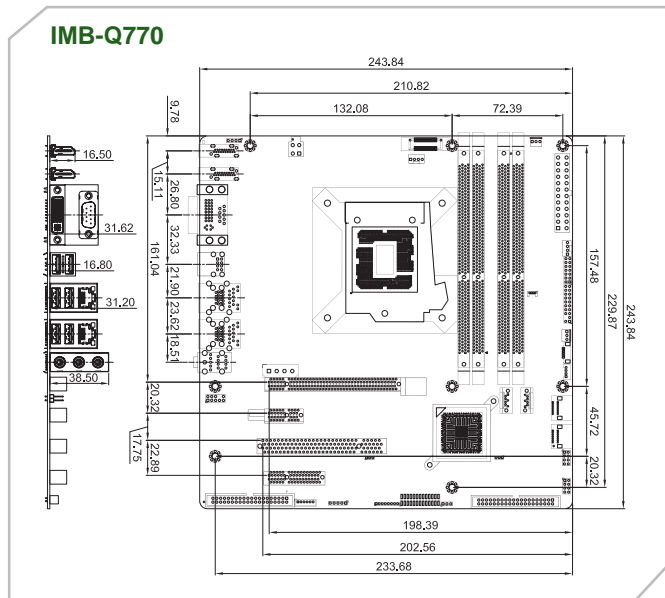
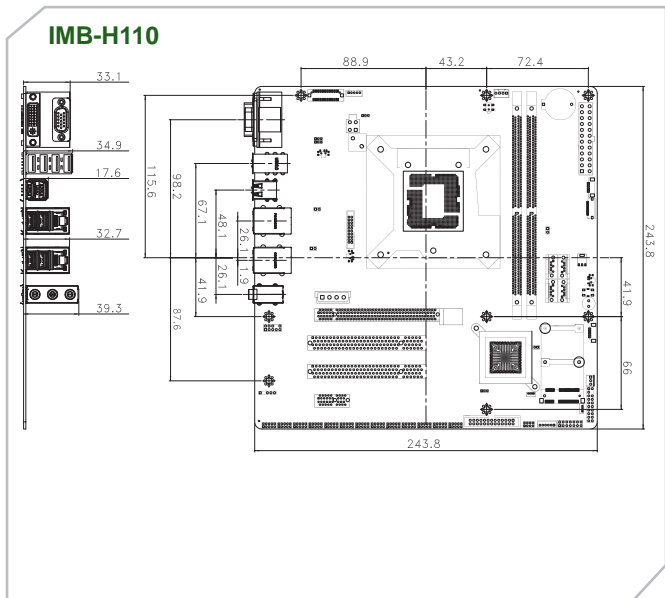
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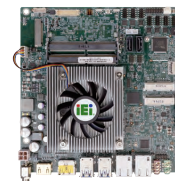
Dimensions (Unit: mm)



Dimensions (Unit: mm)



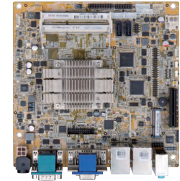
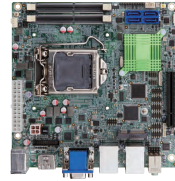
# Mini-ITX Selection Guide

**New****New****New****New**

Model Name	KINO-DH110	KINO-DAL	tKINO-AL	gKINO-DMF	tKINO-ULT3
<b>CPU Socket</b>	LGA1151	On Board	On Board	On Board	On Board
<b>CPU Type</b>	6th/7th generation Intel® Core™ i7/i5/i3 Pentium® and Celeron® processor	Intel® Atom™/Celeron®/Pentium® on-board SoC	Intel® Atom™/Celeron®/Pentium® on-board SoC	AMD G-series on board SoC Merlin Falcon	Intel® Core™ i7/i5/i3, Celeron® ULT processor
<b>Chipset</b>	Intel® H110	Intel® Atom™/Celeron®/Pentium® on-board SoC	Intel® Atom™/Celeron®/Pentium® on-board SoC	AMD G-series on board SoC Merlin Falcon	Intel® Core™ i7/i5/i3, Celeron® ULT processor
<b>Memory</b>	Two 260-pin 2133 MHz dual-channel DDR4 SDRAM SO-DIMMs (system Max. 64 GB)	2 x 204-pin 1866/1600 MHz single-channel DDR3L SO-DIMM (system max. 8 GB)	2 x 204-pin 1866/1600 MHz single-channel DDR3L SO-DIMM (system max. 8 GB)	2 x SO-DIMM DDR4 2400MHz up to 64GB	2 x SO-DIMM DDR4 2133MHz, system maximum up to 32GB
<b>Display Interface</b>	Triple independent display 1 x DP++ 1 x HDMI 1 x iDP interface	Triple independent display 1 x VGA 1 x HDMI 1 x 18/24-bit dual-channel LVDS	Triple independent display 2 x DP++ 1 x eDP	Triple independent display 1 x HDMI 2.0 1 x HDMI 1.4 1 x DP++	Triple independent display 1 x HDM/DP 1 x HDMI 1 x LVDS/eDP
<b>Ethernet</b>	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I219LM with Intel® AMT 11.0 support	Dual LAN: Intel® I210-IT/I211-AT PCIe controller	Dual LAN: RTL8111	Dual LAN: RTL8111GN	LAN1: Intel® I219LM LAN2: Intel® I211AT
<b>iRIS Remote Management Module</b>	N/A				
<b>I/O Interface</b>	1 x KB/MS 1 x RS-232/422/485 2 x RS-232 4 x USB 3.0 4 x USB 2.0	1 x PS/2 KB/MS 2 x RS-232/422/485 2 x USB 2.0 4 x RS-232 4 x USB 3.0	1 x PS/2 KB/MS 2 x RS-232/422/485 2 x USB 2.0 4 x RS-232 4 x USB 3.0	2 x RS-232/422/485 4 x RS-232 (2 support cctalk, TTL) 4 x USB 3.0 5 x USB 2.0	2 x RS-232/422/485 4 x RS-232 4 x USB 2.0 4 x USB 3.0
<b>Storage Interface</b>	2 x SATA 6Gb/s 1 x M.2 (B Key) (2242) (SATA signal)	2 x SATA 6Gb/s with 12/5V SATA power connector 1 x 8 GB eMMC (optional) 1 x M.2 (B Key) (2242)(SATA port1 + USB 2.0 signal) 1 x Micro SD slot (Optional)	2 x SATA 6Gb/s with 12/5V SATA power connector 1 x M.2 (B Key) (2242)(SATA port1 + USB 2.0 signal) 1 x Micro SD slot (Optional)	2 x SATA 6Gb/s with 5V/12V SATA power connector 1 x MicroSD slot 1 x M.2 (B key) (SATA signal)	2 x SATA 6Gb/s with 5V SATA power connector 1 x eMMC5.0 (up to 32G, optional)
<b>Audio</b>	Realtek ALC662 HD Audio codec		Realtek ALC269 HD Audio codec	Realtek ALC662 HD Audio Codec	
<b>Digital I/O</b>	8-bit programmable digital I/O				
<b>Power Consumption</b>	12V@12.16A (3.4GHz Intel® Core i7-6700 with two 2133MHz 16GB DDR4 memory)	TBD	12V@2.58A (Intel® Pentium® N4200 CPU with two 8GB 1600MHz DDR3L memory)	12V@5.54A (AMD RX-421BD 2.1GHz CPU with 2400 MHz 16GB DDR4 memory)	12V@4.68A (Intel® Core™ i7-6600U up to 3.4GHz CPU with 16GB (8GB x 2) DDR4-2133 memory running in 3.2GHz)
<b>Watchdog Timer</b>	Software programmable and supports 1–255 sec. system reset				
<b>Operation Environment</b>	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: KINO-DAL: -20°C ~ 70°C (-4°F~158°F) KINO-DALW2: -40°C ~ 85°C (-40°F~185°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: -20°C ~ 70°C (-4°F ~ 158°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95% non-condensing	
<b>Expansion Slot</b>	1 x Full-size PCIe Mini card slot 1 x PCIe x1 slot	1 x PCIe x1 slot 1 x Full/Half-size PCIe Mini card slot (w/ SIM holder)	1 x PCIe x1 slot 1 x Full/Half-size PCIe Mini card slot (w/ SIM holder)	1 x PCIe x8 slot 1 x Full-size PCIe Mini card slot 1 x MicroSD slot	1 x PCIe x4 slot 1 x Full-size PCIe Mini card slot (support mSATA, colay with SATA2) 1 x Full-size PCIe Mini card slot (with SIM card slot)
<b>CPU Cooler</b>	CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	Heatsink	Heatsink	Cooler	Heatsink

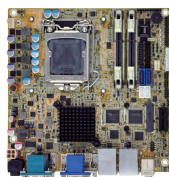


# Mini-ITX Selection Guide



Model Name	KINO-DCM236	KINO-DQM170	KINO-AQ170	tKINO-BW	KINO-DBT
<b>CPU Socket</b>	On Board	On board	LGA1151	On board	On board
<b>CPU Type</b>	Intel® Xeon® E3, Core™ i3, Celeron® process	6th generation Intel® Core™ i7/ i5/i3 and Celeron® processor	6th/7th generation Intel® Core™ i7/i5/i3, Pentium® and Celeron® processor	Intel® Pentium®/Celeron® on board SoC	Intel® Atom™/Celeron® on board SoC
<b>Chipset</b>	Intel® CM236	Intel® QM170	Intel® Q170	Intel® Pentium®/Celeron® on-board SoC	Intel® Atom™/Celeron® on-board SoC
<b>Memory</b>	2 x SO-DIMM DDR4 2133MHz up to 32GB with ECC support	Two 260-pin 2133 MHz dual-channel DDR4 SDRAM SO-DIMMs (system Max. 64 GB)	Two 260-pin 2133 MHz dual-channel DDR4 SDRAM SO-DIMMs (system Max. 64 GB)	Two 204-pin 1600/1333 MHz dual-channel DDR3L SDRAM SO-DIMMs (support up to 8 GB)	Two 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 8 GB (J1900, N2930, E3845, E3827, E3826) One 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM supports up to 4 GB (N2807, E3825, E3815)
<b>Display Interface</b>	Triple independent display 1 x HDMI 2.0 2 x HDMI 1.4 1 x LVDS	Triple independent display supported 1 x HDMI 2.0 2 x HDMI 1.4 1 x LVDS	Triple independent display supported 1 x HDMI 2.0 1 x HDMI/DP 1 x VGA 1 x iDP interface	Triple independent display supported 1 x HDMI/DP 1 x VGA 1 x 18/24-bit dual-channel LVDS	Dual independent display supported 1 x VGA 1 x DVI-D
<b>Ethernet</b>	LAN1: Intel® I219LM LAN2: Intel® I211	LAN1: Intel® I219-LM with Intel® AMT 11.0 support LAN2: Intel® I211 PCIe controller	LAN1: Intel® I211 PCIe controller LAN2: Intel® I219LM with intel AMT 11.0 support	Dual LAN: Realtek RTL8111G PCIe controller	Dual LAN: Realtek RTL8111G PCIe controller
<b>iRIS Remote Management Module</b>	N/A				
<b>I/O Interface</b>	1 x KB/MS 2 x RS-232/422/485 4 x RS-232 4 x USB 2.0 4 x USB 3.0	1 x KB/MS 2 x RS-232/422/485 4 x RS-232 4 x USB 2.0 4 x USB 3.0	1 x KB/MS 2 x RS-232/422/485 4 x RS-232 4 x USB 3.0 6 x USB 2.0	1 x KB/MS 2 x RS-232/422/485 2 x USB 3.0 4 x RS-232 4 x USB 2.0	1 x KB/MS 1 x RS-422/485 2 x USB 3.0 4 x USB 2.0 5 x RS-232
<b>Storage Interface</b>	4 x SATA6Gb/s 1 x mSATA	4 x SATA 6Gb/s (RAID 0/1/5/10 supported)	4 x SATA 6Gb/s (RAID 0/1/5/10 supported)	2 x SATA 6Gb/s 1 x mSATA 1 x Micro SD slot	2 x SATA 3Gb/s 1 x Micro SD slot (E38xx sku only)
<b>Audio</b>	Realtek ALC662 HD Audio codec				
<b>Digital I/O</b>	8-bit programmable digital I/O	8-bit digital I/O			
<b>Power Consumption</b>	12V@6.93A (Intel Xeon E3-1505M V5 2.8GHz CPU with 32 GB (two 16 GB) 2133 MHz DDR4 memory)	12V@5.08A (Intel® Core™ i7-6820EQ, 3.5GHz CPU with 16 GB (two 8 GB) 2133 MHz DDR4 memory)	3.3V@1.62A, 5V@3.54A, 12V@8.17A, 5VSB@3.6A (Intel® Core™ i7 6700K 4.0 GHz CPU with 16 GB (two 8 GB) 2133 MHz DDR4 memory)	12V@1.61A (Intel® Celeron® N3710 CPU with two 4 GB 1600 MHz DDR3L memory)	12V@1.64A (Intel® Celeron® J1900 CPU with 4 GB 1333 MHz DDR3L memory)
<b>Watchdog Timer</b>	Software programmable supports 1~255 sec. system reset				
<b>Operation Environment</b>	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing				
<b>Expansion Slot</b>	1 x PCIe x16 slot 1 x Full-size PCIe Mini card slot (support mSATA) 1 x Half-size PCIe Mini card slot 1 x M.2 2230 (A key)	1 x PCIe x16 slot 1 x Full-size PCIe Mini card slot (support mSATA) 1 x Half-size PCIe Mini card slot 1 x M.2 2230 (A key)	1 x PCIe x8 slot 1 x Full-size PCIe Mini card Slot (support mSATA)	1 x PCIe x1 slot 1 x PCIe Mini card slot	1 x Full-size PCIe Mini card slot (support mSATA) 1 x PCIe x4 slot (with PCIe x1 signal)
<b>CPU Cooler</b>	Heatsink	Heatsink	CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	Heatsink	Heatsink

# Mini-ITX Selection Guide



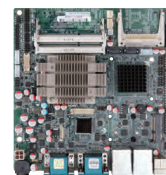
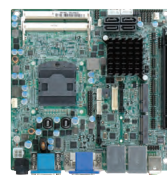
Model Name	KINO-SE/KBN-i2	KINO-DH810	eKINO-BT	KINO-ABT-i2	KINO-AQ870
<b>CPU Socket</b>	On board	LGA1150	On board	On board	LGA1150
<b>CPU Type</b>	AMD Embedded G-Series SoC	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Atom™/Celeron® on-board SoC	Intel® Atom™/Celeron® on-board SoC	Intel® Core™ i7/i5/i3 processor
<b>Chipset</b>	AMD Embedded G-Series SoC	Intel® H81	Intel® Atom™/Celeron® on-board SoC	Intel® Atom™/Celeron® on-board SoC	Intel® Q87
<b>Memory</b>	Two 204-pin 1333/1600 MHz dual-channel DDR3 & DDR3L SO-DIMMs (system max. 8GB)	Two 204-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs (system max. 16 GB)	Two 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 8 GB (J1900, N2930, E3845, E3827, E3826) One 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM supports up to 4 GB (N2807, E3825, E3815)	Two 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 8 GB (J1900, N2930, E3845, E3827, E3826) One 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM supports up to 4 GB (N2807, E3825, E3815)	2 x 240-pin, Max. 16 GB, 1600/1333 MHz dual-channel DDR3 SDRAM UDIMM
<b>Display Interface</b>	Dual independent display supported 2 x HDMI 1 x VGA	Dual display supported 1 x VGA 1 x DVI-D 1 x iDP interface	Dual display supported 1 x VGA 2 x 18/24-bit dual-channel LVDS	Dual display supported 1 x VGA 1 x HDMI 1 x iDP interface	Triple display supported 1 x VGA 1 x DVI-D 1 x iDP interface
<b>Ethernet</b>	LAN1: Intel® I210-AT with PCIe controller with NCSI support LAN2: Intel® I211-AT PCIe controller	Dual LAN: Intel® I211-AT PCIe controller	Dual LAN: Realtek RTL8111E PCIe controller	LAN1: Intel® I210-AT PCIe controller with NCSI support (for iRIS solution) LAN2: Intel® I211-AT PCIe controller	LAN1: Intel® I211 PCIe controller LAN2: Intel® I217LM with Intel® AMT 9.0 support
<b>iRIS Remote Management Module</b>	1 x iRIS-2400 slot	N/A	N/A	1 x iRIS-2400 slot	N/A
<b>I/O Interface</b>	1 x KB/MS 1 x RS-422/485 2 x USB 3.0 4 x USB 2.0 5 x RS-232	1 x PS/2 for KB/MS 1 x RS-422/485 2 x USB 3.0 5 x RS-232 6 x USB 2.0	1 x PS/2 for KB/MS 1 x RS-422/485 2 x USB 3.0 4 x RS-232 4 x USB 2.0	1 x PS/2 for KB/MS 1 x RS-422/485 2 x USB 3.0 4 x RS-232 6 x USB 2.0	1 x PS/2 for KB/MS 1 x RS-422/485 1 x TPM (2x10 pin) 4 x USB 3.0 5 x RS-232 6 x USB 2.0
<b>Storage Interface</b>	2 x SATA 6Gb/s 1 x mSATA 1 x SD card slot	2 x SATA 6Gb/s	2 x SATA 3Gb/s	2 x SATA 3Gb/s	4 x SATA 6Gb/s 1 x mSATA
<b>Audio</b>	Realtek ALC892 HD Audio codec	Realtek ALC662 HD Audio codec			
<b>Digital I/O</b>	8-bit digital I/O	8-bit programmable digital I/O			
<b>Power Consumption</b>	12V@2.7A (AMD GX-424CC 2.4GHz CPU with 1600 MHz 8 GB DDR3 memory)	12V@6.03A (Intel® Core™ i7-4770K 3.90 GHz CPU with two 1333 MHz 4 GB DDR3 memory)	12V@1.55A (Intel® Celeron® J1900 CPU with two 8 GB 1333 MHz DDR3L memory)	5V@1.71A, 12V@0.08A, Vcore_12V@0.27A, 3.3V@0.34 (Intel® Celeron® J1900 CPU with two 4 GB 1333 MHz DDR3L memory)	3.3V@1.11A, 5V@3.01A, 12V@0.12A, Vcore@6.32A, 5VSB@0.15A (Intel® 2.60GHz CPU with two 1600 MHz 2 GB DDR3 memory)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset				
<b>Operation Environment</b>	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing		Temperature Range: 0°C ~ 60°C (32°F ~ 140°F) Relative Humidity: 5% ~ 95% non-condensing		Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing
<b>Expansion Slots</b>	1 x Half-size PCIe Mini card slot 1 x PCIe x4 slot	1 x Full-size PCIe Mini card slot 1 x PCIe x1 slot	1 x Full-size PCIe Mini card slot 1 x PCIe x1 slot	1 x Full-size PCIe Mini card slot 1 x PCIe x1 slot	1 x PCIe x8 slot 1 x PCIe Mini (support mSATA)
<b>CPU Cooler</b>	CF-479B-BGA-RS	CF-115XA-R10 CF-115XE-R10	Heatsink	Heatsink	CF-1150SA-R10 CF-1150SB-R11 CF-1150SC-R20 CF-1150SE-R11

# Mini-ITX Selection Guide



Model Name	KINO-DQM871-i1	KINO-QM770	KINO-DH610	KINO-AH611	KINO-AH612
<b>CPU Socket</b>	On Board	Socket G2	Socket H2	Socket H2	Socket H2
<b>CPU Type</b>	Intel® Core™ i7/i5/i3 Mobile processor	Intel® Mobile processor	Intel® Core™ i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor	Intel® Core™ i7/i5/i3, Pentium®, Celeron® processor
<b>Chipset</b>	Intel® QM87	Intel® QM77	Intel® H61	Intel® H61	Intel® H61
<b>Memory</b>	2 x 204-pin, Max. 16 GB, 1333/1600 MHz dual-channel DDR3 SO-DIMMs	2 x 204-pin, Max. 16 GB, 1066/1333/1600 MHz dual-channel DDR3 SO-DIMMs	2 x 204-pin 1066/1333 MHz dual-channel DDR3 SO-DIMMs (system max. 16 GB)	2 x 204-pin 1066/1333 MHz dual-channel DDR3 SO-DIMMs (system max. 16 GB)	2 x 204-pin 1066/1333 MHz dual-channel DDR3 SO-DIMMs (system max. 16 GB)
<b>Display Interface</b>	Triple display supported 2 x HDMI 1 x VGA 1 x 18/24-bit dual-channel LVDS 1 x IDP interface	Triple display supported 2 x HDMI 1 x DVI-I 1 x 18/24-bit dual-channel LVDS	Dual display supported 1 x VGA 1 x HDMI 1 x DVI-D	Dual display supported 2 x VGA 2 x HDMI	Dual display supported 1 x VGA 1 x DVI-D
<b>Ethernet</b>	LAN1: Intel® I217LM with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe controller	LAN1: Intel® 82579 PHY with Intel® AMT 8.0 support LAN2: Intel® 82583V PCIe controller	LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support LAN2: Realtek RTL8111E PCIe GbE controller	Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support	Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support
<b>iRIS Remote Management Module</b>	1 x iRIS-1010 slot	N/A			
<b>I/O Interface</b>	1 x PS/2 for KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 4 x USB 3.0 5 x RS-232 10 x USB 2.0	1 x KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM (2x10 pin) 2 x RS-232 4 x USB 2.0 4 x USB 3.0	1 x KB/MS 1 x RS-232 1 x RS-422/485 1 x TPM (2x10 pin) 10 x USB 2.0	1 x KB/MS 1 x TPM (2x10 pin) 2 x RS-232 8 x USB 2.0	1 x PS/2 for KB/MS 1 x RS-422/485 1 x TPM (2x10 pin) 5 x RS-232 8 x USB 2.0
<b>Storage Interface</b>	2 x SATA 6Gb/s 2 x SATA 3Gb/s 1 x mSATA	2 x SATA 6Gb/s 2 x SATA 3Gb/s	4 x SATA 3Gb/s	3 x SATA 3Gb/s	4 x SATA 3Gb/s
<b>Audio</b>	Realtek ALC662 HD Audio codec	Realtek ALC892 HD Audio codec	Realtek ALC662 HD Audio codec		
<b>Digital I/O</b>	8-bit programmable digital I/O				
<b>Power Consumption</b>	12V@5.03A (2.0GHz Intel® Core™ i7 processor with two 1333 MHz 4 GB DDR3 memory)	12V@6.08A (2.3GHz Intel® Core™ i7-3610QE with two 1333 MHz 4 GB DDR3 memory running 3DMark06 burn in)	12V@5.07A (2.2GHz Intel® G620T with two 2GB DDR3 1066 MHz running 3DMark06 burn in) 12V@8.85A (2.8GHz Intel® Core™ i7-2600S with two 1066 MHz 2 GB DDR3 running 3DMark06 burn in)	5V@3.47A, 12V@0.11A, Vcore_12V@6.73A, 3.3V@1.01A, 5VSB@0.15A (3.4GHz Intel® Core™ i7-2600K with two 1333 MHz 2 GB DDR3)	5V@3.9A, 12V@0.36A, Vcore_12V@8.28A, 3.3V@1.24A, 5VSB@0.18A (3.4GHz Intel® Core™ i7-2600 with two 1333 MHz 2 GB DDR3)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset				
<b>Operation Environment</b>	Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing				
<b>Expansion Slots</b>	1 x PCIe x16 slot 1 x Full-size PCIe Mini slot (support mSATA)	1 x PCIe x16 slot 1 x PCIe Mini card slot (support mSATA)	1 x PCI slot 1 x PCIe x1 slot	1 x PCIe x16 slot 1 x Half-size PCIe Mini card slot	1 x PCIe x4 slot
<b>CPU Cooler</b>	XCF-479B-RS CF-989B-RS-R11	CF-989A-RS-R12	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10	CF-115XA-R10 CF-1156C-R20 CF-1156D-R20 CF-115XE-R10

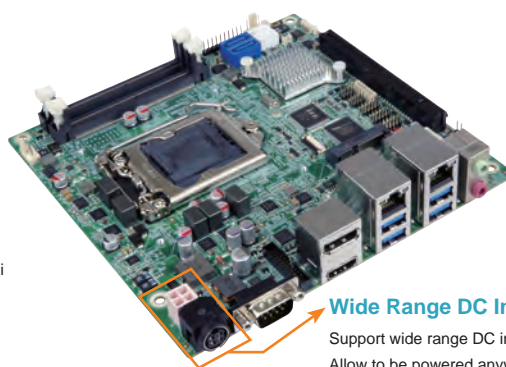
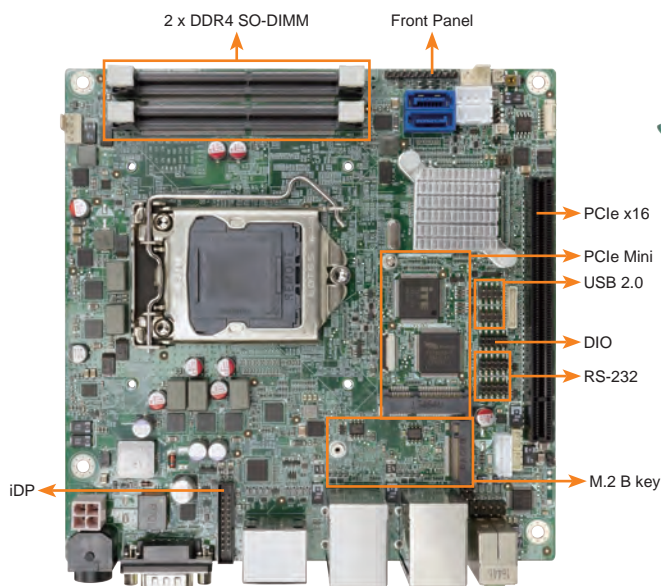
# Mini-ITX Selection Guide



Model Name	KINO-CV-D25501/N26001	KINO-QM670-R20	KINO-QM57A	KINO-HM551	KINO-PV-D5252/D4252
<b>CPU Socket</b>	On Board	Socket G2	Socket G1	Socket G1	On board
<b>CPU Type</b>	Intel® Atom™ processor D2550 1.86GHz Intel® Atom™ processor N2600 1.6GHz	Intel® Core™ i7/i5/i3 Mobile processor	Intel® Core™ i7/i5/i3 and Celeron® mobile processor	Intel® Core™ i7/i5/i3 and Celeron® mobile processor	Intel® Atom™ processor D525 1.8GHz Intel® Atom™ processor D425 1.8GHz
<b>Chipset</b>	NM10	Intel® QM67	Intel® QM57	Intel® HM55	ICH8M
<b>Memory</b>	1 x 204-pin 1066 MHz DDR3/DDR3L (1.35V) SO-DIMM (D2550) (system max. 4 GB) 1 x 204-pin 800 MHz DDR3/DDR3L (1.35V) SO-DIMM (N2600) (system max. 2 GB)	2 x 204-pin 1333/1066 MHz 4 GB DDR3 SO-DIMM (system max. 8 GB)	2 x 204-pin 800/1066 MHz 4 GB DDR3 SO-DIMM (system max. 8 GB)	2 x 204-pin 800/1066 MHz 4 GB DDR3 SO-DIMM (system max. 8 GB)	2 x 204-pin 800 MHz 2 GB DDR3 SO-DIMM (system max. 4 GB)
<b>Display Interface</b>	Dual display supported 1 x VGA 1 x Single-channel 18-bit (N2600)/24-bit LVDS2 (D2550) 1 x 24-bit dual-channel LVDS 1 x HDMI	Dual display supported 1 x VGA 2 x HDMI 1 x 18/24-bit dual-channel LVDS	Dual display supported 1 xVGA 2 x HDMI 1 x 18/24-bit dual-channel LVDS	Dual display supported 1 x VGA 1 x HDMI 1 x DVI-D 1 x 18/24-bit dual-channel LVDS	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS 1 x 24-bit dual-channel LVDS
<b>Ethernet</b>	Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support	LAN1: Intel® 82583V PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 7.0 supported	LAN1: Intel® 82577 GbE LAN controller with Intel® AMT 6.0 supported by iEZman software UI LAN2: Intel® 82574L GbE LAN	Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support	Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support
<b>iRIS Remote Management Module</b>	N/A				
<b>I/O Interface</b>	1 x KB/MS 1 x RS-422/485 1 x TPM (2x10 pin) 2 x USB 3.0 5 x RS-232 6 x USB 2.0	1 x KB/MS 1 x RS-422/485 1 x TPM (2x10 pin) 2 x RS-232 2 x USB 3.0 6 x USB 2.0	1 x KB/MS 1 x RS-232/422/485 2 x RS-232 8 x USB 2.0	1 x KB/MS 1 x TPM (2x10 pin) 2 x RS-232/422/485 4 x RS-232 8 x USB 2.0	1 x KB/MS 1 x LPT 1 x RS-232/422/485 1 x TPM (2x10 pin) 5 x RS-232 8 x USB 2.0
<b>Storage Interface</b>	2 x SATA 3Gb/s or 1 x SATA 3Gb/s + 1 x mSATA 1 x microSD slot (bootable)	2 x SATA 3Gb/s 2 x SATA 6Gb/s	6 x SATA 3Gb/s	4 x SATA 3Gb/s	2 x SATA 3Gb/s 1 x CF Type II
<b>Audio</b>	Realtek ALC662 HD Audio codec	Realtek ALC892 HD Audio codec	Realtek ALC888 HD Audio codec		
<b>Digital I/O</b>	8-bit programmable digital I/O				
<b>Power Consumption</b>	12V@2.8A (1.86GHz Intel® D2550 CPU with DDR3 1333 MHz 4 GB DIMM) 12V@2.4A (1.6GHz Intel® N2600 CPU with 1333 MHz 2 GB DDR3 DIMM)	12V@6.5A (2.2GHz Intel® Core i7 with two 1333 MHz 4 GB DDR3 DIMM)	12V@5.27A (2.66GHz Intel® Core i7 620M CPU with two 1333 MHz 2 GB DDR3 DIMM)	12V@4.67A (2.66GHz Intel® Core i7 620M CPU with two 1333 MHz 4 GB DDR3 DIMM)	12V@1.95A (Intel® Atom™ D525 1.8GHz with two 1 GB DDR3)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset				
<b>Operation Environment</b>	Temperature Range: -10°C ~ 60°C Relative Humidity: 5% ~ 95%, non-condensing				
<b>Expansion Slots</b>	1 x PCIe Mini Card Slot 1 x PCI	1 x PCI x16 slot 1 x PCIe Mini card slot	1 x PCIe x16 slot 1 x PCIe Mini card slot	1 x PCIe x16 slot 1 x PCIe Mini card slot	1 x PCI Slot 1 x PCIe x1 slot 1 x PCIe Mini card slot
<b>CPU Cooler</b>	Heatsink	CF-989A-RS-R12	CF-989A-RS-R12	CF-989A-RS-R12	Heatsink

# KINO-DH110

Mini-ITX SBC supports 14nm 6th/7th Generation LGA1151 Intel® Core™ i7/i5/i3, Celeron® and Pentium® Processor, DDR4, Dual Independent Display, Dual GbE LAN, USB 3.0, SATA 6Gb/s, M.2, HD Audio and RoHS



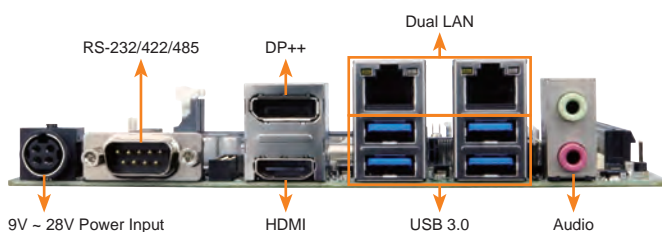
### Wide Range DC Input Support

Support wide range DC input from 9V to 28V. Allow to be powered anywhere, no matter if a 12V/24V DC source or 19V power adapter is available.



## Specifications

- ◆ CPU  
LGA1151 socket supports 6th/7th generation Intel® Core™ i7/i5/i3, Celeron® and Pentium® processor
- ◆ System Chipset  
Intel® H110
- ◆ Memory  
Two 260-pin 2133MHz dual-channel DDR4 SDRAM unbuffered DIMM support up to 32GB
- ◆ BIOS  
UEFI BIOS
- ◆ Graphic Engine  
Intel® HD Graphics Gen 9 engines with 16 low-power execution units, support DX2015, OpenGL 5.X, OpenCL2.x, ES 2.0
- ◆ Display Output  
Dual independent display  
1 x HDMI (up to 3840x2160@60Hz)  
1 x DP++ (up to 3840x2160@60Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60Hz)
- ◆ Ethernet  
LAN1: Intel® I219LM PCIe controller  
LAN2: Intel® I211 PCIe controller
- ◆ External I/O Interface  
4 x USB 3.0  
1 x RS-232/422/485
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin)  
2 x RS-232 (2x5 pin, P=2.0)      2 x SATA 6Gb/s (support hot plug)  
4 x USB 2.0 (2x4 pin, P=2.0)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C: 1 x I<sup>2</sup>C (1x4 pin)
- ◆ Audio  
Realtek ALC662 HD codec supports 5.1-channel  
2 x Audio jacks (line-out, mic-in) on rear IO  
1 x Front audio (2x5 pin)
- ◆ Front Panel  
1 x Front panel (1x10 pin, power LED, HDD LED, power button, reset button)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Expansion  
1 x Full-size PCIe Mini card slot (PCIe & USB)  
1 x M.2 B key (SATA)  
1 x PCIe x16 slot (Gen2)
- ◆ Watchdog Timer  
Software programmable, supports 1–255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
1 x System smart fan (1x4 pin)
- ◆ Power Supply  
9V ~ 28V DC input      Support ATX/AT mode  
1 x External DC jack (4-pin DIN)      1 x Internal power connector (2x2 pin)
- ◆ Power Consumption  
12V@12.16A (3.4GHz Intel® Core i7-6700 with two 2133MHz 16GB DDR4 memory)
- ◆ Operating Temperature: -20°C~60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170mm x 170mm
- ◆ Weight: GW: 900g / NW: 400g
- ◆ CE/FCC compliant



## Features

- LGA1151 Intel® 6th/7th Generation Core™ i7/i5/i3, Celeron® and Pentium® processor
- Dual-channel DDR4 2133MHz
- Support HDMI, DP++
- Support M.2 B key, PCIe Mini
- Support USB 3.0 and SATA 6Gb/s
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

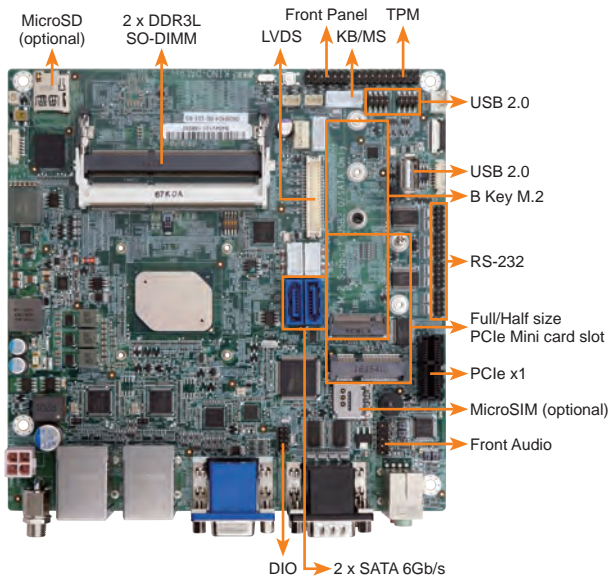
1 x KINO-DH110 single board computer	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
KINO-DH110-R10	Mini-ITX Motherboard supports 14nm LGA1151 Intel® 6th/7th Generation Core™ i7/i5/i3, Celeron® and Pentium® processor, DDR4, dual independent displays, dual GbE LAN, M.2, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
32000-070301-RS	Dual USB Cable
32200-000049-RS	RS232 cable, 200mm
32205-003800-300-RS	RS-422/485 cable, 200mm
CF-1156C-R20	LGA1155/1156 kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/1156 kit, 1U chassis compatible, 65W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DP converter board (for IEI connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI connector)
DP-LVDS-R10	DisplayPort to 24 bit dual channel LVDS converter board (for IEI connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI connector)

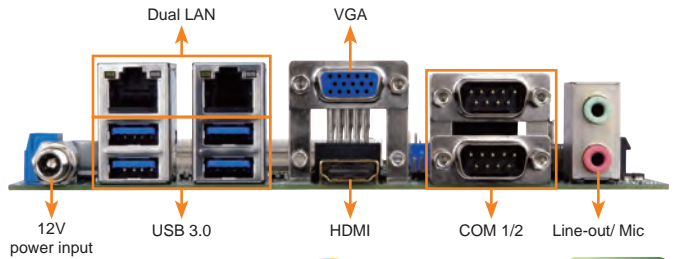
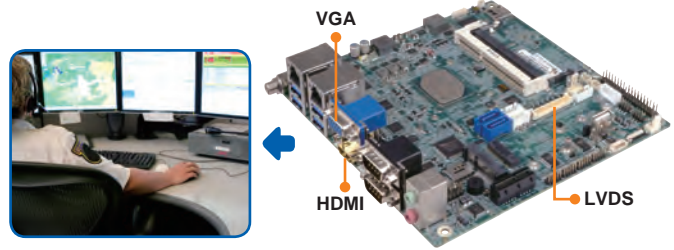
# KINO-DAL

Mini-ITX SBC supports Intel® 14nm Atom™, Pentium® or Celeron® on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS



## Triple Independent Displays

**New**



## Specifications

- SoC
  - Intel® Atom™ E3950 on-board SoC (up to 2.0GHz, quad-core, 2M Cache, TDP=12W)
  - Intel® Atom™ E3940 on-board SoC (up to 1.8GHz, quad-core, 2M Cache, TDP=9W)
  - Intel® Atom™ E3930 on-board SoC (up to 1.8GHz, dual-core, 2M Cache, TDP=6W)
  - Intel® Pentium® N4200 on-board SoC (up to 2.5GHz, quad-core, 2M Cache, TDP=6W)
  - Intel® Celeron® N3350 on-board SoC (up to 2.4GHz, dual-core, 2M Cache, TDP=6W)
- BIOS
  - UEFI BIOS
- Memory
  - Two 204-pin 1866/1600MHz Dual-channel DDR3L DIMMs support up to 8GB
- Graphics Engine
  - Intel® HD Graphics Gen9 Low Power; 18 Execution Units
  - 4K Codec Decode & Encode for HEVC 4 , H.264, VP8, SVC, MVC
- Display Output
  - Triple independent display
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 1 x VGA (up to 1920x1200@60Hz)
  - 1 x HDMI (up to 3840x2160@30Hz)
- Ethernet
  - 2 x PCIe GbE LAN Intel® i211 AT / i210 IT controller
- External I/O Interface
  - 4 x USB 3.0
  - 2 x RS-232/422/485
- Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x MicroSD card slot
  - 1 x USB 2.0 (180° Type-A)
  - 4 x USB 2.0 (2x4 pin, P=2.0)
  - 1 x eMMC 5.0 (optional, up to 32G)
  - 1 x M.2 (B key) (2242, colay SATA1, with USB signal)
  - 2 x SATA 6Gb/s with 12/5V SATA power connector (no RAID)
  - 4 x RS-232 (2x5 pin, P=2.0)
- SMBus: 1 x SMBus (1x4 pin)
- PC: 1 x PC (1x4 pin)
- TPM: 1 x TPM (2x10 pin)
- Audio
  - Realtek ALC662 HD codec
  - 2 x Audio jacks (line-out, mic-in) on rear IO
  - 1 x Front audio (2x5 pin)
- Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- LAN LED
  - 2 x LAN LED (1x2 pin)
- Expansion
  - 1 x PCIe x1 card slot
  - 1 x Full/Half-size PCIe Mini card slot (SIM holder)
- Digital I/O: 8-bit digital I/O (2x5 pin)
- Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x4 pin)
- Power Supply
  - 12V only DC input as Default/ 9V~30V DC input (optional)
  - 1 x Internal power connector (2x2 pin)
  - 1 x External DC power Jackc (Ø5.5mm)
  - Support AT/ATX mode
- Watchdog Timer
  - Software programmable, supports 1~255 sec. system reset
- Power Consumption: TBD
- Operating Temperature: -20°C ~ 70°C / -40°C ~ 85°C (KINO-DAL-ExW2)
- Storage Temperature: -40°C ~ 85°C
- Operating Humidity: 5% ~ 95%, non-condensing
- Dimensions: 170mm x 170mm
- Weight: GW: 1100g / NW: 700g
- CE/FCC compliant



## Features

- Mini-ITX SBC supports Intel® 14nm Atom™, Pentium® or Celeron® on-board SoC supports dual-channel DDR3L SO-DIMMs
- Triple independent display support
- Optional wide range 9V~30V DC input design
- Full size PCIe Mini slot with SIM sockets for 3G/LTE expansion
- COM, USB 3.0, SATA 6Gb/s, M.2, eMMC 5.0 and audio support
- IEI one key recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x KINO-DAL single board computer with heatsink	1 x One Key Recovery CD
1 x SATA with power cable kit	1 x QIG
1 x I/O Shielding	1 x Utility CD

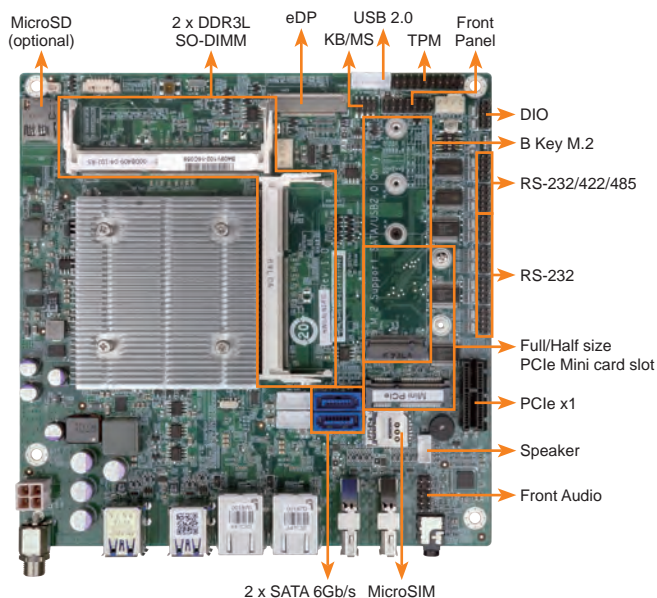
## Ordering Information

Part No.	Description
KINO-DAL-N2-R10	Mini-ITX SBC supports Intel® 14nm quad-core Pentium® N4200 2.5GHz on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS
KINO-DAL-N1-R10	Mini-ITX SBC supports Intel® 14nm dual-core Celeron® N3350 2.3GHz on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS
KINO-DAL-E3W2-R10**	Mini-ITX SBC supports Intel® 14nm quad-core Atom™ E3950 2.0GHz on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS, -40°C ~ 85°C
KINO-DAL-E2W2-R10	Mini-ITX SBC supports Intel® 14nm quad-core Atom™ E3940 1.8GHz on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS, -40°C ~ 85°C
KINO-DAL-E1W2-R10	Mini-ITX SBC supports Intel® 14nm dual-core Atom™ E3930 1.8GHz on-board SoC with HDMI/LVDS/VGA, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS, -40°C ~ 85°C
32000-070301-RS	Dual-port USB cable, 210mm, P=2.0
32000-023800-RS	PS/2 KB/MS cable, 135mm, P=2.0
32205-002700-100-RS	RS-232 cable, 200mm, P=2.0
TPM-IN02-R20	20-pin Infineon TPM 2.0 module, software management tool, firmware v5.5

\*\*By order production, MOQ: 100

## tKINO-AL

Thin Mini-ITX SBC supports Intel® 14nm Atom™, Pentium® or Celeron® on-board SoC with DP++, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS

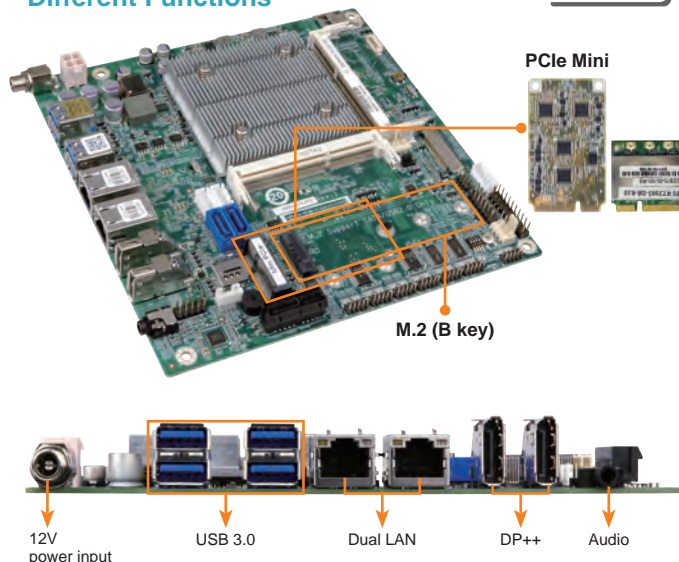


## Specifications

- ◆ SoC
  - Intel® Atom™ E3950 on-board SoC (up to 2.0GHz, quad-core, 2M Cache, TDP=12W)
  - Intel® Atom™ E3940 on-board SoC (up to 1.8GHz, quad-core, 2M Cache, TDP=9W)
  - Intel® Atom™ E3930 on-board SoC (up to 1.8GHz, dual-core, 2M Cache, TDP=6W)
  - Intel® Pentium® N4200 on-board SoC (up to 2.5GHz, quad-core, 2M Cache, TDP=6W)
  - Intel® Celeron® N3350 on-board SoC (up to 2.4GHz, dual-core, 2M Cache, TDP=6W)
- ◆ BIOS
  - UEFI BIOS
- ◆ Memory
  - Two 204-pin 1867/1600MHz Dual-channel DDR3L DIMMs support up to 8GB
- ◆ Graphics Engine
  - Intel® HD Graphics Gen9 Low Power; 18 Execution Units
  - 4K Codec Decode & Encode for HEVC , H.264, VP8, SVC, MVC
- ◆ Display Output
  - Triple Independent Display
  - 1 x eDP (up to 3840x2160@60Hz)
  - 2 x DP++ (up to 4096x2160@60Hz)
- ◆ Ethernet
  - 2 x PCIe GbE LAN Realtek RTL8111
- ◆ External I/O Interface
  - 4 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x M.2 (B key) (2242, colay SATA1, with USB signal)
  - 1 x MicroSD card slot (optional)
  - 2 x RS-232/422/485 (2x5 pin, P=2.0)
  - 2 x USB 2.0 (2x4 pin, P=2.0)
  - 4 x RS-232 (2x5 pin, P=2.0)
  - 2 x SATA 6Gb/s with 12/5V SATA power connector (No RAID)
- ◆ SMBus
  - 1 x SMBus (1x4 pin)
- ◆ TPM
  - 1 x TPM (2x10 pin)
- ◆ Audio
  - Realtek ALC269 HD codec
  - 1 x Audio jacks (line-out, mic-in) on rear IO
  - 1 x Front audio (2x5 pin)
  - 1 x Speaker (1x4 pin)
- ◆ Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Expansion
  - 1 x PCIe x1 slot
  - 1 x Full/Half-size PCIe Mini card slot (w/ SIM holder)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ FAN Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x4 pin)
- ◆ Power supply
  - 12V only DC input as Default
  - 1 x Internal power connector (2x2 pin)
  - 1 x External DC power Jackc (Ø5.5mm)
  - Support AT/ATX mode
- ◆ Watchdog Timer: Software programmable, supports 1~255 sec. system reset
- ◆ Power Consumption
  - 12V@2.58A (Intel® Pentium® N4200 CPU with two 8GB 1600MHz DDR3L memory)
- ◆ Operating Temperature: -20°C ~ 70°C
- ◆ Storage Temperature: -40°C ~ 85°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170mm x 170mm
- ◆ Weight: GW: 1100g / NW: 700g
- ◆ CE/FCC compliant

## Flexible Selection of Modules with Different Functions

New



## Features

- Thin Mini-ITX SBC supports Intel® 14nm Atom™, Pentium® or Celeron® on-board SoC supports dual-channel DDR3L SO-DIMMs
- Triple independent display support
- Full size PCIe Mini slot with SIM sockets for WWAN expansion
- COM, USB 3.0, SATA 6Gb/s and audio support
- IEI one key recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x tKINO-AL single board computer with heatsink	1 x One Key Recovery CD
1 x SATA with power cable kit	1 x QIG
1 x I/O Shielding	1 x Utility CD

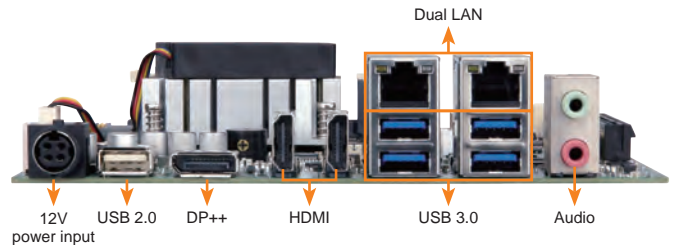
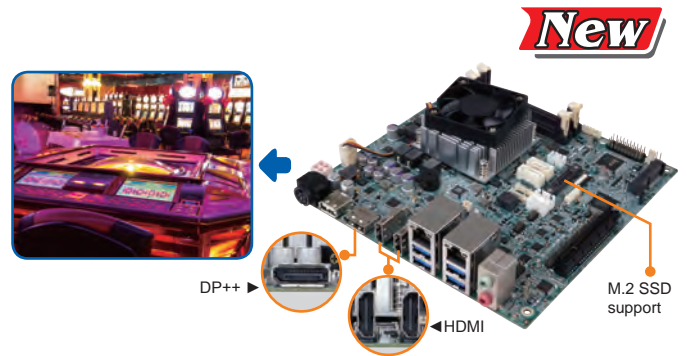
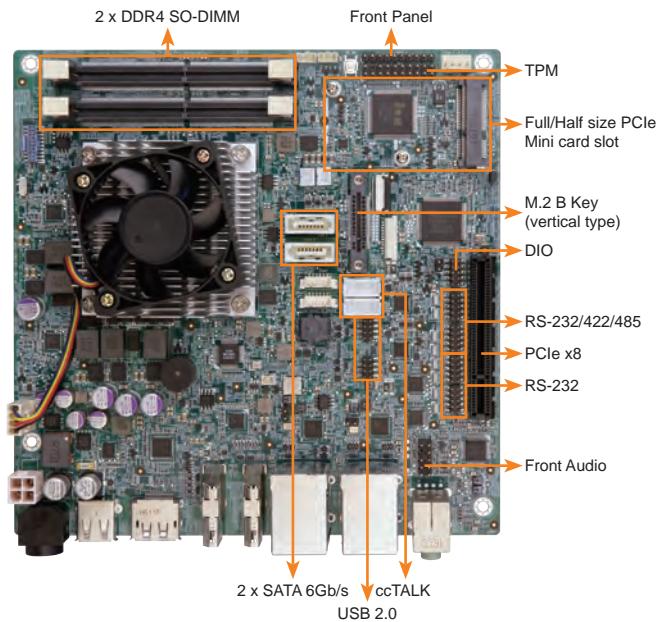
## Ordering Information

Part No.	Description
tKINO-AL-N2-R11	Thin Mini-ITX SBC supports Intel® 14nm quad-core Pentium® N4200 2.5GHz on-board SoC with DP++, Dual PCIe GbE, M.2, USB 3.0, PCIe Mini, SATA 6Gb/s, COM, Audio and RoHS
tKINO-AL-N1-R11	Thin Mini-ITX SBC supports Intel® 14nm dual-core Celeron® N3350 2.4GHz on-board SoC with DP++, Dual PCIe GbE, M.2, USB 3.0, PCIe Mini, SATA 6Gb/s, COM, Audio and RoHS
tKINO-AL-E3-R10**	Thin Mini-ITX SBC supports Intel® 14nm quad-core Atom™ E3950 2.0GHz on-board SoC with DP++, Dual PCIe GbE, M.2, USB 3.0, PCIe Mini, SATA 6Gb/s, COM, Audio and RoHS
tKINO-AL-E2-R10**	Thin Mini-ITX SBC supports Intel® 14nm quad-core Atom™ E3940 1.8GHz on-board SoC with DP++, Dual PCIe GbE, M.2, USB 3.0, PCIe Mini, SATA 6Gb/s, COM, Audio and RoHS
tKINO-AL-E1-R10**	Thin Mini-ITX SBC supports Intel® 14nm dual-core Atom™ E3930 1.8GHz on-board SoC with DP++, Dual PCIe GbE, M.2, USB 3.0, PCIe Mini, SATA 6Gb/s, COM, Audio and RoHS
32000-070301-RS	Dual-port USB cable, 210mm, P=2.0
32000-023800-RS	PS/2 KB/MS cable, 135mm, P=2.0
32205-002700-100-RS	RS-232 cable, 200mm, P=2.0
TPM-IN02-R20	20-pin Infineon TPM 2.0 module, software management tool, firmware v5.5

\*\*By order production, MOQ: 100

## gKINO-DMF

Mini-ITX SBC supports AMD Merlin Falcon SoC Processor, HDMI 2.0, M.2, PCIe Mini, SATA 6Gb/s, USB 3.0, HD audio and RoHS



## Specifications

- ◆ SoC
  - FP4 BGA supports AMD Merlin Falcon SoC
  - RX-421BD on-board SoC (2.1GHz, quad-core, 2MB cache, TDP=35W)
  - RX-216GD on-board SoC (1.6GHz, quad-core, 1MB cache, TDP=15W)
- ◆ BIOS
  - UEFI BIOS
- ◆ Memory
  - Two 260-pin 2400MHz dual-channel DDR4 non-ECC unbuffered SO-DIMMs support up to 64 GB
- ◆ Graphics Engine
  - AMD Radeon HD 10000graphic,3rd Gen. graphic core,support DX 12, HSA 2.0
  - UVD v6 decode for H.265 MPEG2/4, VC-1, MVC
  - VCE v3.1 encode for H.254 VCE
- ◆ Display Output
  - Triple independent display
  - 2 x HDMI 1.4 (up to 4096x2160@24Hz)
  - 1 x DP++ (up to 3840x2160@60Hz)
- ◆ Ethernet
  - Dual GbE RTL 8111GN
- ◆ External I/O Interface
  - 4 x USB 3.0
  - 1 x USB 2.0
- ◆ Internal I/O Interface
  - 1 x MicroSD card slot
  - 2 x RS-232 (2x5 pin, P=2.0)
  - 2 x RS-232 (support Cctalk, TTL)(1x4 pin, P=2.54)
  - 4 x USB 2.0 (2x4 pin, P=2.0)
  - 2 x SATA with 5V/12V output
- ◆ Audio
  - Realtek ALC662 HD audio codec
  - 2 x Audio jacks (line-out, mic-in) on rear IO
  - 1 x Front audio (2x5-pin)
- ◆ Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED
  - 2 x LAN LED (1x2 pin)
- ◆ SMBUS
  - 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C
  - 1 x I<sup>2</sup>C (1x4 pin)
- ◆ TPM
  - 1 x TPM (2x10 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Expansion
  - 1 x PCIe x 8 slot
  - 1 x Full size PCIe Mini card slot
- ◆ Watchdog Timer: Software programmable, supports 1~255 sec. system reset
- ◆ Chassis Intrusion Detection: 1 x Chassis intrusion connector (1x2 pin)
- ◆ Power Supply
  - 12V DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
  - 1 x External DC jack (4-pin DIN)
- ◆ FAN Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x4 pin)
- ◆ Power Consumption
  - 12V@5.54A (AMD RX-421BD 2.1GHz CPU with 2400 MHz 16GB DDR4 memory)
- ◆ Storage Temperature: -10°C ~ 70°C
- ◆ Operating Temperature: 0°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170mm x 170 mm
- ◆ Weight: GW: 1100g / NW: 700g
- ◆ CE/FCC compliant



## Features

- Mini ITX form factor with AMD Merlin Falcon processor supports dual-channel DDR4 SO-DIMMs
- Triple independent display support via dual HDMI and DP++
- Full size PCIe Mini slot and vertical type M.2 B key slot for expansion
- COM, Cctalk, TTL, and USB 3.0support
- IEI one key recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x gKINO-DMF single board computer with CPU cooler
1 x SATA cable
1 x I/O shielding
1 x One Key Recovery CD
1 x QIG
1 x Utility CD

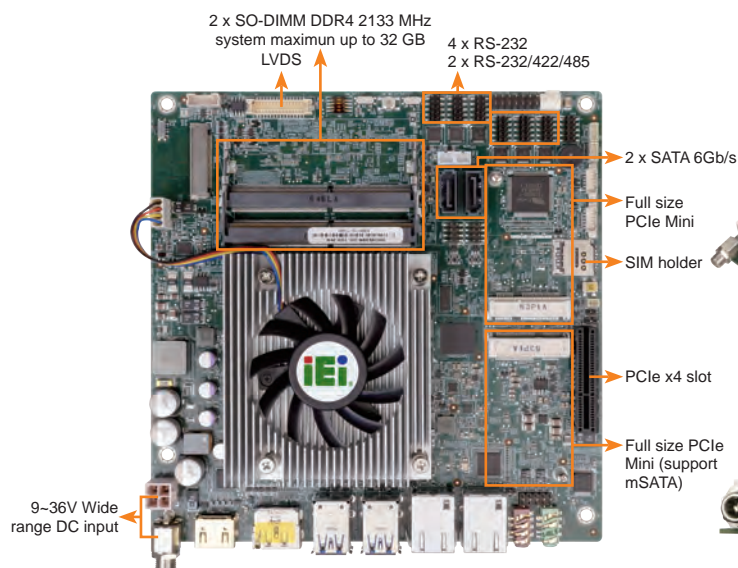
## Ordering Information

Part No.	Description
gKINO-DMF-421-R10	Mini-ITX SBC supports AMD RX-421BD on board SoC (quad-core 2.1GHz, 35W), DDR4 ,triple independent displays.HDMI/DP, dual GbE, SATA 6Gb/s, USB3.0, PCIe Mini, M.2,HD audio and RoHS
gKINO-DMF-216-R10	Mini-ITX SBC supports AMD RX-216GD on board SoC (dual-core 1.6GHz, 15W), DDR4 ,triple independent displays, HDMI/DP, dual GbE, SATA 6Gb/s, USB3.0, PCIe Mini, M.2, HD audio and RoHS
19800-000300-100-RS	RS-232 cable with bracket, 300mm, P=2.0
CB-USB02A-RS	Dual-port USB cable with bracket, 300mm, P=2.0
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

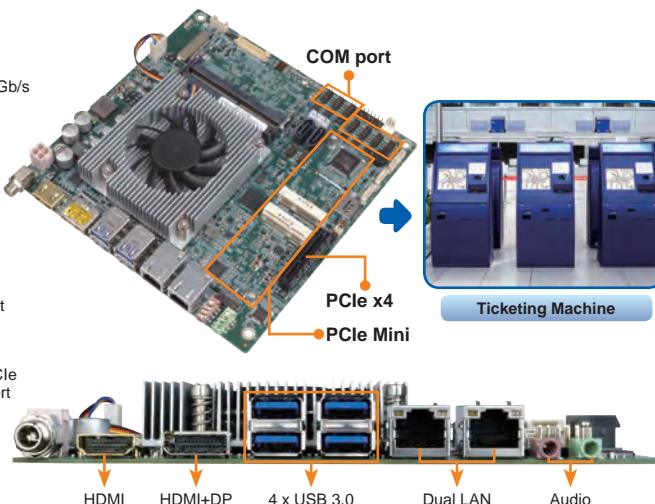


## tKINO-ULT3

Thin Mini-ITX SBC supports Intel® Skylake-U Processor, 9~36V DC input, Dual HDMI, LVDS, SATA 6Gb/s, Dual Intel® GbE, USB 3.0, PCIe Mini, eMMC 5.0, HD audio and RoHS



Multiple expansion with COM port, PCIe x4, and PCIe Mini.



## Specifications

- ◆ CPU
  - 6th generation Intel® mobile ULT on-board processor
  - Intel® Core™ i7-6600U (up to 3.4GHz, dual-core, 4M Cache, TDP=15W)
  - Intel® Core™ i5-6300U (up to 3.0GHz, dual-core, 3M Cache, TDP=15W)
  - Intel® Core™ i3-6100U (up to 2.3GHz, dual-core, 3M Cache, TDP=15W)
  - Intel® Celeron® 3955U (up to 2.0GHz, dual-core, 2M Cache, TDP=15W)
  - Intel® Celeron® 3855U (up to 1.6GHz, dual-core, 2M Cache, TDP=15W)
- ◆ BIOS
  - UEFI BIOS
- ◆ Memory
  - 2 x SO-DIMM DDR4 2133MHz, system maximum up to 32GB
- ◆ Graphics Engine
  - Intel® HD graphic
- ◆ Display Output
  - 1 x HDMI 1.4 (up to 4096x2160@24Hz)
  - 1 x HDMI/DP (up to 4096x2160@24Hz)
  - 1 x LVDS/eDP (select by switch)
- ◆ Ethernet
  - LAN1: Intel® I219LM (with Intel® AMT11.0 support)
  - LAN2: Intel® I211AT PCIe controller with NCSI support
- ◆ External I/O Interface
  - 4 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x eMMC 5.0 (optional, up to 32G)
  - 4 x RS-232 (2x5 pin, P=2.0)
  - 2 x RS-232/422/485 (2x5 pin, P=2.0)
  - 4 x USB 2.0 (2x4 pin, P=2.0)
  - 2 x SATA with 5V output
- ◆ Audio
  - Realtek ALC662 HD Audio Codec support 5.1 Channel
  - 2 x Audio jacks (line-out, mic-in) on rear IO
  - 1 x Front audio (2x5-pin)
- ◆ Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, power button, reset button)
- ◆ LAN LED
  - 2 x LAN LED(1x2 pin)
- ◆ SMBUS: 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C: 1 x I<sup>2</sup>C (1x4 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Expansion
  - 1 x PCIe x4 slot
  - 1 x Full-size PCIe Mini card slot (support mSATA, colay SATA2)
  - 1 x Full-size PCIe Mini card slot (with SIM holder)
  - \*3855U belongs to Skylake ULT Base series CPU, PCIe signal support only PCIe Gen 2*
- ◆ Watchdog Timer
  - Software programmable, supports 1~255 sec. system reset by Super I/O
- ◆ Power Supply
  - 9~36V DC input
  - 1 x Internal power connector (2x2 pin)
  - 1 x External DC power Jackc (Ø5.5mm)
  - Support AT/ATX mode
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System fan (1x3 pin)
- ◆ Chassis Intrusion Detection: 1 x Chassis intrusion connector (1x2 pin)
- ◆ Power Consumption
  - 12V@4.68A (Intel® Core™ i7-6600U up to 3.4GHz CPU with 16GB (8GB x 2) DDR4-2133 memory running in 3.2GHz)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170mm x 170 mm
- ◆ Weight: GW: 900g / NW: 375g
- ◆ CE/FCC compliant



## Features

- Mini ITX form factor with Intel® Skylake-U processor support DDR4-2133 memory
- Wide range 9~36V DC Input
- Support dual HDMI (one HDMI/DP combo support), LVDS/eDP
- Intel® GbE LAN with Intel® AMT 11.0 supported
- SATA 6Gb/s, mSATA and eMMC 5.0 (option) supported
- High speed I/O for USB 3.0, PCIe x4, full-size PCIe Mini support

## Packing List

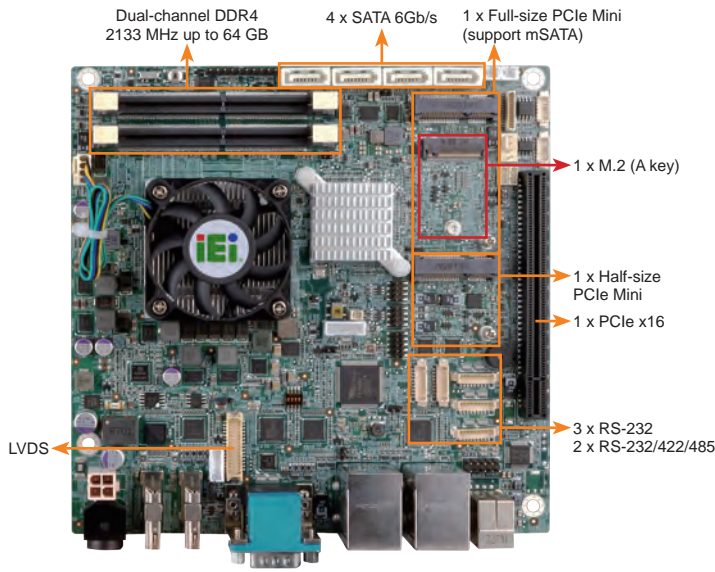
1 x tKINO-ULT3 single board computer with CPU cooler
2 x SATA cable
1 x I/O shielding
1 x One key Recovery CD
1 x QIG
1 x Utility CD

## Ordering Information

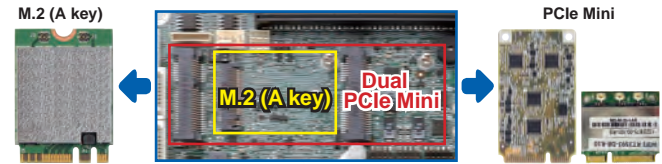
Part No.	Description
tKINO-ULT3-i7-R10	Thin Mini-ITX SBC supports Intel® 6th Generation Mobile Core™ i7-6600U (15W) on-board Processor (ULT), 9~36V DC input, Dual HDMI, LVDS, eDP, SATA 6 Gb/s, Dual Intel® GbE, USB 3.0, PCIe Mini, eMMC 5.0, HD audio and RoHS
tKINO-ULT3-i5-R10	Thin Mini-ITX SBC supports Intel® 6th Generation Mobile Core™ i5-6300U (15W) on-board processor (ULT), 9~36V DC input, Dual HDMI, LVDS, eDP, SATA 6 Gb/s, Dual Intel® GbE, USB 3.0, PCIe Mini, eMMC 5.0, HD audio and RoHS
tKINO-ULT3-i3-R10	Thin Mini-ITX SBC supports Intel® 6th Generation Mobile Core™ i3-6100U (15W) on-board processor (ULT), 9~36V DC input, Dual HDMI, LVDS, eDP, SATA 6 Gb/s, Dual Intel® GbE, USB 3.0, PCIe Mini, eMMC 5.0, HD audio and RoHS
tKINO-ULT3-C-R10	Thin Mini-ITX SBC supports Intel® 6th Generation Mobile Celeron® 3955U (15W) on-board processor (ULT), 9~36V DC input, Dual HDMI, LVDS, eDP, SATA 6 Gb/s, Dual Intel® GbE, USB 3.0, PCIe Mini, eMMC 5.0, HD audio and RoHS
tKINO-ULT3-CE-R10	Thin Mini-ITX SBC supports Intel® 6th Generation Mobile Celeron® 3855U (15W) on-board processor (ULT), 9~36V DC input, Dual HDMI, LVDS, eDP, SATA 6 Gb/s, Dual Intel® GbE, USB 3.0, PCIe Mini, eMMC 5.0, HD audio and RoHS
32205-002700-200-RS	RS-232/422/485, 200mm, P=2.0
34000-000645-RS	Fanless heatsink module, 93.5 x 84 x 30mm

# KINO-DCM236

Mini-ITX SBC supports 6th Intel® Xeon® Processor E3 v5 series, Core™ i3, Celeron® per Intel® CM236, DDR4 with ECC support, HDMI 2.0, dual Intel® GbE, SATA 6Gb/s, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS



## Flexible Selection of Modules with Different Functions

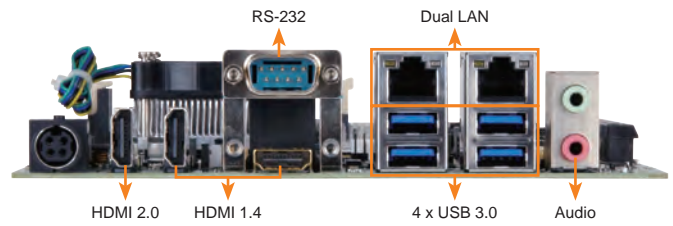


## SO-DIMM DDR4 ECC support



## Specifications

- ◆ CPU
  - 6th generation Intel® processor
  - Intel® Xeon® processor E3-1505M v5 (up to 3.7GHz, quad-core, 8M Cache, TDP=45W)
  - Intel® Xeon® processor E3-1505L v5 (up to 2.0GHz, quad-core, 8M Cache, TDP=25W)
  - Intel® Core™ i3-6102E processor (up to 1.90GHz, dual-core, 3M cache, TDP=25W)
  - Intel® Celeron® processor G3902E (up to 1.60GHz, dual-core, 2M cache, TDP=25W)
- ◆ Chipset: Intel® CM236
- ◆ BIOS: UEFI BIOS
- ◆ Memory
  - Two 260-pin 2133/1866 MHz dual-channel DDR4 ECC and non-ECC unbuffered SDRAM SO-DIMMs support up to 64GB
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 9 support for DX11/12, OCL 2.x, OGL 4.3/4.4, ES 2.0
- ◆ Display Output
  - Triple independent display
  - 2 x HDMI 1.4 (up to 4096x2160 @24Hz)
  - 1 x HDMI 2.0 (up to 4096x2160 @60Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200 @60Hz)
- ◆ Ethernet
  - LAN1: Intel® I219LM with (Intel® AMT 11.0 support)
  - LAN2: Intel® I211 PCIe controller with NCSI support
- ◆ External I/O Interface
  - 4 x USB 3.0
  - 1 x RS-232
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin, P=2.0)
  - 4 x SATA 6Gb/s (RAID 0/1/5/10 support)
  - 2 x RS-232/422/485 (1x9 pin, P=1.25)
  - 4 x USB 2.0 (2x4 pin, P=2.0)
  - 3 x RS-232 (1x9 pin, P=1.25)
- ◆ Audio
  - Realtek ALC662 HD Audio codec supports 5.1-channel
  - 2 x Audio jacks (line-out, mic-in) on rear IO
  - 1 x Front audio (2x5-pin)
- ◆ Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C: 1 x I<sup>2</sup>C (1x4 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Expansion
  - 1 x PCIe x16 slot
  - 1 x Full-size PCIe Mini card slot (support mSATA)
  - 1 x M.2 2230 (A key)
  - 1 x Half-size PCIe Mini card slot
- ◆ Cooler Module
  - 19100-000219-00-RS for Intel® Xeon® E3-1505M v5 (45W)
  - 19100-000203-00-RS for Intel® Xeon® E3-1505L v5/Core™ i3/Celeron® (25W)
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset by super I/O
- ◆ Chassis Intrusion Detection: 1 x Chassis intrusion connector (1x2 pin)
- ◆ Power Supply
  - 12V DC input
  - 1 x External DC jack (4-pin DIN)
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Fan Connector
  - 1 x CPU smart (1x4 pin)
  - 1 x System fan (1x4 pin)
- ◆ Power Consumption
  - 12V @6.93A (Intel Xeon E3-1505M V5 2.8GHz CPU with 32 GB (two 16 GB) 2133 MHz DDR4 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170mm x 170 mm
- ◆ Weight: GW: 900g / NW: 450g
- ◆ CE/FCC compliant



## Features

- Mini ITX form factor with 6th Intel® Xeon® Processor E3 v5 series, Core™ i3, Celeron® support DDR4-2133 memory with ECC support
- HDMI 2.0
- ECC support
- Triple display with independent audio
- PCIe x16, dual PCIe Mini and M.2 A key feature support for various function module
- Rich High speed I/O interface for USB 3.0 and SATA 6Gb/s
- Support IEI jumpless

## Packing List

1 x KINO-DCM236 single board computer with CPU cooler	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

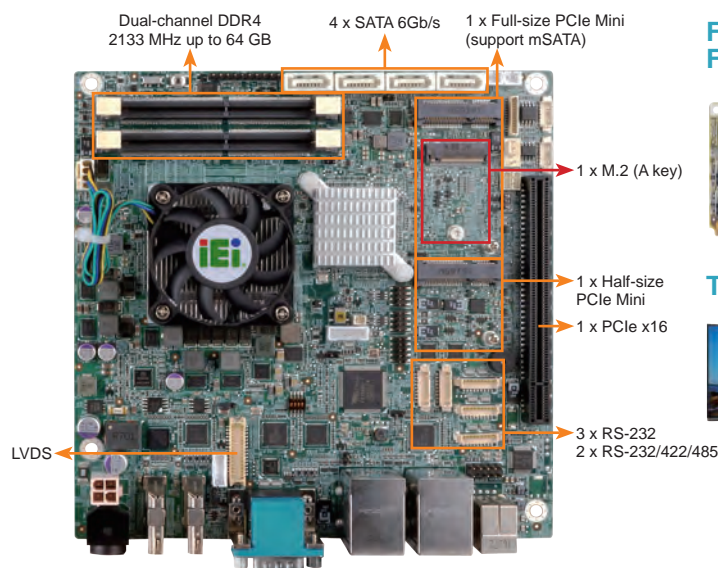
## Ordering Information

Part No.	Description
KINO-DCM-236-E3-R10	Mini-ITX SBC supports 6th Intel® Xeon® processor E3-1505M v5 (45W) , DDR4 with ECC support, HDMI 2.0, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS
KINO-DCM-236-E3E-R10	Mini-ITX SBC supports 6th Intel® Xeon® processor E3-1505L v5 (25W), DDR4 with ECC support, HDMI 2.0, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS
KINO-DCM-236-i3E-R10**	Mini-ITX SBC supports 6th Intel® Core™ i3-6102E processor (25W), DDR4 with ECC support, HDMI 2.0, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS
KINO-DCM-236-CE-R10**	Mini-ITX SBC supports 6th Intel® Celeron® processor G3902E (25W), DDR4 with ECC support, HDMI 2.0, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32005-000900-200-RS	RS-232/422/485 cable, 100mm, P=1.25

\*\*By order production, MOQ: 100

# KINO-DQM170

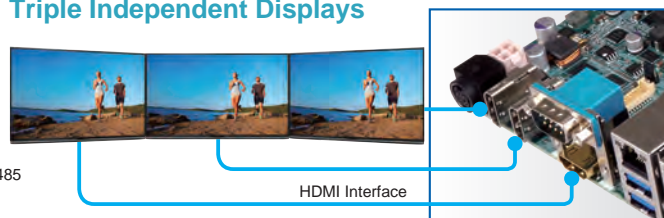
Mini-ITX SBC supports 6th Intel® Core™ Mobile CPU, HDMI 2.0, M.2, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini, HD Audio and RoHS



## Flexible Selection of Modules with Different Functions

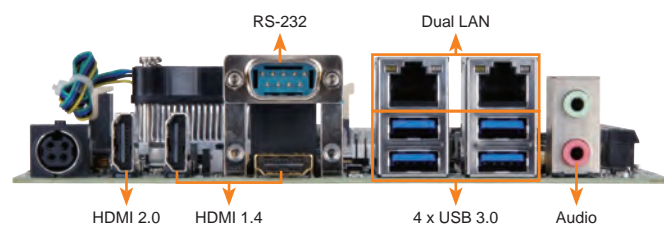


## Triple Independent Displays



## Specifications

- ◆ CPU
  - 6th generation Intel® Core™ mobile processor
  - Intel® Core™ i7-6820EQ (up to 3.5GHz, quad-core, 8M cache, TDP=45W)
  - Intel® Core™ i5-6440EQ (up to 3.4GHz, quad-core, 6M cache, TDP=45W)
  - Intel® Core™ i3-6102E (up to 1.90GHz, dual-core, 3M cache, TDP=25W)
  - Intel® Celeron® G3902E (up to 1.60GHz, dual-core, 2M cache, TDP=25W)
- ◆ Chipset: Intel® QM170
- ◆ BIOS: UEFI BIOS
- ◆ Memory
  - Two 260-pin 2133/1866 MHz dual-channel unbuffered DDR4 SDRAM SO-DIMMs support up to 64GB
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 9 support for DX11/12, OCL 2.x, OGL 4.3/4.4, ES 2.0
- ◆ Display Output
  - Triple independent display
  - 2 x HDMI 1.4 (up to 4096x2160@24Hz)
  - 1 x HDMI 2.0 (up to 4096x2160@60Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
- ◆ Ethernet
  - LAN1: Intel® I219LM with (Intel® AMT 11.0 support)
  - LAN2: Intel® I211 PCIe controller with NCSI support
- ◆ External I/O Interface
  - 4 x USB 3.0
  - 1 x RS-232
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin, P=2.0)
  - 4 x SATA 6Gb/s (RAID 0/1/5/10 support)
  - 2 x RS-232/422/485 (1x9 pin, P=1.25)
  - 4 x USB 2.0 (2x4 pin, P=2.0)
  - 3 x RS-232 (1x9 pin, P=1.25)
- ◆ Audio
  - Realtek ALC662 HD Audio codec supports 5.1-channel
  - 2 x audio jacks(line out, mic in) on rear I/O (colay with 3x audio jack)
  - 1 x Front audio (2x5 pin)
- ◆ Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C: 1 x I<sup>2</sup>C (1x4 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Expansion
  - 1 x PCIe x16 slot
  - 1 x Full-size PCIe Mini card slot (support mSATA)
  - 1 x M.2 2230 (A key)
  - 1 x Half-size PCIe Mini card slot
- ◆ Cooler Module
  - 19100-000219-00-RS for Intel® Core™ i7/i5 (45W)
  - 19100-000203-00-RS for Intel® Core™ i3/Celeron® (25W)
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset by super I/O
- ◆ Chassis Intrusion Detection: 1 x Chassis intrusion connector (1x2 pin)
- ◆ Power Supply
  - 12V DC input
  - 1 x External DC jack (4-pin DIN)
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Fan Connector
  - 1 x CPU smart (1x4 pin)
  - 1 x System fan (1x4 pin)
- ◆ Power Consumption
  - 12V@5.08A (Intel® Core™ i7-6820EQ, 3.5GHz CPU with 16 GB (two 8 GB) 2133 MHz DDR4 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170mm x 170 mm
- ◆ Weight: 900g / NW: 450g
- ◆ CE/FCC compliant



## Features

- Mini ITX form factor with 6th Gen Intel® Core™ i7/i5/i3/Celeron® processor support
- DDR4 memory
- Support HDMI 2.0 (4096x2160@60Hz)
- Triple display with independent audio via HDMI
- PCIe x16, dual PCIe Mini and M.2 A key feature support for various function module
- Rich High speed I/O interface for USB 3.0 and SATA 6Gb/s
- Support IEI jumpless

## Packing List

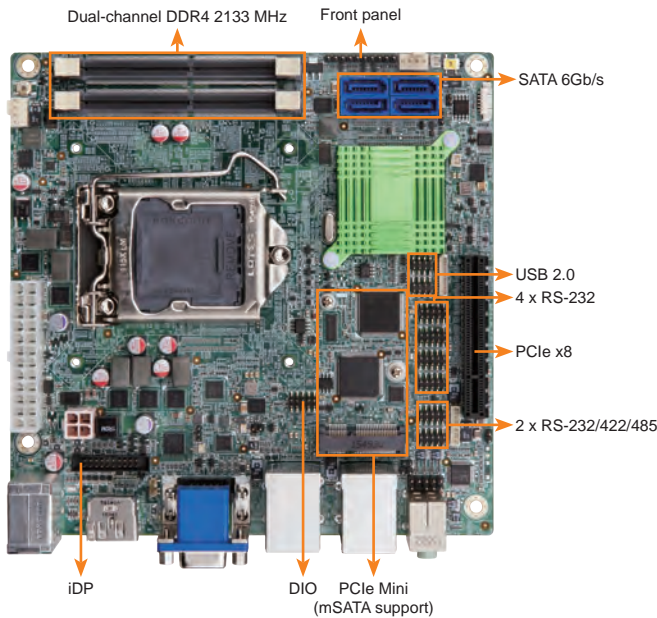
1 x KINO-DQM170 single board computer with CPU cooler	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
KINO-DQM170-i7-R10	Mini-ITX SBC with BGA 1440 supports 6th Gen Intel® Core™ i7-6820EQ processor, HDMI 2.0, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS
KINO-DQM170-i5-R10	Mini-ITX SBC with BGA 1440 supports 6th Gen Intel® Core™ i5-6440EQ processor, HDMI 2.0, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS
KINO-DQM170-i3E-R10	Mini-ITX SBC with BGA 1440 supports 6th Gen Intel® Core™ i3-6102E processor, HDMI 2.0, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS
KINO-DQM170-CE-R10	Mini-ITX SBC with BGA 1440 supports 6th Gen Intel® Celeron® G3902E processor, HDMI 2.0, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini, M.2, HD Audio and RoHS
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32005-000900-200-RS	RS-232/422/485 cable, 100mm, P=1.25

# KINO-AQ170

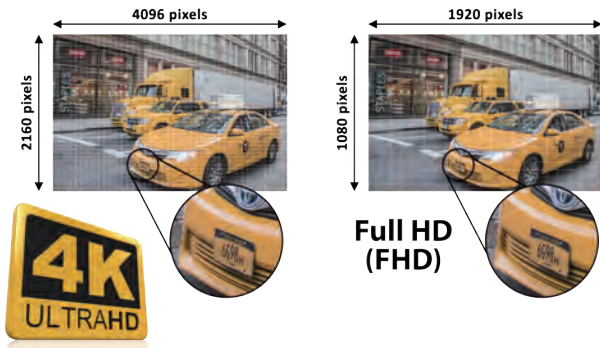
Mini-ITX SBC supports LGA 1151 Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU with Intel® Q170, HDMI 2.0/HDMI+DP/VGA, Dual Intel® GbE, SATA 6Gb/s, USB 3.0, PCIe Mini, HD Audio and RoHS



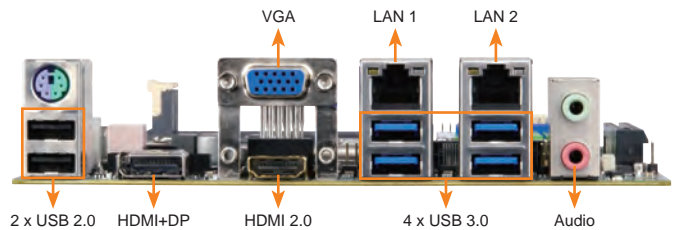
## Specifications

- ◆ CPU  
LGA 1151 socket supports Intel® 6th/7th generation Core™ i7/i5/i3, Pentium® or Celeron® processor
- ◆ Chipset  
Intel® Q170
- ◆ BIOS  
UEFI BIOS
- ◆ Memory  
Two 260-pin 2133 MHz dual-channel DDR4 SDRAM SO-DIMM support up to 64GB
- ◆ Graphics Engine  
Intel® HD Graphics Gen 9 support for DX11/12, OCL 2.x, OGL 4.3/4.4, ES 2.0  
Decode/Encode for HEVC, VP8, VP9 2, VDENC
- ◆ Display Output  
Triple independent display  
1 x HDMI 2.0 (up to 4096x2160@60Hz)  
1 x HDMI/DP (up to 3840x2160@60Hz)  
1 x VGA (up to 1920x1200)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60Hz)
- ◆ Ethernet  
LAN1: Intel® I219LM with (Intel® AMT 11.0 support)  
LAN2: Intel® I211 PCIe controller with NCSI support
- ◆ External I/O Interface  
2 x USB 2.0  
4 x USB 3.0
- ◆ Internal I/O Interface  
2 x RS-232/422/485 (2x5 pin, P=2.0)  
4 x RS-232 (2x5 pin, P=2.0)  
4 x SATA 6Gb/s (RAID 0/1/5/10 supported)  
4 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Audio  
Realtek ALC662 HD Audio codec  
2 x Audio jacks (line-out, mic-in) on rear IO  
1 x Front audio (2x5-pin)
- ◆ Front Panel  
1 x Front panel (1x10 pin, power LED, HDD LED, power button, reset button)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C: 1 x I<sup>2</sup>C (1x4 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Expansion  
1 x PCIe x8 slot  
1 x Full-size PCIe Mini card slot (support mSATA)
- ◆ Chassis Intrusion Detection: 1 x Chassis intrusion connector (1x2 pin)
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset by super I/O
- ◆ Power Supply  
ATX power supply
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
1 x System smart fan (1x4 pin)
- ◆ Power Consumption  
3.3V@0.62A, 5V@3.3A, 12V@7.51A, 5VSB@0.23A  
(Intel® Core™ i7 6700K 4.0GHz CPU with 16 GB (two 8 GB) 2133 MHz DDR4 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170mm x 170mm
- ◆ Weight: GW: 900g / NW: 450g
- ◆ CE/FCC compliant

## HDMI 2.0 Ultra HD (4,096x2,160@60Hz)



	HDMI 1.4	HDMI 2.0
Bandwidth	10.2Gbps	18Gbps
4K@30hz	Yes	Yes
4K@60hz	No	Yes
Up to 32 Audio Channels	No	Yes



## Features

- LGA 1151 Intel® 6th/7th generation Core™ i7/i5/i3, Pentium® or Celeron® processor and DDR4 2133MHz memory support
- Support HDMI 2.0 (4096x2160@60Hz)
- Dual Intel® GbE support Intel® AMT 11.0
- Triple display via HDMI 2.0/HDMI/DP 1.2/VGA/iDP
- High speed I/O interface for USB 3.0, SATA 6Gb/s and mSATA support
- Support IEI jumpless

## Packing List

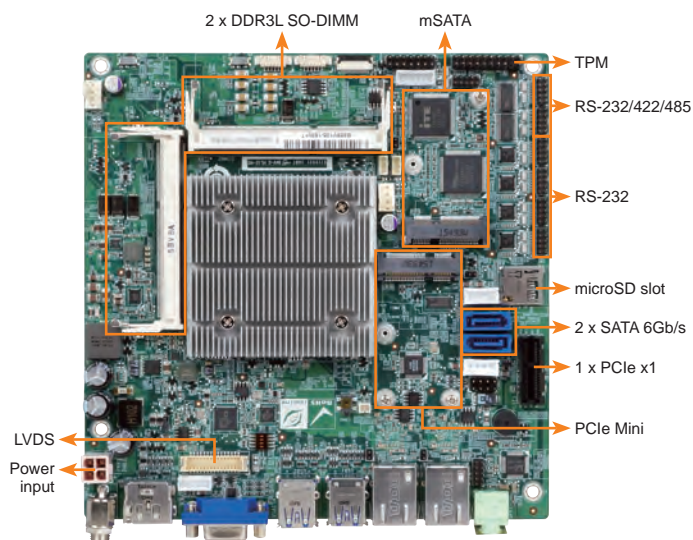
1 x KINO-AQ170 single board computer	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
KINO-AQ170-R10	Mini-ITX SBC supports 6th generation Intel® Core™ i7/i5/i3, Pentium® and Celeron® processor, HDMI 2.0/HDMI/DP/VGA, SATA 6Gb/s, dual Intel® GbE, USB 3.0, PCIe Mini, HD Audio and RoHS
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32205-002700-200-RS	RS-232/422/485 cable, 230mm, P=2.54
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High performance LGA1155/LGA1156 cooler kit, 95W
DP-DP-R10	DisplayPort to DP converter board (for IEI connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI connector)

# tKINO-BW

Thin Mini-ITX SBC supports 14nm Intel® Pentium®/Celeron® on-board SoC, 9~30V DC input, VGA/LVDS/DP+HDMI, SATA 6Gb/s, dual GbE, USB 3.0, HD Audio and RoHS



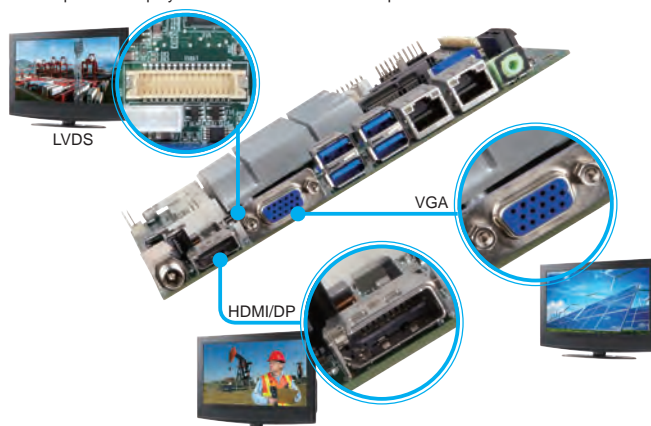
## Specifications

- ◆ SoC
  - Intel® Pentium® N3710 on-board SoC (up to 2.56GHz, quad-core, 2MB cache, TDP=6W)
  - Intel® Celeron® N3160 on-board SoC (up to 2.24GHz, quad-core, 2MB cache, TDP=6W)
  - Intel® Celeron® N3060 on-board SoC (up to 2.48GHz, dual-core, 2MB cache, TDP=6W)
  - Intel® Celeron® N3010 on-board SoC (up to 2.24GHz, dual-core, 2MB cache, TDP=4W)
- ◆ BIOS
  - UEFI BIOS
- ◆ Memory
  - Two 204-pin 1333/1600 MHz single-channel DDR3L SDRAM unbuffered SO-DIMM slots support up to 8 GB
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 8 Engines with 16 low-power execution units, supporting DX11.1, OpenGL 4.2 and OpenCL1.2
- ◆ Display Output
  - Triple independent display
    - 1 x HDMI/DP (up to 3840x2160@30Hz)
    - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
    - 1 x VGA (up to 1920x1200@60Hz)
- ◆ Ethernet
  - Dual Realtek RTL8111E PCIe GbE controller
- ◆ External I/O Interface
  - 4 x USB 3.0
- ◆ Internal I/O Interface
 

1 x KB/MS (1x6 pin)	2 x SATA 6Gb/s with 5V output
1 x MicroSD card slot	2 x USB 2.0 (2x4 pin, P=2.54)
1 x mSATA (colay SATA2)	4 x RS-232 (2x5 pin, P=2.0)
2 x RS-232/422/485 (2x5 pin, P=2.0)	
- ◆ Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED
  - 2 x LAN LED (1x2 pin)
- ◆ SMBus
  - 1 x SMBus (1x4 pin)
- ◆ TPM
  - 1 x TPM (2x10 pin)
- ◆ I<sup>2</sup>C
  - 1 x I<sup>2</sup>C (1x4 pin)
- ◆ Digital I/O
  - 8-bit digital I/O (2x5 pin)
- ◆ Expansion
  - 1 x PCIe x1
  - 1 x Full-size PCIe Mini card slot
- ◆ Audio
  - Realtek ALC662 HD codec
  - 1 x Audio jacks (line-out) on rear IO
  - 1 x Front audio (2x5 pin)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Power Supply
  - 1 x External DC power jack (ø5.5 mm)
  - 1 x Internal power connector (2x2 pin)
  - Input Voltage Range: 9V ~ 30V
  - Support AT/ATX mode
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x4 pin)
- ◆ Power Consumption
  - 12V@1.61A (Intel® Celeron® N3710 CPU with two 4 GB 1600 MHz DDR3L memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Weight: GW: 900g / NW: 400g
- ◆ CE/FCC compliant

## Three Digital Display Interfaces

3 independent displays under Window® 7 OS and up



## Features

- Thin Mini-ITX form factor with 14nm Intel® Pentium®/Celeron® on-board SoC processor supports DDR3L memory
- Supports USB 3.0, two SATA 6Gb/s
- Triple independent display, supporting 4K resolution
- Supports IEL jumperless function

## Packing List

1 x tKINO-BW single board computer with heatsink
1 x I/O shielding
1 x SATA cable
1 x One Key Recovery CD
1 x QIG
1 x Utility CD

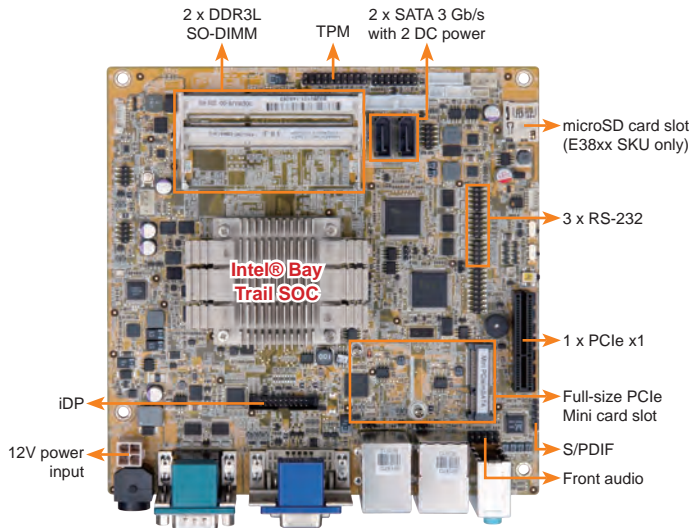
## Ordering Information

Part No.	Description
tKINO-BW-N4-R10	Thin Mini-ITX SBC supports Intel® Pentium® quad-core processor N3710 up to 2.56GHz (6W), VGA/LVDS/DP+HDMI, SATA, dual GbE, USB 3.0, HD Audio and RoHS
tKINO-BW-N3-R10	Thin Mini-ITX SBC supports Intel® Celeron® quad-core processor N3160 up to 2.24GHz (6W), VGA/LVDS/DP+HDMI, SATA, dual GbE, USB 3.0, HD Audio and RoHS
tKINO-BW-N2-R10	Thin Mini-ITX SBC supports Intel® Celeron® dual-core processor N3060 up to 2.48GHz (6W), VGA/LVDS/DP+HDMI, SATA, dual GbE, USB 3.0, HD Audio and RoHS
tKINO-BW-N1-R10**	Thin Mini-ITX SBC supports Intel® Celeron® dual-core processor N3010 up to 2.24GHz (4W), VGA/LVDS/DP+HDMI, SATA, dual GbE, USB 3.0, HD Audio and RoHS
32205-002700-200-RS	RS-232/422/485 cable, 200mm, P=2.0
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

\*\*By order production, MOQ: 100

# KINO-DBT

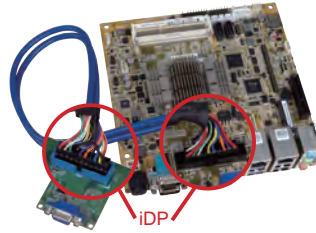
Mini-ITX SBC supports 22nm Intel® Atom™ or Celeron® on-board SoC, VGA/DVI/iDP, dual Realtek PCIe GbE, USB 3.0, SATA, HD Audio, RoHS



## Specifications

- ◆ SoC
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3827 on-board SoC (1.75GHz, dual-core, 1MB cache, TDP=8W)
  - Intel® Atom™ E3826 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=7W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
  - Intel® Atom™ E3815 on-board SoC (1.46GHz, single-core, 512KB cache, TDP=5W)
  - Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Celeron® N2930 on-board SoC (1.83GHz, quad-core, 2MB cache, TDP=7.5W)
  - Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.5W)
- ◆ BIOS
  - UEFI BIOS
- ◆ Memory
  - Two 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 8 GB (J1900, N2930, E3845, E3827, E3826)
  - One 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM supports up to 8 GB (E3825, E3815) or 4 GB (N2807)
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 7 engine with 4 execution units, supporting DX11.1, OpenGL 4.2 and OpenCL1.2
- ◆ Display Output
  - Dual independent display
  - 1 x VGA (up to 2560x1600@60 Hz)
  - 1 x DVI-D (up to 1920x1080@60 Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 2560x1600@60 Hz)
- ◆ Ethernet
  - LAN1: Realtek RTL8111E PCIe GbE controller
  - LAN2: Realtek RTL8111E PCIe GbE controller
- ◆ External I/O Interface
  - 2 x RS-232
  - 2 x USB 2.0
  - 2 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x mSATA (colay SATA2)
  - 2 x SATA 3Gb/s
  - 4 x USB 2.0 (2x4 pin, P=2.0)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Audio
  - Realtek ALC662 HD Audio codec supports 5.1-channel
  - 3 x Audio jacks (line-out, line-in, mic-in) on rear IO
  - 1 x Front audio (2x5 pin)
  - 1 x S/PDIF (1x5 pin)
- ◆ Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Expansion
  - 1 x PCIe x4 slot (with PCIe x1 signal)
  - 1 x Full-size PCIe Mini card slot
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Chassis Intrusion Detection: 1 x Chassis intrusion connector (1x2 pin)
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x4 pin)
- ◆ Power Supply
  - 12V DC input
  - 1 x External DC jack (4-pin DIN)
  - 1 x Internal power connector (2x2 pin)
- ◆ Power Consumption
  - 12V@1.64A (Intel® Celeron® J1900 CPU with 4 GB 1333 MHz DDR3L memory)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170mm x 170mm
- ◆ Weight: GW: 900g / NW: 400g
- ◆ CE/FCC compliant

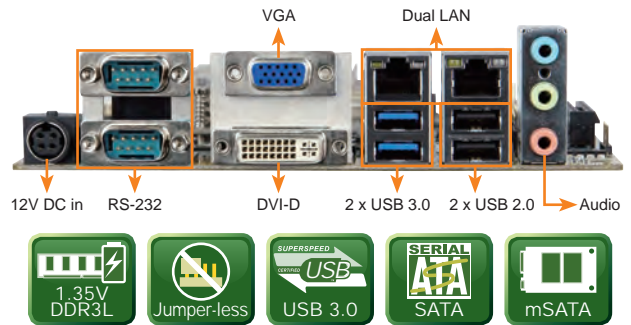
## iDP (IEI Internal DisplayPort)



Model	Output	External Power
DP-VGA-R10	VGA	No
DP-HDMI-R10	HDMI	No
DP-DVI-R10	DVI	No
DP-LVDS-R10	LVDS	Yes
DP-DP-R10	DP	No

## Easy Installation on the Chassis

iDP converter cards with brackets



## Features

- Mini-ITX SBC with 22nm Intel® Atom™ on-board SoC
- 1.35V DDR3L 1066/1333 MHz SDRAM supporting up to 8 GB of memory
- Dual independent display support
- COM, USB 3.0, SATA 6Gb/s, PCIe Mini, mSATA and HD Audio support
- Support Intel® VT-x technology

## Packing List

1 x KINO-DBT single board computer

1 x IO shielding

1 x QIG

1 x SATA cable with power output cable

1 x Utility CD

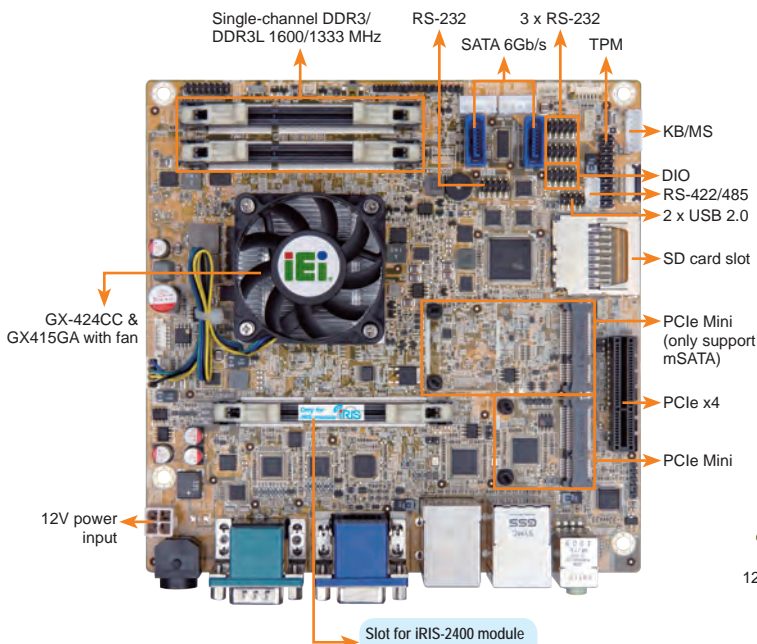
## Ordering Information

Part No.	Description
KINO-DBT-J19001-R10	Mini-ITX SBC supports Intel® Celeron® quad-core processor J1900 (10W), VGA/DVI/iDP, Dual PCIe GbE, USB 3.0, SATA, HD Audio and RoHS
KINO-DBT-N29301-R10	Mini-ITX SBC supports Intel® Celeron® quad-core processor N2930 (7.5W), VGA/DVI/iDP, Dual PCIe GbE, USB 3.0, SATA, HD Audio and RoHS
KINO-DBT-N28071-R10	Mini-ITX SBC supports Intel® Celeron® dual-core processor N2807 (4.5W), VGA/DVI/iDP, Dual PCIe GbE, USB 3.0, SATA, HD Audio and RoHS
KINO-DBT-E38XX1-R10**	Mini-ITX SBC supports Intel® Atom™ processor E38XX, VGA/DVI/iDP, Dual PCIe GbE, USB 3.0, SATA, HD Audio and RoHS
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
32205-002700-200-RS	RS-232 cable, 200mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

\*\*By order production, MOQ: 100

# KINO-SE-i2 KBN-i2

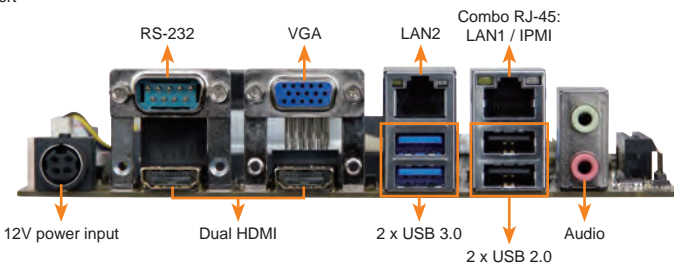
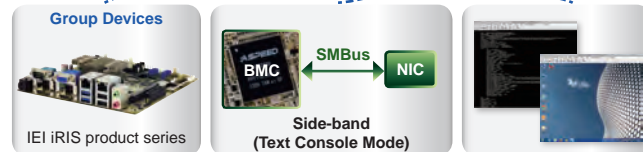
Mini-ITX SBC with AMD® Embedded G-Series SoC with VGA/ Dual HDMI, dual GbE, dual PCIe Mini, USB 3.0, SATA 6Gb/s, audio, iRIS-2400 and RoHS



## Remote Management Solution

### Support iRIS-2400 module

- » Out-of-band control
- » Remote KVM function support
- » User friendly web-UI based



## Specifications

- ◆ SoC
  - » AMD® Embedded G-Series "Steppe Eagle" SoC
    - GX-424CC on-board Soc (2.4GHz, quad-core, 2MB cache, TDP=25W)
    - GX-412HC on-board Soc (1.2GHz, quad-core, 2MB cache, TDP=7W)
    - GX-212JC on-board Soc (1.2GHz, dual-core, 1MB cache, TDP=6W)
    - GX-411GA on-board Soc (1.0GHz, quad-core, 2MB cache, TDP=15W)
    - GX-209HA on-board Soc (1.0GHz, dual-core, 1MB cache, TDP=9W)
  - » AMD® Embedded G-Series "eKabini" SoC
    - GX-415GA on-board Soc (1.5GHz, quad-core, 2MB cache, TDP=15W)
    - GX-210HA on-board Soc (1.0GHz, dual-core, 1MB cache, TDP=9W)
    - GX-420CA on-board Soc (2.0GHz, quad-core, 2MB cache, TDP=25W)
    - GX-217GA on-board Soc (1.65GHz, dual-core, 1MB cache, TDP=15W)
- ◆ BIOS: UEFI BIOS
- ◆ Memory
  - Two 204-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered SO-DIMM slots support up to 8 GB
- ◆ Graphics Engine
  - Support DX11.1, OpenGL 4.1 and OpenCL1.2
  - UVD4.2 decode for H.264, MPEG2/4, VC1, MVC
  - VCE 2.0 encode for H.264, VCE
- ◆ Display Output
  - Dual independent display
  - 2 x HDMI (up to 3840x2160@60Hz)
  - 1 x VGA (up to 2048x1536@60Hz)
- ◆ Ethernet
  - LAN1: Intel® I210-AT PCIe controller with NCSI support
  - LAN2: Intel® I211-AT PCIe controller
- ◆ External I/O Interface
  - 1 x RS-232
  - 2 x USB 2.0
  - 2 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x mSATA (colay SATA port2)
  - 1 x SD card slot
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x USB 2.0 (2x4 pin, P=2.0)
  - 3 x RS-232 (2x5 pin, P=2.54)
  - 2 x SATA 6Gb/s with SATA power connector
- ◆ iRIS Remote Management Module: 1 x iRIS-2400 slot
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Audio: Realtek AL892 HD Audio codec
  - 2 x Audio jacks (line-out, mic-in) on rear IO
  - 1 x S/PDIF (1x4 pin)
- ◆ Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
  - LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Expansion
  - 1 x PCIe x4 slot
  - 1 x Half-size PCIe Mini card slot
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector: 1 x System smart fan (1x4 pin)
- ◆ Watchdog Timer: Software programmable, support 1~255 sec. system reset
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin)
  - 1 x External DC jack (4-pin DIN)
  - Support AT/ATX mode
- ◆ Power Consumption
  - 12V@2.7A (AMD GX-424CC 2.4GHz CPU with 1600 MHz 8 GB DDR3 memory)
- ◆ Operating Temperature: -0°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170mm x 170mm
- ◆ Weight: GW: 600g/ NW: 250g
- ◆ CE/FCC compliant

## Features

- Mini-ITX form factor with AMD® Embedded G-Series SoC
- 12V only single voltage design for AT/ATX power
- Dual independent display by VGA, dual HDMI
- Supporting dual PCIe Mini card slot with mSATA, wireless card, DOM capabilities
- Support IPMI 2.0 through iRIS module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x KINO-SE-i2 single board computer with CPU cooler
1 x I/O shielding
1 x SATA with power output cable kit
1 x One Key Recovery CD
1 x QIG
1 x Utility CD

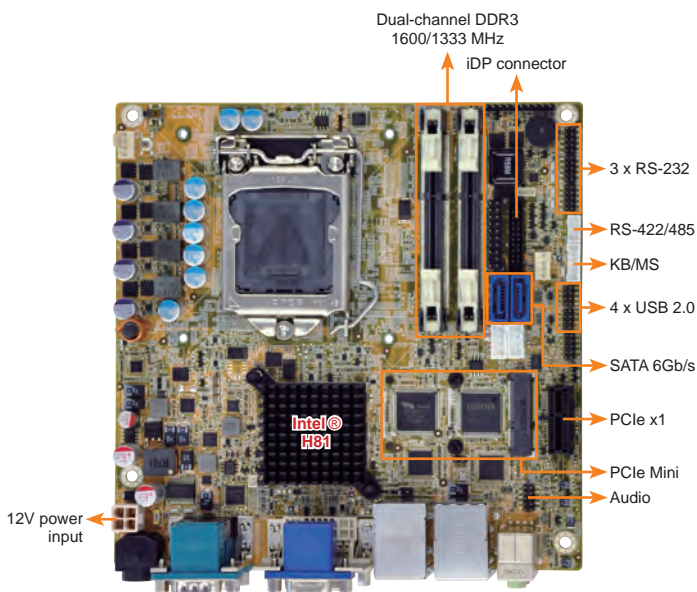
## Ordering Information

Part No.	Description
KINO-SE-i2-4241-R10	Mini-ITX SBC with 28nm AMD® GX-424CC on-board SoC (quad-core, 2.4GHz, 25W) with VGA/Dual HDMI, dual GbE, dual PCIe Mini, USB 3.0, SATA 6Gb/s, iRIS-2400, audio and RoHS
KINO-KBN-i2-4151-R10	Mini-ITX SBC with 28nm AMD® GX-415GA on-board SoC (quad-core, 1.5GHz, 15W) with VGA/Dual HDMI, dual GbE, dual PCIe Mini, USB 3.0, SATA 6Gb/s, iRIS-2400, audio and RoHS
KINO-KBN-i2-2101-R10	Mini-ITX SBC with 28nm AMD® GX-210HA on-board SoC (quad-core, 1.0GHz, 9W) with VGA/Dual HDMI, dual GbE, dual PCIe Mini, USB 3.0, SATA 6Gb/s, iRIS-2400, audio and RoHS
iRIS-2400-R10	IPMI 2.0 adapter card with AST2400 BMC chip for DDR3 SO-DIMM socket interface
19800-010900-200-RS	RS-232 cable with bracket, 230mm, P=2.54
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CB-USB02A-RS	Dual-port USB 2.0 cable with bracket, 300mm, P=2.0
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

Note: Models with other CPUs not listed in the table are requested by MOQ - 100 pcs/lot.

# KINO-DH810

Mini-ITX SBC with LGA1150 4th generation Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU, DDR3, DVI-D, VGA, iDP, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS

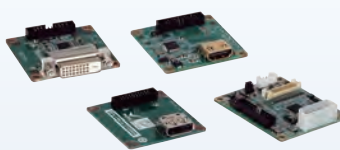


## Specifications

- ◆ CPU  
4th generation LGA1150 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- ◆ Chipset  
Intel® H31
- ◆ Memory  
Two 204-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs support up to 16 GB
- ◆ BIOS  
UEFI BIOS
- ◆ Ethernet  
Dual LAN: Intel® I211-AT PCIe controller
- ◆ Graphics Engine  
Intel® HD Graphics Gen 7.5 supports DX11.1 and OpenCL 1.2, OpenGL 3.2 Full MPEG2, VC1, AVC Decode
- ◆ Display Output  
1 x VGA (up to 1920x1200@60 Hz)  
1 x DVI-D (up to 2560x1600@60 Hz)  
1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60 Hz)
- ◆ Audio  
Realtek ALC662 HD Audio codec  
2 x Audio jacks (line-out, mic-in) on rear I/O  
1 x Front audio (2x5-pin)
- ◆ External I/O Interface  
2 x RS-232  
2 x USB 2.0  
2 x USB 3.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin)                      2 x SATA 6Gb/s  
1 x RS-422/485 (1x4 pin, P=2.0)        4 x USB 2.0 (2x4 pin, P=2.0)  
3 x RS-232 (2x5 pin, P=2.54)
- ◆ Front Panel  
1 x Front panel (1x10 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Expansion  
1 x PCIe x1 slot  
1 x Full-size PCIe Mini card slot (support mSATA)
- ◆ Watchdog Timer  
Software programmable, support 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
1 x System smart fan (1x4 pin)
- ◆ Power Supply  
12V only DC input  
1 x External DC jack (4-pin DIN)  
1 x Internal power connector (2x2 pin)  
Support AT/ATX mode
- ◆ Power Consumption  
+12V@6.03A  
(Intel® Core™ i7-4770K 3.90 GHz CPU with two 1333 MHz 4 GB DDR3 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170mm x 170mm
- ◆ Weight: GW: 900g / NW: 450g
- ◆ CE/FCC compliant

## iDP (IEI Internal DisplayPort)

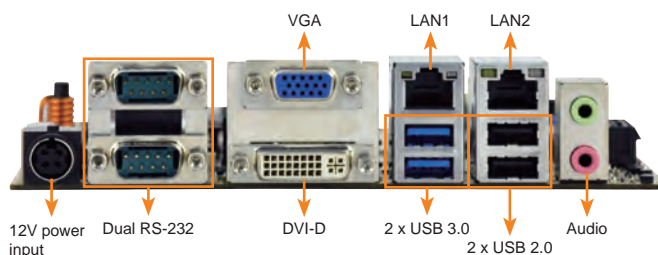
The iDP connector is provided on the IEI 8-series products. Through the IEI iDP converter cards, the iDP connector can support different display specifications, such as VGA, HDMI, DVI-D and LVDS.



iDP converter cards with brackets

### Easy Installation on the Chassis

Model	Output	External Power
DP-VGA-R10	VGA	No
DP-HDMI-R10	HDMI	No
DP-DVI-R10	DVI	No
DP-LVDS-R10	LVDS	Yes
DP-DP-R10	DP	No



## Features

- 4th generation LGA1150 Intel® Core™ i7/i5/i3, Pentium® or Celeron® processor supported
- DDR3 1066/1333/1600 MHz dual-channel SDRAM
- 3D micro-architecture enhancement supports DX11.1, OCL 1.2 and OGL3.2
- Rich media acceleration for hardware decode and encode acceleration
- High-speed I/O interface for USB 3.0, SATA 6Gb/s and mSATA
- IEI Jumper-less function

## Packing List

1 x KINO-DH810 single board computer	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA with power output cable	1 x Utility CD

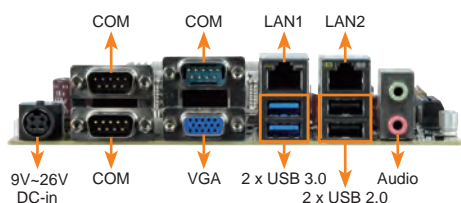
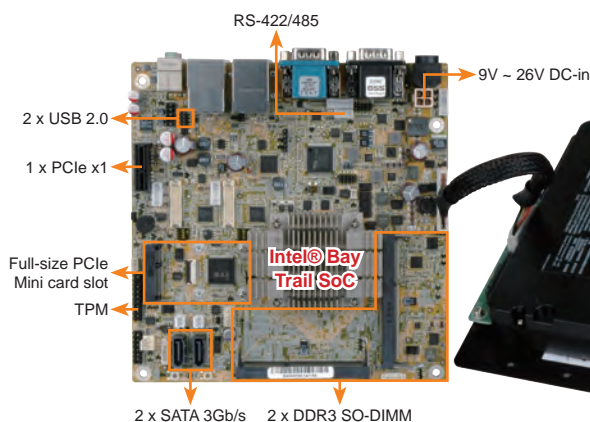
## Ordering Information

Part No.	Description
KINO-DH810-R10	Mini-ITX SBC with LGA1150 Intel® Core™ i7/i5/i3, Celeron® CPU, DDR3, DVI-D, VGA, DP, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
KINO-DH810-ECO-R10	Mini-ITX SBC with LGA1150 Intel® Core™ i7/i5/i3, Pentium® or Celeron® CPU, DDR3, DVI-D, VGA, iDP, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio, ECO packing and RoHS (10 pce/pack)
32000-023800-RS	PS/2 KB/MS cable, 135mm, P=2.0
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32205-002700-200-RS	RS-232/422/485 cable, 200mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-115XA-R10	High-performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA1155/LGA1156 cooler kit, 95W
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17



## eKINO-BT

Mini-ITX SBC supports AUPS sub-system, 22nm Intel® Atom™/Celeron® on-board SoC, wide-range 9V ~ 26V DC input, VGA/dual LVDS, SATA, dual GbE, USB 3.0, audio, CFast and RoHS



## Specifications

- ◆ CPU
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3827 on-board SoC (1.75GHz, dual-core, 1MB cache, TDP=8W)
  - Intel® Atom™ E3826 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=7W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
  - Intel® Atom™ E3815 on-board SoC (1.46GHz, single-core, 512KB cache, TDP=5W)
  - Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Celeron® N2930 on-board SoC (1.83GHz, quad-core, 2MB cache, TDP=7.5W)
  - Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.3W)
- ◆ BIOS
  - UEFI BIOS
- ◆ Memory
  - Two 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 8 GB (J1900, N2930, E3845, E3827, E3826)
  - One 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM supports up to 8 GB (E3825, E3815) or 4 GB (N2807)
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 7 Engines with 4 execution units, supporting DX11.1, OpenGL 4.2 and OpenCL1.2
- ◆ Display Output
  - 1 x VGA (up to 2560x1600@60Hz)
  - 2 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
- ◆ External I/O Interface
  - 2 x USB 2.0
  - 2 x USB 3.0
  - 3 x RS-232
- ◆ Internal I/O Interface
  - 1 x CFast slot
  - 1 x KB/MS (1x6 pin)
  - 1 x MicroSD card slot
  - 1 x RS-232 (2x5 pin, P=2.0)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x SATA 3Gb/s with 5V SATA power connector
  - 2 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Ethernet
  - Dual LAN: Realtek RTL8111E PCIe controller
- ◆ TPM
  - 1 x TPM (2x10 pin)
- ◆ SMBus
  - 1 x SMBus (1x4 pin)
- ◆ Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ LAN LED
  - 2 x LAN LED (1x2 pin)
- ◆ Digital I/O
  - 8-bit digital I/O (2x5 pin)
- ◆ Expansion
  - 1 x PCIe x1 slot
  - 1 x Full-size PCIe Mini card slot
- ◆ Audio
  - Realtek ALC662 HD Audio codec
  - 2 x Audio jacks (line-out, mic-in) on rear I/O
  - 1 x Front audio (2x5 pin)
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Power Supply
  - 1 x External DC power jack (4-pin DIN)
  - 1 x Internal power connector (2x2 pin)
  - Input voltage range: 9V ~ 26V
  - Recommended operating input voltage range: 12V~24V
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System fan (1x3 pin)
- ◆ Power Consumption
  - +12V@1.55A (Intel® Celeron® J1900 CPU with two 4 GB 1333 MHz DDR3L memory)
- ◆ Operating Temperature
  - 0°C ~ 40°C with AUPS sub-system
  - 20°C ~ 60°C without AUPS sub-system
- ◆ Storage Temperature
  - 10°C ~ 50°C with AUPS sub-system
  - 30°C ~ 70°C without AUPS sub-system
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Weight
  - GW: 1100g / NW: 400g
- ◆ CE/FCC compliant

## AUPS Battery Kit

## • BATKIT-2S2P3800-R10



P/N: BAT-LI-2S2P3800  
2S2P 7.4V 3800mAh

## • BATKIT-4S2P3800-R10



P/N: BAT-LI-4S2P3800  
4S2P 14.8V 3800mAh

## Battery Specifications

Battery Model	BAT-LI-2S2P3800	BAT-LI-4S2P3800
Battery type	Li-Ion 2S2P 7.4V	Li-Ion 4S2P 14.8V
Battery capacity	7.4V 3800mAh	14.8V, 3800mAh
Maximum charge voltage	8.4V	16.8V
The end of discharging voltage	5.6V	11.2V
Battery charge time (Power off)	2.5hrs	5hrs
Battery charge time (Power on)	6.5hrs	13hrs
Operating temp.	0°C ~ 40°C	0°C ~ 40°C
Storage temp.	-20°C ~ 60°C	-20°C ~ 60°C
Cycle life	300 charge/discharge cycles	
Backup	60W/10Min	100W/10Min
Safety class	CE	

## Features

- Mini ITX supports Intel® 22nm Atom™ or Celeron® on-board SoC
- Wide-range 9V ~ 26V DC input design
- Supports dual independent display with dual LVDS and VGA
- Equipped with AUPS sub-system, acts as a simple UPS system
- Supports four USB 2.0, two USB 3.0, two SATA and four COM
- IEI jumper-less function

## Packing List

1 x eKINO-BT single board computer	
2 x SATA with 5V output cable kit	
1 x I/O shielding	
1 x QIG	1 x Utility CD

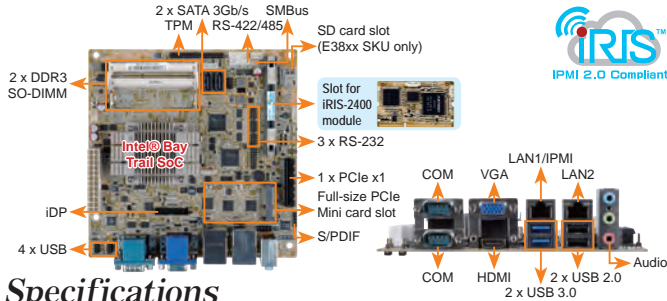
## Ordering Information

Part No.	Description
EKINO-BT-J19001-R10	Mini-ITX SBC supports AUPS sub-system, Intel® Celeron® quad-core processor J1900 (10W), wide-range 9V ~ 26V DC input, VGA/dual LVDS, SATA, dual GbE, USB 3.0, audio, CFast and RoHS
EKINO-BT-N29301-R10	Mini-ITX SBC supports AUPS sub-system, Intel® Celeron® quad-core processor N2930 (7.5W), wide-range 9V ~ 26V DC input, VGA/dual LVDS, SATA, dual GbE, USB 3.0, audio, CFast and RoHS
EKINO-BT-N28071-R10	Mini-ITX SBC supports AUPS sub-system, Intel® Celeron® dual-core processor N2807 (4.3W), wide-range 9V ~ 26V DC input, VGA/dual LVDS, SATA, dual GbE, USB 3.0, audio, CFast and RoHS
EKINO-BT-E38XX1-R10**	Mini-ITX SBC supports AUPS sub-system, Intel® Atom™ E38XX on-board SoC, wide-range 9V ~ 26V DC input, VGA/dual LVDS, SATA, dual GbE, USB 3.0, audio, CFast and RoHS (by request MOQ: 100pcs/lot)
BATKIT-2S2P3800-R10	2S2P 7.4V 3800mAh AUPS battery kit
BAT-LI-2S2P3800	2S2P 7.4V 3800mAh smart battery
BATKIT-4S2P3800-R10	4S2P 14.8V 3800mAh AUPS battery kit
BAT-LI-4S2P3800	4S2P 14.8V 3800mAh smart battery
19800-000075-RS	PS/2 KB/MS cable with bracket, 220mm, P=2.0
32001-008600-200-RS	Dual-port USB 2.0 cable, 210mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
63040-010060-110-RS	60W/12V power adaptor, 90VAC~260VAC, 4-pin DIN
63040-010120-210-RS	120W/19V power adaptor, 90VAC~264VAC, 4-pin DIN
CB-USB02A-RS	Dual-port USB 2.0 cable with bracket, 300mm, P=2.0

\*\*By order production, MOQ: 100

# KINO-ABT-i2

Mini-ITX SBC supports 22nm Intel® Atom™ or Celeron® on-board SoC, VGA/HDMI/iDP, dual Intel® PCIe GbE, USB 3.0, SATA, HD Audio, iRIS-2400 and RoHS



## Specifications

- ◆ SoC
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3827 on-board SoC (1.75GHz, dual-core, 1MB cache, TDP=8W)
  - Intel® Atom™ E3826 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=7W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
  - Intel® Atom™ E3815 on-board SoC (1.46GHz, single-core, 512KB cache, TDP=5W)
  - Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Celeron® N2930 on-board SoC (1.83GHz, quad-core, 2MB cache, TDP=7.5W)
  - Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.3W)
- ◆ BIOS: UEFI BIOS
- ◆ Memory
  - Two 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 8 GB (J1900, N2930, E3845, E3827, E3826)
  - One 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM supports up to 8 GB (E3825, E3815) or 4 GB (N2807)
- ◆ Graphics Engine: Intel® HD Graphics Gen 7 Engines with 4 execution units, supporting DX11.1, OpenGL 4.2 and OpenCL1.2
- ◆ Display Output
  - Dual Independent Display
  - 1 x VGA (up to 2560x1600@60Hz)
  - 1 x HDMI (up to 2560x1600@60Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 2560x1600@60Hz)
- ◆ Ethernet
  - LAN1: Intel® I210-AT PCIe controller with NCSI support (for iRIS solution)
  - LAN2: Intel® I211-AT PCIe controller
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ External I/O Interface
  - 2 x RS-232
  - 2 x USB 2.0
  - 2 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x Micro SD card slot (E38xx sku only)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x SATA 3Gb/s with 5V SATA power connector
  - 3 x RS-232 (2x5 pin, P=2.0)
  - 4 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Audio
  - Realtek ALC662 HD Audio codec
  - 3 x Audio jacks (line-out, line-in, mic-in) on rear IO
  - 1 x Front audio (2x5 pin)
  - 1 x S/PDIF (1x5 pin)
- ◆ Front Panel: 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ Expansion
  - 1 x PCIe x4 slot (PCIe x1 signal)
  - 1 x Full-size PCIe Mini card slot (support mSATA, colay SATA2)
- ◆ iRIS Remote Management Module
  - 1 x iRIS-2400 slot
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Chassis Intrusion Detection: 1 x Chassis intrusion connector (1x2 pin)
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x4 pin)
- ◆ Power Supply: ATX power supply
- ◆ Watchdog Timer: Software programmable, supports 1~255 sec. system reset
- ◆ Power Consumption: 5V@1.71A, 12V@0.08A, Vcore\_12V@0.27A, 3.3V@0.34 (Intel® Celeron® J1900 CPU with two 4 GB 1333 MHz DDR3 memory)
  - ◆ Operating Temperature: -20°C ~ 60°C
  - ◆ Storage Temperature: -30°C ~ 70°C
  - ◆ Operating Humidity: 5% ~ 95%, non-condensing
  - ◆ Dimensions: 170mm x 170mm
  - ◆ Weight: GW: 900g / NW: 450g
  - ◆ CE/FCC compliant

## Packing List

1 x KINO-ABT-i2 single board computer	1 x IO shielding
1 x Dual-port USB cable	1 x QIG
1 x SATA cable	1 x Utility CD

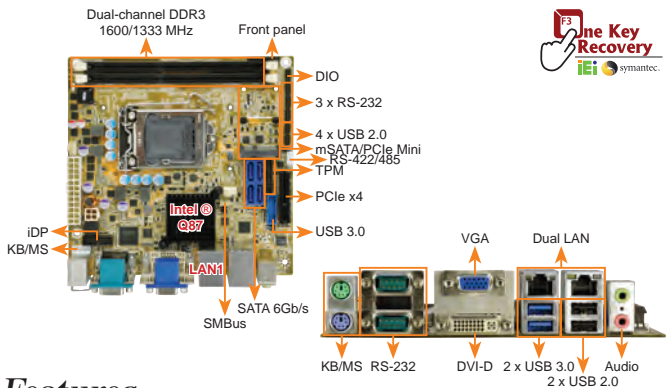
## Ordering Information

Part No.	Description
KINO-ABT-i2-J19001-R10	Mini-ITX SBC supports Intel® Celeron® quad-core processor J1900 (10W), VGA/HDMI/iDP, dual Intel® PCIe GbE, SATA, USB 3.0, HD Audio, iRIS-2400 and RoHS
KINO-ABT-i2-N29301-R10	Mini-ITX SBC supports Intel® Celeron® quad-core processor N2930 (7.5W), VGA/HDMI/iDP, dual Intel® PCIe GbE, SATA, USB 3.0, HD Audio, iRIS-2400 and RoHS
KINO-ABT-i2-N28071-R10	Mini-ITX SBC supports Intel® Celeron® dual-core processor N2807 (4.3W), VGA/HDMI/iDP, dual Intel® PCIe GbE, SATA, USB 3.0, HD Audio, iRIS-2400 and RoHS
KINO-ABT-i2-E38XX1-R10**	Mini-ITX SBC supports Intel® Atom™ processor E38XX, VGA/HDMI/iDP, dual Intel® PCIe GbE, SATA, USB 3.0, HD Audio, iRIS-2400 and RoHS
KINO-ABT-J19001-ECO-R10	Mini-ITX SBC supports Intel® 22nm Celeron® J1900 2.0GHz (10W) on-board (10W), VGA/HDMI/iDP, dual Intel® PCIe GbE, USB 3.0, SATA, HD Audio, ECO packing and RoHS (10 pce/pack)
32006-000300-100-RS	PS/2 KB/MS Y-cable without bracket, 140mm/120mm
32200-000049-RS	RS-232 cable, 200mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

\*\*By order production, MOQ: 100

# KINO-AQ870

Mini-ITX SBC with LGA1150 socket supports 4th Gen Intel® Core™ i7/i5/i3 processor, DVI-D/VGA/DP, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS



## Features

- LGA1150 socket supports 4th Gen Intel® Core™ i7/i5/i3 processor
- DDR3 1066/1333/1600 MHz dual-channel SDRAM
- 3D micro-architecture enhancements for DX11.1, OCL 1.2 and OGL3.2
- Rich media acceleration for hardware decode and encode acceleration
- Intel® GbE LAN with Intel® AMT 9.0 support
- High speed I/O interface for USB 3.0, SATA 6Gb/s and mSATA
- IEI jumper-less function

## Specifications

- ◆ CPU: LGA1150 socket supports 4th Gen Intel® Core™ i7/i5/i3 processor
- ◆ PCH: Intel® Q87
- ◆ Memory: Two 240-pin 1600/1333 MHz dual-channel DDR3 SDRAM unbuffered DIMMs support up to 16 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet
  - LAN1: Intel® I211 PCIe controller
  - LAN2: Intel® I217LM with Intel® AMT 9.0 support
- ◆ Graphics Engine
  - Support for DX11.1 and OpenGL3.2
  - Full MPEG2, VC1, AVC Decode
- ◆ Display Output
  - 1 x VGA (up to 1920x1200@60Hz)
  - 1 x DVI-D (up to 2560x1600@60Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60Hz)
- ◆ Audio
  - Realtek ALC662 HD codec supports 5.1-channel
  - 2 x Audio jacks (line-out, mic-in) on rear IO
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ External I/O Interface
  - 1 x KB/MS
  - 2 x RS-232
  - 2 x USB 2.0
  - 2 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 3 x RS-232 (2x5 pin, P=2.0)
  - 4 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Front Panel
  - 1 x Front panel (1x10 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ Expansion
  - 1 x PCIe x4 card slot
  - 1 x PCIe Mini card slot (supports mSATA, with SATA & USB 2.0 signal only)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x4 pin)
- ◆ Power Supply: ATX Power Supply
- ◆ Power Consumption
  - 3.3V@1.11A, 5V@3.01A, 12V@0.12A, Vcore@6.32A, 5VSB@0.15A (Intel® 2.60GHz CPU with two 1600 MHz 2 GB DDR3 memory)
  - ◆ Operating Temperature: -20°C ~ 60°C
  - ◆ Storage Temperature: -30°C ~ 70°C
  - ◆ Operating Humidity: 5% ~ 95%, non-condensing
  - ◆ Dimensions: 170mm x 170mm
  - ◆ Weight: GW: 900g / NW: 450g
  - ◆ CE/FCC compliant

## Packing List

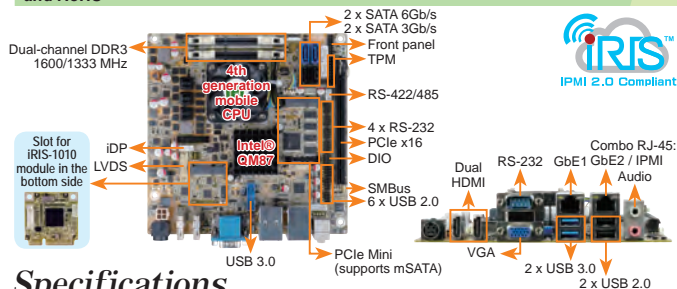
1 x KINO-AQ870 motherboard	1 x Mini jumper pack
1 x I/O shielding	1 x QIG
4 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
KINO-AQ870-R10	Mini-ITX SBC with LGA1150 socket supports 4th Gen Intel® Core™ i7/i5/i3 processor, DVI-D/VGA/DP, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, HD Audio and RoHS
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32205-002700-200-RS	RS-232/422/485 cable, 200mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-1150SA-R10	Special cooler kit for LGA1150, high-performance compatible, 95W
CF-1150SB-R11	Special cooler kit for LGA1150, high-performance compatible, 65W
CF-1150SC-R20	Special cooler kit for LGA1150, 1U chassis compatible, 65W
CF-1150SE-R11	Special cooler kit for LGA1150, 1U chassis compatible, 95W
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# KINO-DQM871-i1

Mini-ITX SBC supports 4th generation Intel® mobile processors, HDMI/ VGA/LVDS/DP, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, iRIS-1010, audio and RoHS



## Specifications

- ◆ CPU
  - Intel® mobile Core™ i7-4700EQ on-board processor with Intel® AMT 9.0 support (2.4GHz, quad-core, 6MB cache, TDP=47W)
  - Intel® mobile Core™ i5-4402E on-board processor with Intel® AMT 9.0 support (1.6GHz, dual-core, 3MB cache, TDP=25W)
  - Intel® mobile Core™ i3-4102E on-board processor (1.6GHz, dual-core, 3MB cache, TDP=25W)
  - Intel® mobile Celeron® 2002E on-board processor (1.5GHz, dual-core, 2MB cache, TDP=25W)
  - Intel® mobile Core™ i5-4400E on-board processor with Intel® AMT 9.0 support (2.7GHz, dual-core, 3MB cache, TDP=37W) (by request)
  - Intel® mobile Core™ i3-4100E on-board processor (2.4GHz, dual-core, 3MB cache, TDP=37W) (by request)
  - Intel® mobile Celeron® 2000E on-board processor (2.2GHz, dual-core, 2MB cache, TDP=37W) (by request)
- ◆ Chipset: Intel® QM87
- ◆ Memory: Two 204-pin 1600/1333 MHz dual-channel DDR3 SDRAM unbuffered DIMMs support up to 16 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet
  - LAN1: Intel® I217LM with Intel® AMT 9.0 support
  - LAN2: Intel® I210-AT PCIe controller
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 7.5 supports DX11.1 and OpenCL 1.2, OpenGL 3.2
  - Full MPEG2, VC1, AVC Decode
- ◆ Audio
  - Realtek ALC662 HD codec supports 5.1-channel 2 x Audio jacks (line-out, mic-in) on rear I/O
- ◆ iRIS Remote Management Module
  - 1 x iRIS-1010 slot
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Display Output
  - 1 x VGA (up to 1920x1200@60Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 2 x HDMI (up to 2500x1600@60Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60Hz)
- ◆ External I/O Interface
  - 1 x RS-232 2 x USB 2.0 2 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x SATA 3Gb/s
  - 2 x SATA 6Gb/s (RAID 0/1/5/10 supported)
  - 2 x USB 3.0 (2x10 pin, P=2.0)
  - 4 x RS-232 (2x5 pin, P=2.0)
  - 6 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Front Panel: 1 x Front panel (2x7 pin, power LED, HDD LED, speaker, power button, reset button)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Expansion: 1 x PCIe x16 slot
  - 1 x Full-size PCIe Mini card slot (support mSATA)
- ◆ Watchdog Timer: Software programmable, support 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector: 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x4 pin)
- ◆ Power Supply: 12V DC input
  - 1 x Internal power connector (2x2 pin)
  - 1 x External DC jack (4-pin DIN) Support AT/ATX mode
- ◆ Power Consumption: 12V@6.03A (Intel® Core™ i7-4700EQ, 2.4GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)
  - ◆ Operating Temperature: -20°C ~ 60°C
  - ◆ Operating Humidity: 5% ~ 95%, non-condensing
  - ◆ Dimensions: 170mm x 170mm
  - ◆ Weight: GW: 900g / NW: 450g
  - ◆ CE/FCC compliant

## Packing List

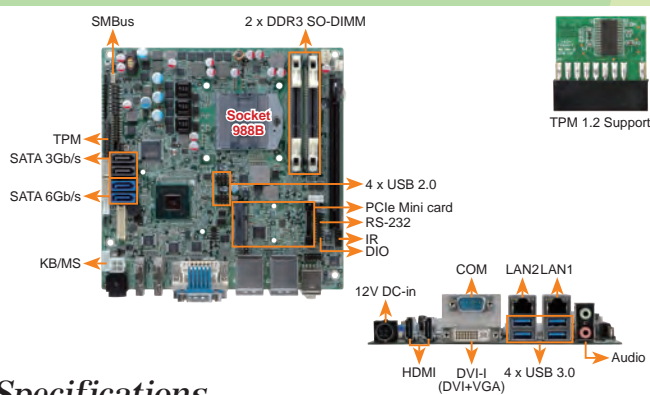
1 x KINO-DQM871-i1 motherboard	
1 x CPU cooler	1 x Mini jumper pack
1 x I/O shielding	1 x QIG
2 x SATA with power output cable	1 x Utility CD

## Ordering Information

Part No.	Description
KINO-DQM871-i1-i7-R10	Mini-ITX SBC supports Intel® 22nm mobile Core™ i7-4700EQ on-board processor, HDMI / VGA / LVDS / DP, dual Intel® PCIe GbE, AMT 9.0, USB 3.0, SATA 6Gb/s, iRIS-1010, audio and RoHS
KINO-DQM871-i1-i5E-R10	Mini-ITX SBC supports Intel® 22nm mobile Core™ i5-4402E on-board processor, HDMI / VGA / LVDS / DP, dual Intel® PCIe GbE, AMT 9.0, USB 3.0, SATA 6Gb/s, iRIS-1010, audio and RoHS
KINO-DQM871-i1-i3E-R10	Mini-ITX SBC supports Intel® 22nm mobile Core™ i3-4102E on-board processor, HDMI / VGA / LVDS / DP, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, iRIS-1010, audio and RoHS
KINO-DQM871-i1-CE-R10	Mini-ITX SBC supports Intel® 22nm Celeron® 2002E on-board processor, HDMI / VGA / LVDS / DP, dual Intel® PCIe GbE, USB 3.0, SATA 6Gb/s, iRIS-1010, audio and RoHS
iRIS-1010-R10	IPMI 2.0 adapter card with AST1010 BMC chip (W/O KVM over IP function) for PCIe Mini socket interface
19800-000300-100-RS	RS-232 cable with bracket, 300mm, P=2.0
19800-003100-100-RS	Dual port USB 2.0 cable with bracket, 300mm, P=2.54
19800-010500-200-RS	USB 3.0 cable with bracket, 450mm
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32205-003800-200-RS	RS-422/485 cable, 200mm, P=2.0
DP-DP-R10	DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# KINO-QM770

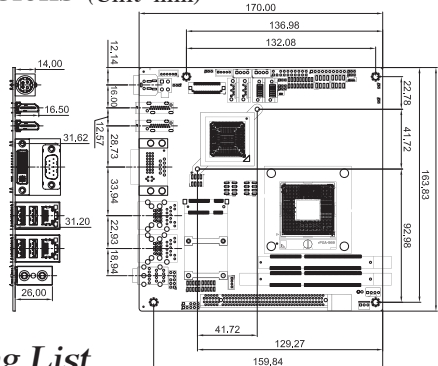
Mini-ITX SBC with Socket G2 for Intel® 22nm mobile CPU, DVI-I, dual HDMI, LVDS, dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s and audio



## Specifications

- ◆ CPU: Socket G2 for 3rd generation Intel® 22nm mobile processor
- ◆ Chipset: Intel® QM77
- ◆ Memory: Two 240-pin 1600/1333 MHz dual-channel DDR3 SDRAM unbuffered DIMMs support up to 16 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet
  - LAN1: Intel® 82579 PHY with Intel® AMT 8.0 support
  - LAN2: Intel® 82583V PCIe controller
- ◆ Graphics Engine
  - Supports DX11 and OpenGL 3.1
  - Full MPEG2, VC1, AVC Decode
- ◆ Display Output
  - 1 x DVI-I (up to 1920x1200@60Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 2 x HDMI (up to 1920x1200@60Hz)
- ◆ Audio
  - Realtek ALC892 HD codec
  - 2 x Audio jacks (line-out, mic-in) on rear I/O
  - 1 x Front Audio (2x5 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Expansion
  - 1 x PCIe x16 slot 1 x PCIe Mini card slot
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ External I/O Interface
  - 1 x RS-232 4 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 2 x SATA 3Gb/s
  - 2 x SATA 6Gb/s (RAID 0/1/5/10 supported)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x SATA 6Gb/s (RAID 0/1/5/10 supported)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 4 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Infrared Interface: 1 x Infrared interface (1x5 pin)
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System fan (1x3 pin)
- ◆ Power Supply
  - 12V DC input
  - 1 x Internal power connector (2x2 pin)
  - 1 x External DC jack (4-pin DIN) Support AT/ATX mode
- ◆ Power Consumption
  - 12V@6.08A (2.3GHz Intel® Core™ i7-3610QE with two 1333 MHz 4 GB DDR3 memory running 3DMark06 burn in)
  - ◆ Operating Temperature: -10°C ~ 60°C
  - ◆ Storage Temperature: -20°C ~ 70°C
  - ◆ Operating Humidity: 5% ~ 95%, non-condensing
  - ◆ Dimensions: 170 mm x 170 mm
  - ◆ Weight: GW: 900g / NW: 450g
  - ◆ CE/FCC compliant

## Dimensions (Unit: mm)



## Packing List

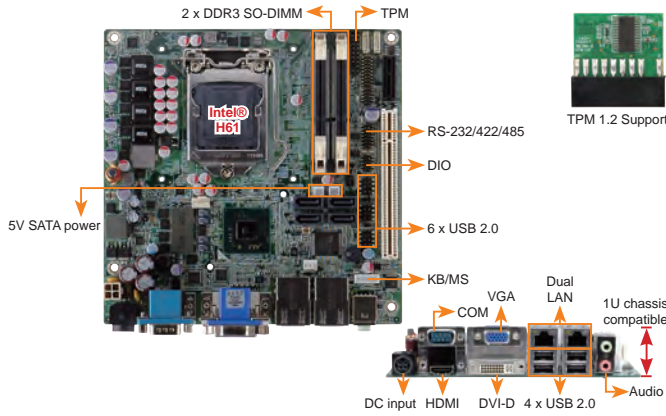
1 x KINO-QM770 single board computer	1 x Mini jumper pack
1 x I/O shielding	1 x One Key Recovery CD
1 x RS-232 cable with bracket	1 x QIG
2 x SATA with power output cable	1 x Utility CD

## Ordering Information

Part No.	Description
KINO-QM770-R10	Mini-ITX SBC with Socket G2 for Intel® 22nm mobile CPU, DVI-I/dual HDMI/LVDS, dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s and Audio
19800-003100-100-RS	Dual port USB 2.0 cable with bracket, 300mm, P=2.54
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
33200-000031-RS	DVI-I to VGA adapter connector
CF-989A-RS-R12	CPU cooler for mobile socket-G (PGA988) up to 55W processor, copper, 60 x 60 x 27.6mm, RoHS
SACF-KIT01-R10	SATA to CF converter board
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# KINO-DH610

Mini-ITX SBC supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU, DDR3, VGA/DVI-D/HDMI, dual PCIe GbE, USB 2.0, SATA 3Gb/s, HD Audio and RoHS



## Specifications

- ◆ CPU: LGA1155 socket supports Intel® Core™ i7/i5/i3/Pentium®/Celeron® dual-core processor (TDP 65W max.)
- ◆ Chipset: Intel® H61
- ◆ Memory: Two 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 16 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet: LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support  
LAN2: Realtek RTL8111E PCIe GbE controller
- ◆ Graphics Engine: Supports DX10.1 and OpenGL 3.0  
Full MPEG2, VC1, AVC Decode
- ◆ Display Output: Dual display supported  
1 x VGA (up to 2048x1536@75Hz)  
1 x HDMI (up to 1920x1200@60Hz)  
1 x DVI-D (up to 1920x1200@60Hz)
- ◆ External I/O Interface: 1 x RS-232 4 x USB 2.0
- ◆ Internal I/O Interface: 1 x KB/MS (1x6 pin)  
1 x RS-232/422/485 (2x7 pin, P=2.0)  
2 x SATA power connector  
4 x SATA 3Gb/s 6 x USB 2.0 (2x4 pin, P=2.54)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Audio: Realtek ALC662 HD codec  
2 x Audio jacks (line-out, mic-in) on rear IO
- ◆ Expansions: 1 x PCI slot  
1 x PCIe x1 slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Fan Connector: 1 x CPU smart fan (1x4 pin)  
1 x System fan (1x3 pin)
- ◆ Power Supply: Maximum input voltage range: 9V ~ 28V  
Recommended operating input voltage range: 12V ~ 24V  
1 x External DC jack (4-pin DIN)  
1 x Internal power connector (2x2 pin)
- ◆ Power Consumption: 12V@5.07A (2.2GHz Intel® G620T with two 1066 MHz 2 GB DDR3 memory running 3DMark06 burn in)  
12V@8.85A (2.8GHz Intel® Core™ i7-2600S with two 1066 MHz 2 GB DDR3 memory running 3DMark06 burn in)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170 mm x 170 mm
- ◆ Weight: GW: 1100g / NW: 700g
- ◆ CE/FCC compliant

## Packing List

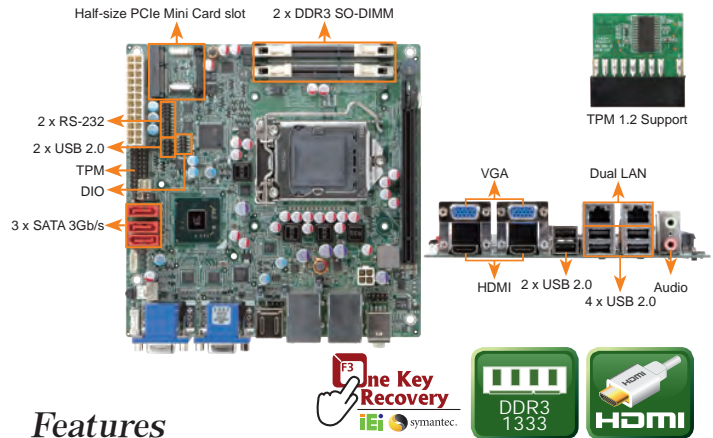
1 x KINO-DH610 single board computer	
1 x I/O shielding	1 x One Key Recovery CD
2 x SATA with 5V power cable	1 x QIG
1 x Mini jumper pack	1 x Utility CD

## Ordering Information

Part No.	Description
KINO-DH610-R10	Mini-ITX SBC supports LGA1155 Intel® Core™ i5/i3/Pentium®/Celeron® CPU, DDR3, VGA/DVI-D/HDMI, dual PCIe GbE, USB 2.0, SATA 3Gb/s, HD Audio and RoHS
CPU-DT-i5-2500T	Intel® Core™ i5-2500T processor, LGA1155, quad core 2.3GHz, 6M cache, 45W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2390T	Intel® Core™ i5-2390T processor, LGA1155, dual core 2.7GHz, 3M cache, 35W, AMT, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i3-2120T	Intel® Core™ i3-2120T processor, LGA1155, dual core 2.6GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-C-G440	Intel® Celeron® G440 processor, LGA1155, single core 1.6GHz, 1M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-P-G630T	Intel® Pentium® G630T processor, LGA1155, dual core 2.3GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
19800-003100-300-RS	Dual port USB cable with bracket, 300mm, P=2.54
19800-004300-100-RS	RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 250mm, P=2.0
32000-023800-RS	PS/2 KB/MS cable, 135mm, P=2.0
63040-010060-110-RS	12V 60W power adaptor with 4-pin DIN lock, 90 ~ 264VAC input, ErP
CF-115XA-R10	High-performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA1155/LGA1156 cooler kit, 95W
SACF-KIT01-R10	SATA to CF converter board
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# KINO-AH611

Mini-ITX SBC supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU, DDR3, dual HDMI/dual VGA, Dual PCIe GbE, SATA 3Gb/s, HD Audio and RoHS



## Features

- LGA1155 for Intel® Core™ i7/i5/i3/Pentium®/Celeron® processor
- Up to 16 GB 1333/1066 MHz dual-channel DDR3 SDRAM
- Supports dual independent display by dual VGA and dual HDMI
- Two COM ports and three SATA 3Gb/s connectors supported
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU: LGA1155 socket supports Intel® Core™ i7/i5/i3/Pentium®/Celeron® processor
- ◆ Chipset: Intel® H61
- ◆ Memory: Two 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 16 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet: Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support
- ◆ Graphics Engine: Supports DX10.1 and OpenGL 3.0  
Full MPEG-2, VC1, AVC Decode
- ◆ Display Output: Dual display supported  
2 x VGA (up to 2048x1536@75Hz)  
2 x HDMI (up to 1920x1200@60Hz)
- ◆ External I/O Interface: 6 x USB 2.0
- ◆ Internal I/O Interface: 1 x KB/MS (1x6 pin) 3 x SATA 3Gb/s  
2 x RS-232 (2x5 pin, P=2.0)  
2 x USB 2.0 (2x4 pin, P=2.54)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Audio: Realtek ALC662 HD codec  
2 x Audio jacks (line-out, mic-in) on rear IO  
1 x Front Audio (2x5 pin)
- ◆ Expansion: 1 x PCIe x16 slot  
1 x Half-size PCIe Mini card slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector: 1 x CPU smart fan (1x4 pin)  
1 x System fan (1x3 pin)
- ◆ Power Supply: ATX power supply
- ◆ Power Consumption: 5V@3.47A, 12V@0.11A, Vcore\_12V@6.73A, 3.3V@1.01A, 5VSB@0.15A (3.4GHz Intel® Core™ i7-2600K with two 1333 MHz 2 GB DDR3 SO-DIMMs)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170 mm x 170 mm
- ◆ Weight: GW: 1100g / NW: 700g
- ◆ CE/FCC compliant

## Packing List

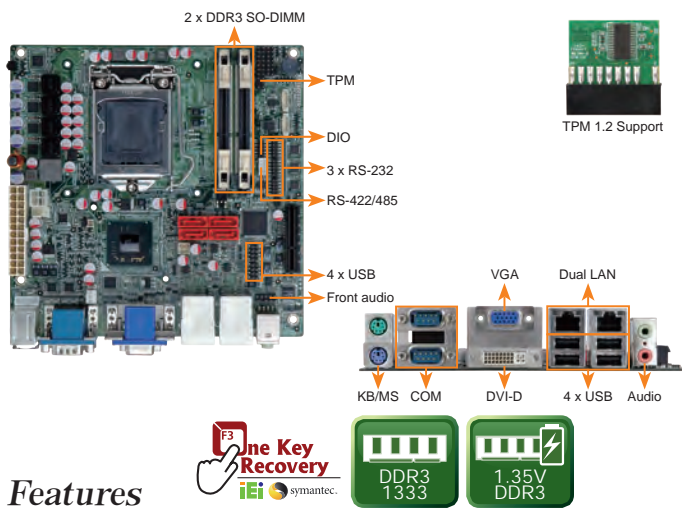
1 x KINO-AH611 single board computer	1 x Mini jumper pack
1 x Dual RS-232 cable	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
3 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
KINO-AH611-R10	Mini-ITX SBC supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU, DDR3, dual HDMI/dual VGA, dual PCIe GbE, SATA 3Gb/s, HD Audio and RoHS
CPU-DT-i5-2500T	Intel® Core™ i5-2500T processor, LGA1155, quad core 2.3GHz, 6M cache, 45W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2390T	Intel® Core™ i5-2390T processor, LGA1155, dual core 2.7GHz, 3M cache, 35W, AMT, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i3-2120T	Intel® Core™ i3-2120T processor, LGA1155, dual core 2.6GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-C-G440	Intel® Celeron® G440 processor, LGA1155, single core 1.6GHz, 1M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-P-G630T	Intel® Pentium® G630T processor, LGA1155, dual core 2.3GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
19800-003100-300-RS	Dual port USB cable with bracket, 300mm, P=2.54
32000-023800-RS	PS/2 KB/MS cable, 135mm, P=2.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
CF-115XA-R10	High-performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA1155/LGA1156 cooler kit, 95W
SACF-KIT01-R10	SATA to CF converter board
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# KINO-AH612

Mini-ITX SBC supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU with H61, DDR3, VGA/DVI-D, six COMs, dual PCIe GbE, SATA 3Gb/s, HD Audio and RoHS



## Features

- LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® processor supported
- Dual-channel 1333/1066 MHz DDR3 supports up to 16 GB
- Supports dual independent display by VGA and DVI-D
- Supports six COM ports, four SATA 3Gb/s ports and one PCIe x4 slot for IO expansion card
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU  
LGA1155 socket supports Intel® Core™ i7/i5/i3/Pentium®/Celeron® processor
- ◆ Chipset: Intel® H61
- ◆ Memory  
Two 204-pin 1066/1333 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 16 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet  
Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support
- ◆ Graphics Engine  
Supports DX10.1 and OpenGL 3.0  
Full MPEG-2, VC1, AVC Decode
- ◆ Display Output  
Dual display supported  
1 x VGA (up to 2048x1536@75Hz)  
1 x DVI-D (up to 1920x1200@60Hz)
- ◆ Audio: Realtek ALC662 HD codec  
2 x Audio jacks (line-out, mic-in) on rear IO  
1 x Front Audio (2x5 pin)
- ◆ External I/O Interface  
1 x KB/MS 2 x RS-232 4 x USB 2.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin) 4 x SATA 3Gb/s  
1 x RS-422/485 (1x4 pin, P=2.0)  
3 x RS-232 (2x5 pin, P=2.0)  
4 x USB 2.0 (2x4 pin, P=2.54)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Expansion: 1 x PCIe x4 slot
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
1 x System fan (1x3 pin)
- ◆ Power Supply: ATX power supply
- ◆ Power Consumption  
5V@3.9A, 12V@0.36A, Vcore\_12V@8.28A, 3.3V@1.24A, 5VSB@0.18A (3.4GHz Intel® Core™ i7-2600 with two 1333 MHz 2 GB DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170 mm x 170 mm
- ◆ Weight: GW: 1100g / NW: 700g
- ◆ CE/FCC compliant

## Packing List

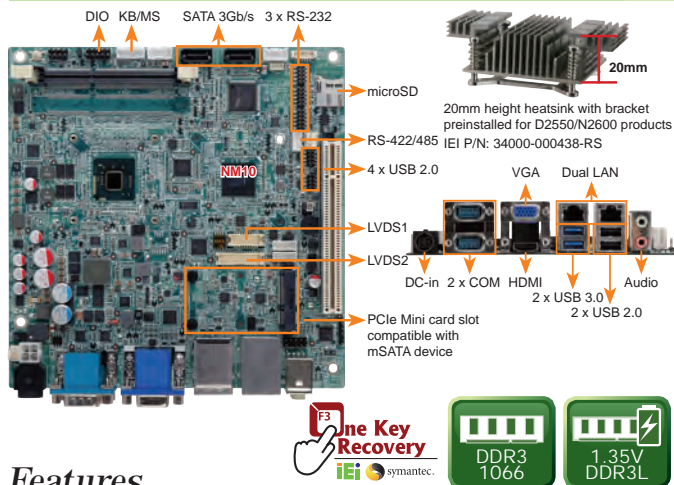
1 x KINO-AH612 single board computer	1 x Mini jumper pack
1 x Dual RS-232 cable	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
KINO-AH612-R10	Mini-ITX SBC supports LGA1155 Intel® Core™ i7/i5/i3/Pentium®/Celeron® CPU with H61, DDR3, VGA/DVI-D, 6 COM, dual PCIe GbE, SATA 3Gb/s, HD Audio and RoHS
CPU-DT-i5-2500T	Intel® Core™ i5-2500T processor, LGA1155, quad core 2.3GHz, 6M cache, 45W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i5-2390T	Intel® Core™ i5-2390T processor, LGA1155, dual core 2.7GHz, 3M cache, 35W, AMT, compatible with CF-1156C-R20 CPU cooler
CPU-DT-i3-2120T	Intel® Core™ i3-2120T processor, LGA1155, dual core 2.6GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-C-G440	Intel® Celeron® G440 processor, LGA1155, single core 1.6GHz, 1M cache, 35W, compatible with CF-1156C-R20 CPU cooler
CPU-DT-P-G630T	Intel® Pentium® G630T processor, LGA1155, dual core 2.3GHz, 3M cache, 35W, compatible with CF-1156C-R20 CPU cooler
19800-003100-100-RS	Dual port USB 2.0 cable with bracket, 300mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
CF-115XA-R10	High-performance LGA1155/LGA1156 cooler kit, 1U chassis compatible, 73W
CF-1156C-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 45W
CF-1156D-R20	LGA1155/LGA1156 cooler kit, 1U chassis compatible, 65W
CF-115XE-R10	High-performance LGA1155/LGA1156 cooler kit, 95W
SACF-KIT01-R10	SATA to CF converter board
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# KINO-CV-D25501/N26001

Mini-ITX SBC with Intel® D2550/N2600 processor, DDR3, VGA/HDMI/dual LVDS, dual GbE, USB 3.0, mSATA, SATA 3Gb/s, audio, RoHS



## Features

- Mini-ITX form factor with Intel® D2550/N2600 dual-core processor supports DDR3/DDR3L (1.35V) memory
- Wide range 9V ~ 28V DC input
- Flexible VGA, dual LVDS and HDMI with dual-display support
- Complete I/O: six USB 2.0, two USB 3.0, two SATA 3Gb/s, six COM, audio and mSATA SSD capable
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU  
Intel® Atom™ D2550 (1.86GHz, dual-core, 1MB cache)  
Intel® Atom™ N2600 (1.6GHz, dual-core, 1MB cache)  
Intel® Atom™ N2800 (1.86GHz, dual-core, 1MB cache)
- ◆ Chipset: Intel® NM10
- ◆ BIOS: UEFI BIOS
- ◆ Memory  
One 204-pin 1066/800 MHz DDR3/DDR3L SDRAM SO-DIMM slot supports up to 4 GB (D2550/N2800) or 2 GB (N2600)
- ◆ Graphics Engine  
Intel® GMA 3650 with 640 MHz graphics core speed for D2550 and N2800  
Intel® GMA 3600 with 400 MHz graphics core speed for N2600
- ◆ Display Output  
Supports dual LVDS, VGA and HDMI for dual independent display  
1 x VGA (up to 2048x1536@75Hz)  
1 x HDMI (up to 1920x1200@60Hz)  
24-bit single-channel LVDS1 (D2550) (up to 1440x900@60Hz)  
18-bit single-channel LVDS1 (N2600/N2800) (up to 1366x768@60Hz)  
24-bit dual-channel LVDS2 (up to 1920x1200(D2550) or 1600x1200(N2600/N2800)@60Hz)
- ◆ Ethernet  
Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Audio: Realtek ALC662 HD Audio codec  
2 x Audio jacks (line-out, mic-in) on rear IO  
1 x Front Audio (2x5 pin)
- ◆ External I/O Interface  
2 x RS-232 2 x USB 2.0 2 x USB 3.0
- ◆ Internal I/O Interface  
1 x KB/MS (1x6 pin) 2 x SATA 3Gb/s  
1 x MicroSD card slot  
1 x RS-422/485 (1x4 pin, P=2.0)  
3 x RS-232 (2x5 pin, P=2.0)  
4 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Expansion  
1 x PCIe Mini card slot (support mSATA)  
1 x PCI slot
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset by Super I/O
- ◆ Power Supply  
1 x External DC power jack (4-pin DIN)  
1 x Internal power connector (2x2 pin)  
Input voltage range: 9V ~ 28V  
Recommended operating input voltage range: 12V~24V
- ◆ Fan Connector  
1 x CPU fan (1x3 pin)  
1 x System fan (1x3 pin)
- ◆ Power Consumption  
12V@2.8A (1.86GHz Intel® D2550 CPU with DDR3 1333 MHz 4 GB DIMM)  
12V@2.4A (1.6GHz Intel® N2600 CPU with DDR3 1333 MHz 2 GB DIMM)
- ◆ Operating Temperature  
-20°C ~ 60°C with free air, -20°C ~ 70°C with force air for D2550 processor  
-20°C ~ 70°C with free air, -20°C ~ 75°C with force air for N2600 and N2800 processor
- ◆ Storage Temperature: -30°C ~ 80°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Weight: GW: 600g / NW: 250g
- ◆ CE/FCC compliant

## Packing List

1 x KINO-CV-D25501/N26001 single board computer	1 x Mini jumper pack
1 x Dual-port USB cable	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA with 5V output cable Kit	1 x Utility CD

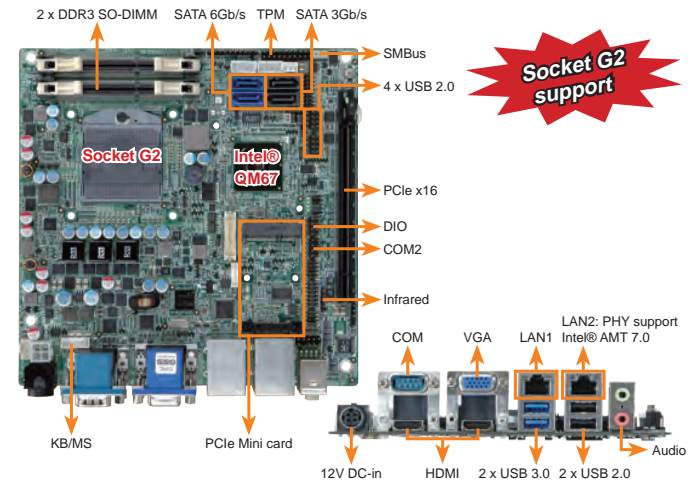
## Ordering Information

Part No.	Description
KINO-CV-D25501-R10	Mini-ITX SBC with Intel® Atom™ D2550 1.86GHz, DDR3, VGA/HDMI/dual LVDS, dual GbE, USB 3.0, 9V ~ 28V, SATA 3Gb/s, audio, RoHS
KINO-CV-N26001-R10	Mini-ITX SBC with Intel® Atom™ N2600 1.6GHz, DDR3, VGA/HDMI/dual LVDS, dual GbE, USB 3.0, 9V ~ 28V, SATA 3Gb/s, audio, RoHS
KINO-CV-N28001-R10**	Mini-ITX SBC with Intel® Atom™ N2800 1.86GHz, DDR3, VGA/HDMI/Dual LVDS, dual GbE, USB 3.0, 9 ~ 28V, SATA 3Gb/s, audio, RoHS
19FFD124010HB2A7-000001-RS	CPU fan (40mm x 40mm x 10mm)
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32205-003900-300-RS	RS-422/485 cable, 200mm, P=2.0
34000-000510-RS	30mm higher heatsink

\*\*By order production, MOQ: 100

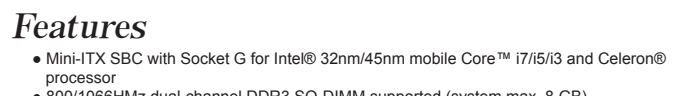
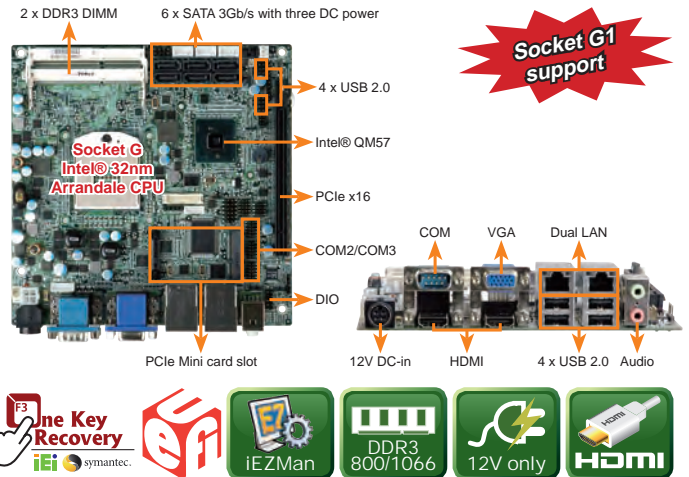
# KINO-QM670-R20

Mini-ITX SBC with Socket G2 for Intel® mobile Core™ i7/i5/i3 CPU, VGA/dual HDMI/LVDS, dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s and audio



# KINO-QM57A

Mini-ITX SBC with Socket G1 for Intel® mobile Core™ i7/i5/i3/Celeron® CPU, VGA/dual HDMI/LVDS, PCIe GbE, USB 2.0, PCIe Mini, SATA 3Gb/s, audio and RoHS



## Features

- Mini-ITX SBC with Socket G2 for Intel® Core™ i7/i5/i3 processor
- Dual-channel 1333/1066MHz DDR3 SDRAM (system max. 8 GB)
- HDMI 1.3 compliant
- 3D micro-architecture enhancement supports DX\*10.1 and OGL\*3.0
- Rich media acceleration for hardware decoding and encoding acceleration
- Intel® GbE LAN with Intel® AMT 7.0 supported
- High speed I/O interface for PCIe Gen2 add-on card, USB 3.0 and SATA 6Gb/s

## Specifications

- ◆ CPU: Socket G2 for Intel® Core™ i7/i5/i3 processor
- ◆ Chipset: Intel® QM67
- ◆ Memory: Two 204-pin 1333/1066 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 8 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet: LAN1: Intel® 82583V PCIe controller  
LAN2: Intel® 82579 PHY with Intel® AMT 7.0 supported
- ◆ Graphics Engine: Support for DX10.1 and OpenGL3.0  
Full MPEG2, VC1, AVC Decode
- ◆ Display Output: Dual display supported  
1 x VGA (up to 2048x1536@75Hz)  
2 x HDMI (up to 1920x1200@60Hz)  
1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
- ◆ External I/O Interface: 1 x RS-232 2 x USB 2.0 2 x USB 3.0
- ◆ Internal I/O Interface: 1 x RS-422/485 (1x4 pin, P=2.0)  
2 x SATA 3Gb/s  
2 x SATA 6Gb/s (RAID 0/1/5/10 supported)  
4 x USB 2.0 (2x4 pin, P=2.54)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Audio: Realtek ALC892 HD codec  
2 x Audio jacks (line-out, mic-in) on rear I/O  
1 x Front Audio (2x5 pin)
- ◆ Expansion: 1 x PCIe16 slot 1 x PCIe Mini card slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Infrared Interface: 1 x 5-pin header
- ◆ Fan Connector: 1 x CPU smart fan (1x4 pin)  
1 x System smart fan (1x3 pin)
- ◆ Power Supply: 12V DC input  
1 x External DC jack (4-pin DIN)  
1 x Internal power connector (2x2 pin)  
Support AT/ATX mode
- ◆ Power Consumption: 12V@6.5A (2.1GHz Intel® Core™ i7-2710QE CPU with two 1333 MHz 2 GB DDR3 DIMM)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170mm x 170mm
- ◆ Weight: GW: 900g / NW: 450g
- ◆ CE/FCC compliant

## Packing List

1 x KINO-QM670 single board computer	1 x Mini jumper pack
1 x I/O shielding	1 x One Key Recovery CD
1 x RS-232 cable	1 x QIG
2 x SATA with power output cable	1 x Utility CD

## Ordering Information

Part No.	Description
KINO-QM670-R20	Mini-ITX SBC with Socket G2 for Intel® mobile Core i7/i5/i3 CPU, VGA/dual HDMI/LVDS, dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s and audio
19800-003100-100-RS	Dual port USB 2.0 cable with bracket, 300mm, P=2.54
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-989A-RS-R12	CPU cooler
SACF-KIT01-R10	SATA to CF converter board
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

## Features

- Mini-ITX SBC with Socket G for Intel® 32nm/45nm mobile Core™ i7/i5/i3 and Celeron® processor
- 800/1066MHz dual-channel DDR3 SO-DIMM supported (system max. 8 GB)
- Analog CRT/18-bit or 24-bit dual-channel LVDS/Dual HDMI outputs supported
- Intel® GbE LAN with Intel® AMT 6.0 support, iEZMan UI is bundled for remote control under Windows® environment
- UEFI software interface between OS and platform firmware
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU: Socket G1 for Intel® mobile Core™ i7/i5/i3 and Celeron® processor (Socket 988)
- ◆ Chipset: Intel® QM57
- ◆ Memory: Two 204-pin 1066/800 MHz dual-channel unbuffered DDR3L SDRAM SO-DIMM support up to 16 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet: LAN1: Intel® 82577 GbE LAN controller with Intel® AMT 6.0 supported by iEZMan software UI  
LAN2: Intel® 82574L GbE LAN
- ◆ Graphics Engine: Gen 5.75 with 12 execution units support DirectX\* 10, OpenGL\* 2.1
- ◆ Display Output: Dual display supported  
1 x VGA (up to 2048x1536@75Hz)  
2 x HDMI (up to 1920x1200@60Hz)  
1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
- ◆ Note: The Intel® quad-core processor is a discrete processor which does not integrate a graphics engine. If a quad-core processor is used on the motherboard, an additional graphics card must be installed in order to support display output. Otherwise, the display will show "No display output" when connected to the on-board display port.
- ◆ Audio: Realtek ALC888 HD codec  
2 x Audio jacks (line-out, mic-in) on rear I/O
- ◆ External I/O Interface: 1 x RS-232 4 x USB 2.0
- ◆ Internal I/O Interface: 1 x KB/MS (1x6 pin)  
1 x RS-232/422/485 (2x7 pin, P=2.0)  
2 x RS-232 (2x5 pin, P=2.0)  
4 x USB 2.0 (2x4 pin, P=2.54)  
6 x SATA3Gb/s (RAID 0/1/5/10 supported)
- ◆ Expansion: 1 x PCIe x16 slot 1 x PCIe Mini card slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector: 1 x CPU smart fan (1x4 pin)  
1 x System smart fan (1x3 pin)
- ◆ Power Supply: 12V DC input  
1 x External DC jack (4-pin DIN)  
1 x Internal power connector (2x2 pin)  
Support AT/ATX mode
- ◆ Power Consumption: 12V@5.27A (2.66GHz Intel® Core™ i7 620M CPU with two 2 GB 1333 MHz DDR3 DIMMs)
- ◆ Operating Temperature: 0°C ~ 60°C (32°F ~ 140°F)
- ◆ Storage Temperature: -10°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 170mm x 170mm
- ◆ Weight: GW: 1000g / NW: 350g
- ◆ CE/FCC compliant

## Packing List

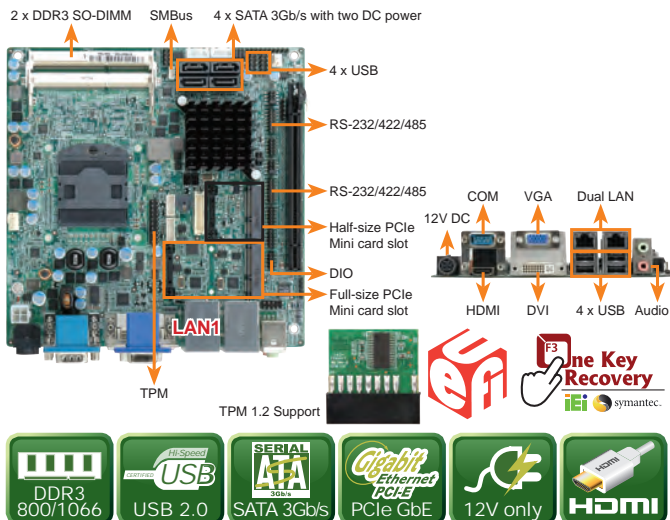
1 x KINO-QM57A single board computer	1 x Mini jumper pack
1 x Dual RS-232 cable w/ bracket	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
3 x SATA with power output cable	1 x Utility CD

## Ordering Information

Part No.	Description
KINO-QM57A-R10	Mini-ITX SBC with Socket G1 for Intel® mobile Core™ i7/i5/i3/Celeron® CPU, VGA/dual HDMI/LVDS, PCIe GbE, USB 2.0, PCIe Mini, SATA 3Gb/s and audio, RoHS
19800-003100-100-RS	Dual port USB 2.0 cable with bracket, 300mm, P=2.54
19800-004300-100-RS	RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 250mm, P=2.0
63040-010096-100-RS	96W/12V power adaptor 90VAC~260VAC, 4-pin DIN
CF-989A-RS-R12	CPU cooler for mobile socket-G (PGA988) up to 55W processor, copper, 60mm x 60mm x 27.6mm, RoHS
CF-989B-RS-R11	CPU cooler for mobile socket-G (PGA988) 50W processor, aluminum, 60mm x 60mm x 27.6mm, RoHS
SAIDE-KIT01-R10	SATA to IDE/CF converter board

## KINO-HM551

Mini-ITX SBC with Socket G1 for Intel® mobile Core™ i7/i5/i3 and Celeron® CPU, VGA/DVI/LVDS/HDMI, dual PCIe GbE, USB 2.0, dual PCIe Mini, SATA 3Gb/s and audio, RoHS



### Features

- Mini-ITX SBC with Socket G1 for Intel® mobile Core™ i7/i5/i3 and Celeron® processor
- DDR3 800/1066MHz dual-channel SDRAM supported up to 8 GB
- 18/24-bit dual-channel LVDS/Analog CRT/DVI/HDMI output supported
- PCIe x16 slot and dual PCIe Mini card for high speed device expansion
- TPM V1.2 hardware security function supported by TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

### Specifications

- ◆ CPU
  - Socket G1 for Intel® mobile Core™ i7/i5/i3 and Celeron® processor (Socket 988)
- ◆ Chipset: Intel® HM55
- ◆ Memory: Two 204-pin 1066/800 MHz DDR3 SDRAM SO-DIMM slot supports up to 4 GB
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet
  - Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support
- ◆ Graphics Engine
  - Gen 5.75 with 12 execution units support Direct\* 10, OpenGL\* 2.1
- ◆ Display Output
  - Dual display supported
  - 1 x VGA (up to 2048x1536@60Hz)
  - 1 x HDMI (up to 1920x1080@60Hz)
  - 1 x DVI-D (up to 1600x1200@60Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1600x1200@60Hz)

*Note: The Intel® quad-core processor is a discrete processor which does not integrate a graphics engine. If a quad-core processor is used on the motherboard, an additional graphics card must be installed in order to support display output. Otherwise, the display will show "No display output" when connected to the on-board display port.*
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ SMBus: 1 x 4-pin wafer connector
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ External I/O Interface
  - 1 x RS-232
  - 4 x USB 2.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 4 x SATA 3Gb/s
  - 2 x RS-232/422/485 (2x7 pin, P=2.0)
  - 3 x RS-232 (2x5 pin, P=2.0)
  - 4 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Audio
  - Realtek ALC662 HD codec
  - 2 x Audio jacks (line-out, mic-in) on rear I/O
  - 1 x Front Audio (2x5 pin)
- ◆ Expansion
  - 1 x PCIe Mini card slot
  - 1 x Half-size PCIe Mini card slot
  - 1 x PCIe x16 slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x3 pin)
- ◆ Power Supply
  - Single voltage 12V DC input
  - 1 x External 4-pin DIN DC jack
  - 1 x Internal 4-pin (2x2) power connector
  - AT/ATX power mode selected by jumper
- ◆ Power Consumption
  - 12V@4.67A (2.66GHz Intel® Core i7 620M CPU with two 1333 MHz 4 GB DDR3 DIMM)
  - ◆ Operating Temperature: -10°C ~ 60°C
  - ◆ Storage Temperature: -20°C ~ 70°C
  - ◆ Operating Humidity: 5% ~ 95%, non-condensing
  - ◆ Dimensions: 170mm x 170mm
  - ◆ Weight: GW: 900g / NW: 450g
  - ◆ CE/FCC compliant

### Packing List

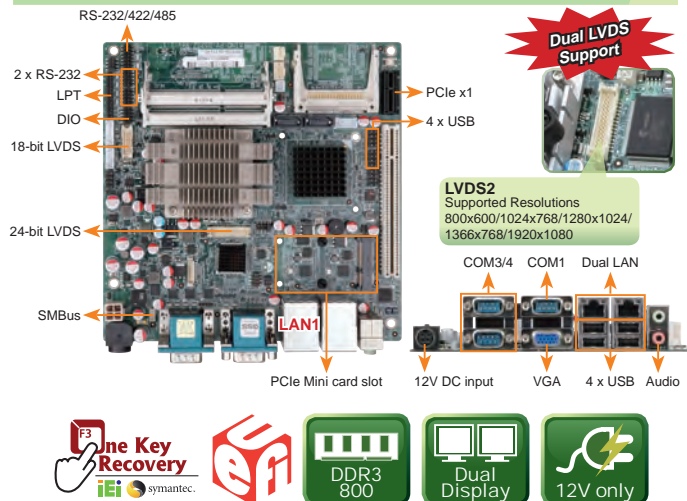
1 x KINO-HM551 single board computer	1 x Mini jumper pack
1 x Dual RS-232 cable with bracket	1 x One Key Recovery CD
1 x I/O shielding	1 x QIG
2 x SATA with power cable	1 x Utility CD

### Ordering Information

Part No.	Description
KINO-HM551-R10	Mini-ITX SBC with Socket G1 for Intel® mobile Core i7/i5/i3 and Celeron® CPU, VGA/DVI/LVDS/HDMI, Dual PCIe GbE, USB 2.0, Dual PCIe Mini, SATA 3Gb/s and Audio, RoHS
19800-003100-300-RS	Dual USB cable with bracket
SAIDE-KIT01-R10	SATA to IDE/CF converter board
19800-004300-100-RS	RS-232 cable, 40-pin to RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 250mm, P=2.0
32000-023800-RS	KB/MS Y cable
CF-989A-RS-R12	CPU cooler for mobile socket-G (PGA988) up to 55W processor, copper, 60mm x 60mm x 27.6mm, RoHS
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

## KINO-PV-D4252/D5252

Mini-ITX SBC with Intel® Atom™ D425/D525, DDR3, VGA/18+48-bit LVDS, dual GbE, audio, USB 2.0 and SATA 3Gb/s, RoHS



### Features

- Mini-ITX SBC with Intel® Atom™ D525/D425 processor
- Support 800 MHz DDR3 SO-DIMM socket (system max. 4 GB)
- Support 24-bit dual-channel LVDS with up to 1920x1080 resolution
- Complete I/O with eight USB, two SATA 3Gb/s, one CF Type II, six COM and audio
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

### Specifications

- ◆ CPU
  - Intel® Atom™ D525 (1.8GHz, dual-core, 1MB cache)
  - Intel® Atom™ D425 (1.8GHz, single-core, 512KB cache)
- ◆ Chipset: ICH8M
- ◆ BIOS: UEFI BIOS
- ◆ Memory: Two 204-pin 800 MHz DDR3 SDRAM SO-DIMM slot supports up to 4 GB (D525/D425) or 2 GB (N455)
- ◆ Graphics Engine: GMA 3150
  - Graphics core speed 400 MHz for D525/D425
- ◆ Display Output
  - 1 x VGA (up to 2048x1536@60Hz)
  - 1 x 18-bit single-channel LVDS (up to 1366x768@60Hz)
  - 1 x 24-bit dual-channel LVDS (up to 1920x1080@60Hz)
- ◆ Ethernet
  - LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support
  - LAN2: Realtek RTL8111E PCIe GbE controller
- ◆ External I/O Interface
  - 3 x RS-232
  - 4 x USB 2.0
- ◆ Internal I/O Interface
  - 1 x CF Type II
  - 1 x KB/MS (1x6 pin)
  - 1 x LPT (2x13 pin, P=2.54)
  - 1 x RS-232/422/485 (2x7 pin, P=2.0)
  - 2 x RS-232 (2x5 pin, P=2.0)
  - 2 x SATA 3Gb/s
  - 4 x USB 2.0 (2x4 pin, P=2.54)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ Audio
  - Realtek ALC662 HD codec
  - 2 x Audio jacks (line-out, mic-in) on rear I/O
- ◆ Digital I/O
  - 8-bit digital I/O (2x5 pin)
- ◆ Expansion
  - 1 x PCI slot
  - 1 x PCIe x1 slot
  - 1 x PCIe Mini card slot
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Power Supply
  - 1 x External DC power jack (4-pin DIN)
  - 1 x Internal power connector (2x2 pin)
  - 12V only DC input, support AT/ATX mode
- ◆ TPM: On-board Infineon SLB9635TT1.2 (Optional)
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System fan (1x3 pin)
- ◆ Power Consumption
  - 12V@1.95A (Intel® Atom™ D525 1.8GHz with two 1 GB DDR3)
  - ◆ Operating Temperature: -10°C ~ 60°C
  - ◆ Storage Temperature: -20°C ~ 70°C
  - ◆ Operating Humidity: 5% ~ 95%, non-condensing
  - ◆ Weight: GW: 800g / NW: 340g
  - ◆ CE/FCC compliant

### Packing List

1 x KINO-PV-D4252/D5252 single board computer	1 x Mini jumper pack
1 x I/O shielding	1 x One Key Recovery CD
1 x RS-232 cable with bracket	1 x QIG
1 x SATA with power cable	1 x Utility CD

### Ordering Information

Part No.	Description
KINO-PV-D5252-L2-R11	Mini-ITX SBC with Intel® Atom™ D525 1.8GHz, DDR3, VGA/18+48 bit LVDS, dual GbE, audio, USB 2.0 and SATA 3Gb/s, RoHS
KINO-PV-D4252-R11	Mini-ITX SBC with Intel® Atom™ D425 1.8GHz, DDR3, VGA/18-bit LVDS, dual GbE, audio, USB 2.0 and SATA 3Gb/s, RoHS
19800-003100-300-RS	Dual port USB cable with bracket, 30mm, P=2.54
19800-004300-100-RS	RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 250mm, P=2.0
19FFD124010HB2A7-000001-RS	CPU fan
32000-023800-RS	PS/2 KB/MS 135mm, P=2.0
32100-192900-RS	One 4-pin (2x2) to one 4-pin (1x4) DC power cable with terminal block
32200-015100-RS	LPT cable, 280mm, P=2.0
34000-000510-RS	30mm higher heatsink
PCIER-K101L-R10	PCIe x1 riser card

# PCIe x1 Riser Card



## PCIER-K101L-R10

Dimensions: 135mm x 31mm

Compatible model list KINO-PV-D4252/D5252

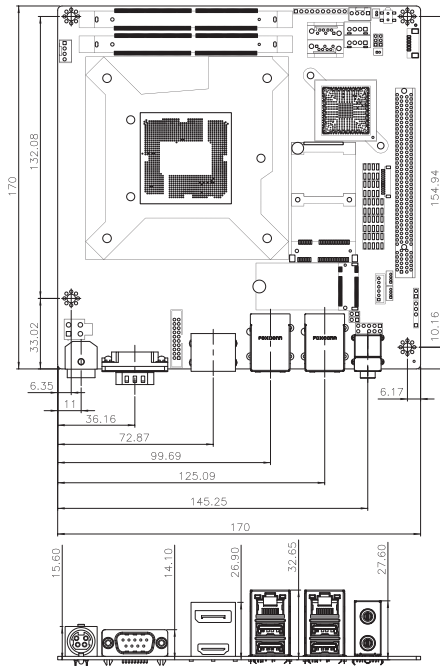
### Packing List

1 x PCIe x1 riser card

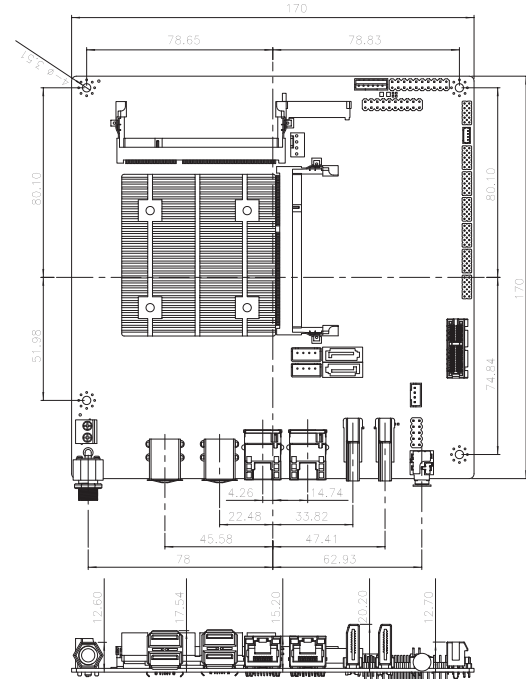
1 x QIG

## Mini-ITX Dimensions (Unit: mm)

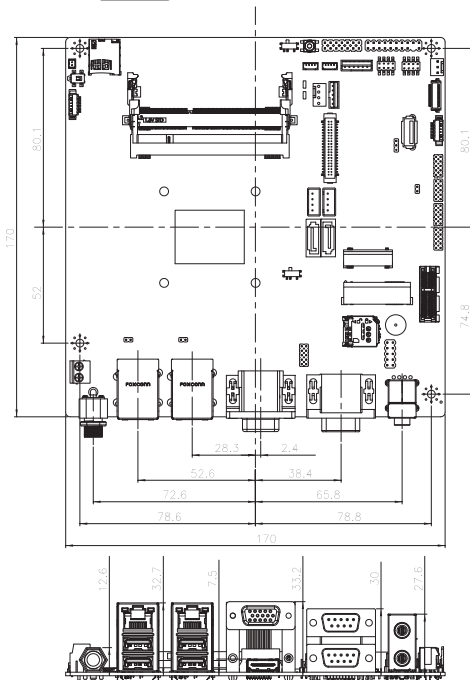
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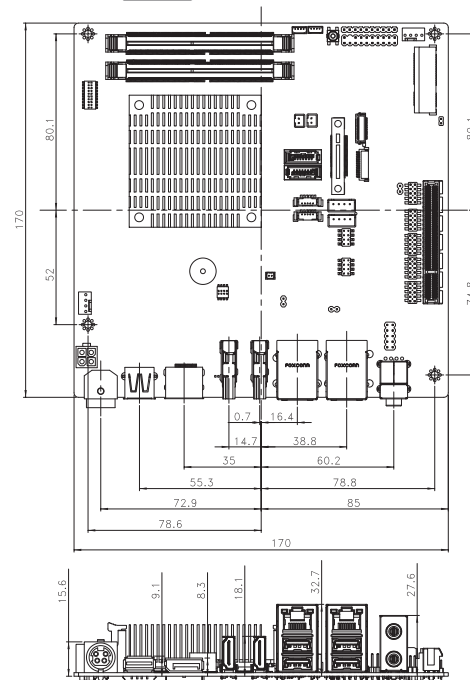
### tKINO-AL **New**



### KINO-DAL **New**



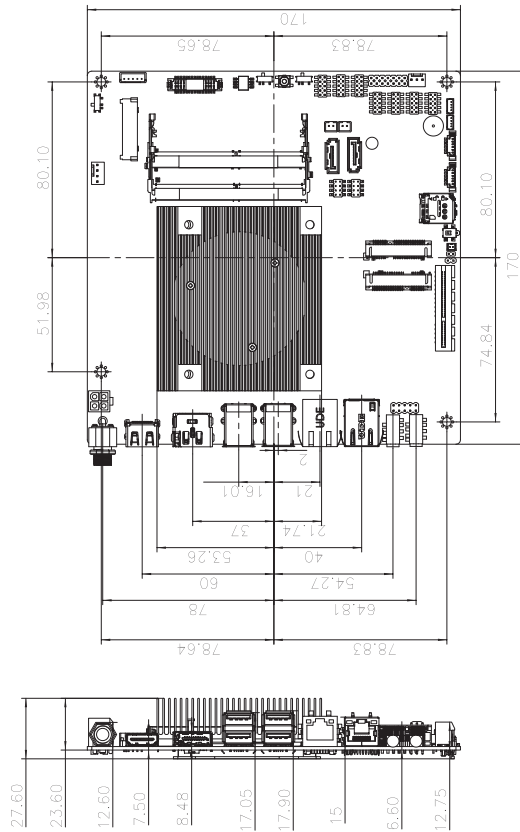
### gKINO-DMF **New**



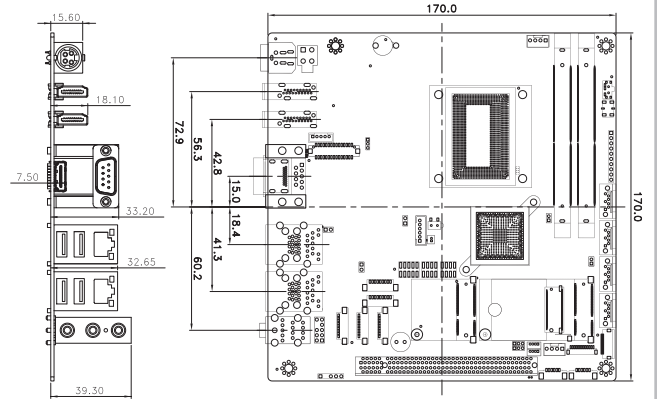


Mini-ITX Dimensions (Unit: mm)

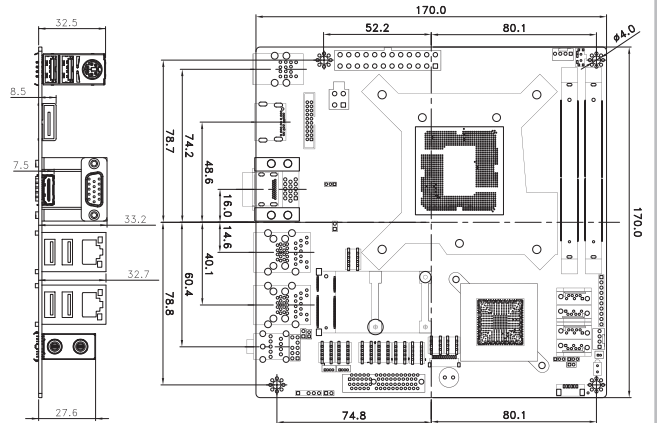
tKINO-ULT3



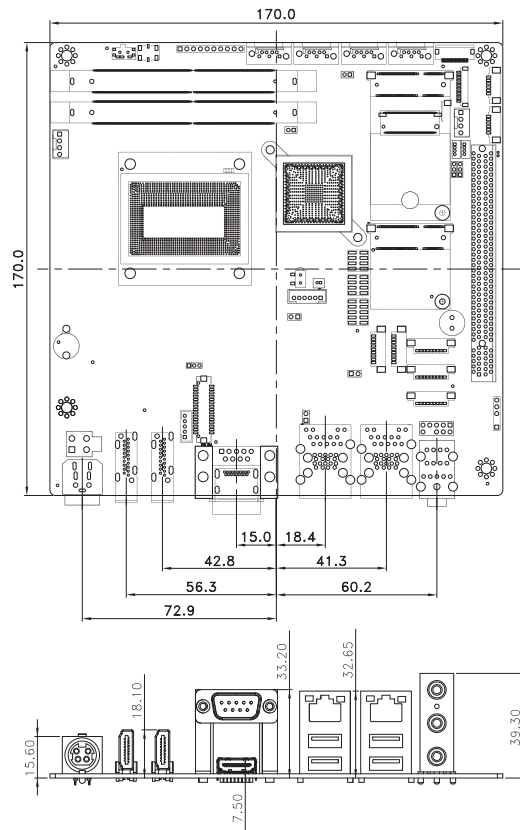
KINO-DQM170



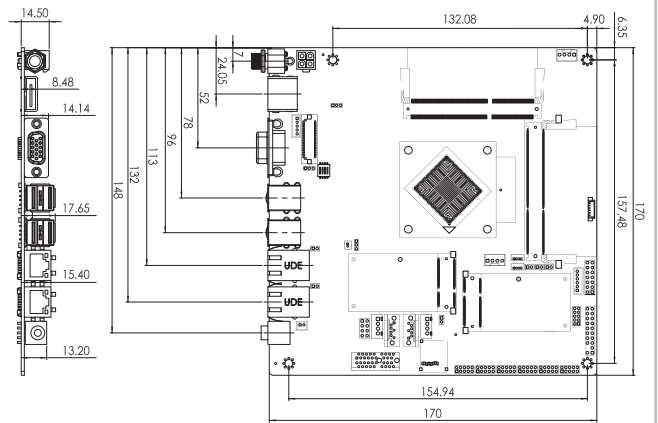
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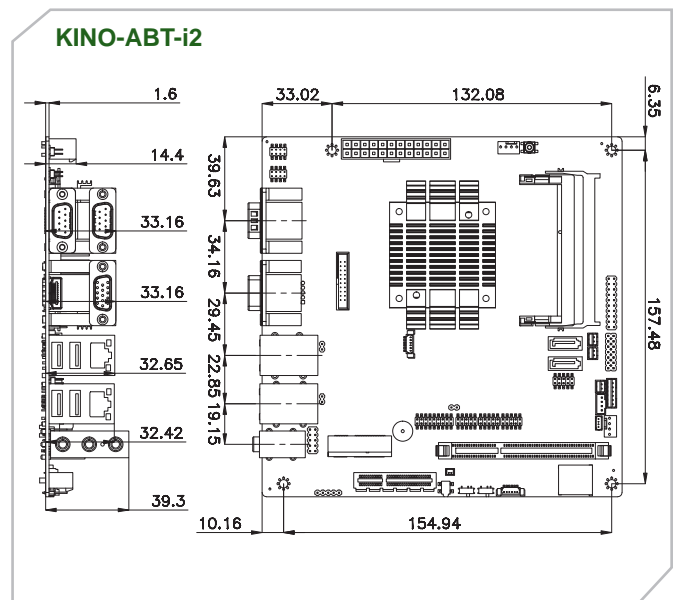
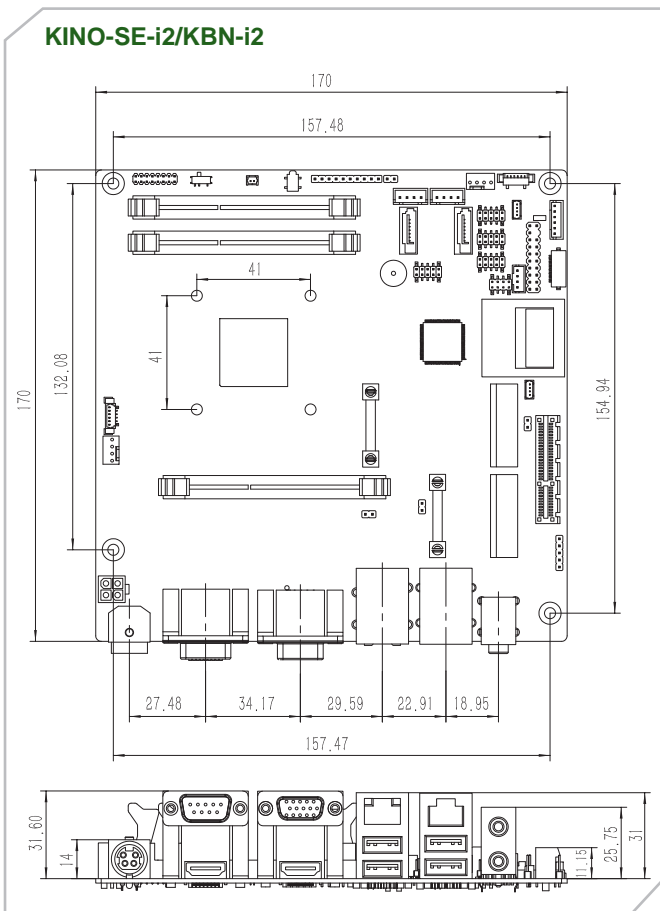
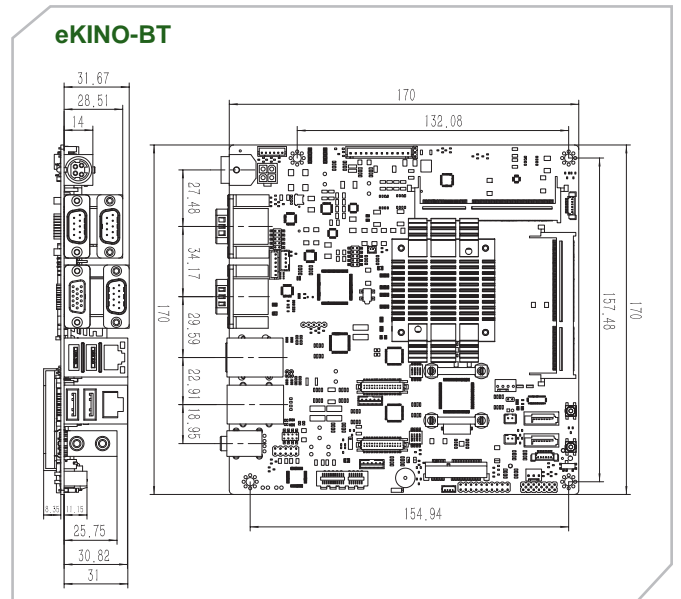
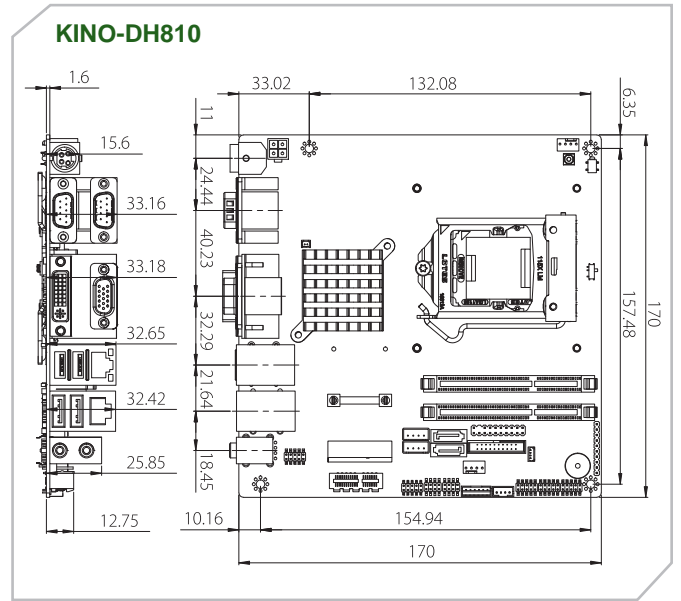
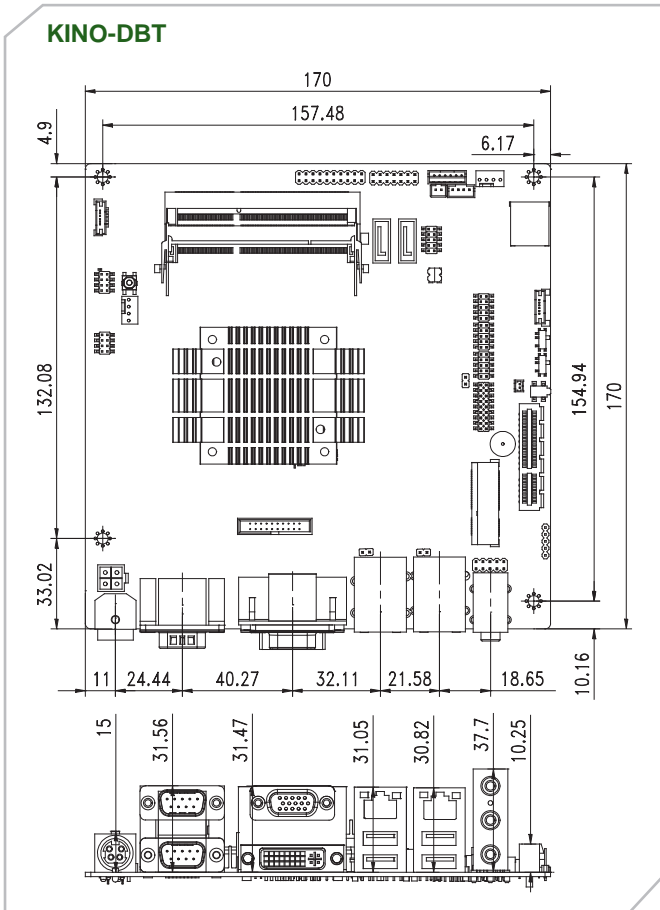
KINO-DCM236



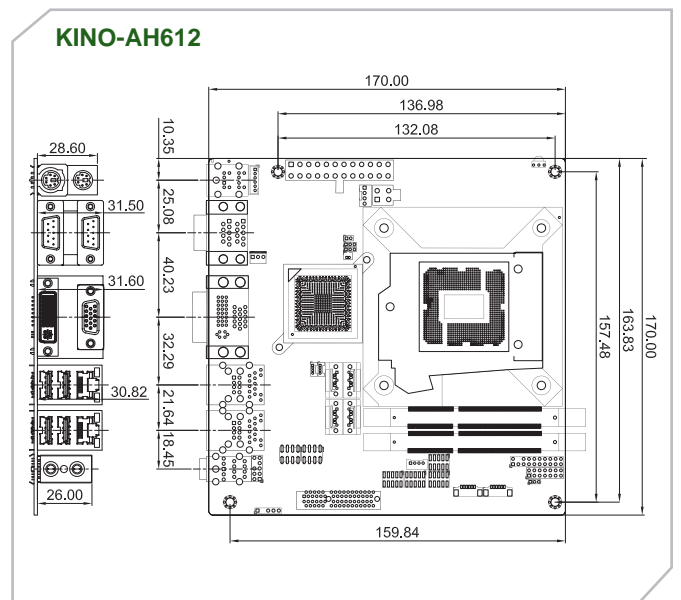
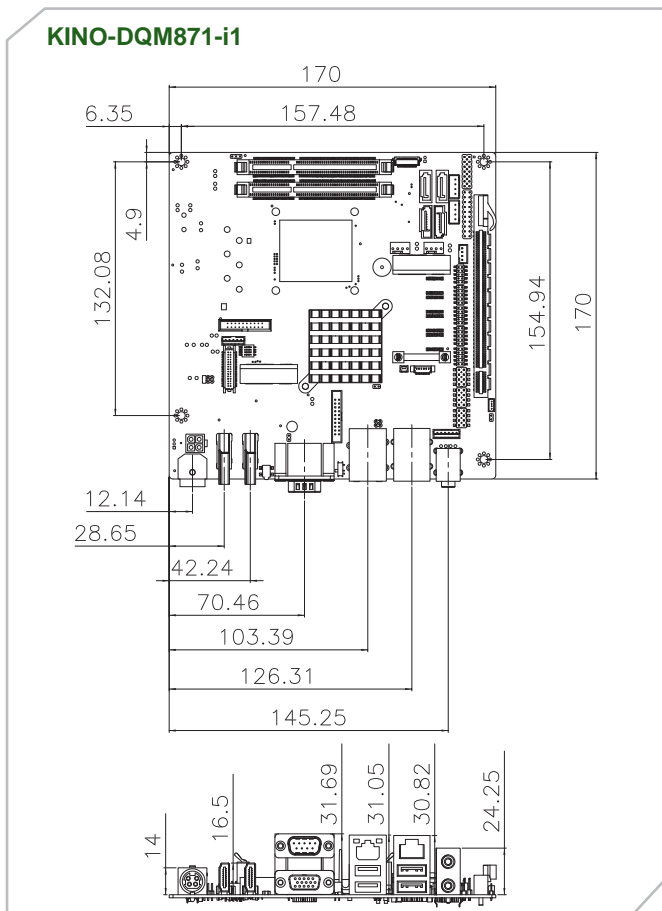
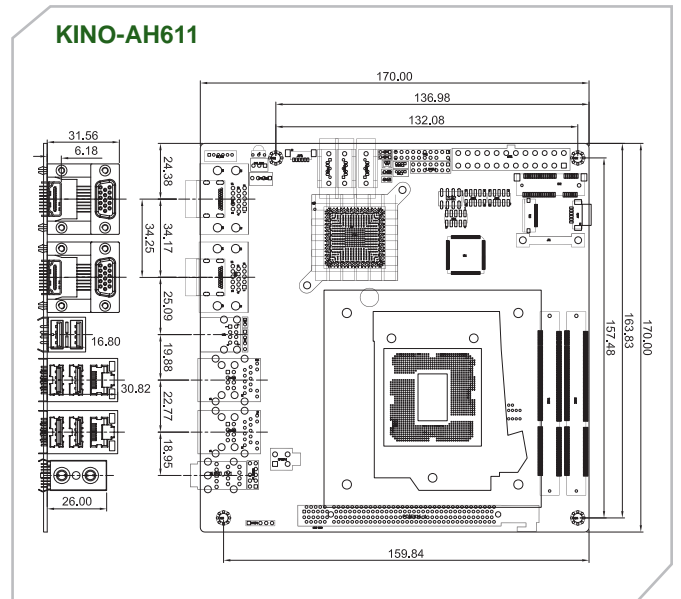
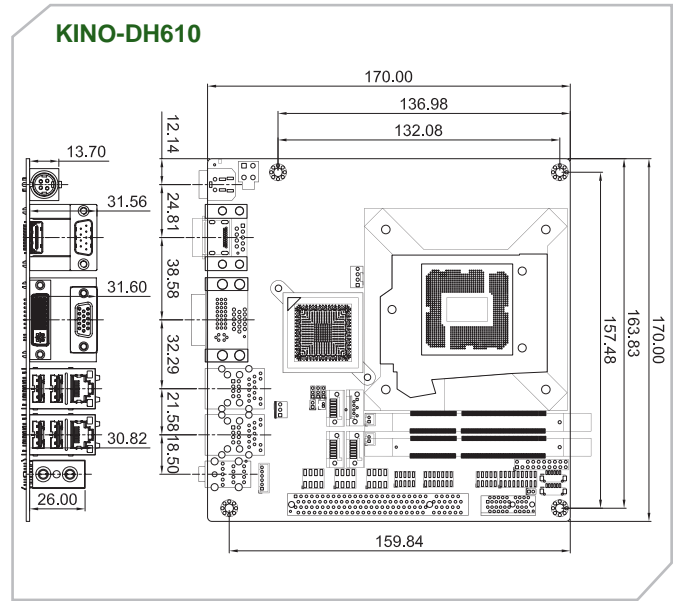
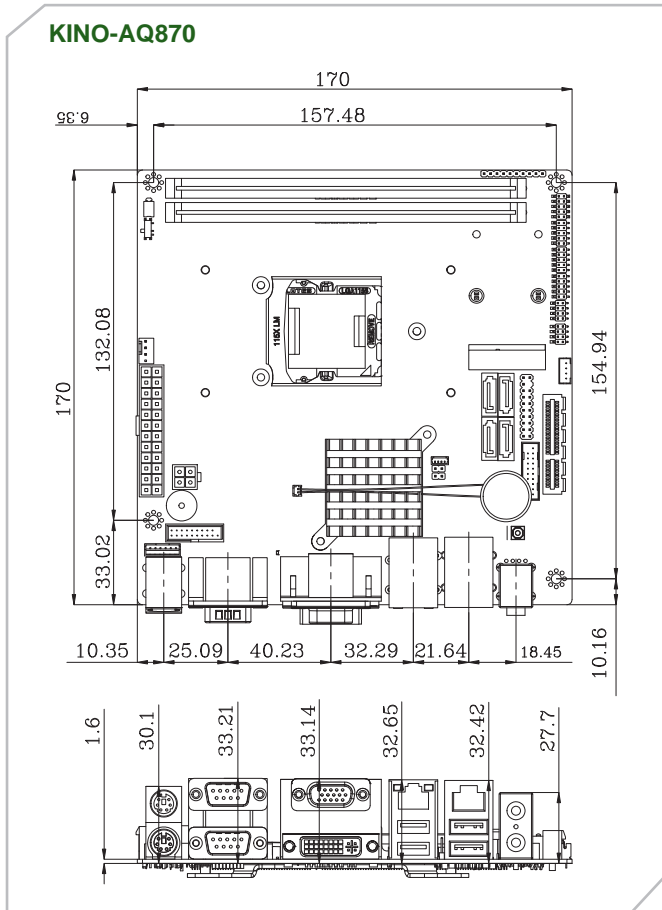
tKINO-BW



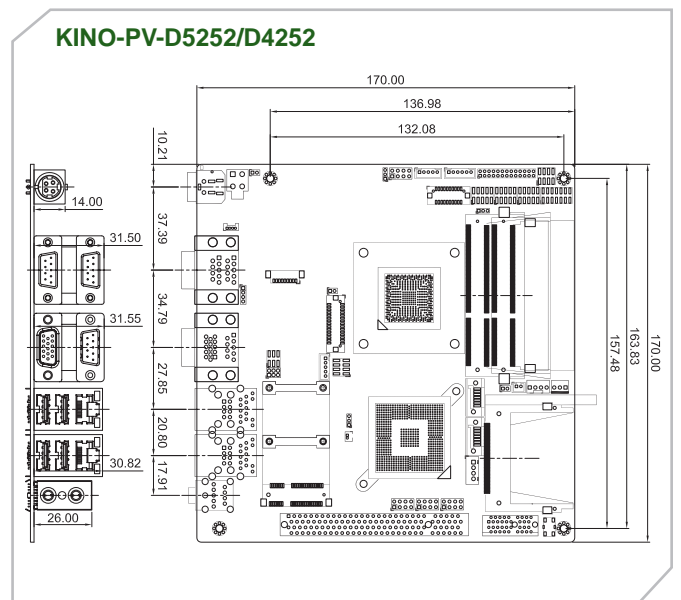
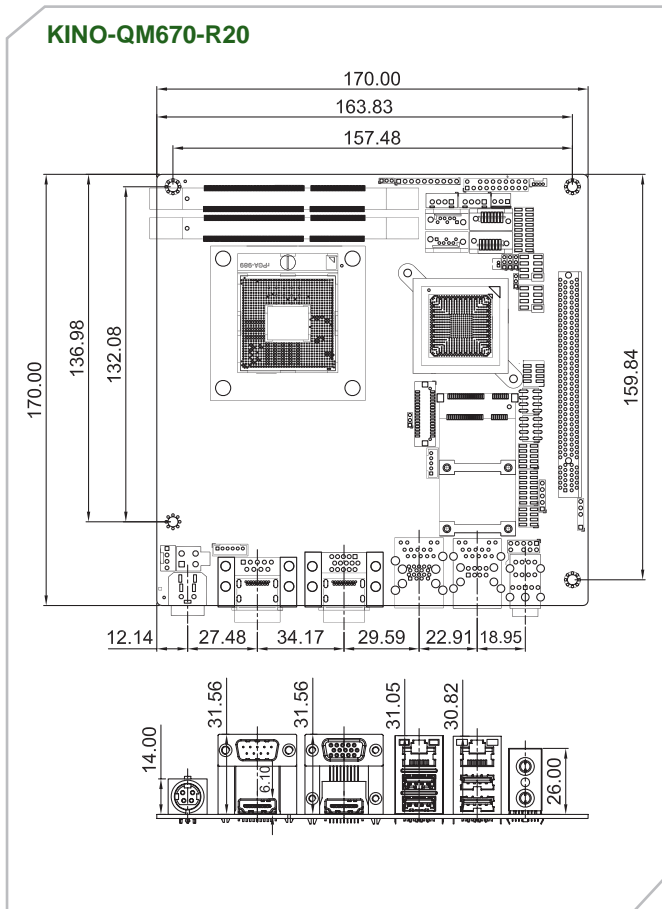
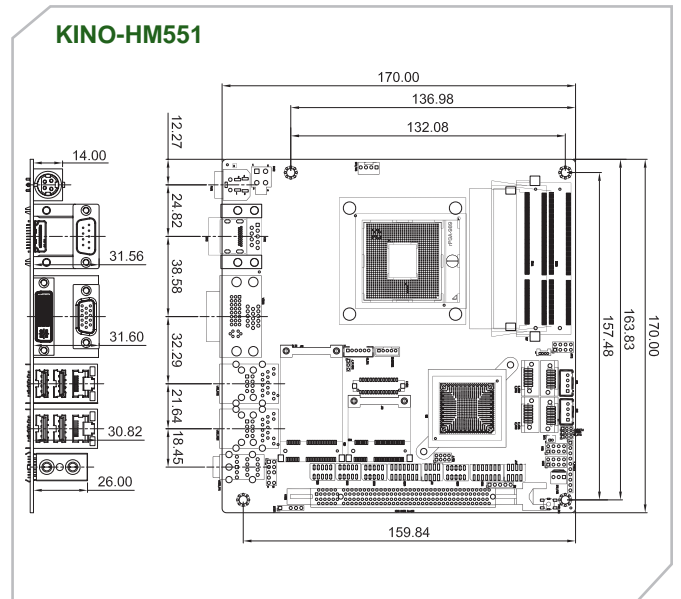
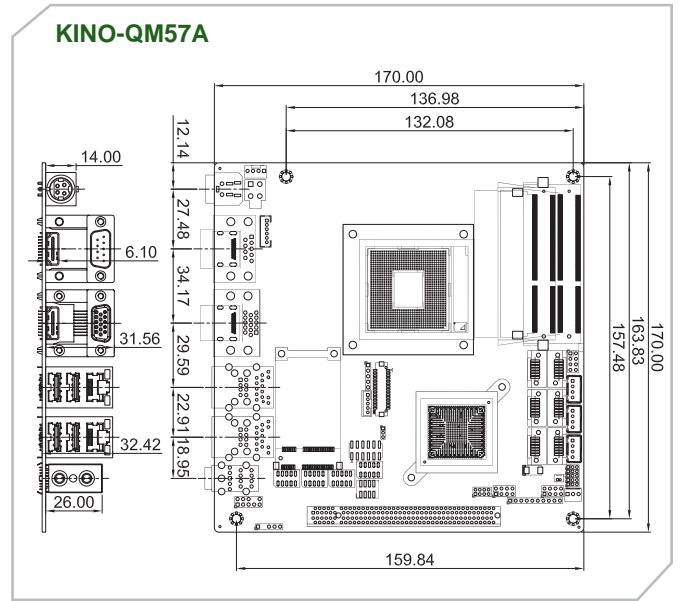
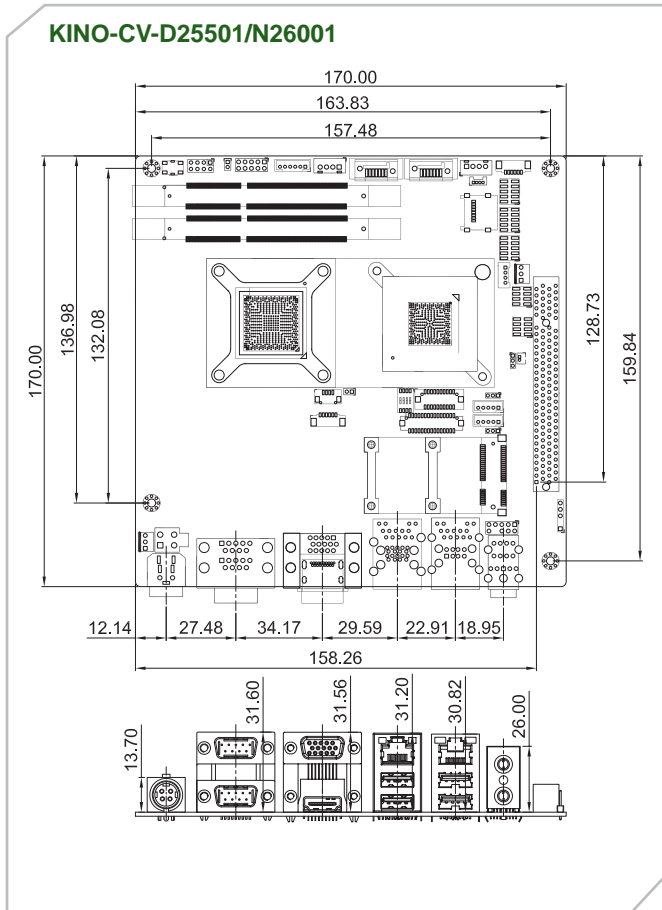
Mini-ITX Dimensions (Unit: mm)



Mini-ITX Dimensions (Unit: mm)



Mini-ITX Dimensions (Unit: mm)



# IEI Embedded Boards

IEI provides various sizes of embedded boards from Pico-ITX (100mm x 72mm) to 5.25" SBC and can meet different applications involving data acquisition, video processing, telecommunications, networking, motion control plus the associated field wiring termination, I/O circuit protection, etc. IEI embedded boards are all with rich rear I/O and multiple I/O expansion options. IEI also provides suitable chassis for our embedded boards, you can easily build feature-rich embedded systems for industrial, medical, military, transportation, and commercial applications.

## IEI Embedded Single Board Computer Form Factors

Ultra compact mainboard form factor for a small footprint  
Embedded PCs, Systems and Appliances



**Pico-ITX**  
100 x 72mm  
HYPER series



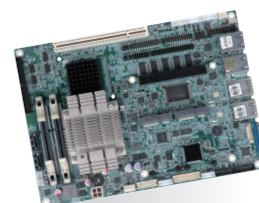
**PC/104**  
96 x 90mm  
PM series



**3.5"**  
146 x 102mm  
WAFER series



**EPIC**  
165 x 115mm  
NANO series



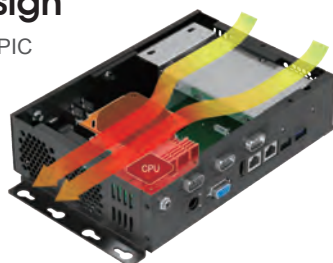
**5.25" / EBX**  
203 x 146mm  
NOVA series

## Two Types of Thermal Solution

IEI provides types of thermal solution for embedded boards with high flexibility. Heatsink and heat spreader design are both with various advantages and meet the needs of different applications.

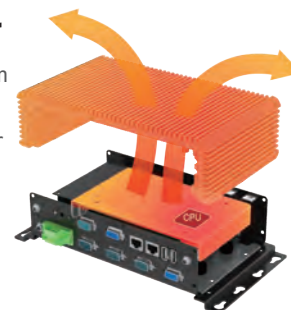
### ■ With heatsink design

- Easy upgrading from same EPIC form factor CPU boards
- Complex I/O functions based on customers' requirements
- Small form factor
- Saves money and space with cables and shared chassis



### ■ With heat spreader

- Heat is spreading out from system surface
- Multiple screw mounting holes for easy chassis design
- Possibility of totally enclosed design



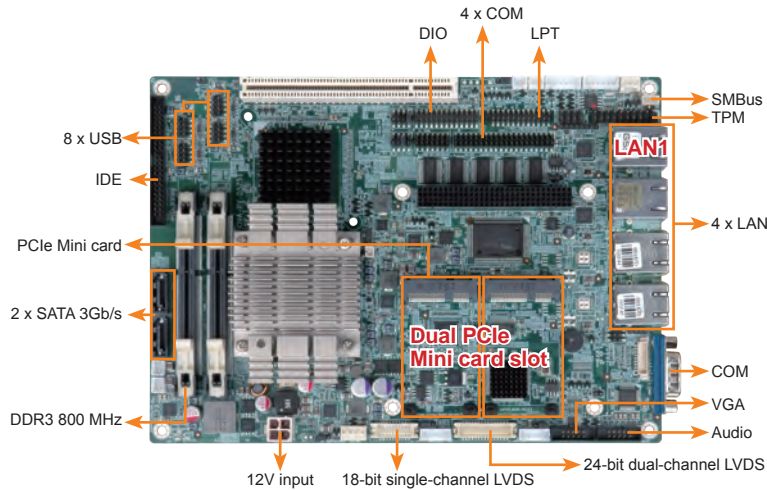
## Embedded System Mapping

	ECN		ECW	uIBX
<b>Embedded System</b>	ECN-380	ECN-360A	ECW-281B	uIBX-230
<b>Model</b>	NANO-QM871 NANO-QM770	NANO-ULT3 NANO-HM651 NANO-CV-D25502	WAFER-BT-1 WAFER-CV-D25501	HYPER-BT

	EBC		
<b>Embedded System</b>	EBC-2200	EBC-2100	EBC-1100
<b>Model</b>	NANO-BT-1 NANO-QM871-1	NANO-LX	WAFER-BT-E38001W2

## NOVA-PV-D5251

5.25" SBC, Intel® Atom™ D425/D525, DDR3, 18-bit+48-bit LVDS/VGA, Dual PCIe Mini, Quad PCIe GbE, USB 2.0, SATA 3Gb/s, Audio, RoHS



Solder side



CF Type II



Dual LVDS  
4 PCIe GbE  
24-bit DIO

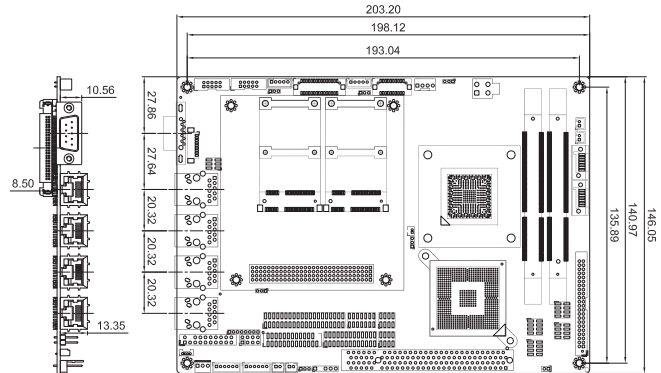
## Specifications

- ◆ CPU  
1.8GHz Intel® Atom™ D525 dual-core processor with 1MB L2 cache
- ◆ Chipset  
Intel® ICH8M
- ◆ BIOS  
UEFI BIOS
- ◆ Memory  
Two 204-pin 800 MHz DDR3 SDRAM SO-DIMM supports up to 4 GB
- ◆ Ethernet  
LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support  
LAN2~4: Realtek RTL8111E PCIe GbE controller
- ◆ Graphics  
GMA 3150  
Graphic core speed 400 MHz for D525
- ◆ External I/O Interface  
1 x RS-232
- ◆ Internal I/O Interface  
1 x CF Type II  
1 x IDE  
1 x RS-232/422/485 (2x5 pin, P=2.0) (Auto flow control)  
2 x SATA 3Gb/s with 5V SATA power connector (no RAID)  
3 x RS-232 for NOVA-PV-D5251-G2L2-R11 (2x5 pin, P=2.0)  
4 x RS-232 for NOVA-PV-D5251-G4-R11 (2x5 pin, P=2.0)  
8 x USB 2.0 (2x4 pin, P=2.0)
- ◆ TPM  
1 x TPM (2x10 pin)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ Expansion  
1 x PCI-104  
2 x Full-size PCIe Mini card slot  
1 x PCI
- ◆ Digital I/O  
24-bit digital I/O (2x15 pin)
- ◆ Display Output  
Dual display supported  
1 x VGA (up to 2048x1536@60Hz)  
1 x 18-bit single-channel LVDS (up to 1366x768@60Hz)  
1 x 24-bit dual-channel LVDS (up to 1920x1080@60Hz)
- ◆ Audio  
Realtek ALC662 HD Audio codec  
1 x Front audio (2x5 pin)
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset
- ◆ Fan Connector  
1 x CPU smart fan (1x4 pin)  
1 x System smart fan (1x3 pin)
- ◆ Power Supply  
12V only DC input  
1 x Internal power connector (2x2 pin)  
Support AT/ATX mode
- ◆ Power Consumption  
12V@1.46A (Intel® Atom™ D525 1.8GHz with two 800 MHz 1 GB DDR3 SO-DIMM)
- ◆ Operating Temperature  
-10°C ~ 60°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Dimensions  
203 mm x 146 mm
- ◆ Weight  
GW: 1000g / NW: 400g
- ◆ CE/FCC compliant

## Features

- 5.25" SBC supports Intel® Atom™ D525/D425 processor
- 800/1066 MHz DDR3 supports up to 4 GB
- VGA/18-bit single-channel/24-bit dual-channel LVDS for dual independent display support
- Quad PCIe Ethernet, two SATA 3Gb/s, and six RS-232 serial port connectors
- TPM V1.2 hardware security function supported by TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Dimensions (Unit: mm)



## Packing List

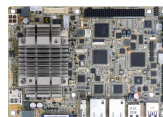
1 x NOVA-PV-D5251 single board computer	
1 x Audio cable	1 x VGA cable
1 x KB/MS cable	1 x Mini jumper pack
1 x Quad port RS-232 cable	1 x One Key Recovery CD
1 x SATA with power cable kit	1 x QIG
1 x USB cable	1 x Utility CD

## Ordering Information

Part No.	Description
NOVA-PV-D5251-G4-R12	5.25" SBC, Intel® Atom™ D525 dual-core 1.8GHz, DDR3, 18-bit LVDS/VGA, dual PCIe Mini, quad PCIe GbE, USB 2.0, SATA 3Gb/s, audio, RoHS
NOVA-PV-D5251-G2L2-R12	5.25" SBC, Intel® Atom™ D525 dual-core 1.8GHz, DDR3, 18+48-bit LVDS/VGA, dual PCIe Mini, dual PCIe GbE, USB 2.0, SATA 3Gb/s, audio, RoHS
19FFD124010HB2A7-000001-RS	CPU fan (40mm x 40mm x 10mm)
19800-004300-100-RS	RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 250mm, P=2.0
32200-000009-RS	44-pin 2.5" IDE cable, 400mm, P=2.0
32200-015100-RS	LPT cable, 280mm, P=2.0
34000-000629-RS	30mm higher heatsink
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# EPIC NANO Selection Guide

**New**



Model Name	NANO-AL/ALW2	NANO-ULT3	NANO-BT-i1/BTW2	NANO-SE/KBN-i1
<b>CPU Socket</b>	On board	On board	On board	On board
<b>CPU Type</b>	Intel® Atom™/Celeron®/Pentium® on-board SoC	Intel® Core™ i7/i5/i3, Celeron® ULT processor	Intel® Atom™, Celeron® SoC	AMD® Embedded G-Series SoC
<b>Chipset</b>	Intel® Atom™/Celeron®/Pentium® on-board SoC	Intel® Core™ i7/i5/i3, Celeron® ULT processor	Intel® Atom™/Celeron® on-board SoC	AMD® Embedded G-Series SoC
<b>Memory</b>	1 x 204-pin 1866/1600 MHz single-channel DDR3L SO-DIMM (system max. 8 GB)	2 x 260-pin 2133/1867 MHz dual-channel DDR4 SO-DIMMs (system max. 32 GB)	1 x 204-pin 1333/1066 MHz single-channel DDR3L SO-DIMM (system max. 8 GB)	1 x 204-pin 1600/1333 MHz single-channel DDR3 & DDR3L SO-DIMM (system max. 8 GB)
<b>Display Interface</b>	Triple independent display 2 x HDMI 1 x 18/24-bit dual-channel LVDS 1 x iDP	Triple independent display 2 x HDMI 1 x 18/24-bit dual-channel LVDS 1 x iDP interface	Dual display supported 1 x VGA 1 x HDMI 1 x 18/24-bit dual-channel LVDS	Dual display supported 1 x VGA 1 x HDMI 1 x 18/24-bit dual-channel LVDS
<b>Ethernet</b>	Dual LAN: Intel® I210-IT/I211-AT PCIe controller	LAN1: Intel® I219-LM PHY with Intel® AMT 11.0 supported LAN2: Intel® I211-AT PCIe GbE Controller	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I211-AT PCIe controller	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I211-AT PCIe controller
<b>iRIS Remote Management Module</b>	N/A		1 x iRIS-1010 slot	
<b>I/O Interface</b>	1 x PS/2 KB/MS 2 x RS-232/422/485 2 x USB 2.0 4 x RS-232 4 x USB 3.0	1 x PS/2 KB/MS 1 x RS-232/422/485 2 x RS-232 2 x USB 2.0 4 x USB 3.0	1 x PS/2 KB/MS 1 x RS-422/485 1 x USB 3.0 3 x RS-232 3 x USB 2.0	1 x PS/2 KB/MS 1 x RS-422/485 2 x USB 3.0 5 x RS-232 6 x USB 2.0
<b>Storage Interface</b>	2 x SATA 6Gb/s with 5V SATA power connector 1 x M.2 (B Key) (SATA only)	2 x SATA 6Gb/s with 5V SATA power connector 1 x 8 GB eMMC (optional)	2 x SATA 3Gb/s with 5V SATA power connector	2 x SATA 6Gb/s with 5V SATA power connector
<b>Audio</b>	Realtek ALC662 HD Audio codec			Realtek ALC892 HD Audio codec
<b>Digital I/O</b>	8-bit programmable digital I/O			
<b>Power Consumption</b>	12V@2.13 A (Intel® Pentium® N4200 CPU with one 8GB 1600MHz DDR3L memory)	12V@2.48A (Intel® Core™ i3-6100U CPU)	12V@1.52A (Intel® Atom™ Processor J1900 CPU with one 8 GB 1333 MHz DDR3L memory)	12V@1.02A (AMD GX-415GA 1.5GHz CPU with 1600 MHz 8 GB DDR3 memory)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset			
<b>Operating Environment</b>	Temperature Range: NANO-AL: -20°C ~ 70°C (-4°F~158°F) NANO-ALW2: -40°C ~ 85°C (-40°F~185°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: NANO-BT-i1: -20°C ~ 60°C (-4°F~140°F) NANO-BTW2: -40°C ~ 85°C (-40°F~185°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: 0°C ~ 60°C (32°F ~ 140°F) Relative Humidity: 5% ~ 95% non-condensing
<b>Expansion Slots</b>	1 x Full/Half-size PCIe Mini slot (w/ Micro SIM holder)	1 x Full-size PCIe Mini card slot (with SIM holder & mSATA support) 1 x Half-size PCIe Mini card slot	1 x Full-size PCIe Mini card slot with mSATA support 1 x PCI-104 slot	1 x Full-size PCIe Mini card slot with mSATA support
<b>CPU Cooler</b>	Heatsink	Heat Spreader	Heatsink	GX-415GA (with heatsink) GX-210HA (with cooler)

# EPIC NANO Selection Guide



Model Name	NANO-QM871-i1	NANO-QM770	NANO-HM651	NANO-HM650
<b>CPU Socket</b>	On board	Socket G2	On board	Socket G2
<b>CPU Type</b>	Intel® Core™ i7/i5/i3, Celeron® Mobile processor	Intel® Core™ i7/i5/i3, Celeron® Mobile processor	Intel® Celeron® 847E 1.1GHz	Intel® Core™ i7/i5/i3/Celeron® mobile processor
<b>Chipset</b>	Intel® QM87	Intel® QM77	Intel® HM65	Intel® HM65
<b>Memory</b>	1 x 204-pin 1600/1333 MHz dual-channel DDR3/DDR3L SO-DIMM (system max. 8 GB)	1 x 204-pin 1600/1333 MHz single-channel DDR3 SO-DIMM (system max. 8 GB)	2 x 204-pin 1333/1066 MHz dual-channel DDR3 SO-DIMMs (system max. 16 GB)	1 x 204-pin 1333/1066 MHz single-channel DDR3/DDR3L SO-DIMM (system max. 8 GB)
<b>Display Interface</b>	Dual display supported 1 x VGA 2 x HDMI 1 x 18/24-bit dual-channel LVDS	Dual display supported 1 x DVI-I 2 x HDMI 1 x 24-bit dual-channel LVDS	Dual display supported 1 x VGA 2 x HDMI 1 x 24-bit dual-channel LVDS	Dual display supported 1 x VGA 1 x HDMI 1 x 24-bit dual-channel LVDS
<b>Ethernet</b>	LAN1: Intel® I217-LM PHY with Intel® AMT 9.0 supported LAN2: Intel® I211-AT PCIe GbE controller	LAN1: Intel® 82583V PCIe controller LAN2: Intel® 82579 PHY with Intel® AMT 8.0 supported	Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support	Dual Realtek RTL8111E PCIe GbE controller with ASF 2.0 support
<b>iRIS Remote Management Module</b>	1 x iRIS-1010 slot	N/A		
<b>I/O Interface</b>	1 x PS/2 KB/MS 1 x RS-422/485 2 x RS-232 2 x USB 3.0 4 x USB 2.0	1 x I <sup>2</sup> C 1 x Infrared 1 x PS/2 KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM connector 2 x RS-232 2 x USB 2.0 4 x USB 3.0	1 x I <sup>2</sup> C 1 x PS/2 KB/MS 1 x RS-422/485 1 x SMBus 1 x TPM connector 2 x RS-232 2 x USB 3.0 4 x USB 2.0	1 x PS/2 KB/MS 1 x RS-422/485 2 x RS-232 8 x USB 2.0
<b>Storage Interface</b>	2 x SATA 6Gb/s with 5V SATA power connector (RAID 0, 1)	2 x SATA 6Gb/s with 5V SATA power connector (RAID 0, 1)	2 x SATA 6Gb/s with 5V SATA power connector (RAID 0, 1)	2 x SATA 6Gb/s with 5V SATA power connector (RAID 0, 1)
<b>Audio</b>	Realtek ALC662 HD Audio codec			
<b>Digital I/O</b>	8-bit programmable digital I/O			
<b>Power Consumption</b>	12V@3.78A (Intel® 4th Gen. 2.0GHz CPU with one 1333MHz DDR3 4 GB memory)	12V@4.89A (Intel® 1.8GHz CPU with 1333 MHz DDR3 4 GB memory)	12V@3.01A (Intel® Celeron® 847E 1.1GHz with 1333 MHz 4 GB memory)	12V@4.85A (2.6GHz Intel® Core™ i5-2540M with 1333 MHz 4 GB DDR3 DIMM)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset			
<b>Operation Environment</b>	Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95% non-condensing			
<b>Expansion Slots</b>	1 x Full-size PCIe Mini card slot	1 x PCIe Mini card slot with mSATA support	1 x PCIe Mini card slot with mSATA support	1 x PCIe Mini card slot with mSATA support 1 x PCI-104 slot
<b>CPU Cooler</b>	XCF-479B-RS / CF-989B-RS-R11	CF-989A-RS-R12 / CF-989B-RS-R11	Heat Spreader	CF-989A-RS-R12 / CF-989B-RS-R11



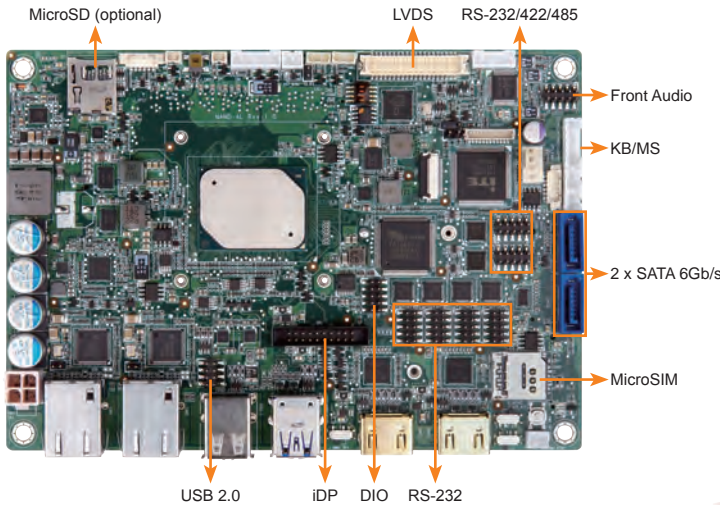
# EPIC NANO Selection Guide



Model Name	NANO-CV-D25502/N26002	NANO-CV-D25501/N26001	NANO-PV-D5251	NANO-PV-D5252	NANO-LX-R12
<b>CPU Socket</b>	On board	On board	On board	On board	On board
<b>CPU Type</b>	Intel® Atom™ D2550 1.86GHz Intel® Atom™ N2600 1.6GHz	Intel® Atom™ D2550 1.86GHz Intel® Atom™ N2600 1.6GHz	Intel® Atom™ D525 1.8GHz	Intel® Atom™ D525 1.8GHz	AMD Geode™ LX800
<b>Chipset</b>	Intel® NM10	Intel® NM10	Intel® ICH8M	Intel® ICH8M	AMD Geode™ LX800 + AMD CS5536
<b>Memory</b>	1 x 204-pin 1066 MHz DDR3/ DDR3L SO-DIMM (system max. 4 GB) for D2550 1 x 204-pin 800 MHz DDR3/ DDR3L SO-DIMM (system max. 2 GB) for N2600	1 x 204-pin 1066 MHz DDR3/ DDR3L SO-DIMM (system max. 4 GB) for D2550 1 x 204-pin 800 MHz DDR3/ DDR3L SO-DIMM (system max. 2 GB) for N2600	1 x 204-pin 800 MHz 4 GB DDR3 SO-DIMM (system max. 4 GB)	1 x 204-pin 800 MHz DDR3 SO- DIMM (system max. 4 GB) for D525/D425 1 x 204-pin 800 MHz DDR3 SO- DIMM (system max. 2 GB) for N455	1 x 200-pin 400/333 MHz DDR SO-DIMM (system max. 1GB)
<b>Display Interface</b>	Dual display supported VGA1: Integrated in Intel® CPU VGA2: Integrated in NXP PTN3392 1 x Single-channel 18-bit (N2600)/24-bit LVDS2 (D2550)	Dual display supported 1 x VGA 1 x Single-channel 18-bit (N2600)/24-bit LVDS2 (D2550) 1 x 24-bit dual-channel LVDS 1 x HDMI	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS 1 x 24-bit dual-channel LVDS	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS 1 x 24-bit TTL (LVDS to TTL)
<b>Ethernet</b>	Dual Realtek RTL8111E PCIe GbE controller with ASF 2.0 support		Dual PCIe GbE by Realtek RT8111E support ASF 2.0	Realtek RTL8111E PCIe GbE controller with ASF 2.0 support	10/100Mbps Realtek RTL8100C
<b>iRIS Remote Management Module</b>	N/A				
<b>I/O Interface</b>	1 x KB/MS 1 x RS-422/485 3 x RS-232 6 x USB 2.0	1 x KB/MS 1 x RS-422/485 1 x TPM connector 2 x USB 3.0 5 x RS-232 6 x USB 2.0	1 x KB/MS 1 x LPT 1 x RS-232/422/485 1 x TPM connector 4 x RS-232 8 x USB 2.0	1 x KB/MS 1 x LPT 1 x RS-232/422/485 4 x RS-232 8 x USB 2.0	1 x Infrared interface 1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 4 x USB 2.0 6 x RS-232
<b>Storage Interface</b>	2 x SATA 3Gb/s	2 x SATA 3Gb/s 1 x microSD	2 x SATA 3Gb/s 1 x CF Type II	2 x SATA 3Gb/s 1 x CF Type II	2 x SATA 1.5Gb/s (RAID 0,1) 1 x IDE 1 x CF Type II
<b>Audio</b>	Realtek ALC662 HD Audio codec		Realtek ALC888 HD Audio codec	Realtek ALC888 HD Audio codec	Realtek ALC203 with AC'97 codec
<b>Digital I/O</b>	8-bit programmable digital I/O				
<b>Power Consumption</b>	12V@1.59A (Intel® dual core D2550 CPU with 1333 MHz 4 GB DDR3 memory) 12V@1.23A (Intel® dual core N2600 CPU with 1333 MHz 4 GB DDR3 memory)	12V@2.1A (1.86GHz Intel® D2550 CPU with DDR3 1333 MHz 2 GB DIMM) 12V@1.72A (1.6GHz Intel® N2600 CPU with DDR3 1333 MHz 2 GB DIMM)	12V@2.21A (Intel® Atom™ D525 with 2 GB 1066 MHz DDR3) 12V@2.11A (Intel® Atom™ D425 with 2 GB 1066 MHz DDR3) 12V@2.00A (Intel® Atom™ N455 with 2 GB 1066 MHz DDR3)	12V@2.16A (Intel® Atom™ D525 with 2 GB 1066 MHz DDR3) 12V@2.08A (Intel® Atom™ D425 with 2 GB 1066 MHz DDR3) 12V@1.99A (Intel® Atom™ N455 with 2 GB 1066 MHz DDR3)	12V@0.92A (AMD LX800, 256 MB 400 MHz DDR)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset				
<b>Operating Environment</b>	-20°C ~ 60°C with free air, -20°C ~ 70°C with force air for D2550 processor -20°C ~ 70°C with free air, -20°C ~ 75°C with force air for N2600 processor			Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: 0°C ~ 60°C (32°F ~ 140°F) Relative Humidity: 5% ~ 95% non- condensing
<b>Expansion Slots</b>	1 x PCIe Mini card slot with mSATA support 1 x Half-size PCIe Mini card slot	1 x PCIe Mini card slot 1 x PC/104-Plus	1 x PCI-104 slot 1 x PCIe Mini card Slot	1 x PCI-104 slot 1 x PCIe Mini card slot	1 x PC/104-Plus
<b>CPU Cooler</b>	Heat Spreader	Heatsink	Heatsink	Heatsink	Heatsink

# NANO-AL ALW2

EPIC SBC supports 14nm Intel® Pentium®/Celeron®/Atom™ on-board SoC with Dual HDMI/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS, -40°C ~ 85°C



## Extreme Environment

**New**



## Specifications

- ◆ SoC
  - Intel® Pentium® N4200 on-board SoC (up to 2.5GHz, quad-core, 2M Cache, TDP=6W)
  - Intel® Celeron® N3350 on-board SoC (up to 2.4GHz, dual-core, 2M Cache, TDP=6W)
  - Intel® Atom™ E3950 on-board SoC (up to 2.0GHz, quad-core, 2M Cache, TDP=12W)
  - Intel® Atom™ E3940 on-board SoC (up to 1.8GHz, quad-core, 2M Cache, TDP=9W)
  - Intel® Atom™ E3930 on-board SoC (up to 1.8GHz, dual-core, 2M Cache, TDP=6W)
- ◆ BIOS
  - AMI UEFI BIOS
- ◆ Memory
  - One 204-pin 1866/1600MHz Single-channel DDR3L SO-DIMM supports up to 8GB
- ◆ Graphics Engine
  - Intel® HD Graphics Gen9 Low Power, 18 Execution Units
  - 4K Codec Decode & Encode for HEVC 4, H.264, VP8, SVC, MVC
- ◆ Display Output
  - Triple independent display
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 2 x HDMI (up to 3840x2160 @ 30Hz)
  - 1 x iDP interface for HDMI. LVDS, VGA, DVI, DP (up to 4096x2304@60Hz) (colay with HDMI1)
- ◆ Ethernet
  - Intel® I211-AT PCIe controller
- ◆ External I/O Interface
  - 2 x USB 3.0
  - 2 x USB 2.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin) 2 x USB 2.0 (2x4 pin, P=2.0)
  - 2 x RS-232/422/485 (2x5 pin, P=2.0) 4 x RS-232 (2x5 pin, P=2.0)
  - 2 x SATA 6Gb/s with 5V SATA power connector (no RAID)
- ◆ SMBus
  - 1 x SMBus (1x4 pin)
- ◆ I²C
  - 1 x I²C (1x4 pin)
- ◆ Audio
  - Realtek ALC662 HD codec
  - 1 x Front audio (2x5 pin)
- ◆ Front Panel
  - 1 x Power LED & HDD LED (1x6 pin)
  - 1 x Power button (1x2 pin)
  - 1 x Reset button (1x2 pin)
- ◆ LAN LED
  - 2 x LAN LED (1x2 pin)
- ◆ Expansion
  - 1 x Full/Half-size PCIe Mini slot (with SIM holder)
  - 1 x M.2 2242 (B key, SATA, USB 2.0, USB 3.0 signal only)
  - 1 x Micro SD (Optional)
- ◆ Digital I/O
  - 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x Smart fan connector (1x4 pin)
- ◆ Power Supply
  - 9V~30V DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Watchdog Timer
  - Software programmable, supports 1~255 sec. system reset
- ◆ Power Consumption
  - 12V@2.13A (Intel® Pentium® N4200 CPU with one 8GB 1600MHz DDR3L memory)
  - 12V@2.81A (Intel® Atom™ x7-E3950 CPU with one 8GB 1600MHz DDR3L memory)
- ◆ Operating Temperature: -20°C ~ 70°C / -40°C ~ 85°C (NANO-AL-ExW2)
- ◆ Storage Temperature: -40°C ~ 85°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 115mm x 165mm
- ◆ Weight: GW: 850g / NW: 350g
- ◆ CE/FCC compliant



## Features

- EPIC SBC supports Intel® 14nm Generation Atom™, Celeron® or Pentium® on-board SoC supports single-channel DDR3L SO-DIMMs
- Triple independent display support
- Wide range 9V~30V DC input design
- COM, USB 3.0, SATA 6Gb/s, M.2 and audio support
- Support wide temperature operation: -40°C ~ 85°C

## Packing List

1 x NANO-AL single board computer with Heatsink	1 x Power cable
1 x SATA with power cable kit	1 x One Key Recovery CD
1 x Screw set (for half-size PCIe Mini card)	1 x QIG
1 x RS-232 cable	1 x Utility CD

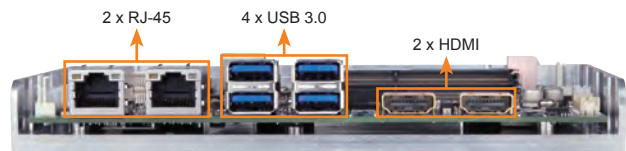
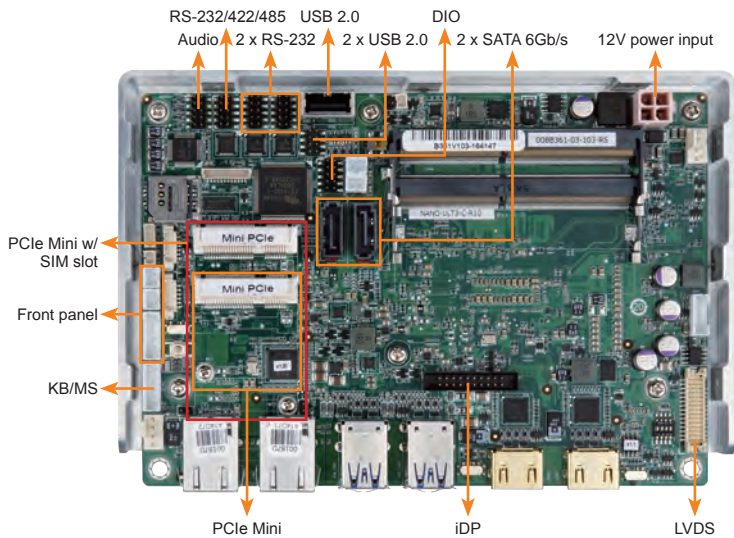
## Ordering Information

Part No.	Description
NANO-AL-N2-R10	EPIC SBC supports Intel® 14nm quad-core Pentium® N4200 2.5GHz on-board SoC with Dual HDMI/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS
NANO-AL-N1-R10	EPIC SBC supports Intel® 14nm dual-core Celeron® N3350 2.4GHz on-board SoC with Dual HDMI/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS
NANO-AL-E3W2-R10**	EPIC SBC supports Intel® 14nm quad-core Atom™ E3950 2.0GHz on-board SoC with Dual HDMI/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS, -40°C ~ 85°C
NANO-AL-E2W2-R10	EPIC SBC supports Intel® 14nm quad-core Atom™ E3940 1.8GHz on-board SoC with Dual HDMI/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS, -40°C ~ 85°C
NANO-AL-E1W2-R10	EPIC SBC supports Intel® 14nm dual-core Atom™ E3930 1.8GHz on-board SoC with Dual HDMI/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, M.2, SATA 6Gb/s, COM, Audio and RoHS, -40°C ~ 85°C
32000-070301-RS	Dual-port USB cable, 210mm, P=2.0
32000-023800-RS	PS/2 KB/MS cable, 135mm, P=2.0
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)

\*\*By order production, MOQ: 100

# NANO-ULT3

EPIC SBC supports Intel® 14nm 6th Generation Mobile Core™ i7/i5/i3 and Celeron® on-board Processor (ULT) with HDMI/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s, mSATA, COM, Audio and RoHS



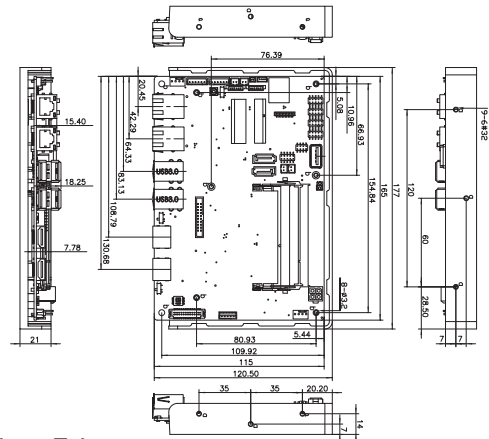
## Specifications

- ◆ SoC
  - 6th generation Intel® mobile ULT on-board SoC
  - Intel® Core™ i7-6600U (up to 3.4GHz, dual-core, 4MB cache, TDP=15W)
  - Intel® Core™ i5-6300U (up to 3.0GHz, dual-core, 3MB cache, TDP=15W)
  - Intel® Core™ i3-6100U (up to 2.3GHz, dual-core, 3MB cache, TDP=15W)
  - Intel® Celeron® processor 3955U (up to 2.0GHz, dual-core, 2MB cache, TDP=15W)
  - Intel® Celeron® processor 3855U (up to 1.6GHz, dual-core, 2MB cache, TDP=15W)
- ◆ BIOS
  - AMI UEFI BIOS
- ◆ Memory
  - Two 260-pin 2133/1866 MHz dual-channel DDR4 non-ECC unbuffered SO-DIMMs support up to 32GB
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 9 Engine with 16 low-power execution units, supporting DX11/12, OpenGL 4.3/4.4 and OpenCL2.x, ES 2.0
- ◆ Display Output
  - Triple independent display
  - 2 x HDMI (up to 4096x2160@24Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60Hz) (colay with HDMI1)
- ◆ Ethernet
  - LAN1: Intel® I219-LM PHY with Intel® AMT 11.0 supported
  - LAN2: Intel® I211-AT PCIe GbE controller
- ◆ External I/O Interface
  - 4 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x 8 GB eMMC (optional)
  - 1 x KB/MS (1x6 pin)
  - 1 x RS-232/422/485 (2x5 pin, P=2.0)
  - 2 x SATA 6Gb/s with 5V SATA power connector (no RAID)
  - 1 x USB 2.0 (180° Type-A)
  - 2 x USB 2.0 (2x4 pin, P=2.0)
  - 2 x RS-232 (2x5 pin, P=2.0)
- ◆ SMBus
  - 1 x SMBus (1x4 pin)
- ◆ Audio
  - Realtek ALC662 HD codec
  - 1 x Front audio (2x5 pin)
- ◆ Front panel
  - 1 x Power LED & HDD LED (1x6 pin)
  - 1 x Power button (1x2 pin)
  - 1 x Reset button (1x2 pin)
- ◆ LAN LED
  - 2 x LAN LED (1x2 pin)
- ◆ Expansion
  - 1 x Full-size PCIe Mini card slot (with SIM holder & mSATA support)
  - 1 x Half-size PCIe Mini card slot
  - \* 3855U belongs to Skylake ULT Base series which supports PCIe Gen 2 signal only.
- ◆ Digital I/O
  - 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x CPU fan connector (1x4 pin)
  - 1 x System fan connector (1x4 pin)
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Power Consumption
  - 12V@2.48A (Intel® Core™ i3-6100U CPU with two 8 GB memory)
  - ◆ Operating Temperature: -20°C ~ 60°C
  - ◆ Storage Temperature: -30°C ~ 70°C
  - ◆ Operating Humidity: 5% ~ 95%, non-condensing
  - ◆ Dimensions: 115mm x 165mm
  - ◆ Weight: GW: 850g / NW: 350g
  - ◆ CE/FCC compliant

## Features

- ◆ EPIC SBC with 6th generation Intel® ULT processor supports dual-channel DDR4 SO-DIMMs
- ◆ Triple independent display support
- ◆ Easy assembly heat spreader for thermal management
- ◆ Full-size PCIe Mini slot with SIM sockets for 3G/LTE expansion
- ◆ COM, USB 3.0, SATA 6Gb/s, mSATA, eMMC 5.0 and audio support
- ◆ IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Dimensions (Unit: mm)



## Packing List

1 x NANO-ULT3 single board computer with heatspreader	1 x Audio cable
1 x Power cable	1 x One Key Recovery CD
1 x RS-232 cable	1 x QIG
1 x SATA with power cable kit	1 x Utility CD

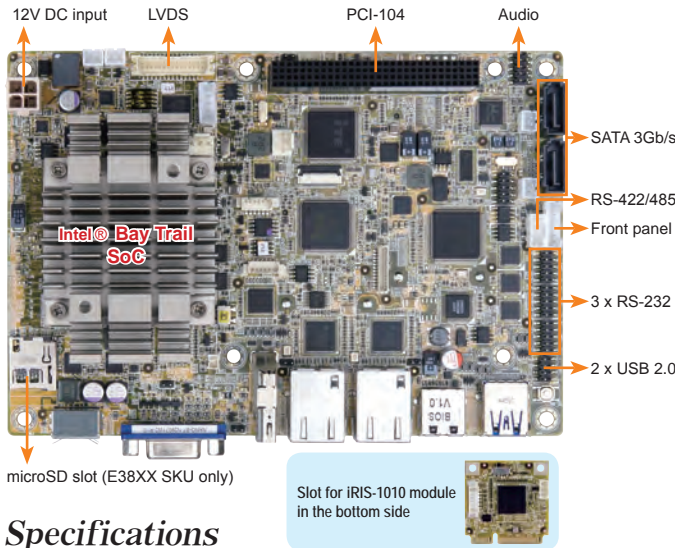
## Ordering Information

Part No.	Description
NANO-ULT3-i7-R10	EPIC SBC supports Intel® 14nm 6th Generation Mobile Core™ i7-6600U (15W) on-board Processor (ULT) with HDMI/LVDS/iDP, Dual PCIe GbE, USB 3.0, Dual PCIe Mini, SATA 6Gb/s, mSATA, COM, Audio and RoHS
NANO-ULT3-i5-R10	EPIC SBC supports Intel® 14nm 6th Generation Mobile Core™ i5-6300U (15W) on-board Processor (ULT) with HDMI/LVDS/iDP, Dual PCIe GbE, USB 3.0, Dual PCIe Mini, SATA 6Gb/s, mSATA, COM, Audio and RoHS
NANO-ULT3-i3-R10	EPIC SBC supports Intel® 14nm 6th Generation Mobile Core™ i3-6100U (15W) on-board Processor (ULT) with HDMI/LVDS/iDP, Dual PCIe GbE, USB 3.0, Dual PCIe Mini, SATA 6Gb/s, mSATA, COM, Audio and RoHS
NANO-ULT3-C-R10	EPIC SBC supports Intel® 14nm 6th Generation Mobile Celeron® 3955U (15W) on-board Processor (ULT) with HDMI/LVDS/iDP, Dual PCIe GbE, USB 3.0, Dual PCIe Mini, SATA 6Gb/s, mSATA, COM, Audio and RoHS
NANO-ULT3-CE-R10*	EPIC SBC supports Intel® 14nm 6th Generation Mobile Celeron® 3855U (15W) on-board Processor (ULT) with HDMI/LVDS/iDP, Dual PCIe GbE, USB 3.0, Dual PCIe Mini, SATA 6Gb/s, mSATA, COM, Audio and RoHS
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0

\*Without full functions support, please refer to user manual.

# NANO-BTW2 BT-i1

EPIC SBC supports 22nm Intel® Atom™/Celeron® on-board SoC with VGA, HDMI, LVDS, Dual Intel® PCIe GbE, USB 3.0, Dual PCIe Mini, SATA 3Gb/s, mSATA, COM, Audio and RoHS



## Specifications

- SoC
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3827 on-board SoC (1.75GHz, dual-core, 1MB cache, TDP=8W)
  - Intel® Atom™ E3826 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=7W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
  - Intel® Atom™ E3815 on-board SoC (1.46GHz, single-core, 512KB cache, TDP=5W)
  - Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Celeron® N2930 on-board SoC (1.83GHz, quad-core, 2MB cache, TDP=7.5W)
  - Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.3W)
- BIOS: AMI UEFI BIOS
- Memory
  - One 204-pin 1333/1066 MHz single-channel unbuffered DDR3L SDRAM SO-DIMM supports up to 8 GB (J1900, N2930, E3845, E3827, E3826, E3825, E3815) or 4 GB (N2807)
- Graphics Engine
  - Intel® HD Graphics Gen 7 Engine with four execution units, supporting DX11.1, OpenCL 4.2 and OpenCL 1.2
- Display Output
  - Dual independent display
  - 1 x VGA (up to 2560x1600@60 Hz)
  - 1 x HDMI (up to 1920x1080@60 Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
- Ethernet
  - » NANO-BT-i1
    - LAN1: Intel® I210-AT PCIe controller with NCSI support
    - LAN2: Intel® I211-AT PCIe controller
  - » NANO-BT-E38XX1W2
    - LAN1: Intel® I210-IT PCIe controller with NCSI support
    - LAN2: Intel® I210-IT PCIe controller
- External I/O Interface
  - 1 x PS/2 KB/MS
  - 1 x USB 2.0
  - 1 x USB 3.0
- Internal I/O Interface
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x SATA 3Gb/s with 5V SATA power connector (no RAID)
  - 2 x USB 2.0 (2x4 pin, P=2.0)
  - 3 x RS-232 (2x5 pin, P=2.0)
- iRIS Remote Management Module: 1 x iRIS-1010 slot
- SMBus: 1 x SMBus (1x4 pin)
- Audio
  - Realtek ALC662 HD Audio codec
  - 1 x Front audio (2x5 pin)
- Front Panel
  - 1 x Power LED & HDD LED (1x6 pin)
  - 1 x Power button (1x2 pin)
  - 1 x Reset button (1x2 pin)
- LAN LED: 2 x LAN LED (1x2 pin)
- Expansion
  - 1 x Full-size PCIe Mini card slot (support mSATA co-lay SATA port 2)
  - 1 x PCI-104 slot (PCI signal)
  - 1 x microSD slot (E38XX SKU only)
- Digital I/O: 8-bit digital I/O (2x5 pin)
- Fan Connector
  - 1 x CPU smart fan (1x3 pin)
  - 1 x System smart fan (1x3 pin)
- Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- Power Consumption
  - 12V@1.52A (Intel® Atom™ processor J1900 with one 8 GB 1333 MHz DDR3 memory)
- Watchdog Timer: Software programmable, support 1~255 sec. system reset
- Operating Temperature: -20°C ~ 60°C, -40°C ~ 85°C (NANO-BT-E38XX1W2)
- Storage Temperature: -30°C ~ 70°C, -40°C ~ 85°C (NANO-BT-E38XX1W2)
- Operating Humidity: 5% ~ 95%, non-condensing
- Dimensions: 115mm x 165mm
- Weight: GW: 850g / NW: 350g
- CE/FCC compliant

## Highly efficient and power optimized multi-format codec engine

### Full HW Acceleration for Video Decoding

H.264, VC1 MPEG2, MVC, VP8, MPEG-4/H.263 MJPEG formats

Bay Trail SoC

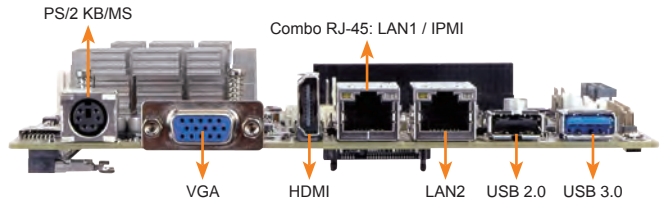


### Video Encoding

» Full HW acceleration for H.264  
» Hybrid HW acceleration of MPEG2



Bay Trail SoC



## Features

- EPIC SBC supports 22nm Intel® Atom™ or Celeron® on-board SoC
- Supports dual independent display with LVDS, VGA and HDMI
- 1.35V DDR3L 1333/1066 MHz SDRAM support up to 8 GB
- Support IPMI 2.0 with iRIS-1010 module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x NANO-BT single board computer with heatsink	
1 x Power cable	1 x One Key Recovery CD
2 x RS-232 cable	1 x QIG
2 x SATA with power cable kit	1 x Utility CD

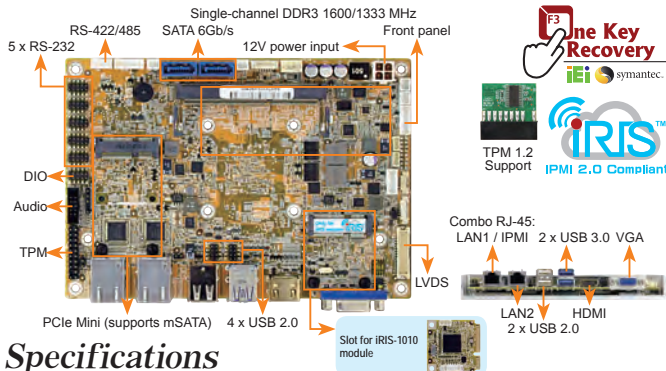
## Ordering Information

Part No.	Description
NANO-BT-E38451W2-R11	EPIC SBC supports Intel® 22nm quad-Core Atom™ E3845 1.91GHz (10W) on-board SoC with VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, Dual PCIe Mini, SATA 3Gb/s, mSATA, COM, audio and RoHS, -40~85°C
NANO-BT-E38XX1W2-R11**	EPIC SBC supports Intel® 22nm single-Core Atom™ E381XX on-board SoC with VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, Dual PCIe Mini, SATA 3Gb/s, mSATA, COM, audio and RoHS, -40~85°C
NANO-BT-i1-J1900-R11	EPIC SBC supports Intel® 22nm quad-core J1900 2.0GHz (10W) on-board SoC with VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 3Gb/s, mSATA, COM, iRIS-1010, Audio and RoHS
NANO-BT-i1-N2930-R11	EPIC SBC supports Intel® 22nm quad-core N2930 1.83GHz (7.5W) on-board SoC with VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 3Gb/s, mSATA, COM, iRIS-1010, Audio and RoHS
NANO-BT-i1-N2807-R11	EPIC SBC supports Intel® 22nm dual-core N2807 1.58GHz (4.3W) on-board SoC with VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 3Gb/s, mSATA, COM, iRIS-1010, Audio and RoHS
NANO-BT-i1-E38XX1-R11**	EPIC SBC supports Intel® Atom™ E38XX on-board SoC with VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 3Gb/s, mSATA, COM, iRIS-1010, Audio and RoHS
NANO-BT-J19001-ECO-R10	Intel® 22nm Quad-Core J1900 2.0GHz (10W) on-board SoC with VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA, mSATA, COM, Audio, ECO packing and RoHS (10 pcs/pack)
iRIS-1010-R10	IPMI 2.0 adapter card with AST1010 BMC chip (w/o KVM over IP function) for PCIe Mini socket interface
32001-008600-200-RS	Dual-port USB 2.0 cable, 210mm, P=2.0
32006-000300-100-RS	PS/2 KB/MS Y-cable without bracket, 140mm/120mm
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0

\*\*By order production, MOQ: 100

# NANO-SE-i1/KBN-i1

EPIC SBC supports AMD® Embedded G-Series SoC with VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s, mSATA, COM, iRIS-1010 and RoHS



## Specifications

- ♦ SoC
  - » AMD® Embedded G-Series "Steppe Eagle" SoC GX-424CC on-board Soc (2.4GHz, quad-core, 2MB cache, TDP=25W)
  - GX-412HC on-board Soc (1.2GHz, quad-core, 2MB cache, TDP=7W)
  - GX-212JC on-board Soc (1.2GHz, dual-core, 1MB cache, TDP=6W)
  - GX-411GA on-board Soc (1.0GHz, quad-core, 2MB cache, TDP=15W)
  - GX-209HA on-board Soc (1.0GHz, dual-core, 1MB cache, TDP=9W)
  - » AMD® Embedded G-Series "eKabini" SoC GX-415GA on-board Soc (1.5GHz, quad-core, 2MB cache, TDP=15W)
  - GX-210HA on-board Soc (1.0GHz, dual-core, 1MB cache, TDP=9W)
  - GX-420CA on-board Soc (2.0GHz, quad-core, 2MB cache, TDP=25W)
  - GX-217GA on-board Soc (1.65GHz, dual-core, 1MB cache, TDP=15W)
  - » AMD® Embedded G-Series "LX" SoC GX-218GL on-board Soc (1.8GHz, dual-core, 1MB cache, TDP=15W)
  - GX-215GL on-board Soc (1.5GHz, dual-core, 1MB cache, TDP=15W)
  - GX-210KL on-board Soc (1.5GHz, dual-core, 1MB cache, TDP=4.5W)
- ♦ BIOS: AMI UEFI BIOS
- ♦ Memory: One 204-pin 1600/1333 MHz single-channel DDR3 & DDR3L SDRAM unbuffered SO-DIMM slot supports up to 8 GB
- ♦ Graphics Engine
  - Support DX11.1, OpenGL 4.1 and OpenCL 1.2
  - UVD4.2 decode for H.264, MPEG2/4, VC1, MVC
  - VCE 2.0 encode for H.264, VCE
- ♦ Display Output
  - Dual independent display
  - 1 x VGA (up to 2048x1536@60Hz)
  - 1 x HDMI (up to 3840x2160@60Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
- ♦ LAN LED: 2 x LAN LED (1x2 pin)
  - ♦ Ethernet
    - LAN1: Intel® I210-AT PCIe controller with NCSI support
    - LAN2: Intel® I211-AT PCIe controller
  - ♦ External I/O Interface
    - 2 x USB 2.0
    - 2 x USB 3.0
  - ♦ Internal I/O Interface
    - 1 x KB/MS (1x6 pin)
    - 4 x USB 2.0 (2x4 pin, P=2.0)
    - 1 x RS-422/485 (1x4 pin, P=2.0)
    - 5 x RS-232 (2x5 pin, P=2.0)
    - 2 x SATA 6Gb/s with 5V SATA power connector (no RAID)
  - ♦ iRIS Remote Management Module
    - 1 x iRIS-1010 slot (NANO-GLX-2101-R10 support by request)
  - ♦ TPM: 1 x TPM (2x10 pin)
  - ♦ SMBus: 1 x SMBus (1x4 pin)
  - ♦ I²C: 1 x I²C (1x4 pin)
  - ♦ Audio
    - Realtek ALC892 HD Audio codec
    - 1 x Front audio (2x5 pin)
    - 1 x S/PDIF (1x4 pin)
  - ♦ Front Panel
    - 1 x Power LED & HDD LED (1x6 pin)
    - 1 x Power button (1x2 pin)
    - 1 x Reset button (1x2 pin)
  - ♦ Expansion: 1 x Full-size PCIe Mini card slot (supports mSATA co-layer SATA port 2)
  - ♦ Watchdog Timer: Software programmable, support 1~255 sec. system reset
  - ♦ Digital I/O: 8-bit digital I/O (2x5 pin)
  - ♦ Fan Connector: 1 x System smart fan (1x4 pin)
  - ♦ Power Supply: 12V only DC input
    - 1 x Internal power connector (2x2 pin)
    - Support AT/ATX mode
  - ♦ Power Consumption
    - 12V@1.02A (AMD GX-415GA 1.5GHz CPU with 1600 MHz 8 GB DDR3 memory)
  - ♦ Operating Temperature: 0°C ~ 60°C
  - ♦ Storage Temperature: -10°C ~ 70°C
  - ♦ Operating Humidity: 5% ~ 95%, non-condensing
  - ♦ Dimensions: 115mm x 165mm
  - ♦ Weight: GW: 850g / NW: 350g
  - ♦ CE/FCC compliant

## Packing List

1 x NANO-KBN/SE-i1 single board computer with heatspreader	1 x Audio cable
1 x Power cable	1 x One Key Recovery CD
2 x RS-232 cable	1 x QIG
2 x SATA with power cable kit	1 x Utility CD

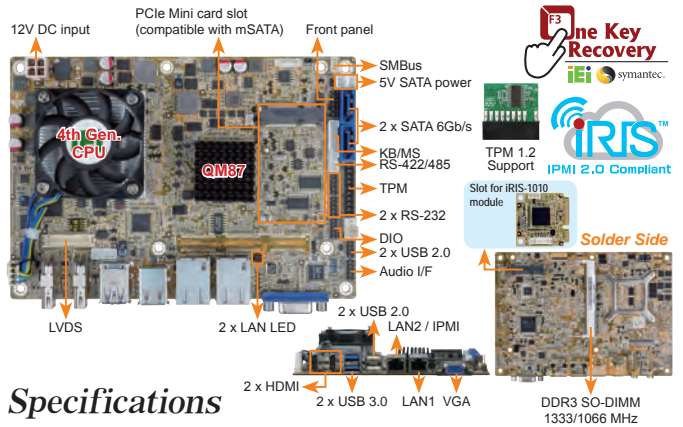
## Ordering Information

Part No.	Description
NANO-SE-i1-4241-R10	EPIC SBC supports AMD® 28nm quad core GX-424CC 2.4GHz (25W) on-board SoC with VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, Dual PCIe Mini, SATA 6Gb/s, mSATA, COM and Audio, iRIS-1010 and RoHS
NANO-KBN-i1-4151-R10	EPIC SBC supports AMD® 28nm quad-core GX-415GA 1.5GHz (15W) on-board SoC with VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s, mSATA, COM, iRIS-1010, HD Audio and RoHS
NANO-KBN-i1-2101-R10	EPIC SBC supports AMD® 28nm dual-core GX-210HA 1.0GHz (9W) on-board SoC with VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s, mSATA, COM, iRIS-1010, HD Audio and RoHS
NANO-GLX-2101-R10	EPIC SBC supports AMD® 28nm dual core GX-210KL 1.0GHz (4.5W) on-board SoC with VGA/HDMI/LVDS, Dual PCIe GbE, USB 3.0, Dual PCIe Mini, SATA 6Gb/s, mSATA, COM and Audio and RoHS
iRIS-1010-R10	IPMI 2.0 adapter card with AST1010 BMC chip (w/o KVM over IP function) for PCIe Mini socket interface
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

Note: Models with other CPUs not listed in the table are requested by MOQ - 100 pcs/lot.

# NANO-QM871-i1

EPIC SBC supports 4th Generation Intel® Mobile Processor with VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, iRIS-1010



## Specifications

- ♦ CPU
  - Intel® mobile Core™ i7-4700EQ on-board processor with Intel® AMT 9.0 support (2.4GHz, quad-core, 6MB cache, TDP=47W)
  - Intel® mobile Core™ i5-4400E on-board processor with Intel® AMT 9.0 support (2.7GHz, dual-core, 3MB cache, TDP=37W)
  - Intel® mobile Core™ i3-4100E on-board processor (2.4GHz, dual-core, 3MB cache, TDP=37W)
  - Intel® mobile Celeron® 2000E on-board processor (2.2GHz, dual-core, 2MB cache, TDP=37W)
  - Intel® mobile Core™ i5-4402E on-board processor with Intel® AMT 9.0 support (1.6GHz, dual-core, 3MB cache, TDP=25W)
  - Intel® mobile Core™ i3-4102E on-board processor (1.6GHz, dual-core, 3MB cache, TDP=25W)
  - Intel® mobile Celeron® 2002E on-board processor (1.5GHz, dual-core, 2MB cache, TDP=25W)
- ♦ Chipset: Intel® QM87
- ♦ BIOS: UEFI BIOS
- ♦ Memory: One 204-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMM supports up to 8 GB
- ♦ Graphics Engine
  - Intel® HD Graphics Gen 7.5 supports DX11.1 and OpenCL 1.2, OpenGL 3.2 Full MPEG2, VC1, AVC Decode
- ♦ Display Output
  - 1 x VGA (up to 1920x1200@60Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 2 x HDMI (up to 2560x1600@60Hz)
- ♦ TPM: 1 x TPM connector (2x10 pin)
- ♦ SMBus: 1 x SMBus (1x4 pin)
  - ♦ Ethernet
    - LAN1: Intel® I217-LM PHY with Intel® AMT 9.0 support
    - LAN2: Intel® I210-AT PCIe controller
  - ♦ External I/O Interface
    - 2 x USB 2.0
    - 2 x USB 3.0
  - ♦ Internal I/O Interface
    - 1 x KB/MS (1x6 pin)
    - 1 x RS-422/485 (1x4 pin, P=2.0)
    - 1 x RS-232 (2x5 pin, P=2.0)
    - 2 x SATA 6Gb/s with 5V SATA power connector (RAID 0, 1 supported)
    - 2 x USB 2.0 (2x4 pin, P=2.0)
  - ♦ iRIS Remote Management Module: 1 x iRIS-1010 slot
  - ♦ Audio
    - Realtek ALC662 HD Audio codec
    - 1 x Front audio (2x5 pin)
  - ♦ Front Panel: 1 x Front Panel (2x5 pin)
  - ♦ LAN LED: 2 x LAN LED (1x2 pin)
  - ♦ Expansion
    - 1 x Full-size PCIe Mini card slot (supports mSATA)
    - 1 x PCIe/104 Type 2 slot (optional)
  - ♦ Watchdog Timer: Software programmable, support 1~255 sec. system reset
  - ♦ Digital I/O: 8-bit digital I/O (2x5 pin)
  - ♦ Fan Connector
    - 1 x CPU smart fan (1x4 pin)
    - 1 x System smart fan (1x4 pin)
  - ♦ Power Supply
    - 12V only DC input
    - 1 x Internal power connector (2x2 pin)
    - Support AT/ATX mode
  - ♦ Power Consumption
    - 12W@4.78A (Intel® Core™ i7-4770EQ 2.4GHz CPU with 4 GB 1333 MHz DDR3 memory)
  - ♦ Operating Temperature: -10°C ~ 60°C
  - ♦ Storage Temperature: -20°C ~ 60°C
  - ♦ Operating Humidity: 5% ~ 95%, non-condensing
  - ♦ Dimensions: 115 mm x 165 mm
  - ♦ Weight: GW: 850g / NW: 350g
  - ♦ CE/FCC compliant

## Packing List

1 x NANO-QM871-i1 single board computer	1 x CPU cooler
1 x Audio cable	1 x One Key Recovery CD
1 x Power cable	1 x QIG
2 x RS-232 cable	1 x Utility CD
2 x SATA with power cable kit	

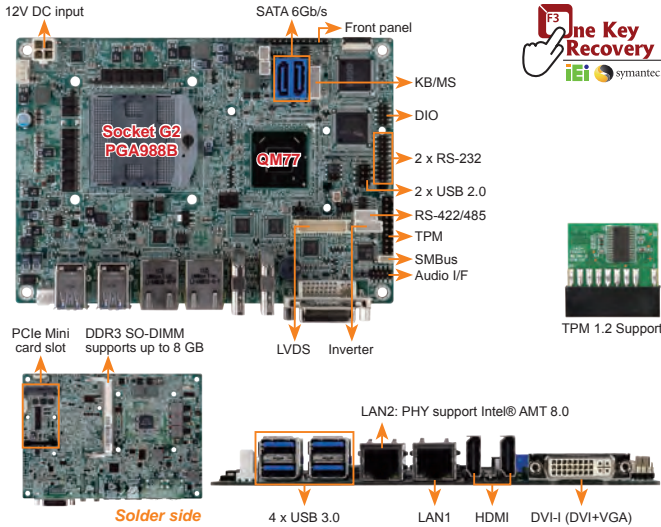
## Ordering Information

Part No.	Description
NANO-QM871-i1-i7-R10	EPIC SBC supports Intel® 22nm Mobile Core™ i7-4700EQ on-board Processor with VGA/Dual HDMI/LVDS, Dual PCIe GbE, AMT 9.0, PCIe Mini, USB 3.0, SATA 6Gb/s, iRIS-1010, Audio and RoHS
NANO-QM871-i1-i5-R10	EPIC SBC supports Intel® 22nm Mobile Core™ i5-4400E on-board Processor with VGA/Dual HDMI/LVDS, Dual PCIe GbE, AMT 9.0, PCIe Mini, USB 3.0, SATA 6Gb/s, iRIS-1010, Audio and RoHS
NANO-QM871-i1-i3-R10	EPIC SBC supports Intel® 22nm Mobile Core™ i3-4100E on-board Processor with VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s, iRIS-1010, Audio and RoHS
NANO-QM871-i1-C-R10	EPIC SBC supports Intel® 22nm Celeron 2000E on-board Processor (37W) with VGA/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s, iRIS-1010, Audio and RoHS
iRIS-1010-R10	IPMI 2.0 adapter card with AST1010 BMC chip (W/O KVM over IP function) for PCIe Mini socket interface
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32001-008600-200-RS	Dual-port USB 2.0 cable, 210mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

Note: Models with other CPUs not listed in the table are requested by MOQ - 100 pcs/lot.

# NANO-QM770

EPIC SBC Supports Socket G2 for Intel® 22nm Mobile CPU, DVI-I/Dual HDMI/LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s and Audio



## Features

- EPIC SBC with Socket G2 for Intel® 22nm mobile processor
- Triple independent display supports with dual HDMI+DVI/dual HDMI+LVDS (HDMI V1.3a compliant)
- 1066/1333/1600 MHz DDR3 SDRAM supports up to 8 GB
- Supports three COM, four USB 3.0, two SATA 6Gb/s and audio
- Intel® GbE LAN with Intel® AMT 8.0 supported
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU: Socket G2 for 3rd generation 22nm Intel® mobile processor
- ◆ Chipset: Intel® QM77
- ◆ BIOS: UEFI BIOS
- ◆ Memory: One 204-pin 1600/1333 MHz single-channel DDR3 & DDR3L SDRAM unbuffered SO-DIMM slot supports up to 8 GB
- ◆ Graphics: Intel® HD Graphics Gen 7 with 12 execution units, DirectX 11, OpenGL 3.1, OpenCL 1.1
- ◆ Display Output: 1 x DVI-I (up to 2048x1536@75Hz), 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz), 2 x HDMI (up to 1920x1200@60Hz)
- ◆ Ethernet: LAN1: Intel® 82583V PCIe controller, LAN2: Intel® 82579 PHY with Intel® AMT 8.0 support
- ◆ External I/O Interface: 4 x USB 3.0
- ◆ Internal I/O Interface: 1 x KB/MS (1x6 pin), 2 x USB 2.0 (2x4 pin, P=2.54), 1 x RS-422/485 (1x4 pin, P=2.0), 2 x RS-232 (2x5 pin, P=2.0), 2 x SATA 6Gb/s with 5V SATA power connector (RAID 0, 1 supported)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Audio: Realtek ALC662 HD codec, 1 x Front audio (2x5 pin)
- ◆ Front Panel: 1 x Front panel (1x10 pin)
- ◆ Expansion: 1 x Full-size PCIe Mini card slot (supports mSATA)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Programmable I/O: 8-bit digital I/O
- ◆ Fan Connector: 1 x CPU smart fan (1x4 pin), 1 x System smart fan (1x3 pin)
- ◆ Power Supply: 12V only DC input, 1 x Internal power connector (2x2 pin), Support AT/ATX mode
- ◆ Power Consumption: 12V@4.89A (Intel® 1.8GHz CPU with one 1333 MHz 4 GB DDR3 SO-DIMM)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 115 mm x 165 mm
- ◆ Weight: GW: 850g / NW: 350g
- ◆ CE/FCC compliant

## Packing List

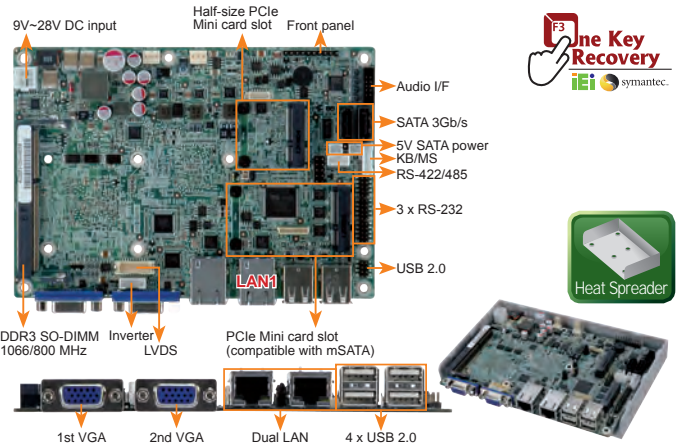
1 x NANO-QM770 single board computer	
1 x Audio cable	1 x Mini jumper pack
1 x Power cable	1 x One Key Recovery CD
2 x RS-232 cable	1 x QIG
2 x SATA with power cable kit	1 x Utility CD

## Ordering Information

Part No.	Description
NANO-QM770-R10	EPIC SBC supports Socket G2 for Intel® 22nm mobile CPU, DVI-I/dual HDMI/LVDS, dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s and Audio
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32000-044300-RS	Dual port USB cable, 210mm, P=2.54
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-989A-RS-R12	CPU cooler for mobile socket-G (PGA988) up to 55W processor, copper, 60 x 60 x 27.6mm, RoHS
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17

# NANO-CV-D25502/N26002

EPIC SBC with Intel® Atom™ D2550 1.86GHz/ N2600 1.6GHz, DDR3, Dual VGA/LVDS, Dual GbE, USB 2.0, Dual PCIe Mini, SATA 3Gb/s, mSATA and Audio



## Features

- EPIC form factor with Intel® Atom™ dual core D2550 1.86GHz/N2600 1.6GHz processor supporting DDR3 memory
- Dual display support by dual VGA and 18/24-bit single-channel LVDS
- 1066/800MHz DDR3 SO-DIMM supports up to 4 GB
- Easy assembly heat spreader for thermal management
- Wide power voltage range supports 9V ~ 28V power input
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU: Intel® Atom™ D2550 (1.86GHz, dual-core, 1MB cache), Intel® Atom™ N2600 (1.6GHz, dual-core, 1MB cache), Intel® Atom™ N2800 (1.86GHz, dual-core, 1MB cache)
- ◆ Chipset: Intel® NM10
- ◆ BIOS: UEFI BIOS
- ◆ Memory: One 204-pin 1066/800 MHz DDR3 SDRAM SO-DIMM slot supports up to 4 GB (D2550/N2800) or 2 GB (N2600)
- ◆ Graphics Engine: GMA 3650 at 640 MHz graphics core speed (for N2550 and N2800), GMA 3600 at 400 MHz graphics core speed (for N2600)
- ◆ Display Output: VGA1 integrated in the CPU (up to 1920x1200@60Hz), VGA2 driver via the NXP PTN3392 (up to 1920x1200@60Hz), 24-bit single-channel LVDS (D2550) (up to 1440x900@60Hz), 18-bit single-channel LVDS (N2600/N2800) (up to 1366x768@60Hz)
- ◆ Ethernet: Dual PCIe LAN controller by Realtek RTL8111E with ASF 2.0 support
- ◆ Audio: Realtek ALC662 HD Audio codec, 1 x Front audio (2x5 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ External I/O Interface: 4 x USB 2.0
- ◆ Internal I/O Interface: 1 x KB/MS (1x6 pin), 2 x RS-422/485 (1x4 pin, P=2.0), 2 x SATA 3Gb/s with 5V SATA power connector, 2 x USB 2.0 (2x4 pin, P=2.0), 3 x RS-232 (2x5 pin, P=2.0)
- ◆ Expansion: 1 x Full-size PCIe Mini card slot (supports mSATA, co-lay with SATA1), 1 x Half-size PCIe Mini card slot
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Fan Connector (smart fan support): 1 x CPU smart fan (1x3 pin), 1 x System smart fan (1x3 pin)
- ◆ Power Supply: 9~28V DC input, 1 x Internal power connector (2x2 pin), Support AT/ATX mode
- ◆ Power Consumption: 12V@1.59A (Intel® Atom™ D2550 dual-core CPU with 1333 MHz 4 GB DDR3 memory), 12V@1.23A (Intel® Atom™ D2600 dual-core CPU with 1333 MHz 4 GB DDR3 memory)
- ◆ Operating Temperature: -20°C ~ 60°C with free air, -20°C ~ 70°C with force air for D2550 processor, -20°C ~ 70°C with free air, -20°C ~ 75°C with force air for N2600/N2800 processor
- ◆ Storage Temperature: -30°C ~ 80°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 115 mm x 165 mm
- ◆ Weight: GW: 850g / NW: 350g
- ◆ CE/FCC compliant

## Packing List

1 x NANO-CV-D25502/N26002 single board computer	
1 x Audio cable	
1 x Heat spreader	1 x Mini jumper pack
1 x Power cable	1 x One Key Recovery CD
1 x RS-232 cable	1 x QIG
1 x SATA with 5V output cable kit	1 x Utility CD

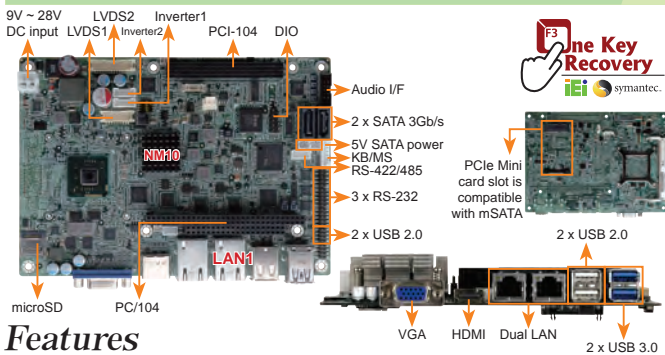
## Ordering Information

Part No.	Description
NANO-CV-D25502-R10	EPIC SBC with Intel® Atom™ D2550 1.86GHz, DDR3, dual VGA/LVDS, dual GbE, USB 2.0, dual PCIe Mini, SATA 3Gb/s, mSATA and Audio
NANO-CV-N26002-R10	EPIC SBC with Intel® Atom™ N2600 1.6GHz, DDR3, dual VGA/LVDS, dual GbE, USB 2.0, dual PCIe Mini, SATA 3Gb/s, mSATA and Audio
NANO-CV-N28002-R10**	EPIC SBC with Intel® Atom™ N2800 1.86GHz, DDR3, dual VGA/LVDS, dual GbE, USB 2.0, dual PCIe Mini, SATA 3Gb/s, mSATA and Audio (by project support, MOQ 100pcs / lot)
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32205-002700-200-RS	RS-232/422/485 cable, 200mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0

\*\*By order production, MOQ: 100

# NANO-CV-D25501/N26001

EPIC SBC with Intel® D2550/N2600, DDR3, VGA/HDMI/Dual LVDS, Dual GbE, USB 3.0, mSATA, SATA 3Gb/s, Audio and RoHS



## Features

- EPIC form factor with Intel® D2550/N2600 dual-core processor supporting DDR3/DDR3L (1.35V) memory
- Wide range 9V ~ 28V DC input design
- Flexible VGA, dual LVDS and HDMI with dual-display support
- Supports PC/104-Plus and PCIe Mini card slot compatible with mSATA SSD storage
- Complete I/O with six USB, two SATA 3Gb/s, four COM and audio
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU
  - Intel® Atom™ D2550 (1.86GHz, dual-core, 1MB cache)
  - Intel® Atom™ N2600 (1.6GHz, dual-core, 1MB cache)
  - Intel® Atom™ N2800 (1.86GHz, dual-core, 1MB cache)
- ◆ Chipset: Intel® NM10
- ◆ BIOS: UEFI BIOS
- ◆ Memory
  - One 204-pin 1066/800 MHz DDR3/DDR3L SDRAM SO-DIMM slot supports up to 4 GB (D2550/N2800) or 2 GB (N2600)
- ◆ Graphics
  - GMA 3650 at 640 MHz graphics core speed (for N2550 and N2800)
  - GMA 3600 at 400 MHz graphics core speed (for N2600)
- ◆ Display Output
  - Dual display supported
  - VGA (up to 1920x1200@60Hz)
  - (Due to Intel GMA driver limitation, the monitor connected to the VGA connector may not have signal to it or become extended desktop after restarting from the graphics driver installation. To solve this problem, press the Ctrl+Alt+F1 hotkey to switch the primary screen to CRT mode.)
  - HDMI (up to 1920x1200@60Hz)
  - 24-bit single-channel LVDS1 (D2550) (up to 1440x900@60Hz)
  - 18-bit single-channel LVDS1 (N2600/N2800) (up to 1366x768@60Hz)
  - 24-bit dual-channel LVDS2 (up to 1920x1200@60Hz)
  - DP to LVDS converter (up to 1920x1200(D2550) or 1600x1200(N2600/N2800)@60Hz)
- ◆ Ethernet
  - Dual LAN by Realtek RTL8111E controllers
- ◆ Audio
  - Realtek ALC662 HD Audio codec
  - 1 x Front audio (2x5 pin)
- ◆ External I/O Interface
  - 2 x USB 3.0
  - 2 x USB 2.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x SATA 3Gb/s with 5V SATA power connector
  - 2 x USB 2.0 (2x4 pin, P=2.0)
  - 3 x RS-232 (2x5 pin, P=2.0)
- ◆ Expansion
  - 1 x Full-size PCIe Mini card slot (supports mSATA, co-lay with SATA1)
  - 1 x PC/104 slot (ISA)
  - 1 x PCI-104 slot (PCI)
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector (smart fan support)
  - 1 x CPU smart fan (1x3 pin)
  - 1 x System smart fan (1x3 pin)
- ◆ Power Supply
  - 9~28V DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Power Consumption
  - 12V@2.1A (Intel® D2550 1.86GHz CPU with 1333 MHz 2 GB DDR3 memory)
  - 12V@1.72A (Intel® N2600 1.6GHz CPU with 1333 MHz 2 GB DDR3 memory)
- ◆ Operating Temperature
  - 20°C ~ 60°C with free air, -20°C ~ 70°C with force air for D2550 processor
  - 20°C ~ 70°C with free air, -20°C ~ 75°C with force air for N2600/N2800 processor
- ◆ Storage Temperature: -30°C ~ 80°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Weight: GW: 670g / NW: 350g
- ◆ CE/FCC compliant

## Packing List

1 x NANO-CV-D25501/N26001 single board computer	
1 x Audio cable	1 x USB cable
1 x Power cable	1 x Mini jumper pack
1 x PS/2 KB/MS cable	1 x One Key Recovery CD
1 x RS-232 cable	1 x QIG
1 x SATA with 5V output cable	1 x Utility CD

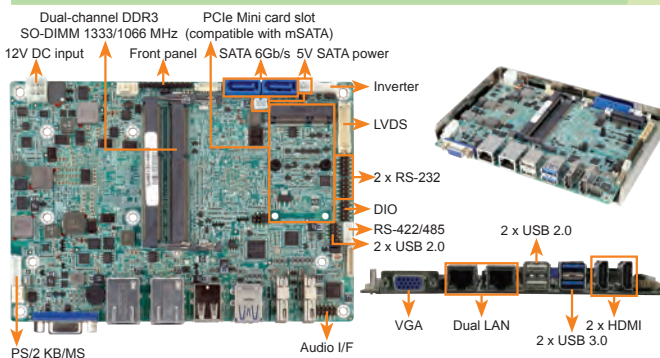
## Ordering Information

Part No.	Description
NANO-CV-D25501-R10	EPIC SBC with Intel® Atom™ D2550 1.86GHz, DDR3, VGA/HDMI/ dual LVDS, dual GbE, USB 3.0, mSATA, SATA 3Gb/s, Audio, RoHS
NANO-CV-N26001-R10	EPIC SBC with Intel® Atom™ N2600 1.6GHz, DDR3, VGA/HDMI/ dual LVDS, dual GbE, USB 3.0, mSATA, SATA 3Gb/s, Audio, RoHS
NANO-CV-N28001-R10**	EPIC SBC with Intel® Atom™ N2800 1.86GHz, DDR3, VGA/HDMI/ dual LVDS, dual GbE, USB 3.0, mSATA, SATA 3Gb/s, Audio and RoHS (by project support, MOQ 100pcs / lot)
19FFD124010HB2A7-000001-RS	CPU fan (40mmx40mmx10mm)
32205-002700-200-RS	RS-232/422/485 cable, 200mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
34000-000629-RS	30mm higher heatsink

\*\*By order production, MOQ: 100

# NANO-HM651

EPIC SBC with on-board Intel® Celeron® Dual Core 847E 1.1GHz CPU, Dual HDMI/VGA/LVDS, Dual GbE, USB 3.0, PCIe Mini, SATA 6Gb/s and Audio



## Features

- EPIC SBC with on-board mobile 32nm Intel® Celeron® dual-core 847E 1.1GHz processor
- Dual HDMI/VGA with dual display support
- Dual-channel 204-pin 1333/1066 MHz DDR3 SO-DIMMs support up to 8 GB
- Easy assembly heat spreader for thermal management
- Supports three COM, four USB 3.0, two SATA 6Gb/s and audio
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU
  - 1.1GHz Intel® Celeron® 847E dual-core processor
- ◆ Chipset
  - Intel® HM65
- ◆ BIOS
  - UEFI BIOS
- ◆ Memory
  - Two 204-pin 1333/1066 MHz dual-channel DDR3 SO-DIMMs support up to 16 GB
- ◆ Graphics
  - Intel® HD Graphics Gen 6 supports DX10.1 and OpenGL 3.0
  - Full MPEG-2, VC1, AVC Decode
- ◆ Display Output
  - 1 x VGA (up to 2048x1536@75Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 2 x HDMI (up to 1920x1200@60Hz)
- ◆ Ethernet
  - Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support
- ◆ Audio
  - Realtek ALC662 HD Audio codec
  - 1 x Front audio (2x5 pin)
- ◆ Front Panel
  - 1 x Front panel (1x10 pin)
- ◆ Expansion
  - 1 x Full-size PCIe Mini card slot (supports mSATA)
- ◆ Digital I/O
  - 8-bit digital I/O (2x5 pin)
- ◆ External I/O Interface
  - 2 x USB 2.0
  - 2 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x RS-232 (2x5 pin, P=2.0)
  - 2 x USB 2.0 (2x4 pin, P=2.0)
  - 2 x SATA 6Gb/s with 5V SATA power connector (RAID 0,1 supported)
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x4 pin)
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Power Consumption
  - 12V@1.88A (Intel® Celeron® with two 1333 MHz 4 GB DDR3 SO-DIMM)
- ◆ Operating Temperature
  - 10°C ~ 60°C
- ◆ Storage Temperature
  - 20°C ~ 70°C
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimensions
  - 115 mm x 165 mm
- ◆ Weight
  - GW: 850g / NW: 350g
- ◆ CE/FCC compliant

## Packing List

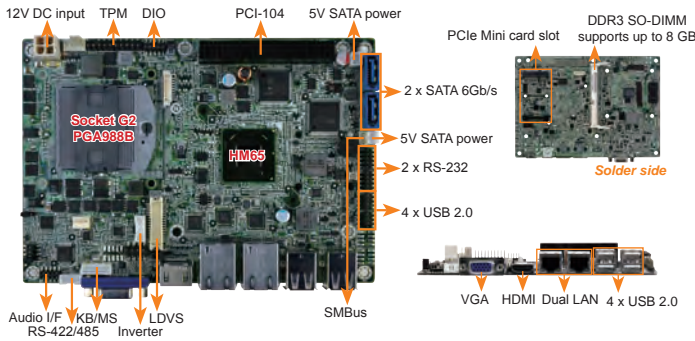
1 x NANO-HM651 single board computer	
1 x Audio cable	1 x Heat spreader
1 x Power cable	1 x Mini jumper pack
1 x SATA with power cable kit	1 x One Key Recovery CD
2 x Plastic shaft for securing half-size PCIe Mini card	1 x QIG
2 x RS-232 cable	1 x Utility CD

## Ordering Information

Part No.	Description
NANO-HM651-847E-R10	EPIC SBC supports Intel® Celeron® dual core 847E 1.1GHz CPU, dual HDMI/VGA/LVDS, dual GbE, USB 3.0, PCIe Mini, SATA 6Gb/s and Audio
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0

# NANO-HM650

EPIC SBC Supports Socket G2 for 2nd Generation Intel® Core™ i7/i5/i3 and Celeron® CPU, VGA/HDMI, Dual PCIe GbE, USB 2.0, PCI-104, SATA 6Gb/s and Audio



## Features

- EPIC SBC with Socket G2 for Intel® 2nd generation Core™ i7/i5/i3 and Celeron® processor
- VGA/24-bit dual-channel LVDS/HDMI for dual display support
- 1066/1333MHz DDR3 SDRAM supported (system max. 8 GB)
- Supports three COM, eight USB 2.0, two SATA 6Gb/s, PCI-104 and audio
- TPM V1.2 hardware security function supported by TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU: Socket G2 for 2nd generation Intel® Core™ i7/i5/i3 and Celeron® mobile processor
- ◆ Chipset: Intel® HM65
- ◆ BIOS: UEFI BIOS
- ◆ Memory: One 204-pin 1333/1066 MHz DDR3 SDRAM SO-DIMM slot supports up to 8 GB
- ◆ Display Output: Dual display supported, 1 x VGA (up to 2048x1536@75Hz), 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz), 1 x HDMI (up to 1920x1200@60Hz)
- ◆ Ethernet: Dual LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support
- ◆ External I/O Interface: 4 x USB 2.0
- ◆ Internal I/O Interface: 1 x KB/MS (1x6 pin), 1 x RS-422/485 (1x4 pin, P=2.0), 2 x RS-232 (2x5 pin, P=2.0), 2 x SATA 6Gb/s with 5V SATA power connector (RAID 0, 1 supported), 8 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Programmable GPIO: 8-bit digital I/O (2x5 pin)
- ◆ Audio: Realtek ALC662 HD Audio codec, 1 x Front audio (2x5 pin)
- ◆ Expansion: 1 x Full-size PCIe Mini card slot, 1 x PCI-104 slot (PCI signal)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Fan Connector: 1 x CPU smart fan (1x4 pin), 1 x System smart fan (1x3 pin)
- ◆ Power Supply: 1 x Internal power connector (2x2 pin), 12V only DC input, support AT/ATX mode
- ◆ Power Consumption: 12V@4.85A (2.6GHz Intel® Core i5-2540M with 1333 MHz 4 GB DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 115 mm x 165 mm
- ◆ Weight: GW: 850g / NW: 350g
- ◆ CE/FCC compliant

## Packing List

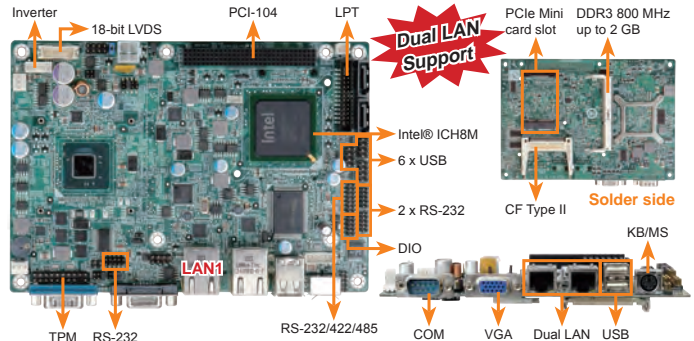
1 x NANO-HM650 single board computer	
1 x Audio cable	1 x Mini jumper pack
1 x Power cable	1 x One Key Recovery CD
2 x RS-232 cable	1 x QIG
2 x SATA with power cable	1 x Utility CD

## Ordering Information

Part No.	Description
NANO-HM650-R11	EPIC SBC supports Socket G2 for Intel® 2nd generation Core™ i7/i5/i3 and Celeron® CPU, VGA/HDMI, USB 2.0, dual PCIe GbE, PCI-104, SATA 6Gb/s and Audio
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
CF-989A-RS-R12	CPU cooler for mobile socket-G up to 55W processor, copper, 60mm x 60mm x 27.6mm

# NANO-PV-D5251

EPIC SBC with Intel® Atom™ D525, DDR3, VGA/LVDS, Dual GbE, USB 2.0, CF Type II, Audio and SATA 3Gb/s, RoHS



## Features

- EPIC SBC with Intel® Atom™ D525/D425/N455 processor
- 800 MHz DDR3 SDRAM supported (system max. 2 GB)
- Support VGA and 18-bit single-channel LVDS with dual display
- Support PCI-104 and PCIe Mini card slot
- Support five COM, eight USB, two SATA 3Gb/s and one CF Type II socket
- TPM V1.2 hardware security function supported by TPM module
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU: Intel® Atom™ D525 (1.8GHz, dual-core, 1MB cache)
- ◆ Chipset: Intel® ICH8M
- ◆ BIOS: UEFI BIOS
- ◆ Memory: One 204-pin 800 MHz DDR3 SDRAM SO-DIMM slot supports up to 4 GB
- ◆ Graphics: GMA 3150, Graphic core speed 400 MHz for D525
- ◆ Display Output: VGA (up to 2048x1536@60Hz), 18-bit single-channel LVDS (up to 1366x768@60Hz)
- ◆ Audio: Realtek ALC888 HD codec, 1 x Front Audio (2x5 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ Expansion: 1 x PCI-104 slot, 1 x PCIe Mini card slot
- ◆ Ethernet: LAN1: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support, LAN2: Realtek RTL8111E PCIe GbE controller
- ◆ External I/O Interface: 1 x PS/2 KB/MS, 2 x USB 2.0
- ◆ Internal I/O Interface: 1 x CF Type II socket, 1 x KB/MS (1x6 pin), 1 x LPT (2x13 pin, P=2.0), 1 x RS-232/422/485 (2x7 pin, P=2.0), 2 x SATA 3Gb/s with 5V SATA power connector, 3 x RS-232 (2x5 pin, P=2.0), 6 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector: 1 x CPU smart fan (1x3 pin), 1 x System smart fan (1x3 pin)
- ◆ Power Supply: 12V only DC input, 1 x Internal power connector (2x2 pin), support AT/ATX mode
- ◆ Power Consumption: 12V@2.21A (Intel® Atom™ D525 with one 2 GB 1066 MHz DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Weight: GW: 670g / NW: 350g
- ◆ CE/FCC compliant

## Packing List

1 x NANO-PV-D5251 single board computer	
1 x Audio cable	2 x RS-232 cable
1 x Dual port USB cable	1 x Mini jumper pack
1 x KB/MS Y cable	1 x One Key Recovery CD
1 x Power cable	1 x QIG
1 x SATA with 5V output cable	1 x Utility CD

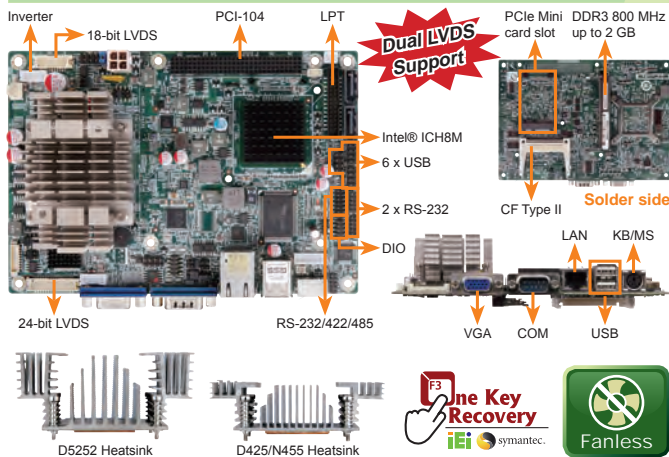
## Ordering Information

Part No.	Description
NANO-PV-D5251-R10	EPIC with Intel® Atom™ D525 1.8GHz, DDR3, VGA/LVDS, Dual GbE, USB 2.0, CF Type II, audio and SATA 3Gb/s, RoHS
19800-004300-100-RS	RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 250mm, P=2.0
19FFD124010HB2A7-000001-RS	CPU fan (40mmx40mmx10mm)
32200-015100-RS	LPT cable, 280mm, P=2.0
32801-000703-500-RS	SATA (7-pin to 7-pin) cable, 500mm
34000-000629-RS	30mm higher heatsink
TPM-IN01-R20	20-pin Infineon TPM module, software management tool, firmware v3.17



# NANO-PV-D4252/N4552/D5252

EPIC SBC with Intel® Atom™ D425/N455/D525, DDR3, VGA/Dual LVDS, PCIe GbE, CF Type II, SATA 3Gb/s



## Features

- EPIC SBC with Intel® Atom™ D525/D425/N455 processor and DDR3 solution
- 12V only single voltage design for AT/ATX mode
- Support dual LVDS
- Support PCI-104 and PCIe Mini card slot
- Support five COM, eight USB, two SATA 3Gb/s and one CF Type II socket
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU
  - Intel® Atom™ D525 (1.8GHz, dual-core, 1MB cache)
  - Intel® Atom™ D425 (1.8GHz, single-core, 512KB cache)
  - Intel® Atom™ N455 (1.66GHz, single-core, 512KB cache)
- ◆ Chipset: Intel® ICH8M
- ◆ BIOS: UEFI BIOS
- ◆ Memory
  - One 204-pin 800 MHz DDR3 SDRAM SO-DIMM slot supports up to 4 GB (D525/D425) or 2 GB (N455)
- ◆ Graphics
  - GMA 3150
  - Graphic core speed 400 MHz for D525/D425
  - Graphic core speed 200 MHz for N455
- ◆ Display Output
  - VGA (up to 2048x1536(D525) or 1400x1050(N455)@60Hz)
  - 18-bit single-channel LVDS (up to 1366x768(D525) or 1024x768(N455)@60Hz)
  - 24-bit dual-channel LVDS (up to 1920x1080@60Hz)
- ◆ Audio
  - Realtek ALC662 HD codec
  - 1 x Front Audio (2x5 pin)
- ◆ TPM (optional): On-board Infineon SLB9635TT1.2
- ◆ Ethernet
  - LAN: Realtek RTL8111E PCIe GbE controller with ASF 2.0 support
- ◆ External I/O Interface
  - 1 x PS/2 KB/MS
  - 1 x RS-232
  - 2 x USB 2.0
- ◆ Internal I/O Interface
  - 1 x CF Type II socket
  - 1 x KB/MS (1x6 pin)
  - 1 x LPT (2x13 pin, P=2.0)
  - 1 x RS-232/422/485 (2x7 pin, P=2.0)
  - 2 x RS-232 (2x5 pin, P=2.0)
  - 2 x SATA 3Gb/s with 5V SATA power connector
  - 6 x USB 2.0 (2x4 pin, P=2.54)
- ◆ Expansion
  - 1 x PCI-104 slot
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x CPU smart fan (1x3 pin)
  - 1 x System smart fan (1x3 pin)
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin) support AT/ATX mode
- ◆ Power Consumption
  - 12V@2.16A (Intel® Atom™ D525 with 2 GB 1066 MHz DDR3)
  - 12V@2.08A (Intel® Atom™ D425 with 2 GB 1066 MHz DDR3)
  - 12V@1.99A (Intel® Atom™ N455 with 2 GB 1066 MHz DDR3)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Weight: GW: 650g / NW: 340g
- ◆ CE/FCC compliant

## Packing List

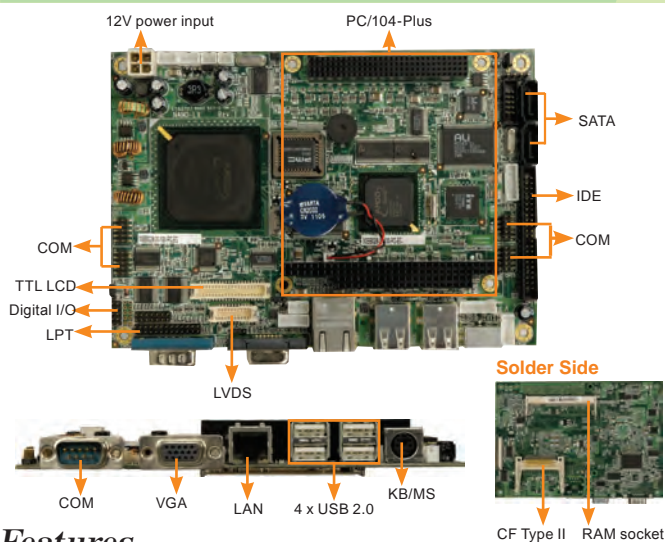
1 x NANO-PV-D4252/N4552/D5252 single board computer	
1 x Audio cable	2 x RS-232 cable
1 x Dual port USB cable	1 x Mini jumper pack
1 x KB/MS Y cable	1 x One Key Recovery CD
1 x Power cable	1 x QIG
1 x SATA with 5V output cable	1 x Utility CD

## Ordering Information

Part No.	Description
NANO-PV-D5252-R11	EPIC SBC with Intel® Atom™ D525 1.8GHz/1MB L2, VGA/Dual LVDS, PCIe GbE, CF Type II, SATA 3Gb/s
NANO-PV-D4252-R11	EPIC SBC with Intel® Atom™ D425 1.8GHz/512KB L2, VGA/Dual LVDS, PCIe GbE, CF Type II, SATA 3Gb/s
NANO-PV-N4552-R11	EPIC SBC with Intel® Atom™ N455 1.66GHz/512KB L2, VGA/Dual LVDS, PCIe GbE, CF Type II, SATA 3Gb/s
19800-004300-100-RS	RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 250mm, P=2.0
19FFD124010HB2A7-000001-RS	CPU fan (40mmx40mmx10mm)
32200-015100-RS	LPT cable, 280mm, P=2.0
32801-000703-500-RS	SATA (7-pin to 7-pin) cable, 500mm

# NANO-LX

EPIC SBC with AMD LX800 CPU, Audio, VGA/LVDS, SATA and RAID 0, 1, JBOD Function Support



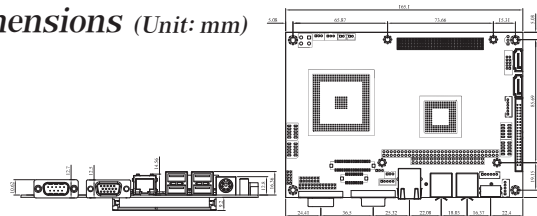
## Features

- EPIC form factor AMD LX800 processor embedded board with RoHS compliant
- DDR 400 MHz SO-DIMM SDRAM up to 1 GB
- VGA, 24-bit TTL, and 18-bit single-channel LVDS
- SATA RAID 0, 1, JBOD function support
- Complete I/O support with two SATA, IDE, PC/104-Plus and four USB 2.0
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU
  - AMD Geode™ LX800 (500 MHz) processor
- ◆ Chipset: AMD Geode LX800 + AMD CS5536
- ◆ BIOS: AWARD
- ◆ System Memory
  - One 200-pin 400/333 MHz DDR SDRAM SO-DIMM supports up to 1GB
- ◆ Ethernet
  - LAN: 10/100Mbps Realtek RTL8100C
- ◆ External I/O Interface
  - 1 x PS/2 KB/MS
  - 1 x RS-232
  - 4 x USB 2.0
- ◆ Internal I/O Interface
  - 1 x CF Type II
  - 1 x IDE
  - 1 x LPT
  - 1 x RS-232/422/485
  - 4 x USB 2.0
  - 5 x RS-232
- ◆ Expansion
  - 1 x PC/104 slot (ISA)
  - 1 x PCI-104 slot (PCI)
- ◆ Audio: Realtek ALC203 with AC'97 codec
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Infrared Interface: 1 x Infrared interface (1x5 pin)
- ◆ Display Output
  - 1 x VGA (up to 1920x1440@60Hz)
  - 1 x 24-bit single-channel TTL (up to 1600x1200@60Hz)
  - 1 x 18-bit single-channel LVDS (up to 1280x1024@60Hz)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Power Supply: 12V only DC input
- ◆ 1 x Internal power connector (2x2 pin) support AT/ATX mode
- ◆ Power Consumption: 12V@0.92A (AMD LX800 with 400 MHz 256MB DDR RAM)
- ◆ Operating Temperature: 0°C ~ 60°C
- ◆ Storage Temperature: -10°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 115 mm x 165 mm
- ◆ Weight: GW: 950g / NW: 350g
- ◆ CE/FCC compliant

## Dimensions (Unit: mm)



## Packing List

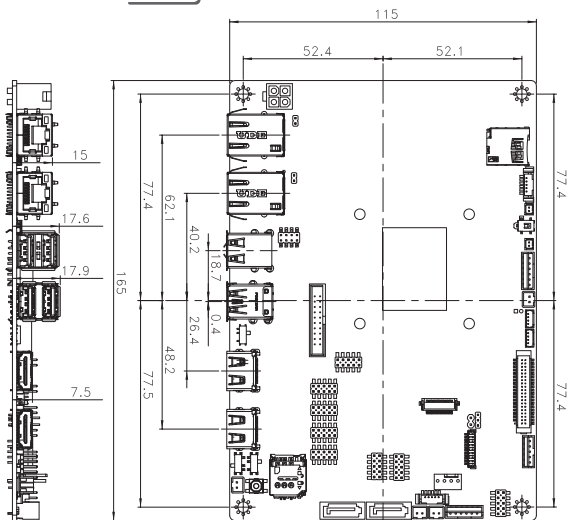
1 x NANO-LX single board computer	2 x RS-232 port cable
1 x Audio cable	2 x SATA cable
1 x IDE flat cable 44p/44p	1 x Mini jumper pack
1 x KB/MS Y cable	1 x One Key Recovery CD
1 x Power cable	1 x QIG
1 x SATA power cable	1 x Utility CD

## Ordering Information

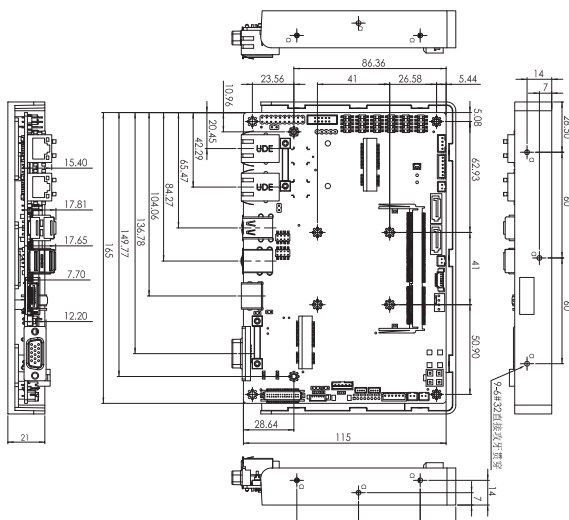
Part No.	Description
NANO-LX-800-R12	EPIC SBC, AMD LX800 500 MHz processor, VGA/LVDS/TTL, LAN, SATA and Audio
32102-022100-100-RS	ATX power cable, 300mm
32200-015100-RS	LPT cable, 280mm, P=2.0
19800-004300-100-RS	RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 250mm, P=2.0

**EPIC NANO Dimensions** (Unit: mm)

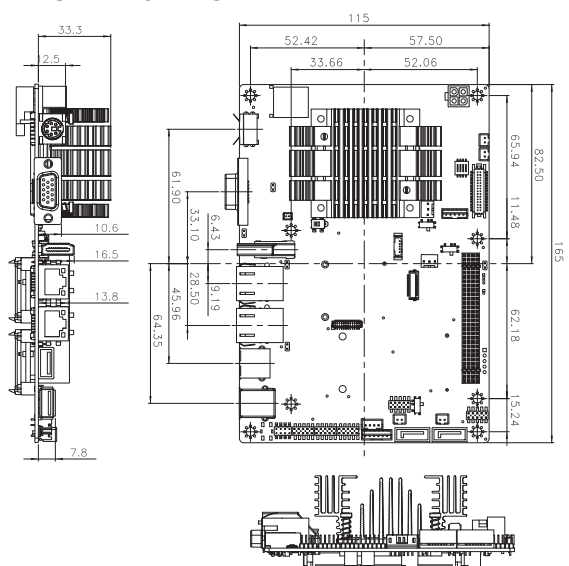
**NANO-AL** *New*



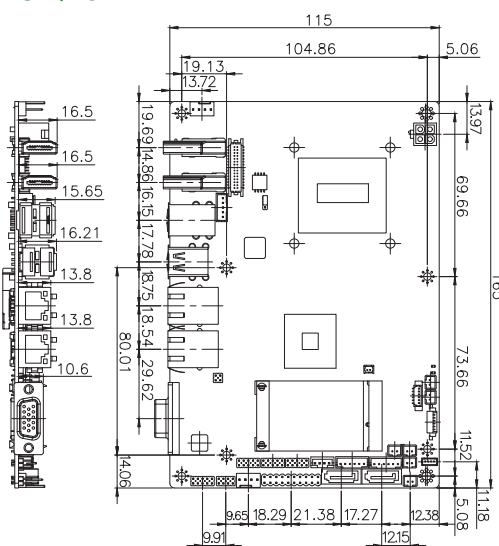
**NANO-SE-i1/NANO-KBN-i1**



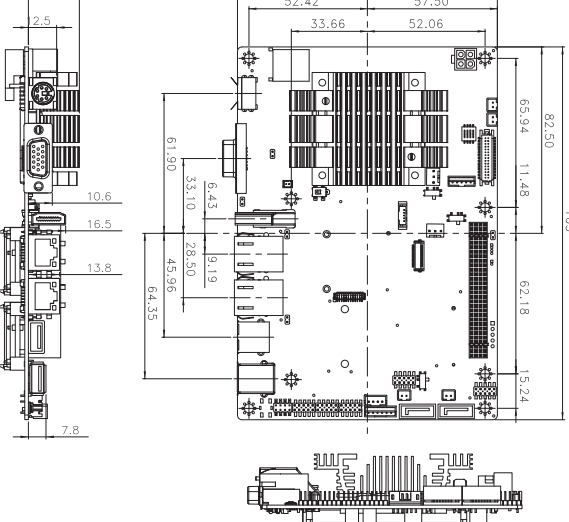
**NANO-BTW2/NANO-BT-i1**



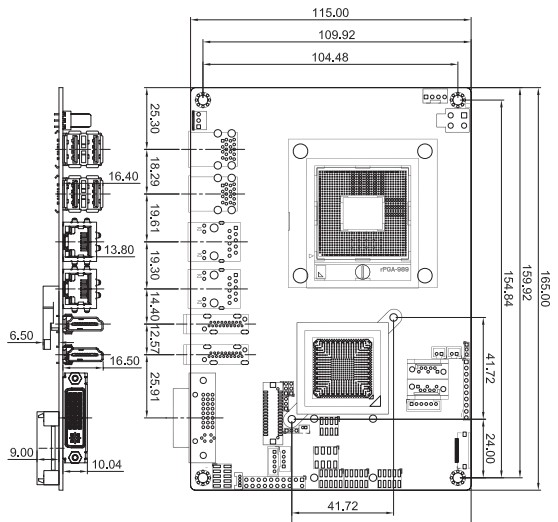
**NANO-QM871-i1**



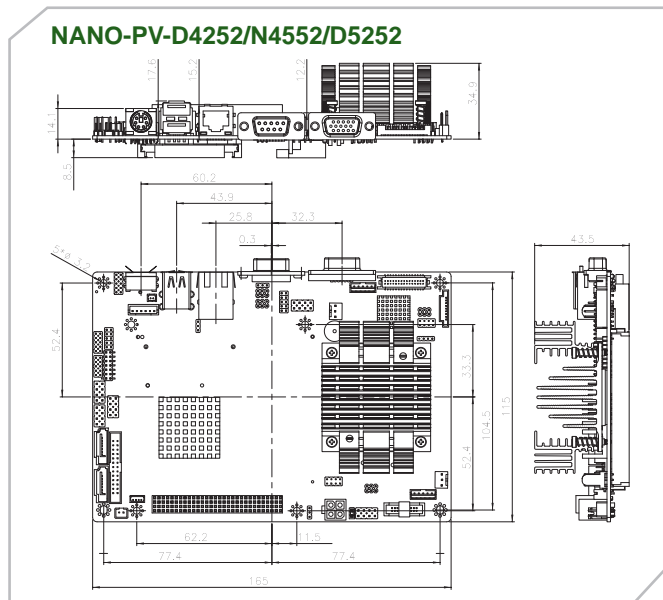
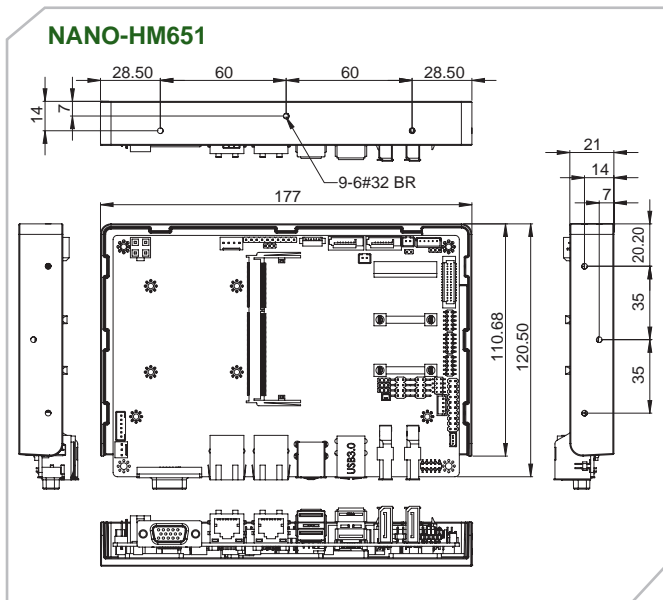
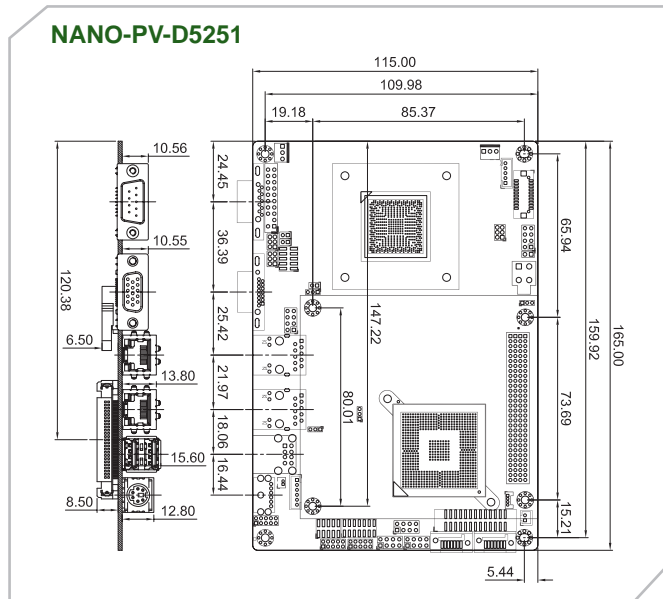
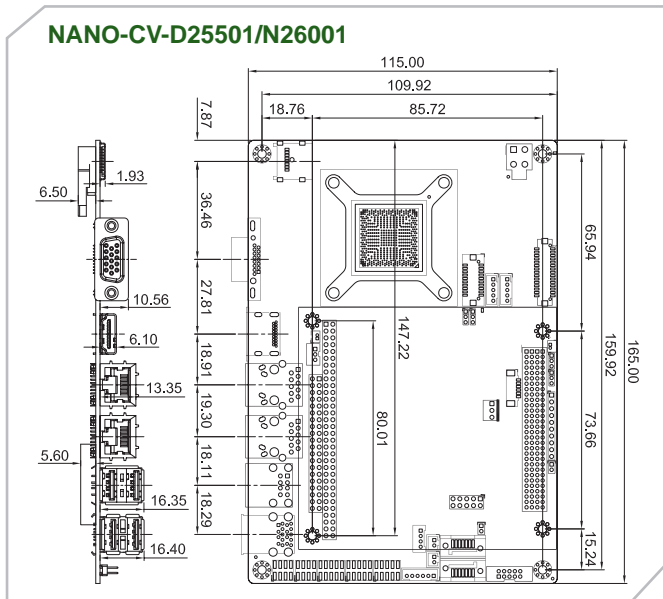
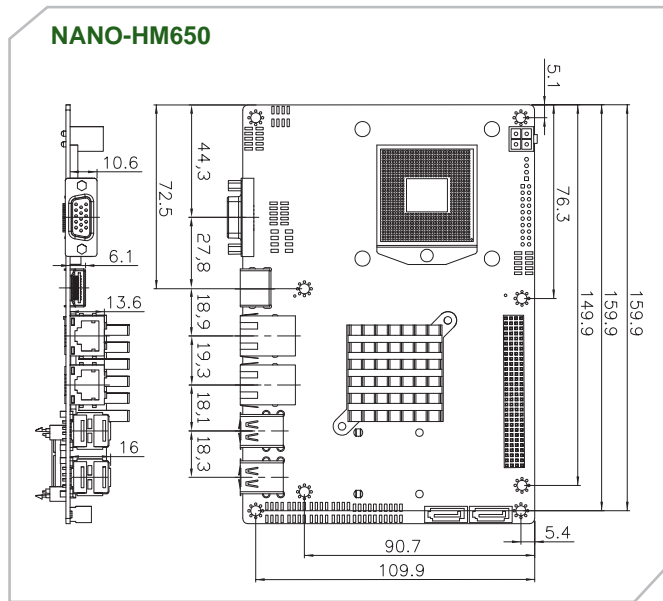
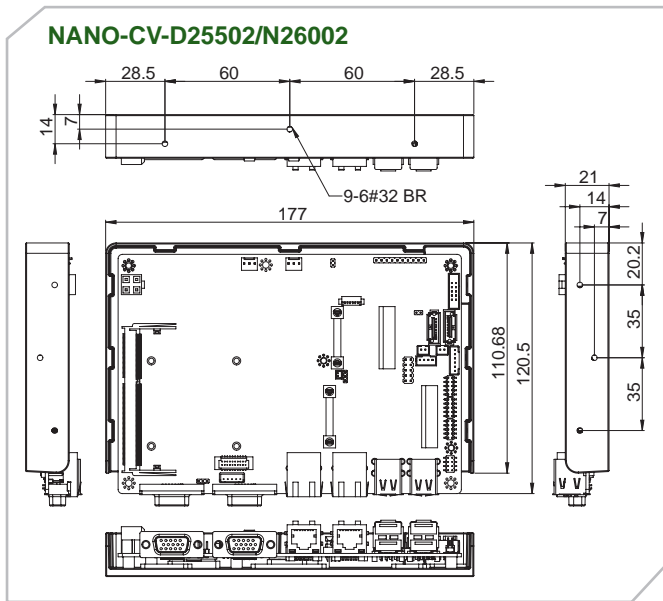
**NANO-QM770**



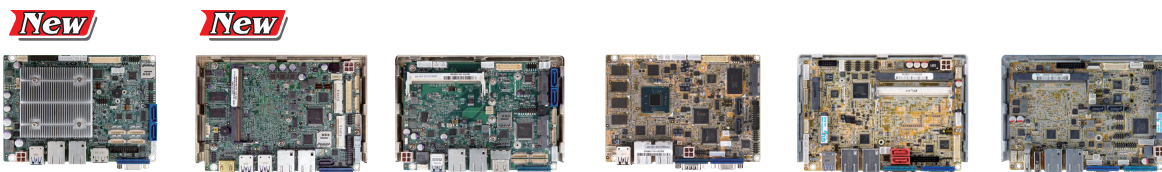
**NANO-QM770**



**EPIC NANO Dimensions** (Unit: mm)



# 3.5" WAFER Selection Guide



Model Name	WAFER-AL	WAFER-ULT4/ULT3	WAFER-BW	WAFER-BTW2	WAFER-ULT2/ULT-i1	WAFER-BT-i1
<b>CPU Socket</b>	On board	On board	On board	On board	On board	On board
<b>CPU Type</b>	Intel® Atom™/Celeron®/Pentium® on-board SoC	Intel® Mobile ULT processor	Intel® Pentium®/Celeron® SoC	Intel® Atom™/Celeron® SoC	Intel® Mobile ULT processor	Intel® Atom™/Celeron® SoC
<b>Chipset</b>	Intel® Atom™/Celeron®/Pentium® on-board SoC	Intel® Mobile ULT processor	Intel® Pentium®/Celeron® SoC	Intel® Atom™/Celeron® SoC	Intel® Lynx Point SoC	Intel® Atom™/Celeron® on-board SoC
<b>Memory</b>	1 x 204-pin 1866/1600 MHz single-channel DDR3L SO-DIMM (system max. 8 GB)	1 x 260-pin 2133MHz DDR4 SDRAM SO-DIMM (channel 1) On-board DDR4 memory (optional 4/8GB support)	1 x 204-pin 1600/1333 MHz single-channel DDR3L SDRAM unbuffered SO-DIMM slot (system max. 8 GB)	4 GB solder-down 1066/1333 MHz DDR3L memory (for E3845) 2 GB solder-down 1066/1333 MHz DDR3L memory (for E3825)	2 x 204-pin 1600/1333 MHz dual-channel DDR3L SO-DIMMs (system max. 16 GB)	1 x 204-pin 1066/1333 MHz dual-channel DDR3L SO-DIMMs (system max. 8 GB)
<b>Display Interface</b>	Triple independent display 1 x VGA 1 x DP++ 1 x 18/24-bit dual-channel LVDS 1 x iDP	Triple independent displays 1 x VGA 1 x HDMI 1 x 18/24-bit dual-channel LVDS 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP	Triple independent display 2 x HDMI 1 x 18/24-bit dual-channel LVDS	Dual independent display 1 x VGA 1 x 18/24-bit dual-channel LVDS 1 x iDP interface	Dual display supported 1 x VGA 1 x 18/24-bit dual-channel LVDS 1 x iDP interface	Dual display supported 1 x VGA 1 x 18/24-bit dual-channel LVDS 1 x iDP interface
<b>Ethernet</b>	LAN1: Realtek RTL8111 Controller LAN2: Realtek RTL8111 Controller	1 x Intel® I219LM 1 x Intel® I211AT	LAN1: Realtek RTL8111GN controller LAN2: Realtek RTL8111GN controller	LAN1: Intel® I210-IT PCIe controller LAN2: Intel® I210-IT PCIe controller	LAN1: Intel® I218LM PHY with Intel® AMT 9.0 support LAN2: Intel® I210-AT PCIe GbE controller	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I211-AT PCIe controller
<b>iRIS Remote Management Module</b>	N/A				1 x iRIS-1010 slot	
<b>I/O Interface</b>	2 x RS-232 2 x RS-232/422/485 2 x USB 3.0 4 x USB 2.0	2 x RS-232/422/485 4 x USB 3.0 2 x USB 2.0	1 x PS/2 KB/MS 2 x RS-232/422/485 2 x USB 3.0 4 x RS-232 4 x USB 2.0	1 x PS/2 KB/MS 1 x RS-422/485 1 x USB 3.0 2 x RS-232 5 x USB 2.0	1 x PS/2 KB/MS 1 x RS-422/485 2 x USB 2.0 2 x USB 3.0 3 x RS-232	1 x PS/2 KB/MS 1 x RS-422/485 1 x USB 3.0 3 x RS-232 5 x USB 2.0
<b>Storage Interface</b>	2 x SATA 6Gb/s with 5V SATA power connector	1 x SATA 6Gb/s with 5V SATA power connector	2 x SATA 6Gb/s with 5V SATA power connector (no RAID) 1 x eMMC4.51 (optional)	2 x SATA 3Gb/s with 5V SATA power connector (no RAID) 1 x 4 GB on-board SSD (optional) 1 x microSD 1 x mSATA	2 x SATA 6Gb/s with 5V power connector	2 x SATA 3Gb/s with 5V SATA power connector (no RAID)
<b>Audio</b>	Realtek ALC662 HD Audio codec	N/A	Realtek ALC662 HD Audio codec			
<b>Digital I/O</b>	8-bit programmable digital I/O					
<b>Power Consumption</b>	12V@2.57A (Intel® Pentium® N4200 up to 2.5GHz with 8GB DDR3L memory)	12V@4.27A (Intel® Core™ i7-6600U up to 3.4GHz CPU with 16GB (16GB x1) DDR4-2133 memory running in 3.0GHz)	12V@1.52A (Intel® Pentium® processor N3710 with 8 GB 1600MHz DDR3L memory)	12V@1.32A (Intel® Atom™ processor E3845 with on-board 2 GB 1333 MHz DDR3L memory)	12V@2.72A (Intel® Core™ i5-4300U CPU with two 8 GB 1600 MHz DDR3 memory)	12V@1.45A (Intel® Celeron® Processor J1900 CPU with one 8 GB 1333 MHz DDR3L memory)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset					
<b>Operating Environment</b>	Temperature Range: -20°C ~ 70°C (-4°F~158°F) Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -20°C ~ 60°C (-4°F~140°F) Relative Humidity: 5% ~ 95%, non-condensing			Temperature Range: -10°C ~ 60°C (14°F~140°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: -20°C ~ 60°C Relative Humidity: 5% ~ 95%, non-condensing
<b>Expansion Slot</b>	2 x Full/Half-size PCIe Mini card slot (one supports mSATA, another one with SIM holder)	1 x Full-size PCIe Mini slot (w/ SATA signal, support mSATA) 1 x Full-size PCIe Mini slot (w/ SIM card slot support)	2 x Full/Half-size PCIe Mini card slot (one with SIM holder)	2 x Full-size PCIe Mini card slot (one with SIM holder)	1 x Full-size PCIe Mini card slot (supports mSATA)	1 x Full-size PCIe Mini card slot (supports mSATA)
<b>Recommended CPU Cooler</b>	Heatsink	Heat Spreader	Heat Spreader	Heatsink	Heat Spreader	N/A

# 3.5" WAFER Selection Guide

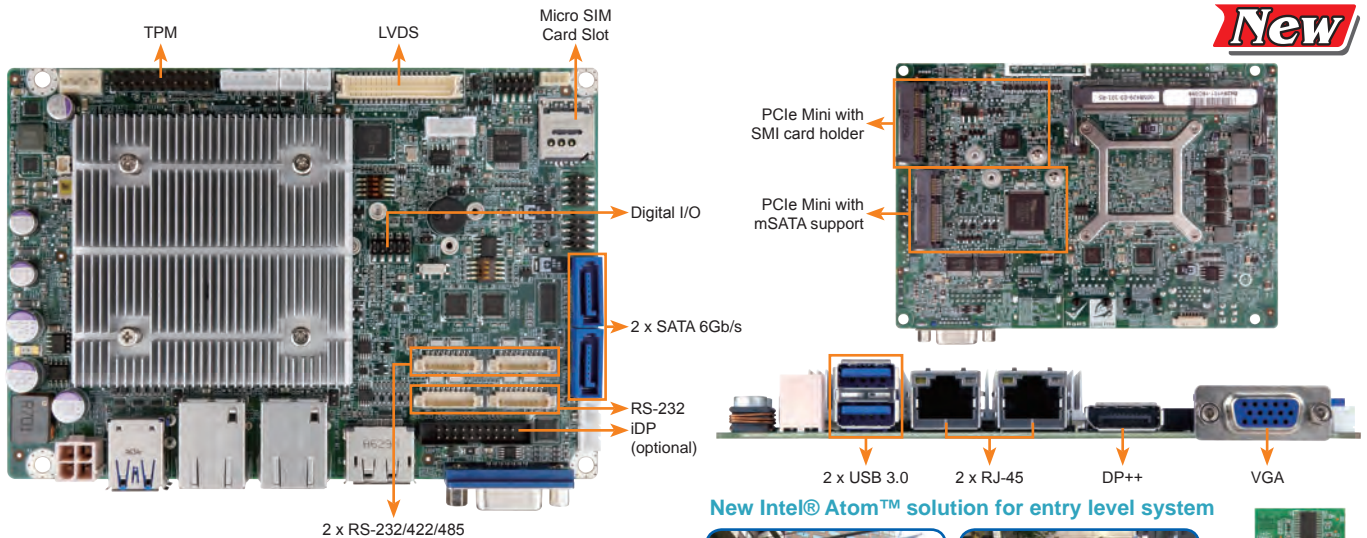


Model Name	WAFER-KBN-i1	WAFER-CV-D25502/ N26002	WAFER-CV-D25501/ N26001	WAFER-PV-N4552/D5252	WAFER-LX-R12	WAFER-LX2-R12
<b>CPU Socket</b>	On board	On board	On board	On board	On board	On board
<b>CPU Type</b>	AMD® Embedded G-Series SoC	Intel® Atom™ D2550 1.86GHz Intel® Atom™ N2600 1.6GHz	Intel® Atom™ D2550 1.86GHz Intel® Atom™ N2600 1.6GHz	Intel® Atom™ D525 1.8GHz Intel® Atom™ N455 1.66GHz	AMD Geode™ LX800	AMD Geode™ LX800
<b>Chipset</b>	AMD® Embedded G-Series SoC	Intel® NM10	NM10	Intel® ICH8M	AMD Geode™ LX800 + AMD CS5536	AMD Geode™ LX800 + AMD CS5536
<b>Memory</b>	1 x 204-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SO-DIMM (system max. 8 GB)	On-board 2 GB 1066 MHz DDR3 SDRAM	1 x 204-pin 1066 MHz 4 GB (max.) DDR3/DDR3L (1.35V) SO-DIMM (D2550) 1 x 204-pin 800 MHz 2 GB (max.) DDR3/DDR3L (1.35V) SO-DIMM (N2600)	1 x 204-pin 800 MHz 4 GB (max.) DDR3 SO-DIMM (D525/ D425) 1 x 204-pin 800 MHz 2 GB (max.) DDR3 SO-DIMM (N455)	1 x 200-pin 333/400 MHz. 1 GB (max.) DDR SO-DIMM	1 x 200-pin 400 MHz. 1 GB (max.) DDR SO-DIMM
<b>Display Interface</b>	Dual display supported 1 x VGA 1 x 18-bit dual-channel LVDS 1 x iDP interface	Dual display supported 1 x VGA integrated in Intel® CPU 1 x Single-channel 18-bit (N2600)/24-bit LVDS2 (D2550)	Dual display supported 1 x VGA 1 x Single-channel 18-bit (N2600)/24-bit LVDS2 (D2550) 1 x 24-bit dual-channel LVDS	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS 1 x 24-bit TTL	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS 1 x 24-bit TTL
<b>Ethernet</b>	LAN1: Intel® I210-AT PCIe controller with NCSI support LAN2: Intel® I211-AT PCIe controller	Dual LAN: Realtek RTL8111E controllers	Dual LAN: Realtek RTL8111E controllers	Dual LAN: Realtek RTL8111E controllers	Dual LAN: 10/100Mbps RTL8100C Ethernet Controller	LAN1: 10/100Mbps RTL8100C Ethernet Controller
<b>iRIS Remote Management Module</b>	1 x iRIS-1010 slot	N/A				
<b>I/O Interface</b>	1 x PS/2 KB/MS 1 x RS-422/485 2 x USB 3.0 3 x RS-232 4 x USB 2.0	1 x PS/2 KB/MS 1 x RS-422/485 4 x USB 2.0 5 x RS-232	1 x KB/MS 1 x RS-422/485 3 x RS-232 6 x USB 2.0	1 x KB/MS 1 x RS-232/422/485 5 x RS-232 8 x USB 2.0	1 x LPT 1 x PS/2 for KB/MS 1 x RS-422/485 2 x RS-232 4 x USB 2.0	1 x RS-232/422/485 4 x USB 2.0 7 x RS-232
<b>Storage Interface</b>	2 x SATA 6Gb/s with 5V SATA power connector	2 x SATA 3Gb/s or 1 x SATA 3Gb/s + 1 x mSATA	2 x SATA 3Gb/s	2 x SATA 3Gb/s 1 x CF Type II	2 x SATA 1.5Gb/s RAID 1 x IDE 1 x CF Type II	1 x IDE 1 x CF Type II
<b>Audio</b>	Realtek ALC662 HD Audio codec				Realtek ALC203 with AC'97 codec	
<b>Digital I/O</b>	8-bit programmable digital I/O					
<b>Power Consumption</b>	12V@2.12A (AMD GX-415GA 1.5GHz CPU with 1333 MHz 4 GB DDR3 memory)	12V@1.19A (1.86GHz Intel® D2550 with on-board 1066 MHz 1 GB SDRAM) 12V@0.95A (1.6GHz Intel N2600 with on-board 1066 MHz 1 GB SDRAM)	12V@1.53A (1.86GHz Intel® D2550 with 1 GB DDR3 1066 MHz) 12V@1.15A (1.6GHz Intel® N2600 with 1 GB DDR3 1066 MHz)	12V@1.79A (Intel® Atom™ D525 with 2 GB 1066 MHz DDR3)	5V@1.53A (AMD Geode™ LX 800 1 GB 400 MHz DDR)	5V@1.33A (AMD Geode™ LX800 512MB 333 MHz DDR)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset					
<b>Operating Environment</b>	Temperature Range: 0°C ~ 60°C (32°F~140°F) Relative Humidity: 5% ~ 95% non-condensing	-20°C ~ 60°C with free air, -20°C ~ 70°C with force air for D2550 processor -20°C ~ 70°C with free air, -20°C ~ 75°C with force air for N2600 processor Relative Humidity: 5% ~ 95%, non-condensing	-20°C ~ 60°C with free air, -20°C ~ 70°C with force air for D2550 processor -20°C ~ 70°C with free air, -20°C ~ 75°C with force air for N2600 processor Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -10°C ~ 60°C (14°F~140°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: 0°C ~ 60°C (32°F~140°F) Relative Humidity: 5% ~ 95% non-condensing	
<b>Expansion Slot</b>	1 x Full-size PCIe Mini card slot (supports mSATA)	1 x Full/Half-size PCIe Mini card slot (support mSATA) 1 x PCI-104 slot supports PCI singal	1 x Full-size PCIe Mini card slot (support mSATA) 1 x Half-size PCIe Mini card slot	1 x PCIe Mini card slot	1 x PC/104	1 x PC/104
<b>Recommended CPU Cooler</b>	GX-415GA (with heatsink) GX-210HA (with cooler)	Heatsink	Heat Spreader	Heat Spreader	Heatsink	Heatsink

# WAFER-AL

3.5" SBC supports Intel® 14nm Generation Atom™ or Celeron® on-board SoC with DP++/VGA/LVDS/iDP support, Dual PCIe GbE, USB 3.0, PCIe Mini with mSATA support, SATA 6Gb/s, COM, Audio and RoHS

**New**



## Specifications

- ◆ SoC
  - Intel® Pentium® N4200 on-board SoC (up to 2.5GHz, quad-core, 2M Cache, TDP=6W)
  - Intel® Celeron® N3350 on-board SoC (up to 2.4GHz, dual-core, 2M Cache, TDP=6W)
  - Intel® Atom™ E3950 on-board SoC (up to 2.0GHz, quad-core, 2M Cache, TDP=12W)
  - Intel® Atom™ E3940 on-board SoC (up to 1.8GHz, quad-core, 2M Cache, TDP=9W)
  - Intel® Atom™ E3930 on-board SoC (up to 1.8GHz, dual-core, 2M Cache, TDP=6W)
- ◆ BIOS
  - AMI UEFI BIOS
- ◆ Memory
  - One 204-pin 1866/1600MHz Single-channel DDR3L DIMMs support up to 8GB
- ◆ Graphics Engine
  - Intel® HD Graphics Gen9 Low Power; 18 Execution Units
  - 4K Codec Decode & Encode for HEVC 4, H.264, VP8, SVC, MVC
- ◆ Display Output
  - Triple independent display
  - 1 x DP++ (up to 4096x2160@60Hz)
  - 1 x VGA (up to 1920x1200@60Hz)
  - 1 x LVDS: 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 1 x iDP (colay with VGA, support by request)
- ◆ Ethernet
  - 2 x PCIe GbE LAN Realtek RTL8111 Controller
- ◆ External I/O Interface
  - 2 x USB 3.0
- ◆ Internal I/O Interface
  - 2 x RS-232 (1x9 pin, P=1.25)
  - 2 x RS-232/422/485 (1x9 pin, P=1.25)
  - 2 x SATA 6Gb/s with 5V SATA power connector (no RAID)
  - 4 x USB 2.0 (2x4 pin, P=2.0)
- ◆ SMBus/I<sup>2</sup>C
  - 1 x SMBus (1x4 pin, P=2.0)
- ◆ TPM
  - 1 x TPM (2x10 pin)
- ◆ Audio
  - Realtek ALC662 HD codec
  - 1 x Front audio (2x5 pin)
- ◆ Front Panel
  - 1 x Power LED & HDD LED (1x6 pin)
  - 1 x Power button (1x2 pin)
  - 1 x Reset button (1x2 pin)
- ◆ LAN LED
  - 2 x LAN LED (1x2 pin)
- ◆ Expansion
  - 1 x Full/Half-size PCIe Mini slot (supports mSATA, colay with SATA port 2)
  - 1 x Full/Half-size PCIe Mini slot (supports SIM card holder)
- ◆ Digital I/O
  - 1 x 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x System fan connector (1x4 pin)
- ◆ Power supply
  - +12V DC input power (AT/ATX mode)
- ◆ Watchdog Timer
  - Software programmable, supports 1~255 sec. system reset
- ◆ Power Consumption
  - 12V@2.57A (Intel® Pentium® N4200 up to 2.5GHz with 8GB DDR3L memory)
- ◆ Operating Temperature: -20°C ~ 70°C
- ◆ Storage Temperature: -20°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 146mm x 102mm
- ◆ Weight: 600g / NW: 250g
- ◆ CE/FCC compliant

## New Intel® Atom™ solution for entry level system



## Features

- 3.5" SBC with Intel® Apollo Lake platform on-board SoC
- One SO-DIMM DDR3L 1866/1600MHz support up to system maximum 8GB
- Triple displays with 1 x DP++, 1 x VGA / 1 x iDP, 1 x LVDS selection
- High speed I/O interface for USB 3.0, SATA 6Gb/s
- PCIe Mini with mSATA support

## Packing List

1 x WAFER-AL single board computer	
1 x Power cable	1 x One key Recovery CD
1 x RS-232/422/485 cable	1 x QIG
1 x SATA with power cable kit	1 x Utility CD

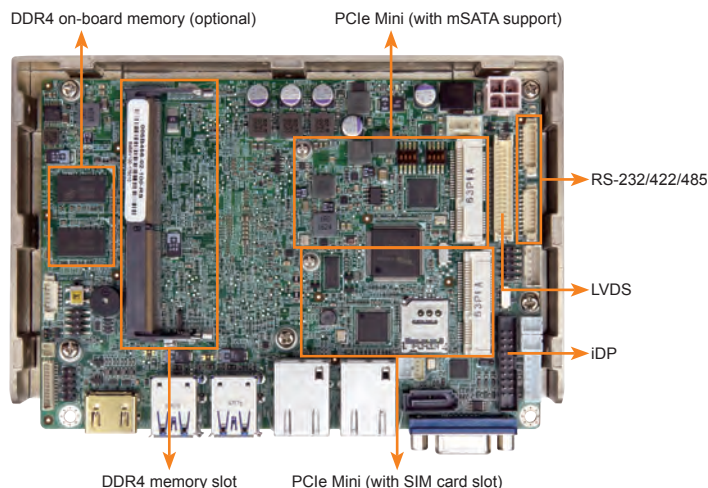
## Ordering Information

Part No.	Description
WAFER-AL-N2-R10	3.5" SBC supports Intel® 14nm quad-core Pentium® N4200 2.5GHz on-board SoC with triple display, Dual PCIe GbE, USB 3.0, PCIe Mini with mSATA support, SATA 6Gb/s, COM, Audio and RoHS
WAFER-AL-N1-R10	3.5" SBC supports Intel® 14nm dual-core Celeron® N3350 2.4GHz on-board SoC with triple display, Dual PCIe GbE, USB 3.0, PCIe Mini with mSATA support, SATA 6Gb/s, COM, Audio and RoHS
WAFER-AL-Nx-iDP-R10**	3.5" SBC supports Intel® 14nm quad-core Pentium® N4200/ Celeron® N3350 on-board SoC with iDP, DP++, LVDS triple display, Dual PCIe GbE, USB 3.0, PCIe Mini with mSATA support, SATA 6Gb/s, COM, Audio and RoHS
WAFER-AL-E3-R10**	3.5" SBC supports Intel® 14nm quad-core Atom™ E3950 2.0GHz on-board SoC with triple display, Dual PCIe GbE, USB 3.0, PCIe Mini with mSATA support, SATA 6Gb/s, COM, Audio and RoHS
WAFER-AL-E2-R10**	3.5" SBC supports Intel® 14nm quad-core Atom™ E3940 1.8GHz on-board SoC with triple display, Dual PCIe GbE, USB 3.0, PCIe Mini with mSATA support, SATA 6Gb/s, COM, Audio and RoHS
WAFER-AL-E1-R10**	3.5" SBC supports Intel® 14nm dual-core Atom™ E3930 1.8GHz on-board SoC with triple display, Dual PCIe GbE, USB 3.0, PCIe Mini with mSATA support, SATA 6Gb/s, COM, Audio and RoHS
32001-008600-200-RS	Dual-port USB 2.0 cable, 210mm, P=2.0
32005-003500-200-RS	RS-232/422/485 cable, 250mm, P=1.25
32007-005200-200-RS	Audio cable, 300mm, P=2.0
TPM-IN02-R20	20-pin Infineon TPM 2.0 module, software management tool, firmware v5.5

\*\*By order production, MOQ: 100

# WAFER-ULT3 -ULT4

3.5" SBC supports Intel® 6th/7th Generation ULT Processor with DDR4 SO-DIMM/On-board Memory Support, Triple Display, PCIe Mini with SIM Card Slot/mSATA Support, SATA 6Gb/s, COM, Audio, and RoHS

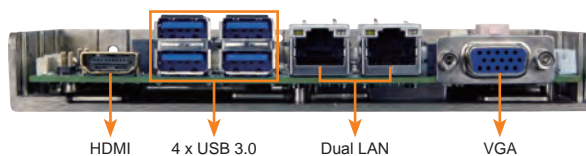


Passenger information system for transportation

**New**



34000-000673-RS  
Fanless heatsink module  
(optional)



## Specifications

- ◆ CPU
  - 7th generation Intel® mobile ULT processor
  - Intel® Core™ i7-7600U (up to 3.9GHz, dual-core, 4MB cache, TDP=15W)
  - Intel® Core™ i5-7300U (up to 3.5GHz, dual-core, 3MB cache, TDP=15W)
  - Intel® Core™ i3-7100U (up to 2.4GHz, dual-core, 3MB cache, TDP=15W)
  - 6th generation Intel® mobile ULT processor
  - Intel® Core™ i7-6600U (up to 3.4GHz, dual-core, 4MB cache, TDP=15W)
  - Intel® Core™ i5-6300U (up to 3.0GHz, dual-core, 3MB cache, TDP=15W)
  - Intel® Core™ i3-6100U (up to 2.3GHz, dual-core, 3MB cache, TDP=15W)
  - Intel® Celeron® processor 3955U (up to 2.0GHz, dual-core, 2MB cache, TDP=15W)
  - Intel® Celeron® processor 3855U (up to 1.6GHz, dual-core, 2MB cache, TDP=15W)
- ◆ BIOS
  - AMI UEFI BIOS
- ◆ Memory
  - 1 x 260-pin 2133MHz DDR4 SDRAM SO-DIMM (channel 1, supports up to 16GB)
  - On-board 4GB/8GB DDR4 memory (channel 2, optional support by request)
- ◆ Graphics Engine
  - Intel® HD Graphics
- ◆ Display Output
  - Triple independent display
  - 1 x VGA (up to 1920x1200@60Hz)
  - 1 x HDMI (up to 4096x2160@30Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (co-layout with VGA)
- ◆ Ethernet
  - 1 x Intel® I219LM
  - 1 x Intel® I211AT
- ◆ External I/O Interface
  - 4 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x SATA 6Gb/s with 5V SATA power connector
  - 2 x USB 2.0 (2x4 pin, P=2.0)
  - 2 x RS-232/422/485 (1x9 pin, P=1.25)
- ◆ SMBus
  - 1 x SMBus (1x4 pin, P=2.0)
- ◆ Audio
  - 1 x HD audio (2x5 pin, supports 7.1-channel HD audio by AC-KIT-892HD-R10)
- ◆ Front Panel
  - 1 x Power LED & HDD LED (1x6 pin)
  - 1 x Power button (1x2 pin)
  - 1 x Reset button (1x2 pin)
- ◆ Expansion
  - 1 x Full-size PCIe Mini slot (w/ SATA signal, supports mSATA)
  - 1 x Full-size PCIe Mini slot (w/ SIM card slot support)
  - \*3855U belongs to Skylake ULT Base series which supports PCIe Gen 2 signal only.
- ◆ Digital I/O
  - 1 x 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x System fan connector (1x4 pin)
- ◆ Watchdog Timer
  - Software programmable, supports 1~255 sec. system reset
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin, or optional terminal block)
- ◆ Power Consumption
  - 12V@4.27A (Intel® Core™ i7-6600U up to 3.4GHz CPU with 16GB 2133MHz DDR4 memory running in 3.0GHz)
  - ◆ Operating Temperature: -20°C ~ 60°C
  - ◆ Storage Temperature: -20°C ~ 60°C
  - ◆ Operating Humidity: 5% ~ 95%, non-condensing
  - ◆ Dimensions: 146mm x 102mm
  - ◆ Weight: GW: 600g / NW: 250g
  - ◆ CE/FCC compliant

## Features

- 3.5" SBC supports Intel® 6th/7th Generation ULT processor supports DDR4 SO-DIMM (on-board memory support by request)
- Triple display with VGA/iDP, HDMI and LVDS selection
- Two PCIe Mini with mSATA/SIM card slot support
- Intel® GbE LAN with Intel® AMT 11.0 supported
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x WAFER-ULT3/ULT4 single board computer (heat spreader by default)	
1 x Power cable	1 x One Key Recovery CD
1 x RS-232/422/485 cable	1 x QIG
1 x SATA with power cable kit	1 x Utility CD

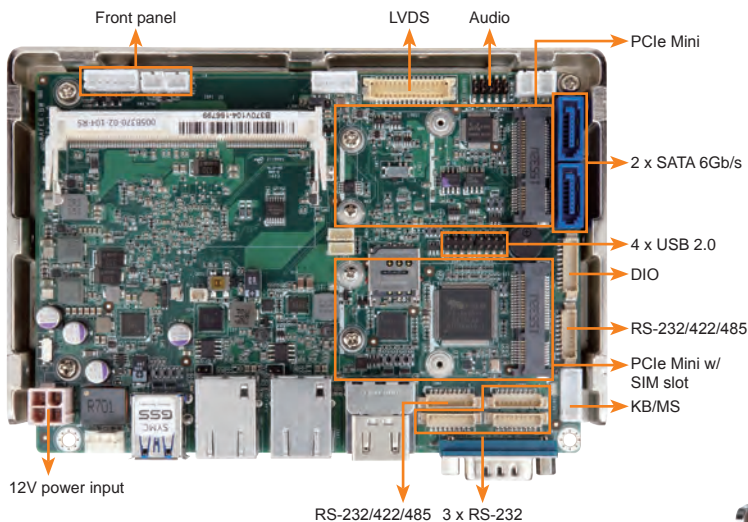
## Ordering Information

Part No.	Description
WAFER-ULT3-i7-R10	3.5" SBC supports Intel® 6th Generation ULT Core™ i7-6600U processor with DDR4 SO-DIMM, triple display with VGA/iDP, HDMI, LVDS, Dual GbE, PCIe Mini with SIM card slot/mSATA support, SATA 6Gb/s, COM and RoHS
WAFER-ULT3-i5-R10	3.5" SBC supports Intel® 6th Generation ULT Core™ i5-6300U processor with DDR4 SO-DIMM, triple display with VGA/iDP, HDMI, LVDS, Dual GbE, PCIe Mini with SIM card slot/mSATA support, SATA 6Gb/s, COM and RoHS
WAFER-ULT3-i3-R10	3.5" SBC supports Intel® 6th Generation ULT Core™ i3-6100U processor with DDR4 SO-DIMM, triple display with VGA/iDP, HDMI, LVDS, Dual GbE, PCIe Mini with SIM card slot/mSATA support, SATA 6Gb/s, COM and RoHS
WAFER-ULT3-C-R10	3.5" SBC supports Intel® 6th Generation ULT Celeron® 3955U processor with DDR4 SO-DIMM, triple display with VGA/iDP, HDMI, LVDS, Dual GbE, PCIe Mini with SIM card slot/mSATA support, SATA 6Gb/s, COM and RoHS
WAFER-ULT3-CE-R10	3.5" SBC supports Intel® 6th Generation ULT Celeron® 3855U processor with DDR4 SO-DIMM, triple display with VGA/iDP, HDMI, LVDS, Dual GbE, PCIe Mini with SIM card slot/mSATA support, SATA 6Gb/s, COM and RoHS
WAFER-ULT4-i7-R10**	3.5" SBC supports Intel® 7th Generation ULT Core™ i7-7600U processor with DDR4 SO-DIMM, triple display with VGA/iDP, HDMI, LVDS, Dual GbE, PCIe Mini with SIM card slot/mSATA support, SATA 6Gb/s, COM and RoHS
WAFER-ULT4-i5-R10	3.5" SBC supports Intel® 7th Generation ULT Core™ i5-7300U processor with DDR4 SO-DIMM, triple display with VGA/iDP, HDMI, LVDS, Dual GbE, PCIe Mini with SIM card slot/mSATA support, SATA 6Gb/s, COM and RoHS
WAFER-ULT4-i3-R10**	3.5" SBC supports Intel® 7th Generation ULT Core™ i3-7100U processor with DDR4 SO-DIMM, triple display with VGA/iDP, HDMI, LVDS, Dual GbE, PCIe Mini with SIM card slot/mSATA support, SATA 6Gb/s, COM and RoHS
32001-008600-200-RS	Dual-port USB 2.0 cable, 210mm, P=2.0
32005-003500-200-RS	RS-232/422/485 cable, 250mm, P=1.25
34000-000673-RS	Optional fanless heatsink module, 146mm x 102mm x 16mm

\*\*By order production, MOQ:100

# WAFER-BW

3.5" SBC with Intel® 14nm Pentium®/Celeron® on-board SoC with Dual HDMI and LVDS, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s, mSATA, COM, Audio and RoHS



## Triple independent display

(Dual HDMI and one 18/24-bit dual-channel LVDS)



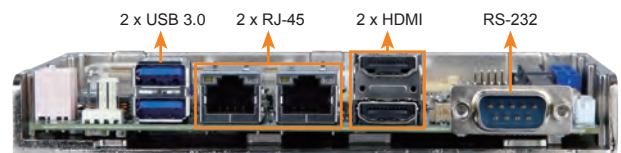
Digital Signage



LVDS



HDMI



## Specifications

- ◆ SoC
  - Intel® Pentium® N3710 on-board SoC (up to 2.56GHz, quad-core, 2MB cache, TDP=6W)
  - Intel® Celeron® N3160 on-board SoC (up to 2.24GHz, quad-core, 2MB cache, TDP=6W)
  - Intel® Celeron® N3060 on-board SoC (up to 2.48GHz, dual-core, 2MB cache, TDP=6W)
  - Intel® Celeron® N3010 on-board SoC (up to 2.24GHz, dual-core, 2MB cache, TDP=4W)
- ◆ BIOS
  - AMI UEFI BIOS
- ◆ Memory
  - One 204-pin 1600/1333 MHz single-channel DDR3L SDRAM unbuffered SO-DIMM slot supports up to 8 GB
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 8 Engine with 16 low-power execution units, supporting DX11.1, OpenGL 4.2 and OpenCL1.2
- ◆ Display Output
  - Triple independent display
  - 2 x HDMI (up to 3840x2160@30Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
- ◆ Ethernet
  - LAN1: Realtek RTL8111GN
  - LAN2: Realtek RTL8111GN
- ◆ External I/O Interface
  - 1 x RS-232
  - 2 x USB 3.0 (on rear I/O)
- ◆ Internal I/O Interface
  - 1 x eMMC4.51 (optional)
  - 1 x KB/MS (1x6 pin)
  - 1 x mSATA
  - 2 x RS-232/422/485 (2 by pin header) (1x9 pin, P=1.25)
  - 2 x SATA 6Gb/s with 5V SATA power connector (no RAID)
  - 3 x RS-232 (1x9 pin, P=1.25)
  - 4 x USB 2.0 (2x4 pin, P=2.0)
- ◆ SMBus
  - 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C
  - 1 x I<sup>2</sup>C (1x4 pin)
- ◆ Audio
  - Realtek ALC662 HD codec
  - 1 x Front audio (2x5 pin)
- ◆ Front Panel
  - 1 x Power LED & HDD LED (1x6 pin)
  - 1 x Power button (1x2 pin)
  - 1 x Reset button (1x2 pin)
- ◆ LAN LED
  - 2 x LAN LED (1x2 pin)
- ◆ Expansion
  - 1 x Full/Half-size PCIe Mini slot (with SIM card holder)
  - 1 x Full/Half-size PCIe Mini slot (supports mSATA, colay with SATA port 2)
- ◆ Digital I/O: 8-bit digital I/O (1x10 pin, P=1.25)
- ◆ Fan Connector
  - 1 x Smart fan connector (1x4 pin)
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Power Consumption
  - 12V@1.52A (Intel® Pentium® processor N3710 with 8 GB 1600 MHz DDR3L memory)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 146mm x 102mm
- ◆ Weight: GW: 600g/ NW: 250g
- ◆ CE/FCC compliant



## Features

- 3.5" SBC supports Intel® 14nm Pentium®/Celeron® on-board SoC
- Triple independent display support
- 1.35V DDR3L 1333/1600 MHz SDRAM up to 8 GB
- COM, USB 3.0, SATA 6Gb/s, PCIe Mini, mSATA and Audio support
- Two full-size PCIe Mini slots (one with SIM holder for WLAN/WWAN expansion)
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x WAFER-BW single board computer
1 x Audio cable
1 x Power cable
1 x RS-232/422/485 cable
2 x SATA with power cable kit
1 x One Key Recovery CD
1 x QIG
1 x Utility CD

## Ordering Information

Part No.	Description
WAFER-BW-N4-R10	3.5" SBC supports Intel® Pentium® quad-core processor N3710 up to 2.56GHz (6W) with dual HDMI and LVDS, Dual PCIe GbE, PCIe Mini, USB 3.0, SATA 6Gb/s, mSATA, COM, Audio and RoHS
WAFER-BW-N3-R10	3.5" SBC supports Intel® Celeron® quad-core processor N3160 up to 2.24GHz (6W) with dual HDMI and LVDS, Dual PCIe GbE, PCIe Mini, USB 3.0, SATA 6Gb/s, mSATA, COM, Audio and RoHS
WAFER-BW-N2-R10	3.5" SBC supports Intel® Celeron® dual-core processor N3060 up to 2.48GHz (6W) with dual HDMI and LVDS, Dual PCIe GbE, PCIe Mini, USB 3.0, SATA 6Gb/s, mSATA, COM, Audio and RoHS
WAFER-BW-N1-R10**	3.5" SBC supports Intel® Celeron® dual-core processor N3010 up to 2.24GHz (4W) with dual HDMI and LVDS, Dual PCIe GbE, PCIe Mini, USB 3.0, SATA 6Gb/s, mSATA, COM, Audio and RoHS
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32001-008600-200-RS	Dual-port USB 2.0 cable, 210mm, P=2.0
32005-003500-200-RS	RS-232/422/485 cable, 250mm, P=1.25

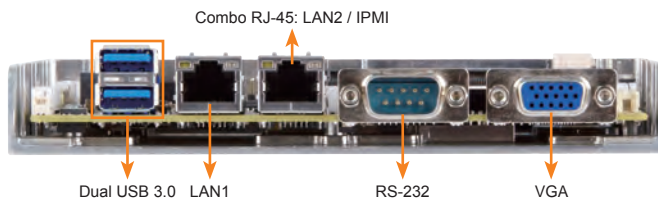
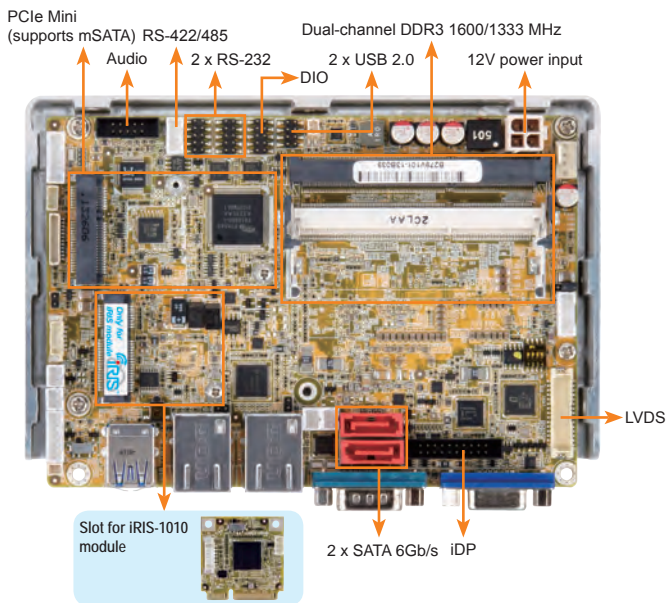
\*\*By order production, MOQ: 100



# WAFER-ULT2-i1

## ULT-i1

3.5" SBC supports Intel® 22nm 4th/14nm 5th Generation Mobile Core™ i7/i5/i3 and Celeron® on-board Processor (ULT), VGA/LVDS/iDP, Dual GbE, PCIe Mini, USB 3.0, SATA 6Gb/s Audio, iRIS-1010 and RoHS



## Specifications

- ◆ CPU
  - » 5th generation Intel® mobile ULT on-board SoC
    - Intel® Core™ i7-5650U (2.2GHz, dual-core, 4MB cache, TDP=15W)
    - Intel® Core™ i5-5350U (1.8GHz, dual-core, 3MB cache, TDP=15W)
    - Intel® Core™ i3-5010U (2.1GHz, dual-core, 3MB cache, TDP=15W)
    - Intel® Celeron® processor 3765U (1.9GHz, dual-core, 2MB cache, TDP=15W)
  - » 4th generation Intel® mobile ULT on-board SoC
    - Intel® Core™ i7-4650U (1.7GHz, dual-core, 4MB cache, TDP=15W)
    - Intel® Core™ i5-4300U (1.9GHz, dual-core, 3MB cache, TDP=15W)
    - Intel® Core™ i3-4010U (1.7GHz, dual-core, 3MB cache, TDP=15W)
    - Intel® Celeron® processor 2980U (1.6GHz, dual-core, 2MB cache, TDP=15W)
- ◆ BIOS: UEFI BIOS
- ◆ Memory
  - Two 204-pin 1600/1333 MHz dual-channel DDR3L SDRAM SO-DIMM slots support up to 16 GB
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 7.5 supports DX11.1, OpenGL 4.2 and OpenCL 1.2 Full MPEG2, VC1, AVC decode (4th generation SoC)
  - Intel® HD Graphics Gen 8 supports DX11.1, OpenGL 4.2 and OpenCL 1.2 Full MPEG2, VC1, AVC decode (5th generation SoC)
- ◆ Display Output
  - Triple independent display
  - 1 x VGA (up to 2560x1600@60 Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 3840x2160@60 Hz)
- ◆ Ethernet
  - LAN1: Intel® I218LM PHY with Intel® AMT 9.0 support
  - LAN2: Intel® I210-AT PCIe controller with NCSI support
- ◆ External I/O Interfaces
  - 2 x USB 3.0
  - 1 x RS-232
- ◆ Internal I/O Interfaces
  - 1 x KB/MS (1x6 pin)    2 x USB 2.0 (2x4 pin, P=2.0)
  - 1 x RS-422/485 (1x4 pin, P=2.0)    2 x RS-232 (2x5 pin, P=2.0)
  - 2 x SATA 6Gb/s with 5V power connector
- ◆ iRIS Remote Management Module
  - 1 x iRIS-1010 slot
- ◆ Expansion: 1 x Full-size PCIe Mini card slot (mSATA support)
- ◆ Audio
  - Realtek ALC662 HD Audio codec
  - 1 x audio (2x5 pin)
- ◆ Front Panel
  - 1 x Power LED & HDD LED (1x6 pin)
  - 1 x Power button (1x2 pin)
  - 1 x Reset button (1x2 pin)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector: 1 x System smart fan (1x4 pin)
- ◆ Watchdog Timer: Software programmable, support 1~255 sec. system reset
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Power Consumption
  - 12V@2.72A (Intel® Core™ i5-4300U CPU with two 8 GB 1600 MHz DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 146mm x 102mm
- ◆ Weight: GW: 600g/ NW: 250g
- ◆ CE/FCC compliant

## Features

- 3.5" form factor with 4th/5th generation Intel® ULT SoC supports dual-channel DDR3L SO-DIMMs
- 12V only single voltage design with AT/ATX mode support
- 18/24-bit dual-channel LVDS support
- Support triple independent display via LVDS, VGA and iDP
- Support PCIe Mini card slot for mSATA, 3G card, wireless card and DOM

## Packing List

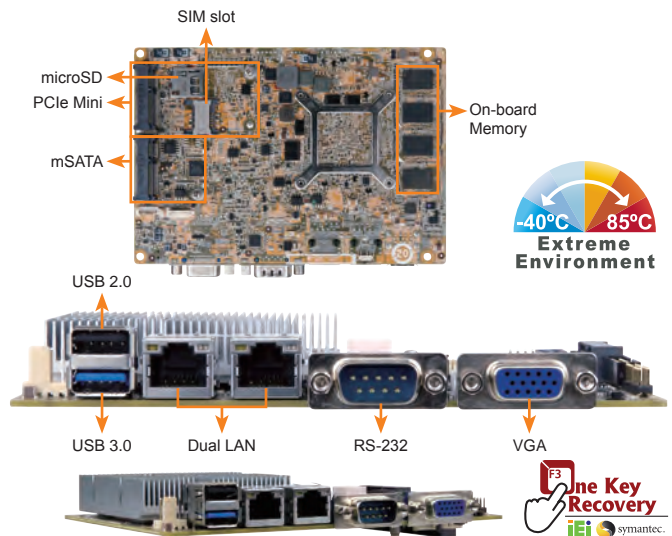
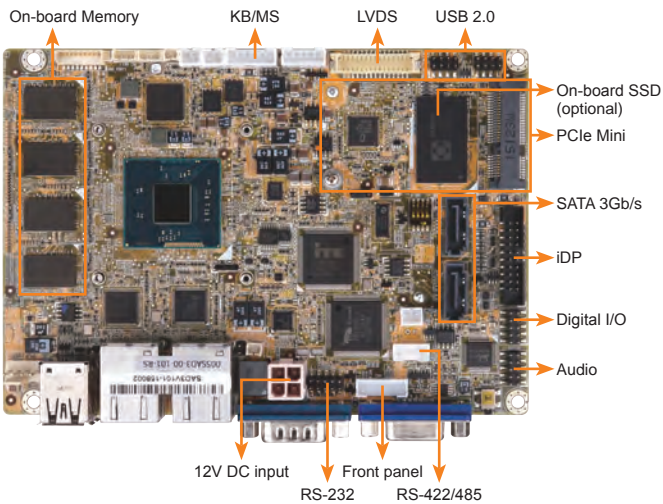
1 x WAFER-ULT2-i1 single board computer with heatsink enclosure	
1 x Audio cable	
1 x Dual-port USB 2.0 cable	1 x One Key Recovery CD
1 x Power cable	1 x QIG
2 x SATA with 5V output cable kit	1 x Utility CD

## Ordering Information

Part No.	Description
WAFER-ULT2-i1-i7-R11	3.5" SBC with Intel® 14nm 5th Generation ULT Mobile Core™ i7-5650U processor (ULT), VGA/LVDS/iDP, Dual GbE, PCIe Mini, USB 3.0, SATA 6Gb/s and iRIS
WAFER-ULT2-i1-i5-R11	3.5" SBC with Intel® 14nm 5th Generation ULT Mobile Core™ i5-5350U processor (ULT), VGA/LVDS/iDP, Dual GbE, PCIe Mini, USB 3.0, SATA 6Gb/s and iRIS
WAFER-ULT2-i1-i3-R11	3.5" SBC with Intel® 14nm 5th Generation ULT Mobile Core™ i3-5010U processor (ULT), VGA/LVDS/iDP, Dual GbE, PCIe Mini, USB 3.0, SATA 6Gb/s and iRIS
WAFER-ULT2-i1-C-R11	3.5" SBC with Intel® 14nm 5th Generation ULT Mobile Celeron® 3765U processor (ULT), VGA/LVDS/iDP, Dual GbE, PCIe Mini, USB 3.0, SATA 6Gb/s and iRIS
WAFER-ULT-i1-i7-R11	3.5" SBC supports Intel® 22nm 4th Generation Mobile Core™ i7-4650U processor (ULT), VGA/LVDS/iDP, Dual GbE, USB 3.0, PCIe Mini, SATA 6Gb/s Audio, iRIS-1010 and RoHS
WAFER-ULT-i1-i5-R11	3.5" SBC supports Intel® 22nm 4th Generation Mobile Core™ i5-4300U processor (ULT), VGA/LVDS/iDP, Dual GbE, USB 3.0, PCIe Mini, SATA 6Gb/s Audio, iRIS-1010 and RoHS
WAFER-ULT-i1-i3-R11	3.5" SBC supports Intel® 22nm 4th Generation Mobile Core™ i3-4010U processor (ULT), VGA/LVDS/iDP, Dual GbE, USB 3.0, PCIe Mini, SATA 6Gb/s Audio, iRIS-1010 and RoHS
WAFER-ULT-i1-C-R11	3.5" SBC supports Intel® 22nm 4th Generation Mobile Celeron™ 2980U processor (ULT), VGA/LVDS/iDP, Dual GbE, USB 3.0, PCIe Mini, SATA 6Gb/s Audio, iRIS-1010 and RoHS
iRIS-1010-R10	IPMI 2.0 adapter card with AST1010 BMC chip (w/o KVM over IP function) for PCIe Mini socket interface
19800-000300-200-RS	RS-232 cable, 300mm, P=2.0
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)

# WAFER-BT-E38001W2

3.5" SBC with Intel® 22nm Atom™ SoC, -40°C ~ 85°C, VGA/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 3Gb/s, mSATA, COM, Audio and RoHS



## Specifications

- ◆ SoC
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3827 on-board SoC (1.75GHz, dual-core, 1MB cache, TDP=8W)
  - Intel® Atom™ E3826 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=7W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
  - Intel® Atom™ E3815 on-board SoC (1.46GHz, single-core, 512KB cache, TDP=5W)
- ◆ BIOS
  - UEFI BIOS
- ◆ Memory
  - 4 GB solder-down 1066/1333 MHz DDR3L memory (for E3845)
  - 2 GB solder-down 1066/1333 MHz DDR3L memory (for E3825)
- ◆ Graphics
  - Intel® HD Graphics Gen 7 Engine with 4 execution units, supporting DX11.1, OpenGL 4.2 and OpenCL1.2
- ◆ Display Output
  - Dual independent display
  - 1 x VGA (up to 2560x1600@60Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 2560x1600@60Hz)
- ◆ Ethernet
  - LAN1: Intel® I210-IT PCIe controller
  - LAN2: Intel® I210-IT PCIe controller
- ◆ External I/O Interface
  - 1 x RS-232
  - 1 x USB 2.0
  - 1 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x PS/2 KB/MS (1x6 pin) 1 x RS-232 (2x5 pin, P=2.0)
  - 4 x USB 2.0 (2x4 pin, P=2.0) 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x SATA 3Gb/s with 5V SATA power connector (no RAID)
- ◆ Expansion
  - 2 x Full-size PCIe Mini slot
- ◆ Audio
  - Realtek ALC662 HD Audio codec
  - 1 x Front audio (2x5 pin)
- ◆ Storage
  - On-board SSD 4 GB colay SATA port 1 (optional)
  - 1 x mSATA colay SATA port 2
  - 1 x microSD socket
- ◆ Front Panel
  - 1 x Power LED & HDD LED (1x6 pin)
  - 1 x Power button (1x2 pin)
  - 1 x Reset button (1x2 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ I<sup>2</sup>C: 1 x I<sup>2</sup>C (1x4 pin)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x Smart fan connector (1x4 pin)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Power Consumption
  - 12V@1.32A (Intel® Atom™ processor E3845 with on-board 2 GB 1333 MHz DDR3L memory)
- ◆ Operating Temperature: -40°C ~ 85°C
- ◆ Storage Temperature: -40°C ~ 85°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 146mm x 102mm
- ◆ Weight: GW: 600g / NW: 250g
- ◆ CE/FCC compliant

## Features

- 3.5" SBC supports Intel® 22nm Atom™ on-board SoC
- Dual independent display support
- On-board 2 GB/4 GB 1066/1333 MHz DDR3L memory
- COM, USB 3.0, SATA 3Gb/s, PCIe Mini, mSATA and Audio support
- Supports -40°C ~ 85°C
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x WAFER-BT single board computer	1 x QIG
1 x Power cable	1 x Utility CD
1 x SATA with power cable kit	1 x One Key Recovery CD

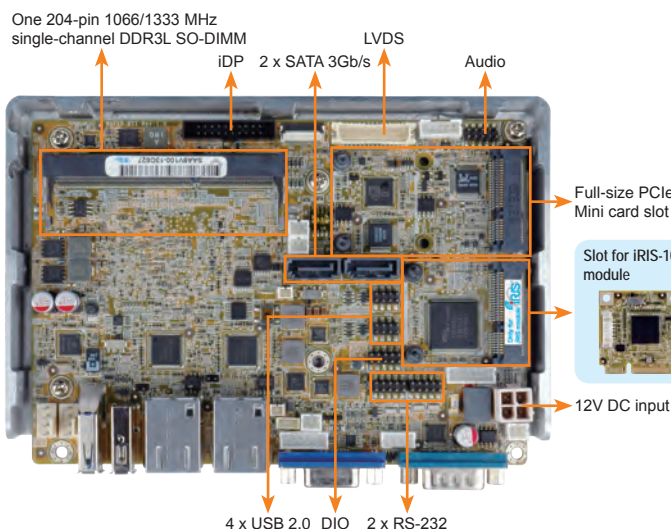
## Ordering Information

Part No.	Description
WAFER-BT-E38451W2-R10	3.5" SBC with Intel® 22nm Atom™ quad-core E3845 1.91GHz (10W) on-board SoC supports -40°C ~ 85°C, 4 GB DDR3 memory on board, VGA/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 3Gb/s, mSATA, COM, Audio and RoHS
WAFER-BT-E38271W2-R10**	3.5" SBC with Intel® 22nm Atom™ dual-core E3827 1.75GHz (8W) on-board SoC supports -40°C ~ 85°C, 2 GB DDR3 memory on board, VGA/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 3Gb/s, mSATA, COM, Audio and RoHS
WAFER-BT-E38261W2-R10**	3.5" SBC with Intel® 22nm Atom™ dual-core E3826 1.46GHz (7W) on-board SoC supports -40°C ~ 85°C, 2 GB DDR3 memory on board, VGA/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 3Gb/s, mSATA, COM, Audio and RoHS
WAFER-BT-E38251W2-R10	3.5" SBC with Intel® 22nm Atom™ dual-core E3825 1.33GHz (6W) on-board SoC supports -40°C ~ 85°C, 2 GB DDR3 memory on board, VGA/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 3Gb/s, mSATA, COM, Audio and RoHS
WAFER-BT-E38151W2-R10**	3.5" SBC with Intel® 22nm Atom™ single-core E3815 1.46GHz (5W) on-board SoC supports -40°C ~ 85°C, 2 GB DDR3 memory on board, VGA/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 3Gb/s, mSATA, COM, Audio and RoHS
19800-000300-100-RS	RS-232 cable with bracket, 300mm, P=2.0
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32007-005200-200-RS	Audio cable, 300mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)

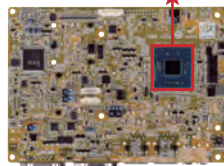
\*\*By order production, MOQ: 100

# WAFER-BT-i1

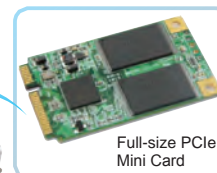
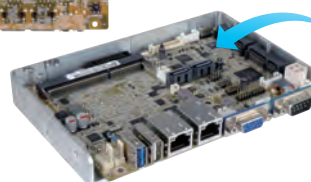
3.5" SBC with Intel® 22nm Atom™/Celeron® on-board SoC, VGA/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 3Gb/s, mSATA, COM, Audio and RoHS



Intel® Atom™ Bay Trail SoC processor on solder side



1 x Full-size PCIe Mini slot for Wi-Fi expansion  
2 x SATA connector for storage

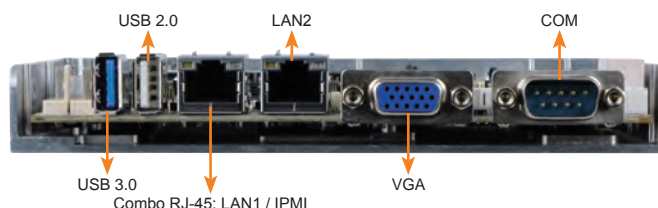


Dual independent display (max. support 1920x1200@60Hz)



## Specifications

- ◆ SoC
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3827 on-board SoC (1.75GHz, dual-core, 1MB cache, TDP=8W)
  - Intel® Atom™ E3826 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=7W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
  - Intel® Atom™ E3815 on-board SoC (1.46GHz, single-core, 512KB cache, TDP=5W)
  - Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Celeron® N2930 on-board SoC (1.83GHz, quad-core, 2MB cache, TDP=7.5W)
  - Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.3W)
- ◆ BIOS
  - AMI UEFI BIOS
- ◆ Memory
  - One 204-pin 1066/1333 MHz single-channel DDR3L SO-DIMM slot supports up to 8 GB (J1900, N2930, E3845, E3827, E3826, E3825, E3815) or 4 GB (N2807)
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 7 Engine with 4 execution units, supports DX11.1, OpenGL 4.2 and OpenCL 1.2
- ◆ Display Output
  - Dual independent display
  - 1 x VGA (up to 2560x1600@60Hz)
  - 1 x 24-bit dual-channel LVDS connector (up to 1920x1200@60Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 2560x1600@60Hz)
- ◆ Ethernet
  - LAN1: Intel® I210-AT PCIe controller with NCSI support
  - LAN2: Intel® I211-AT PCIe controller
- ◆ External I/O Interface
  - 1 x RS-232
  - 1 x USB 2.0
  - 1 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x RS-232 (2x5 pin, P=2.0)
  - 2 x SATA 3Gb/s with 5V SATA power connector
  - 4 x USB 2.0 (2x4 pin, P=2.0)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ Audio
  - Realtek ALC662 HD codec
  - 1 x Front audio (2x5 pin)
- ◆ Front Panel
  - 1 x Power LED & HDD LED (1x6 pin)
  - 1 x Power button (1x2 pin)
  - 1 x Reset button (1x2 pin)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Expansion: 1 x Full-size PCIe Mini card slot (supports mSATA, colay with SATA port 2)
- ◆ iRIS Remote Management Module: 1 x iRIS-1010 slot
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System smart fan (1x4 pin)
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Watchdog Timer: Software programmable, supports 1~255 sec. system reset
- ◆ Power Consumption
  - 12V@1.45A (Intel® Celeron® J1900 with one 8 GB 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 146mm x 102mm
- ◆ Weight: GW: 600g / NW: 250g
- ◆ CE/FCC compliant



## Features

- 3.5" SBC supports Intel® 22nm Atom™ on-board SoC
- Dual independent display support
- 1333/1066 MHz 1.35V DDR3L SDRAM up to 8 GB
- COM, USB 3.0, SATA 3Gb/s, PCIe Mini, mSATA and Audio support
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery



## Packing List

1 x WAFER-BT-i1 single board computer	
1 x Audio cable	1 x One Key Recovery CD
1 x Power cable	1 x QIG
1 x SATA with power cable kit	1 x Utility CD

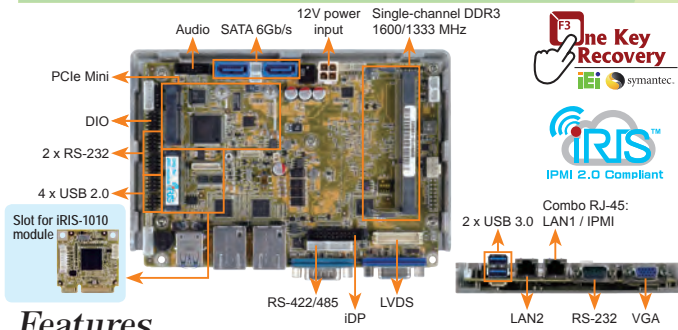
## Ordering Information

Part No.	Description
WAFER-BT-i1-J19001-R10	3.5" SBC supports Intel® 22nm quad-core Celeron® J1900 2.0GHz on-board SoC with VGA/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s, mSATA, COM, Audio, iRIS-1010 and RoHS
WAFER-BT-i1-N28071-R10	3.5" SBC supports Intel® 22nm dual-core Celeron® N2807 1.58GHz (4.3W) on-board SoC with VGA/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s, mSATA, COM, Audio, iRIS-1010 and RoHS
WAFER-BT-i1-N29301-R10	3.5" SBC supports Intel® 22nm quad-core Celeron® N2930 1.86GHz (7.5W) on-board SoC with VGA/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s, mSATA, COM, Audio, iRIS-1010 and RoHS
WAFER-BT-i1-E38XX1-R10**	3.5" SBC supports Intel® 22nm Atom™ E38XX on-board SoC with VGA/LVDS/iDP, Dual PCIe GbE, USB 3.0, PCIe Mini, SATA 6Gb/s, mSATA, COM, Audio, iRIS-1010 and RoHS
WAFER-BT-J19001-ECO-R10	Intel® 22nm Quad-Core Celeron® J1900 2.0GHz on-board SoC with VGA/LVDS/iDP, Dual PCIe GbE, USB 2.0, PCIe Mini, SATA, mSATA, COM, Audio, ECO packing and RoHS
19800-000300-100-RS	RS-232 cable, 300mm, P=2.0
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0

\*\*By order production, MOQ: 100

# WAFER-KBN-i1

3.5" SBC supports AMD® Embedded G-Series SoC with VGA/LVDS/iDP, Dual GbE, PCIe Mini, USB 3.0, SATA 6Gb/s, iRIS-1010, HD Audio and RoHS



## Features

- 3.5" form factor with AMD® Embedded G-Series SoC
- 12V only single voltage design with AT/ATX mode
- 18/24-bit dual-channel LVDS for high resolution panel
- Support IPMI 2.0 with iRIS-1010 module
- Support full-size PCIe Mini card slot for mSATA, wireless card and DOM

## Specifications

- ◆ SoC
  - AMD® Embedded G-Series SoC
  - GX-415GA on-board SoC (1.5GHz, quad-core, 2MB cache, TDP=15W)
  - GX-210HA on-board SoC (1.0GHz, dual-core, 1MB cache, TDP=9W)
  - GX-420CA on-board SoC (2.0GHz, quad-core, 2MB cache, TDP=25W)
  - GX-217GA on-board SoC (1.65GHz, dual-core, 1MB cache, TDP=15W)
- ◆ BIOS: AMI UEFI BIOS
- ◆ Memory: One 204-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM SO-DIMM slot supports up to 8 GB
- ◆ Graphics Engine
  - GPU frequency 500 MHz (Radeon™ HD 8330E) for GX-415GA
  - GPU frequency 300 MHz (Radeon™ HD 8210E) for GX-210HA
  - GPU frequency 600 MHz (Radeon™ HD 8400E) for GX-420CA
  - GPU frequency 450 MHz (Radeon™ HD 8280E) for GX-217GA
  - Support DX11.1, OpenGL 4.1 and OpenCL 1.2
  - UVDA.2 decode for H.264, MPEG2/4, VC1, MVC
  - VCE 2.0 encode for H.264, VCE
- ◆ Display Output
  - 1 x VGA (up to 2048x1536@60Hz)
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 2560x1600@60 Hz)
- ◆ Ethernet
  - LAN1: Intel® i210-AT PCIe controller with NCSI support
  - LAN2: Intel® i211-AT PCIe controller
- ◆ External I/O Interface
  - 1 x RS-232
  - 2 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x RS-232 (2x5 pin, P=2.0)
  - 2 x SATA 3Gb/s with 5V SATA power connector
  - 4 x USB 2.0 (2x4 pin, P=2.0)
- ◆ iRIS Remote Management Module
  - 1 x iRIS-1010 slot
  - 1 x SMBus: 1 x SMBus (1x4 pin)
  - 1 x I²C: 1 x I²C (1x4 pin)
- ◆ Audio
  - Realtek ALC892 HD codec
  - 1 x Front audio (2x5 pin)
  - 1 x S/PDIF (1x4 pin)
- ◆ Front Panel
  - 1 x Power LED & HDD LED (1x6 pin)
  - 1 x Power button (1x2 pin)
  - 1 x Reset button (1x2 pin)
- ◆ LAN LED: 2 x LAN LED (1x2 pin)
- ◆ Expansion: 1 x Full-size PCIe Mini card slot (supports mSATA co-lay SATA port 2)
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Fan Connector: 1 x 4-pin system fan connector
- ◆ Watchdog Timer: Software programmable, support 1~255 sec. system reset
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Power Consumption
  - 12V@2.12A (AMD GX-415GA 1.5GHz CPU with one 4 GB 1333 MHz DDR3 memory)
  - Operating Temperature: 0°C ~ 60°C
  - Storage Temperature: -10°C ~ 70°C
  - Operating Humidity: 5% ~ 95%, non-condensing
  - Dimensions: 146mm x 102mm
  - Weight: GW: 600g/ NW: 250g
  - ◆ CE/FCC compliant

## Packing List

1 x WAFER-KBN single board computer with Enclosure Heatsink	
1 x Audio cable	
1 x Power cable	1 x One Key Recovery CD
1 x RS-232 cable	1 x QIG
2 x SATA with 5V output cable kit	1 x Utility CD

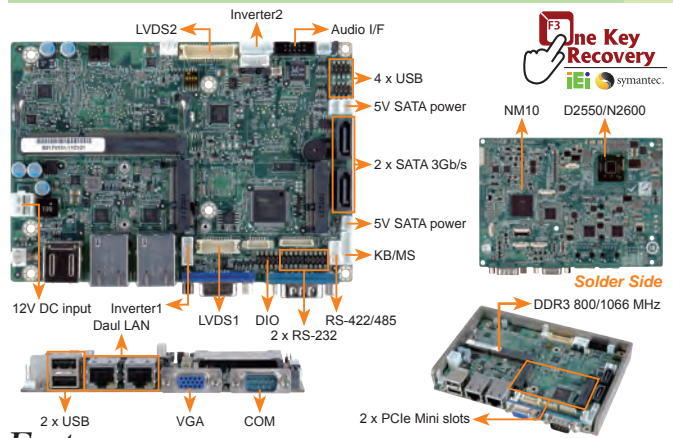
## Ordering Information

Part No.	Description
WAFER-KBN-i1-4151-R10	3.5" SBC supports AMD 28nm quad-core GX-415GA 1.5GHz (15W) on-board SoC with VGA/LVDS, Dual GbE, PCIe Mini, USB 3.0, SATA 6Gb/s, iRIS-1010, HD Audio and RoHS
WAFER-KBN-i1-2101-R10	3.5" SBC supports AMD 28nm dual-core GX-210HA 1.0GHz (9W) on-board SoC with VGA/LVDS, Dual GbE, PCIe Mini, USB 3.0, SATA 6Gb/s, iRIS-1010, HD Audio and RoHS
iRIS-1010-R10	IPMI 2.0 adapter card with AST1010 BMC chip (W/O KVM over IP function) for PCIe Mini socket interface
32000-023800-RS	PS/2 KB/MS cable, 135mm/110mm, P=2.0
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)

Note: Models with other CPU not listed in the table are requested by MOQ: 100 pcs/lot.

# WAFER-CV-D25501/N26001

3.5" SBC with Intel® Atom™ D2550/N2600 Processor, DDR3, VGA/Dual LVDS, Dual GbE, USB 2.0, SATA 3Gb/s, Audio and RoHS



## Features

- 3.5" form factor with Intel® Atom™ D2550/N2600 dual-core processor supporting DDR3 memory
- 12V only single voltage design for AT/ATX power
- Open frame heatsink thermal design for fanless solutions
- Flexible VGA, 18/24-bit LVDS with dual display support
- Complete I/O: six USB, two SATA 3Gb/s, one mSATA, four COM and audio
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU
  - Intel® Atom™ D2550 (1.86GHz, dual-core, 1MB cache)
  - Intel® Atom™ N2600 (1.6GHz, dual-core, 1MB cache)
  - Intel® Atom™ N2800 (1.86GHz, dual-core, 1MB cache)
- ◆ Chipset: Intel® NM10
- ◆ BIOS: UEFI BIOS
- ◆ Memory: One 204-pin 1066 MHz DDR3 SDRAM SO-DIMM slot supports up to 4 GB (D2550/N2800) or 2 GB (N2600)
- ◆ Display Output
  - Dual display supported
  - VGA (up to 1920x1200@60Hz)
  - (Due to Intel GMA driver limitation, the monitor connected to the VGA connector may not have signal to it or become extended desktop after restarting the graphics driver installation. To solve this problem, press the Ctrl+Alt+F1 hotkey to switch the primary screen to CRT mode.)
  - 24-bit single-channel LVDS1 (D2550) (up to 1440x900@60Hz)
  - 18-bit single-channel LVDS1 (N2600/N2800) (up to 1366x768@60Hz)
  - 24-bit dual-channel LVDS2 (up to 1920x1200 (D2550) or 1600x1200 (N2600/N2800)@60Hz)
- ◆ Graphics
  - GMA 3650 at 640 MHz graphics core speed (for N2550 and N2800)
  - GMA 3600 at 400 MHz graphics core speed (for N2600)
- ◆ Ethernet
  - Dual LAN: Realtek RTL8111E controllers
- ◆ External I/O Interface
  - 1 x RS-232
  - 2 x USB 2.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x RS-232 (2x5 pin, P=2.0)
  - 2 x SATA 3Gb/s with 5V SATA power connector
  - 4 x USB 2.0 (2x4 pin, P=2.0)
  - ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Expansion
  - 1 x Full-size PCIe Mini card slot (supports mSATA, colay with SATA port 2)
  - 1 x Half-size PCIe Mini card slot
- ◆ Audio
  - Realtek ALC662 HD codec
  - 1 x Front audio (2x5 pin)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Fan Connector (smart fan support)
  - 1 x CPU smart fan (1x3 pin)
  - 1 x System smart fan (1x3 pin)
- ◆ Power Consumption
  - 12V@1.53A (Intel® D2550 1.86GHz CPU with one 1 GB 1066 MHz DDR3 memory)
  - 12V@1.15A (Intel® N2600 1.6GHz CPU with one 1 GB 1066 MHz DDR3 memory)
- ◆ Operating Temperature
  - 20°C ~ 60°C with free air, -20°C ~ 70°C with force air for D2550 processor
  - 20°C ~ 70°C with free air, -20°C ~ 75°C with force air for N2600/N2800 processor
- ◆ Storage Temperature: -30°C ~ 80°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Weight: GW: 600g / NW: 250g
- ◆ CE/FCC compliant

## Packing List

1 x WAFER-CV-D25501/N26001 single board computer	2 x SATA with 5V output cable
1 x Audio cable	1 x One Key Recovery CD
1 x KB/MS cable	1 x Heat spreader
1 x Power cable	1 x Mini jumper pack
1 x RS-232 cable	1 x Utility CD
1 x Screw set for PCIe Mini card	1 x QIG

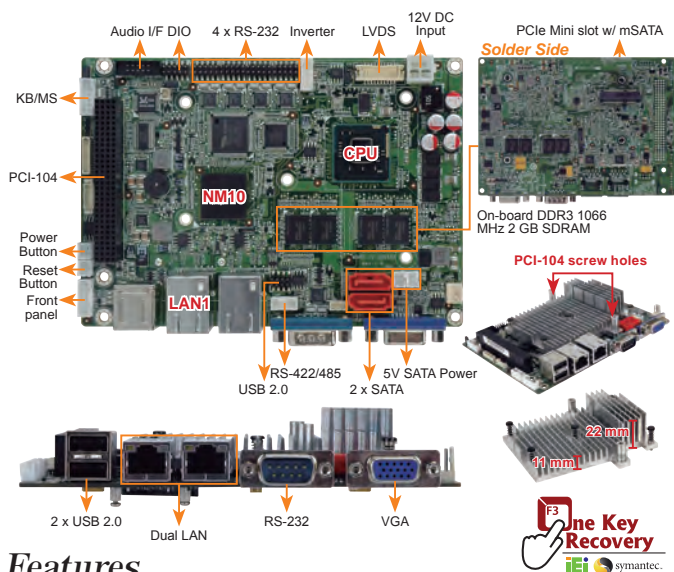
## Ordering Information

Part No.	Description
WAFER-CV-D25501-R10	3.5" SBC with Intel® Atom™ D2550 1.86GHz, DDR3, VGA/ dual LVDS, dual GbE, USB 2.0, SATA 3Gb/s, Audio, RoHS
WAFER-CV-N26001-R10	3.5" SBC with Intel® Atom™ N2600 1.6 GHz, DDR3, VGA/ dual LVDS, dual GbE, USB 2.0, SATA 3Gb/s, Audio, RoHS
WAFER-CV-N28001-R10**	3.5" SBC with Intel® Atom™ N2800 1.86GHz, DDR3, VGA/ dual LVDS, dual GbE, USB 2.0, SATA 3Gb/s, Audio, RoHS (by project support, MOQ 100pcs / lot)
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0

\*\*By order production, MOQ: 100

# WAFER-CV-D25502/N26002

3.5" SBC Supports Intel® Atom™ D2550/N2600 Processor with 2 GB DDR3 Memory, VGA/LVDS, Dual GbE, PCI-104, USB 2.0, SATA 3Gb/s and Audio



## Features

- 3.5" form factor supports Intel® Atom™ D2550/N2600 dual-core processor with 2 GB DDR3 memory
- 12V only single voltage design for AT/ATX power
- 24-bit single-channel LVDS via D2550 CPU or 18-bit single-channel via N2600/N2800 CPU support
- Supporting PCI-104 and mSATA
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU
  - Intel® Atom™ D2550 (1.86GHz, dual-core, 1MB cache)
  - Intel® Atom™ N2600 (1.6GHz, dual-core, 1MB cache)
  - Intel® Atom™ N2800 (1.86GHz, dual-core, 1MB cache)
- ◆ System Chipset: Intel® NM10
- ◆ BIOS: UEFI BIOS
- ◆ Memory
  - 2 GB soldered-down 1066 MHz DDR3 memory
- ◆ Graphics
  - GMA 3650 with 640 MHz graphics core speed for D2550 and N2800
  - GMA 3600 with 400 MHz graphics core speed for N2600
- ◆ Display Output
  - VGA (up to 1920x1200@60Hz)
  - 24-bit single-channel LVDS (D2550) (up to 1440x900@60Hz)
  - 18-bit single-channel LVDS (N2600/N2800) (up to 1366x768@60Hz)
- ◆ Ethernet
  - LAN1: Realtek RTL8111E controllers with ASF2.0 support
  - LAN2: Realtek RTL8111E controllers
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Audio: Realtek ALC662 HDA codec
- ◆ External I/O Interface
  - 1 x RS-232
  - 2 x USB 2.0
- ◆ Internal I/O Interface
  - 1 x KB/MS (1x6 pin)
  - 1 x RS-422/485 (1x4 pin, P=2.0)
  - 2 x SATA 3Gb/s with 5V SATA power connector
  - 2 x USB 2.0 (2x4 pin, P=2.0)
  - 4 x RS-232 (2x5 pin, P=2.0)
- ◆ Expansion
  - 1 x Full-size PCIe Mini card slot (support mSATA)
  - 1 x PCI/104 slot (PCI signal)
- ◆ Fan Connector: 1 x Smart fan connector (1x3 pin)
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX moded
- ◆ Power Consumption:
  - 12V@1.19A (1.86GHz Intel® Atom™ D2550 with on-board 1 GB 1066 MHz DDR3 memory)
  - 12V@0.95A (1.6GHz Intel® Atom™ N2600 with on-board 2 GB 1066 MHz DDR3 memory)
- ◆ Operating Temperature
  - 20°C ~ 60°C with free air, -20°C ~ 70°C with force air for D2550 processor
  - 20°C ~ 70°C with free air, -20°C ~ 75°C with force air for N2600/N2800 processor
- ◆ Storage Temperature: -30°C ~ 80°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 146 mm x 102 mm
- ◆ Weight: GW: 600g / NW: 250g
- ◆ CE/FCC compliant

## Packing List

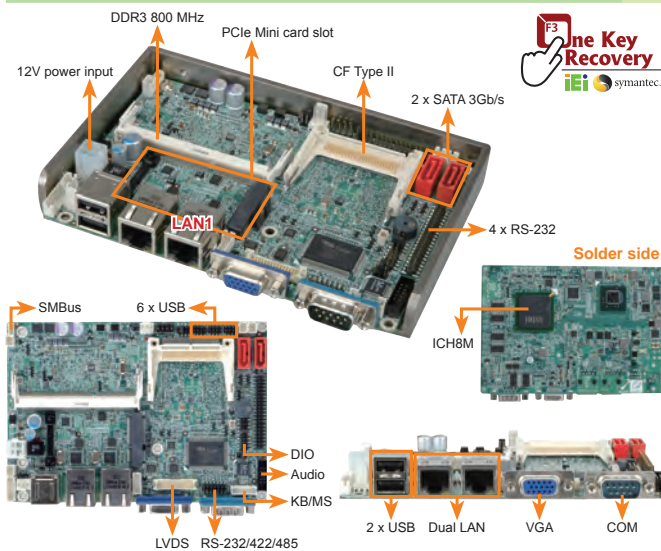
1 x WAFER-CV-D25502/N26002 single board computer	
1 x Audio cable	
1 x Power cable	1 x Mini jumper pack
1 x PS/2 KB/MS cable	1 x QIG
1 x RS-232 cable	1 x Utility CD
2 x SATA with 5V output cable kit	1 x One Key Recovery CD

## Ordering Information

Part No.	Description
WAFER-CV-D25502-R10	3.5" SBC supports Intel® Atom™ D2550 1.86 MHz processor with 2 GB DDR3 memory, VGA/LVDS, Dual GbE, PCI/104, USB 2.0, SATA 3Gb/s and Audio
WAFER-CV-N26002-R10	3.5" SBC supports Intel® Atom™ N2600 1.6 MHz processor with 2 GB DDR3 memory, VGA/LVDS, Dual GbE, PCI/104, USB 2.0, SATA 3Gb/s and Audio
**WAFER-CV-N28002-R10	3.5" SBC supports Intel® Atom™ N2800 1.86 MHz processor with 2 GB DDR3 memory, VGA/LVDS, Dual GbE, PCI/104, USB 2.0, SATA 3Gb/s and Audio (by project support, MOQ 100pcs / lot)
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0

# WAFER-PV-D5252/D4252/N4552

3.5" SBC with Intel® Atom™ D425/N455/D525, DDR3, VGA/LVDS, Dual GbE, USB 2.0 and SATA 3Gb/s, Audio, RoHS



## Features

- 3.5" form factor with Intel® Atom™ D525/D425/N455 processor supports DDR3 memory
- 12V only single voltage design for AT/ATX power
- Open frame heatsink thermal design for fanless solutions
- Support VGA and 18-bit single-channel LVDS with dual display support
- Complete I/O with eight USB, two SATA 3Gb/s, one CF Type II, six COM and audio
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU
  - Intel® Atom™ D525 (1.8GHz, dual-core, 1MB cache)
  - Intel® Atom™ D425 (1.8GHz, single-core, 512KB cache)
  - Intel® Atom™ N455 (1.66GHz, single-core, 512KB cache)
- ◆ Chipset: Intel® ICH8M
- ◆ BIOS: UEFI BIOS
- ◆ Memory
  - One 204-pin 800 MHz DDR3 SDRAM SO-DIMM slot supports up to 4 GB (D525/D425) or 2 GB (N455)
- ◆ Graphics
  - GMA 3150
  - Graphics core speed 400 MHz for D525/D425
  - Graphics core speed 200 MHz for N455
- ◆ Display Output
  - VGA (up to 2048x1536 (D525/D425) or 1400x1050 (N455) @60Hz)
  - 18-bit single-channel LVDS (up to 1366x768 (D525/D425) or 1024x768 (N455) @60Hz)
- ◆ Ethernet
  - LAN1: Realtek RTL8111E controllers with ASF2.0 support
  - LAN2: Realtek RTL8111E controllers
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Expansion: 1 x Full-size PCIe Mini card slot
- ◆ Audio: Realtek ALC662 HD Audio codec
- ◆ External I/O Interface
  - 1 x RS-232
  - 2 x USB 2.0
- ◆ Internal I/O Interface
  - 1 x CF Type II
  - 1 x KB/MS (1x6 pin)
  - 1 x RS-232/422/485 (2x7 pin, P=2.0)
  - 2 x SATA 3Gb/s with 5V SATA power connector
  - 4 x RS-232 (2x5 pin, P=2.0)
  - 6 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Power Supply
  - 12V only DC input
  - 1 x Internal power connector (2x2 pin)
  - Support AT/ATX mode
- ◆ Fan Connector
  - 1 x CPU smart fan (1x3 pin)
  - 1 x System smart fan (1x3 pin)
- ◆ SMBus: 1 x SMBus (1x4 pin)
- ◆ Power Consumption
  - 12V@1.79A (Intel® Atom™ D525 with one 1 GB 800 MHz DDR3 memory)
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Weight: GW: 600g / NW: 250g
- ◆ CE/FCC compliant

## Packing List

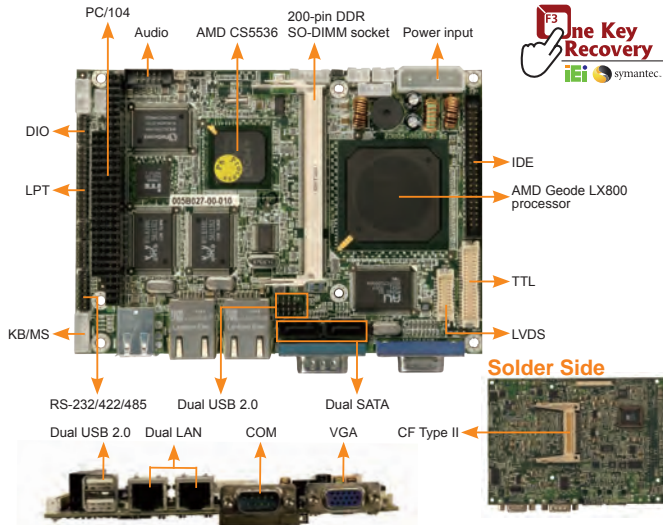
1 x WAFER-PV-D5252/D4252/N4552 single board computer	
1 x Audio cable	1 x Heat spreader
1 x KB/MS cable	1 x Mini jumper pack
1 x Power cable	1 x One Key Recovery CD
1 x Quad RS-232 cable	1 x Utility CD
1 x SATA with 5V output cable	1 x QIG

## Ordering Information

Part No.	Description
WAFER-PV-D5252-R11	3.5" SBC with Intel® Atom™ D525 1.8GHz, DDR3, VGA/LVDS, dual GbE, USB 2.0 and SATA 3Gb/s, audio, RoHS
WAFER-PV-D4252-R11	3.5" SBC with Intel® Atom™ D425 1.8GHz, DDR3, VGA/LVDS, dual GbE, USB 2.0 and SATA 3Gb/s, audio, RoHS
WAFER-PV-N4552-R11	3.5" SBC with Intel® Atom™ N455 1.66GHz, DDR3, VGA/LVDS, dual GbE, USB 2.0 and SATA 3Gb/s, audio, RoHS
19800-004300-100-RS	RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 250mm, P=2.0
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0

# WAFER-LX

3.5" SBC with on-board AMD Geode™ LX 800 Processor VGA/LVDS/TTL, Dual LAN and SATA



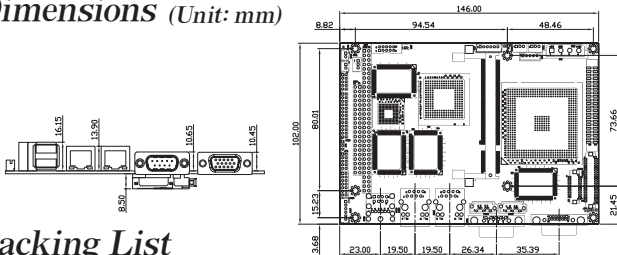
## Features

- 3.5" form factor embedded board with AMD Geode™ LX 800 processor and RoHS compliant
- 333/400 MHz DDR SDRAM SO-DIMM supports up to 1 GB
- Complete I/O support with two SATA, IDE, CF Type II, PC/104, dual LAN and four USB 2.0
- 24-bit TTL/18-bit single-channel LVDS
- Value embedded applications with low power and fanless design. Support Windows® XP/CE/XPe
- The best choice for thin client Windows® CE 5.0, XPe OS image with ICA, RDP and IE APs ready
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU  
AMD Geode™ LX800 (500 MHz) processor
- ◆ Chipset: AMD CS5536
- ◆ BIOS: Award BIOS
- ◆ System Memory  
One 200-pin 400/333 MHz DDR SDRAM SO-DIMM slot supports up to 1 GB
- ◆ Ethernet  
Dual LAN: 10/100Mbps RTL8100C Ethernet Controller
- ◆ External I/O Interface  
1 x RS-232      2 x USB 2.0
- ◆ Internal I/O Interface  
1 x CF Type II  
1 x IDE (2x22 pin, P=2.0)  
1 x LPT (2x13 pin, P=2.0)  
1 x KB/MS (1x6 pin)  
1 x RS-232 (2x5 pin, P=2.0)  
1 x RS-422/485 (2x2 pin, P=2.0)  
2 x SATA 1.5Gb/s (RAID 0, 1 support)  
2 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Expansion: 1 x PC/104
- ◆ Digital I/O: 8-bit digital I/O (2x5 pin)
- ◆ Audio: Realtek ALC203 with AC'97 codec
- ◆ Display Output  
1 x VGA (up to 1920x1440@60Hz)  
1 x 18-bit single-channel LVDS (up to 1280x1024@60Hz)
- ◆ Infrared Interface: 1 x Infrared interface (1x5 pin)
- ◆ Watchdog Timer  
Software programmable supports 1~255 sec. system reset
- ◆ Power Supply  
5V only DC input  
1 x Internal power connector (1x4 pin)  
Support AT/ATX mode
- ◆ Power Consumption  
5V@1.53A (AMD LX800 with one 1 GB 400 MHz DDR memory)
- ◆ Operating Temperature: 0°C ~ 60°C
- ◆ Storage Temperature: -10°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 146 mm x 102 mm
- ◆ Weight: GW: 670g / NW: 230g
- ◆ CE/FCC compliant

## Dimensions (Unit: mm)



## Packing List

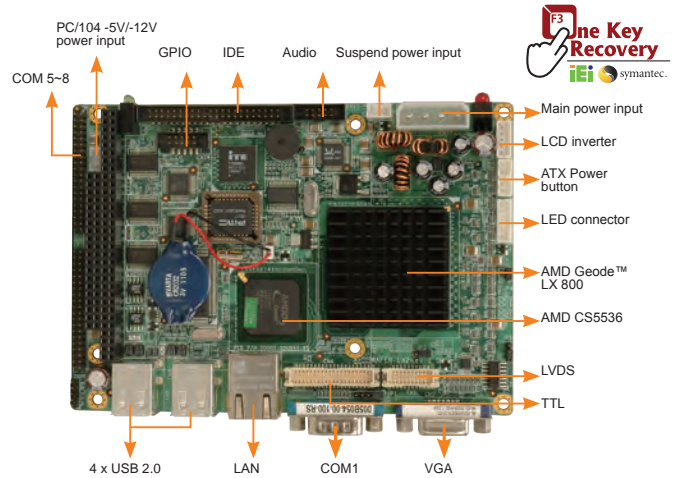
1 x WAFER-LX single board computer	1 x Audio cable
1 x KB/MS Y cable	1 x IDE flat cable 44p/44p
1 x RS-232/422/485 cable	1 x Mini jumper pack
1 x SATA power cable	1 x One Key Recovery CD
1 x USB cable	1 x QIG
2 x SATA cable	1 x Utility CD

## Ordering Information

Part No.	Description
WAFER-LX-800-R12	3.5" SBC with AMD Geode™ LX 800 processor, audio, VGA/LVDS/TTL, dual LAN and SATA connectors
32200-015100-RS	LPT cable, 280mm, P=2.0

# WAFER-LX2

3.5" SBC with AMD Geode™ LX 800 Processor, Eight COM, DDR 400 MHz, VGA/LVDS/TTL Display Interfaces, PC/104, Four USB 2.0, Embedded OS Support



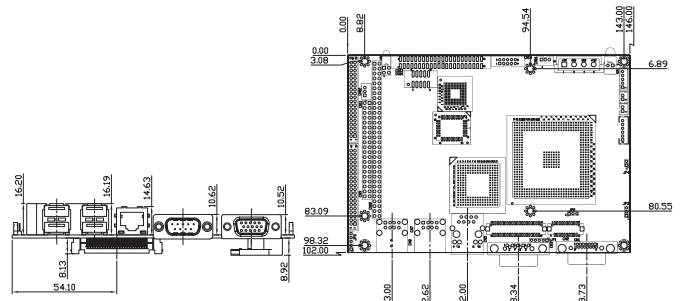
## Features

- 3.5" form factor with AMD Geode™ LX 800 CPU
- One 333/400 MHz DDR SO-DIMM socket supports up to 1 GB memory
- VGA, 24-bit TTL, 18-bit LVDS display interfaces
- Seven RS-232 and one RS-232/422/485
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU  
AMD Geode™ LX 800 (500 MHz)
- ◆ Chipset  
CS5536
- ◆ BIOS  
Award BIOS
- ◆ System Memory  
One 200-pin 400/333 MHz DDR SDRAM SO-DIMM slot supports up to 1 GB
- ◆ Ethernet  
LAN: 10/100Mbps RTL8100C Ethernet Controller
- ◆ External I/O Interface  
1 x RS-232      4 x USB 2.0
- ◆ Internal I/O Interface  
1 x CF Type II  
1 x IDE (2x22 pin, P=2.0)  
1 x RS-232/422/485 (2x7 pin, P=2.0)  
6 x RS-232 (2x5 pin, P=2.0)
- ◆ Expansion  
1 x PC/104 (ISA Bus)
- ◆ Digital I/O  
8-bit digital I/O (2x5 pin)
- ◆ Display Output  
1 x VGA (up to 1920x1440@60Hz)  
1 x 24-bit single-channel TTL (up to 1600x1200@60Hz)  
1 x 18-bit single-channel LVDS (up to 1280x1024@60Hz)
- ◆ Audio: Realtek ALC203 with AC'97 codec
- ◆ Watchdog Timer  
Software programmable supports 1 ~255 sec. system reset
- ◆ Power Supply  
5V only DC input  
1 x Internal power connector (1x4 pin)  
Support AT/ATX mode
- ◆ Power Consumption  
5V@1.33A (AMD Geode™ LX 800 with one 1 GB 400 MHz DDR memory)
- ◆ Operating Temperature  
0°C ~ 60°C (32°F ~ 140°F)
- ◆ Storage Temperature: -10°C ~ 70°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Dimensions: 146 mm x 102 mm
- ◆ Weight: GW: 670g / NW: 230g
- ◆ CE/FCC compliant

## Dimensions (Unit: mm)



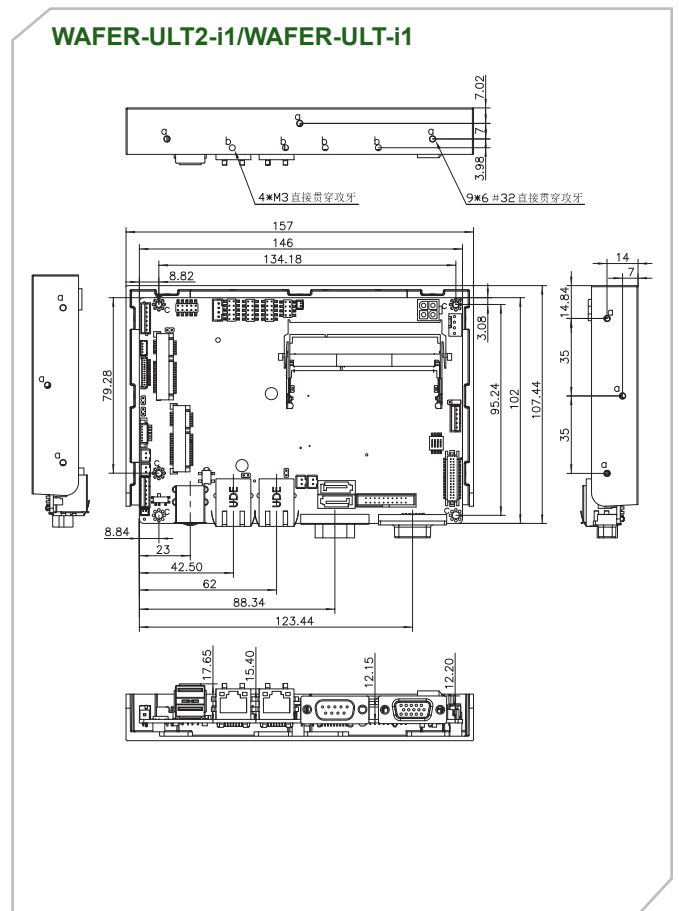
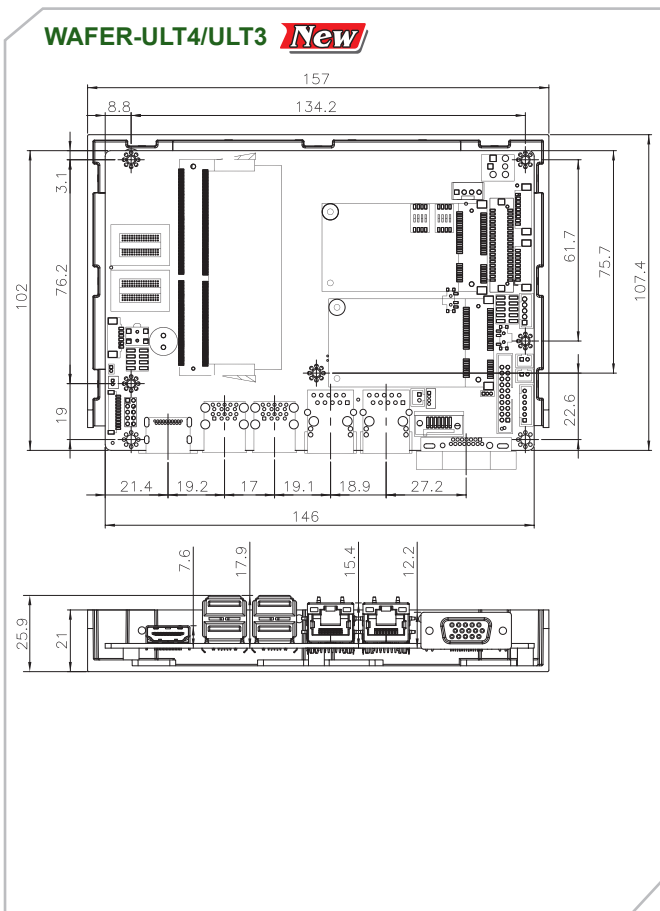
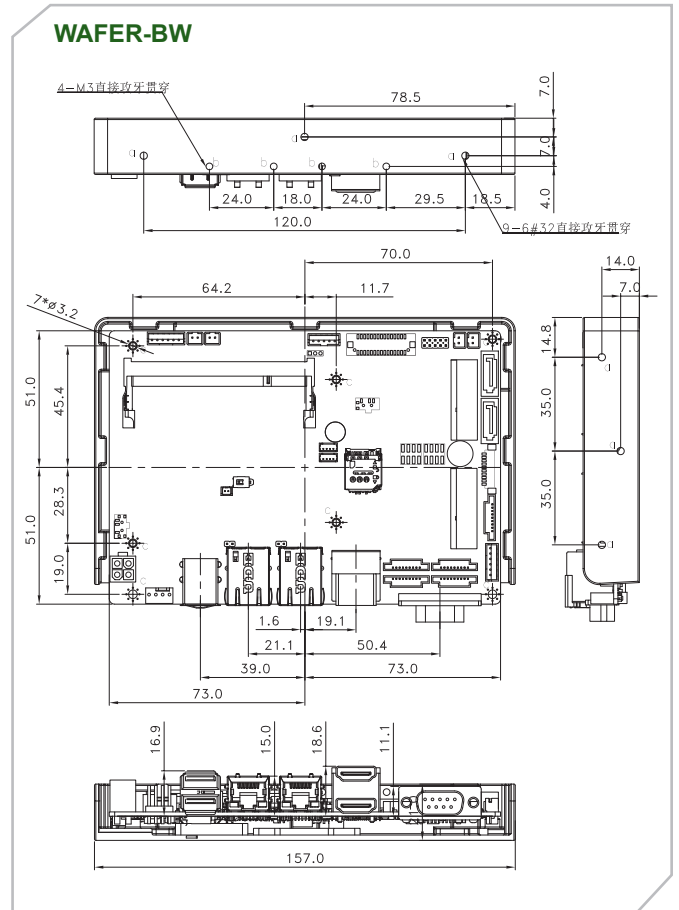
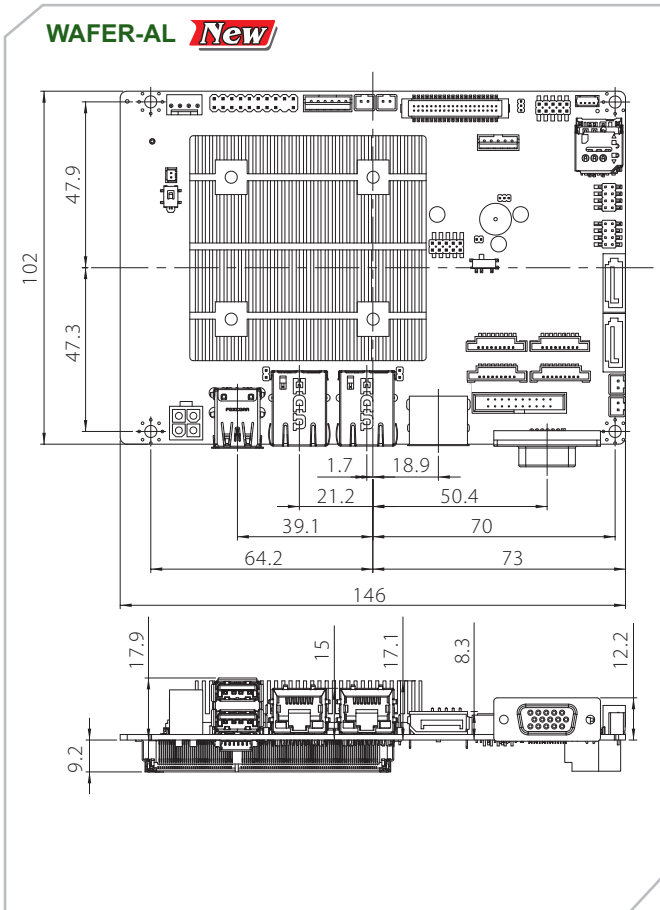
## Packing List

1 x WAFER-LX2 single board computer	1 x Mini jumper pack
1 x Audio cable	1 x One Key Recovery CD
1 x IDE flat cable 44p/44p	1 x QIG
2 x Quad RS-232 adapter cable	1 x Utility CD

## Ordering Information

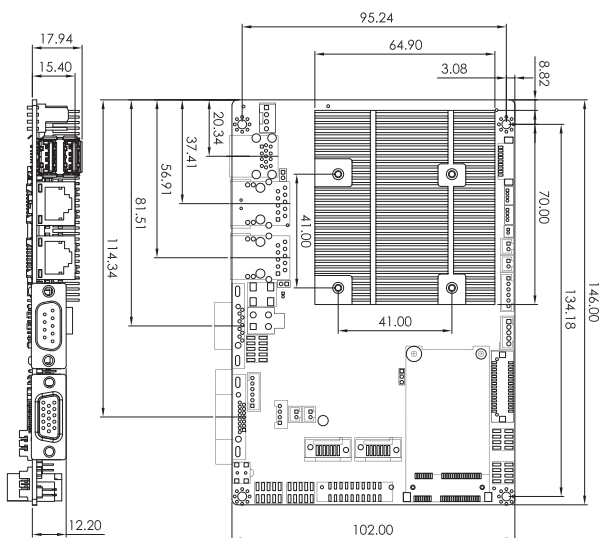
Part No.	Description
WAFER-LX2-800-R12	3.5" SBC with AMD Geode™ LX 800 processor, Audio, VGA/LVDS, TTL/LVDS, four USB 2.0, seven RS-232 and one RS-232/422/485

**WAFER Dimensions** (Unit: mm)

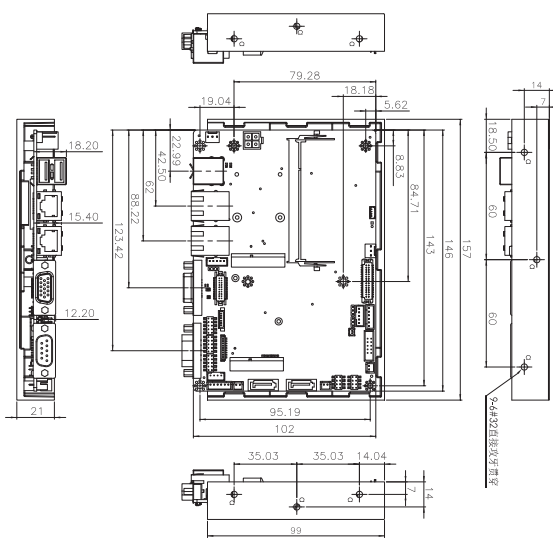


**WAFER Dimensions** (Unit: mm)

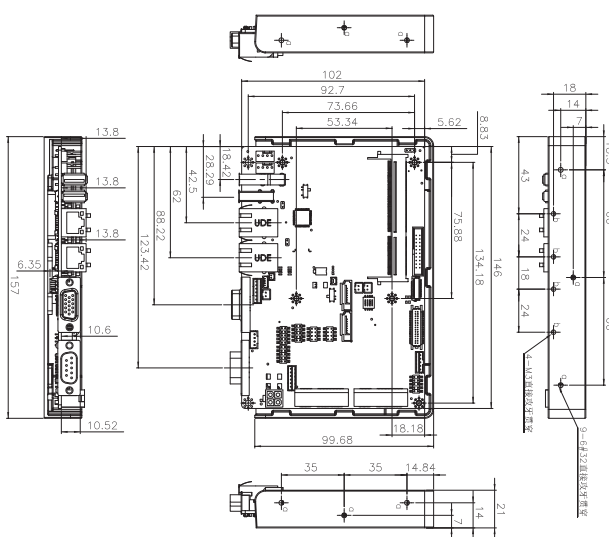
**WAFER-BT-E38001W2**



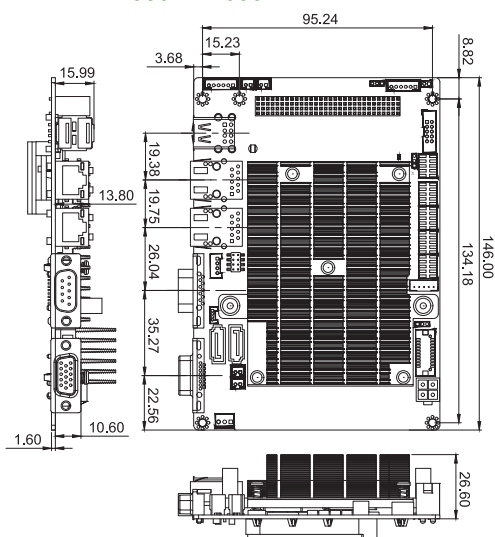
**WAFER-CV-D25501/N26001**



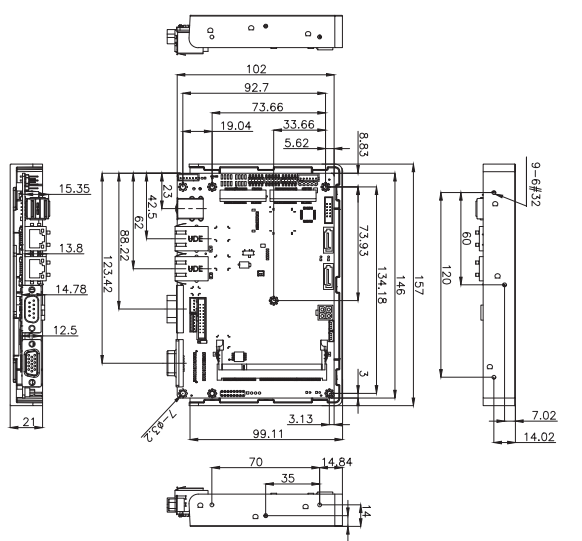
**WAFER-BT-i1**



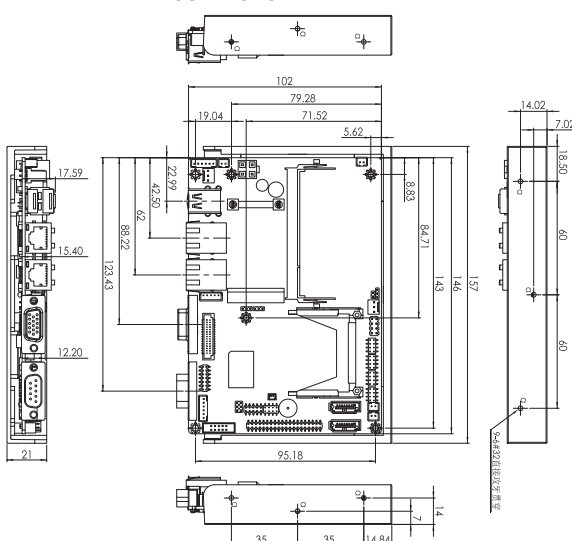
**WAFER-CV-D25502/N26002**



**WAFER-KBN-i1**



**WAFER-PV-N4552/D5252**





# PC/104 Selection Guide

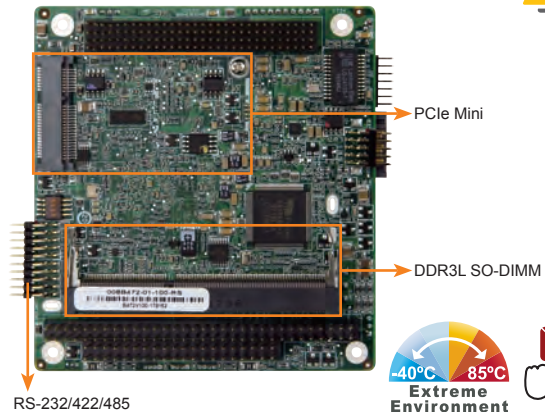
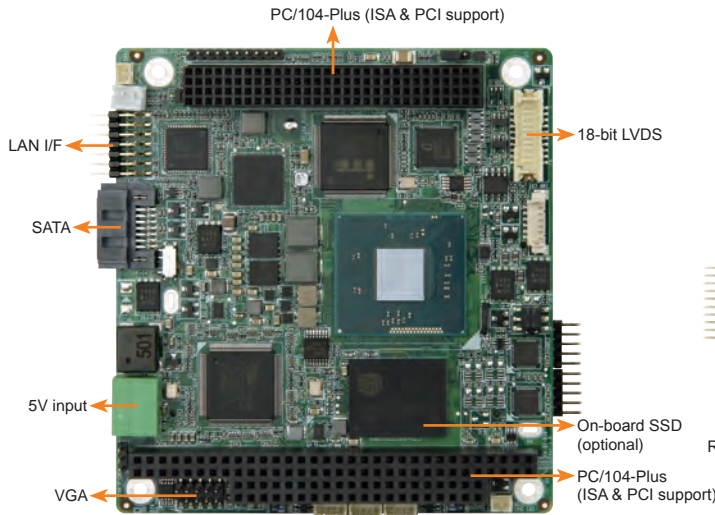
**Preliminary**



Model Name	PM-BT	PM-PV-N4551/D5251-R11	PM-LX	PM-LX2
<b>CPU Socket</b>	On board	On board	On board	On board
<b>CPU Type</b>	Intel® Atom™/Celeron® SoC	Intel® Atom™ D525 1.8GHz Intel® Atom™ N455 1.66GHz	AMD Geode™ LX 800 500 MHz	AMD Geode™ LX 800 500 MHz
<b>Chipset</b>	Intel® Atom™/Celeron® SoC	ICH8M	Geode™ LX800 + CS5536	Geode™ LX800 + CS5536
<b>Memory</b>	1 x 204-pin 1066/1333 MHz DDR3L SO-DIMM (system max. 8 GB)	1 x 204-pin 800 MHz 4 GB (max.) DDR3 SO-DIMM (D525) 1 x 204-pin 800 MHz 2 GB (max.) DDR3 SO-DIMM (N455)	1 x 200-pin 400 MHz 1 GB (max.) DDR SDRAM SO-DIMM	1 x 200-pin 400 MHz 1 GB (max.) DDR SDRAM SO-DIMM
<b>Display Interface</b>	Dual display supported 1 x VGA 1 x 18/24-bit single-channel LVDS	Dual display supported 1 x VGA 1 x 18-bit single-channel LVDS	Dual display supported 1 x VGA 1 x 24-bit TTL	Dual display supported 1 x VGA 1 x 24-bit TTL
<b>Ethernet</b>	GbE by Intel® I210 Ethernet PHY	GbE by Intel® 82567V Ethernet PHY	10/100Mbps LAN by Realtek RTL8100C	10/100Mbps LAN by Realtek RTL8100C
<b>iRIS Remote Management Module</b>	N/A			
<b>I/O Interface</b>	2 x RS-232/422/485 (2x5, P=2.0) 3 x USB 2.0 (1x4 pin, P=1.25)	1 x KB/MS by pin header 1 x RS-232 1 x RS-232/422/485 4 x USB 2.0	1 x KB/MS by pin header 1 x LPT 1 x RS-422/485 2 x RS-232 2 x USB 2.0	1 x KB/MS by pin header 1 x LPT 1 x RS-422/485 2 x RS-232 2 x USB 2.0
<b>Storage Interface</b>	1 x SATA 3Gb/s with 5V SATA power connector On-board SSD (optional)	1 x SATA 3Gb/s 1 x CF Type II	1 x IDE 1 x CF Type II	1 x Slim FDD 1 x IDE 1 x CF Type II
<b>Audio</b>	N/A	10-pin header on board supports 7.1-channel HD Audio by AC-KIT-892HD-R10	N/A	
<b>Digital I/O</b>	1 x 8-bit DIO		N/A	
<b>Power Consumption</b>	TBD	5V@3.31A (Intel® Atom™ D525 with 1 GB DDR3) 5V@2.39A (Intel® Atom™ N455 with 1 GB DDR3)	5V@1.13A (AMD Geode™ LX 800 with 1 GB DDR 400 MHz)	5V@1.09A (AMD Geode™ LX 800 with 512MB DDR 400 MHz)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset			
<b>Operating Environment</b>	-20°C ~ 60°C (for J1900/N2930/N2807) -40°C ~ 85°C (for E38xx)	Temperature Range: -10°C ~ 60°C (14°F ~ 140°F) Relative Humidity: 5% ~ 95% non-condensing	Temperature Range: 0°C ~ 60°C Relative Humidity: 5% ~ 95%, non-condensing	Temperature Range: -40°C ~ 70°C (W) Relative Humidity: 5% ~ 95%, non-condensing
<b>Expansion Slot</b>	1 x Full-size PCIe Mini slot (support mSATA) 1 x PC/104-Plus (ISA+PCI)	1 x PCI-104	1 x PCI-104	1 x PC-104
<b>CPU Cooler</b>	Heatsink	Heatsink	Heatsink	Heatsink

# PM-BT

PC/104-Plus SBC with Intel® Atom™/Celeron® on-board SoC with DDR3L, VGA, LVDS, GbE, USB 2.0, SATA 3Gb/s, RS-232/422/485 and 5V DC input, RoHS



Preliminary



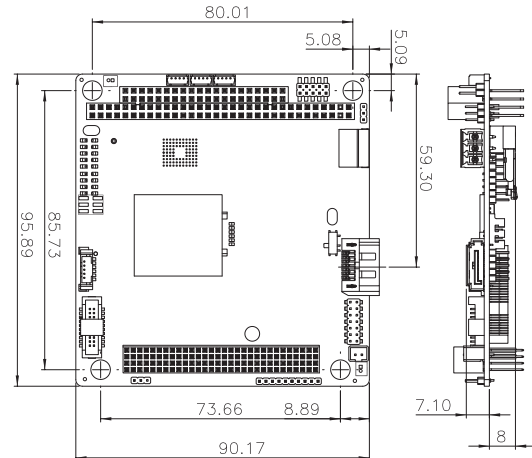
## Specifications

- ◆ SoC
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3827 on-board SoC (1.75GHz, dual-core, 1MB cache, TDP=8W)
  - Intel® Atom™ E3826 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=7W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
  - Intel® Atom™ E3815 on-board SoC (1.46GHz, single-core, 512KB cache, TDP=5W)
  - Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Celeron® N2930 on-board SoC (1.83GHz, quad-core, 2MB cache, TDP=7.5W)
  - Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.3W)
- ◆ BIOS
  - AMI UEFI BIOS
- ◆ Memory
  - One 204-pin 1333/1066 MHz single-channel DDR3L SO-DIMM supports up to 8 GB (J1900, N2930, E3845, E3827, E3826, E3825, E3815) or 4 GB (N2807)
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 7 Engine with four execution units, supporting DX11.1, OpenGL 4.2 and OpenCL 1.2
- ◆ Display Output
  - Dual independent display
  - 1 x VGA (up to 2560x1600@60 Hz)
  - 1 x 18/24-bit single-channel LVDS (2x10 pin)
- ◆ Ethernet
  - 1 x Intel® I210
- ◆ Super I/O
  - Fintek F81866
- ◆ Internal I/O Interface
  - 1 x SATA 3Gb/s with 5V SATA power connector
  - 3 x USB 2.0 (1x4 pin, P=1,25)
  - 2 x RS-232/422/485 (2x5, P=2.0)
- ◆ Storage
  - On-board SSD (optional, support by request)
- ◆ Front Panel
  - 1 x 10-pin header, P=2.0 (power LED, HDD LED, power button and reset button)
- ◆ Expansion
  - 1 x Full-size PCIe Mini slot (supports mSATA)
  - 1 x PC/104-Plus (ISA+PCI)
- ◆ Digital I/O
  - 1 x 8-bit digital I/O (2x5 pin, P=2.0)
- ◆ Power Supply
  - 5V DC input
  - 12V for fan, LVDS and PCI-104 plus
    - » 5V for PCI-104 plus (1x3 pin, P=2.0)
    - » 12V for PCI-104 plus (1x3 pin, P=2.0)
  - 3/5V jumper for PCI-104 plus
  - Support AT/ATX mode
  - ErP/EuP Compliant
- ◆ Watchdog Timer
  - Software programmable, supports 1~255 sec. system reset
- ◆ Operating Temperature
  - 20°C ~ 60°C (for J1900/N2930/N2807)
  - 40°C ~ 85°C (for E38xx)
- ◆ Storage Temperature
  - 40°C ~ 85°C
- ◆ Thermal
  - Heatsink
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimensions
  - 96 mm x 90 mm
- ◆ Weight
  - GW: 500g / NW 120g
- ◆ CE/FCC compliant

## Features

- PC/104 form factor SBC supports 22nm Intel® Atom™ on-board SoC
- PC/104-Plus (ISA and PCI signal) function support
- 5V DC input solution
- Support 2 COM, PCIe Mini, USB and optional on-board SSD
- Dual display from VGA and LVDS
- Wide range temperature support from -40°C ~ 85°C (for E38xx series CPU)
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Dimensions (Unit: mm)



## Packing List

1 x PM-BT single board computer	1 x SATA cable kit
1 x COM port cable	1 x Single-port USB cable
1 x LAN cable	1 x VGA cable

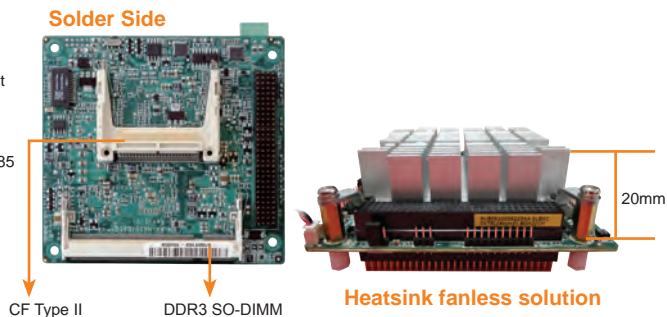
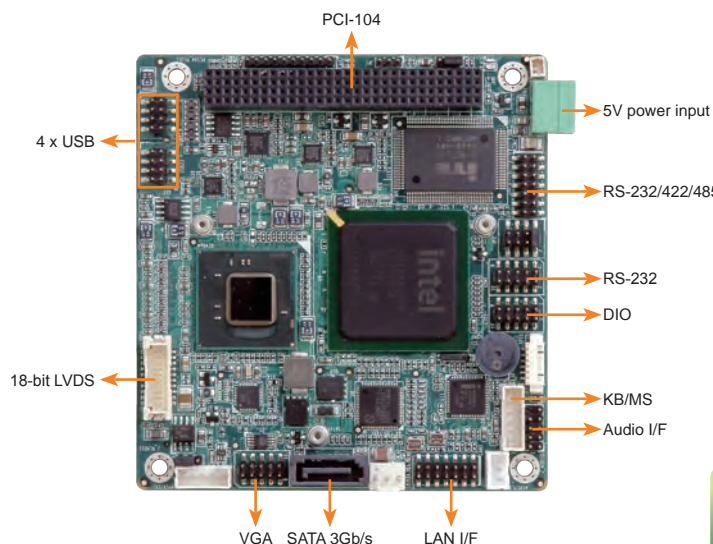
## Ordering Information

Part No.	Description
PM-BT-J19001-R10	PC/104-Plus Single Board Computer with Intel® Atom™ J1900 SoC with DDR3L, VGA, LVDS, USB 2.0, SATA 3Gb/s, GbE, RS-232/422/485 and 5V DC input, RoHS
PM-BT-N28071-R10	PC/104-Plus Single Board Computer with Intel® Atom™ N2807 SoC with DDR3L, VGA, LVDS, USB 2.0, SATA 3Gb/s, GbE, RS-232/422/485 and 5V DC input, RoHS
PM-BT-E38451W2-R10	PC/104-Plus Single Board Computer with Intel® Atom™ E3845 SoC with DDR3L, VGA, LVDS, USB 2.0, SATA 3Gb/s, GbE, RS-232/422/485 and 5V DC input, RoHS, -40°C ~ 85°C
PM-BT-E38251W2-R10	PC/104-Plus Single Board Computer with Intel® Atom™ E3825 SoC with DDR3L, VGA, LVDS, USB 2.0, SATA 3Gb/s, GbE, RS-232/422/485 and 5V DC input, RoHS, -40°C ~ 85°C

\*\*Note: Models with other CPUs not listed in the table are requested by MOQ - 100 pcs/lot.

# PM-PV-N4551 D5251

PCI-104 SBC with Intel® Atom™ N455/D525, DDR3, VGA/LVDS, GbE, USB 2.0, SATA 3Gb/s and CF Type II, RoHS



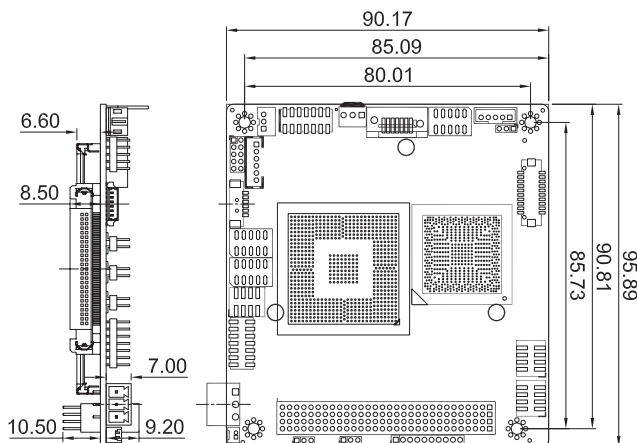
## Specifications

- ◆ CPU
  - Intel® Atom™ D525 (1.8GHz, dual-core, 1MB cache)
  - Intel® Atom™ N455 (1.66GHz, single-core, 512KB cache)
- ◆ Chipset
  - Intel® ICH8M
- ◆ BIOS
  - UEFI BIOS
- ◆ Memory
  - One 204-pin 800 MHz DDR3 SDRAM SO-DIMM supports up to 4 GB (D525) or 2 GB (N455)
- ◆ Graphics
  - GMA 3150
  - Graphics core speed 400 MHz for D525
  - Graphics core speed 200 MHz for N455
- ◆ Display Output
  - VGA (up to QXGA 2048x1536 (D525) or SXGA+ 1400x1050 (N455) @60Hz)
  - 18-bit single-channel LVDS (up to WXGA 1366x768 (D525) or XGA 1024x768 (N455) @60Hz)
- ◆ Ethernet
  - Intel® 82567V GbE Ethernet PHY
- ◆ Expansion
  - 1 x PCI-104
- ◆ Digital I/O
  - 8-bit digital I/O (2x5 pin)
- ◆ Audio
  - 1 x Audio I/F (2x5 pin, P=2.0)
- ◆ Internal I/O Interface
  - 1 x CF Type II
  - 1 x KB/MS (1x6 pin)
  - 1 x RS-232 (2x5 pin, P=2.0)
  - 1 x RS-232/422/485 (2x5 pin, P=2.0)
  - 1 x SATA 3Gb/s
  - 4 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Power Supply
  - 5V only DC input
  - 1 x Internal power connector (1x2 pin) support AT/ATX mode
- ◆ Power Consumption
  - 5V@3.31A (Intel® Atom™ D525 with 1 GB DDR3)
  - 5V@2.39A (Intel® Atom™ N455 with 1 GB DDR3)
- ◆ Operating Temperature
  - 10°C ~ 60°C
- ◆ Storage Temperature
  - 10°C ~ 70°C
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimensions
  - 96mm x 90mm
- ◆ CE/FCC compliant

## Features

- Intel® Atom™ N455/D525 processor with DDR3 memory
- Single 5V power input design, 12V for LCD/fan
- Single-channel 18-bit LVDS/VGA output for display
- Support two COM, four USB, SATA 3Gb/s and CF Type II socket
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Dimensions (mm)



## Packing List

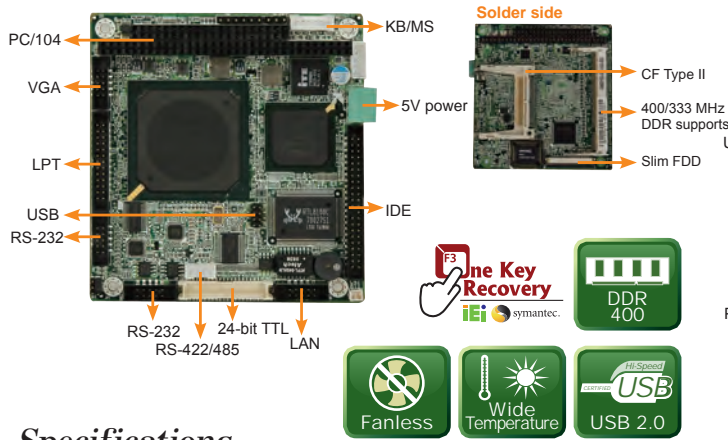
1 x PM-PV-N4551/D5251 single board computer	1 x SATA cable
1 x Dual-port USB cable	1 x VGA cable
1 x LAN cable	1 x Mini jumper pack
1 x Power cable	1 x One Key Recovery CD
1 x PS/2 KB/MS cable	1 x QIG
1 x RS-232 cable	1 x Utility CD

## Ordering Information

Part No.	Description
PM-PV-D5251-R11	PCI-104 SBC with Intel® Atom™ D525 1.8GHz, DDR3, VGA/LVDS, GbE, USB 2.0, SATA 3Gb/s and CF Type II, RoHS
PM-PV-N4551-R11	PCI-104 SBC with Intel® Atom™ N455 1.66GHz, DDR3, VGA/LVDS, GbE, USB 2.0, SATA 3Gb/s and CF Type II, RoHS
19800-004300-100-RS	RS-232 & RS-422/485 cable with bracket, 14-pin to two DB-9, 250mm, P=2.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P
AC-KIT-892HD-R10	7.1-channel HD Audio kit with Realtek ALC888 supports dual audio streams
CF-PV4010-R10	CPU fan (40mm x 40mm x 10mm)

# PM-LX2

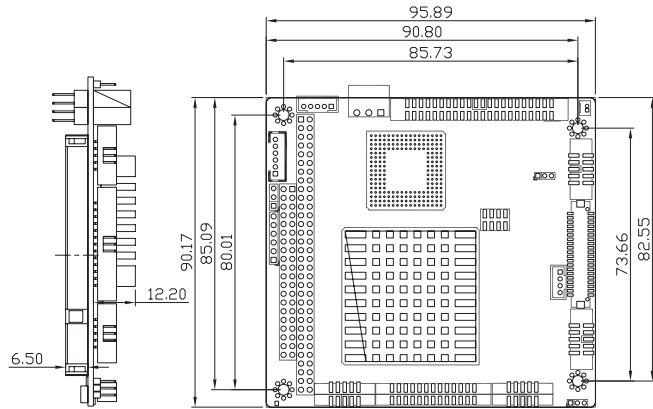
AMD Geode™ LX 800 CPU on-board PC/104 Module



## Specifications

- ◆ CPU: AMD Geode™ LX 800 (500 MHz)
- ◆ Chipset: AMD CS5536
- ◆ BIOS: AMI BIOS
- ◆ System Memory: One 200-pin 400 MHz DDR SDRAM SO-DIMM supports up to 1 GB
- ◆ Ethernet: One Realtek RTL8100C 10/100Mbps Ethernet chipset
- ◆ Internal I/O Interface: 1 x CF Type II, 1 x IDE (2x22 pin, P=2.0), 1 x LPT (2x13 pin, P=2.0), 1 x KB/MS (1x6 pin), 2 x RS-232 (2x5 pin, P=2.0), 1 x RS-422/485 (1x4 pin, P=2.0), 1 x Slim FDD, 2 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Expansion: 1 x PC/104
- ◆ Display Output: 1 x VGA (up to 1920x1440@60Hz), 1 x 24-bit single-channel TTL (up to 1600x1200@60Hz)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset.
- ◆ Power Supply: 5V only DC input, 1 x Internal power connector (1x2 pin) Support AT mode
- ◆ Power Consumption: 5V@1.09A (AMD Geode™ LX 800 with one 512MB 400 MHz DDR)
- ◆ Operating Temperature: PM-LX2-800-R10: 0°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 96mm (L) x 90mm (W)
- ◆ Weight: GW: 500g / NW 110g
- ◆ CE/FCC compliant

## Dimensions (mm)



## Packing List

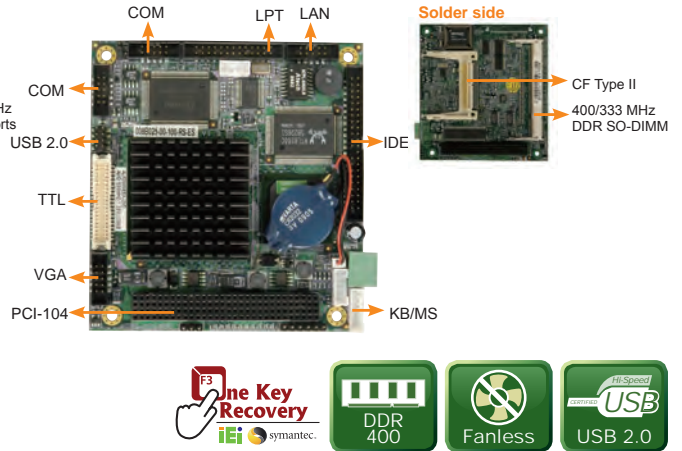
1 x PM-LX2 single board computer	1 x Power cable
1 x ATA33 flat cable	2 x RS-232 cable
1 x Dual USB cable	1 x Mini jumper pack
1 x LAN cable	1 x One Key Recovery CD
1 x PS/2 KB/MS cable	1 x QIG
1 x VGA cable	1 x Utility CD

## Ordering Information

Part No.	Description
PM-LX2-800-R10	PC/104 SBC with AMD Geode™ LX 800 500 MHz, VGA/TTL, LAN, USB 2.0 and CF Type II
32200-015100-RS	LPT cable, 280mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0

# PM-LX

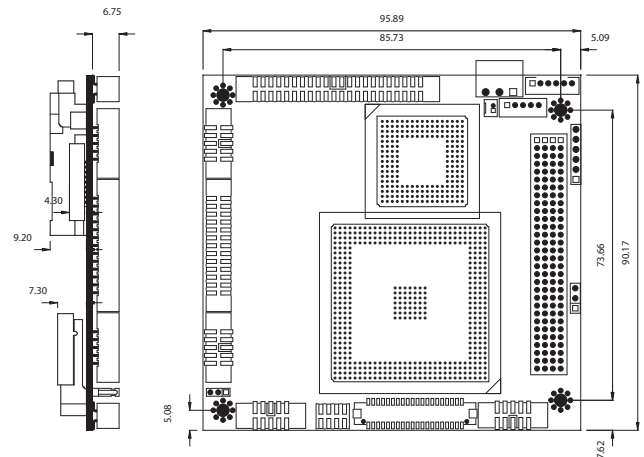
PCI-104 Module with on-board AMD Geode™ LX 800 CPU



## Specifications

- ◆ CPU: AMD Geode™ LX 800 (500 MHz) processor
- ◆ Chipset: AMD CS5536
- ◆ BIOS: Award BIOS
- ◆ System Memory: One 200-pin 400 MHz DDR SDRAM SO-DIMM supports up to 1 GB
- ◆ Ethernet: 10/100Mbps realtek RTL8100C Ethernet chipset
- ◆ Internal I/O Interface: 1 x CF Type II, 1 x IDE (2x22 pin, P=2.0), 1 x LPT (2x13 pin, P=2.0), 1 x KB/MS (1x6 pin), 2 x RS-232 (2x5 pin, P=2.0), 1 x RS-422/485 (1x4 pin, P=2.0), 2 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Expansion: 1 x PCI-104
- ◆ Display Output: 1 x VGA (up to 1920x1440@60Hz), 1 x 24-bit single-channel TTL (up to 1600x1200@60Hz)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ Power Supply: 5V only DC input, 1 x Internal power connector (1x2 pin) Support AT mode
- ◆ Power Consumption: 5V@1.13A (AMD Geode™ LX 800 with one 1 GB 400 MHz DDR memory)
- ◆ Operating Temperature: 0°C ~ 60°C
- ◆ Storage Temperature: -10°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%
- ◆ Dimensions: 95 mm x 95 mm
- ◆ Weight: GW: 500g / NW: 110g
- ◆ CE/FCC compliant

## Dimensions (mm)



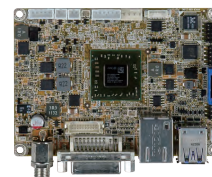
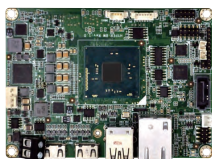
## Packing List

1 x PM-LX single board computer	1 x ATA33 flat cable
1 x LAN cable	1 x KB/MS Y cable
1 x Power cable	1 x Mini jumper pack
1 x USB cable	1 x One Key Recovery CD
1 x VGA cable	1 x QIG
2 x RS-232 cable	1 x Utility CD

## Ordering Information

Part No.	Description
PM-LX-800-R11	PCI-104 SBC with AMD Geode™ LX 800 processor, VGA/TTL, LAN, USB 2.0, CF Type II
32200-015100-RS	LPT cable, 280mm, P=2.0
32205-003800-300-RS	RS-422/485 cable, 200mm, P=2.0

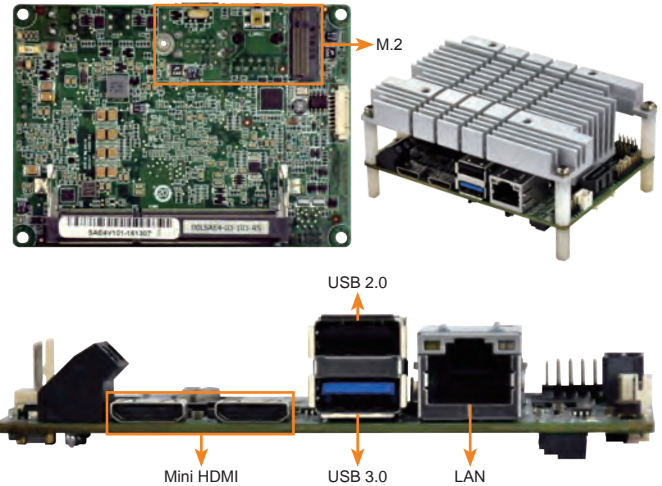
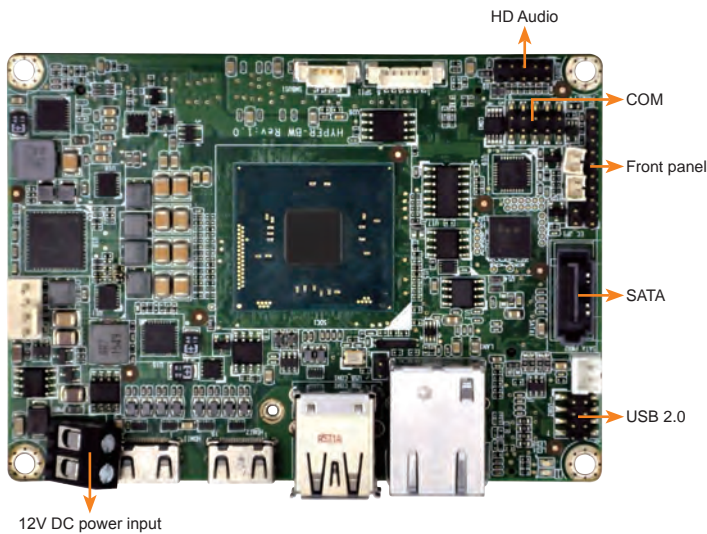
# Pico-ITX Selection Guide



Model Name	HYPER-BW	HYPER-BT	HYPER-KBN
<b>CPU Socket</b>	On board	On board	On board
<b>CPU Type</b>	Intel® Pentium®/Celeron® SoC	Intel® Atom™/Celeron® SoC	AMD® Embedded G-Series SoC
<b>Chipset</b>	Intel® Pentium®/Celeron® SoC	Intel® Atom™/Celeron® SoC	AMD® Embedded G-Series SoC
<b>Memory</b>	1 x 204-pin 1600/1333 MHz single-channel DDR3L SDRAM unbuffered SO-DIMM slot (system max. 8 GB)	1 x 204-pin 1600/1333 MHz single-channel DDR3L SDRAM unbuffered SO-DIMM slot (system max. 8 GB)	1 x 204-pin 1600/1333 MHz single-channel DDR3L SDRAM unbuffered SO-DIMM slot (system max. 8 GB)
<b>Display Interface</b>	Dual independent display 2 x Mini HDMI	Dual independent display 1 x VGA 1 x iDP interface	Dual independent display 1 x DVI-I 1 x 18-bit single-channel LVDS
<b>Ethernet</b>	LAN: Realtek RTL8111GN controller	LAN: Intel® I211-AT PCIe GbE controller	LAN: Realtek RTL8111E controller with ASF2.0 supported
<b>iRIS Remote Management Module</b>	N/A		
<b>I/O Interface</b>	1 x RS-232 1 x USB 3.0 3 x USB 2.0	1 x RS-232 1 x USB 3.0 3 x USB 2.0	1 x RS-232 2 x USB 2.0 2 x USB 3.0
<b>Storage Interface</b>	1 x SATA 6Gb/s with 5V SATA power connector (no RAID)	1 x SATA 3Gb/s with 5V SATA power connector (no RAID)	1 x SATA 6Gb/s with 5V SATA power connector (no RAID)
<b>Audio</b>	10 pin header on board support 7.1 channel HD Audio by AC-KIT-892HD-R10	Realtek ALC662 HD Audio codec	
<b>Power Consumption</b>	12V@1.52A (Intel® Pentium® processor N3710 with 8 GB 1600 MHz DDR3L memory)	12V@1.35A (Intel® Celeron® processor J1900 with one 8 GB 1333 MHz DDR3L memory)	12V@1.45A (AMD GX-415GA 1.5GHz CPU with one 2 GB 1333 MHz DDR3L memory)
<b>Watchdog Timer</b>	Software programmable and supports 1~255 sec. system reset		
<b>Operating Environment</b>	Temperature Range: -20°C ~ 60°C (-4°F ~ 140°F) Relative Humidity: 5% ~ 95%, non-condensing		
<b>Expansion Slot</b>	1 x M.2 (B key)	N/A	N/A
<b>CPU Cooler</b>	Heatsink	Heat Spreader	Heatsink

# HYPER-BW

Pico-ITX SBC with Intel® 14nm Pentium®/Celeron® on-board SoC with dual Mini HDMI, M.2, GbE, USB 3.0, SATA 6Gb/s, COM, Audio and RoHS



## Specifications

- ◆ SoC
  - Intel® Pentium® N3710 on-board SoC (up to 2.56GHz, quad-core, 2MB cache, TDP=6W)
  - Intel® Celeron® N3160 on-board SoC (up to 2.24GHz, quad-core, 2MB cache, TDP=6W)
  - Intel® Celeron® N3060 on-board SoC (up to 2.48GHz, dual-core, 2MB cache, TDP=6W)
  - Intel® Celeron® N3010 on-board SoC (up to 2.24GHz, dual-core, 2MB cache, TDP=4W)
  - Intel® Atom® x5-E8000 on-board SoC (up to 2.00 GHz, quad-core, 2M cache, TDP=5W)
- ◆ BIOS
  - AMI UEFI BIOS
- ◆ Memory
  - One 204-pin 1600/1333 MHz single-channel DDR3L SDRAM SO-DIMM slot supports up to 8 GB
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 8 Engine with 16 low-power execution units, supporting DX11.1, OpenGL 4.2 and OpenCL1.2
- ◆ Display Output
  - Dual independent display
  - 2 x Mini HDMI (up to 3840x2160@30Hz)
- ◆ Ethernet
  - LAN1: Realtek RTL8111 controller
- ◆ External I/O Interface
  - 1 x USB 2.0
  - 1 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x RS-232 (1x9 pin, P=1.25)
  - 1 x SATA 6Gb/s with 5V SATA power connector
  - 2 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Audio
  - 1 x HD audio (2 x 5 pin, support 7.1 channel HD audio by AC-KIT-892HD-R10)
- ◆ Front Panel
  - 1 x Front panel (1x10 pin, power LED, HDD LED, power button, reset button)
- ◆ LAN LED
  - 1 x LAN LED (1x2 pin)
- ◆ Expansion
  - 1 x M.2 2242 (B key)
- ◆ Fan Connector
  - 1 x Smart fan connector (1x4 pin)
- ◆ Power Supply
  - 12V DC input only
  - 1 x Power terminal block (1x2 pin)
  - Support AT/ATX mode
- ◆ Power Consumption
  - 12V@1.52A (Intel® Pentium® processor N3710 with 8 GB 1600 MHz DDR3L memory)
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset
- ◆ Operating Temperature
  - 20°C ~ 60°C
- ◆ Storage Temperature
  - 30°C ~ 70°C
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimensions
  - 100mm x 72mm
- ◆ Weight
  - GW:600g/ NW:250g
- ◆ CE/FCC compliant



## Features

- Pico-ITX SBC supports Intel® 14nm Pentium®/Celeron® on-board SoC
- IEI jumper-less function
- Dual independent display support
- 1333/1600 MHz 1.35V DDR3L SDRAM up to 8 GB supported
- COM, USB 3.0, SATA 6Gb/s and Audio support
- 1 x M.2 B key slot for expansion possibility
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x HYPER-BW single board computer with heatsink
1 x RS-232 cable
1 x SATA with power cable kit
1 x One Key Recovery CD
1 x QIG
1 x Utility CD

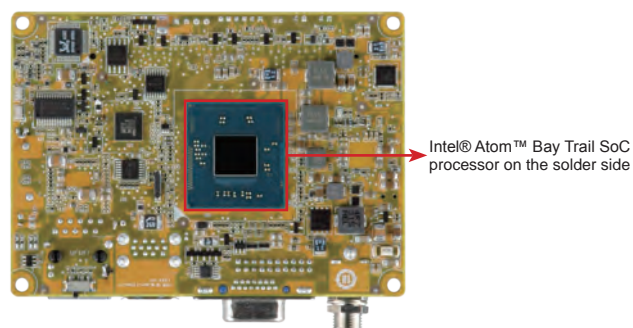
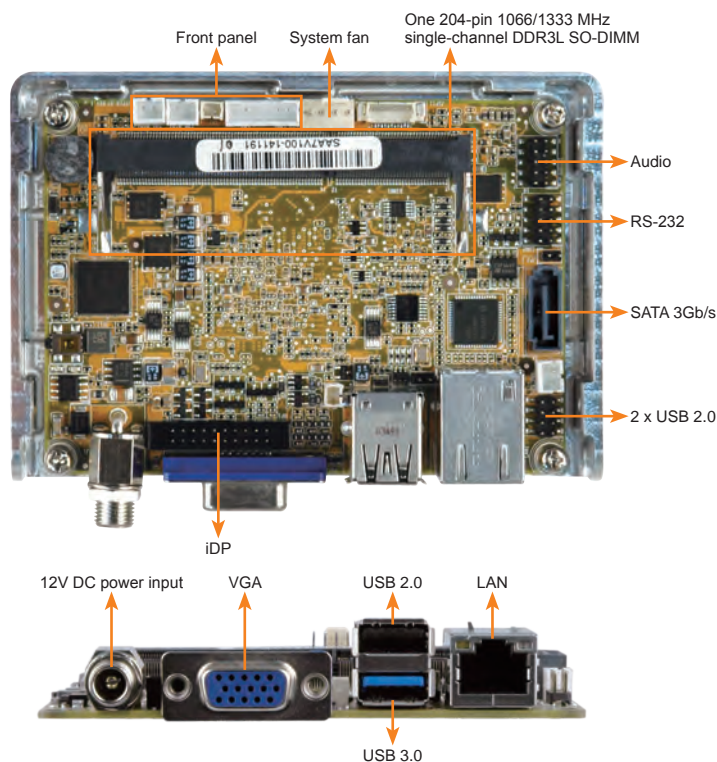
## Ordering Information

Part No.	Description
HYPER-BW-N4-R10	Pico-ITX SBC with Intel® Pentium® 14nm quad-core N3710 up to 2.56GHz (6W) on-board SoC with dual Mini HDMI, PCIe GbE, M.2, USB 3.0, SATA 6Gb/s, COM, Audio and RoHS
HYPER-BW-N3-R10	Pico-ITX SBC with Intel® Celeron® 14nm quad-core N3160 up to 2.24GHz (6W) on-board SoC with dual Mini HDMI, PCIe GbE, M.2, USB 3.0, SATA 6Gb/s, COM, Audio and RoHS
HYPER-BW-N2-R10	Pico-ITX SBC with Intel® Celeron® 14nm dual-core N3060 up to 2.48GHz (6W) on-board SoC with dual Mini HDMI, PCIe GbE, M.2, USB 3.0, SATA 6Gb/s, COM, Audio and RoHS
HYPER-BW-N1-R10**	Pico-ITX SBC with Intel® Celeron® 14nm dual-core N3010 up to 2.24GHz (4W) on-board SoC with dual Mini HDMI, PCIe GbE, M.2, USB 3.0, SATA 6Gb/s, COM, Audio and RoHS
HYPER-BW-E8-ECO-R10	Pico-ITX SBC with Intel® Celeron® 14nm quad-core x5-E8000 up to 2.00GHz (5W) on-board SoC with dual Mini HDMI, PCIe GbE, M.2, USB 3.0, SATA 6Gb/s, COM, Audio, ECO packing and RoHS
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
AC-KIT-892HD-R10	Realtek ALC892 7.1 Channel HD Audio peripheral board, RoHS

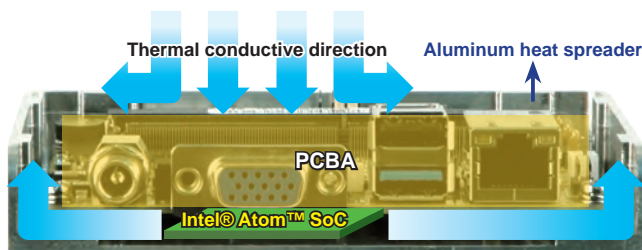
\*\*By order production, MOQ: 100

# HYPER-BT

Pico-ITX SBC supports Intel® 22nm Atom™/Celeron® on-board SoC, DDR3L, VGA/iDP, GbE, USB 3.0, SATA 3Gb/s, HD Audio and RoHS



You can attach aluminum heat spreader directly to your construction for better heat dissipation



## Specifications

- ◆ SoC
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3827 on-board SoC (1.75GHz, dual-core, 1MB cache, TDP=8W)
  - Intel® Atom™ E3826 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=7W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
  - Intel® Atom™ E3815 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=5W)
  - Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Celeron® N2930 on-board SoC (1.83GHz, quad-core, 2MB cache, TDP=7.5W)
  - Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.3W)
- ◆ BIOS
  - AMI UEFI BIOS
- ◆ Memory
  - One 204-pin 1066/1333 MHz single-channel DDR3L SO-DIMM supports up to 8 GB (J1900, N2930, E3845, E3827, E3826) or 4 GB (N2807, E3825, E3815)
- ◆ Graphics
  - Intel® HD Graphics Gen 7 Engine with 4 execution units, supporting DX11.1 OpenGL 4.2 and OpenCL 1.2
- ◆ Display Output
  - Dual independent display
  - 1 x VGA (up to 2560x1600@60Hz)
  - 1 x iDP interface for HDMI, LVDS, VGA, DVI, DP (up to 2560x1600@60Hz)
- ◆ Ethernet: LAN: Intel® I211-AT PCIe controller
- ◆ External I/O Interface
  - 1 x USB 2.0
  - 1 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x RS-232 (2x5 pin, P=2.0)
  - 1 x SATA 3Gb/s with 5V SATA power connector
  - 2 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Audio: Realtek ALC662 HD codec supports 5.1-channel
- ◆ Front Panel
  - 1 x Power LED & HDD LED (1x6 pin)
  - 1 x Power button (1x2 pin)
  - 1 x Reset button (1x2 pin)
- ◆ LAN LED: 1 x LAN LED (1x2 pin)
- ◆ Fan Connector: 1 x Smart fan connector (1x4 pin)
- ◆ Watchdog Timer: Software programmable, support 1~255 sec. system reset
- ◆ Power Supply
  - 12V only DC input
  - 1 x External DC power jack (ø5.5 mm)
  - Support AT/ATX mode
- ◆ Power Consumption
  - 12V@1.35A (Intel® Celeron® J1900 with one 4 GB 1333 MHz DDR3 memory)
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions (LxW)
  - Single board: 100mm x 72mm / Heat spreader: 112mm x 78mm
- ◆ Weight: GW: 600g / NW: 250g
- ◆ CE/FCC compliant

## Features

- Pico-ITX SBC supports Intel® 22nm Atom™ or Celeron® on-board SoC
- 12V only single voltage design for AT/ATX power by DC power jack
- VGA and iDP support dual display
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x HYPER-BT single board computer	
1 x Audio cable	1 x One Key Recovery CD
1 x RS-232 cable	1 x QIG
1 x SATA with 5V output cable kit	1 x Utility CD

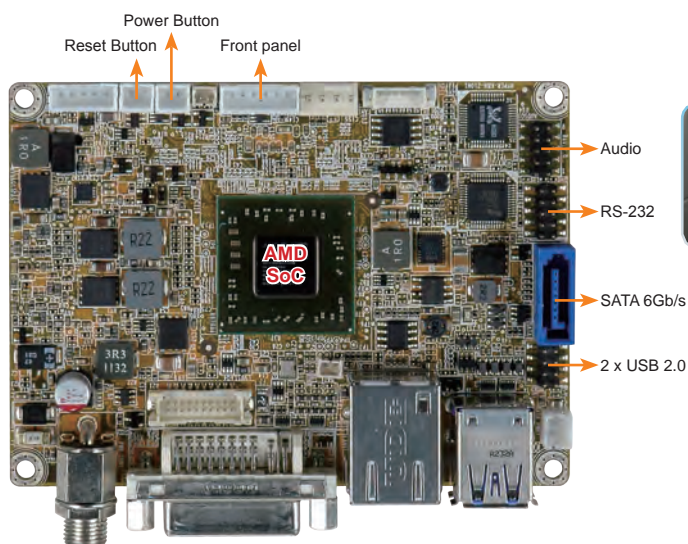
## Ordering Information

Part No.	Description
HYPER-BT-J19001-R10	PICO-ITX SBC supports Intel® Celeron® quad-core J1900 (10W) on-board SoC with DDR3L, VGA/iDP, GbE, USB 3.0, SATA 3Gb/s, Audio and RoHS
HYPER-BT-N29301-R10	PICO-ITX SBC supports Intel® Celeron® quad-core N2930 (7.5W) on-board SoC with DDR3L, VGA/iDP, GbE, USB 3.0, SATA 3Gb/s, Audio and RoHS
HYPER-BT-N28071-R10	PICO-ITX SBC supports Intel® Celeron® dual-core N2807 (4.3W) on-board SoC with DDR3L, VGA/iDP, GbE, USB 3.0, SATA 3Gb/s, Audio and RoHS
HYPER-BT-E38XX1-R10**	PICO-ITX SBC supports Intel® Atom™ E38XX on-board SoC with DDR3L, VGA/iDP, GbE, USB 2.0, SATA 3Gb/s, Audio and RoHS
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0
32006-000300-100-RS	PS/2 KB/MS Y-cable without bracket, 140mm/120mm
32200-000049-RS	RS-232 cable, 240mm, P=2.0
DP-DP-R10	DisplayPort to DisplayPort converter board (for IEI iDP connector)
DP-DVI-R10	DisplayPort to DVI-D converter board (for IEI iDP connector)
DP-HDMI-R10	DisplayPort to HDMI converter board (for IEI iDP connector)
DP-LVDS-R10	DisplayPort to LVDS converter board (for IEI iDP connector)
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector)

\*\*By order production, MOQ: 100

# HYPER-KBN

Pico-ITX SBC Supports AMD® Embedded G-Series SoC with DDR3, DVI-I/LVDS, GbE, USB 3.0, SATA 6Gb/s, Audio and RoHS

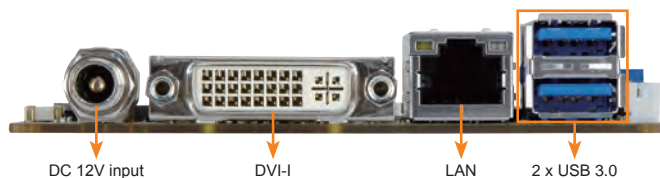


## Flexible Application Small size form factor: Pico-ITX



## Specifications

- ◆ SoC
  - GX-415GA on-board SoC (1.5GHz, quad-core, 2MB cache, TDP=15W)
  - GX-210HA on-board SoC (1.0GHz, dual-core, 1MB cache, TDP=9W) (support fanless solution)
  - GX-420CA on-board SoC (2.0GHz, quad-core, 2MB cache, TDP=25W)
  - GX-217GA on-board SoC (1.65GHz, dual-core, 1MB cache, TDP=15W)
- ◆ BIOS
  - AMI UEFI BIOS
- ◆ Memory
  - One 204-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMM supports up to 8 GB
- ◆ Graphics Engine
  - Support DX11.1, OpenGL 4.1 and OpenCL 1.2
  - UVD4.2 decode for H.264, MPEG2/4, VC1, MVC
  - VCE 2.0 encode for H.264, VCE
- ◆ Display Output
  - 1 x DVI-I (DVI-D up to 1920x1200@60Hz, VGA up to 2048x1536@60Hz)
  - 1 x 18-bit single-channel LVDS (up to 1600x900@60Hz)
- ◆ Ethernet
  - LAN: Realtek RTL8111E controllers with ASF2.0 supported
- ◆ External I/O Interface
  - 2 x USB 3.0
- ◆ Internal I/O Interface
  - 1 x RS-232 (2x5 pin, P=2.0)
  - 1 x SATA 6Gb/s with 5V SATA power connector
  - 2 x USB 2.0 (2x4 pin, P=2.0)
- ◆ Audio
  - Realtek AL662 HD Audio codec
  - 1 x Front audio (2x5 pin)
- ◆ Front Panel
  - 1 x Power LED & HDD LED (1x6 pin)
  - 1 x Power button (1x2 pin)
  - 1 x Reset button (1x2 pin)
- ◆ LAN LED
  - 1 x LAN LED (1x2 pin)
- ◆ Fan Connector
  - 1 x Smart fan connector (1x4 pin)
- ◆ Watchdog Timer
  - Software programmable, support 1~255 sec. system reset
- ◆ Power Supply
  - 12V only DC input
  - 1 x External DC power jack (ø5.5 mm)
  - Support AT/ATX mode
- ◆ Power Consumption
  - 12V@1.45A (AMD GX-415GA 1.5GHz CPU with one 2 GB 1333 MHz DDR3 memory)
- ◆ Operating Temperature
  - 0°C ~ 60°C
- ◆ Storage Temperature
  - 10°C ~ 70°C
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimensions (LxW)
  - 100mm x 72mm
- ◆ Weight
  - GW: 600g/ NW: 250g
- ◆ CE/FCC compliant



## Features

- Pico-ITX form factor with AMD® Embedded G-Series SoC supports DDR3/DDR3L up to 1600 MHz memory
- 12V only single voltage design for AT/ATX power by DC power jack
- DVI-I and 18-bit single-channel LVDS support for dual display
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Packing List

1 x HYPER-KBN single board computer
1 x Audio cable
1 x RS-232 cable
1 x SATA with 5V output cable kit
1 x Special heatsink
1 x One Key Recovery CD
1 x QIG
1 x Utility CD

## Ordering Information

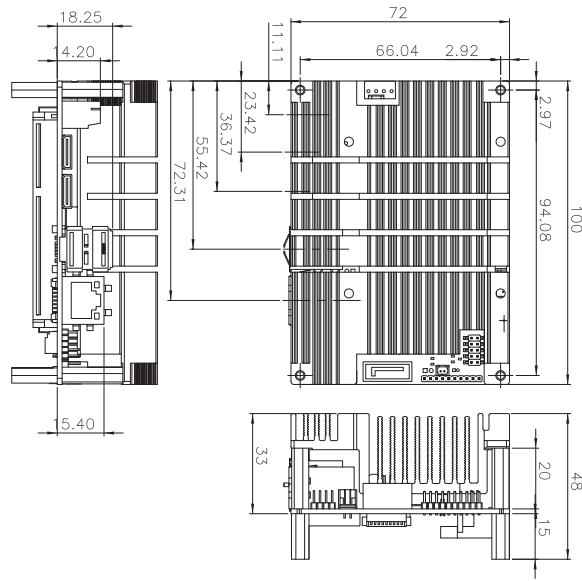
Part No.	Description
HYPER-KBN-4151-R10	Pico-ITX SBC with AMD 28nm quad-core GX-415GA 1.5GHz (15W) SoC processor, DDR3 DVI-I/LVDS, GbE, SATA 6Gb/s, USB 3.0, HD Audio and RoHS
HYPER-KBN-2101-R10	Pico-ITX SBC with AMD 28nm dual-core GX-210HA 1.0GHz (9W) SoC processor, DDR3 DVI-I/LVDS, GbE, SATA 6Gb/s, USB 3.0, HD Audio and RoHS
32001-008600-200-RS	Dual-port USB cable, 210mm, P=2.0

Note: Models with other CPUs not listed in the table are requested by MOQ - 100 pcs/lot

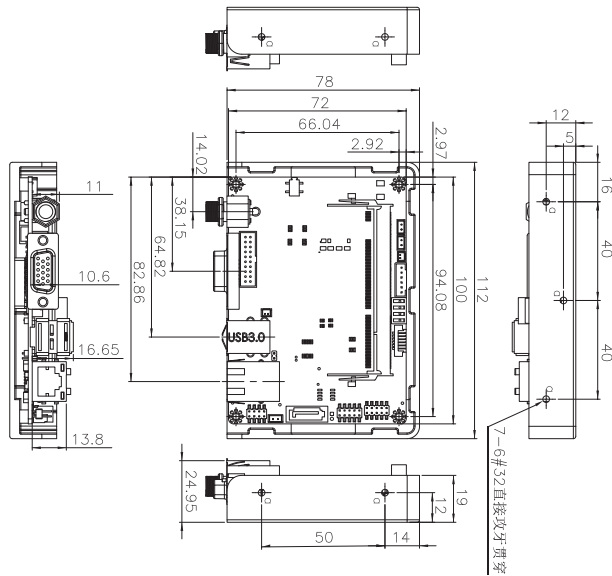


**HYPER Dimensions** (Unit: mm)

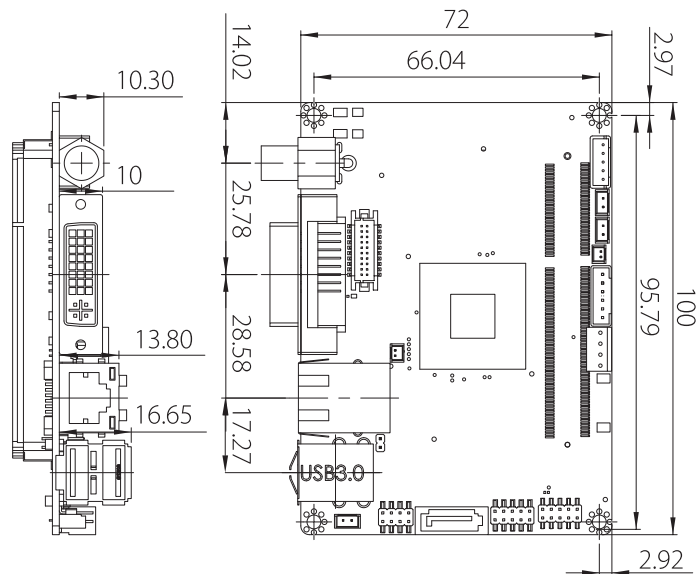
**HYPER-BW**



**HYPER-BT**



**HYPER-KBN**



# IEI Computer on Modules

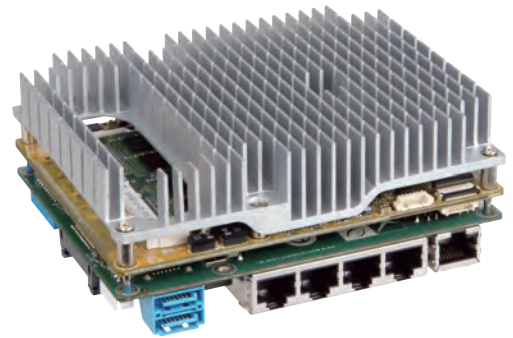
A computer-on-module (COM) is a type of single-board computer (SBC), a subtype of an embedded computer system. An extension of the concept of system on chip (SoC) and system in package (SiP), COM lies between a full-up computer and a microcontroller in nature.

## Design

Computer-on-modules are complete embedded computers built on a single circuit board. The design is centered on a CPU or a microprocessor with RAM, input/output controllers and all other features needed to be a functional computer on the one board. However, unlike a single-board computer, the Computer-on-module will usually lack the standard connectors for any input/output peripherals to be attached directly to the board.

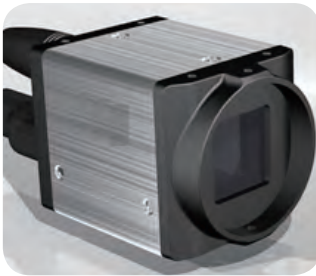
The module will usually need to be mounted on a carrier board (or baseboard) which breaks the bus out to standard peripheral connectors. Some Computer-on-modules also include peripheral connectors and/or can be used without a carrier.

A Computer-on-module solution offers a dense package computer system for use in small or specialized applications requiring low power consumption or small physical size as is needed in embedded systems.



## Typical Applications

### ■ High Density



Smart Camera



Speed Camera



Mobile Device

### ■ Automation & Robot Controller



Robot Controller



CNC

## IEI Computer on Module Form Factors



**COM Express  
Type 10**

Mini: 84 mm x 55 mm



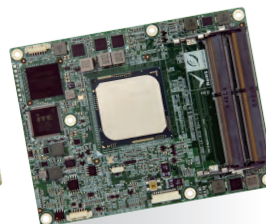
**COM Express  
Type 6**

Compact: 95 mm x 95 mm



**COM Express  
Type 6**

Basic: 125 mm x 95 mm



**COM Express  
Type 7**

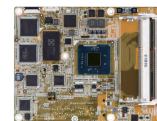
Basic: 125 mm x 95 mm



**Qseven 2.0**

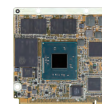
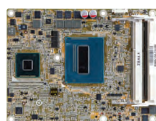
70 mm x 70 mm

# Computer on Module Selection Guide



Computer on Module	COM Express Type 10	COM Express Type 7	COM Express Type 6	COM Express Type 6
COM Express Size	Mini: 84 mm x 55 mm	Basic: 125 mm x 95 mm	Compact: 95 mm x 95 mm	Basic: 125 mm x 95 mm
Model Name	ICE-BT-T10 ICE-BT-T10W2	ICE-BDE-T7	ICE-ULT3	ICE-BT-T6
CPU Socket	On board	On board	On board	On board
CPU Type	Intel® Atom™/Celeron® on-board SoC	Intel® Xeon® Processor on-board SoC	Intel® Skylake ULT on-board SoC	Intel® Atom™/Celeron® on-board SoC
Chipset	Intel® Atom™/Celeron® on-board SoC	Intel® Xeon® Processor D-1548 (12MB Cache, 2.00 GHz) Intel® Xeon® Processor D-1518 (6MB Cache, 2.20 GHz)	Intel® Skylake ULT	Intel® Atom™/Celeron® on-board SoC
Memory	2 GB soldered down 1066/1333 MHz DDR3L memory (up to 8 GB)	Two 240-pin 2133/1867 MHz dual-channel DDR4 SDRAM unbuffered DIMM supported (system max. 32GB) Support ECC	Two 260-pin 2133/1867 MHz dual-channel DDR4 SDRAM Unbuffered DIMM supported (system max. 32GB)	Two 204-pin 1066/1333 MHz dual-channel DDR3L SO-DIMM supported (system max. 8 GB)
Display Interface	Dual display supported 1 x VGA 1 x DDI 1 x eDP	NA	Tripal display supported 2 x DDI: DisplayPort/HDMI/DVI 1 x DDI: Embedded DP (Option with 1 x Dual Channel LVDS 18/24 bit via CH7511B)	Dual display supported 1 x VGA 1 x DDI 1 x 18/24-bit dual-channel LVDS
Ethernet	LAN1: Intel® I210 PCIe controller	LAN1: Intel® I210 2 x 10G KR Interfaces 10G Sideband Signals	LAN1: Intel® I219LM	LAN1: Intel® I210 PCIe controller
I/O Interface	1 x I <sup>2</sup> C 1 x SMBus 1 x LPC 1 x USB 3.0 2 x Serial port (TX & RX) 4 x USB 2.0	2 x RS-232 (2-Wire) to base board 4 x USB 3.0 to base board (with 4 x USB 2.0)	2 x RS-232 (2-Wire) to base board 4 x USB 2.0 to base board 4 x USB 3.0 to base board (with 4 x USB 2.0)	1 x I <sup>2</sup> C 1 x LPC 1 x SMBus 2 x Serial port (TX & RX) 4 x USB 3.0 7 x USB 2.0
Storage Interface	2 x SATA 3Gb/s Optional soldered down SSD up to 64 GB (SATA port 1)	2 x SATA 6Gb/s signal to base board	2 x SATA 6Gb/s signal to base board eMMC 5.0 (optional)	2 x SATA 3Gb/s Optional soldered down SSD up to 64 GB (SATA port 1)
Audio	High-definition Audio interface	NA	High-definition Audio interface	
Power Consumption	12V@0.43A, Vcore_12V@0.9 A (Intel® Atom™ E3845 CPU with 2 GB 1333 MHz DDR3L memory)	12V@2.57A, 5VSB@0.04A, 5V@0.02A (Intel® Core™ i7-6600U with two 8GB 2400 MHz DDR4 memory)	12V@2.57A, 5VSB@0.04A, 5V@0.02A (Intel® Core™ i7-6600U with two 8GB 2400 MHz DDR4 memory)	12V@0.54A, Vcore_12V@0.95A (Intel® Celeron® J1900 CPU with two 8 GB 1333 MHz DDR3 memory)
Watchdog Timer	Software programmable and supports 1~255 sec. system reset			
Operation Environment	Temperature Range: -20°C ~ 60°C -40°C ~ 85°C (ICE-BT-10-E38001W2) Relative Humidity: 10% ~ 95% non-condensing	Operating Temperature: -20°C ~ 60°C Operating Humidity: 5% ~ 95%, non-condensing		Temperature Range: -20°C ~ 60°C Relative Humidity: 10% ~ 95% non-condensing
Expansion Slot	3 x PCIe x1 signal to baseboard	1 x PCIe x16 Gen 3 (Bifurcatable to 2 x8, 1 x8 & 2 x4, or 4 x4) 1 x PCIe x8 Gen 3 (Bifurcatable to 1 x8 & 2 x4) 8 x PCIe x1 (Gen2) signal to base board Bifurcatable to 1 x8 or 2 x4 or 4 x1+1x4 or 8 x1	1 x PCIe x1 signal to base board (Via PCIe x16 channel) 8 x PCIe x1 signal to base board	5 x PCIe x1 signal to baseboard

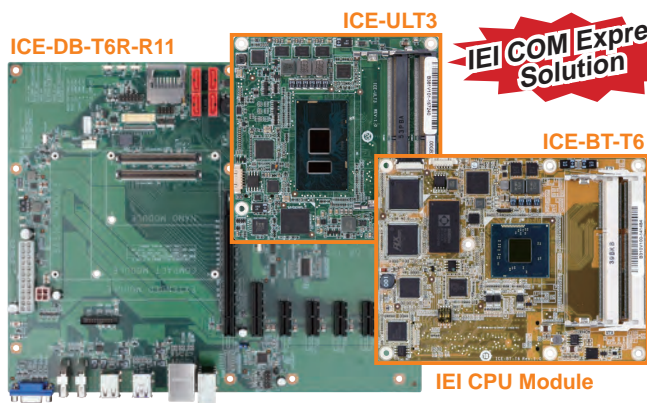
# Computer on Module Selection Guide



Computer on Module	COM Express Type 6	COM Express Type 6	Qseven 2.0	Qseven 2.0
COM Express Size	Basic: 125 mm x 95 mm	Basic: 125 mm x 95 mm	70 mm x 70 mm	70 mm x 70 mm
Model Name	ICE-QM871	ICE-QM770	iQ7-AL iQ7-ALW	iQ7-BT-E38001 iQ7-BT-E38001W2
CPU Socket	On board	Socket G2	On board	On board
CPU Type	4th Generation 22nm Intel® Core™ i7/ i5/i3 and Celeron® mobile processor	2nd & 3rd Generation Intel® Core™ i7/i5/i3 and Celeron® mobile processor	Intel® Atom™/Pentium/ Celeron® on- board SoC	Intel® Atom™/Celeron® on-board SoC
Chipset	Intel® QM87	Intel® QM77	Intel® Atom™/Pentium/ Celeron® on- board SoC	Intel® Atom™/Celeron® on-board SoC
Memory	Two 204-pin 1066/1333 MHz dual- channel DDR3L SO-DIMM supported (system max. 16 GB)	Two 204-pin 1066/1333 MHz dual- channel DDR3L SO-DIMM supported (system max. 16 GB)	4GB on-board 1333/1600MHz single- channel DDR3L DIMMs (2GB optional)	2 GB soldered down 1066/1333 MHz DDR3L memory (up to 4 GB)
Display Interface	Triple display supported 1 x VGA 3 x DDI 1 x 18/24-bit dual-channel LVDS	Triple display supported 1 x VGA 3 x DDI 1 x 18/24-bit dual-channel LVDS	1 x 18/24-bit dual-channel LVDS 1 x eDP/LVDS-A channel (optional) 1 x DDI	Dual display supported 1 x DDI 1 x 18/24-bit dual-channel LVDS
Ethernet	LAN1: Intel® I217LM Clarkville-V with Intel® AMT 9.0 support	LAN1: Intel® Intel® 82579LM with Intel® AMT 8.0 support	LAN1: Intel® I210 GbE Ethernet	LAN1: Intel® I210 PCIe controller
I/O Interface	1 x I <sup>2</sup> C 1 x LPC 1 x SMBus 2 x Serial port (TX & RX) 4 x USB 3.0 8 x USB 2.0	1 x I <sup>2</sup> C 1 x LPC 1 x SMBus 2 x Serial port (TX & RX) 4 x USB 3.0 8 x USB 2.0	1 x LPC 1 x SDIO 1 x SMBus 1 x USB 3.0 to base board 2 x RS-232 (2-Wire) to base board 3 x I <sup>2</sup> C 6 x USB 2.0 to base board	1 x LPC 1 x SDIO 1 x SMBus 1 x USB 3.0 3 x I <sup>2</sup> C 6 x USB 2.0
Storage Interface	4 x SATA 6Gb/s	4 x SATA 6Gb/s	2 x SATA 6Gb/s signal to base board eMMC 5.0 (optional)	2 x SATA 3Gb/s Optional soldered down SSD up to 64 GB (SATA port 1)
Audio	High-definition Audio interface			
Power Consumption	12V@3.70A (Intel® Core™ i7-4700EQ 2.4GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)	12V@1.86A, +12V2@3.70A (Intel® Core™ i7-4700EQ 2.4GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)	3.3V@0.13A, 5V@0.12A, 12V@1.38A (Intel® ATOM™ E3940 with two 4GB DDR3L memory)	3.3V@0.13A, 5V@0.13A, 12V@1.35A, 5VSB@0.12A (Intel® Atom™ E3845 CPU with 2 GB on-board memory)
Watchdog Timer	Software programmable and supports 1-255 sec. system reset			
Operation Environment	Temperature Range: -20°C ~ 60°C Relative Humidity: 10% ~ 95% non-condensing	Temperature Range: -20°C ~ 60°C Relative Humidity: 10% ~ 95% non-condensing	Operating Temperature: -40°C ~ 85°C Operating Humidity: 5% ~ 95%, non-condensing	Temperature Range: -20°C ~ 60°C -40°C ~ 85°C (iQ7-BT-E38001W2) Relative Humidity: 10% ~ 95% non-condensing
Expansion Slot	1 x PCIe x16 signal (to baseboard) 7 x PCIe x1 signal (to baseboard)	1 x PCIe x16 signal (to baseboard) 7 x PCIe x1 signal (to baseboard)	4 x PCIe x1 signal to baseboard (3 PCIe x1 or 2 PCIe x1 + 1 PCIe x2)	3 x PCIe x1 signal to baseboard

# IEI COM Express Series

**COM Express** is a computer-on-module (COM) form factor series. It can be integrated in various customized applications. Each COM Express module integrates CPU, memory and common I/O of a PC/AT including USB, audio, graphics, and Ethernet. All I/O signals are mapped to two high density, low profile connectors on the bottom side of the module. The COM Express specification is hosted by PICMG. The ICE (IEI COM Express) modules provide complete performance range for users to choose. With the IEI COM Express baseboard design service, users can quickly enjoy the benefits of modulization and efficiency.



IEI COM Express design baseboard

## Transfer your ETX Module to IEI COM Express Solution

COM Express provides PCI Express, dual-channel LVDS, GbE, eight USB and four SATA ports for I/O expansion

Platform	ETX	COM Express Type 2 Basic Module
Size	95 mm x 114 mm	95 mm x 125 mm
VGA	Yes	Yes
LCD	TTL or LVDS	Up to 2x single LVDS or dual-channel LVDS
SDVO	N/A	Up to 2 SDVO (shared with PCIe x16)
Expansion	PCI & ISA	PCIe & PCI
Ethernet	10/100 Mbps	10/100/1000 Mbps
USB	Up to 4 ports	Up to 8 ports
SATA	Up to 2 Ports (ETX 3.0 only)	Up to 4 SATA
IDE	Up to 2 channels	Up to 1 channel

## COM Express Pinout Types

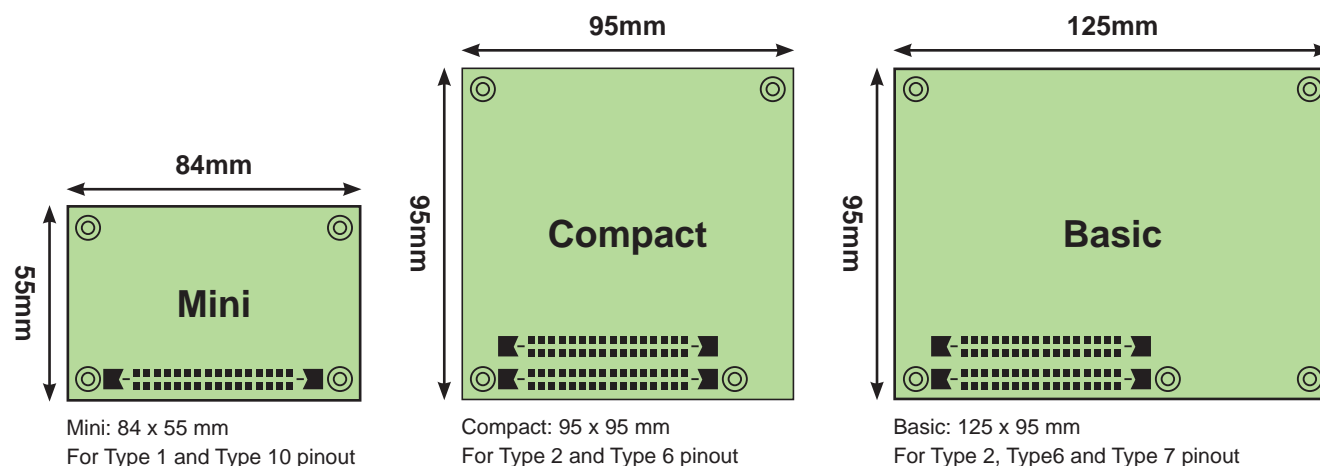
**COM Express**, a computer-on-module (COM) form factor, is a highly integrated and compact PC that can be used in a design application much like an integrated circuit component. Each COM Express Module COM integrates core CPU and memory functionality, the common I/O of a PC/AT, USB, audio, graphics (PEG), and Ethernet. All I/O signals are mapped to two high density, low profile connectors on the bottom side of the module.

### Types

The COM Express specification is hosted by PICMG. There are seven different pinouts defined in the specification. The most common used pinouts are Type 6 and Type 10 in the revision 2.0 of the COM Express specification. The latest pinouts added in the revision 3.0 of the COM Express specification is Type 7.

Types	PCIe Lanes	PEG/SDVO	Display	SATA	1GbE/10GbE	PCI	IDE	USB 2.0	USB 3.0
Type 1	Up to 6	x	VGA, LVDS	4	1/0	x	x	8	x
Type 10	Up to 4	/1	DDI, LVDS	2	1/0	x	x	8	2
Type 2	Up to 22	1/2	VGA, LVDS, PEG, SDVO	4	1/0	✓	x	8	x
Type 6	Up to 24	1/	VGA, LVDS, PEG, 3 x DDI	4	1/0	x	x	8	4
Type 7	Up to 32	2	NA	2	1/4	x	x	4	4

### The Specification Defines Three Module Sizes:



◆ Pinout Comparison of Type 10

Type 10 Pinout

B	LPC SMB PC	2 ports SATA	2 ports USB 3.0	Audio	8 ports USB 2.0	4 lanes PCIe x1	Reserve Pin	DDI		5VSB	12V	
A	GBE							LVDS A	Others	SPI	2 ports serial	12V

◆ Pinout Comparison of Type 6 and Type 7

Type 6 Pinout

D	4 ports USB 3.0/2.0	2 lanes PCIe x 1	DDI 1	DDI 2	DDI 3	PCIe x16	12V
C							

B	LPC SMB PC	4 ports SATA	Audio	8 ports USB 2.0	6 lanes PCIe x1	LVDS B	VGA	5VSB	12V	
A	GBE					LVDS A	Others	SPI	2 ports serial TPM	12V

Type 7 Pinout

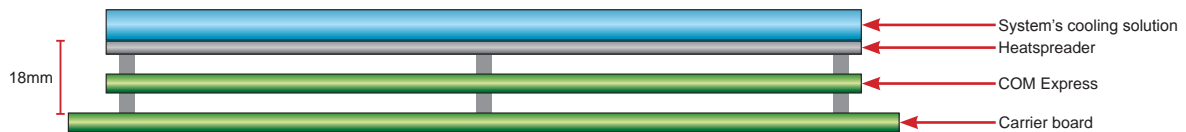
D	4 ports USB 3.0/2.0	2 lanes PCIe x 1	4 x 10GbE LAN			PCIe x16	12V
C							

B	LPC/eSPI	2 ports SATA	2 lanes PCIe x1	Reserve Pin	4 ports USB 2.0	2 lanes PCIe x1	6 lanes PCIe x1	4 lanes PCIe x1	NCSI	5VSB	12V	
A	GBE								Others	SPI	2 ports serial TPM	12V

■ Installing the COM Express

◆ Thermal Design of COM Express

COM Express definition includes a heatspreader that acts as a thermal interface between the COM Express module and the system's cooling solution. The height of a COM Express module, including the heatspreader, has been defined as 18 mm and covers the complete area of the COM Express. All heat generating components are thermally conducted to the heatspreader in order to avoid hot spots.



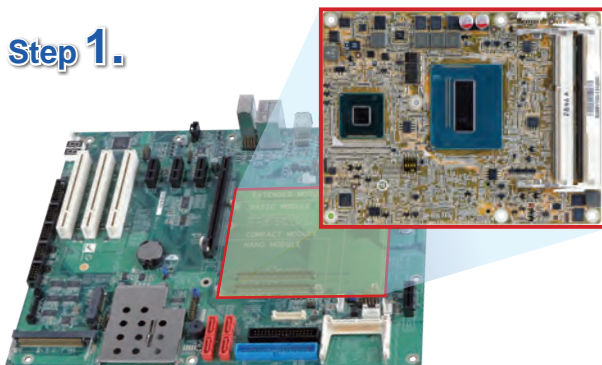
1. Installing the COM Express

Firmly insert the COM Express into the COM Express socket.

2. Installing the heatspreader

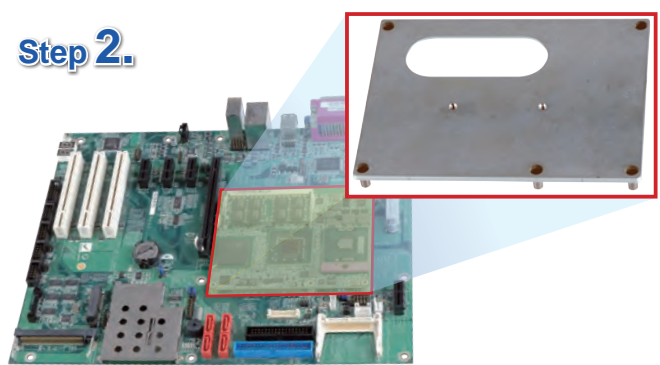
A heatspreader must be installed on the COM Express. Thermal pads must be smeared on the lower side of the heatspreader before it is mounted on the COM Express. Heatspreaders are mounted on the CPU, Northbridge and Southbridge chipsets to ensure the operating temperature of these chips remain low.

Step 1.



▲ Installing the COM Express

Step 2.



▲ Installing the heatspreader

### 3. Installing the system's cooling solution

In addition to the heatspreader, COM Express needs another heatsink or other thermal solution to cool down the COM Express.

Before installing the system's cooling solution, make sure that you have properly applied thermal interface material to the heatspreader.

#### Operating Temperature

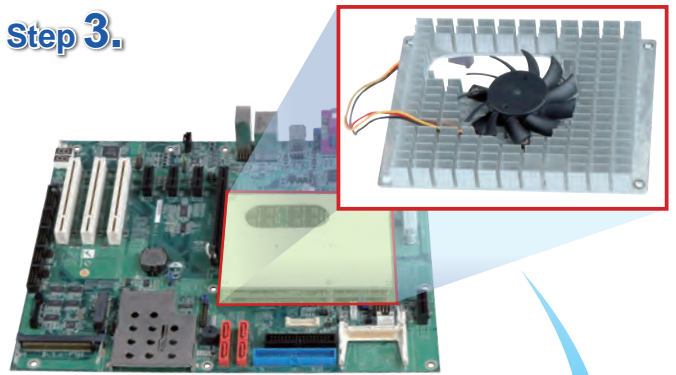
The maximum and minimum operating temperatures for the standard COM Express are listed below.

- Minimum Operating Temperature: 0°C (32°F)
- Maximum Operating Temperature: 60°C (140°F)

#### WARNING:

Never run the embedded module without the heat sink. The heatspreader plate shipped with the COM Express acts as a thermal interface between the module and the heat sink. The heat sink must be installed on the heatspreader plate to maintain proper operating temperatures. Make sure to maintain the heatspreader plate temperature under 60°C in operation.

Step 3.



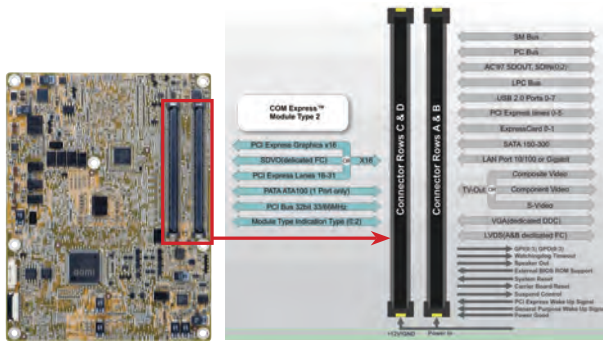
▲ Installing the system's cooling solution



## Benefits

### A: High Compatibility

- IEI ICE modules follow standard COM Express design guide and have high compatibility
- ICE modules are compatible with all baseboards compliant with COM Express specifications
- Complete performance level for customers' choice



**Embedded Fanless**

Fanless

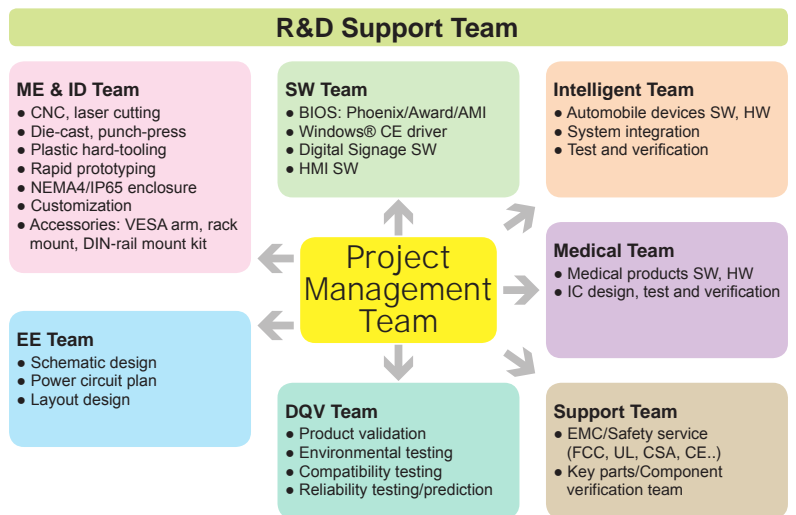
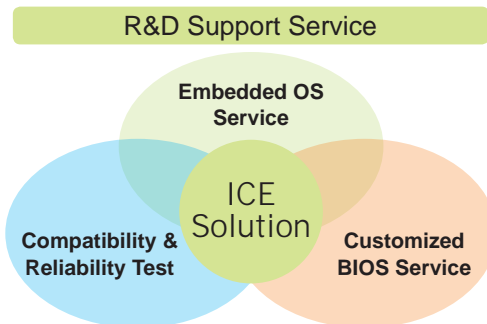
**Performance Dual Core**

Dual Core

Embedded, single core, or dual core complete performance level could be immediately applied on the baseboard.

### B: Strong Support

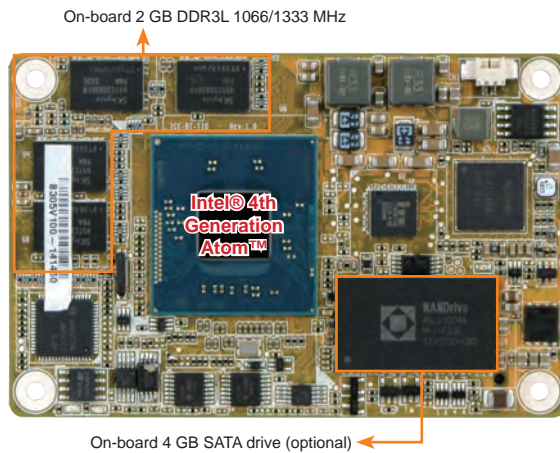
- With strong R&D resources, IEI provides customers innovative leading products and service to drive successful experience.
- IEI provides complete turnkey solutions from hardware, software and industrial BIOS design support.



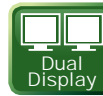
TYPE 10

ICE-BT-T10  
T10W2

COM Express Rev 2.1 Mini Size Type 10 Module, Intel® 4th Generation Atom™ Processor, VGA, DDI, GbE, SATA 3Gb/s, USB and Audio, -40°C to +85°C and RoHS



The one-piece heatsink for COM Express Type 10 provides better thermal solution



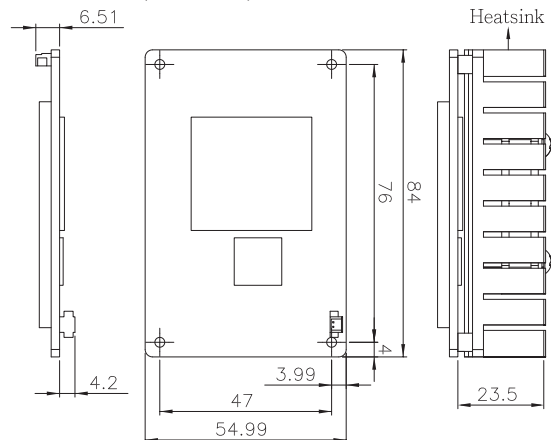
## Specifications

- ◆ CPU
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
  - Intel® Atom™ E3815 on-board SoC (1.46GHz, single-core, 512KB cache, TDP=5W)
- ◆ Memory
  - 2 GB soldered down 1066/1333 MHz DDR3L memory (up to 8 GB)
- ◆ BIOS
  - UEFI BIOS
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 7 Engine with 4 execution units, supports DX11.1, OpenGL 4.2 and OpenCL1.2
- ◆ Display Output
  - 1 x VGA (up to 2560x1600@60Hz)
  - 1 x DDI: DisplayPort/HDMI/DVI (DP up to 2560x1600@60Hz / HDMI up to 1920x1080@60Hz)
  - 1 x DDI: Embedded DP (up to 2560x1600@60Hz)
- ◆ Ethernet
  - Intel® I210-AT GbE controller (Intel® I210-IT GbE controller with W2 sku)
- ◆ Storage
  - 2 x SATA 3Gb/s signal to baseboard
  - Optional soldered down SSD up to 64 GB (SATA port 1)
- ◆ I/O Interface
  - 4 x USB 2.0 signal to baseboard
  - 1 x USB 3.0 signal to baseboard
- ◆ Audio
  - High-definition Audio interface to baseboard
- ◆ GPIO
  - Yes, to baseboard
- ◆ SMBus
  - Yes, to baseboard
- ◆ I<sup>2</sup>C
  - Yes, to baseboard
- ◆ LPC
  - Yes, to baseboard
- ◆ SPI
  - Yes, to baseboard
- ◆ Internal Storage
  - 2-Kb serial I<sup>2</sup>C bus EEPROM supports EAPI Rev. 1.0
- ◆ Serial Port
  - Two serial ports to baseboard (TX & RX from EC)
- ◆ Expansion
  - 3 x PCIe x1 signal to baseboard
- ◆ Watchdog Timer
  - Software programmable, supports 1~255 sec. system reset (from EC)
- ◆ Power Consumption
  - 12V@0.43A, Vcore\_12V@0.9 A (Intel® Atom™ E3845 CPU, 2 GB 1333 MHz DDR3L memory)
- ◆ Operating Temperature
  - 20°C ~ 60°C
  - 40°C ~ 85°C (ICE-BT-10-E38001W2)
- ◆ Storage Temperature
  - 20°C ~ 60°C
  - 40°C ~ 85°C (ICE-BT-10-E38001W2)
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimensions
  - 84 mm x 55 mm (mini size)
- ◆ Weight
  - GW: 300g / NW: 150g
- ◆ CE/FCC compliant

## Features

- Intel® 22nm Atom™ on-board SoC supported
- Type 10 connector pinout according to COM.0 R2.1
- Supports 2 GB 1066/1333 MHz DDR3L memory
- Optional soldered down 4 GB SSD
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery
- Support wide range operating temperature: -40°C to +85°C

## Dimensions (Unit: mm)



## Packing List

1 x ICE-BT-T10 single board computer	1 x QIG
1 x Heatsink	1 x Utility CD

## Ordering Information

Part No.	Description
ICE-BT-T10-E38451W2-R10	COM Express Basic Type 10 module supports Intel® Atom™ processor E3845 (quad core, 10W), on-board 2 GB DDR3L, VGA, DDI, GbE, SATA, USB 3.0 and HD Audio, -40°C ~ 85°C and RoHS
ICE-BT-T10-E38251W2-R10	COM Express Basic Type 10 module supports Intel® Atom™ processor E3825 (dual core, 6W), on-board 2 GB DDR3L, VGA, DDI, GbE, SATA, USB 3.0 and HD Audio, -40°C ~ 85°C and RoHS
ICE-BT-T10-E38451-R10	COM Express Basic Type 10 module supports Intel® Atom™ processor E3845 (quad core, 10W), on-board 2 GB DDR3L, VGA, DDI, GbE, SATA, USB 3.0 and HD Audio, and RoHS
ICE-BT-T10-E38251-R10	COM Express Basic Type 10 module supports Intel® Atom™ processor E3825 (dual core, 6W), on-board 2 GB DDR3L, VGA, DDI, GbE, SATA, USB 3.0 and HD Audio, and RoHS
ICE-BT-T10-E38151-R10	COM Express Basic Type 10 module supports Intel® Atom™ processor E3815 (single core, 5W), on-board 2 GB DDR3L, VGA, DDI, GbE, SATA, USB 3.0 and HD Audio, and RoHS
ICE-DB-T10-R10	Baseboard for COM Express Type 10 module COM.0 Rev. 2.1, supports PICMG EAPI R1.0

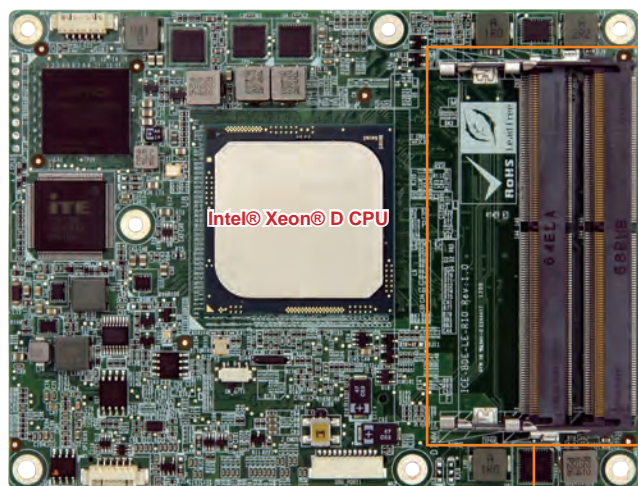
Note: Models with other CPUs not listed in the table are requested by MOQ - 100 pcs/lot.



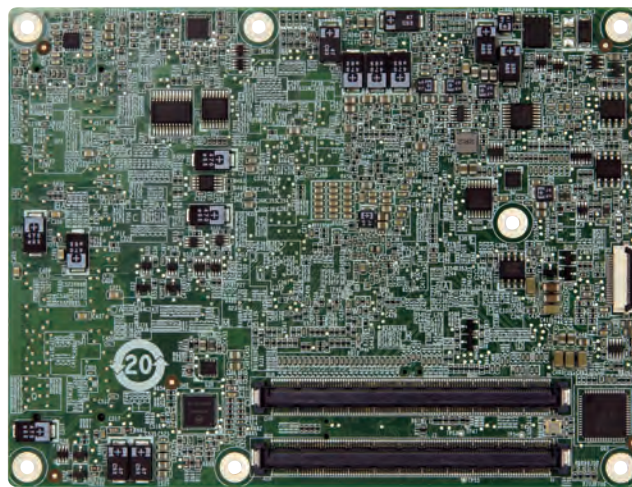
TYPE 7

## ICE-BDE-T7

COM Express Basic Size Type 7 Module Support, Intel® Broadwell-DE Processor D-1500, Two ECC DDR4 SO-DIMM, GbE, 10G KR, NCSI, SATA 6Gb/s, USB 3.0, PCIe Gen3, RoHS



Dual-channel DDR4 2133/1867 MHz



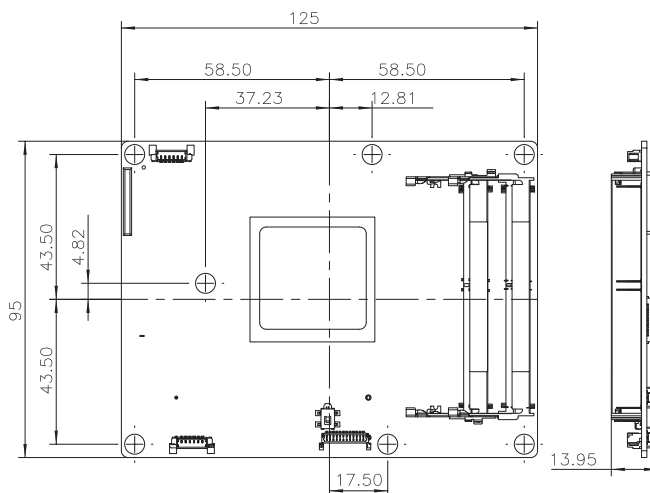
## Specifications

- ◆ Form Factor  
PICMG COM.0 R2.1 Basic Type 7 (125mm x 95mm)
- ◆ CPU  
Intel® Xeon® Processor D-1548 (12MB Cache, 2.00 GHz)  
Intel® Xeon® Processor D-1518 (6MB Cache, 2.20 GHz)
- ◆ Memory  
Two 240-pin 2133/1867 MHz dual-channel DDR4 SDRAM unbuffered DIMM supported (system max. 32GB)  
Support ECC
- ◆ BIOS  
UEFI BIOS
- ◆ Ethernet  
Intel® I210  
2 x 10G KR interfaces  
10G sideband signals  
(10G\_INT 10G\_PHY\_MDC/MDIO 10G\_PHY\_SEL 10G\_PHY\_RST 10G\_LED\_I2C 10G\_SFP\_I2C 10G\_SDP)
- ◆ I/O Interface  
2 x RS-232 (2-wire) to base board  
4 x USB 2.0 to base board  
4 x USB 3.0 to base board  
2 x SATA 6Gb/s signal to base board
- ◆ SMBus  
Yes, to base board
- ◆ I2C  
Yes, to base board
- ◆ LPC  
Yes, to base board
- ◆ Expansion  
1 x PCIe x16 Gen 3 (bifurcatable to 2 x8, 1 x8 & 2 x4, or 4 x4)  
1 x PCIe x8 Gen 3 (bifurcatable to 1 x8 & 2 x4)  
8 x PCIe x1 (Gen2) signal to base board  
Bifurcatable to 1 x8 or 2 x4 or 4 x1+1x4 or 8 x1
- ◆ Watchdog Timer  
Software programmable, supports 1~255 sec. system reset
- ◆ GPIO  
8-bit GPIO, to base board
- ◆ TPM  
Through base board
- ◆ Power Supply  
12V: 12VSB±5%
- ◆ Power Consumption  
TBD
- ◆ Operating Temperature  
Standard: -20°C ~ 60°C  
Storage: -30°C ~ 70°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Dimensions  
125 mm x 95 mm
- ◆ Weight  
GW: 600g/ NW: 300g
- ◆ CE/FCC compliant

## Features

- COM Express basic size Type 7 module
- Intel® Xeon® D and Pentium® D SoC (up to 16 cores)
- Up to 32GB dual channel DDR4 at 1866/2133/2400MHz ECC (dependent on SoC SKU)
- Two 10G Ethernet and NC-SI support
- Up to 32 PCIe lanes (24 x Gen3, 8 x Gen2)
- GbE, two SATA 6Gb/s, four USB 3.0/2.0

## Dimensions (Unit: mm)



## Packing List

1 x ICE-BDE-T7 single board computer	1 x Driver CD
1 x Heatsink	1 x QIG

## Ordering Information

Part No.	Description
ICE-BDE-T7-1548-R10	COM Express Basic size Type 7 Module support, Intel® Broadwell-DE Eight-Core processor D-1548 (45W), two ECC DDR4 SO-DIMM, GbE, 10G KR, NCSI, SATA 6Gb/s, USB 3.0, PCIe Gen3, RoHS
ICE-BDE-T7-1518-R10	COM Express Basic size Type 7 Module support, Intel® Broadwell-DE Quad-Core processor D-1518 (35W), two ECC DDR4 SO-DIMM, GbE, 10G KR, NCSI, SATA 6Gb/s, USB 3.0, PCIe Gen3, RoHS
ICE-DB-T7-i2-R10	Base Board for COM Express Type 7 Module

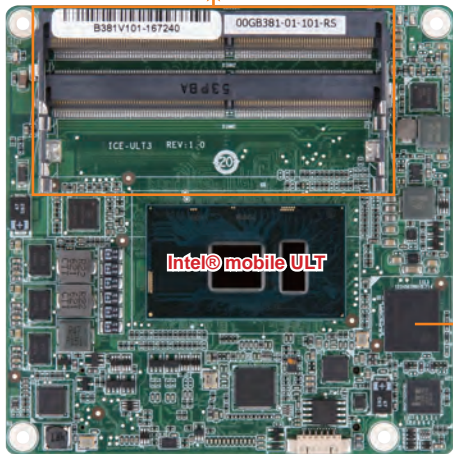
TYPE 6

## ICE-ULT3

COM Express Compact size Type 6 Module, 6th Generation Intel® Core™ ULT Processor, DDR4, VGA, LVDS, DDI, GbE, SATA 6Gb/s, USB 3.0 and HD Audio, RoHS

New

Dual-channel DDR4 2133/1867 MHz



On-board eMMC 5.0 (optional)



One piece heat sink for COM Express Basic Size provides better thermal solution



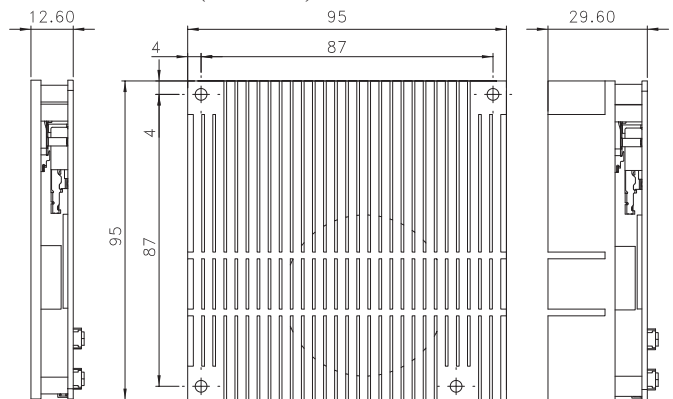
## Specifications

- ◆ CPU
  - 6th generation Intel® mobile ULT on-board SoC
  - Intel® Core™ i7-6600U (up to 3.4GHz, dual-core, 4MB cache, TDP=15W)
  - Intel® Core™ i5-6300U (up to 3.0GHz, dual-core, 3MB cache, TDP=15W)
  - Intel® Core™ i3-6100U (up to 2.3GHz, dual-core, 3MB cache, TDP=15W)
  - Intel® Celeron® processor 3955U (up to 2.0GHz, dual-core, 2MB cache, TDP=15W)
  - Intel® Celeron® processor 3855U (up to 1.6GHz, dual-core, 2MB cache, TDP=15W)
- ◆ Memory
  - Two 260-pin 2133/1867 MHz dual-channel DDR4 non-ECC unbuffered SO-DIMMs support up to 32GB
- ◆ BIOS
  - UEFI BIOS
- ◆ Graphic Engine
  - Intel® HD Graphics Gen 9 support for DX11/12, OCL 2.x, OGL 4.3/4.4, ES 2.0 Decode/Encode for HEVC, VP8, VP9 2, VDENC
- ◆ Display Output
  - 1 x DDI: DisplayPort/HDMI/DVI (up to 3840x2160@60Hz)
  - 1 x DDI: DisplayPort/HDMI/DVI (up to 3840x2160@60Hz) (Option with 1 x CRT via CH7517) (up to 1920x1200@60Hz)
  - 1 x DDI: Embedded DP (up to 3840x2160@60Hz) (Option with 1 x Dual Channel LVDS 18/24 bit via CH7511B) (up to 1920x1200@60Hz)
- ◆ Ethernet
  - Intel® Clarkville-V I219LM Support Intel® AMT 11.0
- ◆ I/O Interface
  - 2 x RS-232 (2-Wire) to base board
  - 4 x USB 2.0 to base board
  - 4 x USB 3.0 to base board (with 4 x USB 2.0)
  - 2 x SATA 6Gb/s signal to base board
- ◆ Audio
  - High definition audio interface
- ◆ SMBus
  - YES, to base board
- ◆ I²C
  - YES, to base board
- ◆ LPC
  - YES, to base board
- ◆ Expansion
  - 1 x PCIe x1 signal to base board (Via PCIe x16 channel)
  - 8 x PCIe x1 signal to base board
- ◆ Watchdog Timer
  - Software programmable, supports 1~255 sec. system reset
- ◆ eMMC
  - eMMC 5.0 (optional)
- ◆ GPIO
  - 8 bit GPIO, to base board
- ◆ TPM
  - Through base board
- ◆ Power Supply
  - 12V: 12V±5%, 5VSB: 5V±5%, RTC Battery: 2.0-3.3V
- ◆ Power Consumption
  - +12V@2.57A, 5VSB@0.04A, 5V@0.02A (Intel® Core™ i7-6600U with two 8GB 2400 MHz DDR4 memory)
- ◆ Operating Temperature
  - 20°C ~ 65°C
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimension
  - 95 mm x 95 mm
- ◆ Weight
  - GW: 600g / NW: 250g
- ◆ CE/FCC compliant

## Features

- Intel® Skylake ULT Processors supported
- Intel® HD Graphics technology integrates high-performance graphics and media processing
- Two 260-pin 2133/1867 MHz Dual-Channel DDR4 SDRAM Unbuffered DIMM supported (system max. 32GB)
- 18/24-bit dual-channel LVDS, analog CRT, DDI supported
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery
- Support Intel® AMT 11.0

## Dimensions (Unit: mm)



## Packing List

1 x ICE-ULT3 single board computer	1 x Driver CD
1 x Heatsink	1 x QIG

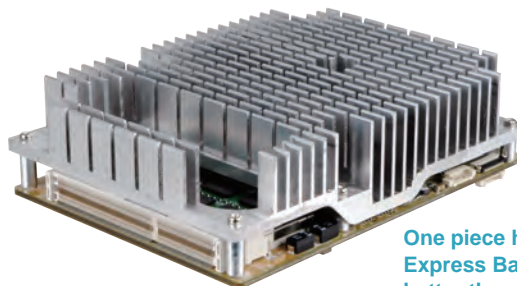
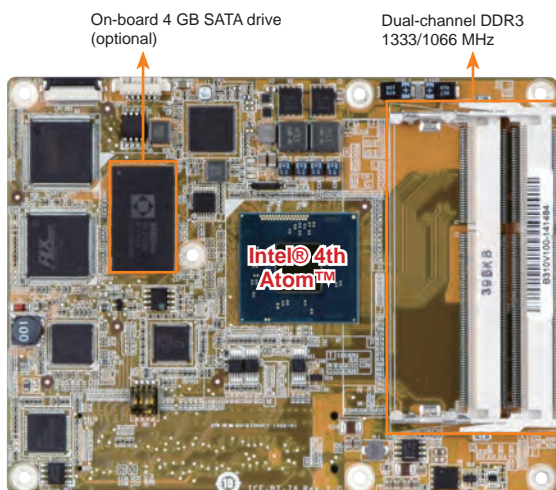
## Ordering Information

Part No.	Description
ICE-ULT3-i7-R10	COM Express Compact size Type 6 Module, 6th Generation Intel® Core™ i7-6600U (15W) on-board Processor (ULT), DDR4, VGA, LVDS, DDI, GbE, USB 3.0, SATA 6Gb/s and HD Audio, RoHS
ICE-ULT3-i5-R10	COM Express Compact size Type 6 Module, 6th Generation Intel® Core™ i5-6300U (15W) on-board Processor (ULT), DDR4, VGA, LVDS, DDI, GbE, USB 3.0, SATA 6Gb/s and HD Audio, RoHS
ICE-ULT3-i3-R10	COM Express Compact size Type 6 Module, 6th Generation Intel® Core™ i3-6100U (15W) on-board Processor (ULT), DDR4, VGA, LVDS, DDI, GbE, USB 3.0, SATA 6Gb/s and HD Audio, RoHS
ICE-ULT3-C-R10	COM Express Compact size Type 6 Module, Intel® Celeron® 3955U (15W) on-board Processor (ULT), DDR4, VGA, LVDS, DDI, GbE, USB 3.0, SATA 6Gb/s and HD Audio, RoHS
ICE-ULT3-CE-R10	COM Express Compact size Type 6 Module, Intel® Celeron® 3855U (15W) on-board Processor (ULT), DDR4, VGA, LVDS, DDI, GbE, USB 3.0, SATA 6Gb/s and HD Audio, RoHS
ICE-DB-T6R-R11	Base Board for COM Express Type 6 Module COM.0 Rev. 2.1, support PICMG EAPI R1.0

TYPE 6

## ICE-BT-T6

COM Express Rev 2.1 Basic Type 6 Module, Intel® 4th Generation Atom™ Processor, VGA, DDI, GbE, SATA 3Gb/s, USB and Audio, RoHS



One piece heat sink for COM Express Basic Size provides better thermal solution



## Specifications

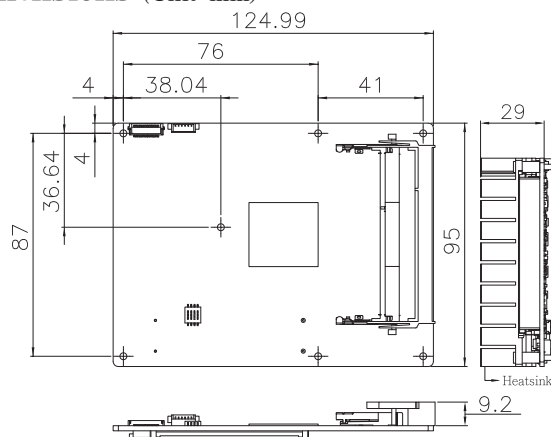
- ◆ CPU
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3827 on-board SoC (1.75GHz, dual-core, 1MB cache, TDP=8W)
  - Intel® Atom™ E3826 on-board SoC (1.46GHz, dual-core, 1MB cache, TDP=7W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
  - Intel® Atom™ E3815 on-board SoC (1.46GHz, single-core, 512KB cache, TDP=5W)
  - Intel® Celeron® J1900 on-board SoC (2GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Celeron® N2930 on-board SoC (1.83GHz, quad-core, 2MB cache, TDP=7.5W)
  - Intel® Celeron® N2807 on-board SoC (1.58GHz, dual-core, 2MB cache, TDP=4.3W)
- ◆ Memory
  - Two 204-pin 1066/1333 MHz dual-channel DDR3L SDRAM unbuffered DIMMs support up to 8 GB
- ◆ BIOS
  - UEFI BIOS
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 7 Engine with 4 execution units, supporting DX11.1, OpenGL 4.2 and OpenCL 1.2
- ◆ Display Output
  - 1 x VGA (up to 2560x1600@60Hz)
  - 1 x DDI 1 (DP up to 2560x1600@60Hz / HDMI up to 1920x1080@60Hz)
  - 1 x LVDS: 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
- ◆ Ethernet
  - Intel® I210 GbE Ethernet
- ◆ Storage
  - 2 x SATA 3Gb/s signal to baseboard
  - Optional soldered down SSD up to 64 GB (SATA port 1)
- ◆ Embedded Controller
  - ITE IT8528E/FX
- ◆ USB
  - 7 x USB 2.0 signal to baseboard
  - 4 x USB 3.0 signal to baseboard (via 1 to 4 USB 3.0 hub)
- ◆ Audio
  - High Definition Audio interface to baseboard
- ◆ GPIO
  - Yes, to baseboard
- ◆ SMBus
  - Yes, to baseboard
- ◆ I<sup>2</sup>C
  - Yes, to baseboard
- ◆ LPC
  - Yes, to baseboard
- ◆ SPI
  - Yes, to baseboard
- ◆ Internal Storage
  - 2-Kb serial I<sup>2</sup>C bus EEPROM supports EAPI Rev. 1.0
- ◆ Serial Port
  - 2 x Serial ports to baseboard (TX & RX from EC)
- ◆ Expansion
  - 5 x PCIe x1 signal to baseboard (2 from SoC, 3 from PLX PEX8605 switch IC)
- ◆ Watchdog Timer
  - Software programmable, supports 1~255 sec. system reset (by EC)
- ◆ Power Consumption
  - +12V@0.54A, Vcore\_12V@0.95A
  - (Intel® Celeron® J1900 CPU with two 8 GB 1333 MHz DDR3 memory)
- ◆ Operating Temperature
  - 20°C ~ 60°C
- ◆ Storage Temperature
  - 30°C ~ 70°C
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimensions: 125 mm x 95 mm
- ◆ Weight: GW: 600g / NW: 200g
- ◆ CE/FCC compliant



## Features

- Intel® 22nm Atom™ or Celeron® on-board SoC supported
- Intel® HD Graphics Gen7 integrates high-performance graphics and media processing
- Supports 1333/1066 MHz DDR3L (1.35V) memory, up to 8 GB
- Supports one analog CRT, one 24-bit dual-channel LVDS, and one DDI
- Optional soldered down 4 GB SSD
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Dimensions (Unit: mm)



## Packing List

1 x ICE-BT-T6 single board computer	1 x Heatsink
1 x QIG	1 x Utility CD

## Ordering Information

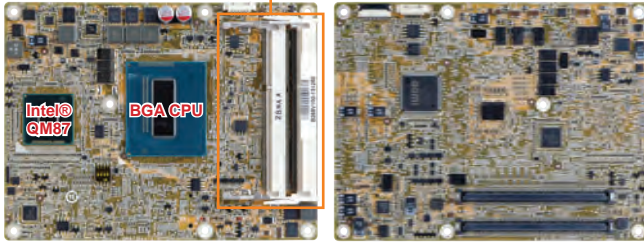
Part No.	Description
ICE-BT-T6-J19001-R10	COM Express Basic Type 6 module with Intel® Celeron® quad-core processor J1900 (10W), VGA, DDI, LVDS, GbE, SATA, USB 3.0 and HD Audio, RoHS
ICE-BT-T6-N29301-R10	COM Express Basic Type 6 module with Intel® Celeron® quad-core processor N2930 (7.5W), VGA, DDI, LVDS, GbE, SATA, USB 3.0 and HD Audio, RoHS
ICE-BT-T6-N28071-R10	COM Express Basic Type 6 module with Intel® Celeron® dual-core processor N2807 (4.3W), VGA, DDI, LVDS, GbE, SATA, USB 3.0 and HD Audio, RoHS
ICE-BT-T6-E38XX1-R10	COM Express Basic Type 6 module with Intel® Atom™ processor E38XX, VGA, DDI, LVDS, GbE, SATA, USB 3.0 and HD Audio, RoHS (by request MOQ: 100pcs/lot)
ICE-DB-T6R-R11	Baseboard for COM Express Type 6 Module COM.0 Rev. 2.1, supports PICMG EAPI R1.0
19100-000186-00-RS	Heat spreader for ICE-BT-T6

**TYPE 6**

## ICE-QM871

COM Express Basic Type 6 Module Supports Intel® 22nm 4th Generation Mobile Core™ Processor, VGA, LVDS, DDI, GbE, PCIe Gen3, SATA 6Gb/s, USB 3.0 and HD Audio, RoHS

Dual-channel DDR3 1333/1066 Mhz



### Features

- 4th generation Intel® mobile Core™ i7/i5/i3 or Celeron® on-board processor
- Intel® HD Graphics technology integrates high-performance graphics and media processing
- Dual-channel 1600/1333 MHz DDR3 support up to 16 GB
- Support 1.5V/1.35V DDR3 SO-DIMM
- 18/24-bit dual-channel LVDS, analog CRT and three DDI supported
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery
- Support AMT 9.0

### Specifications

- ◆ CPU
  - Intel® mobile Core™ i7-4700EQ on-board processor with Intel® AMT 9.0 support (2.4GHz, quad-core, 6MB cache, TDP=47W)
  - Intel® mobile Core™ i5-4402E on-board processor with Intel® AMT 9.0 support (1.6GHz, dual-core, 3MB cache, TDP=25W)
  - Intel® mobile Core™ i3-4102E on-board processor (1.6GHz, dual-core, 3MB cache, TDP=25W)
  - Intel® mobile Celeron® 2002E on-board processor (1.5GHz, dual-core, 2MB cache, TDP=25W)
  - Intel® mobile Core™ i5-4400E on-board processor with Intel® AMT 9.0 support (2.7GHz, dual-core, 3MB cache, TDP=37W) (by request)
  - Intel® mobile Core™ i3-4100E on-board processor (2.4GHz, dual-core, 3MB cache, TDP=37W) (by request)
  - Intel® mobile Celeron® 2000E on-board processor (2.2GHz, dual-core, 2MB cache, TDP=37W) (by request)
- ◆ System Chipset: Intel® QM87
- ◆ BIOS: UEFI BIOS
- ◆ Memory: Two 204-pin 1600/1333 MHz dual-channel DDR3 & DDR3L SDRAM unbuffered DIMMs support up to 16 GB
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 7.5 supports DX11.1 and OpenGL 3.2 Full MPEG2, VC1, AVC Decode
- ◆ Display Output
  - 3 x DDI: DisplayPort/HDMI/DVI (up to 2560x1600@60 Hz)
  - 1 x VGA (up to 1920x1200@60 Hz)
  - 1 x Dual-channel 18/24-bit LVDS (up to 1920x1200@60 Hz)
- ◆ Ethernet LAN: Intel® I217LM Clarkville-V with Intel® AMT 9.0 support
- ◆ I/O Interface
  - 2 x RS-232 (to baseboard)
  - 4 x SATA 6Gb/s signal (to baseboard)
  - 4 x USB 3.0 (to baseboard)
  - 8 x USB 2.0 (to baseboard)
- ◆ Audio: High Definition Audio interface
- ◆ SMBus: Yes (to baseboard)
- ◆ IPC: Yes (to baseboard)
- ◆ LPC: Yes (to baseboard)
- ◆ Expansion
  - 1 x PCIe x16 signal (to baseboard)
  - 7 x PCIe x1 signal (to baseboard)
- ◆ Watchdog Timer
  - Software programmable, support 1~255 sec. system reset
- ◆ GPIO: 8-bit GPIO
- ◆ Power Consumption
  - +12V1 @ 1.86A, +12V2 @ 3.70A (Intel® Core™ i7-4700EQ 2.4GHz CPU with 8 GB (two 4 GB) 1333 MHz DDR3 memory)
  - ◆ Operating Temperature: -20°C ~ 60°C
  - ◆ Storage Temperature: -30°C ~ 70°C
  - ◆ Operating Humidity: 5% ~ 95%, non-condensing
  - ◆ Dimensions: 125mm x 95mm
  - ◆ Weight: GW: 600g / NW: 250g
  - ◆ CE/FCC compliant

### Packing List

1 x ICE-QM871 single board computer	1 x Driver CD
1 x Heatspreader	1 x Utility CD
1 x Cooler	1 x QIG

### Ordering Information

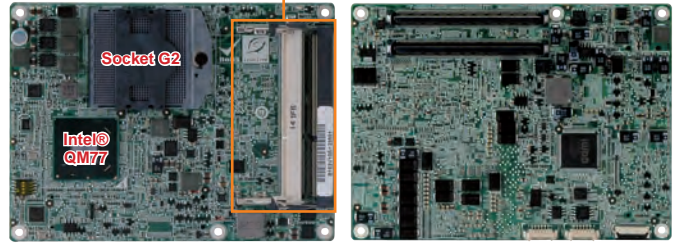
Part No.	Description
ICE-QM871-i7-R10	COM Express Basic Type 6 module supports Intel® 22nm 4th Generation Mobile Core™ i7-4700EQ processor (47W), VGA, LVDS, DDI, GbE, PCIe Gen3, AMT 9.0, SATA 6Gb/s, USB 3.0 and HD Audio, RoHS
ICE-QM871-i5E-R10	COM Express Basic Type 6 module supports Intel® 22nm 4th Generation Mobile Core™ i5-4402E processor (25W), VGA, LVDS, DDI, GbE, PCIe Gen3, AMT 9.0, SATA 6Gb/s, USB 3.0 and HD Audio, RoHS
ICE-QM871-i3E-R10	COM Express Basic Type 6 module supports Intel® 22nm 4th Generation Mobile Core™ i3-4102E processor (25W), VGA, LVDS, DDI, GbE, PCIe Gen3, SATA 6Gb/s, USB 3.0 and HD Audio, RoHS
ICE-QM871-CE-R10	COM Express Basic Type 6 module supports Intel® 22nm 4th Generation Celeron® Mobile 2002E processor (25W), VGA, LVDS, DDI, GbE, PCIe Gen3, SATA 6Gb/s, USB 3.0 and HD Audio, RoHS
ICE-DB-T6R-R11	Base Board for COM Express Type 6 Module COM.0 Rev. 2.1, support PICMG EAPI R1.0

**TYPE 6**

## ICE-QM770

COM Express Basic Type 6 Module with Socket G2 Supports Intel® 2nd & 3rd Generation Core™ i7/i5/i3 Celeron® Processor, VGA/LVDS, DDI, GbE, SATA 6Gb/s, USB 3.0, Audio and RoHS

Dual-channel DDR3 1333/1066 Mhz



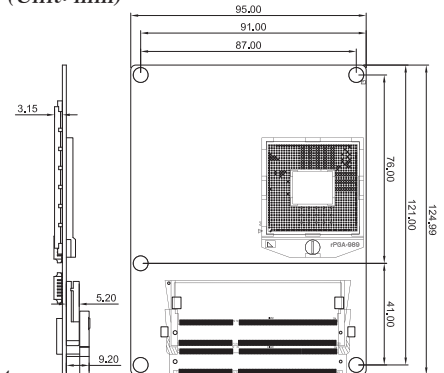
### Features

- Intel® Core™ i7/i5/i3/Celeron® processors supported
- Intel® HD Graphics technology integrates high-performance graphics and media processing
- 1600/1333/1066 MHz dual-channel DDR3 memory supports up to 16 GB
- Supports 1.35V DDR3L
- 18/24-bit dual-channel LVDS, analog CRT and three DDI supported
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

### Specifications

- ◆ Form Factor
  - PICMG COM Express R2.0 Basic Type 6
- ◆ CPU: Socket G2 for 2nd & 3rd generation Intel® Core™ i7/i5/i3/Pentium®/Celeron® processor
- ◆ PCH: Intel® QM77
- ◆ Memory
  - Two 204-pin 1600/1333MHz dual-channel unbuffered DDR3 SDRAM SO-DIMMs support up to 16GB
  - Supports 1.35V DDR3L
- ◆ BIOS: UEFI BIOS
- ◆ Graphics Engine
  - Intel® HD Graphics 2000/3000 Supports DX11, OCL 1.1 and OpenGL 3.0 Full MPEG2, VC1, AVC Decode
- ◆ Display Output
  - 3 x DDI (up to 2560x1600@60Hz)
  - 1 x VGA up to QXGA (up to 2048x1536@75Hz)
  - 1 x 18/24-bit dual-channel LVDS up to UXGA (up to 1920x1200@60Hz)
- ◆ Ethernet: Intel® 82579LM
- ◆ Embedded Controller: iWDD
- ◆ Audio: High Definition Audio
- ◆ SMBus: Yes (to baseboard)
- ◆ IPC: Yes (to baseboard)
- ◆ LPC: Yes (to baseboard)
- ◆ I/O Interface
  - 2 x RS-232 (to baseboard) (3.3V)
  - 2 x SATA 3Gb/s (signal to baseboard)
  - 2 x SATA 6Gb/s (signal to baseboard)
  - 4 x USB 3.0 (to baseboard)
  - 8 x USB 2.0 (to baseboard)
- ◆ Expansion
  - 1 x PCIe x16 signal (to baseboard)
  - 7 x PCIe x1 signal (to baseboard)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ GPIO: 8-bit GPIO (to baseboard)
- ◆ TPM: Through the baseboard
- ◆ Intel® AMT: Supports Intel® AMT 8.0
- ◆ Power Consumption
  - +12V @ 1.75A, Vcore \_12V @ 3.33A (Intel® 1.8GHz CPU with 4 GB 1333 MHz DDR3 memory)
  - ◆ Operating Temperature: -10°C ~ 60°C
  - ◆ Storage Temperature: -20°C ~ 70°C
  - ◆ Operating Humidity: 5% ~ 95%, non-condensing
  - ◆ Dimensions: 338 mm x 126 mm
  - ◆ Weight: GW: 700g / NW: 250g
  - ◆ CE/FCC compliant

### Dimensions (Unit: mm)



### Packing List

1 x ICE-QM770-R10 single board computer	1 x Driver CD
1 x Heatspreader for Socket G2 CPU (22nm)	1 x Utility CD
1 x Cooler	1 x QIG

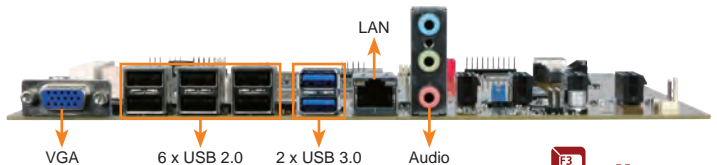
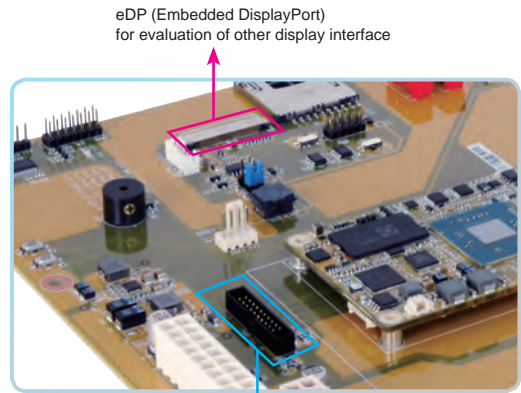
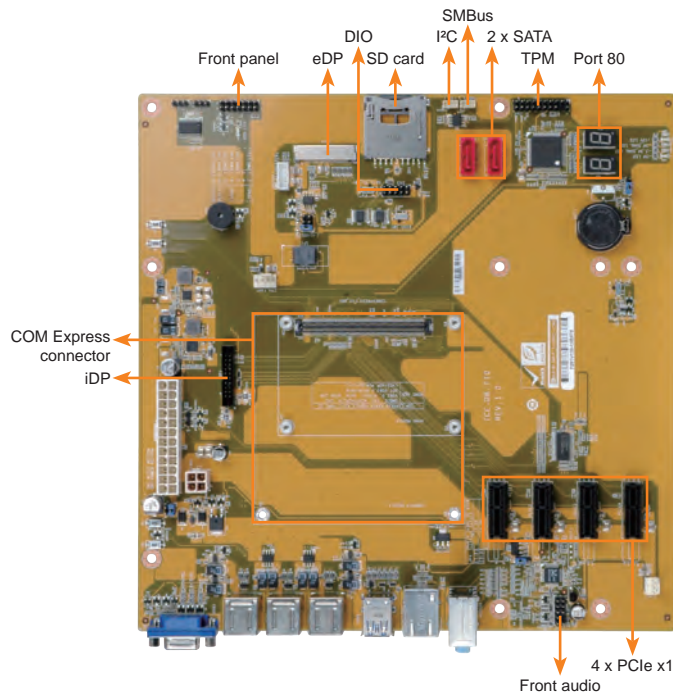
### Ordering Information

Part No.	Description
ICE-QM770-R10	COM Express Basic Type 6 Module with Socket G2 Supports Intel® 2nd & 3rd Generation Core™ i7/i5/i3 Celeron® Processor, VGA/LVDS, DDI, GbE, SATA 6Gb/s, USB 3.0, Audio and RoHS
ICE-DB-T6-R10	Baseboard for COM Express Type 6 modules

TYPE 10

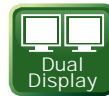
## ICE-DB-T10

Baseboard for COM Express Type 10 Module COM.0 Rev. 2.1, support PICMG EAPI R1.0



## Specifications

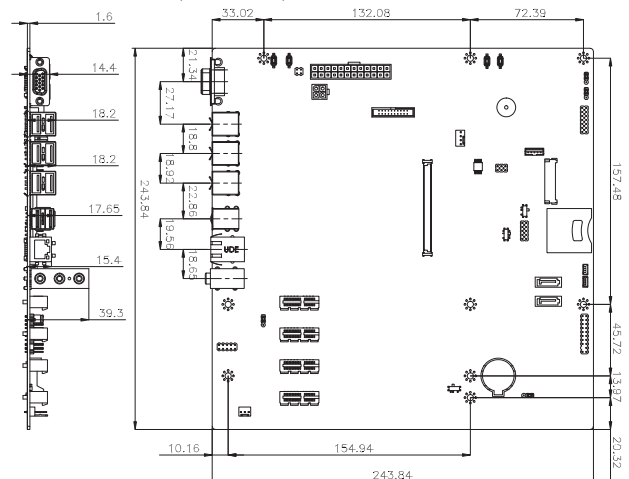
- ◆ Form Factor  
microATX form factor baseboard (244mm x 244mm)
- ◆ COM Express type  
Supports COM Express Compact/Mini module using connector pin out Type 10
- ◆ Display Interfaces  
1 x eDP  
1 x VGA  
1 x DisplayPort pin-header
- ◆ Audio  
Realtek ALC662 HD Audio codec (Line-in, Line-out, Mic)
- ◆ Internal I/O Interface  
4 x PCIe x1                   1 x LPC  
2 x SATA port               1 x SD card socket  
2 x RS-232 from COM Express (only TX, RX, GND)
- ◆ External I/O Interface  
1 x VGA                       1 x Audio jack (Line-in, Line-out, Mic)  
2 x USB 3.0                 6 x USB 2.0  
1 x RJ-45
- ◆ Front Audio  
1 x Front audio (2x5 pin)
- ◆ TPM  
1 x TPM connector (2x10 pin)
- ◆ 80 Port  
1 x 80 port (2x7 segment display)
- ◆ Front Panel  
1 x Front panel (2x7 pin, power LED, HDD LED, speaker(Buzzer), power button, reset button)
- ◆ I2C  
1 x I2C (1x4 pin)
- ◆ SMBus  
1 x SMBus (1x4 pin)
- ◆ Internal Storage  
EEPROM (support EAPI R1.0)
- ◆ LPC  
1 x LPC
- ◆ Fan Connector  
1 x 4-pin / 1 x 3 pin CPU module fan connector
- ◆ Watchdog Timer  
Software programmable, support 1~255 sec. system reset
- ◆ Power Supply  
ATX / AT power supply  
24+4 pin
- ◆ Operating Temperature  
-20°C ~ 60°C
- ◆ Storage Temperature  
-30°C ~ 70°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Dimensions  
243.8 mm x 243.8 mm (9.6" x 9.6")
- ◆ CE/FCC compliant



## Features

- microATX form factor baseboard for COM.0 Rev. 2.1, Pin-out Type 10
- Support four PCIe x1
- Support eDP, VGA and iDP
- Support PICMG EAPI R1.0

## Dimensions (Unit: mm)



## Packing List

1 x COM Express Baseboard	1 x SATA cable
1 x Mini jumper pack	1 x QIG

## Ordering Information

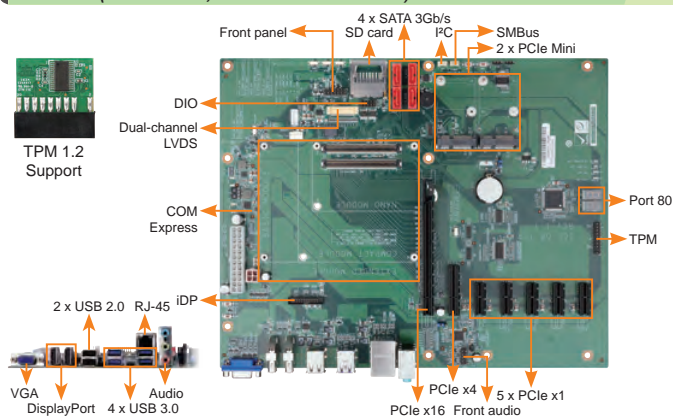
Part No.	Description
ICE-DB-T10-R10	Baseboard for COM Express Type 10 Module COM.0 Rev. 2.1, support PICMG EAPI R1.0
19800-000082-RS	RS-232/422/485 cable, 14-pin to dual DB-9, 230mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P





# ICE-DB-T6R

Baseboard for COM Express Type 6 Module COM.0 Rev. 2.1 (for ICE-ULT3, ICE-QM871 & ICE-BT-T6)



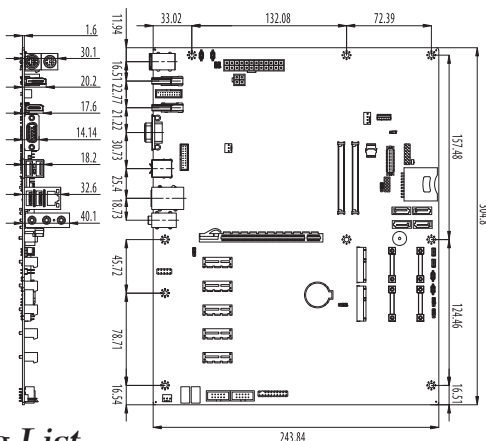
## Features

- ATX form factor baseboard for COM.0 Rev. 2.1, pin-out Type 6
- Support one PCIe x16, one PCIe x4, five PCIe x1, two PCIe Mini
- Support PICMG EAPI R1.0

## Specifications

- ◆ Form Factor: ATX form factor baseboard
- ◆ CPU: Supports COM Express Compact/Mini module using connector pin out Type 6
- ◆ Display Interfaces: 1 x DisplayPort connectors, 1 x LVDS 18/24-bit single or dual-channel (with PWM back light controller), 1 x VGA, 2 x DisplayPort pin-header
- ◆ Audio: Realtek ALC662 HD Audio codec (Line-in, Line-out, Mic)
- ◆ Expansion: 1 x LPC, 1 x PCIe x4, 1 x PCIe x16, 5 x PCIe x1, 2 x PCIe Mini (MINIPCIe1 with mSATA support, colay with SATA\_4)
- ◆ Internal I/O Interface: 1 x PS2 KB/MS, 4 x SATA port, 1 x SD card socket
- ◆ External I/O Interface: 1 x Audio jack (Line-in, Line-out, Mic), 1 x DisplayPort connectors, 1 x HDMI, 1 x VGA, 1 x PS2 KB/MS, 2 x USB 2.0, 1 x RJ-45, 4 x USB 3.0
- ◆ Front Audio: 2 x 5-pin pin header
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ 80 port: 2 x 7 segment display
- ◆ Front Panel: 1 x Front panel (2x7 pin, power LED, HDD LED, speaker/buzzer, power button, reset button)
- ◆ I2C: 1 x 4-pin wafer
- ◆ SMBus: 1 x 4-pin wafer
- ◆ Internal storage: EEPROM (supports EAPI R1.0)
- ◆ Watchdog Timer: Software programmable supports 1~255 sec system reset
- ◆ GPIO: 8-bit GPIO
- ◆ Power Supply: ATX / AT Power Supply 24+4 pins
- ◆ Fan Connector: 1 x 4-pin / 1 x 3-pin CPU module fan connector, 1 x 3-pin system fan connector by SIO
- ◆ Operating Temperature: -20°C ~ 60°C
- ◆ Storage Temperature: -30°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95 non-condensing
- ◆ Dimensions: 304.8 mm x 243.8 mm (12" x 9.6")
- ◆ CE/FCC compliant

## Dimensions (Unit: mm)



## Packing List

1 x COM Express baseboard	1 x Mini jumper pack
2 x SATA cable	1 x QIG

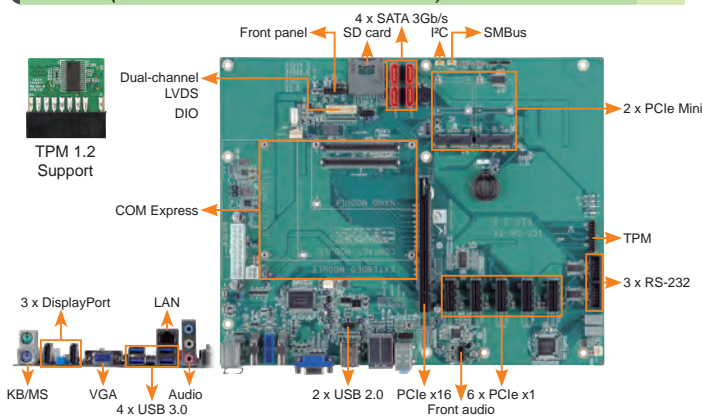
## Ordering Information

Part No.	Description
ICE-DB-T6R-R11	Baseboard for COM Express Type 6 Module COM.0 Rev. 2.1, support PICMG EAPI R1.0
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P



# ICE-DB-T6

Baseboard for COM Express Type 6 Module (for ICE-QM770 & ICE-CV-D25501/N26001)



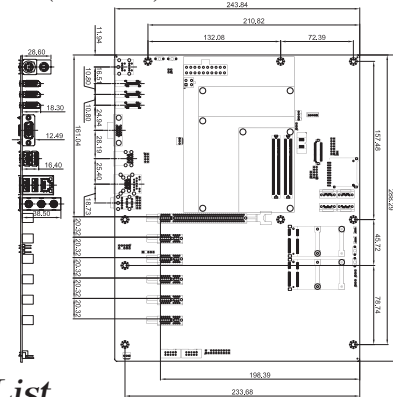
## Features

- ATX form factor baseboard for COM Express Rev. 2, Pin-out Type 6
- Supports one PCIe x16, six PCIe x1 and two PCIe Mini
- Supports smart battery charger

## Specifications

- ◆ Form Factor: ATX form factor baseboard
- ◆ CPU: Supports COM Express Compact/Mini module using connector pin out Type 6
- ◆ Display Interfaces: 1 x 18/24-bit single/dual-channel LVDS, 1 x VGA, 3 x DisplayPort (2 x real connectors, 1 x pin header)
- ◆ Super I/O: W83627DHG
- ◆ Audio: Realtek ALC892 HD Audio codec (Line-in, Line-out, Mic)
- ◆ Expansion: 1 x LPC, 2 x PCIe Mini (with USB), 1 x PCIe x16, 6 x PCIe x1
- ◆ Internal I/O Interface: 1 x PS2 KB/MS, 2 x RS-232 from SIO, 1 x SD, 2 x USB 2.0, 4 x SATA port, 2 x RS-232 from COM Express (only TX, RX and GND)
- ◆ External I/O Interface: 1 x VGA, 4 x USB 3.0, 1 x RJ-45, 3 x DisplayPort, 1 x Audio jack (Line-in, Line-out, Mic)
- ◆ Front Audio: 1 x Front audio (2x5 pin)
- ◆ TPM: 1 x TPM (2x10 pin)
- ◆ 80 port: 2 x 7 segment display
- ◆ Front Panel: 1 x Front panel (2x7 pin, power LED, HDD LED, speaker/buzzer, power button, reset button)
- ◆ I2C: 1 x 4-pin wafer
- ◆ SMBus: 1 x 4-pin wafer
- ◆ Watchdog Timer: Software programmable supports 1~255 sec. system reset
- ◆ GPIO: 8-bit GPIO (GPIO from iWDD co-layer SIO)
- ◆ Power Supply: ATX/AT power supply
- ◆ Battery: Supports smart battery charger connector
- ◆ Fan Connector: 1 x 4-pin / 1 x 3-pin CPU module fan connector, 1 x 3-pin system fan connector by SIO
- ◆ Operating Temperature: -10°C ~ 60°C
- ◆ Storage Temperature: -20°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 304.8 mm x 243.8 mm (12" x 9.6")
- ◆ CE/FCC compliant

## Dimensions (Unit: mm)



## Packing List

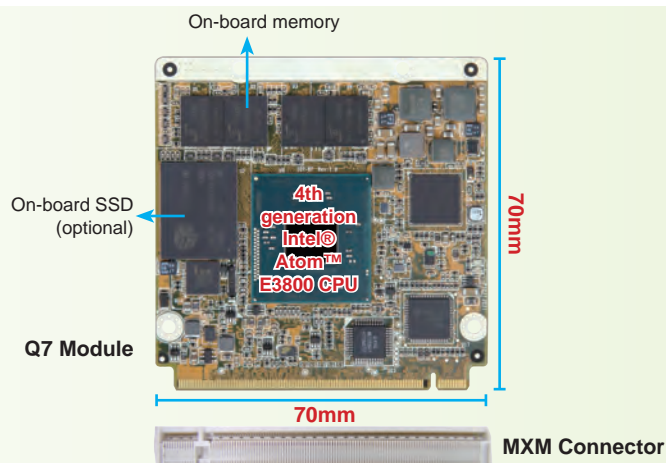
1 x COM Express baseboard	1 x Mini jumper pack
1 x Dual-port RS-232 cable	1 x Utility CD
2 x SATA cable	1 x QIG
1 x One Key Recovery CD	

## Ordering Information

Part No.	Description
ICE-DB-T6-R10	Baseboard for COM Express Type 6 modules
19800-000082-RS	RS-232/422/485 cable, 14-pin to dual DB-9, 230mm, P=2.54
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P

# Q7 Introduction

- The Qseven™ concept is an off-the-shelf, multi vendor, Single Board Computer that integrates all the core components of a common PC and is mounted onto an application specific carrier board.
- Qseven™ modules have a standardized form factor of 70mm x 70mm and have specified pinouts based on the high speed MXM system connector that has a standardized pinout regardless of the vendor.
- The Qseven™ module provides the functional requirements for an embedded application. These functions include, but are not limited to, graphics, sound, mass storage, network and multiple USB ports. A singleruggedized MXM connector provides the carrier board interface to carry all the I/O signals to and from the Qseven™ module.



## The New Module Standard

Compact, Square & Cost Efficient  
Module Concept for Ultra Mobile Applications

- Low Cost
- Low Power Consumption
- Legacy Free
- Fast Serial Interfaces

ETX, COM Express and Q7 Comparison Table			
Platform	ETX 3.0	COM Express Type II Basic Module	Q7
Size	95 x 114 mm	95 x 125 mm	70 x 70 mm
Connector	4 x 100-pin	2 x 220-pin	1 x 230-pin
Memory	1 x SO-DIMM	1 x SO-DIMM	on board memory
VGA	Yes	Yes	N/A
LCD	TTL or LVDS	Up to two single LVDS or Dual-channel LVDS	SDVO/HDMI/DP (Shared)
Expansion	PCI & ISA	PCI & PCI Express	PCI Express
Ethernet	10/100 Mbps	10/100/1000 Mbps	10/100/1000Mbps
USB	4	8	8
SATA	2 (ETX 3.0 only)	Up to 4 SATA	Up to 2 SATA
IDE	2CH	1CH	N/A
Audio	Mic-In/Line-in/Line-Out	AC97/HD interface	HD interface
Power	5V	12V	5V

## Defined Interfaces

- 4 x PCI Express x1 Lanes
- 2 x SATA
- 8 x USB 2.0
- 1 x 1000BaseT Ethernet
- 1 x SDIO 8 bit
- 2 x 24-bit LVDS
- SDVO / HDMI / DisplayPort (shared)
- HDA (High Definition Audio)
- I<sup>2</sup>C Bus
- LPC (Low Pin Count Bus)
- CAN Bus
- Fan Control
- Power Management Signals
- Battery Management
- 5V Power (TDP 12 Watt)
- Unique API for I<sup>2</sup>C Bus, Watchdog Timer and EPI (Embedded Panel Interface)
- Thermal Cooling Interface defined

## Typical Applications



Automation Controllers



Mobile Devices

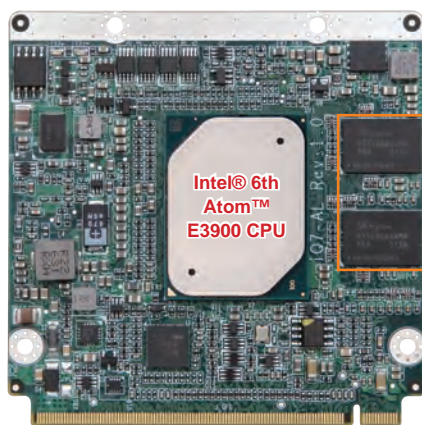


Measurement Systems

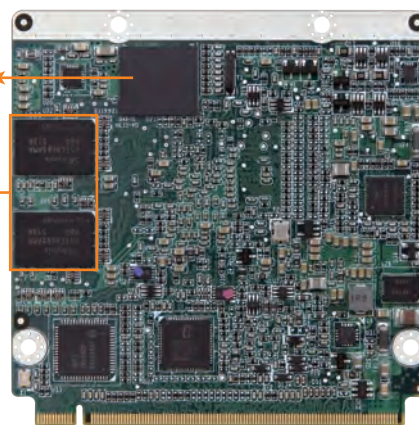


iQ7-AL  
ALW2

Qseven® Rev. 2.0 module supports Intel® 6th Generation Atom™/Celeron® Processor, LVDS/eDP, DisplayPort, GbE, SATA 6Gb/s, USB 3.0, Audio and RoHS, -40°C~85°C



On-board eMMC (optional)  
solder-down  
1333/1600 MHz DDR3L

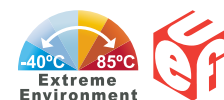


Preliminary

Bottom side

## Specifications

- ◆ CPU
  - Intel® Atom™ E3950 on-board SoC (up to 2.0GHz, quad-core, 2M Cache, TDP=12W)
  - Intel® Atom™ E3940 on-board SoC (up to 1.8GHz, quad-core, 2M Cache, TDP=9W)
  - Intel® Atom™ E3930 on-board SoC (up to 1.8GHz, dual-core, 2M Cache, TDP=6W)
  - Intel® Pentium® N4200 on-board SoC (up to 2.5GHz, quad-core, 2M Cache, TDP=6W)
  - Intel® Celeron® N3350 on-board SoC (up to 2.4GHz, dual-core, 2M Cache, TDP=6W)
- ◆ Memory
  - 4 GB solder-down 1333/1600 MHz DDR3L memory (for E3950, E3940)
  - 2 GB solder-down 1333/1600 MHz DDR3L memory (for E3930)
- ◆ BIOS
  - UEFI BIOS
- ◆ Graphics Engine
  - Intel® HD Graphics Gen9 Low Power, 18 Execution Units
  - 4K Codec Decode & Encode for HEVC 4, H.264, VP8, SVC, MVC
- ◆ Display Output
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 1 x eDP/LVDS-A channel (optional)
  - 1 x DDI (DP/HDMI up to 3840x2160@30Hz)
- ◆ Ethernet
  - Intel® I210 GbE Ethernet
- ◆ Embedded Controller
  - ITE IT8528E/FX
- ◆ Storage
  - Optional soldered down 8GB eMMC 5.0
  - 2 x SATA 6Gb/s signal to baseboard
- ◆ USB 2.0
  - 6 x USB 2.0 signal to base board
- ◆ USB 3.0
  - 1 x USB 3.0 signal to base board
- ◆ Audio
  - High definition audio interface to baseboard
- ◆ GPIO
  - YES, to baseboard
- ◆ SMBus
  - YES, to baseboard
- ◆ I²C
  - I²C x3, to baseboard
- ◆ LPC
  - YES, to baseboard
- ◆ SDIO
  - 8-bit SDIO 3.0 x 4, to baseboard
- ◆ SPI
  - YES, to baseboard
- ◆ I2S
  - YES, to baseboard
- ◆ Serial port
  - 2 serial ports to base board (TX & RX form EC)
- ◆ Expansion
  - 4 x PCIe x1 signal to baseboard (3 PCIe x1 or 2 PCIe x1 +1 PCIe x2)
- ◆ Watchdog Timer
  - Software programmable, supports 1~255 sec. system reset (form EC)
- ◆ Power Consumption
  - TBD
- ◆ Operating Temperature
  - 20°C ~ 70°C
  - 40°C ~ 85°C (iQ7-AL-ExW2)
- ◆ Storage Temperature
  - 40°C ~ 85°C
- ◆ Operating Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimensions
  - 70 mm x 70 mm
- ◆ Weight
  - GW: 300g / NW: 150g
- ◆ CE/FCC compliant



## Features

- Intel® 14nm Atom™ or Celeron® on-board SoC supported
- Qseven® connector pinout according to Qseven® Specification Revision 2.0
- Optional eMMC 5.0 soldered down up to 64GB
- Support -40°C ~ 85°C

## Packing List

1 x iQ7-AL single board computer	1 x QIG
1 x Heatsink	1 x Utility CD

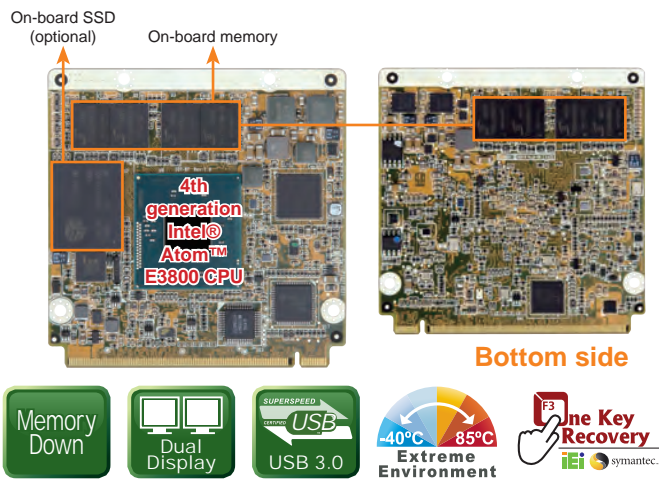
## Ordering Information

Part No.	Description
iQ7-AL-E1-R10	Qseven® Rev. 2.0 module supports Intel® Atom™ Dual-core processor E3930 (5.5W), 2GB DDR3L LVDS, DDI, GbE, USB 3.0, SATA 3Gb/s, Audio, -20°C~70°C and RoHS
iQ7-AL-E2-R10	Qseven® Rev. 2.0 module supports Intel® Atom™ Quad-core processor E3940 (9W), 4GB DDR3L LVDS, DDI, GbE, USB 3.0, SATA 3Gb/s, Audio, -20°C~70°C and RoHS
iQ7-AL-E3-R10**	Qseven® Rev. 2.0 module supports Intel® Atom™ Quad-core processor E3950 (13W), 4GB DDR3L LVDS, DDI, GbE, USB 3.0, SATA 3Gb/s, Audio, -20°C~70°C and RoHS
iQ7-AL-E1W2-R10**	Qseven® Rev. 2.0 module supports Intel® Atom™ Dual-core processor E3930 (5.5W), 2GB DDR3L LVDS, DDI, GbE, USB 3.0, SATA 3Gb/s, Audio, -40°C~85°C and RoHS
iQ7-AL-E2W2-R10**	Qseven® Rev. 2.0 module supports Intel® Atom™ Quad-core processor E3940 (9W), 4GB DDR3L LVDS, DDI, GbE, USB 3.0, SATA 3Gb/s, Audio, -40°C~85°C and RoHS
iQ7-AL-E3W2-R10**	Qseven® Rev. 2.0 module supports Intel® Atom™ Quad-core processor E3950 (13W), 4GB DDR3L LVDS, DDI, GbE, USB 3.0, SATA 3Gb/s, Audio, -40°C~85°C and RoHS
iQ7-AL-N1-R10**	Qseven® Rev. 2.0 module supports Intel® Celeron® Dual-Core Processor N3350(6W), 2GB DDR3L LVDS, DDI, GbE, SATA 3Gb/s, USB 3.0, Audio, -20°C~70°C and RoHS
iQ7-AL-N2-R10**	Qseven® Rev. 2.0 module supports Intel® Celeron® Quad-Core Processor N4200(6W), 4GB DDR3L LVDS, DDI, GbE, SATA 3Gb/s, USB 3.0, Audio, -20°C~70°C and RoHS
iQ7-DB-MATX2-R10	Base Board for Qseven® Rev. 2.0 module

\*\*By order production, MOQ: 100

# iQ7-BTW2/iQ7-BT

Qseven Rev. 2.0 Module Supports 4th generation Intel® Atom™ Processor, LVDS, DDI, GbE, SATA 3Gb/s, USB 3.0, SDIO, Audio, -40°C~85°C and RoHS



## Features

- 22nm Intel® Atom™ on-board SoC supported
- Qseven connector pinout according to Qseven Specification Revision 2.0
- Supports 2 GB 1066/1333 MHz DDR3L memory (4 GB optional)
- Optional soldered-down 2 GB~64 GB SSD
- IEI One Key Recovery solution allows you to create rapid OS backup and recovery

## Specifications

- ◆ CPU
  - Intel® Atom™ E3845 on-board SoC (1.91GHz, quad-core, 2MB cache, TDP=10W)
  - Intel® Atom™ E3825 on-board SoC (1.33GHz, dual-core, 1MB cache, TDP=6W)
- ◆ Memory
  - 2 GB soldered-down 1066/1333 MHz DDR3L memory (up to 4 GB)
- ◆ BIOS: UEFI BIOS
- ◆ Graphics Engine
  - Intel® HD Graphics Gen 7 Engine with 4 execution units support DX11.1, OpenGL 4.2 and OpenCL1.2
- ◆ Display Output
  - Dual independent display
  - 1 x 18/24-bit dual-channel LVDS (up to 1920x1200@60Hz)
  - 1 x DDI (DP up to 2560x1600@60Hz / HDMI up to 1920x1080@60Hz)
- ◆ Ethernet: Intel® I210 GbE controller
- ◆ Embedded Controller: ITE IT8528E/FX
- ◆ I/O Interface
  - 6 x USB 2.0 signal to baseboard
  - 1 x USB 3.0 signal to baseboard
- ◆ Storage
  - 2 x SATA 3Gb/s signal to baseboard
  - Optional soldered-down 4 GB SSD (SATA port 2)
- ◆ Audio
  - High-definition Audio interface to baseboard
- ◆ SMBus: Yes, to baseboard
- ◆ I<sup>2</sup>C: Yes, to baseboard
- ◆ LPC: Yes, to baseboard
- ◆ SDIO: One 8-bit SDIO 2.0, to baseboard
- ◆ SPI: Yes, to baseboard
- ◆ Serial port: One serial port to baseboard (form EC)
- ◆ Expansion: 3 x PCIe x1 signal to baseboard
- ◆ Watchdog Timer
  - Software programmable supports 1~255 sec. system reset (form EC)
- ◆ Power Consumption
  - 3.3V@0.13A, 5V@0.13A, 12V@1.35A, 5VSB@0.12A
  - (Intel® Atom™ E3845 CPU with 2 GB on-board memory)
- ◆ Operating Temperature: -40°C ~ 85°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions: 70 mm x 70 mm
- ◆ Weight: GW: 300g / NW: 150g
- ◆ CE/FCC compliant

## Packing List

1 x iQ7-BT single board computer	1 x QIG
1 x Heatsink	1 x Utility CD

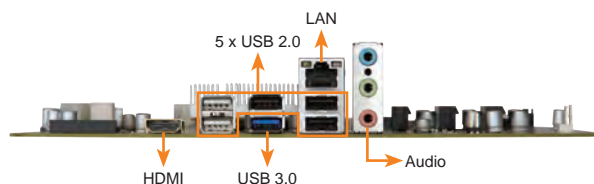
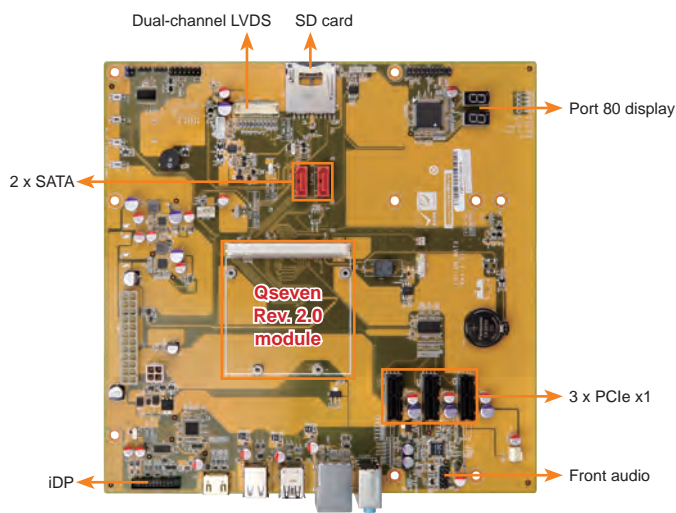
## Ordering Information

Part No.	Description
iQ7-BT-E38451W2-R10	Qseven Rev. 2.0 module supports Intel® Atom™ processor E3845 (quad core, 10W), on-board 2 GB DDR3L, LVDS, DDI, GbE, SATA 3Gb/s, SDIO, USB 3.0, Audio, -40°C~85°C and RoHS
iQ7-BT-E38251W2-R10	Qseven Rev. 2.0 module supports Intel® Atom™ processor E3825 (dual core, 6W), on-board 2 GB DDR3L, LVDS, DDI, GbE, SATA 3Gb/s, SDIO, USB 3.0, Audio, -40°C~85°C and RoHS
iQ7-BT-E38451-R10	Qseven Rev. 2.0 module supports Intel® Atom™ processor E3845 (quad core, 10W), on-board 2 GB DDR3L, LVDS, DDI, GbE, SATA 3Gb/s, SDIO, USB 3.0, Audio, and RoHS
iQ7-BT-E38251-R10	Qseven Rev. 2.0 module supports Intel® Atom™ processor E3825 (dual core, 6W), on-board 2 GB DDR3L, LVDS, DDI, GbE, SATA 3Gb/s, SDIO, USB 3.0, Audio, and RoHS
iQ7-DB-MATX-R10	Baseboard for Qseven Rev. 2.0 module

Note: Models with other CPUs not listed in the table are requested by MOQ - 100 pcs/lot.

# iQ7-DB-MATX

Baseboard for Qseven Rev. 2.0 Module



## Features

- mATX form factor baseboard for Qseven Rev. 2.0 module
- Supports three PCIe x1
- 18/24-bit dual-channel LVDS

## Specifications

- ◆ COM Express Type
  - mATX form factor baseboard for Qseven Rev. 2.0 module
- ◆ Display Interfaces
  - 1 x LVDS
  - 1 x HDMI
  - 1 x iDP
- ◆ Audio
  - Realtek ALC662 HD Audio codec (Line-in, Line-out, Mic)
- ◆ Internal I/O Interface
  - 1 x LPC
  - 1 x SD card socket
  - 2 x SATA port
  - 3 x PCIe x1
- ◆ External I/O Interface
  - 1 x Audio jack (Line-in, Line-out, Mic)
  - 1 x HDMI
  - 1 x USB 3.0
  - 5 x USB 2.0
  - 1 x RJ-45
- ◆ Front Audio
  - 1 x Front audio (2x5 pin)
- ◆ TPM
  - 1 x TPM (2x10 pin)
- ◆ Port 80 Display
  - 2 x 7-segment display
- ◆ Front Panel
  - 1 x Front panel (2x7 pin, power LED, HDD LED, buzzer speaker, power button, reset button)
- ◆ I<sup>2</sup>C
  - 3 x I<sup>2</sup>C (1x4 pin)
- ◆ SMBus
  - 1 x SMBus (1x4 pin)
- ◆ Watchdog Timer
  - Software programmable, supports 1~255 sec. system reset
- ◆ Power Supply
  - ATX power supply, ATX/AT mode support
- ◆ Fan Connector
  - 1 x CPU smart fan (1x4 pin)
  - 1 x System fan (1x3 pin)
- ◆ Temperature
  - 40°C ~ 85°C
- ◆ Humidity
  - 5% ~ 95%, non-condensing
- ◆ Dimensions
  - 243.8 mm x 243.8 mm
- ◆ CE/FCC compliant

## Packing List

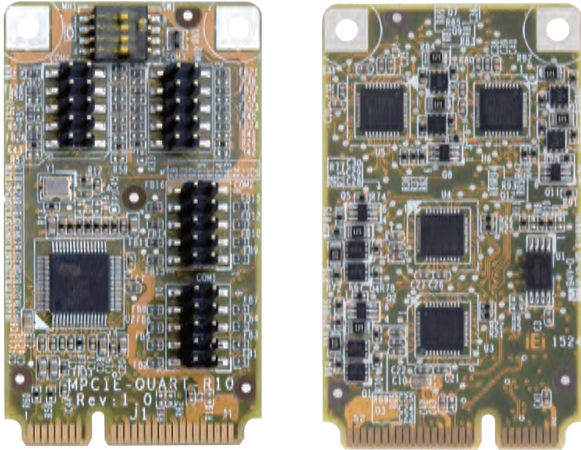
1 x Qseven® baseboard
1 x QIG

## Ordering Information

Part No.	Description
iQ7-DB-MATX-R10	Baseboard for Qseven Rev. 2.0 module
32102-000100-200-RS	SATA power cable, MOLEX 5264-4P to SATA15P

# MPCIE-UART-KIT01-R10

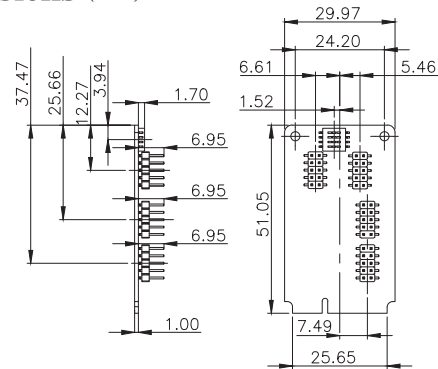
PCI Express Mini Card Supports  
Quad-port RS-232/422/485, Full Size,  
RoHS



## Features

- PCI Express Mini supports quad-port RS-232/422/485
- 128 bytes transmit/receive FIFO
- High-speed 16C550/16C650/16C750/16C850 compatible UARTs
- Baud rate supports 115.2K, max. up to 1.5M

## Dimensions (mm)



## Specifications

- ◆ Form Factor: PCI Express Mini card
- ◆ PCI Express Bridge to Quad Serial Port: Fintek F81504
- ◆ Buffer/Transceiver Series: F81439
- ◆ IO: 4 x RS-232/422/485 (2x5-pin header)
- ◆ Operating Temperature: 0°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions (LxW): 51 mm x 30 mm
- ◆ Weight: GW: 100g / NW: 50g
- ◆ CE/FCC compliant

## Packing List

1 x MPCIE-UART-KIT01-R10 module

4 x D-SUB9 male cable

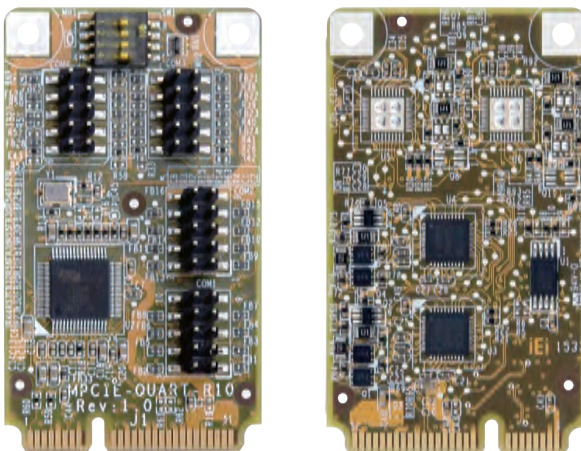
1 x QIG

## Ordering Information

Part No.	Description
MPCIE-UART-KIT01-R10	PCI Express Mini card supports quad-port RS-232/422/485, full size, RoHS

# MPCIE-UART-KIT02-R10

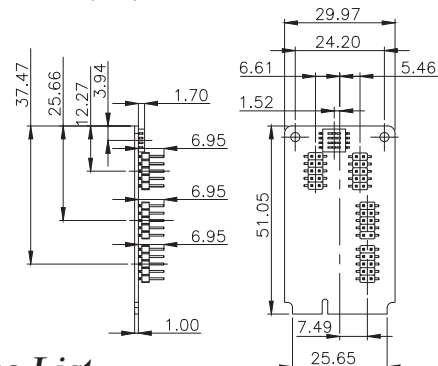
PCI Express Mini Card Supports  
Dual-port RS-232/422/485, 16-bit  
GPIO, Full Size, RoHS



## Features

- PCI Express Mini supports dual RS-232/422/485 and 16-bit GPIO ports
- 128 bytes transmit/receive FIFO
- High-speed 16C550/16C650/16C750/16C850 compatible UARTs
- Baud rate supports 115.2K, max. up to 1.5M
- All GPIO supports digit IO for input/output control, output data control, input status
- Support High/Low Level/Pulse, Open Drain/Push Pull function selection

## Dimensions (mm)



## Specifications

- ◆ Form Factor: PCI Express Mini card
- ◆ PCI Express Bridge to Quad Serial Port: Fintek F81504
- ◆ Buffer/Transceiver Series: F81439
- ◆ IO  
2 x RS-232/422/485 (2x5-pin header)  
2 x 8 bit GPIO (2x5-pin header)
- ◆ Operating Temperature: 0°C ~ 60°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions (LxW): 51 mm x 30 mm
- ◆ Weight: GW: 100g / NW: 50g
- ◆ CE/FCC compliant

## Packing List

1 x MPCIE-UART-KIT02-R10 module

2 x D-SUB 9 male cable

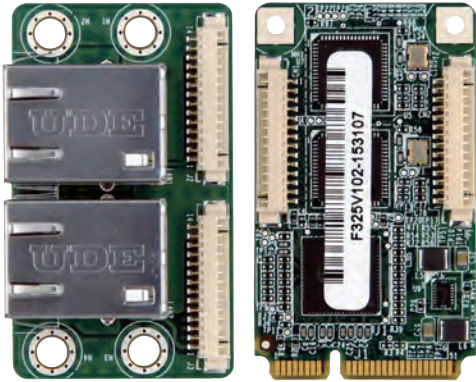
1 x QIG

## Ordering Information

Part No.	Description
MPCIE-UART-KIT02-R10	PCI Express Mini card supports dual-port RS-232/422/485, 16-bit GPIO, full size, RoHS

# MPCIE-DLAN-R10

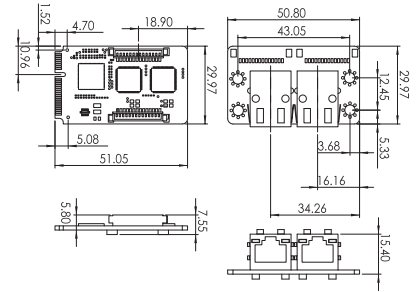
PCI Express Mini Dual Intel® GbE LAN Module, Full Size, RoHS



## Specifications

- ◆ Form Factor: PCI Express Mini card
- ◆ BIOS: UEFI BIOS
- ◆ Ethernet Controller: Dual Intel® I210-IT
- ◆ Speed: 10/100/1000Mbps
- ◆ External Connector: 2 x 8-pin RJ-45
- ◆ Power Supply: On board 3.3V
- ◆ Compatible OS
  - Windows XP/Server 2003/ Server 2008/ Vista/ 7 /8.1/10
  - Linux kernel version 2.6.32 above
- ◆ Operating Temperature: -10°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions (LxW) : 51 mm x 30 mm
- ◆ Weight: 55g
- ◆ CE/FCC compliant

## Dimensions (mm)



## Features

- Support dual GbE LAN by Intel® I210-IT
- Compliant with PCI Express Mini specification 1.2

## Packing List

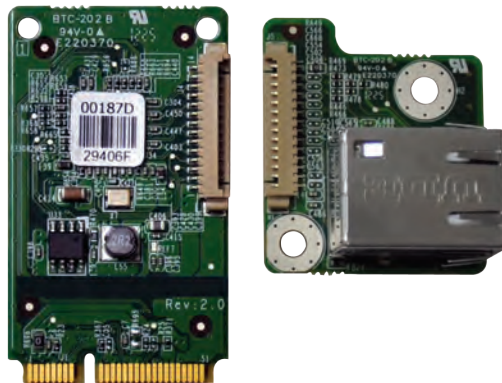
1 x MPCIE-DLAN module	2 x Flat cable (pitch=1.25mm), 340mm length	1 x QIG
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## Ordering Information

Part No.	Description
MPCIE-DLAN-R10	PCI Express Mini dual Intel® GbE LAN module, full size, RoHS

# MPCIE-LAN-R10

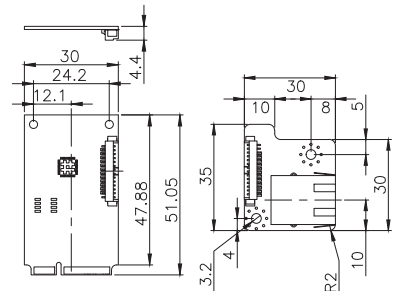
PCI Express Mini GbE LAN Module, Full Size, RoHS



## Specifications

- ◆ Form Factor: PCI Express Mini card
- ◆ Ethernet Controller: Realtek RTL8111E
- ◆ Speed: 10/100/1000Mbps
- ◆ External Connector: 1 x 8-pin RJ-45
- ◆ Compatible OS
  - Windows 2000/ XP/ Server 2003/ Server 2008/ Vista/ 7
  - Linux kernel version 2.6.32 above
- ◆ Power Supply: On board 3.3V
- ◆ Operating Temperature: -10°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ Dimensions (LxW) : 51 mm x 30 mm
- ◆ Weight: 70g
- ◆ CE/FCC compliant

## Dimensions (mm)



## Features

- Support one GbE LAN by RTL8111E
- Compliant with PCI Express Mini specification 1.2

## Packing List

1 x MPCIE-LAN module	1 x Flat cable (pitch=1.25mm), 340mm length	1 x QIG
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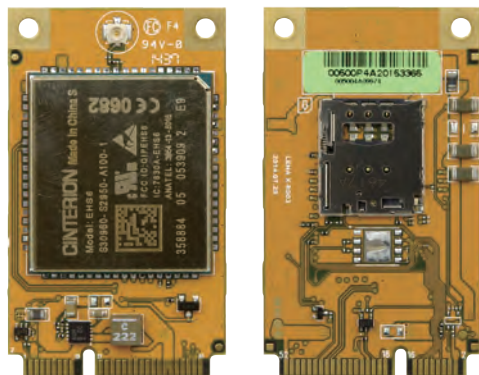
## Ordering Information

Part No.	Description
MPCIE-LAN-R10	PCI Express Mini GbE LAN module, full size, RoHS

# MPCIE-3G-R20

PCI Express Mini 3G Adapter Card, RoHS

**New**



## Specifications

- ◆ Form Factor
  - PCI Express Mini card
  - Antenna 50Ohms. Main GSM/UMTS antenna
- ◆ Frequency Bands
  - GSM/GPRS/EDGE: 850/900/1800/1900 GPRS/EDGE Class12
  - UMTS/HSPA+: Dual band UMTS 800/850/900/1900/2100 MHz

- ◆ USB
  - USB 2.0 High Speed (480Mbit/s) device interface
- ◆ Compatible OS
  - Windows@8, Windows@7, Windows EC, Linux, Android
- ◆ Operating Temperature
  - Normal operation: -30°C to +85°C
  - Restricted operation: -40°C to +95°C
- ◆ Dimensions (W x D x H)
  - 51.0 mm x 30.0 mm x 4.75 mm

## Packing List

1 x PCI Express Mini 3G adapter card
--------------------------------------

## Ordering Information

Part No.	Description
MPCIE-3G-R20	PCI Express Mini 3G adapter card, RoHS
32501-000705-100-RS	RF antenna cable
32503-000100-100-RS	GSM antenna cable

## Features

- Real time clock: Timer functions via AT commands
- Phonebook: SIM and phone
- TTY/CTM support: Integrated CTM modem

# Wireless LAN Module



## WMPCIE-V02-R10

PCIe Mini card wireless LAN module

### Features

- PCIe Mini card form factor
- High speed wireless connection up to 433.3Mbps transmit/receive PHY rate using 80 MHz bandwidth
- Solid design with external antenna diversity
- Low power consumption and high performance
- Enhanced wireless security
- Fully qualified Bluetooth 4.0 and 3.0 + High speed system

### Ordering Information

Part No.	Description
WMPCIE-V02-R10	IEEE802.11a/b/g/n/ac wireless with Bluetooth 4.0/3.0 + HS PCIe Mini module with Realtek RTL8821AE, RoHS
32501-001000-200-RS	RF cable; 300MM; 28AWG; (A) SMA connector (B) MHF20278-11R-13; RoHS
32505-000100-100-RS	2 dBi 109mm antenna



## WIFI-RT3593-DB-R10

### Features

- Half-size PCIe Mini card
- Dual band 802.11a/b/g/n supports 3Tx/3Rx 3-stream MIMO to enable data rates up to 450Mbps for a 40 MHz channel.
- 20 MHz/40 MHz bandwidth
- Solid design with external antenna diversity
- Low power consumption with advanced power management
- Supports 802.11x authentication, WEP 64/128, WPA, WPA2, WAPI encryption.
- Supported operating systems: Windows® XP, 2000, ME, 98SE, Vista 32/64, Linux, MAC

### Ordering Information

Part No.	Description
WIFI-RT3593-DB-R10	Wi-Fi module with RT3593 single chip, 3T3R, dual band, RoHS
32501-000200-100-RS	Antenna; RF cable; outside diameter: 1.13mm; L=128mm; 0-6 GHz; (A)reverse sma jack, nut *1+washer *2; (B)I-PEX; RoHS
32505-000900-100-RS	External antenna; WLAN; RG 178; 108mm; TANK-700-QM67-R10; PEAK GAIN 2.0DBI; Exceltek; 2.4-2.5 GHz/5.15-5.85 GHz; reverse SMA plug; RoHS

### Specifications

Model	WMPCIE-V02-R10
Standards	IEEE 802.11a/b/g/n/ac Wi-Fi with Bluetooth 4.0/3.0 + HS (Wi-Fi:PCI-E, BT:USB)
Interface	PCIe Mini card
Connectors	2XU.FL(I-PEX) antenna connectors
Controller Chip	Realtek RTL8821AE
Frequency Range	Wi-Fi: 2.4/5GHz, BT: 2402 MHz~2483 MHz
Modulation Type	Wi-Fi: 802.11a/g/n/ac: OFDM 802.11b: CCK, DQPSK, BPSK BT: Header GFSK Payload 2M: 4-DQPSK Payload 3M: 8DPSK
Supported OS	Windows 7/8/10
Receiver Sensitivity	Wi-Fi: 802.11a: less than -65 dBm (54M) 802.11b: less than -76 dBm (11M) 802.11g: less than -65 dBm (54M) 802.11n@2.4GHz: less than -64 dBm (HT20 MCS7) 802.11n@5GHz: less than -64 dBm (HT20 MCS7) 802.11ac@5GHz: less than -51 dBm (VHT80 MCS9) BT: BER < 0.1% (Anritsu 8852B Tx -70 dBm)
Temperature	Operating: 0°C ~ 70°C Storage: -40°C ~ 85°C
Humidity	5% ~ 95%, non-condensing
Dimensions	29.85mm x 26.65mm
Weight	NW: 3.28g
Compliance Certifications	FCC, CE

### Specifications

Model	WIFI-RT3593-DB-R10
Standards	IEEE 802.11a/b/g/n, Wi-Fi compliant
Rate	450 Mbps PHY rate in 3T3R mode
Interface	PCIe Mini card
Controller Chip	Ralink RT3593
Connectors	3 x U.FL (I-PEX) antenna connectors
Security	WEP 64/128, WPA, WPA2, WAPI
Frequency Range	2.4/5GHz
Modulation Type	802.11a (OFDM) 802.11b (DSSS): CCK, DQPSK, DBPSK 802.11g (OFDM): BPSK, QPSK, 16-QAM, 64-QAM 802.11n (OFDM): BPSK, QPSK, 16-QAM, 64-QAM
Supported OS	Windows® XP, CE6.0, XPE, 2000, ME, 98SE, Vista 32/64, Windows® 7 32/64, MAC
Receiver Sensitivity	802.11a: -71dBm (Typical) at 54 Mbps 802.11b: -80dBm (Typical) at 11 Mbps 802.11g: -73dBm (Typical) at 54 Mbps 802.11n: -71dBm (Typical) at 450 Mbps
Power Consumption	430mA@3.3V in continuous Tx 460mA@3.3V in continuous Rx
Temperature	Operating: -10°C ~ 70°C Storage: -40°C ~ 150°C
Humidity	Operating: 5% ~ 95%, non-condensing
Dimensions (W x D x H)	28 mm x 30 mm x 4 mm
Weight	NW: 11g
Safety & EMC	CE/FCC/TELEC

# IGCME-1300-R11

PCIe Mini VGA Adapter Card, RoHS

## IEI Scalable Display Solution

The IGCME-1300 is applied to expand one VGA port for the IEI motherboard with a PCIe Mini slot for multiple display applications.

## Features

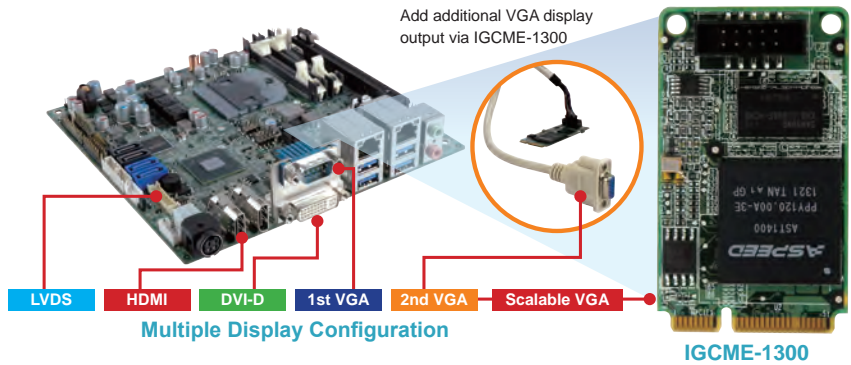
- Support PCIe VGA/2D controller, 1920x1200@60Hz 32bpp
- DDR3 SDRAM supports up to 800 MHz speed
- Compliant with PCI Express Mini specification 1.2

## Specifications

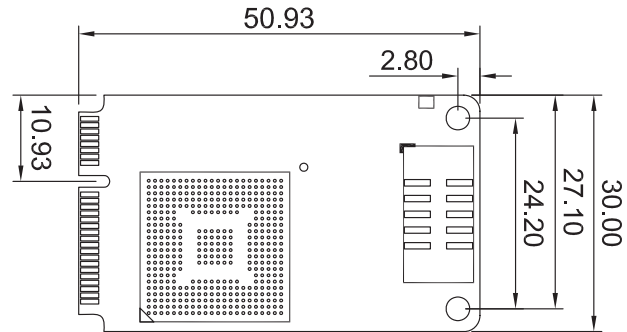
- ◆ Form Factor  
PCI Express Mini card
- ◆ Display Controller  
Aspeed AST1400
- ◆ Internal Connector  
1 x 10-pin (2x5) box header by 2.0mm pitch
- ◆ Compatible OS  
Win7/Win8/Server 2003/Server 2008/Server 2012  
Linux kernel version 2.6.32 above
- ◆ Power Supply  
On-board 3.3V
- ◆ Operating Temperature  
-10°C ~ 60°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Dimensions (LxW)  
50mm x 30mm
- ◆ Weight  
70g
- ◆ CE/FCC compliant

## Packing List

1 x IGCME-1300 PCIe Mini VGA adapter card	1 x QIG
VGA cable, 600 mm length (Pitch=2.0mm) (P/N: 32003-001500-100-RS)	



## Dimensions (mm)

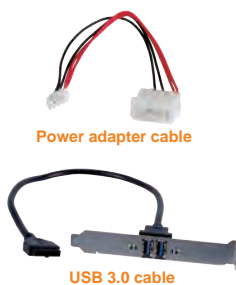
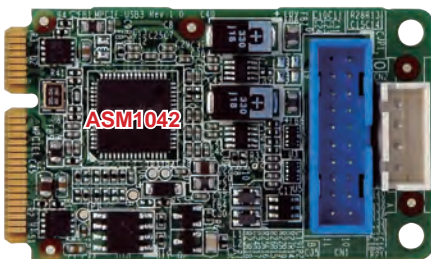


## Ordering Information

Part No.	Description
IGCME-1300-R11	PCIe Mini VGA adapter card, RoHS

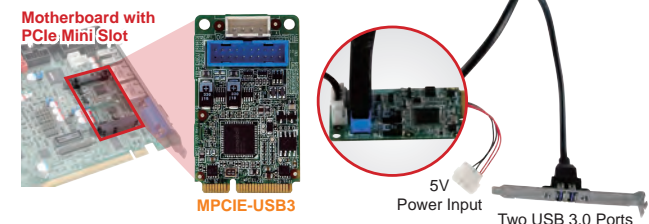
# MPCIE-USB3

PCIe Mini USB 3.0 Adapter Card, RoHS



## IEI USB 3.0 Expanded Solution

The MPCIE is applied to add additional super speed USB 3.0 ports for the motherboard with a PCIe Mini slot.



## Specifications

- ◆ Form Factor  
PCI Express Mini card
- ◆ USB 3.0 Controller  
Asmedia ASM1042A
- ◆ Internal Connector  
1 x 20-pin (2x10) box header
- ◆ Power Jack  
1 x 4-pin box header
- ◆ Compatible OS  
Windows® XP/Server 2003/Server 2008/Vista/7/8.1/10  
Linux kernel version 2.6.32 above
- ◆ Operating Temperature  
-10°C ~ 60°C
- ◆ Operating Humidity  
5% ~ 95%, non-condensing
- ◆ Dimensions (LxW)  
50 mm x 30 mm
- ◆ Weight  
70g
- ◆ CE/FCC compliant

## Packing List

1 x MPCIE-USB3 PCIe Mini USB 3.0 adapter card	
1 x Dual USB 3.0 type A port cable with bracket	
1 x Power cable	1 x QIG

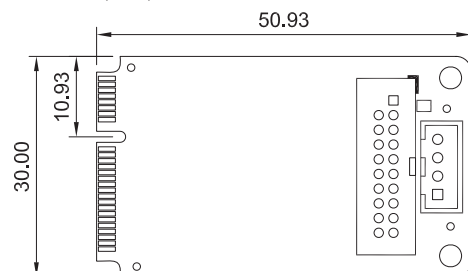
## Ordering Information

Part No.	Description
MPCIE-USB3-R11	PCIe Mini USB 3.0 adapter card, RoHS
19800-010500-200-RS	Dual USB 3.0 type A port cable with bracket

## Features

- Supports two external USB 3.0 type A ports
- USB 3.0 provides up to 5Gbps of transferring rate
- Backward compatible with USB 2.0 and USB 1.0/1.1 devices
- Fully compliant with USB 3.0 rev 1.0 specifications and Intel® xHCI rev 0.96 specifications, with transfer rates up to 5Gbps
- Compliant with PCI Express Mini specification 1.2




## Dimensions (mm)



# IEI Trusted Platform Module (TPM)

Hardware-based security solution for data protection and reliable authentication via TPM that stores key, passwords and digital certificates.

## H/W Features

Solution	Infineon <b>SLB9660 TT1.2</b>	<b>SLB9665TT2.0</b>
Features	 	
Secure Startup	Root of Trust Measurement of early boot devices	
Anti H/W Attack	Sensors and active shield	
TSS API Support	MS-CAP1/PKCS#11, #12	
H/W Certification		
Management Tool Function	1. TPM management 2. File & Folder En/De-cryption 3. Personal secure drive 4. Secure Email 5. Key transferring 6. Security policy configuration	
Market Segment	Complete TPM1.2/2.0 function	
TCG Specification	TCG 1.2/2.0 compliant trusted platform module	
Interface	Low pin count	
Software Structure	TCG software stack 1.2 complaint	
Cryptographic Accelerator	HAS-1/RSA algorithm	

## IEI SBC with TPM support

Form factor	Model name	Form factor	Model name
PICMG1.3	PCIE-Q170-i2*	Micro-ATX	IMB-H110*
	SPCIE-C236-i2*		IMB-Q870-i2
	SPCIE-C2260-i2		IMB-H810-i2
	SPCIE-C2160		IMB-Q770
	SPCIE-C2060		IMB-Q670
	PCIE-H810		IMB-H610A/H610B
PICMG1.0	PCIE-Q670	Mini-ITX	tKINO-BW
	PCIE-H610		KINO-DBT
WSB-H810	KINO-SE/KBN-i2		
WSB-H610	KINO-DH810		
Half-size PCIe	WSB-PV-D4251/D5251		eKINO-BT
	PICOe-B650		KINO-ABT-i2
Half-size PCISA	PICOe-HM650		KINO-DA750-i2
	PCISA-BT		KINO-AA750-i2
ATX	IMBA-C2360-i2*		KINO-AQ870
	IMBA-Q170-i2*		KINO-DQM871-i1
	IMBA-H110*		KINO-QM770
	IMBA-BDE		KINO-DH610
	IMBA-H810		KINO-AH611
	IMBA-C2260-i2		KINO-AH612
	IMBA-Q870-i2	KINO-QM670	
	IMBA-Q770	5.25" SBC	NOVA-PV-D5251
	IMBA-H610	EPIC SBC	NANO-QM871
	IMBA-C2060		NANO-QM770
IMBA-Q670	NANO-HM650		

\* TPM 2.0 is supported by these models.

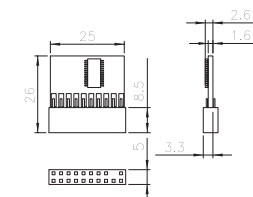
## Pin Assignment

Pin	Signal	Pin	Signal	Pin	Signal	Pin	Signal
1	LCLK	6	VCC5	11	LAD0#	16	SERIRQ
2	GND	7	LAD3#	12	GND	17	GND
3	LFRAME#	8	LAD2#	13	SCL	18	CLKRUN#
4	KEYWAY	9	VCC3	14	SDA	19	LPCPD#
5	LRST#	10	LAD1#	15	SB3V	20	LDRQ#

## Ordering Information

Model Name	Description
TPM-IN01-R20	20-pin Infineon TPM1.2 module, software management tool, firmware v4.4
TPM-IN02-R20	20-pin Infineon TPM2.0 module, software management tool, firmware v5.5

## Dimensions (mm)



# IPCIE-4POE

PCI Express Power over Ethernet card, 4-port 1000 Base(T), 802.3af compliant



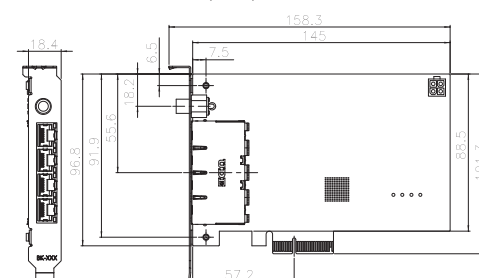
## Features

- PCI Express® x4 compliant
- Support for IEEE 802.3af (Power over Ethernet) with 15.4 watts per port
- Support link aggregation/jumbo frames (9 Kbyte)
- Supports 12~24 AT/ATX DC input power.

## Packing List

- 1 x IPCIE-4POE card
- 1 x QIG
- 1 x Utility CD

## Dimensions (mm)



## Specifications

- ◆ Interface: PCI Express® x4
- ◆ Ethernet  
Intel® i210 AT controller  
9kB jumbo frame  
IEEE 802.3az, IEEE1588
- ◆ PoE Capability  
IEEE 802.3af  
15.4W / 48V DC per port
- ◆ PWR Input  
12~24V DC input  
Internal DC input (2x2 ATX)  
External DC input (Φ2.1/Φ5.5)
- ◆ Operating Temperature: 0°C ~ 60°C
- ◆ Storage Temperature: -10°C ~ 70°C
- ◆ Operating Humidity: 5% ~ 95%, non-condensing
- ◆ CE/FCC compliant

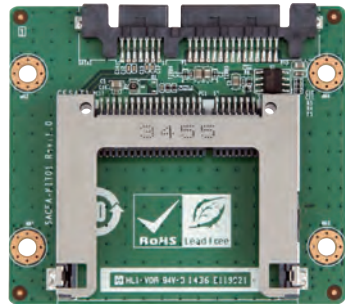
## Ordering Information

Part No.	Description
IPCIE-4POE-R10	PCI Express Power over Ethernet card, 4-port 1000 Base(T), 802.3af compliant
63040-010090-120-RS	Adapter power, FSP, FSP090-DIEBN2, 9NA0904712, Vin: 90~264VAC, 90W, Plug=7.5mm, Cable=1500mm, Erp (no load 0.5W), Vout: 19VDC, Φ2.1/Φ5.5/lock, CCL, RoHS
63040-010065-200-RS	Adapter power, FSP, FSP065-REBN2, 9NA0654709, Vin: 90~264VAC, 65W, Dim: 46.3x108.3x30mm, Plug=7.5mm, Cable=1500mm, Erp (no load 0.1W), Vout: 19VDC, Φ2.1/Φ5.5/lock, CCL, RoHS

## SATA to CFast™ Converter Board

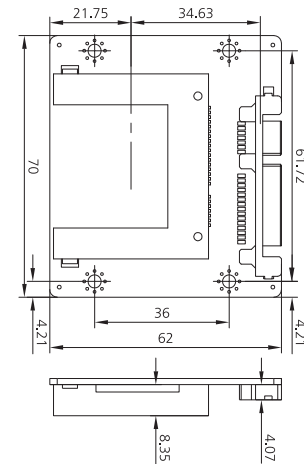
### SACFA-KIT01-R10

SATA to CFast™ converter board



32801-000100-300-RS

Dimensions (Unit: mm)



### Features

- CFast™ socket
- 7-pin SATA data connector, and a female 17-pin power CFast™ connector

### Packing List

- 1 x SACFA-KIT01-R10
- 1 x QIG

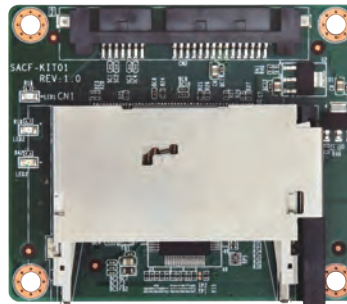
### Ordering Information

Part No.	Description
SACFA-KIT01-R10	SATA to 24-pin CFast™ socket converter board
32000-080700-RS	SATA 7+15P female to SATA 7P / PH 5.08 4P cable, L=200mm/100mm
32801-000100-100-RS	SATA 7+15P female to SATA 7P / PH 2.5 4P cable, L=200mm/200mm
32801-000201-100-RS	SATA 7+15P female to SATA 7P / PH 2.0 2P cable, L=150mm/150mm

## SATA to CF Type II Converter Board

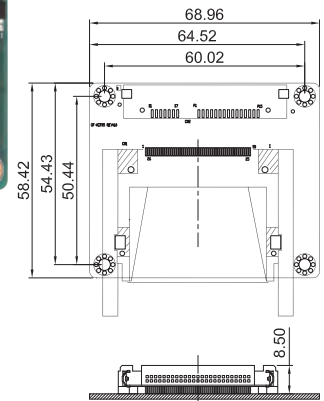
### SACF-KIT01-R10

SATA to CF converter board



32801-000100-300-RS

Dimensions (Unit: mm)



### Features

- CF Type II socket
- 50-pin CF Type II connector

### Packing List

- 1 x SACF-KIT01-R10
- 1 x QIG
- 1 x SATA with power cable kit

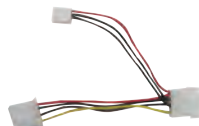
### Ordering Information

Part No.	Description
SACF-KIT01-R10	SATA to 50-pin CF socket converter board

## SATA to IDE/CF Type II Converter Board

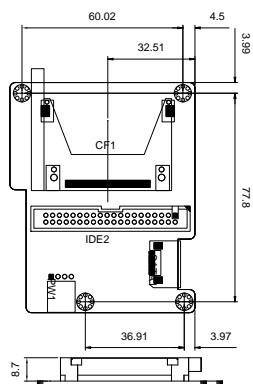
### SAIDE-KIT01-R10

SATA to IDE/CF converter board



32100-064401-RS

Dimensions (Unit: mm)



### Features

- CF Type II socket
- 40-pin IDE connector (master mode)
- 4-pin 5V input connector
- Power/5V/HDD LED indicator
- Support one IDE device or one CF

### Packing List

- 1 x SAIDE-KIT01-R10
- 1 x QIG
- 1 x Power cable

### Ordering Information

Part No.	Description
SAIDE-KIT01-R10	SATA to 40-pin IDE/CF socket converter board with bracket
32000-062800-RS	SATA cable
32100-064401-RS	Power cable
32102-000100-200-RS	SATA power cable

## IDE/CF Type II Converter Board

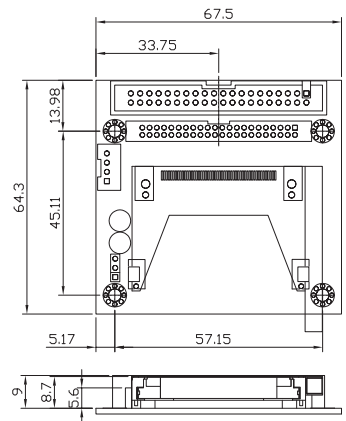
### CF-KIT04-R10 IDE to CF Type II converter board with master/slave mode selection



### Features

- CF Type II socket with master/slave mode selection
- 4-pin power connector
- Power/HDD signal LED

Dimensions (Unit: mm)



### IEI CF Solution



iCF1000 Industrial standard grade



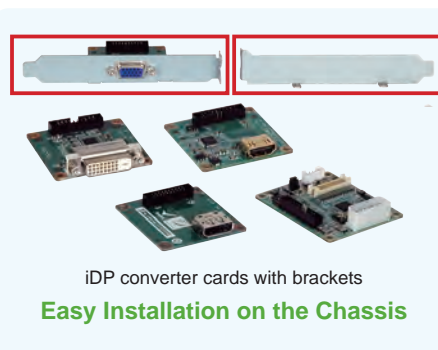
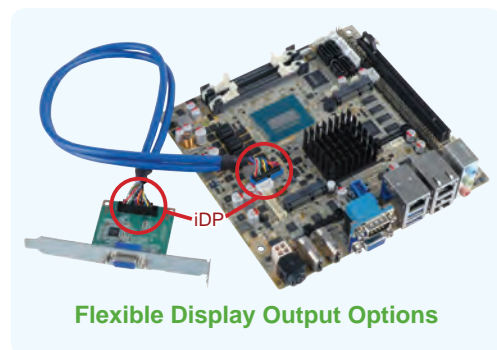
iCF1000 Wide Temp. grade



# IEI iDP Introduction

## iDP (IEI Internal DisplayPort)

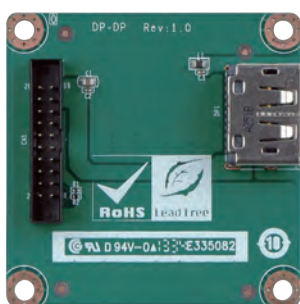
The iDP connector is provided on the IEI products. Through the IEI iDP converter cards, the iDP connector can support different display specifications, such as VGA, HDMI, DVI-D and LVDS.



iDP Supported Models	
HPCIE-C236	KINO-DH10
HPCIE-Q710	KINO-AQ170
SPCIE-C236	KINO-DH810
PCIE-Q170	KINO-AQ870
SPCIE-C2260-i2	KINO-DQM871-i1
PCIE-Q870-i2	KINO-ABT-i2
IMBA-C2360-i2	NANO-AL/ALW2
IMBA-Q170-i2	NANO-ULT3
IMBA-H110	WAFER-AL
IMBA-Q870-i2	WAFER-ULT3/ULT4
IMBA-C2260-i2	WAFER-BTW2
IMB-H110	WAFER-BT-i1
IMB-Q870-i2	WAFER-ULT/ULT2-i1
IMB-H810-i2	WAFER-KBN-i1

## DP-DP-R10

DisplayPort Expansion Board (for IEI iDP Connector), RoHS



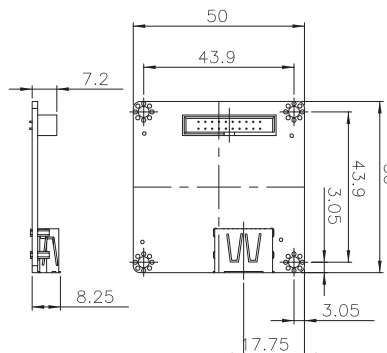
### Features

- DisplayPort output

### Specifications

- ◆ Display Input: 1 x IEI iDP connector
- ◆ Display Output: 1 x DisplayPort
- ◆ Temperature: -20°C ~ 60°C
- ◆ Humidity: 5 ~ 95% non-condensing
- ◆ Dimensions: 50 mm x 50 mm

### Dimensions (mm)



### Packing List

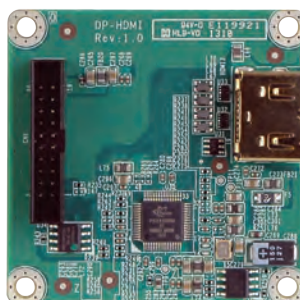
1 x DP-DP expansion board	1 x QIG
1 x IEI iDP connector cable, 450 mm length	

### Ordering Information

Part No.	Description
DP-DP-R10	DisplayPort expansion board (for IEI iDP connector), RoHS

## DP-HDMI-R10

DisplayPort to HDMI 1.3a Converter Board (for IEI iDP connector), RoHS



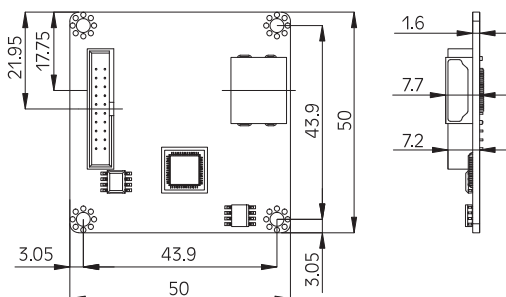
### Features

- DisplayPort to HDMI 1.3a output
- Support up to 1920x1200 resolution

### Specifications

- ◆ Display Input: IEI iDP connector
- ◆ Display Output: 1 x HDMI 1.3a
- ◆ Display IC: Parade - PS161 (DP to HDMI 1.3a)
- ◆ Temperature: -10°C ~ 60°C
- ◆ Humidity: 5 ~ 95% non-condensing
- ◆ Dimensions: 50 mm x 50 mm

### Dimensions (mm)



### Packing List

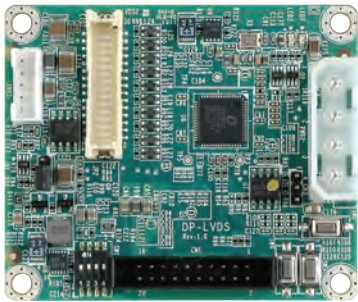
1 x DP-HDMI converter board	1 x QIG
1 x Internal DisplayPort cable, 450 mm length	

### Ordering Information

Part No.	Description
DP-HDMI-R10	DisplayPort to HDMI 1.3a converter board (for IEI iDP connector), RoHS

# DP-LVDS-R10

DisplayPort to 24-bit Dual-channel LVDS Converter Board  
(for I/EI iDP Connector), RoHS



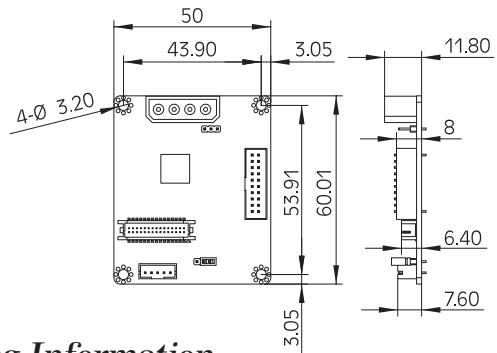
## Features

- DisplayPort to LVDS output
- Supports 24-bit dual-channel up to 1920x1200

## Specifications

- ◆ Display Input: 1 x I/EI iDP connector
- ◆ Display Output: 1 x LVDS 24-bit dual-channel
- ◆ Display IC: Chrontel - CH7511B (DP to LVDS)
- ◆ Temperature: -10°C ~ 60°C
- ◆ Humidity: 5% ~ 95 non-condensing
- ◆ Dimensions: 60 mm x 50 mm

## Dimensions (mm)



## Packing List

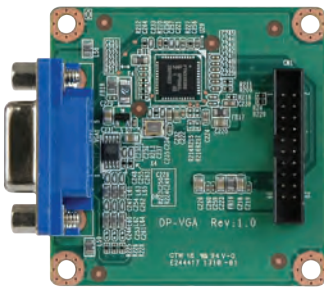
1 x DP-LVDS converter board	1 x QIG
1 x Internal DisplayPort cable, 450 mm length	

## Ordering Information

Part No.	Description
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for I/EI iDP connector), RoHS

# DP-VGA-R10

DisplayPort to VGA Converter Board (for I/EI iDP Connector),  
RoHS



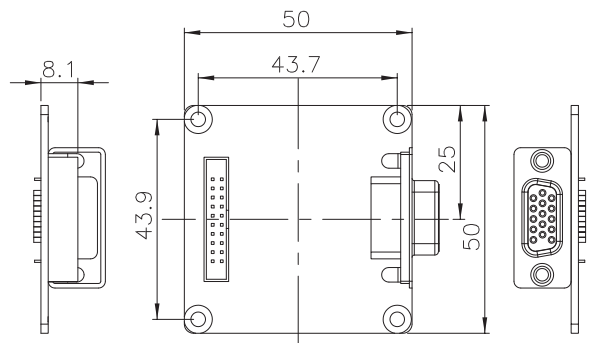
## Features

- DisplayPort to VGA output
- Support up to 1920x1200 resolution

## Specifications

- ◆ Display Input: 1 x I/EI iDP connector
- ◆ Display Output: 1 x VGA
- ◆ Display IC: NXP - PTN3392 (DP to VGA)
- ◆ Temperature: -10°C ~ 60°C
- ◆ Humidity: 5% ~ 95 non-condensing
- ◆ Dimensions: 50 mm x 50 mm

## Dimensions (mm)



## Packing List

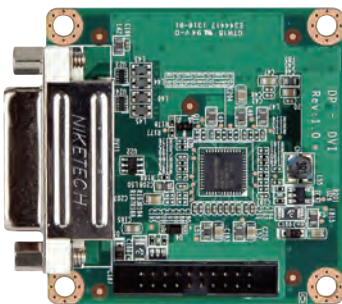
1 x DP-VGA converter board	1 x QIG
1 x Internal DisplayPort cable, 450 mm length	

## Ordering Information

Part No.	Description
DP-VGA-R10	DisplayPort to VGA converter board (for I/EI iDP connector), RoHS

# DP-DVI-R10

DisplayPort to DVI Converter Board (for I/EI iDP Connector),  
RoHS



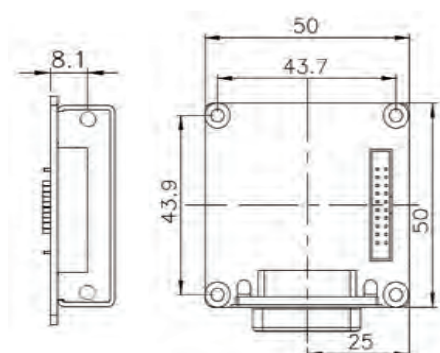
## Features

- DisplayPort to DVI output
- Support up to 1920x1200 resolution

## Specifications

- ◆ Display Input: 1 x I/EI iDP connector
- ◆ Display Output: 1 x DVI
- ◆ Display IC: Parade - PS161 (DP to HDMI / DVI)
- ◆ Temperature: -10°C ~ 60°C
- ◆ Humidity: 5% ~ 95 non-condensing
- ◆ Dimensions: 50 mm x 50 mm

## Dimensions (mm)



## Packing List

1 x DP-DVI converter board	1 x QIG
1 x Internal DisplayPort cable, 450 mm length	

## Ordering Information

Part No.	Description
DP-DVI-R10	DisplayPort to DVI converter board (for I/EI iDP connector), RoHS

# LVDS-DVI

18-bit LVDS to DVI Converter Board, Resolution Support up to 1366x768 (Support IEI Model Only)



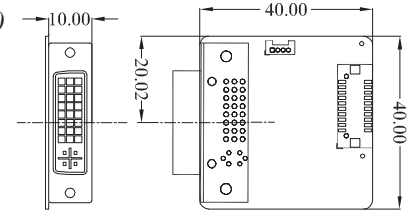
## Features

- Provide DVI option for dual display output
- Resolution supported: 1366x768, 1024x768, 800x600, 640x480
- 18 or 24-bit LVDS to DVI converter board

## Packing List

1 x LVDS to DVI converter board
1 x SMBus cable
1 x QIG

## Dimensions (mm)



## Supported Models

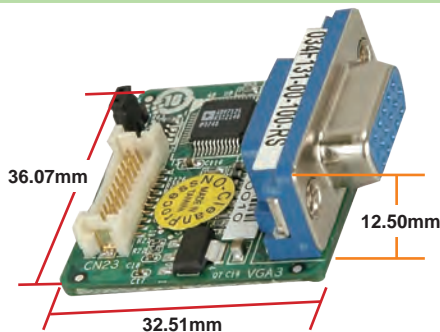
WSB-PV-D5251	PICOe-PV-D5251	PCISA-PV-D5251
KINO-PV-D5252	NOVA-PV-D5251	NANO-PV-D5251
NANO-PV-D5252	WAFER-PV-D5252	

## Ordering Information

LVDS-DVI-R10	18/24-bit LVDS to DVI converter board
32602-012200-100-RS	20-pin to 30-pin LVDS connecting cable for WAFER-PV-D5252 only
32602-012300-100-RS	20-pin to 20-pin LVDS connecting cable

# LVDS-VGA-R10

Single-channel LVDS to VGA Converter Board (Support IEI Model Only)



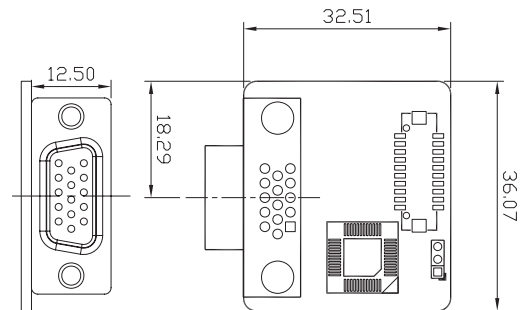
## Features

- Provide 2nd VGA option for dual VGA display
- Resolution adjusted by BIOS: Support 1024x768, 800x600, 640x480
- 18-bit LVDS to VGA converter board

## Packing List

1 x LVDS to VGA converter board
1 x QIG

## Dimensions (mm)



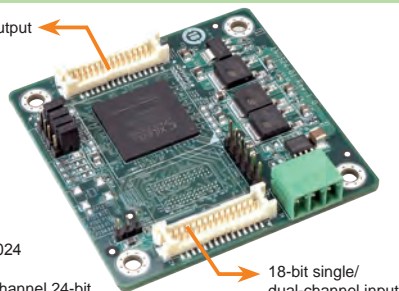
## Ordering Information

Part No.	Description
LVDS-VGA-R10	18-bit LVDS to VGA converter board
32600-112300-RS	30-pin LVDS connecting cable
32602-026400-100-RS	20-pin LVDS connecting cable

# LVDS24-01

18-bit to 24-bit LVDS Converter Board

24-bit dual-channel output



## Features

- Resolution supports up to 1280x1024
- Support below configuration:
  - » Single-channel 18-bit to single-channel 24-bit
  - » Single-channel 18-bit to dual-channel 24-bit
  - » Dual-channel 18-bit to dual-channel 24-bit

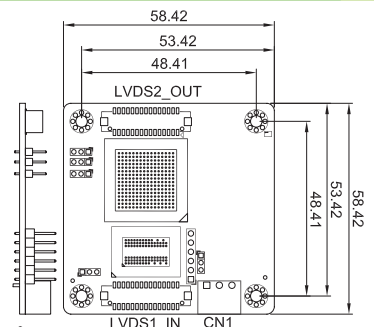
\* Note: The module does not support dual-channel 18-bit to single-channel 24-bit conversion.

## Packing List

1 x 18-bit to 24-bit LVDS converter board
1 x Power cable
1 x QIG



## Dimensions (mm)

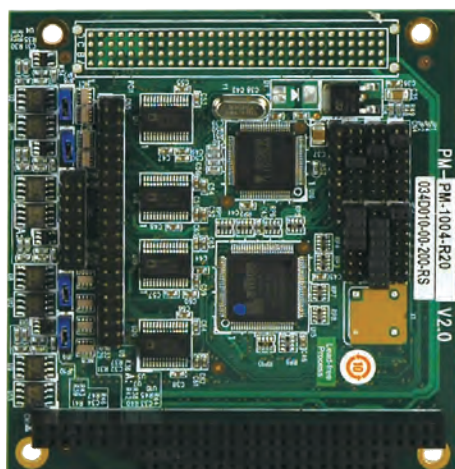


## Ordering Information

Part No.	Description
LVDS24-01-R10	18-bit to 24-bit LVDS converter board
32602-007900-100-RS	Single-channel 18-bit 20-pin to 24-bit 30-pin LVDS connection cable
32602-008000-200-RS	Dual-channel 18-bit 30-pin to 24-bit 30-pin LVDS connection cable

# PM-1004/1028-8

4-port Non-isolated RS-232/422/485 Serial Communication  
PC/104 Module



PM-1004

4-port/8-port non-isolated RS-232  
serial communication PC/104 modules

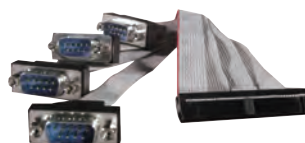


P/N: 32205-002500-100-RS

Shipped with 4-port RS-422/485  
connection cable



PM-1028



P/N: 32205-001201-100-RS

Shipped with 4-port RS-232  
connection cable

## Features

- PC/104 form factor
- 16C554 UART controller
- Four jumpers for RS-232 or RS-422/485 serial communication selection
- Supports shared IRQ or independent IRQ mode
- Jumper selectable interrupt level
- Max. baud rate: 921.6kb/s
- Windows® NT, Windows® 2000, Windows® XP, Windows® CE and Linux driver support

## Specifications

	PM-1004	PM-1028-8
Bus Interface	PC/104	
Number of Ports	4-port	8-port
Interrupt Level	3, 4, 5, 7, 9, 10, 11, 12	
Chipset	TI 16C554A	
Baud Rate	921.6 Kbps (max.) at 14.745 MHz clock input	
Serial Port	16C550-compatible UARTs	
Connectors (40-pin; 2.54 box header)	1 x 4-port RS-232/RS-422/RS-485	2 x 4-port RS-232
Power Consumption	+5V@0.6A (max.)	
Operating Temperature	0°C ~ 60°C	
Dimensions	96 mm x 90 mm	
Driver Support	Windows®NT, Windows®2000, Windows®XP, Windows®CE and Linux	

## Packing List

- 1 x 4-port non-isolated RS-232/422/485 serial communication PC/104 module
- 1 x 4-port RS-422/485 connection cable
- 1 x RS-232 cable
- 1 x Mini jumper pack
- 1 x Utility CD

## Ordering Information

Part No.	Description
PM-1004-R20	4-port non-isolated RS-232/422/485 serial communication PC/104 module
PM-1028-8-R20	8-port non-isolated RS-232 serial communications PC/104 module