IEI Computer on Modules

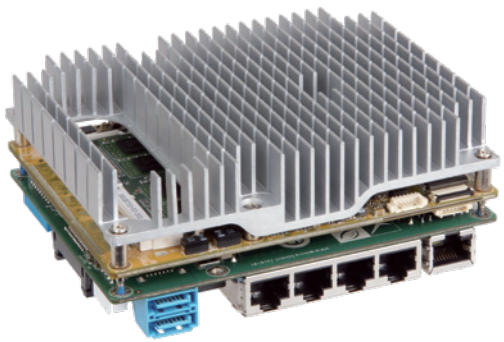
A computer-on-module (COM) is a type of single-board computer (SBC), a subtype of an embedded computer system. An extension of the concept of system on chip (SoC) and system in package (SiP), COM lies between a full-up computer and a microcontroller in nature.

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 6

Compact: 95 mm x 95 mm

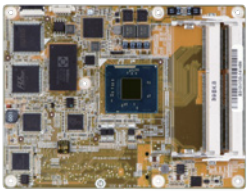
COM Express Type 6

Basic: 125 mm x 95 mm

Qseven 2.0

70 mm x 70 mm

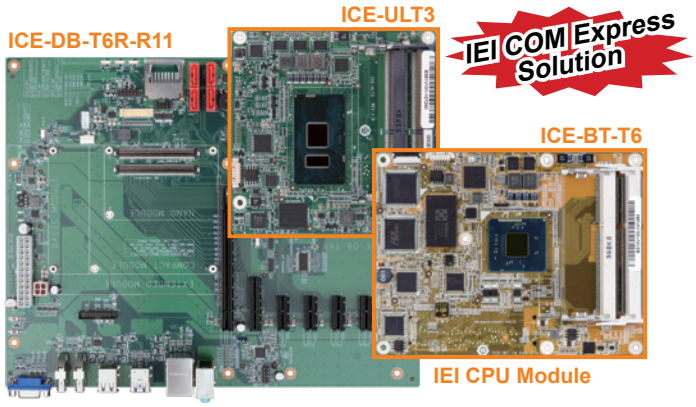
Computer on Module Selection Guide


Computer on Module	COM Express Type 6	COM Express Type 6	Qseven 2.0
COM Express Size	Compact: 95 mm x 95 mm	Basic: 125 mm x 95 mm	70 mm x 70 mm
Model Name	**ICE-ULT3**	**ICE-BT-T6**	**iQ7-BT-E38001** **iQ7-BT-E38001W2**
CPU Socket	On board	On board	On board
CPU Type	Intel® Skylake ULT on-board SoC	Intel® Atom™/Celeron® on-board SoC	Intel® Atom™/Celeron® on-board SoC
Chipset	Intel® Skylake ULT	Intel® Atom™/Celeron® on-board SoC	Intel® Atom™/Celeron® on-board SoC
Memory	Two 260-pin 2133/1867 MHz dual-channel DDR4 SDRAM Unbuffered SO-DIMM supported (system max. 32GB)	Two 204-pin 1333/1066 MHz dual-channel DDR3L SO-DIMM supported (system max. 8 GB)	2 GB soldered down 1333/1066 MHz DDR3L memory (up to 4 GB)
Display Interface	Triple display supported 1 x DDI: DisplayPort/HDMI/DVI 1 x DDI: DP to VGA via CH7517 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: DisplayPort/HDMI 1 x LVDS: 18/24-bit dual-channel LVDS	Dual display supported 1 x DDI: DisplayPort/HDMI 1 x LVDS: 18/24-bit dual-channel LVDS
Ethernet	LAN1: Intel® I219LM	LAN1: Intel® I210 GbE controller	LAN1: Intel® I210 GbE controller
I/O Interface	2 x RS-232 (2-Wire) to baseboard 4 x USB 2.0 signal to baseboard 4 x USB 3.2 Gen1 signal to baseboard (with 4 x USB 2.0)	1 x I²C 1 x LPC 1 x SMBus 2 x Serial port (TX & RX) 7 x USB 2.0 signal to baseboard 4 x USB 3.2 Gen1 signal to baseboard	3 x I²C 1 x LPC 1 x SDIO 1 x SMBus 5 x USB 2.0 signal to baseboard 1 x USB 3.2 Gen 1 signal to baseboard
Storage Interface	2 x SATA 6Gb/s signal to baseboard eMMC 5.0 (optional)	2 x SATA 3Gb/s signal to baseboard Optional soldered down SSD up to 64 GB (SATA port 1)	2 x SATA 3Gb/s signal to baseboard Optional soldered down SSD up to 64 GB (SATA port 1)
Audio	High-definition Audio interface		
Power Consumption	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)	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 Enviornment	Operating Temperature: -20°C ~ 60°C Operating Humidity: 5% ~ 95%, non-condensing	Operating Temperature: -20°C ~ 60°C Operating Humidity: 5% ~ 95% non-condensing	Operating Temperature: -20°C ~ 60°C -40°C ~ 85°C (iQ7-DB-MATX) Operating Humidity: 5% ~ 95% non-condensing
Expansion Slot	1 x PCIe x1 signal to baseboard (Via PCIe x16 channel) 8 x PCIe x1 signal to baseboard	5 x PCIe x1 signal to baseboard	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 deign service, users can quickly enjoy the benefits of modulization and efficiency.



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 2 x 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

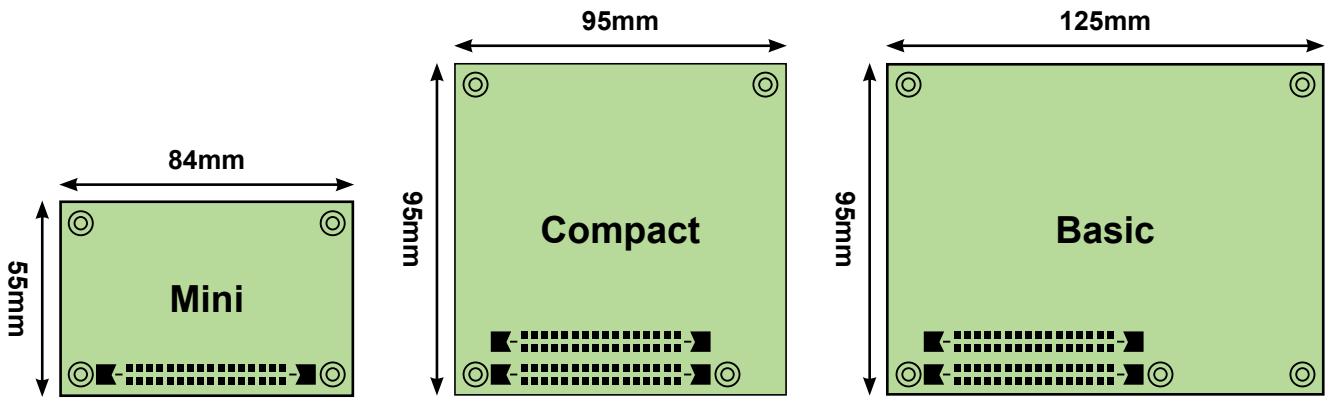
COM Express, a computer-on-module (COM) form factor, is a highly integrated and compact PC that can be used in a design application much like an integrated circuit component. Each COM Express Module COM integrates core CPU and memory functionality, the common I/O of a PC/AT, USB, audio, graphics (PEG), 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 3.2 Gen 1
Type 1	Up to 6	×	VGA, LVDS	4	1/0	×	×	8	×
Type 10	Up to 4	/1	DDI, LVDS	2	1/0	×	×	8	2
Type 2	Up to 22	1/2	VGA, LVDS, PEG, SDVO	4	1/0	✓	×	8	×
Type 6	Up to 24	1/	VGA, LVDS, PEG, 3 x DDI	4	1/0	×	×	8	4
Type 7	Up to 32	2	NA	2	1/4	×	×	4	4

The Specification Defines Three Module Sizes:



Mini: 84 x 55 mm
For Type 1 and Type 10 pinout

Compact: 95 x 95 mm
For Type 2 and Type 6 pinout

Basic: 125 x 95 mm
For Type 2, Type6 and Type 7 pinout

◆ Pinout Comparison of Type 10

Type 10 Pinout

B	LPC SMB I²C	2 ports SATA	2 ports USB 3.2 Gen 1	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 C	4 ports USB 3.2 Gen 1/2.0	2 lanes PCIe x 1	DDI 1	DDI 2	DDI 3	PCIe x16	12V

B	LPC SMB I²C	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

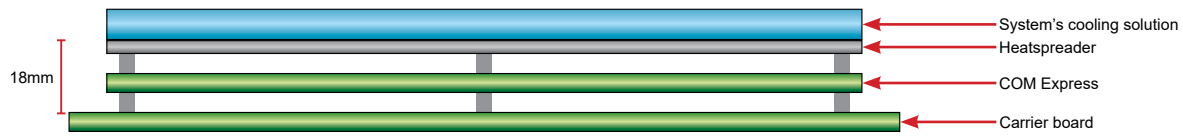
Type 7 Pinout

D C	4 ports USB 3.2 Gen 1/2.0	2 lanes PCIe x 1	4 x 10GbE LAN			PCIe x16				12V	
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.

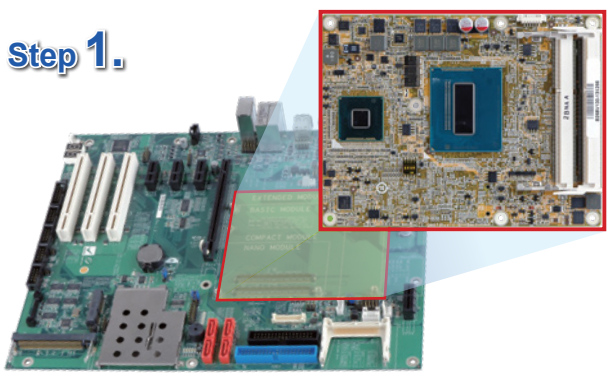


1. Installing the COM Express

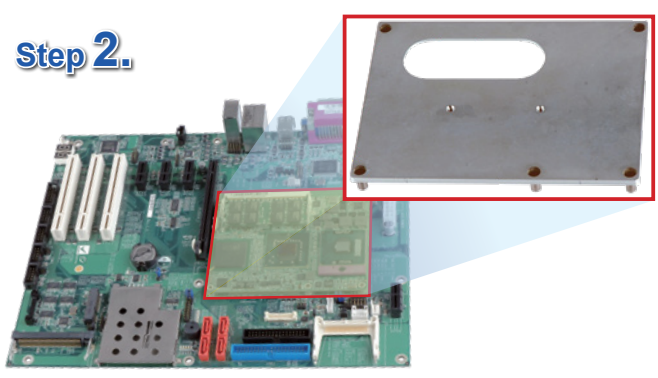
Firmly insert the COM Express into the COM Express socket.

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.



▲ Installing the COM Express

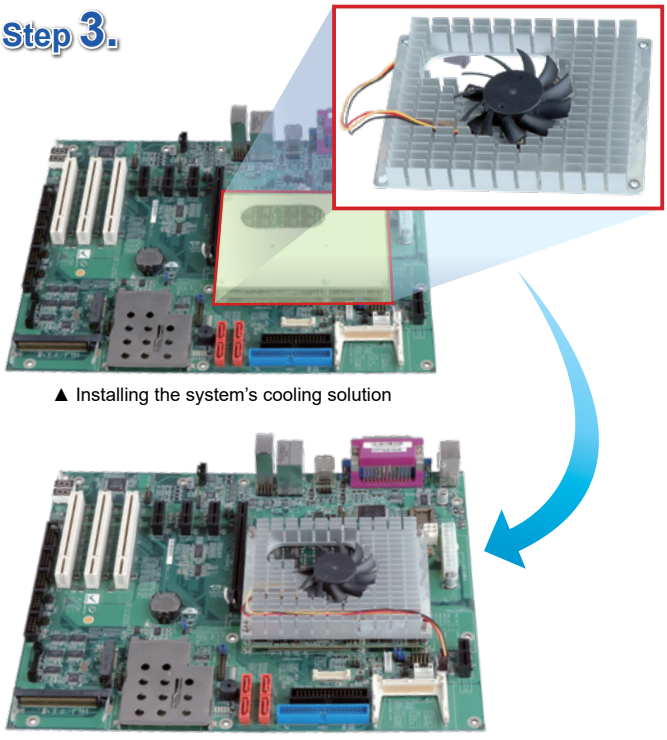


▲ Installing the heatspreader

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



▲ Installing the system's cooling solution

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)

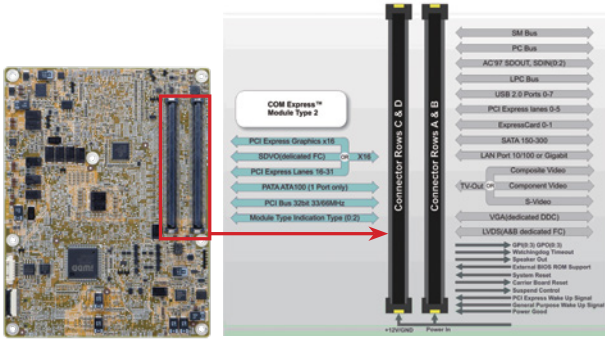
WARNING:

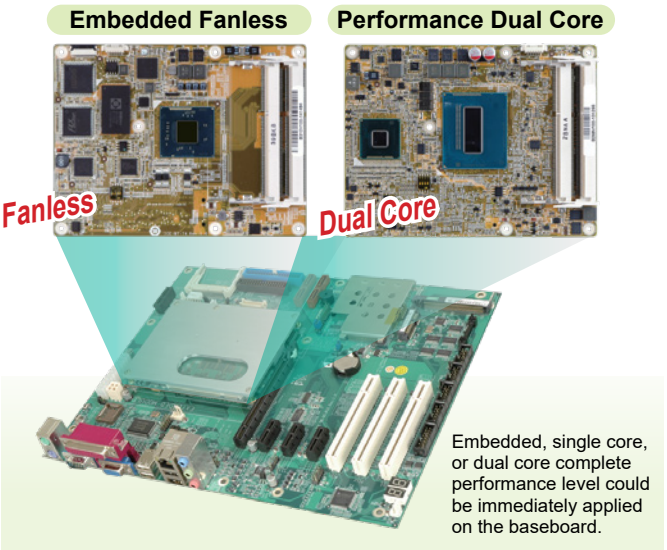
Never run the embedded module without the heat sink. The heatspreader plate shipped with the COM Express acts as a thermal interface between the module and the heat sink. The heat sink must be installed on the heatspreader plate to maintain proper operating temperatures. Make sure to maintain the heatspreader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

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



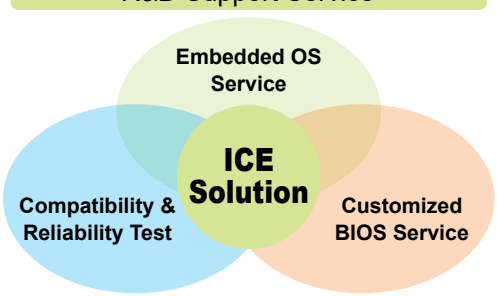


Embedded, single core, or dual core complete performance level could be immediately applied on the baseboard.

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.

R&D Support Service



R&D Support Team

ME & ID Team
- CNC, laser cutting
- Die-cast, punch-press
- Plastic hard-tooling
- Rapid prototyping
- NEMA4/IP65 enclosure
- Customization
- Accessories: VESA arm, rack mount, DIN-rail mount kit

SW Team
- BIOS: Phoenix/Award/AMI
- Windows® CE driver
- Digital Signage SW
- HMI SW

Intelligent Team
- Automobile devices SW, HW
- System integration
- Test and verification

Project Management Team

EE Team
- Schematic design
- Power circuit plan
- Layout design

Medical Team
- Medical products SW, HW
- IC design, test and verification

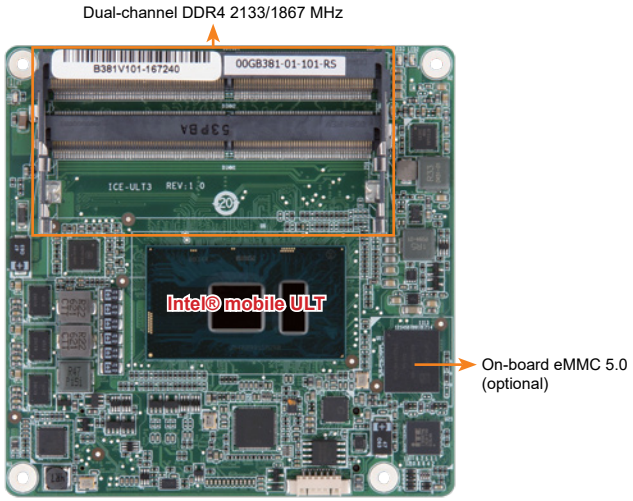
DQV Team
- Product validation
- Environmental testing
- Compatibility testing
- Reliability testing/prediction

Support Team
- EMC/Safety service (FCC, UL, CSA, CE..)
- Key parts/Component verification team

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 3.2 Gen 1 (5Gb/s) and HD Audio, RoHS



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

DDR4 2133 | Triple Display | USB 3.2 | SATA 6Gb/s | GbE

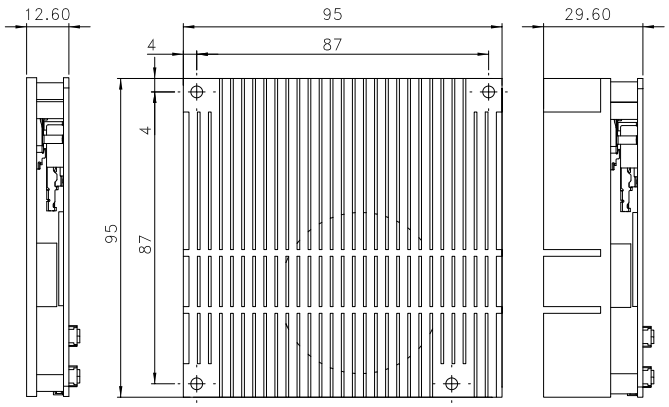
Specifications

- 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™ 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)
- Memory
  Two 260-pin 2133/1866 MHz dual-channel DDR4 non-ECC unbuffered SO-DIMM 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: DP to VGA via CH7517
  (1 x Optional DisplayPort / HDMI/DVI 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 3.2 Gen 1 (5Gb/s) 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 baseboard
- I²C
  YES, to baseboard
- LPC
  YES, to baseboard
- 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 baseboard
- TPM
  Through baseboard
- 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 ~ 60°C
- Operating Humidity
  5% ~ 95%, non-condensing
- Dimension
  95 mm x 95 mm
- Weight
  GW: 600g / NW: 250g
- Safety: CE/FCC compliant

Features

- Support Intel® Skylake ULT Processors
- Intel® HD Graphics technology integrates high-performance graphics and media processing
- Two 260-pin 2133/1867 MHz Dual-Channel DDR4 SDRAM Unbuffered SO-DIMM supported (system max. 32GB)
- Support 18/24-bit dual-channel LVDS, analog CRT, DDI (DisplayPort/HDMI/DVI)
- Support Intel® I219LM with AMT 11.0

Dimensions *(Unit: mm)*



Packing List

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

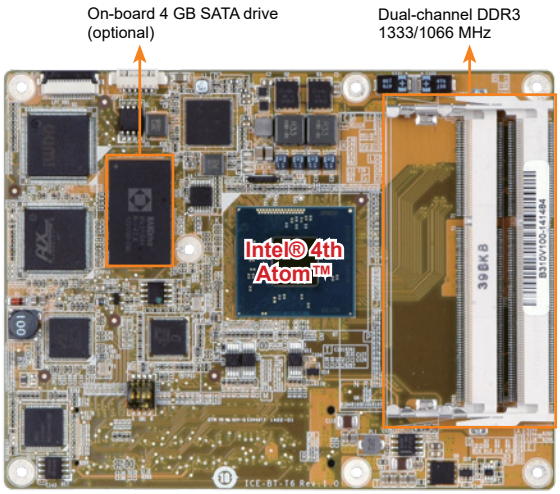
Ordering Information

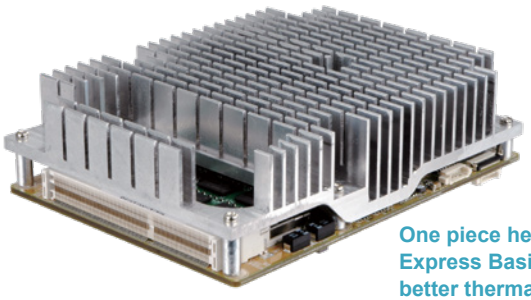
Part No.	Description
ICE-ULT3-i7-R10	COM Express Compact size Type 6 Module, 6th Generation Intel® Core™ i7-6600U (15W) on-board Processor (ULT), DDR4, VGA, LVDS, DDI, GbE, USB 3.2 Gen 1 (5Gb/s), SATA 6Gb/s and HD Audio, RoHS
ICE-ULT3-i3-R10	COM Express Compact size Type 6 Module, 6th Generation Intel® Core™ i3-6100U (15W) on-board Processor (ULT), DDR4, VGA, LVDS, DDI, GbE, USB 3.2 Gen 1 (5Gb/s), 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 3.2 Gen 1 (5Gb/s), 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

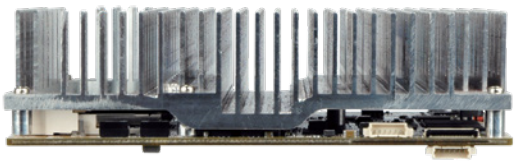
ICE-BT-T6

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



1.35V DDR3L | Dual Display | USB 3.2 | SATA 3Gb/s | GbE

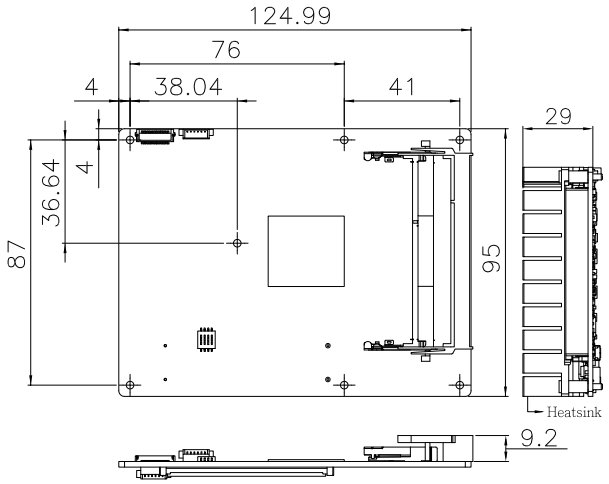
Specifications

- 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)
- Memory
  Two 204-pin 1333/1066 MHz dual-channel DDR3L SDRAM unbuffered SO-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 OpenCL1.2
- Display Output
  1 x VGA (up to 2560x1600@60Hz)
  1 x DDI: (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 controller
- 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 3.2 Gen 1 (5Gb/s) signal to baseboard (via 1 to 4 USB 3.2 Gen 1 (5Gb/s) hub)
- Audio
  High Definition Audio interface to baseboard
- GPIO
  Yes, to baseboard
- SMBus
  Yes, to baseboard
- I²C
  Yes, to baseboard
- LPC
  Yes, to baseboard
- SPI
  Yes, to baseboard
- Internal Storage
  2-Kb serial I²C 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
- Safety:CE/FCC compliant

Features

- Support Intel® 22nm Atom™ or Celeron® on-board SoC
- Intel® HD Graphics Gen7 integrates high-performance graphics and media processing
- Support 1333/1066 MHz dual-channel DDR3L (1.35V) memory up to 8 GB
- Support one analog CRT, one 24-bit dual-channel LVDS, and one DDI (DisplayPort/ HDMI)
- Support optional soldered down SSD up to 64 GB

Dimensions *(Unit: mm)*



Packing List

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

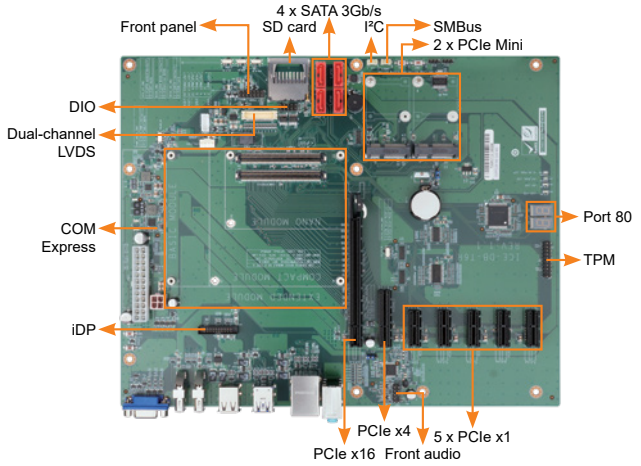
Ordering Information

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 3.2 Gen 1 (5Gb/s) and HD Audio, RoHS
ICE-BT-T6-E38XX1-R10	COM Express Basic Type 6 module with Intel® Atom™ processor E38XX, VGA, DDI, LVDS, USB 3.2 Gen 1 (5Gb/s), GbE, SATA 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

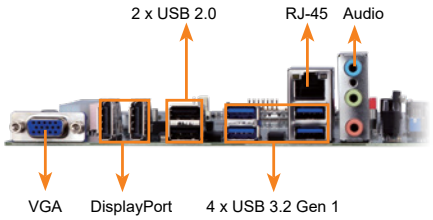
TYPE 6

ICE-DB-T6R

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



TPM 1.2 Support



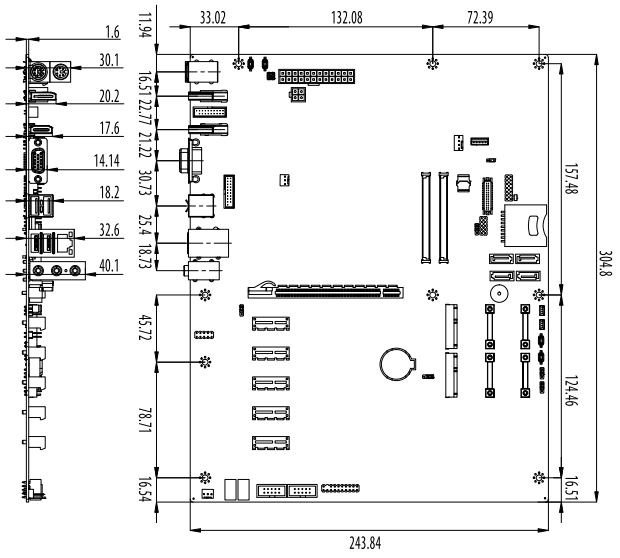
Specifications

- ◆ Form Factor
  ATX form factor baseboard
- ◆ CPU
  Supports COM Express Compact/Mini module using connector pin out Type 6
- ◆ Display Interfaces
  1 x iDP pin-header
  1 x LVDS 18/24-bit single or dual-channel (with PWM back light controller)
  1 x VGA
  2 x DisplayPort
- ◆ Audio
  Realtek ALC888S 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 3Gb/s
  1 x SD card socket
- ◆ External I/OInterface
  1 x Audio jack (Line-in, Line-out, Mic)
  2 x DisplayPort
  1 x VGA
  1 x PS2 KB/MS 2 x USB 2.0
  1 x RJ-45
  4 x USB 3.2 Gen 1 (5Gb/s)
- ◆ Front Audio:
  2x5 pin pin header
- ◆ TPM:
  1 x TPM connector (2x10 pin)
- ◆ 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 (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")
- ◆ Weight: GW:650g / NW:430g
- ◆ Safety:CE/FCC compliant

Features

- ATX form factor baseboard for COM Rev. 2.1, pin-out Type 6
- Support 1 x PCIe x16, 1 x PCIe x4, 5 x PCIe x1, 2 x PCIe Mini
- Support PICMG EAPI R1.0

Dimensions (Unit: mm)



Packing List

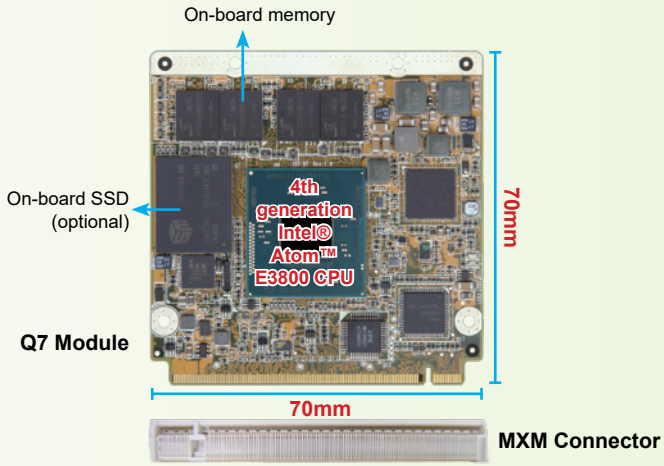
1 x Baseboard for COM Express	1 x Mini jumper pack
2 x SATA cable	1 x QIG

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

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)
- I²C Bus
- LPC (Low Pin Count Bus)
- CAN Bus
- Fan Control
- Power Management Signals
- Battery Management
- 5V Power (TDP 12 Watt)
- Unique API for I²C Bus, Watchdog Timer and EPI (Embedded Panel Interface)
- Thermal Cooling Interface defined

Typical Applications

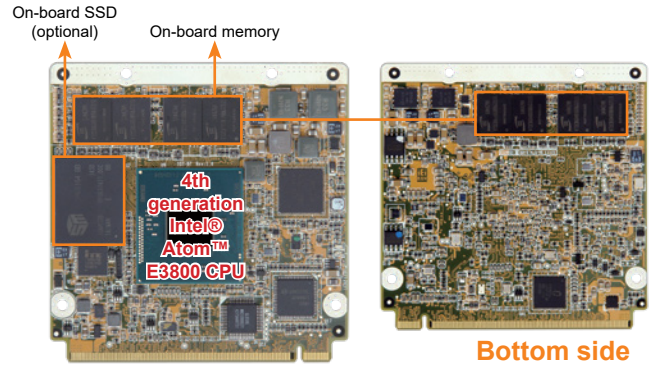

Automation Controllers


Mobile Devices


Measurement Systems

iQ7-BT

Qseven Rev. 2.0 Module Supports 4th generation Intel® Atom™ Processor, LVDS, DDI, GbE, SATA 3Gb/s, USB 3.2 Gen 1 (5Gb/s), SDIO, Audio, -20°C~60°C and RoHS



Memory Down | Dual Display | USB 3.2

Features

- Support 22nm Intel® Atom™ on-board SoC
- Qseven connector pinout according to Qseven Specification Revision 2.0
- Supports 2 GB 1333/1066 MHz DDR3L memory (4 GB optional)
- Support optional soldered down SSD up to 64 GB

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 1333/1066 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 LVDS: 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 3.2 Gen 1 (5Gb/s) signal to baseboard
- Storage
  2 x SATA 3Gb/s signal to baseboard
  Optional soldered-down up to 64 GB SSD (SATA port 2)
- Audio
  High-definition Audio interface to baseboard
- SMBus
  Yes, to baseboard
- I²C
  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
  -20°C ~ 60°C
- Operating Humidity
  5% ~ 95%, non-condensing
- Dimensions
  70 mm x 70 mm
- Weight
  GW: 300g / NW: 150g
- Safety
  CE/FCC compliant

Packing List

1 x iQ7-BT single board computer	
1 x Heatsink	1 x QIG

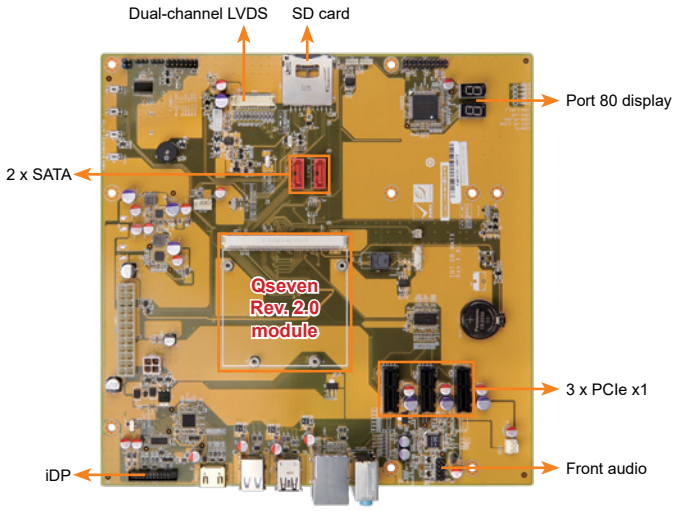
Ordering Information

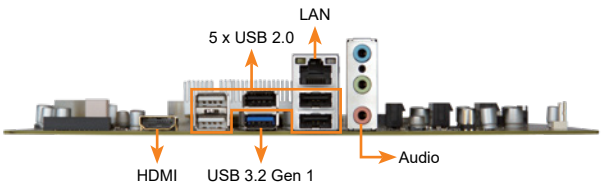
Part No.	Description
iQ7-BT-E38451-R10	Qseven Rev. 2.0 module supports Intel® Atom™ processor E3845 (quad core, 10W), on-board 2 GB DDR3L, LVDS, DDI, GbE, SATA 3Gb/s, SDIO, USB 3.2 Gen 1 (5Gb/s), Audio, and RoHS
iQ7-BT-E38251-R10	Qseven Rev. 2.0 module supports Intel® Atom™ processor E3825 (dual core, 6W), on-board 2 GB DDR3L, LVDS, DDI, GbE, SATA 3Gb/s, SDIO, USB 3.2 Gen 1 (5Gb/s), 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 ALC888S HD Audio codec (Line-in, Line-out, Mic)
- Internal I/O Interface
  1 x LPC
  1 x SD card socket
  2 x SATA 3Gb/s
  3 x PCIe x1
- External I/O Interface
  1 x Audio jack (Line-in, Line-out, Mic)
  1 x HDMI
  1 x USB 3.2 Gen 1 (5Gb/s)
  5 x USB 2.0
  1 x RJ-45
- Front Audio
  1 x Front audio connector (2x5 pin)
- TPM
  1 x TPM connector(2x10 pin)
- Port 80 Display
  2x7 segment display
- Front Panel
  1 x Front panel (2x7 pin, power LED, HDD LED, buzzer speaker, power button, reset button)
- I²C
  3 x I²C (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)
- Operating Temperature
  -20°C ~ 60°C
- Humidity
  5% ~ 95%, non-condensing
- Dimensions
  243.8 mm x 243.8 mm
- Safety
  CE/FCC compliant

Packing List

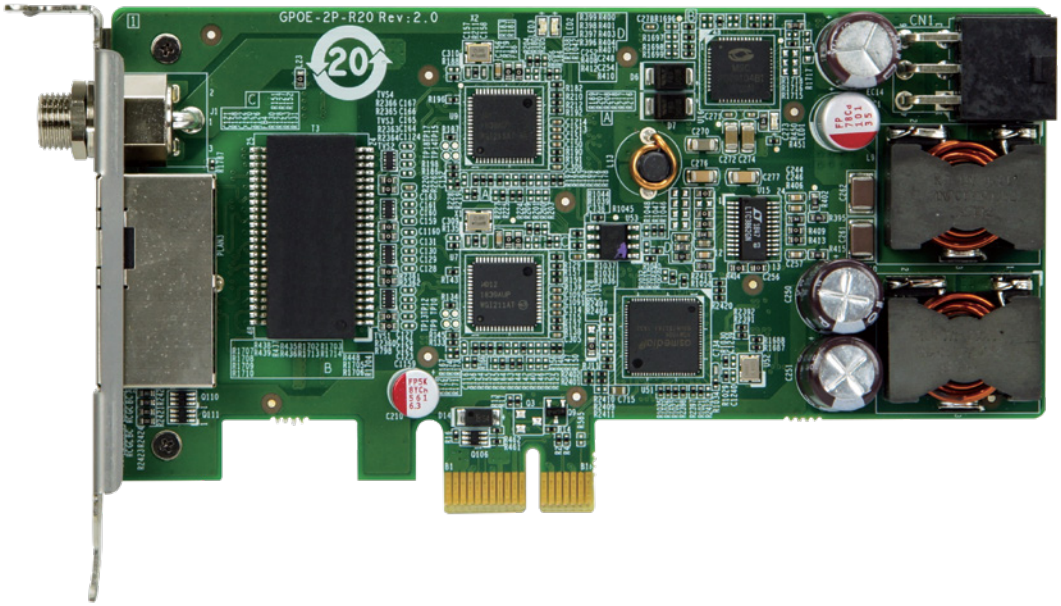
1 x Qseven® baseboard
1 x QIG

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

GPOE-2P

PCI Express Power over Ethernet card, 2-port 1000 Base(T), 802.3at compliant, low profile, RoHS



Specifications

- Interface
  PCI Express® x1
- Ethernet
  Intel® I211AT controller
  9kB jumbo frame
  IEEE 802.3at, IEEE1588
- Power Input
  12~24V DC input
  1 x Internal DC input (1x4 pin)
  1 x External DC Jack (Φ2.1/Φ5.5)
  ***Caution! Choose one input only at a time*
- PoE Capability
  IEEE 802.3at
  30W / 52V DC per port
  (Support for total 60 watts under full load)
- Operating Temperature
  0°C ~ 60°C
- Storage Temperature
  -10°C ~ 70°C
- Operating Humidity
  5% ~ 95%, non-condensing
- Dimensions
  130 mm x 65 mm
- Weight
  110g
- Safety:
  CE/FCC compliant

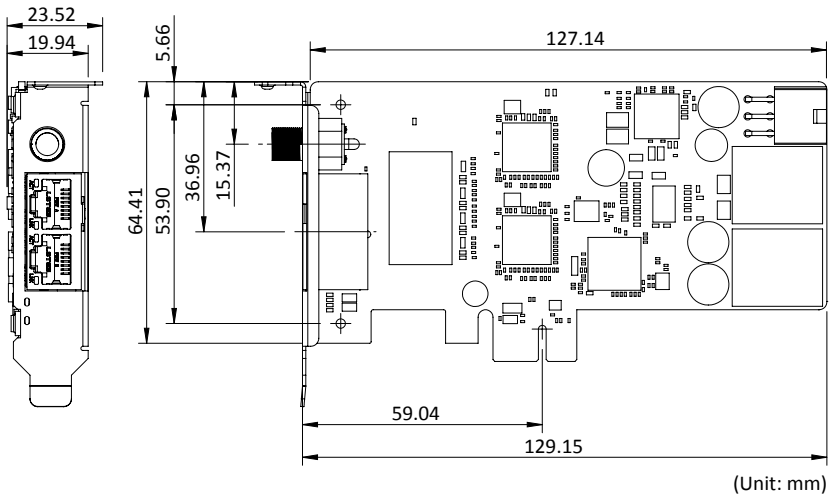
Features

- PCI Express® x1 compliant
- Support IEEE 802.3at for PoE (Power over Ethernet) with 30 watts per port
- Support link aggregation/jumbo frames (9 Kbyte)
- Support 12V~24V DC input power

Packing List

1 x GPOE-2P card
1 x Full height bracket
1 x QIG

Dimensions



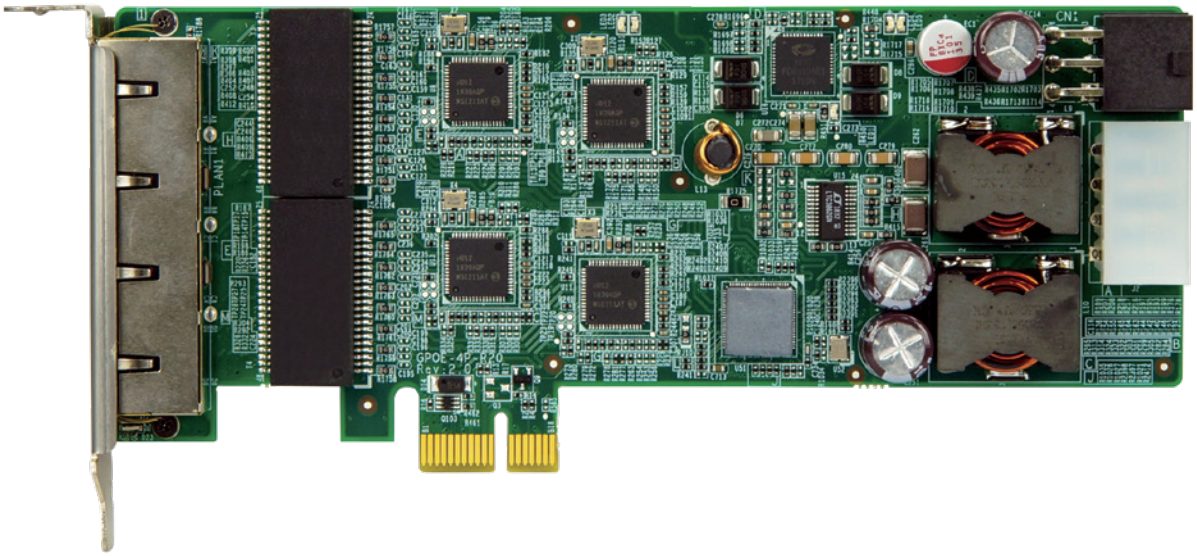
(Unit: mm)

Ordering Information

Part No.	Description
GPOE-2P-R20	PCI Express Power over Ethernet card, 2-port 1000 Base(T), 802.3at compliant, low profile, RoHS
32102-044900-100-RS	WIRE cable, power cable, PCIe power cable, 3, 100MM, 0AWG, (A) MOLEX 8981-04M P=5.08*2, (B) TKP:H6657R1-06-B-03 P=4.2, Polywell, RoHS
63040-010090-120-RS	Power adapter, 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
63040-010065-710-RS	Adapter Power, FSP, FSP065-RBBN3, 9NA0657819, Vin:90~264VAC, 65W, Dim:46.3x108.3x30mm, Plug=7.5mm, Cable=1500mm, Erp (NO LOAD 0.15W), Vout:19VDC, Φ2.1/Φ5.5/lock, CCL, RoHS

GPOE-4P

PCI Express Power over Ethernet card, 4-port 1000 Base(T), 802.3at/af compliant, low profile, RoHS



Specifications

- Interface
  PCI Express® x1
- Ethernet
  Intel® I211-AT controller
  9kB jumbo frame
  IEEE 802.3az, IEEE1588
- Power Input
  Support 12V~24V DC input power
  1 x Internal DC input (1x4 pin)
  1 x Internal DC input (2x3 pin)
  ***Caution! Choose one input only at a time*
- PoE Capability
  Standard mode: IEEE 802.3af with 15.4W / 52V per port
  Dual port mode: IEEE 802.3at with 30W / 52V per port
  (Support for total 90 watts under full load)
- Operating Temperature
  0°C ~ 60°C
- Storage Temperature
  -10°C ~ 70°C
- Operating Humidity
  5% ~ 95%, non-condensing
- Dimensions
  160 mm x 65 mm
- Weight
  110g
- Safety
  CE/FCC compliant

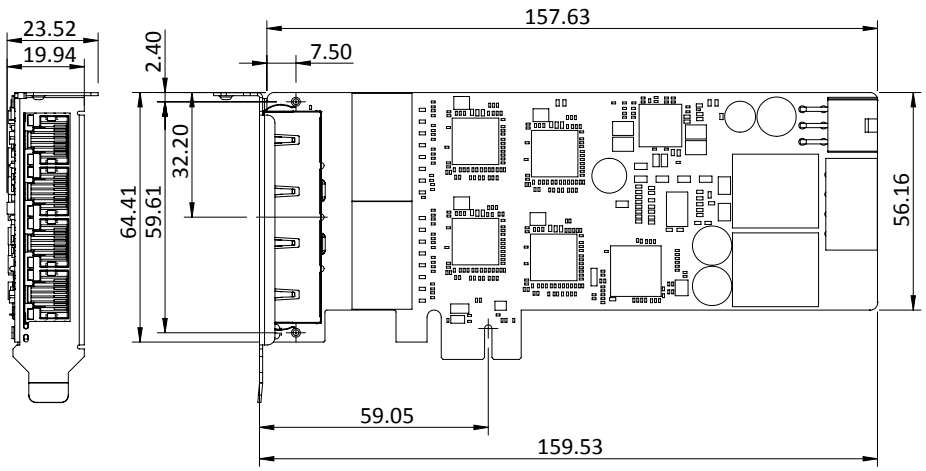
Features

- PCI Express® x1 compliant
- Support for total 90 watts under full load
- Support link aggregation/jumbo frames (9 Kbyte)
- Support 12V~24V DC input power

Packing List

1 x GPOE-4P card
1 x Full height bracket
1 x QIG

Dimensions



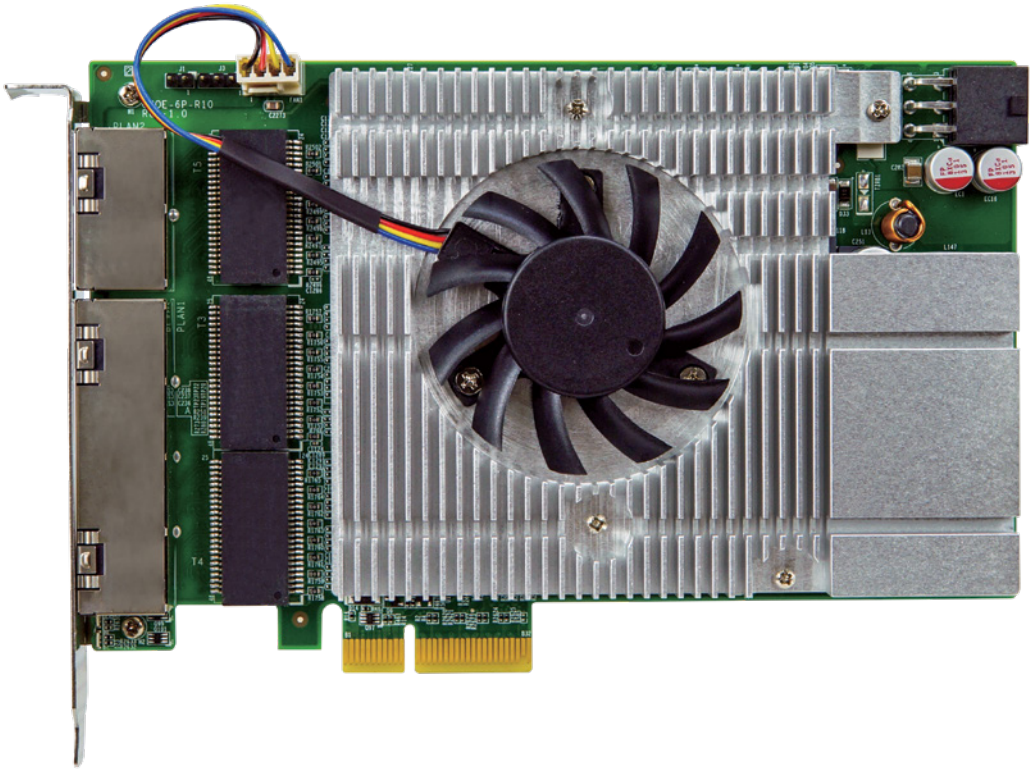
(Unit: mm)

Ordering Information

Part No.	Description
GPOE-4P-R20	PCI Express Power over Ethernet card, 4-port 1000 Base(T), 802.3af compliant, low profile, RoHS
32102-011500-100-RS	WIRE cable, power cable, 3, 150MM, 18AWG, MOLEX 8981-04P P=5.08 X2, MOLEX 8981-04M P=5.08, Wins Precision, RoHS
32102-044900-100-RS	WIRE cable, power cable, PCIe power cable, 3, 100MM, 0AWG, (A) MOLEX 8981-04M P=5.08*2, (B) TKP:H6657R1-06-B-03 P=4.2, Polywell, RoHS

GPOE-6P

PCI Express Power over Ethernet card, 6-port 1000 Base(T), 802.3at / bt compliant, RoHS



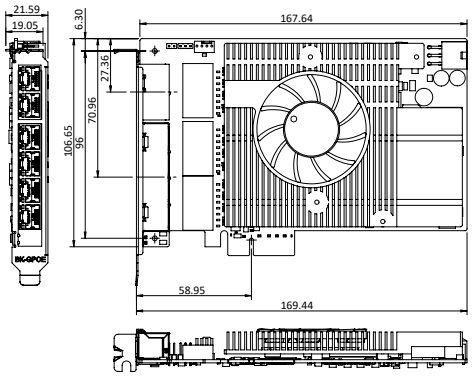
Features

- Provide six 10/100/1000Base-T(X) PoE (P.S.E.) ports
- Total 180 Watts power budget with maximum 90 Watts per port
- PoE power sourced from 12~24VDC of ATX power
- Each LAN port supports both PoE and non-PoE connections (Auto Detect & Classification)
- Support SW/RDK (IEI GPOE Management Software Tools)
- Compatible with x4, x8 and x16 PCIe slots
- IEEE 802.3at/bt PoE compliant

Specifications

- Interface
  PCI Express® x4
- Ethernet
  6 x Intel® I211AT controller
  9kB jumbo frame
- Fan
  One fan connector (1x4 pin)
- Power Input
  12~24V DC input
  1 x Internal DC input (2x3 pin)
- PoE Capability
  IEEE 802.3at with 30W / 52V per port
  IEEE 802.3bt with 90W / 52V per port
  (Support for total 180 watts under full load)
- Software
  IEI GPOE Management Tools (Windows/Linux)
- Operating Temperature
  0°C ~ 60°C
- Storage Temperature
  -10°C ~ 70°C
- Operating Humidity
  5% ~95%, non-condensing
- Dimensions
  169.44 mm x 106.65 mm
- Weight
  286g
- Safety
  CE/FCC compliant

Dimensions *(mm)*



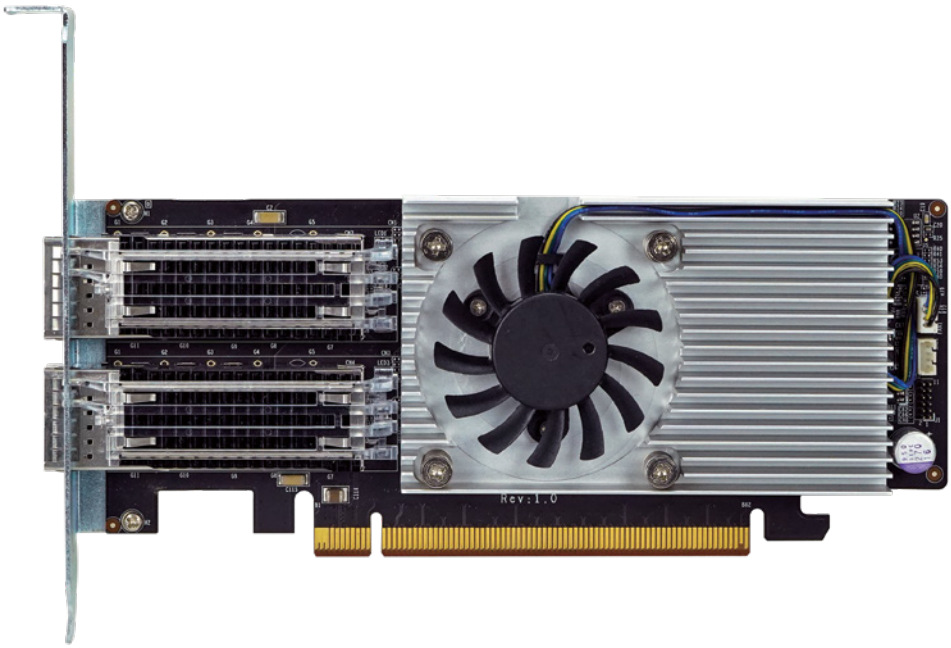
Packing List

1 x GPOE-6P card with cooler
1 x QIG

Part No.	Description
GPOE-6P-R10	PCI Express Power over ethernet card, 6-port 1000 Base(T), 802.3at / bt compliant, RoHS
32102-044900-100-RS	PCIe power cable, 100mm, 20AWG, (A)MOLEX 8981-04M P=5.08*2, (B)TKP:H6657R1-06-B-03 P=4.2, RoHS
63040-010065-710-RS	Power adapter, FSP065-RBBN3, 9NA0657819, Vin:90~264VAC, 65W, DIM:46.3x108.3x30mm, plug=7.5mm, cable=1500mm, Erp (no load 0.15W), Vout: 19VDC, Φ2.1/ Φ5.5/lock, CCL, RoHS

LAN-100G2SF-E810

Intel® EZE810CAM2 Ethernet Controller based Network Interface Card with Two QSFP28 via PCIe 4.0 x16 Interface



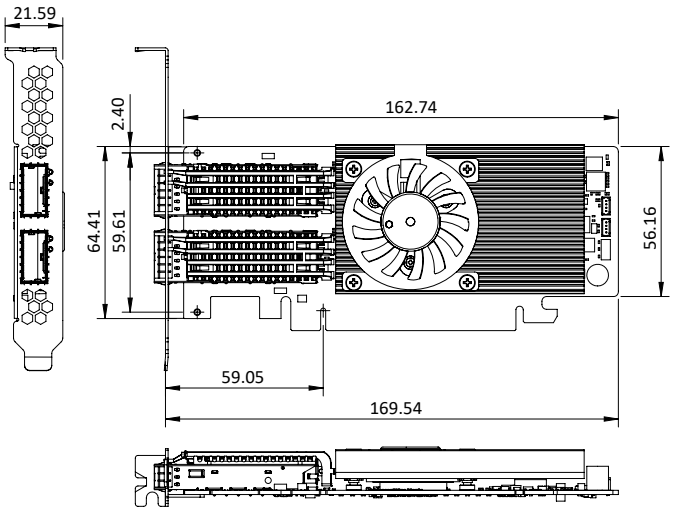
Features

- 1 x Intel E810 Ethernet controller
- 2-port 100GbE QSFP28 connector
- Support PCIe Gen4 x16

Specifications

- Form Factor
  Low profile PCI Express® add-on card
- NIC
  Intel® E810
- LAN Interface
  QSFP28
- Speed
  100GbE
- LAN Ports
  2 x LAN ports
- Host Interface
  1 x PCIe Gen4 x16
- Storage Temperature
  -20°C ~ 75°C (-4°F ~ 167°F)
- Operating Temperature
  0°C ~ 40°C (32°F ~ 104°F)
- Operating Humidity
  5% ~ 95% RH, Non-condensingg
- Dimensions (mm)
  165.50 (L) x 77.8 (W) x 44.2 (H)
- RoHS compliant

Dimensions



Packing List

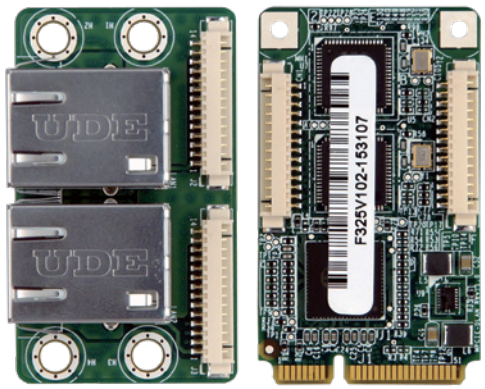
1 x LAN-100G2SF-E810 Module
1 x QIG

Ordering Information

Part No.	Description
LAN-100G2SF-E810-R10	Intel® EZE810CAM2 Ethernet Controller based PCIe Card with Two QSFP28 via PCIe 4.0 x16 Interface

MPCIE-DLAN-R10

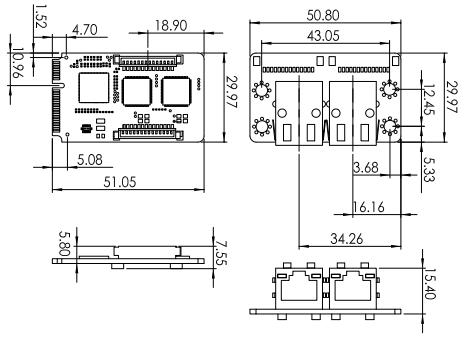
PCI Express Mini Dual Intel® GbE LAN Module, Full Size, RoHS



Features

- Support dual GbE LAN by Intel® I210-IT
- Compliant with PCI Express Mini specification 1.2

Dimensions (mm)



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
- Compitable OS
  Windows XP/Server 2003/ Server 2008/ Vista/ 7 /8.1/10
  Linux kernel version 2.6.32 or later
- Operating Temperature: -10°C ~ 70°C
- Operating Humidity: 5% ~ 95%, non-condensing
- Dimensions (LxW) : 51 mm x 30 mm
- Weight: 55g
- Safety: CE/FCC compliant

Packing List

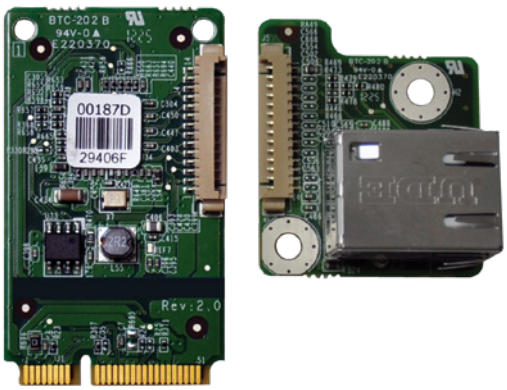
1 x MPCIE-DLAN module	2 x Flat cable (pitch=1.25mm), 340mm length	1 x QIG

Ordering Information

Part No.	Description
MPCIE-DLAN-R10	PCI Express Mini dual Intel® GbE LAN module, full size, RoHS

MPCIE-LAN-R10

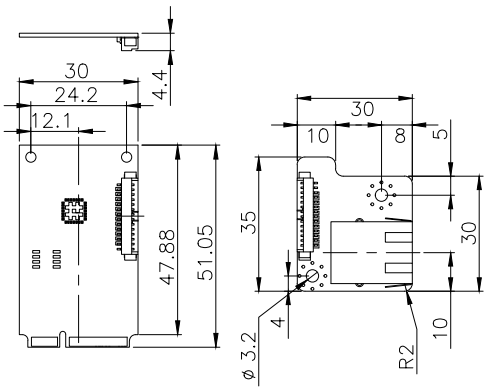
PCI Express Mini GbE LAN Module, Full Size, RoHS



Features

- Support one GbE LAN by RTL8111E
- Compliant with PCI Express Mini specification 1.2

Dimensions (mm)



Specifications

- Form Factor: PCI Express Mini card
- Ethernet Controller: Realtek RTL8111E
- Speed: 10/100/1000Mbps
- External Connector: 1 x 8-pin RJ-45
- Compitable OS
  Windows 2000/ XP/ Server 2003/ Server 2008/ Vista/ 7
  Linux kernel version 2.6.32 or later
- 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
- Safety: CE/FCC compliant

Packing List

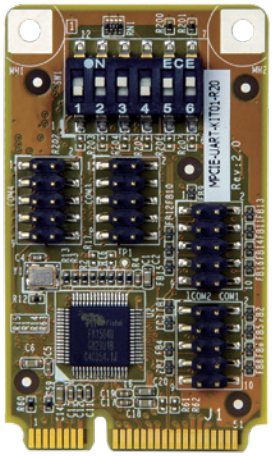
1 x MPCIE-LAN module	1 x Flat cable (pitch=1.25mm), 340mm length	1 x QIG

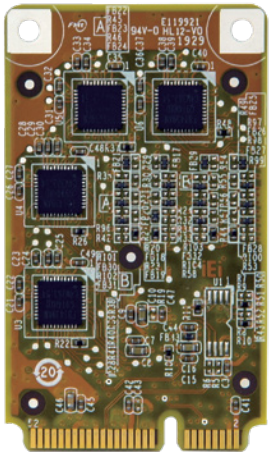
Ordering Information

Part No.	Description
MPCIE-LAN-R10	PCI Express Mini GbE LAN module, full size, RoHS

MPCIE-UART-KIT01-R20

PCI Express Mini Card Supports Quad-port RS-232/422/485, Full Size, RoHS

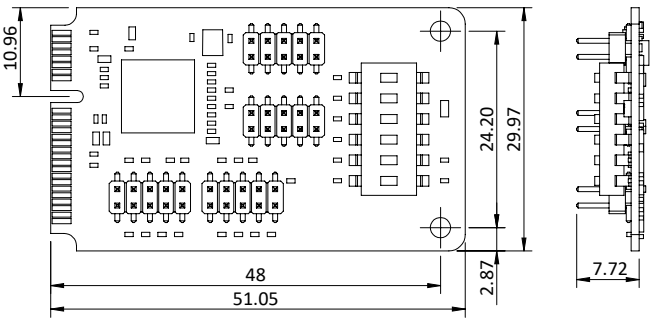




Features

- 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 connector (2x5 pin)
- Operating Temperature: 0°C ~ 60°C
- Operating Humidity: 5% ~ 95%, non-condensing
- Dimensions (LxW): 51 mm x 30 mm
- Weight: GW: 100g / NW: 50g
- Safety: CE/FCC compliant

Packing List

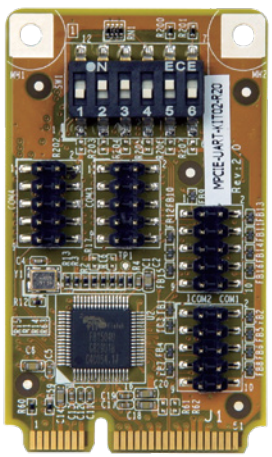
1 x MPCIE-UART-KIT01 module	
4 x D-SUB9 male cable	1 x QIG

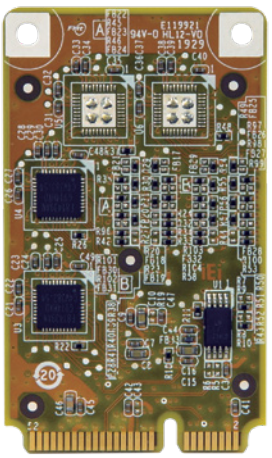
Ordering Information

Part No.	Description
MPCIE-UART-KIT01-R20	PCI Express Mini card supports quad-port RS-232/422/485, full size, RoHS

MPCIE-UART-KIT02-R20

PCI Express Mini Card Supports Dual-port RS-232/422/485, 16-bit GPIO, Full Size, RoHS

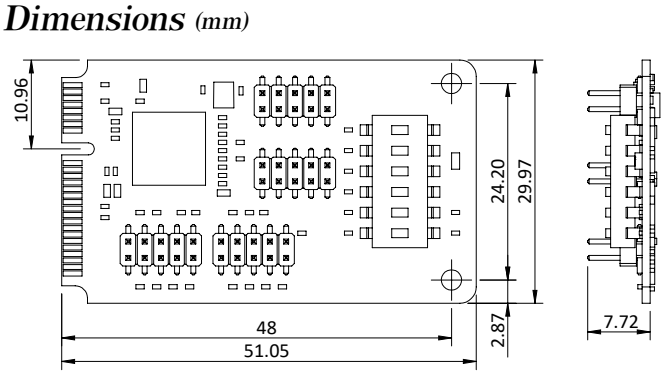




Features

- 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
- Safety: CE/FCC compliant

Packing List

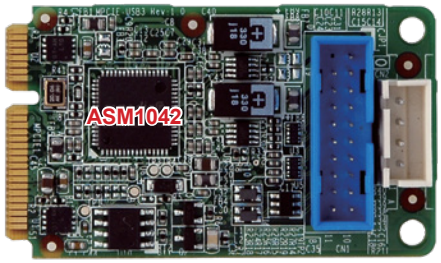
1 x MPCIE-UART-KIT02 module	
2 x D-SUB 9 male cable	1 x QIG

Ordering Information

Part No.	Description
MPCIE-UART-KIT02-R20	PCI Express Mini card supports dual-port RS-232/422/485, 16-bit GPIO, full size, RoHS

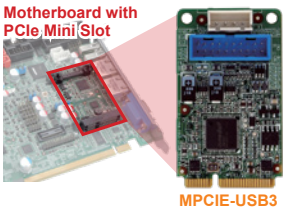
MPCIE-USB3

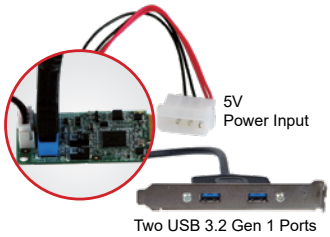
PCIe Mini USB 3.2 Gen 1 (5Gb/s) Adapter Card, RoHS



IEI USB 3.2 Gen 1 (5Gb/s) Expanded Solution

The MPCIE is applied to add additional super speed USB 3.2 Gen 1 (5Gb/s) ports for the motherboard with a PCIe Mini slot.





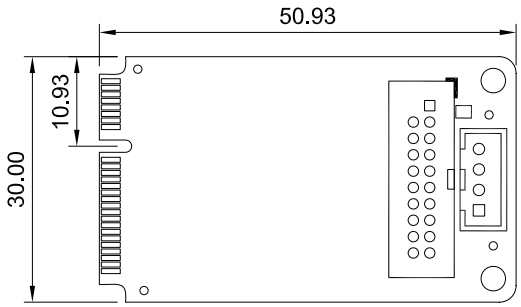
Specifications

- Form Factor
  PCI Express Mini card
- USB 3.2 Gen 1 (5Gb/s) Controller
  Asmedia ASM1042A
- Internal Connector
  1 x box header (2x10 pin)
- 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
- Safety: CE/FCC compliant

Features

- Supports two external USB 3.2 Gen 1 (5Gb/s) type A ports
- USB 3.2 Gen 1 (5Gb/s) provides up to 5Gbps of transferring rate
- Backward compatible with USB 2.0 and USB 1.0/1.1 devices
- Fully compliant with USB 3.2 Gen 1 (5Gb/s) 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)



Packing List

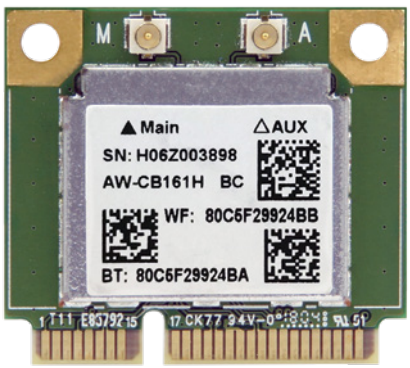
1 x MPCIE-USB3 PCIe Mini USB 3.2 Gen 1 (5Gb/s) adapter card	
1 x Dual USB 3.2 Gen 1 (5Gb/s) type A port cable with bracket	
1 x Power cable	1 x QIG

Ordering Information

Part No.	Description
MPCIE-USB3-R11	PCIe Mini USB 3.2 Gen 1 (5Gb/s) adapter card, RoHS
19800-010500-200-RS	Dual USB 3.2 Gen 1 (5Gb/s) type A port cable with bracket

EMB-WIFI-KIT

PCIe Mini card wireless LAN module kit



Features

- Half size PCIe Mini card form factor
- High speed wireless connection up to 433.3Mbps transmit/receive PHY rate using 80MHz bandwidth
- Low power consumption and high performance
- Fully qualified Bluetooth 4.0
- Solid design with external antenna diversity

Ordering Information

Part No.	Description
EMB-WIFI-KIT01-R20	1T1R wifi module kit for embedded system, IEEE802.11a/b/g/n/ac WiFi with Bluetooth 4.0/3.0+HS, 1 x wifi module, 2 x 250mm RF cable, 2 x Antenna, RoHS
EMB-WIFI-KIT11-R20	1T1R wifi module kit for embedded system, IEEE802.11a/b/g/n/ac WiFi with Bluetooth 4.0/3.0+HS, 1 x wifi module, 2 x 400mm RF cable, 2 x Antenna, RoHS

Specifications

Model Name	EMB-WIFI-KIT
Standard	IEEE 802.11a/b/g/n/ac, Wi-Fi compliant / Bluetooth4.0 Standard
Major chipset	Realtek RTL8821AE
Antenna	2x standard U.FL Connector
Frequency range	Wi-Fi: 2.4GHz/5GHz, BT: 2402MHz~2483MHz
Modulation	Wi-Fi: 802.11a/g/n/ac: OFDM 802.11b: CCK(11, 5.5Mbps), DQPSK(2Mbps), BPSK(1Mbps)
Receive 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 @2.4GHz: less than -61 dBm (HT40 MCS7) 802.11n @5GHz: less than -64 dBm (HT20 MCS7) 802.11n @5GHz: less than -61 dBm (HT40 MCS7) 802.11ac @5GHz: less than -51 dBm (VHT80 MCS9) BT: BER < 0.1% (Anritsu 8852B Tx -70 dBm)
Driver support	Windows 7/8/10, Linux kernel 3.18
Temperature	0°C ~ 70°C
Dimensions	29.85mm x 26.65mm x 1.5mm
Weight	NW: 3.28g

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

Features \ Solution	Infineon SLB9660 TT1.2	SLB9665TT2.0
		
Secure Startup	Root of Trust Measurement of early boot devices	
Anti H/W Attack	Sensors and active shield	
TSS API Support	MS-CAPI/PKCS#11, #12	
H/W Certification	EAL 4	
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
	PCIE-H810		IMB-Q770
	PCIE-Q670		IMB-Q670
PICMG1.0	WSB-H810		IMB-H610A/H610B
	WSB-H610	Mini-ITX	KINO-DH310
Half-size PCIe	PICOe-B650		tKINO-BW
	PICOe-HM650		KINO-DBT
Half-size PCISA	PCISA-BT		KINO-SE/KBN-i2
ATX	IMBA-C2360-i2*		KINO-DH810
	IMBA-Q170-i2*		eKINO-BT
	IMBA-H110*		KINO-ABT-i2
	IMBA-BDE		KINO-AQ870
	IMBA-H810		KINO-DQM871-i1
	IMBA-C2260-i2		KINO-QM770
	IMBA-Q870-i2		KINO-DH610
	IMBA-H610		KINO-AH612
	IMBA-Q670		
EPIC SBC	NANO-QM871		
	NANO-QM770		
	NANO-HM650		

* TPM 2.0 is supported by these models.

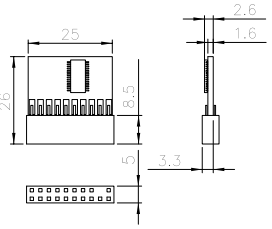
Pin Assignment

Pin	Singnal	Pin	Singnal	Pin	Singnal	Pin	Singnal
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

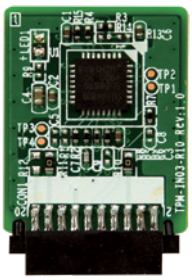
Model Name	Description
TPM-IN01-R20	20-pin Infineon TPM1.2 module, software management tool, firmware v4.4
TPM-IN02-R20	20-pin Infineon TPM2.0 module, software management tool, firmware v5.5

Dimensions (mm)



TPM-IN03

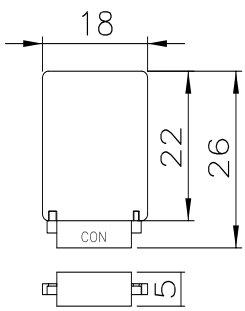
SPI TPM 2.0 module, software management tool, firmware v7.85



Specifications

- Interface
  SPI interface
- Solution
  Infineon SPI TPM 2.0 with SLB9670VQ2.0
  FW7.85
- 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
  7. SPI interface
- Market Segment
  Complete TPM 2.0 function
- OS Support: Windows® & Linux
- Operating Temperature: 0°C ~ 60°C
- Storage Temperature: -20°C ~ 70°C
- Operating Humidity
  5% ~ 95%, non-condensing
- Dimensions (LxW): 26mm x 18mm

Dimensions (Unit: mm)



SPI TPM Support List

Form factor	Model name
Medical Panel PC	POCi-W22C-ULT5
EPIC SBC	NANO-ULT5
DIN-Rail Embedded System	DRPC-230-ULT5
	DRPC-330-A7K

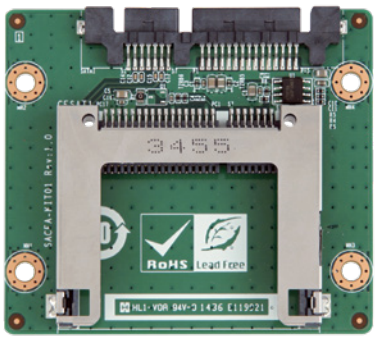
Packing List

1 x 20-pin TPM module

Ordering Information

Part No.	Description
TPM-IN03-R10	20-Pin Infineon SPI TPM 2.0 module with SLB9670VQ2.0, software management tool, firmware v7.85.

SATA to CFast™ Converter Board



SACFA-KIT01-R10

SATA to CFast™ converter board

32801-000100-300-RS

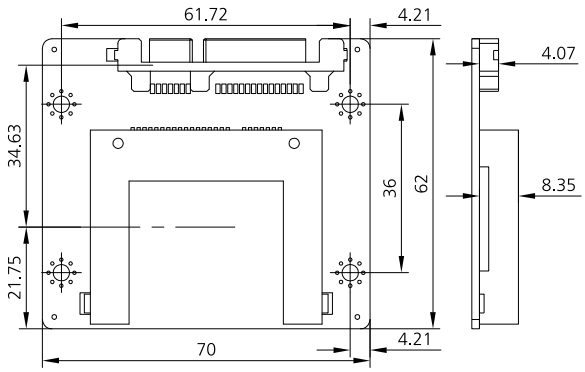
Features

- 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

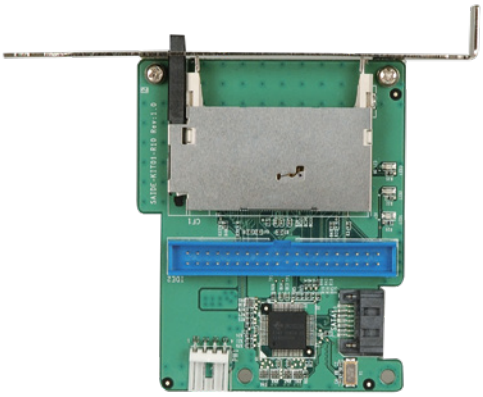
Dimensions *(Unit: mm)*



Ordering Information

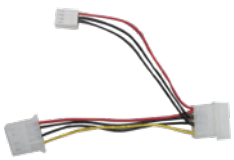
Part No.	Description
SACFA-KIT01-R10	SATA to 24-pin CFast™ socket converter board
32801-003706-100-RS	SATA 7+15P female to SATA 7P / PH 5.08 4P cable, L=200mm/100mm
32801-003706-100-RS	SATA 7+15P female to SATA 7P / PH 2.5 4P cable, L=200mm/200mm
32801-000201-100-RS	SATA 7+15P female to SATA 7P / PH 2.0 2P cable, L=150mm/150mm

SATA to IDE/CF Type II Converter Board



SAIDE-KIT01-R10

SATA to IDE/CF converter board



32100-064401-RS

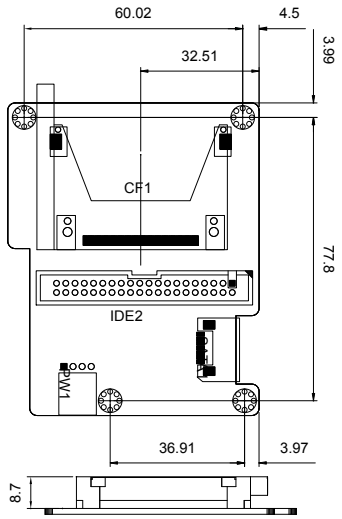
Features

- 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 Power cable	1 x QIG

Dimensions *(Unit: mm)*



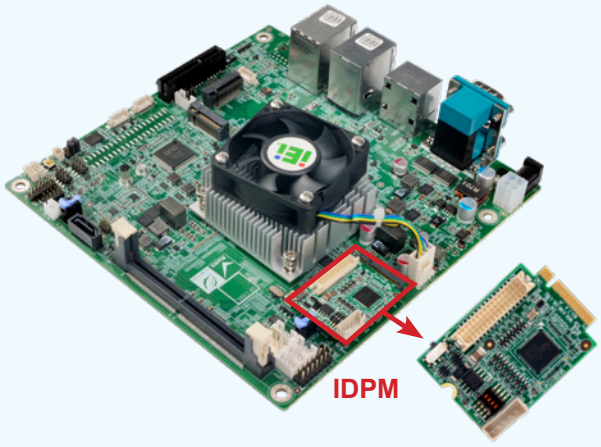
Ordering Information

Part No.	Description
SAIDE-KIT01-R10	SATA to 40-pin IDE/CF socket converter board with bracket
32801-000703-500-RS	SATA cable
32801-000703-500-RS	Power cable

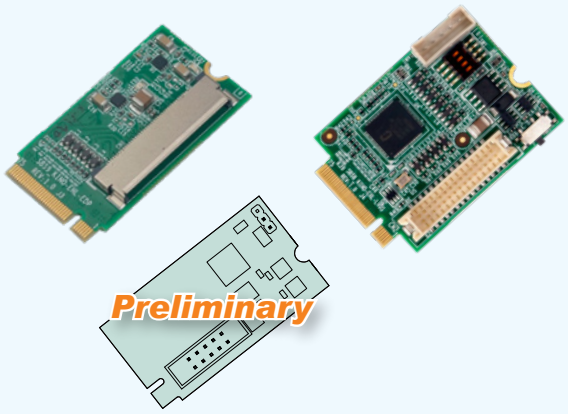
IEI IDPM Introduction

IDPM (IEI Internal DisplayPort Module)

The IDPM connector is provided on the IEI products. Through the IEI IDPM converter cards, the IDPM connector can support different display specifications, such as VGA, DisplayPort, and LVDS.



Flexible Display Output Options



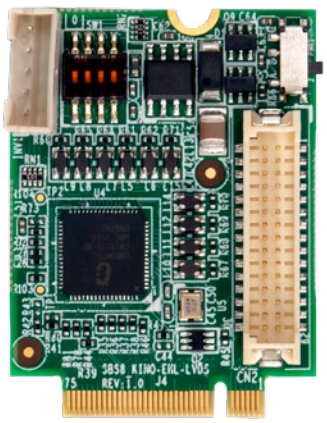
Easy Installation in the Chassis

IDPM Supported Models		
KINO-EHL	WAFER-EHL	NANO-EHL
KINO-TGL	WAFER-TGL	HYPER-EHL

IDPM-LVDS

eDP to 24-bit Dual-channel LVDS Converter Board (for IEI IDPM Slot)

NEW



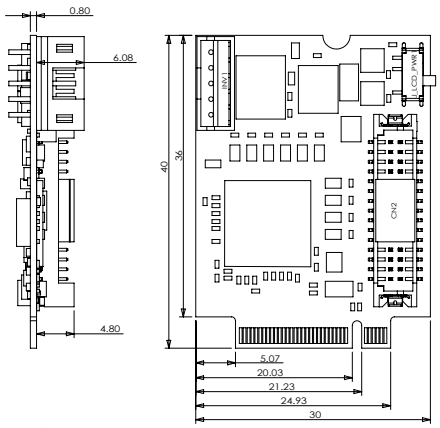
Features

- DisplayPort to LVDS output

Specifications

- Form Factor
  M.2 B Key 3040
- Display Output
  1 x LVDS 24-bit dual-channel
- Display IC
  Chrontel - CH7511B (DP to LVDS)
- Power
  On board 3.3V ~ 12V
- Operating Temperature
  0°C ~ 60°C
- Operating Humidity
  5% ~ 95 non-condensing
- Dimensions
  40 mm x 30 mm
- Safety:
  CE/FCC compliant

Dimensions (mm)



Packing List

1 x IDPM-LVDS converter module

Ordering Information

Part No.	Description
iDPM-LVDS-R10	eDP to 24-bit dual-channel LVDS converter board (for IEI IDPM slot)

IDPM-eDP

eDP to eDP Converter Board (for IEI IDPM Slot)

NEW

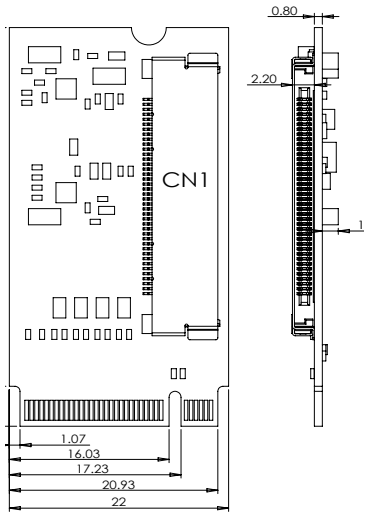
Features

- DisplayPort to DisplayPort output

Specifications

- Form Factor
  M.2 B Key 2240
- Internal Connector
  1 x eDP connector (1 x 40 pin)
- Power
  On board 3.3V ~ 12V
- Operating Temperature
  0°C ~ 60°C
- Operating Humidity
  5% ~ 95%, non-condensing
- Dimensions (LxW)
  40 mm x 22 mm
- Safety:
  CE/FCC compliant

Dimensions (mm)



Packing List

1 x IDPM-eDP converter module

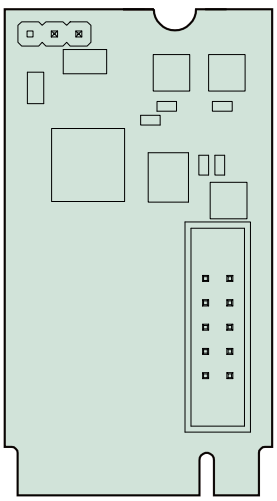
Ordering Information

Part No.	Description
iDPM-eDP-R10	eDP to eDP converter board (for IEI IDPM slot)

IDPM-VGA

eDP to VGA Converter Board (for IEI IDPM Slot)

preliminary



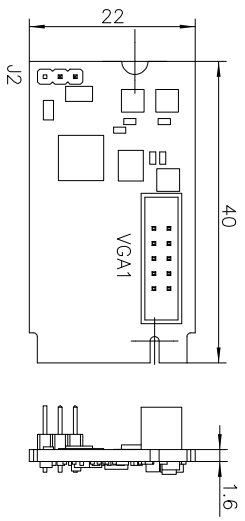
Features

- DisplayPort to VGA output

Specifications

- Form Factor
  M.2 B Key 2240
- Display Output
  1 x VGA pin-header
- Power
  On board 3.3V ~ 12V
- Operating Temperature
  0°C ~ 60°C
- Operating Humidity
  5% ~ 95%, non-condensing
- Dimensions (LxW)
  40mm x 22mm
- Safety:
  CE/FCC compliant

Dimensions (mm)



Packing List

1 x IDPM-VGA converter module
1 x VGA Cable

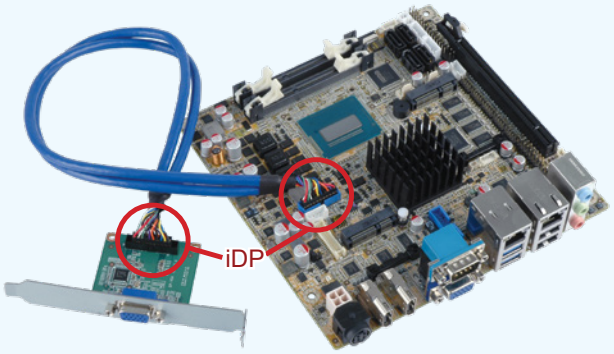
Ordering Information

Part No.	Description
iDPM-VGA-R10	eDP to VGA converter board (for IEI IDPM slot)

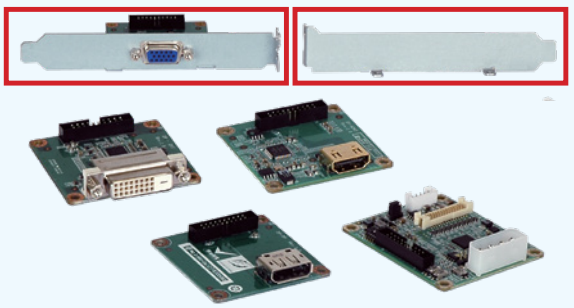
IEI iDP Introduction

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.



Flexible Display Output Options



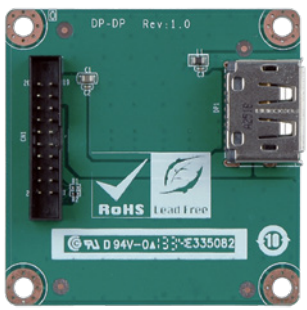
iDP converter cards with brackets

Easy Installation on the Chassis

iDP Supported Models			
HPCIE-C236	IMBA-Q170-i2	KINO-DH110	WAFER-AL
HPCIE-Q710	IMBA-H110	KINO-AQ170	WAFER-ULT3/ULT4
SPCIE-C236	IMBA-Q870-i2	KINO-DH810	WAFER-BTW2
PCIE-Q170	IMBA-C2260-i2	KINO-DQM871-i1	WAFER-BT-i1
SPCIE-C2260-i2	IMB-H110	KINO-ABT-i2	WAFER-ULT/ULT2-i1
PCIE-Q870-i2	IMB-Q870-i2	NANO-AL/ALW2	WAFER-KBN-i1
IMBA-C2360-i2	IMB-H810-i2	NANO-ULT3	

DP-DP-R10

DisplayPort Expansion Board (for IEI iDP Connector), RoHS



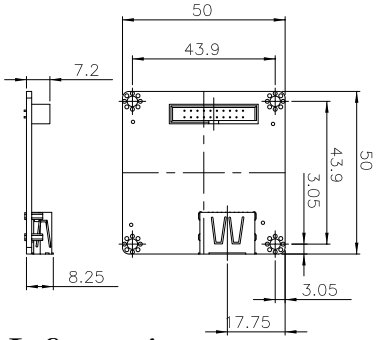
Features

- DisplayPort to DisplayPort output
- Resolution support up to 1920x1200

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

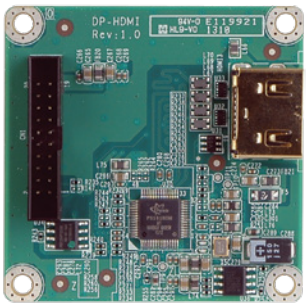
1 x DP-DP expansion board	1 x QIG
1 x IEI iDP connector cable, 450 mm length	

Ordering Information

Part No.	Description
DP-DP-R10	DisplayPort expansion board (for IEI iDP connector), RoHS
32034-000900-100-RS	Round cable, displayport cable, 2, 450mm, 28AWG, (A) USB 3.2 20P P=2.0*2, lintes, RoHS

DP-HDMI-R10

DisplayPort to HDMI 1.3a Converter Board (for IEI iDP connector), RoHS



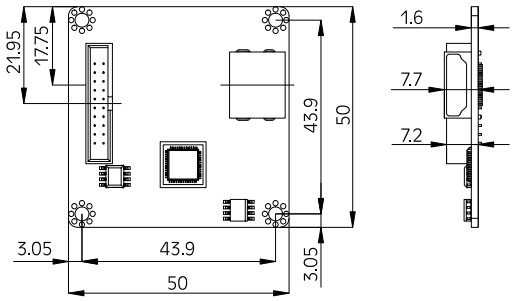
Features

- 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

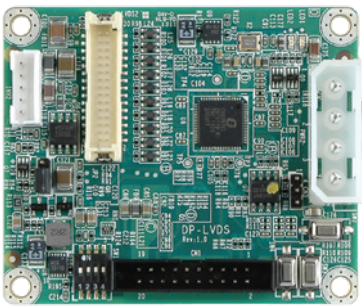
1 x DP-HDMI converter board	1 x QIG
1 x Internal DisplayPort cable, 450 mm length	

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 IEI iDP Connector), RoHS



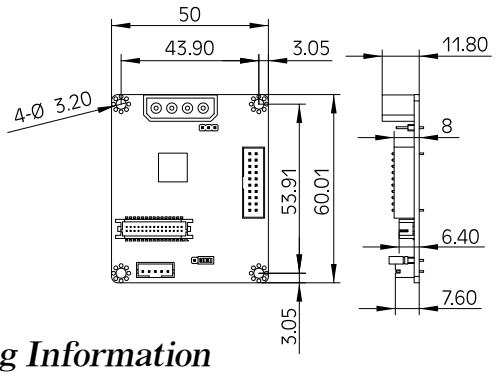
Features

- DisplayPort to LVDS output
- Supports 24-bit dual-channel up to 1920x1200

Specifications

- Display Input: 1 x IEI 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

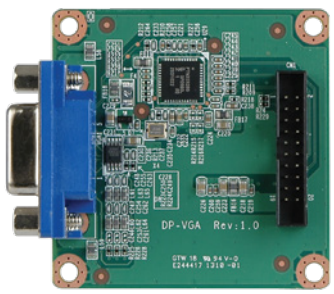
1 x DP-LVDS converter board	1 x QIG
1 x Internal DisplayPort cable, 450 mm length	

Ordering Information

Part No.	Description
DP-LVDS-R10	DisplayPort to 24-bit dual-channel LVDS converter board (for IEI iDP connector), RoHS

DP-VGA-R10

DisplayPort to VGA Converter Board (for IEI iDP Connector), RoHS



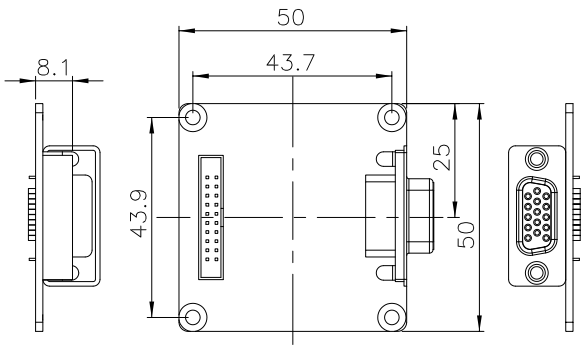
Features

- DisplayPort to VGA output
- Support up to 1920x1200 resolution

Specifications

- Display Input: 1 x IEI 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

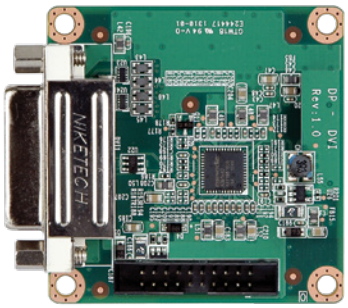
1 x DP-VGA converter board	1 x QIG
1 x Internal DisplayPort cable, 450 mm length	

Ordering Information

Part No.	Description
DP-VGA-R10	DisplayPort to VGA converter board (for IEI iDP connector), RoHS

DP-DVI-R10

DisplayPort to DVI Converter Board (for IEI iDP Connector), RoHS



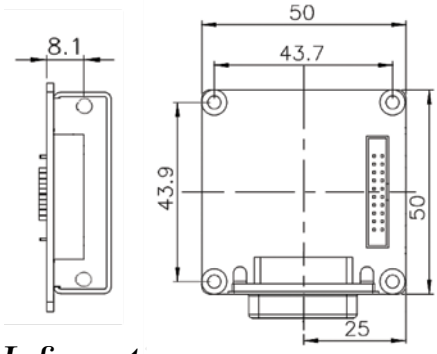
Features

- DisplayPort to DVI output
- Support up to 1920x1200 resolution

Specifications

- Display Input: 1 x IEI 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

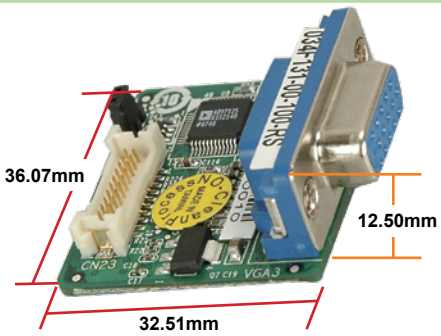
1 x DP-DVI converter board	1 x QIG
1 x Internal DisplayPort cable, 450 mm length	

Ordering Information

Part No.	Description
DP-DVI-R10	DisplayPort to DVI converter board (for IEI iDP connector), RoHS

LVDS-VGA-R10

Single-channel LVDS to VGA Converter Board (Support IEI Model Only)



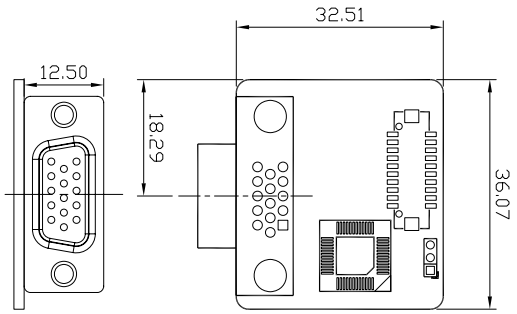
Features

- 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)*

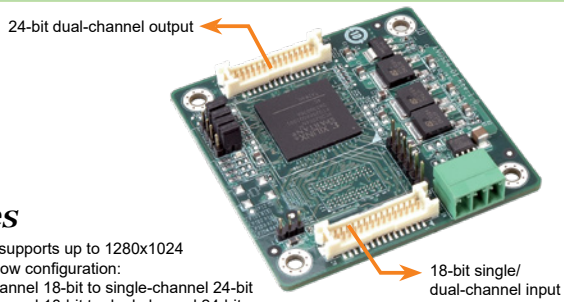


Ordering Information

Part No.	Description
LVDS-VGA-R10	18-bit LVDS to VGA converter board
32602-007900-200-RS	30-pin LVDS connecting cable (300mm)
32602-026400-100-RS	20-pin LVDS connecting cable (150mm)

LVDS24-01

18-bit to 24-bit LVDS Converter Board



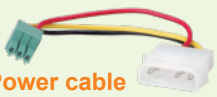
Features

- 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.

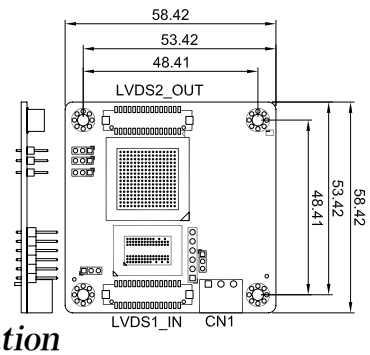
Packing List

1 x 18-bit to 24-bit LVDS converter board
1 x Power cable
1 x QIG



Power cable
P/N: 32100-130300-RS

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