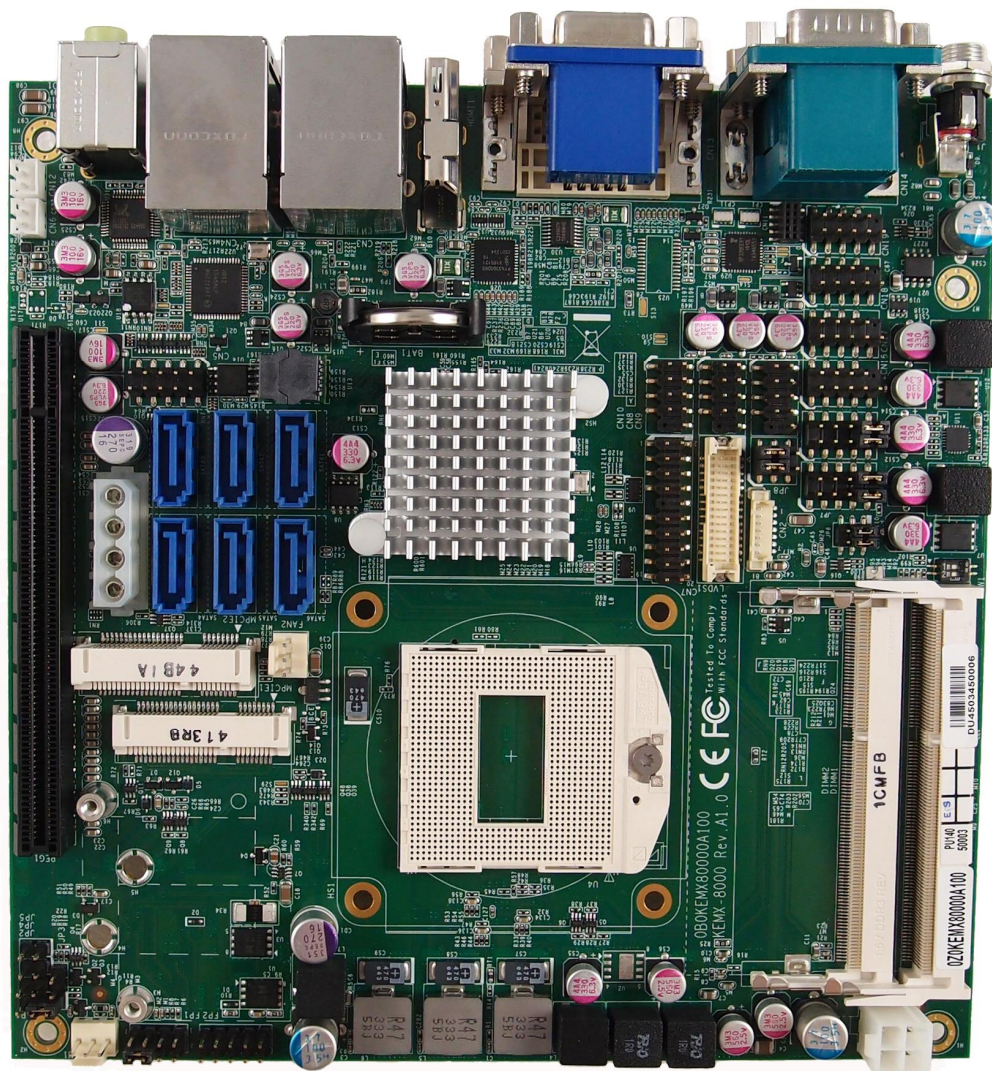


KEMX-8000 Series

Industrial Motherboard in Mini-ITX form factor
with Intel® Haswell Processors
and HM87 / QM87 Express Chipset

User's Guide



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Quanmax reserves the right to make changes without notice in product or component design as warranted by evolution in user needs or progress in engineering or manufacturing technology.

Changes which affect the operation of the unit will be documented in the next revision of this user's guide.

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Safety Instructions

■ Before You Begin

Before handling the product, read the instructions and safety guidelines on the following pages to prevent damage to the product and to ensure your own personal safety. Refer to the %Advisories+section in the Preface for advisory conventions used in this user's guide, including the distinction between Warnings, Cautions, Important Notes, and Notes.

- Always use caution when handling/operating a computer. Only qualified, experienced, authorized electronics service personnel should access the interior of a computer. The power supplies produce high voltages and energy hazards, which can cause bodily harm.
- Use extreme caution when installing or removing components. Refer to the installation instructions in this user's guide for precautions and procedures. If you have any questions, please contact Quanmax Post-Sales Technical Support.

WARNING



High voltages are present inside the chassis when the unit's power cord is plugged into an electrical outlet. Turn off system power, turn off the power supply, and then disconnect the power cord from its source before removing the chassis cover. Turning off the system power switch does not remove power to components.

■ When Working Inside a Computer

Before taking covers off a computer, perform the following steps:

1. Turn off the computer and any peripherals.
2. Disconnect the computer and peripherals from their power sources or subsystems to prevent electric shock or system board damage. This does not apply when hot swapping parts.

3. Follow the guidelines provided in **Preventing Electrostatic Discharge** on the following page.
4. Disconnect any telephone or telecommunications lines from the computer.

In addition, take note of these safety guidelines when appropriate:

- To help avoid possible damage to system boards, wait five seconds after turning off the computer before removing a component, removing a system board, or disconnecting a peripheral device from the computer.
- When you disconnect a cable, pull on its connector or on its strain-relief loop, not on the cable itself. Some cables have a connector with locking tabs. If you are disconnecting this type of cable, press in on the locking tabs before disconnecting the cable. As you pull connectors apart, keep them evenly aligned to avoid bending any connector pins. Also, before connecting a cable, make sure both connectors are correctly oriented and aligned.

CAUTION



Do not attempt to service the system yourself except as explained in this user's guide. Follow installation and troubleshooting instructions closely.

■ Preventing Electrostatic Discharge

Static electricity can harm system boards. Perform service at an ESD workstation and follow proper ESD procedure to reduce the risk of damage to components. Quanmax strongly encourages you to follow proper ESD procedure, which can include wrist straps and smocks, when servicing equipment. You can also take the following steps to prevent damage from electrostatic discharge (ESD):

- When unpacking a static-sensitive component from its shipping carton, do not remove the component's antistatic packing material until you are ready to install the component in a computer. Just before unwrapping the antistatic packaging, be sure you are at an ESD workstation or grounded. This will discharge any static electricity that may have built up in your body.
- When transporting a sensitive component, first place it in an antistatic container

Safety Instructions

or packaging.

- Handle all sensitive components at an ESD workstation. If possible, use antistatic floor pads and workbench pads.
- Handle components and boards with care. Don't touch the components or contacts on a board. Hold a board by its edges or by its metal mounting bracket.
- Do not handle or store system boards near strong electrostatic, electromagnetic, magnetic, or radioactive fields.

Preface

■ How to Use This Guide

This guide is designed to be used as step-by-step instructions for installation, and as a reference for operation, troubleshooting, and upgrades.

NOTE



Driver downloads and additional information are available under Downloads on our web site: www.quanmax.com.

■ Unpacking

When unpacking, follow these steps:

1. After opening the box, save it and the packing material for possible future shipment.
2. Remove all items from the box. If any items listed on the purchase order are missing, notify Quanmax customer service immediately.
3. Inspect the product for damage. If there is damage, notify Quanmax customer service immediately. Refer to %Warranty Policy+for the return procedure.

■ Regulatory Compliance Statements

This section provides the FCC compliance statement for Class A devices.

FCC Compliance Statement for Class A Devices

The product(s) described in this user's guide has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the user's guide, may cause harmful interference to radio communications. Operation of this equipment in a residential

area (domestic environment) is likely to cause harmful interference, in which case the user will be required to correct the interference (take adequate measures) at their own expense.

Changes or modifications not expressly approved by Quanmax could void the user's authority to operate the equipment.

NOTE



The assembler of a personal computer system may be required to test the system and/or make necessary modifications if a system is found to cause harmful interference or to be noncompliant with the appropriate standards for its intended use.

■ Warranty Policy

Limited Warranty

Quanmax Inc.'s detailed Limited Warranty policy can be found under Support at www.quanmax.com. Please consult your distributor for warranty verification.

The limited warranty is void if the product has been subjected to alteration, neglect, misuse, or abuse; if any repairs have been attempted by anyone other than Quanmax or its authorized agent; or if the failure is caused by accident, acts of God, or other causes beyond the control of Quanmax or the manufacturer. Neglect, misuse, and abuse shall include any installation, operation, or maintenance of the product other than in accordance with the user's guide.

No agent, dealer, distributor, service company, or other party is authorized to change, modify, or extend the terms of this Limited Warranty in any manner whatsoever.

Quanmax reserves the right to make changes or improvements in any product without incurring any obligation to similarly alter products previously purchased.

Return Procedure

For any Limited Warranty return, please contact Support at www.quanmax.com and login to obtain a Return Material Authorization (RMA) Number. If you do not have an account, send an email to support@quanmax.com to apply for one.

All product(s) returned to Quanmax for service or credit must be accompanied by a Return Material Authorization (RMA) Number. Freight on all returned items must be prepaid by the customer who is responsible for any loss or damage caused by common carrier in transit. Returns for Warranty must include a Failure Report for each unit, by serial number(s), as well as a copy of the original invoice showing the

date of purchase.

To reduce risk of damage, returns of product must be in a Quanmax shipping container. If the original container has been lost or damaged, new shipping containers may be obtained from Quanmax Customer Service at a nominal cost. Quanmax owns all parts removed from repaired products. Quanmax uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If Quanmax repairs or replaces a product, its warranty term is not extended.

Shipments not in compliance with this Limited Warranty Return Policy will not be accepted by Quanmax.

Limitation of Liability

In no event shall Quanmax be liable for any defect in hardware, software, loss, or inadequacy of data of any kind, or for any direct, indirect, incidental, or consequential damages in connection with or arising out of the performance or use of any product furnished hereunder. Quanmax's liability shall in no event exceed the purchase price of the product purchased hereunder. The foregoing limitation of liability shall be equally applicable to any service provided by Quanmax or its authorized agent.

■ Maintaining Your Computer

Environmental Factors

■ Temperature

The ambient temperature within an enclosure may be greater than room ambient temperature. Installation in an enclosure should be such that the amount of air flow required for safe operation is not compromised.

Consideration should be given to the maximum rated ambient temperature.

Overheating can cause a variety of problems, including premature aging and failure of chips or mechanical failure of devices.

If the system has been exposed to abnormally cold temperatures, allow a two-hour warm-up period to bring it up to normal operating temperature before turning it on. Failure to do so may cause damage to internal components, particularly the hard disk drive.

■ Humidity

High-humidity can cause moisture to enter and accumulate in the system. This moisture can cause corrosion of internal components and degrade such

properties as electrical resistance and thermal conductivity. Extreme moisture buildup inside the system can result in electrical shorts, which can cause serious damage to the system.

Buildings in which climate is controlled usually maintain an acceptable level of humidity for system equipment. However, if a system is located in an unusually humid location, a dehumidifier can be used to maintain the humidity within an acceptable range. Refer to the **Specifications** section of this user's guide for the operating and storage humidity specifications.

■ **Altitude**

Operating a system at a high altitude (low pressure) reduces the efficiency of the cooling fans to cool the system. This can cause electrical problems related to arcing and corona effects. This condition can also cause sealed components with internal pressure, such as electrolytic capacitors, to fail or perform at reduced efficiency.

Power Protection

The greatest threats to a system's supply of power are power loss, power spikes, and power surges caused by electrical storms, which interrupt system operation and/or damage system components. To protect your system, always properly ground power cables and one of the following devices.

■ **Surge Protector**

Surge protectors are available in a variety of types and usually provide a level of protection proportional with the cost of the device. Surge protectors prevent voltage spikes from entering a system through the AC power cord. Surge protectors, however, do not offer protection against brownouts, which occur when the voltage drops more than 20 percent below the normal AC line voltage level.

■ **Line Conditioner**

Line conditioners go beyond the over voltage protection of surge protectors. Line conditioners keep a system's AC power source voltage at a fairly constant level and, therefore, can handle brownouts. Because of this added protection, line conditioners cost more than surge protectors. However, line conditioners cannot protect against a complete loss of power.

■ **Uninterruptible Power Supply**

Uninterruptible power supply (UPS) systems offer the most complete protection against variations on power because they use battery power to keep the server running when AC power is lost. The battery is charged by the AC power while it is available, so when AC power is lost, the battery can provide power to the system for a limited amount of time, depending on the UPS system.

UPS systems range in price from a few hundred dollars to several thousand dollars, with the more expensive units allowing you to run larger systems for a longer period of time when AC power is lost. UPS systems that provide only 5 minutes of battery power let you conduct an orderly shutdown of the system, but are not intended to provide continued operation. Surge protectors should be used with all UPS systems, and the UPS system should be Underwriters Laboratories (UL) safety approved.

Chapter 1

Introduction

■ Overview

The KEMX-8000 Series is a Mini-ITX form factor industrial motherboard combining the latest 4th generation Intel® Haswell Core i processors with the high integration of the Intel® HM87 / QM87 chipset. Featured are 2x DDR3L SO-DIMM, 1x SPWG connector for 18/24/30-bit, 1/2/4-ch LVDS, HDMI, DVI-D, VGA, 2x Gigabit Ethernet, 6x SATA, 6 x USB3.0, 6x USB2.0 ,2x Mini PCIe Sockets, 1x Option mSATA socket mixed with mPCIe, 6x COM ports

The KEMX-8000 Series is a compact, high performance industrial motherboard that is ideal for a variety of applications.

Checklist

- Driver/ Manual CD
- Quick Installation Guide
- KEMX-8000 Series Mini-ITX main board
- SATA cable (7-pin connector with lock, L=46cm)
- COM cable

Features

- Intel® Haswell Core i Processor
- Intel® HM87 / QM87 Express Chipset
- 1x VGA, 1x HDMI, 1x DVI-D and 1x 18/24/30-bit, 1/2/4-channel LVDS
- 2x DDR3L SO-DIMM Sockets
- 2x Mini PCIe Sockets and 1x mSATA Socket (Optional)
- 6x SATA, 6x USB 3.0, 6x USB 2.0 and 6x COM
- 2x GbE, DIO support
- Watchdog Timer, Hardware Monitor

■ Product Specifications

Model Name	KEMX-8000 Series
CPU Support	KEMX-8000 : Intel® Haswell Processor
Chipset	Intel® HM87 Express Chipset Intel® QM87 Express Chipset
Memory	2x DDR3L SO-DIMM Sockets
BIOS	AAMI uEFI BIOS/ 1x 128mb SPI flash ROM
Display	1x HDMI 1x DVI-D 1x VGA 1x SPWG connector for 18/24/30-bit, 1/2/4-ch LVDS
LAN	2x RJ-45, Gigabit Ethernet
Audio	2x Audio Jacks for Line-out & MIC-In 2x Wafers for Stereo Speaker output
Peripheral Support	Storage supported 6x SATA ports 1x Option mSATA socket mixed with mPCIe 6x USB 2.0 ports 6x USB 3.0 ports (2x USB3.0 ports on internal Headers) 1x 8-bits DIO supported (4-bits DI/DO) 6x COM ports supported COM1 & COM2 with RS-232/422/485 supported COM3 ~COM6 with RS-232 supported 1x +12VDC CPU Smart FAN support 1x +12VDC System Smart FAN support SM bus supported MISC support 1x Header for Reset button, HDD LED and External Speaker support 1x Header for Power button, Power LED and SM bus support 1x Header for mPCIe activity LED support 1x Header for 8-bit DIO support
Power	1x ATX Power Connector for 9-24VDC input

	Or 1x DC Jack on rear I/O for 9-24VDC input 1x Wafer for HDD Power supply 1x Wafer for Panel Power supply ATX/AT Mode Support / ACPI 4.0a Support
Expansion	1x PCIEx16 Slot 2x mPCIe Sockets 1x Wafer for SIM card
Watchdog Timer	Programmable WDT to generate System reset event
Hardware Monitor	Voltages monitoring Temperature monitoring
Dimensions	Mini-ITX (170 x 170 mm)
Environmental Factors	Operation Temp: 0°C - 60°C Storage Temp.: -10°C - 85°C Humidity: 0% - 90%
Real Time Clock	Chipset integrated RTC
Certifications	CE, FCC Class A

Table 1 KEMX-8000 Series Specification

■ System Block Diagram

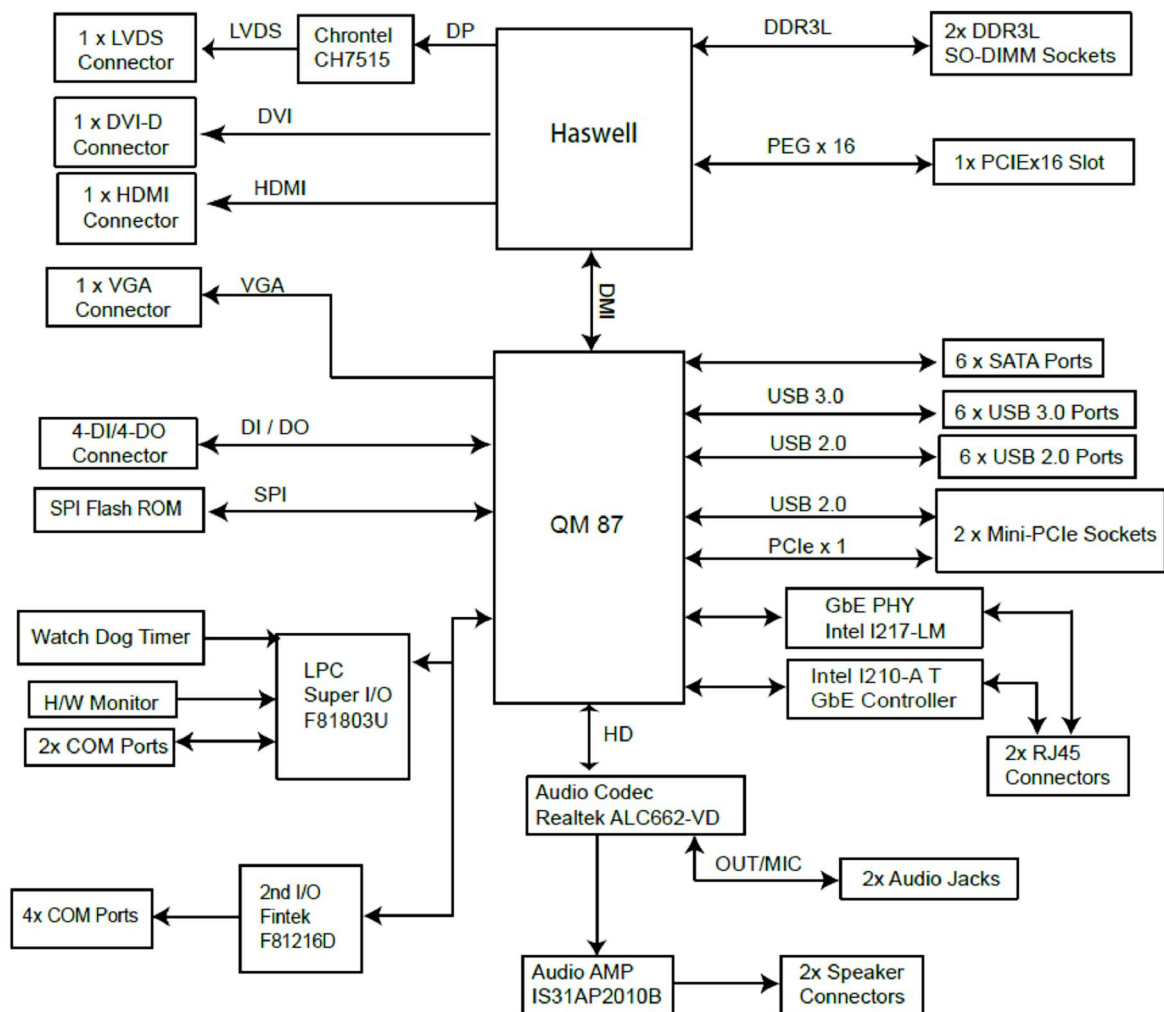


Figure 1 Block Diagram

■ Mechanical Dimensions

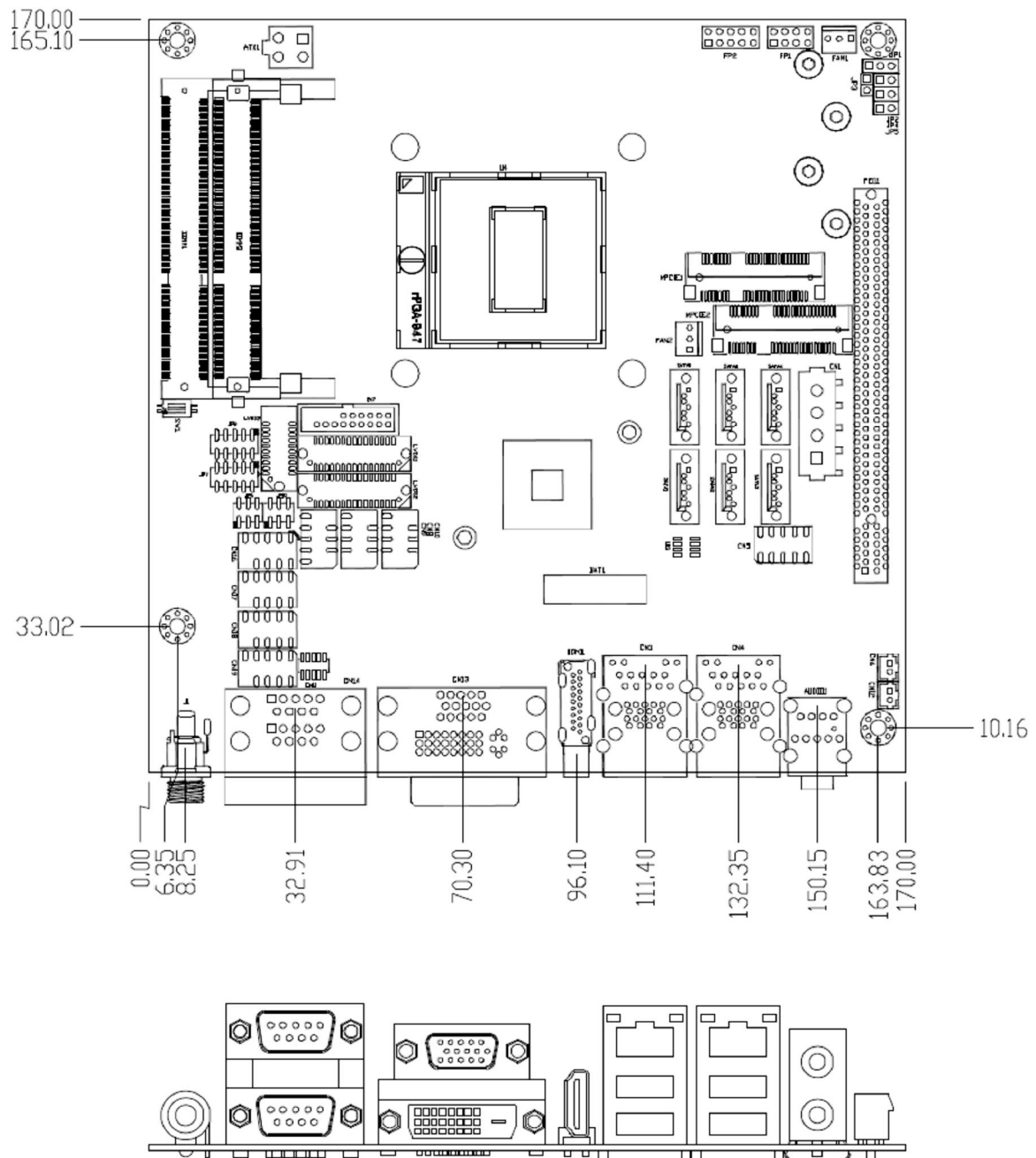


Figure 2 Mechanical Dimensions

Chapter 2

Hardware Settings

■ Overview

This chapter provides the definitions and locations of jumpers, headers, and connectors.

Jumpers

The product has several jumpers which must be properly configured to ensure correct operation.

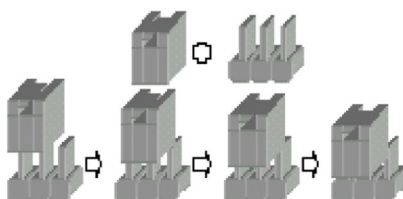


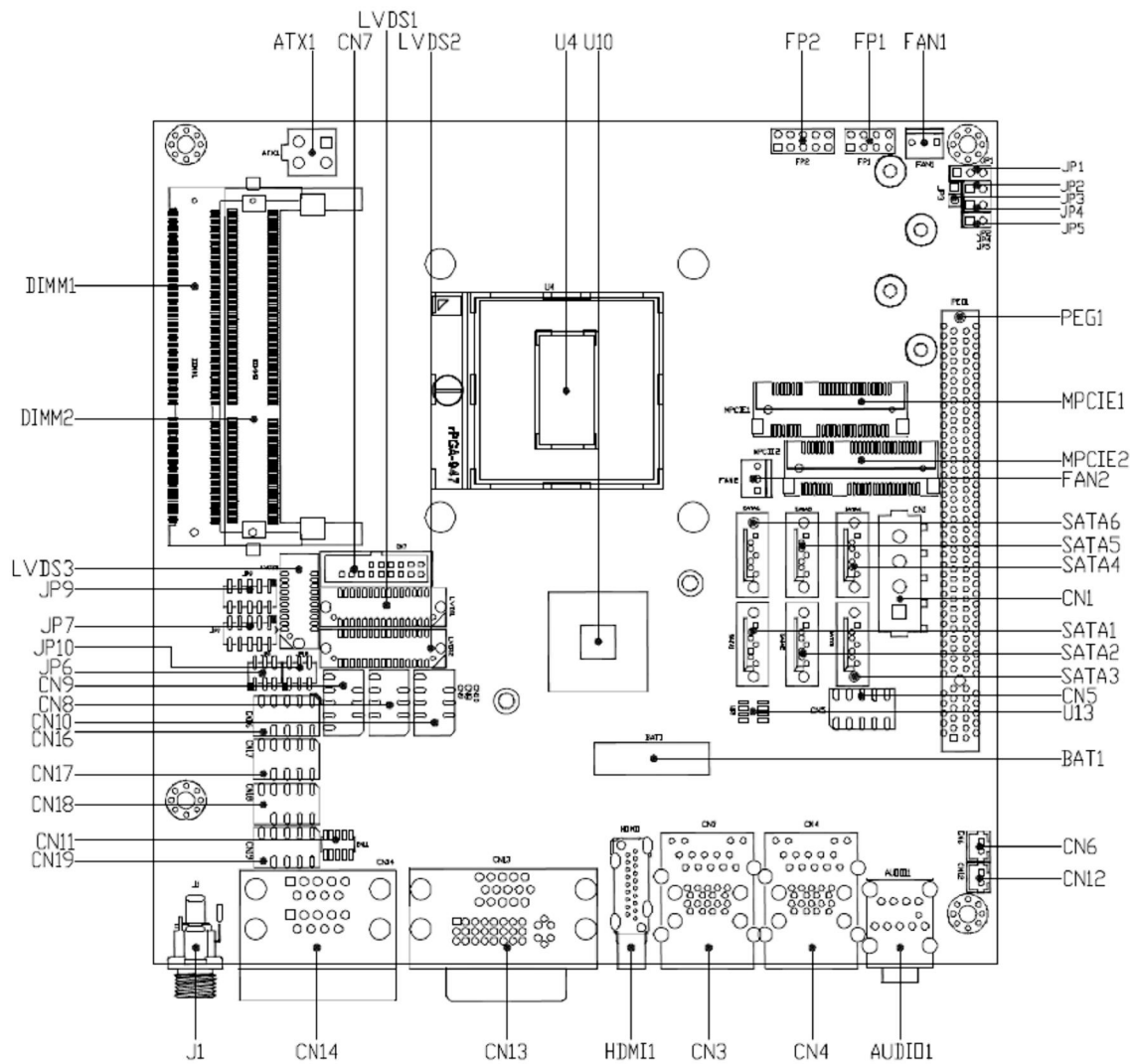
Figure 3 Jumper Connector

For a three-pin jumper (see *Figure 3*), the jumper setting is designated ~~%1-2+~~ when the jumper connects pins 1 and 2. The jumper setting is designated ~~%2-3+~~ when pins 2 and 3 are connected and so on. You will see that one of the lines surrounding a jumper pin is thick, which indicates pin No.1.

To move a jumper from one position to another, use needle-nose pliers or tweezers to pull the pin cap off the pins and move it to the desired position.

■ Jumper Settings and Pin Definitions

For jumper and connector locations, please refer to the diagrams below.



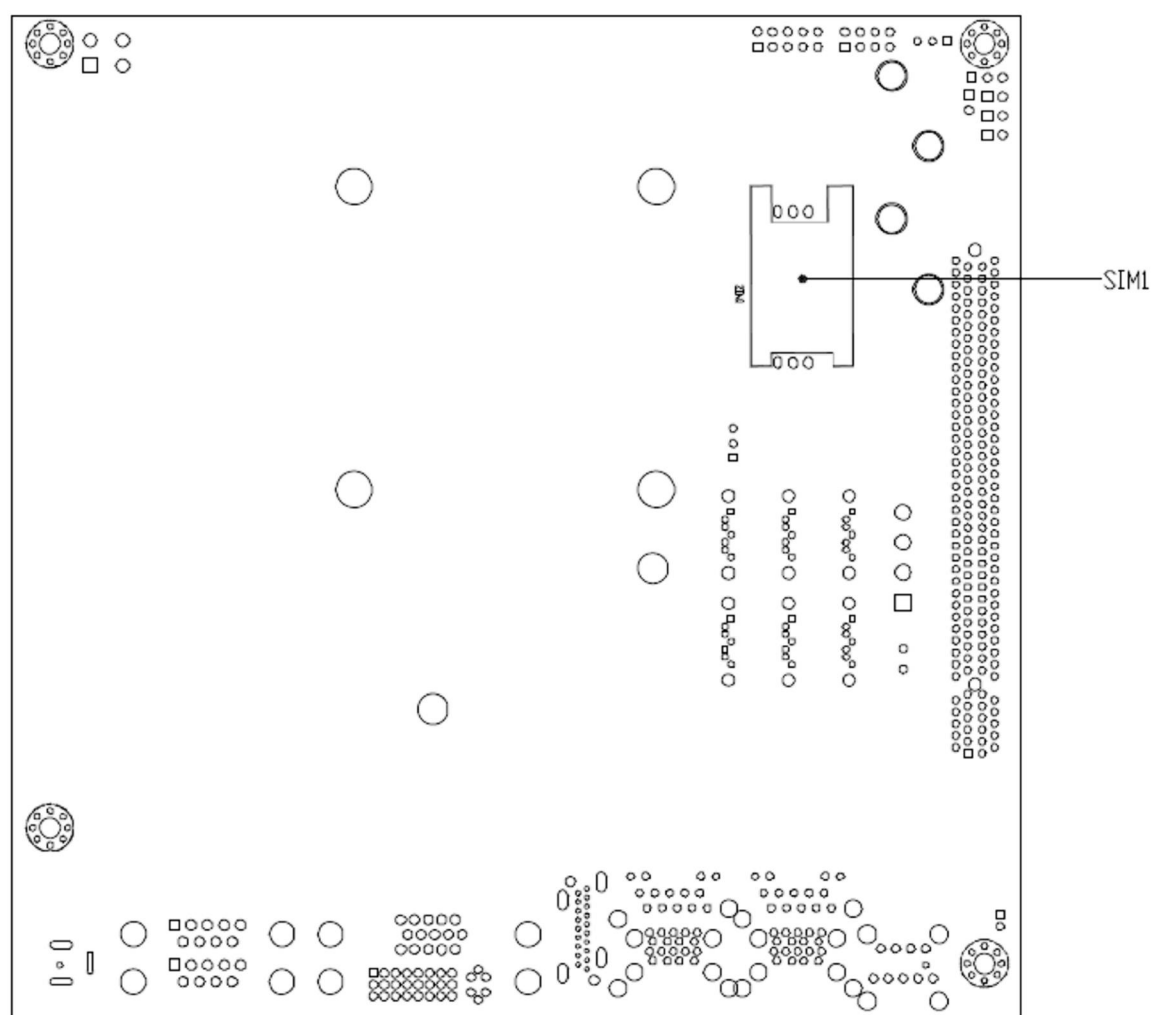


Figure 4 Jumper and Connector Locations

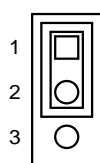
Jumper Settings

To ensure correct system configuration, the following section describes how to set the jumpers to enable/disable or change functions. For jumper descriptions, please refer to the table below.

Table 2 Jumper List

Label	Function
JP1	<i>MPCIE2 mSATA / mPCIE Selection</i>
JP2	<i>RTC Reset Selection</i>
JP3	<i>MPCIE Activity LED Indication</i>
JP4	<i>SRTC Reset Selection</i>
JP5	<i>Flash Description Security Over-ride</i>
JP6	<i>Backlight Power Enable Selection for LVDS1</i>
JP7	<i>Signal / Power Selection for COM6</i>
JP8	<i>Panel & Backlight Power Selection for LVDS1</i>
JP9	<i>Signal / Power Selection for COM5</i>

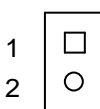
Table 3 JP1 MPCIE2 mSATA / mPCIE Selection



Jumper	Status
1-2	mSATA Selected (Default)
2-3	mPCIE Selected

Pitch:2.54mm [YIMTEX 3321*03SAGR(6T)]

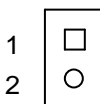
Table 4 JP2 RTC Reset Selection



Jumper	Status
1-2 Open	Normal Operation
1-2 Short	Clear RTC CMOS

Pitch:2.54mm [YIMTEX 3321*02SAGR(6T)]

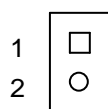
Table 5 JP3 MPCIE Activity LED Indication



Pin	Description
1	LED+
2	LED-

DIP 2P 1R MALE STRAIGHT TYPE Pitch:2.54mm [YIMTEX 3321*02SAGR(6T)]

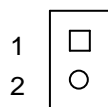
Table 6 JP4 SRTC Reset Selection



Jumper	Status
1-2 Open	Normal Operation
1-2 Short	Clear ME Registers

Pitch:2.54mm [YIMTEX 3321*02SAGR(6T)]

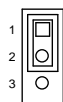
Table 7 JP5 Flash Description Security Over-ride



Jumper	Status
1-2 Open	Disabled
1-2 Short	Enabled

Pitch:2.54mm [YIMTEX 3321*02SAGR(6T)]

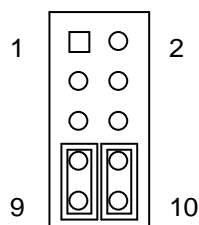
Table 8 JP6 Backlight Power Enable Selection for LVDS1



Jumper	Status
1-2	Active High
2-3	Active Low

Pitch:2.54mm [YIMTEX 3321*03SAGR(6T)]

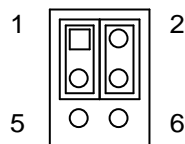
Table 9 JP7 Signal / Power Selection for COM6



Jumper	Setting	Function
1	1-3 Short	Pin 1 = +12V
	3-5 Short	Pin 1 = +5V
	5-7 Short	Pin 1 = +5V
	7-9 Short	Pin 1 = DCD
2	2-4 Short	Pin 9 = +12V
	4-6 Short	Pin 9 = +5V
	6-8 Short	Pin 9 = +5V
	8-10 Short	Pin 9 = RI

Pitch:2.54mm [YIMTEX 3362*05SANGR]

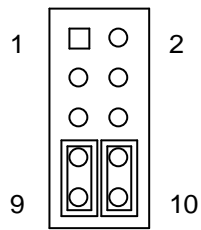
Table 10 JP8 Panel & Backlight Power Selection for LVDS1



Jumper	Setting	Status
1	1-3	Backlight Power = +12V
	3-5	Backlight Power = +5V
2	2-4	Panel Power = +3.3V
	4-6	Panel Power = +5V

Pitch:2.54mm [YIMTEX 3362*03SAGR]

Table 11 JP9 Signal / Power Selection for COM5



Jumper	Setting	Function
1	1-3 Short	Pin 1 = +12V
	3-5 Short	Pin 1 = +5V
	5-7 Short	Pin 1 = +5V
	7-9 Short	Pin 1 = DCD
2	2-4 Short	Pin 9 = +12V
	4-6 Short	Pin 9 = +5V
	6-8 Short	Pin 9 = +5V
	8-10 Short	Pin 9 = RI

Pitch:2.54mm [YIMTEX 3362*05SANGR]

Rear Panel Pin Assignments

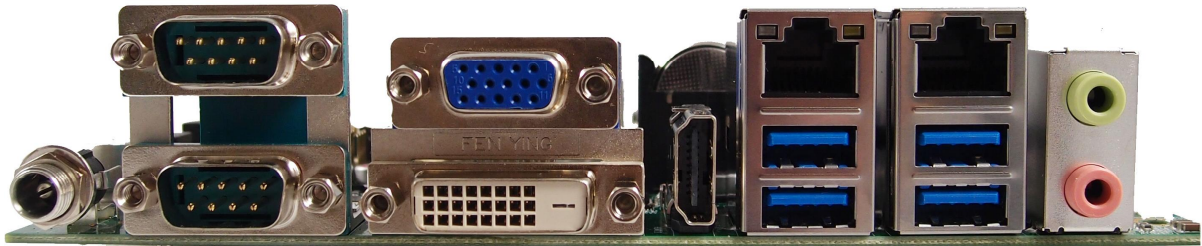
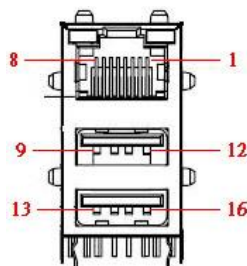


Figure 5 Rear Panel IO

Table 12 Rear Panel Connector List

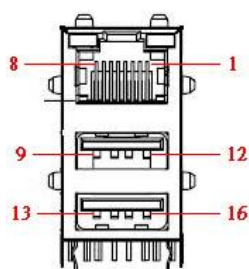
Label	Function
CN3	LAN1 & USB3.0 Port 1,2 Connector
CN4	LAN2 & USB3.0 Port 3,4 Connector
CN13	CRT DB-15 & DVI-D Connector
CN14	RS-232 / 422 / 485 Port 1, 2 Connector
AUDIO1	2 Stack-up Azalia Audio Phone Jack
HDMI1	HDMI Connector
J1	Power Input DC Jack

Table 13 LAN1 & USB3.0 Port 1,2 Connector



Pin	Signal	Pin	Signal
1	MDI[0]+	9	+USBVCC
2	MDI[0]-	10	USB_A-
3	MDI[1]+	11	USB_A+
4	MDI[1]-	12	GND
5	MDI[2]+	13	+USBVCC
6	MDI[2]-	14	USB_B-
7	MDI[3]+	15	USB_B+
8	MDI[3]-	16	GND

Table 14 LAN2 & USB3.0 Port 3,4 Connector



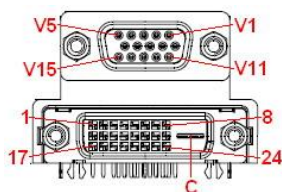
Pin	Signal	Pin	Signal
1	MDI[0]+	9	+USBVCC
2	MDI[0]-	10	USB_A-
3	MDI[1]+	11	USB_A+
4	MDI[1]-	12	GND
5	MDI[2]+	13	+USBVCC
6	MDI[2]-	14	USB_B-
7	MDI[3]+	15	USB_B+
8	MDI[3]-	16	GND

[UDE RU1-161F9WGF(XB)]

Note : LAN LED Configuration

- Left (Link) LED : Green / Orange
 Link 1000 → Orange LED on
 Link 100 → Green LED on
 Link 10 or No Link → LED off
- Right (Active) LED : Yellow
 Activity → Yellow LED blink

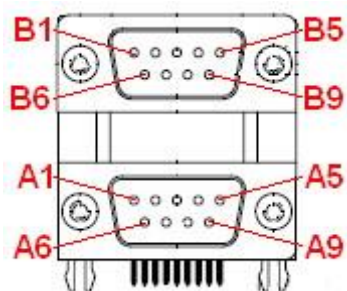
Table 15 CN12 USB3.0 Port-0,1 Type-A Connector



Signal Name	Pin	Pin	Signal Name
Red	V1	V2	Green
Blue	V3	V4	NC
GND	V5	V6	GND
GND	V7	V8	GND
+5V	V9	V10	GND
NC	V11	V12	DDC_DATA
HSYNC	V13	V14	VSYSN
DDC_CLK	V15		
Signal Name	Pin	Pin	Signal Name
TX2-	1	2	TX2+
GND	3	4	NC
NC	5	6	DDC_CLK
DDC_DATA	7	8	NC
TX1-	9	10	TX1+
GND	11	12	NC
NC	13	14	+5V
GND	15	16	HTPLG
TX0-	17	18	TX0+
GND	19	20	NC
NC	21	22	GND
TXC+	23	24	TXC-
GND	C		

[FAN YING G205D2C01012PHN]

Table 16 RS-232 / 422 / 485 Port 1, 2 Connector

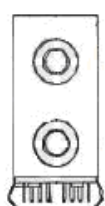


Port	Pin	RS-232	RS-422	Half Duplex RS-485	Full Duplex RS-485
1	B1	DCD	TX-	DATA-	TX-
	B2	RXD	TX+	DATA+	TX+
	B3	TXD	RX+	NA	RX+
	B4	DTR	RX-	NA	RX-
	B5	GND	GND	GND	GND
	B6	DSR	NA	NA	NA
	B7	RTS	NA	NA	NA
	B8	CTS	NA	NA	NA
	B9	RI	NA	NA	NA
Port	Pin	RS-232	RS-422	Half Duplex RS-485	Full Duplex RS-485
2	A1	DCD	TX-	DATA-	TX-
	A2	RXD	TX+	DATA+	TX+
	A3	TXD	RX+	NA	RX+
	A4	DTR	RX-	NA	RX-
	A5	GND	GND	GND	GND
	A6	DSR	NA	NA	NA
	A7	RTS	NA	NA	NA
	A8	CTS	NA	NA	NA
	A9	RI	NA	NA	NA

Dual D-SUB 9 90D(M) [FEN YING D20H1P1PB112AA31N3]

Note : RS-232 / 422 / 485 can be selected in BIOS setup.

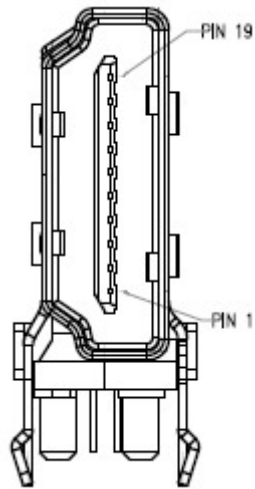
Table 17 AUDIO1 3 Stack-up Azalia Audio Phone Jack



	Signal Name
GREEN	LINE OUT
PINK	MIC IN

JACK*2 DIP 9P 90D AZALIA.D3.5mm [KORTAK ZJ387S-9B-7H]

Table 18 HDMI1 Connector



Pin	Signal
1	TMDS Data2+
2	Ground
3	TMDS Data2.
4	TMDS Data1+
5	Ground
6	TMDS Data1.
7	TMDS Data0+
8	Ground
9	TMDS Data0.
10	TMDS Clock+
11	Ground
12	TMDS Clock.
13	Reserved
14	Reserved
15	DDC_CLK
16	DDC_DATA
17	Ground
18	+5 V Power
19	Hot Plug Detect

[ARGOSY HDMIV-A1915-DK2R]

Table 19 Power Input DC Jack

Φ2.5mm, Screw M8.0xP0.75/5.7mm, 9-24V

Internal Connector List

Label	Function
ATX1	4-pin ATX Power Input Connector
BAT1	CR2032 Battery Holder
CN1	HDD Power Output Wafer
CN2	Panel Backlight Wafer for LVDS1
CN5	Digital Input / Output Pin Header
CN6	Left Channel 3W Audio AMP Output Wafer
CN7	USB3.0 Port 5, 6 Pin Header
CN8	USB2.0 Port 6, 7 Pin Header
CN9	USB2.0 Port 8, 9 Pin Header
CN10	USB2.0 Port 10, 11 Pin Header
CN11	P80 Header
CN12	Right Channel 3W Audio AMP Output Wafer
CN16	RS-232 Port 3 Pin Header
CN17	RS-232 Port 4 Pin Header
CN18	RS-232 Port 5 Pin Header
CN19	RS-232 Port 6 Pin Header
DIMM1	Primary DDR3 Memory SO-DIMM Socket
DIMM2	Secondary DDR3 Memory SO-DIMM Socket
FAN1	System FAN Wafer
FAN2	CPU FAN Wafer
FP1	Front Panel 1 Pin Header
FP2	Front Panel 2 Pin Header
LVDS1	Primary 24-bit, 2-channel LVDS Panel Connector
MPCIE1	Mini-PCIE Express v1.2 Socket 1
MPCIE2	Mini-PCIE Express v1.2 Socket 2
PEG1	PCIE Express x16 Slot
SATA1	Serial ATA Port 0 Connector
SATA2	Serial ATA Port 1 Connector
SATA3	Serial ATA Port 2 Connector
SATA4	Serial ATA Port 3 Connector
SATA5	Serial ATA Port 4 Connector
SATA6	Serial ATA Port 5 Connector
SIM1	SIM Interface Wafer for MPCIE2

Table 20 ATX1 4-pin ATX Power Input Connector

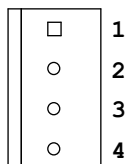


Pin	Signal Name
1	GND
2	GND
3	+12V
4	+12V

Pitch:4.2mm [YIMTEX 576MWA2*02STR]

BAT1 CR2032 Battery Holder
[LOTES AAA-BAT-038-K01]

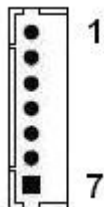
Table 21 CN1 SATA HDD Power Output Wafer



Pin	Signal Name
1	+12V
2	GND
3	GND
4	+5V

Pitch:2.5mm [YIMTEX 512CW4ST-2R]

Table 22 CN2 Panel Backlight Wafer for LVDS1



Pin	Signal Name
1	NC
2	BL_ADJ *
3	GND
4	+5V / +12V **
5	+5V / +12V **
6	GND
7	BL_EN***

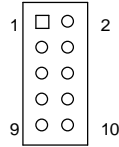
Pitch:1.25mm [Townes Enterprise 1250W-07T1-V]

* : BL_ADJ can be setting from 0V to 5V in BIOS setup.

** : Backlight Power can be selected by JP8.

*** : BL_EN can be selected by JP6.

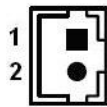
Table 23 CN5 Digital Input / Output Pin Header



Pin	Signal	Pin	Signal
1	Digital Output 0	2	Digital Input 0
3	Digital Output 1	4	Digital Input 1
5	Digital Output 2	6	Digital Input 2
7	Digital Output 3	8	Digital Input 3
9	+5V	10	GND

Pitch:2.54mm [YIMTEX 3362*05SANGR]

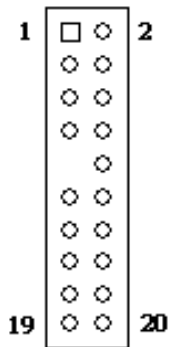
Table 24 CN6 Left Channel 3W Audio AMP Output Wafer



Pin	Signal Name
1	Speaker+
2	Speaker-

Pitch:2.0mm [YIMTEX 503PW1*02STR]

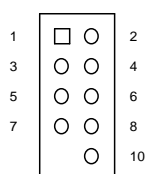
Table 25 CN7 USB3.0 Port 5,6 Pin Header



Pin	Signal Name	Pin	Signal Name
1	+USBVCC	2	+USBVCC
3	USB_A-	4	USB_B-
5	USB_A+	6	USB_B+
7	GND	8	GND
9	NC	10	GND
11	USB3_RX5P	12	USB3_RX6P
13	USB3_RX5N	14	USB3_RX6N
15	GND	16	GND
17	USB3_TX5N	18	USB3_TX6N
19	USB3_TX5P	20	USB3_TX6P

Pitch:2.54mm [YIMTEX 3362*05SANGR-09]

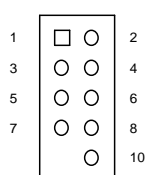
Table 26 CN8 USB2.0 Port 6, 7 Pin Header



Pin	Signal Name	Pin	Signal Name
1	+USBVCC	2	+USBVCC
3	USB_A-	4	USB_B-
5	USB_A+	6	USB_B+
7	GND	8	GND
9	KEY	10	GND

Pitch:2.54mm [YIMTEX 3362*05SANGR-09]

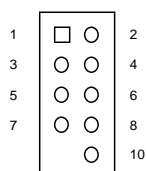
Table 27 CN9 USB2.0 Port 8, 9 Pin Header



Pin	Signal Name	Pin	Signal Name
1	+USBVCC	2	+USBVCC
3	USB_A-	4	USB_B-
5	USB_A+	6	USB_B+
7	GND	8	GND
9	KEY	10	GND

Pitch:2.54mm [YIMTEX 3362*05SANGR-09]

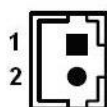
Table 28 CN10 USB2.0 Port 10,11 Pin Header



Pin	Signal Name	Pin	Signal Name
1	+USBVCC	2	+USBVCC
3	USB_A-	4	USB_B-
5	USB_A+	6	USB_B+
7	GND	8	GND
9	KEY	10	GND

Pitch:2.54mm [YIMTEX 3362*05SANGR-09]

Table 29 CN12 Right Channel 3W Audio AMP Output Wafer



Pin	Signal Name
1	Speaker+
2	Speaker-

Pitch:2.0mm [YIMTEX 503PW1*02STR]

Table 30 CN16 RS-232 Port 3 Pin Header

<div> <div>1</div> <div> <div>□ ○</div> <div>○ ○</div> <div>○ ○</div> <div>○ ○</div> <div>○</div> </div> <div>9</div> </div> <div>2</div>	Pin	Signal
	1	DCD, Data carrier detect
	2	RXD, Receive data
	3	TXD, Transmit data
	4	DTR, Data terminal ready
	5	GND, ground
	6	DSR, Data set ready
	7	RTS, Request to send
	8	CTS, Clear to send
	9	RI, Ring indicator
	10	NC, Key

Pitch:2.54mm [YIMTEX 3362*05SANGR-10]

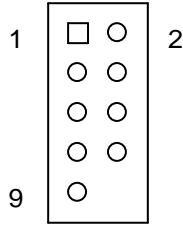
Table 31 CN17 RS-232 Port 4 Pin Header

<div> <div>1</div> <div> <div>□ ○</div> <div>○ ○</div> <div>○ ○</div> <div>○ ○</div> <div>○</div> </div> <div>9</div> </div> <div>2</div>	Pin	Signal
	1	DCD, Data carrier detect
	2	RXD, Receive data
	3	TXD, Transmit data
	4	DTR, Data terminal ready
	5	GND, ground
	6	DSR, Data set ready
	7	RTS, Request to send
	8	CTS, Clear to send
	9	RI, Ring indicator
	10	NC, Key

Pitch:2.54mm [YIMTEX 3362*05SANGR-10]

Table 32 CN18 RS-232 Port 5 Pin Header

Pin	Signal
1	DCD, Data carrier detect / +12V / +5V *
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator / +12V / +5V *
10	NC, Key

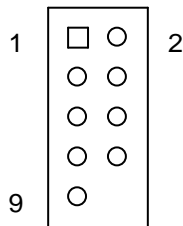


Pitch:2.54mm [YIMTEX 3362*05SANGR-10]

* : Selected by JP2.

Table 33 CN19 RS-232 Port 6 Pin Header

Pin	Signal
1	DCD, Data carrier detect / +12V / +5V *
2	RXD, Receive data
3	TXD, Transmit data
4	DTR, Data terminal ready
5	GND, ground
6	DSR, Data set ready
7	RTS, Request to send
8	CTS, Clear to send
9	RI, Ring indicator / +12V / +5V *
10	NC, Key



Pitch:2.54mm [YIMTEX 3362*05SANGR-10]

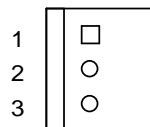
* : Selected by JP4.

DIMM1 Primary DDR3 Memory SO-DIMM Socket

Height:9.2mm [ARGOSY DDRSK-20401-TP9D]

DIMM2 Secondary DDR3 Memory SO-DIMM Socket
Height:5.2mm [ARGOSY DDRSK-20401-TP5B]

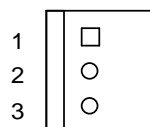
Table 34 FAN1 System FAN Wafer



Pin	Signal
1	GND
2	+12V
3	FAN_RPM

Pitch:2.54mm [YIMTEX 521AW1*03STR]

Table 35 FAN2 CPU FAN Wafer

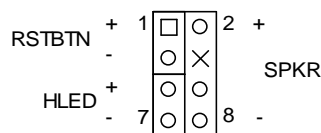


Pin	Signal
1	GND
2	+12V*
3	FAN_RPM

Pitch:2.54mm [YIMTEX 521AW1*03STR]

* : PWM Fan control supported.

Table 36 FP1 Front Panel 1 Pin Header

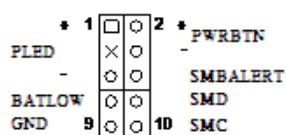


Pin	Signal	Pin	Signal
1	Reset Button +	2	Speaker +
3	Reset Button -	4	NC
5	HDD LED +	6	Internal Speaker-
7	HDD LED -	8	Speaker -

Pitch:2.54mm [YIMTEX 3362*04SANGR]

Note : Internal Buzzer is enabled when Pin6-8 is shorted.

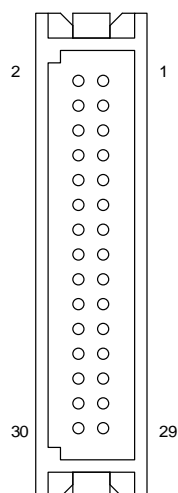
Table 37 FP2 Front Panel 2 Pin Header



Pin	Signal	Pin	Signal
1	Power LED +	2	Power Button +
3	NC	4	Power Button -
5	Power LED -	6	SMBALERT#
7	BATLOW#	8	SMBus Data
9	GND	10	SMBus Clock

Pitch:2.54mm [YIMTEX 3362*05SANGR]

Table 38 LVDS1 Primary 24-bit, 2-channel LVDS Panel Connector

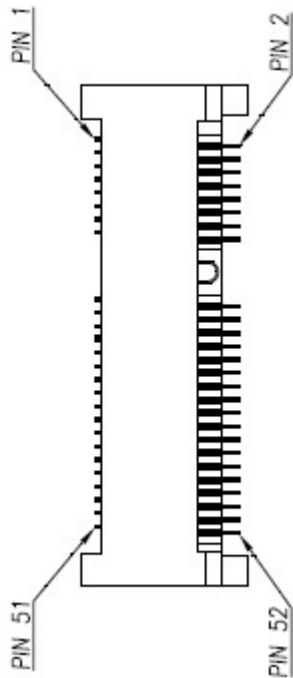


Signal Name	Pin	Pin	Signal Name
GND	2	1	VDD_EN
+3.3V / +5V*	4	3	+3.3V / +5V*
TxclkB-	6	5	TxclkA-
TxclkB+	8	7	TxclkA+
GND	10	9	GND
TxoutB0-	12	11	TxoutA0-
TxoutB0+	14	13	TxoutA0+
TxoutB1-	16	15	TxoutA1-
TxoutB1+	18	17	TxoutA1+
TxoutB2-	20	19	TxoutA2-
TxoutB2+	22	21	TxoutA2+
TxoutB3-	24	23	TxoutA3-
TxoutB3+	26	25	TxoutA3+
GND	28	27	GND
DDC_Clock	30	29	DDC_Data

Pitch:1.25mm [HIROSE DF13-30DP-1.25(24)]

* : LVDS1 panel power can be selected by JP8.

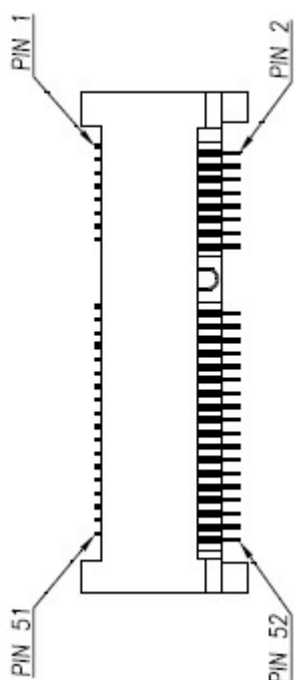
Table 39 MPCIE1 Mini-PCIE Express v1.2 Socket 2



Signal	Pin	Pin	Signal
WAKE#	1	2	+3.3VSB
Reserved	3	4	Ground
Reserved	5	6	+1.5V
CLKREQ#	7	8	Reserved
Ground	9	10	Reserved
REFCLK-	11	12	Reserved
REFCLK+	13	14	Reserved
Ground	15	16	Reserved
Reserved	17	18	Ground
Reserved	19	20	W_Disable#
Ground	21	22	PERST#
PERn0	23	24	+3.3VSB
PERp0	25	26	Ground
Ground	27	28	+1.5V
Ground	29	30	SMB_CLK
PETn0	31	32	SMB_DATA
PETp0	33	34	Ground
Ground	35	36	USB_D-
Ground	37	38	USB_D+
+3.3VSB	39	40	Ground
+3.3VSB	41	42	LED_WWAN#
Ground	43	44	LED_WLAN#
Reserved	45	46	LED_WPAN#
Reserved	47	48	+1.5V
Reserved	49	50	Ground
Reserved	51	52	+3.3VSB

Height:5.5mm [ARGOSY MPCEC-S00F1-TP03]

Table 40 MPCIE2 Mini-PCIE Express v1.2 Socket 1



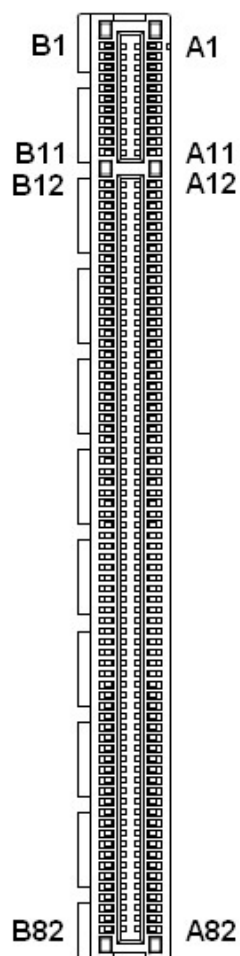
Signal	Pin	Pin	Signal
WAKE#	1	2	+3.3VSB
Reserved	3	4	Ground
Reserved	5	6	+1.5V
CLKREQ#	7	8	UIM_PWR**
Ground	9	10	UIM_DATA**
REFCLK-	11	12	UIM_CLK**
REFCLK+	13	14	UIM_RESET**
Ground	15	16	UIM_VPP**
LPC_CLK*	17	18	Reserved
LPC_FRAME# *	19	20	W_Disable#
Ground	21	22	PERST#
PERn0	23	24	+3.3VSB
PERp0	25	26	Ground
Ground	27	28	+1.5V
Ground	29	30	SMB_CLK
PETn0	31	32	SMB_DATA
PETp0	33	34	Ground
Ground	35	36	USB_D-
Ground	37	38	USB_D+
+3.3VSB	39	40	Ground
+3.3VSB	41	42	LED_WWAN#
Ground	43	44	LED_WLAN#
LPC_AD0*	45	46	LED_WPAN#
LPC_AD1*	47	48	+1.5V
LPC_AD2*	49	50	Ground
LPC_AD3*	51	52	+3.3VSB

Height:9.0mm [ARGOSY MPCEC-S00F1-TP09]

* : Internal debug only, left these pins open.

** : These pins are connected to SIM1 directly.

Table 41 PEG1 PCIE Express x16 Slot



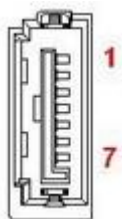
Pin	Side B	Side A
1	+12V	PRSNT1#
2	+12V	+12V
3	Reserved	+12V
4	Ground	Ground
5	SMCLK	Reserved
6	SMDAT	Reserved
7	Ground	Reserved
8	+3.3V	Reserved
9	Reserved	+3.3V
10	+3.3VSB	+3.3V
11	WAKE#	PERST#
12	Reserved	Ground
13	Ground	REFCLK+
14	HSOP0	REFCLK-
15	HSOP0	Ground
16	Ground	HSIP0
17	PRSNT2#	HSIN0
18	Ground	Ground
19	HSOP1	Reserved
20	HSOP1	Ground
21	Ground	HSIP1
22	Ground	HSIN1
23	HSOP2	Ground
24	HSOP2	Ground
25	Ground	HSIP2
26	Ground	HSIN2
27	HSOP3	Ground
28	HSOP3	Ground
29	Ground	HSIP3
30	Reserved	HSIN3
31	PRSNT2#	Ground
32	Ground	Reserved
33	HSOP4	Reserved
34	HSOP4	Ground

Pin	Side B	Side A
35	Ground	HSIP4
36	Ground	HSIN4
37	HSOP5	Ground
38	HSOP5	Ground
39	Ground	HSIP5
40	Ground	HSIN5
41	HSOP6	Ground
42	HSOP6	Ground
43	Ground	HSIP6
44	Ground	HSIN6
45	HSOP7	Ground
46	HSOP7	Ground
47	Ground	HSIP7
48	PRSNT2#	HSIN7
49	Ground	Ground
50	HSOP8	Reserved
51	HSOP8	Ground
52	Ground	HSIP8
53	Ground	HSIN8
54	HSOP9	Ground
55	HSOP9	Ground
56	Ground	HSIP9
57	Ground	HSIN9
58	HSOP10	Ground
59	HSOP10	Ground
60	Ground	HSIP10
61	Ground	HSIN10
62	HSOP11	Ground
63	HSOP11	Ground
64	Ground	HSIP11
65	Ground	HSIN11
66	HSOP12	Ground
67	HSOP12	Ground
68	Ground	HSIP12
69	Ground	HSIN12
70	HSOP13	Ground

Pin	Side B	Side A
71	HSOP13	Ground
72	Ground	HSIP13
73	Ground	HSIN13
74	HSOP14	Ground
75	HSOP14	Ground
76	Ground	HSIP14
77	Ground	HSIN14
78	HSOP15	Ground
79	HSOP15	Ground
80	Ground	HSIP15
81	PRSENT2#	HSIN15
82	Reserved	Ground

Pitch:1.0mm [WIN WIN WPCS-164AN41B22UWL]

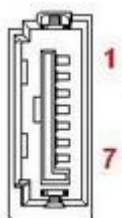
Table 42 SATA1 Serial ATA Port 0 Connector



Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

[FOXCONN LD1807V-S52U]

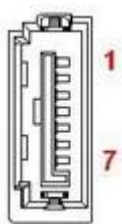
Table 43 SATA2 Serial ATA Port 1 Connector



Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

[FOXCONN LD1807V-S52U]

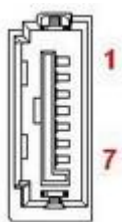
Table 44 SATA3 Serial ATA Port 2 Connector



Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

[FOXCONN LD1807V-S52U]

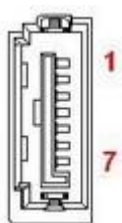
Table 45 SATA4 Serial ATA Port 3 Connector



Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

[FOXCONN LD1807V-S52U]

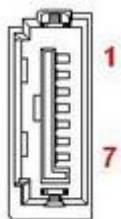
Table 46 SATA5 Serial ATA Port 4 Connector



Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

[FOXCONN LD1807V-S52U]

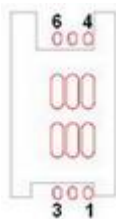
Table 47 SATA6 Serial ATA Port 5 Connector



Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

[FOXCONN LD1807V-S52U]

Table 48 SIM1 SIM Card Socket for MPCIE2



Pin	Signal Name
1	UIM_PWR
2	UIM_RST
3	UIM_CLK
4	GND
5	UIM_VPP
6	UIM_DATA

Chapter 3

System Installation

■ Expansion Interfaces

mini PCIe slot

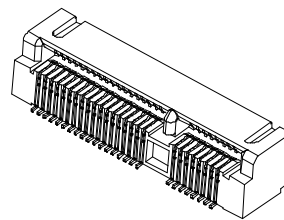


Figure 6 Expansion Interfaces

NOTE



When adding or removing expansion cards, make sure that you unplug the power supply first. Meanwhile, read the documentation for the expansion card to configure any necessary hardware or software settings for the expansion card, such as jumpers, switches or BIOS configuration.

■ Memory Module Installation

Carefully follow the steps below in order to install the SO-DIMMs:

1. To avoid generating static electricity and damaging the SO-DIMM, ground yourself by touching a grounded metal surface or use a ground strap before you touch the SO-DIMM.
2. Do not touch the connectors of the SO-DIMM. Dirt or other residue may cause a malfunction.
3. Hold the SO-DIMM with its notch aligned with the memory socket of the board and insert it at a 30-degree angle into the socket.

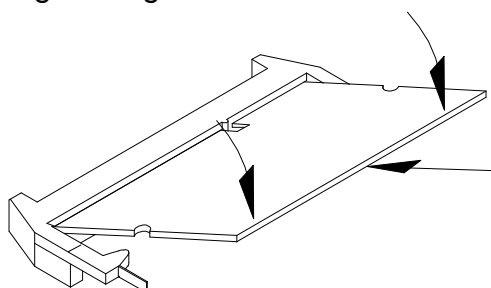


Figure 7 Align the SO-DIMM Memory Module with the onboard socket

4. Fully insert the module into the socket until a **click** is heard.
5. Press down on the SO-DIMM so that the tabs of the socket lock on both sides of the module

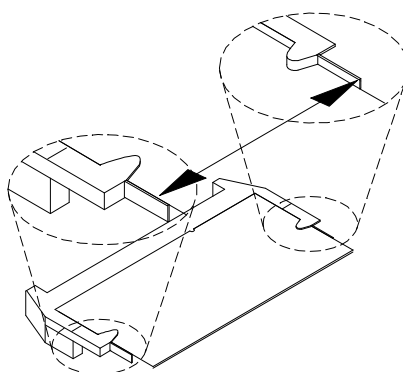


Figure 8 Press down on the SO-DIMM Memory Module to lock it in place

Removing a SO-DIMM:

To remove the SO-DIMM, use your fingers or a small screwdriver to carefully push away the tabs that secure either side of the SO-DIMM. Lift it out of the socket. Make sure you store the SO-DIMM in an anti-static bag. The socket must be populated with memory modules of the same size and manufacturer.

Chapter 4

AMI BIOS Setup

■ Overview

This chapter provides a description of the AMI BIOS. The BIOS setup menus and available selections may vary from those of your product. For specific information on the BIOS for your product, please contact Quanmax.



NOTE: The BIOS menus and selections for your product may vary from those in this chapter. For the BIOS manual specific to your product, please contact Quanmax

AMI's ROM BIOS provides a built-in Setup program, which allows the user to modify the basic system configuration and hardware parameters. The modified data will be stored in a battery-backed CMOS, so that data will be retained even when the power is turned off. In general, the information saved in the CMOS RAM will not need to be changed unless there is a configuration change in the system, such as a hard drive replacement or when a device is added.

It is possible for the CMOS battery to fail, which will cause data loss in the CMOS only. If this happens you will need to reconfigure your BIOS settings.

■ Main Menu

The BIOS Setup is accessed by pressing the DEL key after the Power-On Self-Test (POST) memory test begins and before the operating system boot begins. Once you enter the BIOS Setup Utility, the Main Menu will appear on the screen. The Main Menu provides System Overview information and allows you to set the System Time and Date. Use the **←** and **→** cursor keys to navigate between menu screens.

Table 49 BIOS Main Menu

BIOS SETUP UTILITY				
Main	Advanced	Boot	Security	Save & Exit
Product Information				→ ← Select Screen Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit
Product Name		KEMX-8000		
BIOS Version		R0.04 (x64)		
BIOS Build Date		07/24/2013		
ME FW Version		9.0.13.1482		
CPU Information				
Intel® Core™ i7-4702 MQ CPU @ 2.20 GHz				
Microcode Revision		17		
Processor Cores		4		
Memory Information				
Total Size		2048 MB (DDR3)		
Frequency		1600 MHz		
System date		[Wed 10/29/2014]		
System time		[10:56:28]		
Access Level		Administrator		
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.				

■ Advanced Menu

Table 50 Advanced Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Security	Server Mgmt	Save & Exit	
Onboard LAN1 Controller			[Enabled]	<div>→ ← Select Screen</div> <div>Select Item</div> <div>Enter: Select</div> <div>+ - Change Opt.</div> <div>F1: General Help</div> <div>F2: Previous Values</div> <div>F3: Optimized Defaults</div> <div>F4 Save & Exit</div> <div>ESC Exit</div>		
Onboard LAN1 Boot			[Disabled]			
Onboard LAN2 Controller			[Enabled]			
Onboard LAN2 Boot			[Disabled]			
Audio Controller			[Enabled]			
> Display Configuration						
> Super IO Configuration						
> CPU Chipset Configuration						
> SATA Configuration						
>USB Configuration						
> Intel(R) Rapid Start Technology						
>DIO Configuration						
>H/W Monitor						
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.						

Onboard LAN 1 Controller

Options: Disabled, Enabled

Onboard LAN 1 Boot

Options: Disabled, Enabled

Onboard LAN 2 Controller

Options: Disabled, Enabled

Onboard LAN 2 Boot

Options: Disabled, Enabled

Audio Controller

Options: Disabled, Enabled

Table 51 Advanced Menu . Display Configuration

BIOS SETUP UTILITY					
Main	Advanced	Boot	Security	Server Mgmt	Save & Exit
Display Configuration				→ ← Select Screen Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit	
Primary Display		[Auto]			
UMA Frame Buffer Size		[256 MB]			
DVMT Pre-Allocated		[64M]			
DVMT Total Gfx Mem		[256 M]			
Primary IGFX Boot Display		[VBIOS Default]			
Active LVDS		[Disabled]			
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Primary Display

Options: Auto, IGFX, PCIE

UMA Frame Buffer Size

Options: 128MB, 256MB, 512MB

DVMT Pre-Allocated

Options: 32M, 64M, 96M, 128M, 160M, 192M, 224M, 256M, 288M, 320M, 352M, 384M, 416M, 448M, 480M, 512M, 1024M

DVMT Total Gfx Mem

Options: 128M, 256M, MAX

Primary IGFX Boot Display

Options: VBIOS Default, CRT, DVI, HDMI

Active LVDS

Options: Disabled, Enabled

Table 52 Advanced Menu . Power Management Configuration

BIOS SETUP UTILITY		
Main	Advanced	Boot Security Server Mgmt Save & Exit
Power Management Configuration		
ACPI Sleep State	[S3 Only (Suspend to RAM)]	
Restore AC Power Loss	[Power Off]	
Power Saving Mode	[Disabled]	→ ← Select Screen Select Item
Resume Event Control		Enter: Select
Resume By PCIE Device	[Disabled]	+ - Change Opt.
Resume By RTC Alarm	[Disabled]	F1: General Help
> Watchdog Timer Configuration		F2: Previous Values
		F3: Optimized Defaults
		F4 Save & Exit
		ESC Exit
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.		

ACPI Sleep State

Options: Suspend Disabled, S1 (CPU Stop Clock), S3 (Suspend to RAM)

Restore AC Power Loss

Options: Power Off, Power On, Last State

Power Saving Mode

Options: Disabled, EUP Enabled, DeepSX in S5, DeepSX in S4-S5, DeepSX in S3-S4-S5

Resume By PCIE Device

Options: Disabled, Enabled

Resume By RTC Alarm

Options: Disabled, Enabled

Watchdog Timer Configuration

■ **WDT Function** [Disabled]

Options: Disabled, Enabled

Table 53 Advanced Menu . CPU Chipset Configuration

BIOS SETUP UTILITY				
Main	Advanced	Boot	Security	Save & Exit
CPU Advanced Configuration			<div>→ ← Select Screen Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit</div>	
EIST		[Enabled]		
Turbo Mode		[Enabled]		
Hyper Treading		[Enabled]		
Active Processor Cores		[All]		
Limit CPUID Maximum		[Disabled]		
Execute Disable Bit		[Enabled]		
Intel © Virtualization Technology		[Disabled]		
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.				

EIST

Options: Disabled, Enabled

Turbo Mode

Options: Disabled, Enabled

Hyper Threading

Options: Disabled, Enabled

Active Processor Cores

Options: All, 1, 2, 3

Limit CPUID Maximum

Options: Disabled, Enabled

Execute Disable Bit

Options: Disabled, Enabled

Intel ® Virtualization Tech

Options: Disabled, Enabled

Table 54 Advanced Menu . SATA Configuration

BIOS SETUP UTILITY			
Main	Advanced	Boot	Security
SATA Configuration			→ ← Select Screen Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit
SATA Controller(s)			[Enabled]
SATA Mode Selection			[AHCI]
SATA Controller Speed			[Default]
Serial ATA Port 1			Empty
Port 1			[Enabled]
Serial ATA Port 2			Empty
Port 2			[Enabled]
Serial ATA Port 3			Empty
Port 3			[Enabled]
Serial ATA Port 4			Empty
Port 4			[Enabled]
Serial ATA Port 5			Empty
Port 5			[Enabled]
Serial ATA Port 6			Empty
Port 6			[Enabled]
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.			

SATA Controller(s)

Options: Disabled, Enabled

SATA Mode Selection

Options: IDE, AHCI

SATA Controller Speed

Options: Default, Gen 1, Gen 2, Gen 3

Port

Options: Disabled, Enabled

SATA Device Type

Options: Hard Disk Driver, Solid State Driver

Table 55 Advanced Menu . Intel Rapid Start Technology

BIOS SETUP UTILITY	
Main Advanced Boot Security Server Mgmt Save & Exit	
Intel® Rapid Start Technology [Disabled]	→ ← Select Screen Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.	

Intel® Rapid Start Technology

Options: Disabled, Enabled

Table 56 Advanced Menu . USB Configuration

BIOS SETUP UTILITY	
Main Advanced Boot Security Save & Exit	
USB Configuration USB Devices: 1 Keyboard, 2 Hubs Legacy USB Support [Enabled] USB 3.0 Support [Enabled] XHCI hand-off [Enabled] EHCI Hand-off [Disabled] USB Mass Storage Driver Support [Enabled]	→ ← Select Screen Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.	

Legacy USB Support

Options: Disabled, Enabled, Auto

USB 3.0 Support

Options: Disabled, Enabled

XHCI hand-off

Options: Disabled, Enabled

EHCI hand-off

Options: Disabled, Enabled

USB Mass Storage Driver Support

Options: Disabled, Enabled

Table 57 Advanced Menu . DIO Configuration

BIOS SETUP UTILITY				
Main	Advanced	Boot	Security	Save & Exit
DIO Configuration User Configuration [Disabled] DI_1 1 DI_2 1 DI_3 1 DI_4 1 DO_1 1 DO_2 1 DO_3 1 DO_4 1				→ ← Select Screen Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit
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User Configuration

Options: Disabled, Enabled

Table 58 Advanced Menu . Super IO Configuration

BIOS SETUP UTILITY	
Main Advanced Boot Security Server Mgmt Save & Exit	
Super IO Configuration	
>Serial Port 1 Configuration >Serial Port 2 Configuration >Serial Port 3 Configuration >Serial Port 4 Configuration >Serial Port 5 Configuration >Serial Port 6 Configuration	
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.	

Table 59 Advanced Menu . Super IO Configuration .
Serial Port 1 Configuration

BIOS SETUP UTILITY	
Main Advanced Boot Security Server Mgmt Save & Exit	
Serial Port 1 Configuration	→ ← Select Screen Select Item
Serial Port	Enter: Select
Device Settings	+ - Change Opt.
Change Settings	F1: General Help
Serial Port 1 Type	F2: Previous Values
	F3: Optimized Defaults
	F4 Save & Exit
	ESC Exit
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.	

Serial Port

Options: Disabled, Enabled

Change Settings

Options: Auto,

IO=3F8h; IRQ=4;

IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

Serial Port Type

Options: RS232, RS422, R485

Table 60 Advanced Menu . Super IO Configuration .
Serial Port 2 Configuration

BIOS SETUP UTILITY						
Main	Advanced	Boot	Security	Server Mgmt	Save & Exit	
Serial Port 2 Configuration						
Serial Port			[Enabled]			
Device Settings			IO=2F8h; IRQ=3			
Change Settings			[Auto]			
Serial Port 2 Type			[RS232]			
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.						

Serial Port

Options: Disabled, Enabled

Change Settings

Options: Auto,

IO=2F8h; IRQ=3;

IO=3F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

IO=2F8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

IO=3E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

IO=2E8h; IRQ=3, 4, 5, 6, 7, 9, 10, 11, 12;

Serial Port Type

Options: RS232, RS422, RS485

Table 61 Advanced Menu . H/W Monitor

BIOS SETUP UTILITY				
Main	Advanced	Boot	Security	Save & Exit
PC Health Status			→ ← Select Screen Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit	
Smart FAN Configuration				
CPU Warning Temperature	: +69 C			
Memory Temperature	: +37 C			
System Temperature	: +34 C			
CPU FAN Speed	+5928RPM			
System FAN Speed	N/A			
+VCORE		: +1.784 V		
+VIN		: +11.808 V		
+5V		: +5.114 V		
+3.3V		: +3.387 V		
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.				

CPU Warning Temperature

Options: Disabled, 80 C, 85 C, 90 C, 95 C

FAN Configuration :**CPU FAN Configuration****CPU FAN Setting [Manual Mode]**

Options: Manual Mode, Auto Mode

Manual Duty 255**System FAN Configuration****System FAN Setting [Manual Mode]**

Options: Manual Mode, Auto Mode

Manual Duty 255

■ Boot Menu

Table 62 Boot Menu

BIOS SETUP UTILITY				
Main	Advanced	Boot	Security	Save & Exit
Boot Configuration			→ ← Select Screen Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit	
Full Screen LOGO Display	[Disabled]			
Setup Prompt Timeout	1			
Bootup NumLock State	[On]			
CAM Support	[Enabled]			
Boot Option Filter	Legacy only			
DIMM Voltage Warming	[Enabled]			
Keyboard Detect Warming	[Enabled]			
Boot Option Priorities				
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.				

Full Screen LOGO Display

Options: Disabled, Enabled

Bootup Numlock State

Options: On, Off

UEFI Boot

Options: Disabled, Enabled

CAM Support

Options: Disabled, Enabled

Boot Option Filter

Options: UEFI and Legacy, Legacy only, UEFI only

DIMM Voltage Warming

Options: Disabled, Enabled

Keyboard Detect Warming

Options: Disabled, Enabled

■ Security Menu

Table 63 Security Menu

BIOS SETUP UTILITY	
Main	Advanced
Boot	Security
Save & Exit	
Password Description If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup the User will have Administrator rights The password length must be in the following range: Minimum Length 3 Maximum length 20 Administrator Password User Password Secure Boot menu	→ ← Select Screen Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.	

Secure Boot

Options: Disabled, Enabled

Secure Boot Mode

Options: Standard, Custom

■ Save & Exit Menu

Table 64 Save & Exit Menu

BIOS SETUP UTILITY	
Main	Advanced
Boot	Security
Save & Exit	
Save Changes and Reset Discard Changes and Reset Save Options Save Changes Discard Changes Restore Defaults	→ ← Select Screen Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit
Version 2.15.1236. Copyright (C) 2012, American Megatrends, Inc.	

Save Changes and Exit

Exit system setup after saving the changes. Once you are finished making your selections, choose this option from the Exit menu to ensure the values you selected are saved to the CMOS RAM. The CMOS RAM is sustained by an onboard backup battery and stays on even when the PC is turned off. When you select this option, a confirmation window appears. Select [Yes] to save changes and exit.

Discard Changes and Exit

Exit system setup without saving any changes. Select this option only if you do not want to save the changes that you made to the Setup program. If you made changes to fields other than system date, system time, and password, the BIOS asks for a confirmation before exiting.

Discard Changes

Discards changes done so far to any of the setup values. This option allows you to discard the selections you made and restore the previously saved values. After selecting this option, a confirmation appears. Select [Yes] to discard any changes and load the previously saved values.

Load Optimal Defaults

Load Optimal Default values for all the setup values. This option allows you to load optimal default values for each of the parameters on the Setup menus, which will provide the best performance settings for your system. The F9 key can be used for this operation.

Load Failsafe Defaults

Load Optimal Default values for all the setup values. This option allows you to load failsafe default values for each of the parameters on the Setup menus, which will provide the most stable performance settings. The F8 key can be used for this operation.

Chapter 5

Driver Installation

If your KEMX-8000 Series does not come with an operating system pre-installed, you will need to install an operating system and the necessary drivers to operate it. After you have finished assembling your system and connected the appropriate power source, power it up using the power supply and install the desired operating system.

You can download the drivers for the KEMX-8000 Series from the Quanmax website at www.quanmax.com and install as instructed there. For other operating systems, please contact Quanmax.

NOTE



When the system reboots without connecting the CRT, there might be no image on screen when you insert the CRT/VGA cable. Please pressing <Ctrl>+<Alt>+<F1> simultaneously to show the image on screen
