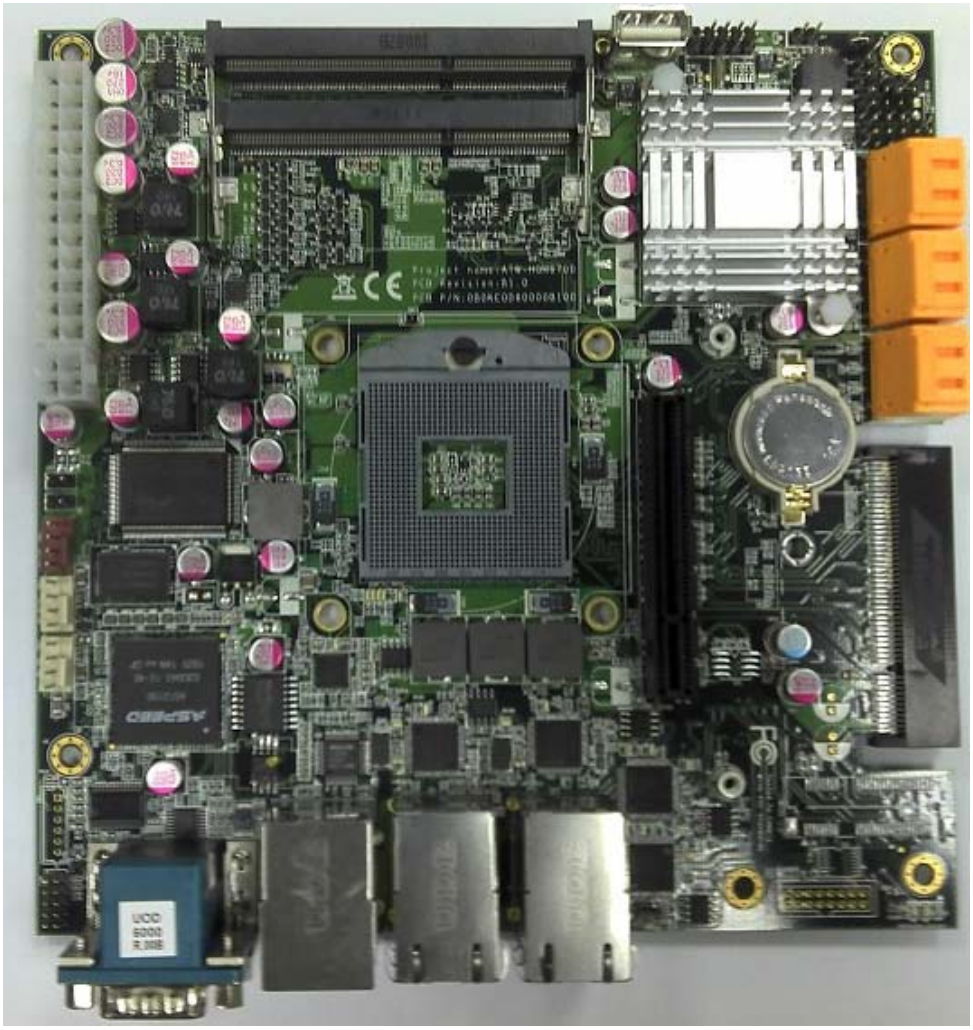
ATW-HQM6700

Industrial Motherboard in Mini-ITX form factor with 2nd generation Intel® core i5/i7 processor

User's Guide



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Revision	Date	Edited by	Changes
1.0	2011/05/18	Zack	Initial Release

Content

Figures

Tables

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 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 unit s 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 KEOD-6000 is a Mini-ITX form factor industrial motherboard combining the latest 2nd Generation Intel® core i5/i7 processors with the high integration of the Intel® QM67 chipset. The new architecture of 2nd generation Intel® core i5/i7 processors provides the best efficiency and performance, and smallest form factor for thin client and fundamental use. Featured are DDR3-1066/1333 SO-DIMM up to 8GB, five Gigabit and one Fast Ethernet, 6x SATA, 2x PCI Express x8 expansion slots, one mini-PCIE, 6x USB 2.0, 2x COM ports, moreover, it supports IPMI platform enables BMC and KVM functions providing excellent management abilities. The KEOD-6000 is a compact, high performance industrial motherboard that is ideal for POS, multimedia, gaming, and thin client applications.

Checklist

- Driver/ Manual CD
- Quick Installation Guide
- KEOD-6000 main board

Features

- 2nd Generation Intel® core i5/i7 processors
- Intel® QM67
- Two DDR3 SO-DIMM Socket, total up to 8 GB
- 1x mini PCIe, 2 x PCIE x 8
- IPMI platform - BMC and KVM supported
- 4x GbE, 1x 10/100 Fast Ethernet
- 2x COM ports, 6x USB 2.0
- 6x 7-pin SATA connectors supported
- Watchdog Timer, Hardware Monitor

■ Product Specifications

Model Name	▪ KEOD-6000
Form Factor	▪ Mini ITX (170mm x 170mm)
Processor	▪ 2nd Generation Intel core i5/i7 Processors with rPGA988 package
Memory	▪ Two SO-DIMMs, dual channel DDR3, non-ECC support, up to 8GB (Intel plan to support 16GB maximum and perform validation right now.)
Chipset	▪ Intel QM67 Express Chipset
Display	▪ AST-2150 Integrated graphics core. ▪ Display from AST-2150 GPU ● One VGA with DB-15 female connector on rear I/O ● Resolution up to 1600x1200
IPMI	▪ AST-2150 Integrated Remote Management processor onboard ▪ 128MB DDR2 onboard for AST-2150 ▪ 16MB SPI NOR flash for IPMI core on AST-2150 (32MB NOR flash onboard for BOM option) ▪ KVM function supported ▪ BMC function supported ▪ One 2x5-pins 2.0mm header for Console mode
Ethernet	▪ Five Ethernet ports supported ● Four GbE controllers (Intel 82574L) onboard for ETH0,1,2,3 PXE/WOL/iSCSI boot supports on ETH0, 1, 2, 3 Two dual-stack RJ-45 connectors w/z Gb transformer on rear I/O, 1st connector for ETH0 & 1 2nd connector for ETH2 & 3 ● One 10/100M PHY (Realtek RTL8201EL) onboard for AST2150 dedicated Ethernet port One RJ-45 connectors w/z Gb transformer on rear I/O
Peripheral Support	▪ Storage supported ● Six 7-pins SATA connectors supported, port 1,2 up to 6Gb/s, port 3~6 up to 3Gb/s ● Raid 0/1/5/10 supported ▪ Six USB2.0 ports supported ● One dual-stack type-A connector on rear I/O for port1 and port2 ● One type-A vertical onboard internal for port3 ● One 2x5-pins pitch 2.54mm header for port4,5 ▪ Two COM ports supported ● One DB-9 male connectors on rear I/O for COM1 ● COM2 connected to AST-2150 for Serial Over LAN ▪ Buzzer onboard ▪ One 1x2-pins pitch 2.54mm header for chassis intrusion(GP Input for NCT6776F) ▪ One 1x2-pins pitch 2.54mm header for AUX thermal detection ▪ One 1x2-pins pitch 2.54mm header for “reset” of AST-2150 ▪ One switch button on rear I/O for “reset” of AST-2150 ▪ Three fans supported, brown for CPU fan connector white for System & AUX connector ● Three 4-pin connectors ● Auto detect PWM ● Fans speed control supported ● Max current 2A on each connector

	▪ Three LEDs for overheat indication LED1 for standby power indicator LED2 for over temperature indicator LED3 for BMC alive indication
Expansion Slot	▪ One PCIE X8 vertical slot supported (Signals from Sandy Bridge configured as One PCIe X8.) ▪ One PCIE X8 horizontal slot supported (Signals from Sandy Bridge configured as One PCIe X8.)
Super I/O	▪ Nuvoton-NCT6776F
Watchdog Timer	▪ 1-255 step
Hardware Monitor	▪ Supply voltages detection (CPU Volt, +3.3V, +5V, +12V, 5VSB) ▪ CPU, system and AUX temperature detection ▪ CPU, system and AUX fan speed independent controlled and detection
Battery	▪ One vertical battery socket onboard ▪ Lithium, 3V
Power	▪ One 24-pins + 4-pins standard ATX power connector for power input ▪ AT/ATX supported
BIOS	▪ AMI PnP SPI Flash BIOS ▪ ATWORKS boot logo supported
ACPI	▪ ACPI 4.0 supported
Operation Temp.	▪ 0ºC – 60ºC
Storage Temp.	▪ -10ºC – 85ºC
Humidity	▪ 0% – 90%
Certifications	▪ VCCI Class A

Table 1 KEOD-6000 Specification

■ System Block Diagram

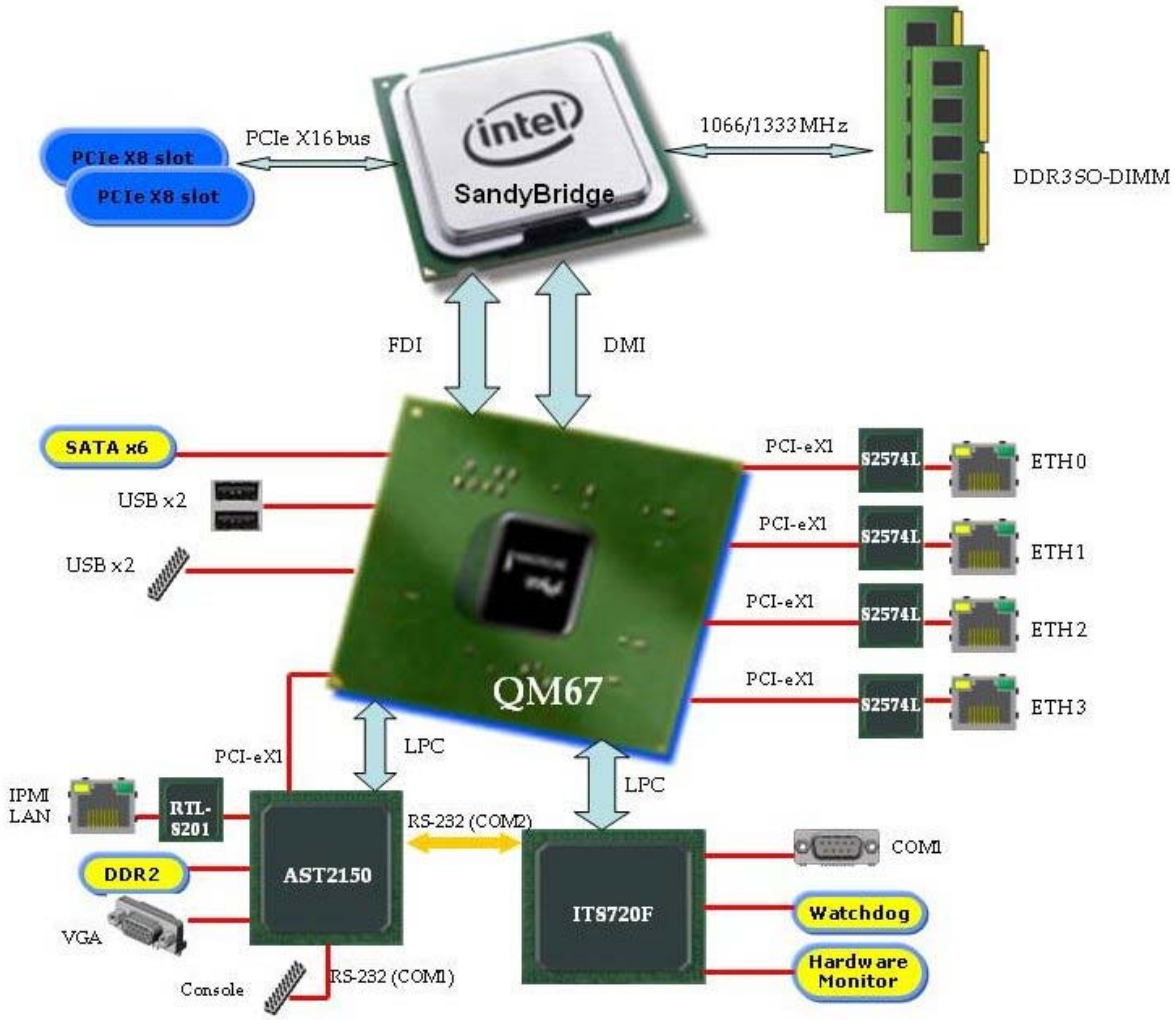


Figure 1 Block Diagram

■ Mechanical Dimensions

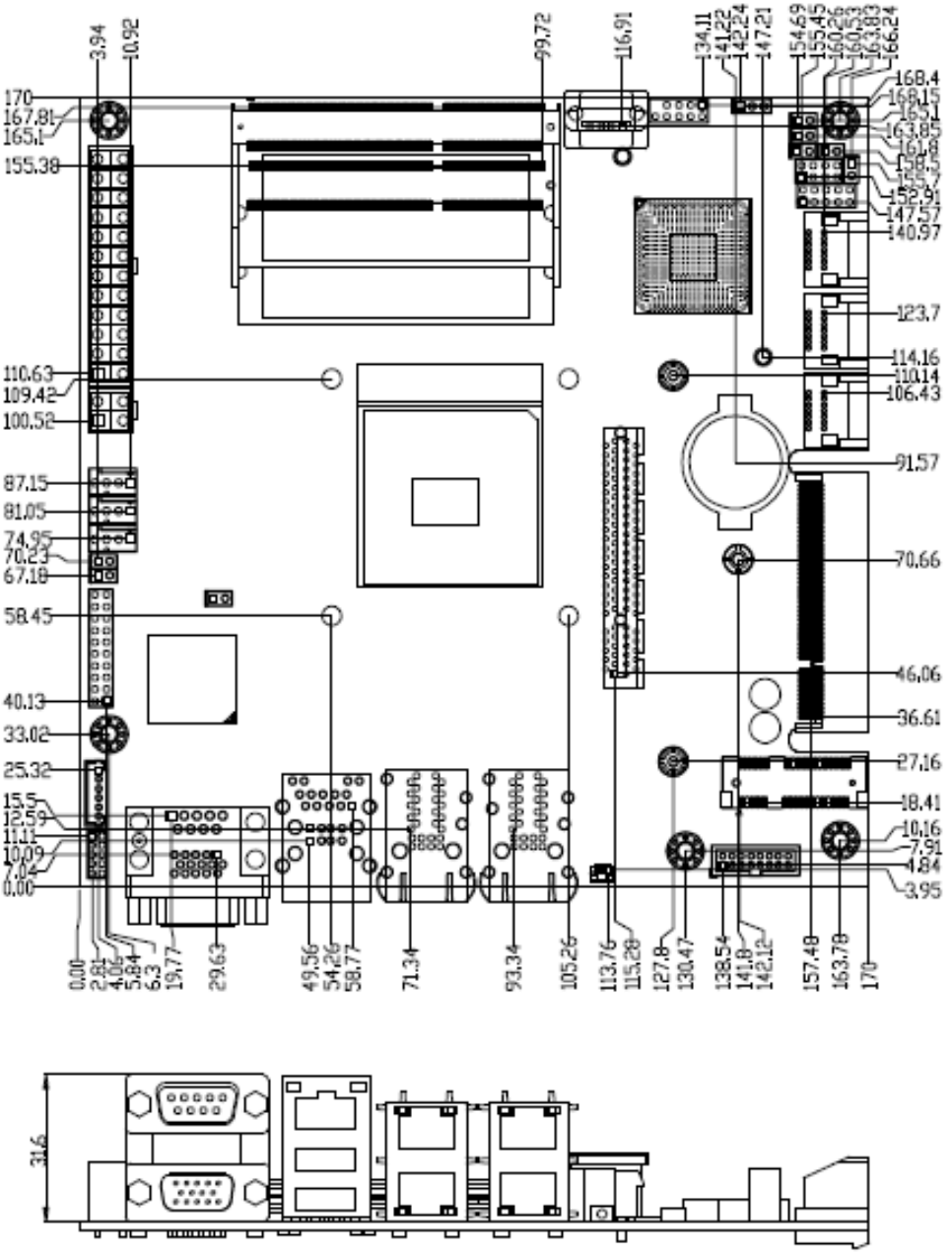


Figure 2 Mechanical Dimensions

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.

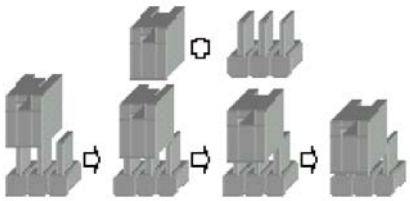


Figure 3 Jumper Connector

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 location, please refer to the diagrams below.

Top View

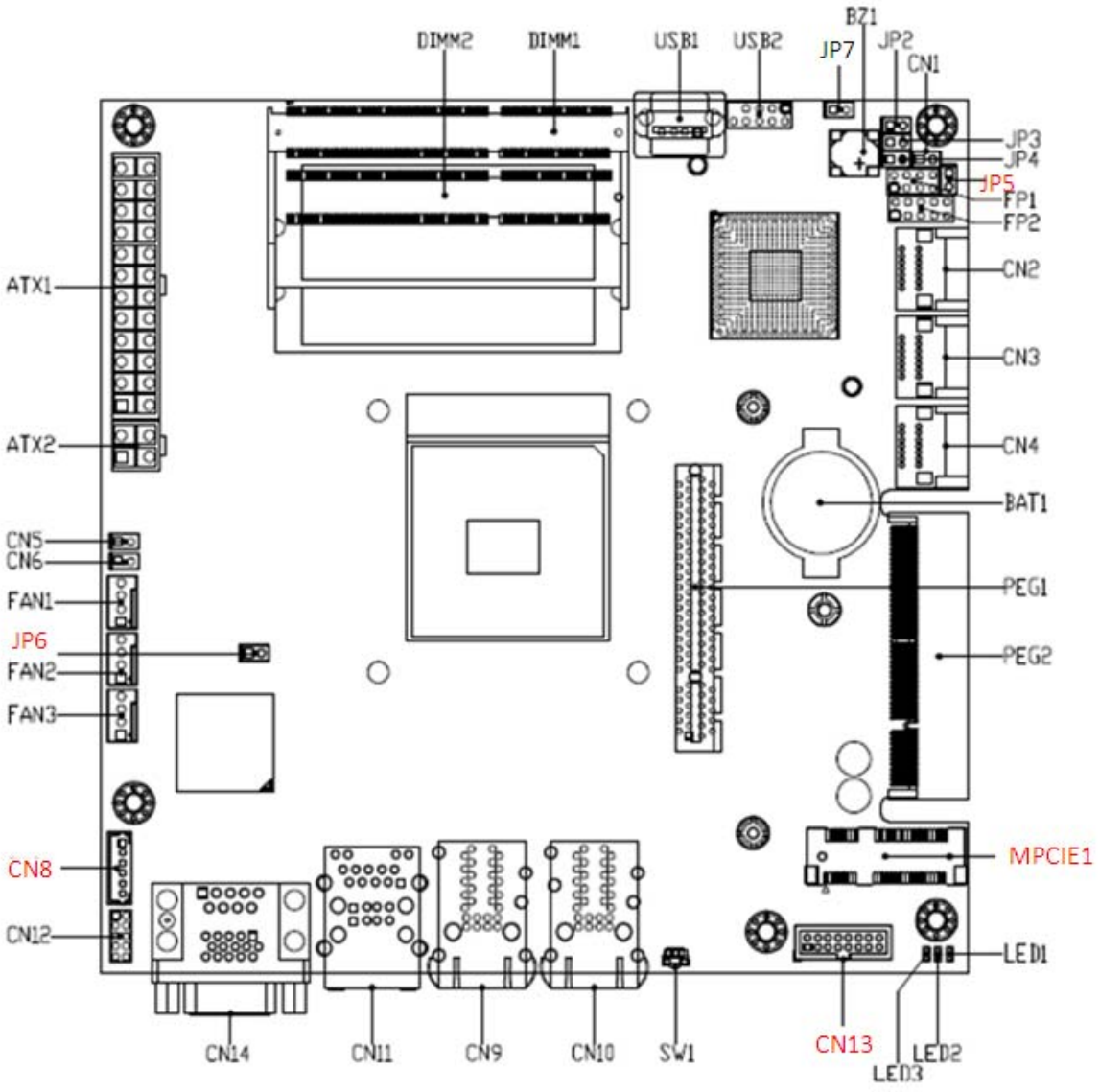


Figure 4 Jumper and Connector Locations – Top View

(Debug Only: CN8, CN13, JP5, JP6, MPCIE1)

Rear Panel

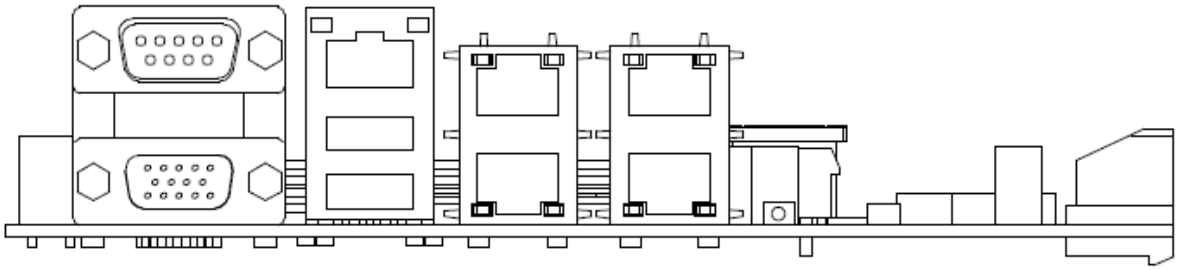


Figure 5 Rear panel IO

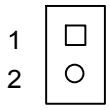
Jumper Settings

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
JP2	*AT / ATX Mode Selection*
JP3	*ARM CPU Reset Selection*
JP4	*RTC Reset Selection*
JP5	*SRTC Reset Selection (Reserved)*
JP6	*ARM CPU Boot Code Selection (Reserved)*
JP7	*Intel ME F/W Selection (Debug Only)*
SW1	*ARM CPU Reset Switch*

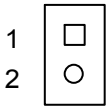
Table 3 JP2 AT / ATX Mode Selection



Jumper	Status
1-2 Open	ATX Mode
1-2 Short	AT Mode

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

Table 4 JP3 ARM CPU Reset Selection

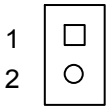


Jumper	Status
1-2 Open	Normal Operation
1-2 Short	Reset ARM CPU

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

(Remarks: Same function as SW1; 1-2 open – ARM CPU is in Normal Operation. 1-2 short – ARM CPU is in Reset Status.)

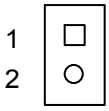
Table 5 JP4 RTC Reset Selection



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

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

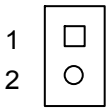
Table 6 JP5 SRTC Reset Selection (Reserved)



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

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

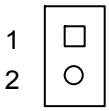
Table 7 JP6 ARM CPU Boot Code Selection (Reserved)



Jumper	Status
1-2 Open	Boot from SPI Flash
1-2 Short	Disable ARM CPU

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

Table 8 JP7 Intel ME F/W Selection



Jumper	Status
1-2 Open	Enabled
1-2 Short	Disabled (Default)

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

Table 9 SW1 ARM CPU Reset Switch

Switch	Status
Off	Normal Operation
On	Reset ARM CPU

SWITCH PUSH BUTTOM SMD 3-PIN 90D [HCH PTS-099]

Rear Panel Pin Assignments

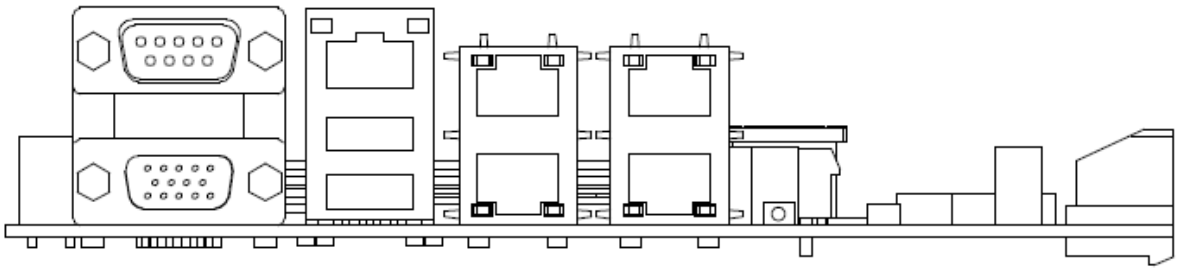
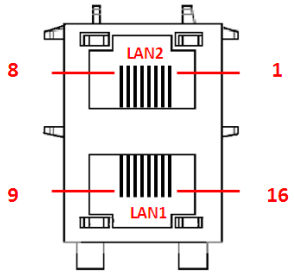


Figure 5 Rear Panel IO

Table 10 Rear Panel Connector List

Label	Function
CN9	*LAN1 & LAN2 Connector*
CN10	*LAN3 & LAN4 Connector*
CN11	*LAN0 & USB2.0 Port 0,1 Connector*
CN14	*COM1 & VGA Connector*

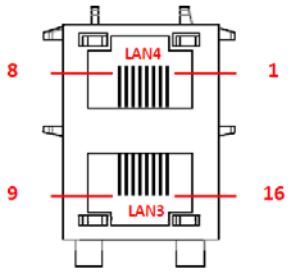
Table 11 CN9 LAN1 & LAN2 Connector



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

CONN, DIP RJ45 14P 2X1 w/XFMR & LED RM2-168A9V1F [UDE]

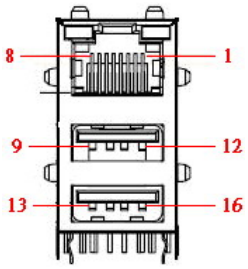
Table 12 CN10 LAN3 & LAN4 Connector



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

CONN, DIP RJ45 14P 2X1 w/XFMR & LED RM2-168A9V1F [UDE]

Table 13 CN11 LAN0 & USB2.0 Port 0, 1 Connector



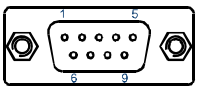
Pin	Signal	Pin	Signal
1	MDI[0]+	9	+VCCUSB01
2	MDI[0]-	10	USB_1-
3	MDI[1]+	11	USB_1+
4	MDI[1]-	12	GND
5	MDI[2]+	13	+VCCUSB01
6	MDI[2]-	14	USB_0-
7	MDI[3]+	15	USB_0+
8	MDI[3]-	16	GND

CONN, USB*2/RJ45*1+TFM+LED (10/100)22P DIP 90° [UDE RU1-161A1Z1F (XB)]

Note：LAN LED Configuration

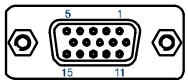
1. Left (Link) LED：Green / Orange
   Link 1000 ➔ Orange LED on
   Link 100 ➔ Green LED on
   Link 10 or No Link ➔ LED off
2. Right (Active) LED：Yellow
   Activity ➔ Yellow LED blink

Table 14 CN14 COM1 & VGA Connector



DB9

Pin	RS-232
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



DB-15

Signal Name	Pin	Pin	Signal Name
Red	1	2	Green
Blue	3	4	NC
GND	5	6	GND
GND	7	8	GND
VCC	9	10	GND
NC	11	12	DDC2B data
HSYNC	13	14	VSYNC
DDC2B clock	15		

CONN D-SUB 9P (M) & 15S (19.05mm) (F) SCREWLOCK INSTALLED Screw Head=4.8mm, Screw Length=11.8mm FOR PC99 FOLLOW PANTONE COLOR [FEN YING D201B1N010129N]

LED Indicator Description

Table 15 LED Indicator List

Label	Function
LED1	*Standby Power LED Indicator*
LED2	*Over Temperature LED Indicator*
LED3	*BMC Alive LED Indicator*

Table 16 LED1 Standby Power LED Indicator

LED	Status
On	Standby Power on
Off	Standby Power off

Table 17 LED2 Over Temperature LED Indicator

LED	Status
On	System Over Temperature
Off	Normal Operation

Table 18 LED3 BMC Alive LED Indicator

LED	Status
Blink	BMC Alive
On/Off	BMC Damaged

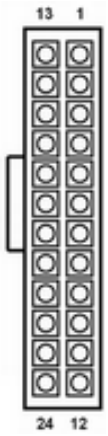
Main Board Pin Assignments

Internal Connector List

Table 19 Internal Connector List

Label	Function
ATX1	*24-pin ATX Power Input Connector*
ATX2	*4-pin ATX Power Input Connector*
BAT1	*CR2032 Battery Holder*
CN1	*Over Temperature Indicator Header*
CN2	*Serial ATA Port 4, 5 Connector*
CN3	*Serial ATA Port 2, 3 Connector*
CN4	*Serial ATA Port 0, 1 Connector*
CN5	*Case Open Detection Header*
CN6	*AUX Temperature Detection Header*
CN8	*Keyboard & Mouse Wafer (Debug only)*
CN12	*Serial Port from ARM CPU Header*
CN13	*VGA Output Box Header (Debug only)*
DIMM1	*Primary DDR3 Memory SO-DIMM Socket*
DIMM2	*Secondary DDR3 Memory SO-DIMM Socket*
FAN1	*CPU FAN Wafer*
FAN2	*System FAN Wafer*
FAN3	*AUX FAN Wafer*
FP1	*Front Panel 1 Pin Header*
FP2	*Front Panel 2 Pin Header*
MPCIE1	*Mini-PCIE Express v1.2 Socket (Debug only)*
PEG1	*PCIE Express x8 Slot 1*
PEG2	*PCIE Express x8 Slot 2*
USB1	*USB2.0 Port 2 Connector*
USB2	*USB2.0 Port 4, 5 Pin Header*

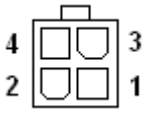
Table 20 ATX1 24-pin ATX Power Input Connector



Pin	Signal	Pin	Signal
1	+3.3V	13	+3.3V
2	+3.3V	14	NC
3	GND	15	GND
4	+5V	16	PS_ON
5	GND	17	GND
6	+5V	18	GND
7	GND	19	GND
8	POWER OK	20	NC
9	+5VSB	21	+5V
10	+12V	22	+5V
11	+12V	23	+5V
12	+3.3V	24	GND

CONN, ATX POWER DIP 12P*2.180D (M) [YIMTEX 576MWA2*12STR]

Table 21 ATX2 4pin ATX Power Input Connector



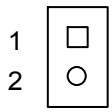
Pin	Signal Name
1	GND
2	GND
3	+12V
4	+12V

CONN,ATX POWER DIP 4P 2R MALE 180° Pitch:4.2mm Hollow PIN [YIMTEX 576MWA2*02STR]

Table 22 BAT1 CR2032 Battery Holder

SOCKET, SMD BATTERY 2P HOLDER FEMALE BH-800.9G

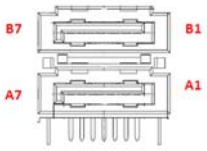
Table 23 CN1 Over Temperature Indicator Header



Pin	Signal Name
1	LED+
2	LED-

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

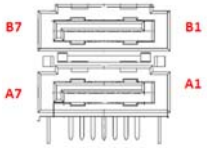
Table 24 CN2 Serial ATA Port 4, 5 Connector



Pin	Signal	Pin	Signal
A1	GND	B1	GND
A2	TX+	B2	TX+
A3	TX-	B3	TX-
A4	GND	B4	GND
A5	RX-	B5	RX-
A6	RX+	B6	RX+
A7	GND	B7	GND

MINI BASE DIP 14P 90D, Double Layer SATA Connector, Gold Flash Plated, NY6T, Yellow, Tray [WINWIN WATLL-14A1N65U3]

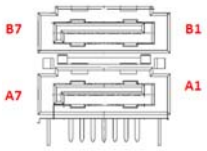
Table 25 CN3 Serial ATA Port 2, 3 Connector



Pin	Signal	Pin	Signal
A1	GND	B1	GND
A2	TX+	B2	TX+
A3	TX-	B3	TX-
A4	GND	B4	GND
A5	RX-	B5	RX-
A6	RX+	B6	RX+
A7	GND	B7	GND

MINI BASE DIP 14P 90D, Double Layer SATA Connector, Gold Flash Plated, NY6T, Yellow, Tray [WINWIN WATLL-14A1N65U3]

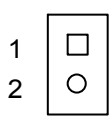
Table 26 CN4 Serial ATA Port 0, 1 Connector



Pin	Signal	Pin	Signal
A1	GND	B1	GND
A2	TX+	B2	TX+
A3	TX-	B3	TX-
A4	GND	B4	GND
A5	RX-	B5	RX-
A6	RX+	B6	RX+
A7	GND	B7	GND

MINI BASE DIP 14P 90D, Double Layer SATA Connector, Gold Flash Plated, NY6T, Yellow, Tray [WINWIN WATLL-14A1N65U3]

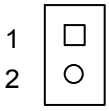
Table 27 CN5 Case Open Detection Header



Pin	Signal
1	Case_Open#
2	GND

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

Table 28 CN6 AUX Temperature Detection Header



Pin	Signal
1	Thermistor+
2	Thermistor-

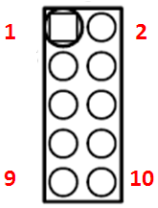
PIN HEADER, DIP 2P 1R MALE STRAIGHT TYPE Pitch: 2.54mm [YIMTEX 3321*02SAGR (6T)]

Table 29 CN8 Keyboard & Mouse Wafer (Debug Only)

Pin	Signal
1	MS_CLK
2	VCC
3	MS_DAT
4	KB_DAT
5	GND
6	KB_CLK

MINI BASE DIP 6P 180° Pitch=2.0mm WAFER [YIMTEX 503PW1*06STR]

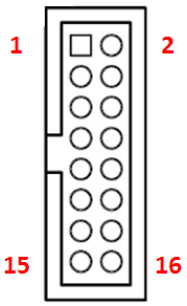
Table 30 CN12 Serial Port from ARM CPU Header



Pin	Signal	Pin	Signal
1	NC	2	CM2 RXD
3	CM2 TXD	4	NC
5	GND	6	NC
7	NC	8	NC
9	NC	10	GND

PIN HEADER, DIP 10P 2R MALE 180° Pitch: 2.0mm [YIMTEX 3292*05SAGR (6T)]

Table 31 CN13 VGA Output Box Header (Debug Only)



Pin	Signal	Pin	Signal
1	R	2	G
3	B	4	NC
5	GND	6	GND
7	GND	8	GND
9	+5V	10	GND
11	NC	12	DDC_DATA
13	HSYNC	14	VSYNC
15	DDC_CLK	16	NC

BOXHEADER, MALE DIP 16P 2R 180D P-2.0mm [PINREX 52S-90-16GB00]

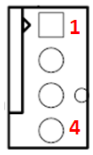
Table 32 DIMM1 Primary DDR3 Memory SO-DIMM Socket

SO DIMM 204P DDR3 1.5V High=9.2mm STD Type [ARGOSY DDRSK-20401-TP9D]

Table 33 DIMM2 Secondary DDR3 Memory SO-DIMM Socket

SO DIMM 204P DDR3 1.5V High=5.2mm STD Type [ARGOSY DDRSK-20401-TP5B]

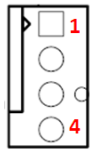
Table 34 FAN1 CPU FAN Wafer



Pin	Signal
1	GND
2	+12V
3	FAN_RPM
4	FANCTL

MINI BASE, DIP 4P 180° Pitch: 2.54mm WAFER, Brown, Tin Plated [PINREX 744-81-04TF60]

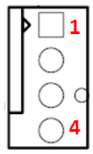
Table 35 FAN2 System FAN Wafer



Pin	Signal
1	GND
2	+12V
3	FAN_RPM
4	FANCTL

MINI BASE, DIP 4P 180° Pitch: 2.54mm WAFER [FOXCONN HF2704E-M1]

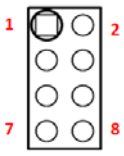
Table 36 FAN3 AUX FAN Wafer



Pin	Signal
1	GND
2	+12V
3	FAN_RPM
4	FANCTL

MINI BASE, DIP 4P 180° Pitch: 2.54mm WAFER [FOXCONN HF2704E-M1]

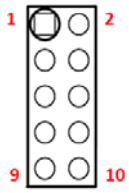
Table 37 FP1 Front Panel 1 Pin Header



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

PIN HEADER, DIP 8P 2R MALE STRAIGHT TYPE Pitch: 2.54mm [YIMTEX 3322*04SAGR (6T)]

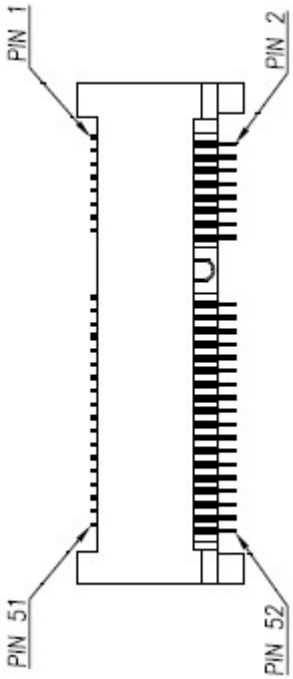
Table 38 FP2 Front Panel 2 Pin Header



Pin	Signal	Pin	Signal
1	Power LED+	2	Power Button+
3	Power LED-	4	Power Button-
5	Power LED-	6	NC
7	NC	8	SMBus_Data
9	GND	10	SMBus_Clock

PIN HEADER, DIP 10P 2R MALE STRAIGHT TYPE Pitch: 2.54mm [YIMTEX 3322*05SAGR (6T)]

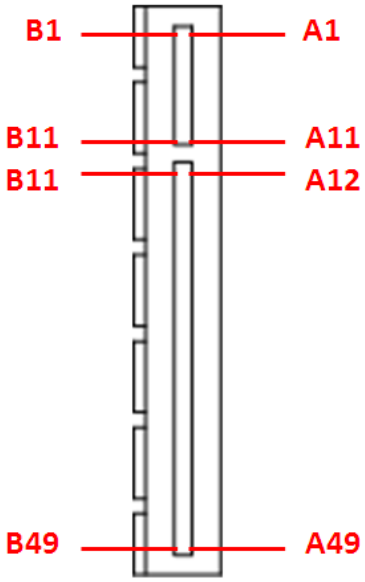
Table 39 MPCIE1 Mini-PCIE Express v1.2 Socket (Debug Only)



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

SLOT SMD 52P 90D (F) MINI PCI-Express Connector; H: 9.0mm, Gold Flash, Tape Reel [ARGOSY MPCEC-S00F1-TP09]

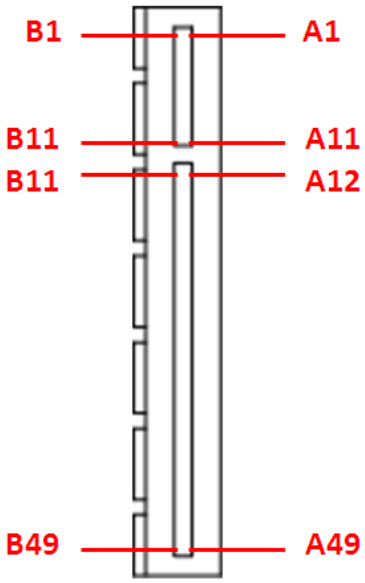
Table 40 PEG1 PCIE Express x8 Slot 1



Signal	Pin	Pin	Signal
+12V	B1	A1	PRSNT1#
+12V	B2	A2	+12V
RSVD	B3	A3	+12V
GND	B4	A4	GND
SMCLK	B5	A5	JTAG2
SMDAT	B6	A6	JTAG3
GND	B7	A7	JTAG4
+3.3V	B8	A8	JTAG5
JTAG1	B9	A9	+3.3V
3.3VAUX	B10	A10	+3.3V
PCIE_WAKE#	B11	A11	PERST#
RSVD	B12	A12	GND
GND	B13	A13	REFCLK+
PETp0	B14	A14	REFCLK-
PETn0	B15	A15	GND
GND	B16	A16	PERp0
PRSNT2#	B17	A17	PERn0
GND	B18	A18	GND
PETp1	B19	A19	RSVD
PETn1	B20	A20	GND
GND	B21	A21	PERp1
GND	B22	A22	PERn1
PETp2	B23	A23	GND
PETn2	B24	A24	GND
GND	B25	A25	PERp2
GND	B26	A26	PERn2
PETp3	B27	A27	GND
PETn3	B28	A28	GND
GND	B29	A29	PERp3
RSVD	B30	A30	PERn3
PRSNT2#	B31	A31	GND
GND	B32	A32	RSVD
PETp4	B33	A33	RSVD
PETn4	B34	A34	GND
GND	B35	A35	PERp4
GND	B36	A36	PERn4
PETp5	B37	A37	GND
PETn5	B38	A38	GND
GND	B39	A39	PERp5
GND	B40	A40	PERn5
PETp6	B41	A41	GND
PETn6	B42	A42	GND
GND	B43	A43	PERp6
GND	B44	A44	PERn6
PETp7	B45	A45	GND
PETn7	B46	A46	GND
GND	B47	A47	PERp7
PRSNT2#	B48	A48	PERn7
GND	B49	A49	GND

SLOT DIP 98P 180D (F) PCIEx8 Pitch: 1.0mm, Gold Flash, NY46, Black [WINWIN WPES-098AN41B22UWS]

Table 41 PEG2 PCIE Express x8 Slot 2



Signal	Pin	Pin	Signal
+12V	B1	A1	PRSNT1#
+12V	B2	A2	+12V
RSVD	B3	A3	+12V
GND	B4	A4	GND
SMCLK	B5	A5	JTAG2
SMDAT	B6	A6	JTAG3
GND	B7	A7	JTAG4
+3.3V	B8	A8	JTAG5
JTAG1	B9	A9	+3.3V
3.3VAUX	B10	A10	+3.3V
PCIE_WAKE#	B11	A11	PERST#
RSVD	B12	A12	GND
GND	B13	A13	REFCLK+
PETp0	B14	A14	REFCLK-
PETn0	B15	A15	GND
GND	B16	A16	PERp0
PRSNT2#	B17	A17	PERn0
GND	B18	A18	GND
PETp1	B19	A19	RSVD
PETn1	B20	A20	GND
GND	B21	A21	PERp1
GND	B22	A22	PERn1
PETp2	B23	A23	GND
PETn2	B24	A24	GND
GND	B25	A25	PERp2
GND	B26	A26	PERn2
PETp3	B27	A27	GND
PETn3	B28	A28	GND
GND	B29	A29	PERp3
RSVD	B30	A30	PERn3
PRSNT2#	B31	A31	GND
GND	B32	A32	RSVD
PETp4	B33	A33	RSVD
PETn4	B34	A34	GND
GND	B35	A35	PERp4
GND	B36	A36	PERn4
PETp5	B37	A37	GND
PETn5	B38	A38	GND
GND	B39	A39	PERp5
GND	B40	A40	PERn5
PETp6	B41	A41	GND
PETn6	B42	A42	GND
GND	B43	A43	PERp6
GND	B44	A44	PERn6
PETp7	B45	A45	GND

PETn7	B46	A46	GND
GND	B47	A47	PERp7
PRSNT2#	B48	A48	PERn7
GND	B49	A49	GND

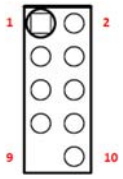
SLOT SMD 98P 90D (F) PCIEx8 Pitch: 1.0mm, Gold Flash, NY6T, Black [WIN WIN WPES-098AN61B51UWS]

Table 42 USB1 USB2.0 Port 2 Connector

Pin	Signal
1	VCC
2	USB-
3	USB+
4	GND

CONN USB DIP 4P 180D, USB A type Receptacle, PA66+30%G.F., Gold Flash Plated, Black [HOMETOM US04022BAI100]

Table 43 USB2 USB2.0 Port 4, 5 Pin Header



Pin	Signal	Pin	Signal
1	VCC1	2	VCC2
3	USB1-	4	USB2-
5	USB1+	6	USB2+
7	GND	8	GND
9	NC	10	GND

PIN HEADER,DIP 10P 2R MALE STRAIGHT TYPE Pitch:2.54mm （YIMTEX 3322*05SAGR (6T) remove 9th pin） [YIMTEX 3322*05SAGR(6T) -09]

Chapter 3

System Installation

■ Expansive Interfaces

- One PCIE X8 vertical slot supported
  (Signals from Sandy Bridge configured as One PCIe X8.)
- One PCIE X8 horizontal slot supported
  (Signals from Sandy Bridge configured as One PCIe X8.)

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 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.

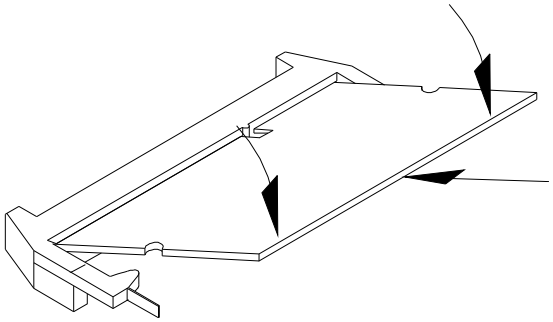


Figure 6 Align the SO-DIMM Memory Module with the onboard socket

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

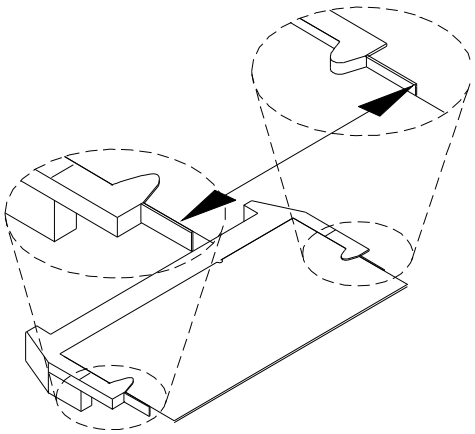


Figure 7 Press down on the SO-DIMM Memory Module to lock it in place

Removing a 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.

Note: *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.*

Removing a DIMM:

To remove the DIMM, press down both sides of the holders carefully and lift it out of the socket.

Make sure you store the 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 44 BIOS Main Menu

BIOS SETUP UTILITY		
Main Advanced Boot Security Server Mgmt Save & Exit		
System Date	[Mon 04/25/2011]	Set the Date. Use Tab to switch between Data elements.
System Time	[00:36:38]	
BIOS Information		
Version	0.0L	
Build Date	04/26/2011	
		→ ← Select Screen
CPU Information		↑↓ Select Item
Intel® Core ™ i3-2330M CPU @ 2.20GHz		Enter: Select
Processor Stepping	206a7	+- Change Opt.
Microcode Revision	12	F1: General Help
Max Processor Speed	2200 MHz	F2: Previous Values
Min Processor Speed	800 MHz	F3: Optimized Defaults
Processor Speed	2200 MHz	F10 Save & Exit
Processor Cores	2	ESC Exit
Intel HT Technology	Supported	
EMT64	Supported	
Memory Information		
Total Size	8192 MB (DDR3)	
Frequency	1333 MHz	
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■ Advanced Menu

Table 45 Advanced Menu

BIOS SETUP UTILITY		
Main **Advanced** Boot Security Server Mgmt Save & Exit		
Onboard LAN1 Controller	[Enabled]	Enable or Disable Onboard LAN Device
Onboard LAN2 Controller	[Enabled]	
Onboard LAN3 Controller	[Enabled]	
Onboard LAN4 Controller	[Enabled]	
Onboard LAN1 Boot	[Disabled]	
Onboard LAN2 Boot	[Disabled]	
Onboard LAN3 Boot	[Disabled]	
Onboard LAN4 Boot	[Disabled]	
>Power Management Configuration		→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
>SATA Configuration		
>USB Configuration		
>Super IO Configuration		
>H/W Monitor		
>CPU Advanced Configuration		
>Serial Port Console Redirection		
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Onboard LAN Controller

Options: Disabled, Enabled

Onboard LAN Boot

Options: Disabled, PXE, iSCSI

Table 46 Advanced Menu – Power Management Configuration

BIOS SETUP UTILITY		
Main **Advanced** Boot Security Server Mgmt Save & Exit		
Power Management Configuration		Select the highest ACPI sleep state the system will enter, when the SUSPEND button is pressed.
ACPI Sleep State	[S3 (Suspend to…)	
Restore AC Power Loss	[Power Off]	
Resume By PCIE Device	[Disabled]	
Resume By RTC Alarm	[Enabled]	
Date(Days)Alarm	0	
Time(hh)Alarm	0	→ ← Select Screen
Time(mm)Alarm	1	↑↓ Select Item
Time(ss)Alarm	0	Enter: Select
		+- Change Opt.
		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F10 Save & Exit
		ESC Exit
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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

Resume By PCIE Device

Options: Disabled, Enabled

Resume By RTC Alarm

Options: Disabled, Enabled

Table 47 Advanced Menu – SATA Configuration

BIOS SETUP UTILITY		
Main **Advanced** Boot Security Server Mgmt Save & Exit		
SATA Controller(s)	[Enabled]	Enable or Disable SATA Device.
SATA Mode Selection	[IDE]	
Serial ATA Port 1	Empty	
Software Preserve	Unknown	
Serial ATA Port 2	Maxtor 6L120MO (12	
Software Preserve	Supported	
Serial ATA Port 3	Empty	
Software Preserve	Unknown	→ ← Select Screen
Serial ATA Port 4	Empty	↑↓ Select Item
Software Preserve	Unknown	Enter: Select
Serial ATA Port 5	Empty	+- Change Opt.
Software Preserve	Unknown	F1: General Help
Serial ATA Port 6	Empty	F2: Previous Values
Software Preserve	Unknown	F3: Optimized Defaults
		F10 Save & Exit
		ESC Exit
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SATA Controller(s)

Options: Disabled, Enabled

SATA Mode Selection

Options: IDE, AHCI, RAID

Table 48 Advanced Menu – USB Configuration

BIOS SETUP UTILITY	
Main **Advanced** Boot Security Server Mgmt Save & Exit	
USB Configuration USB Devices: 1 keyboard, 1 Mouse, 3 Hubs Legacy USB Support [Enabled] EHCI Hand-off [Disabled]	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications. → ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
Version 2.10.1208. Copyright (C) 2010, American Megatrends, Inc.	

Legacy USB Support

Options: Disabled, Enabled, Auto

EHCI hand-off

Options: Disabled, Enabled

Table 49 Advanced Menu – Super IO Configuration

BIOS SETUP UTILITY		
Main **Advanced** Boot Security Server Mgmt Save & Exit		
Super IO Configuration		Set Parameters of Serial Port 1 (COMA)
>Serial Port 1 Configuration		
>Serial Port 2 Configuration		
Watch Dog Timer Function	[Disabled]	→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
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Watch Dog Timer Function

Options: Disabled, Enabled

Table 50 Advanced Menu – Super IO Configuration – Serial Port 1 Configuration

BIOS SETUP UTILITY		
Main **Advanced** Boot Security Server Mgmt Save & Exit		
Serial Port 1 Configuration		Enable or Disable Serial Port (COM)
Serial Port	[Enabled]	
Device Settings	IO=3F8h; IRQ=4;	
Change Settings	[Auto]	→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
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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;

Table 51 Advanced Menu – Super IO Configuration – Serial Port 2 Configuration

BIOS SETUP UTILITY		
Main **Advanced** Boot Security Server Mgmt Save & Exit		
Serial Port 2 Configuration		Enable or Disable Serial Port (COM)
Serial Port	[Enabled]	
Device Settings	IO=2F8h; IRQ=3;	
Change Settings	[Auto]	→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
Version 2.10.1208. Copyright (C) 2010, 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;

Table 52 Advanced Menu – H/W Monitor

BIOS SETUP UTILITY	
Main **Advanced** Boot Security Server Mgmt Save & Exit	
PC Health Status	
CPU Shutdown Temperature [Disabled]	
CPU Smart FAN Temperature [Disabled]	
SYS Smart FAN Temperature [Disabled]	
AUX Sensors [Disabled]	
CPU Temperature : +63 C	
SYS Temperature : +44 C	→ ← Select Screen
	↑↓ Select Item
CPU Fan Speed : 5314 RPM	Enter: Select
SYS Fan Speed : N/A	+- Change Opt.
AUX Fan Speed : N/A	F1: General Help
	F2: Previous Values
+VCORE : +1.168 V	F3: Optimized Defaults
+12V : +11.904 V	F10 Save & Exit
+5V : +5.040 V	ESC Exit
+5VSB : +5.040 V	
+3.3V : +3.408 V	
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CPU Shutdown Temperature

Options: Disabled, 70 C, 75 C, 80 C, 85 C

CPU Smart Fan Temperature

Options: Disabled, 30 C, 35 C, 40 C, 45 C, 50 C, 55 C, 60 C, 65 C, 70 C, 75 C, 80 C

SYS Smart Fan Temperature

Options: Disabled, 30 C, 35 C, 40 C, 45 C, 50 C, 55 C, 60 C

AUX Sensors

Options: Disabled, Enabled, SYS Sensors sync

Table 53 Advanced Menu – CPU Advanced Configuration

BIOS SETUP UTILITY		
Main **Advanced** Boot Security Server Mgmt Save & Exit		
CPU Advanced Configuration		Enable/Disable Intel ® Speed Step ™ Tech.
Intel ® Speed Step ™ Tech	[Enabled]	
Intel ® Virtualization Tech	[Disabled]	
Intel ® Hyper Treading Tech	[Disabled]	
Active Processor Cores	[Disabled]	
Limit CPUID Maximum	[Disabled]	
Execute Disable Bit	[Enabled]	
		→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
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Intel ® Speed Step ™ Tech

Options: Disabled, Enabled

Intel ® Virtualization Tech

Options: Disabled, Enabled

Intel ® Hyper Threading Tech

Options: Disabled, Enabled

Active Processor Cores

Options: All, 1

Limit CPUID Maximum

Options: Disabled, Enabled

Execute Disable Bit

Options: Disabled, Enabled

Table 54 Advanced Menu – Serial Port Console Redirection

BIOS SETUP UTILITY		
Main **Advanced** Boot Security Server Mgmt Save & Exit		
COM1 Console Redirection >Console Redirection Settings	[Disabled]	Console Redirection Enable or Disable.
COM2 (serial over LAN) Console Redirection >Console Redirection Settings	[Disabled]	
Serial Port for Out-of-Band Management/ Windows Emergency Management Services)EMS) Console Redirection >Console Redirection Settings	[Disabled]	→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
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Console Redirection

Options: Disabled, Enabled

■ Boot Menu

Table 55 Boot Menu

BIOS SETUP UTILITY						
Main	Advanced	**Boot**	Security	Server Mgmt	Save & Exit	
Boot Configuration					Enables or Disables Quiet Boot option	
Full Screen LOGO Display			[Enabled]			
Setup Prompt Timeout			1			
Bootup NumLock State			[On]			
Boot Option Priorities					→ ← Select Screen	
Boot Option #1			[SATA: Maxtor 6L…]		↑↓ Select Item	
Hard Drive BBS Priorities					Enter: Select	
					+- Change Opt.	
					F1: General Help	
					F2: Previous Values	
					F3: Optimized Defaults	
					F10 Save & Exit	
					ESC Exit	
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Full Screen LOGO Display

Options: Disabled, Enabled

Bootup Numlock State

Options: On, Off

Boot Option #1

Options: SATA: Maxtor 6L120M0, Disabled

Hard Drive BBS Priorities

Boot Option #1: SATA: Maxtor 6L120M0, Disabled

■ Security Menu

Table 56 Security Menu

BIOS SETUP UTILITY	
Main Advanced Boot **Security** Server Mgmt 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 Administrator Password User Password HDD Security Configuration: HDD 0:Maxtor 6L120	Set Setup Administrator Password → ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
Version 2.10.1208. Copyright (C) 2010, American Megatrends, Inc.	

■ Server Management Menu

Table 57 Server Management Menu

BIOS SETUP UTILITY		
Main Advanced Boot Security **Server Mgmt** Save & Exit		
BMC Support	[Enabled]	Enables or Disables interfaces to communicate with BMC
Wait for BMC	[Enabled]	
FRB-2 Timer	[Disabled]	
FRB-2 Timer timeout	[3 minutes]	
FRB-2 Timer Policy	[Reset]	
O/S Watchdog Timer	[Disabled]	
O/S wtd Timer Timeout	[5 minutes]	
O/S wtd Timer Policy	[Reset]	→ ← Select Screen
		↑↓ Select Item
>Bmc self test log		Enter: Select
>System event Log		+- Change Opt.
>BMC network configuration		F1: General Help
		F2: Previous Values
		F3: Optimized Defaults
		F10 Save & Exit
		ESC Exit
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BMC Support

Options: Disabled, Enabled

Wait for BMC

Options: Disabled, Enabled

FRB-2 Timer

Options: Disabled, Enabled

O/S Watchdog Timer

Options: Disabled, Enabled

Table 58 Server Management Menu – BMC Self Test Log

BIOS SETUP UTILITY		
Main Advanced Boot Security **Server Mgmt** Save & Exit		
Log area usage = 00 out of 20 logs		Erase Log Options
Erase Log	[Yes, On every r…]	
When log is full	[Clear Log]	
Log Empty		
		→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
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Erase Log

Options: Yes, on every reset, No

When Log is Full

Options: Clear Log, Do not log any more

Table 59 Server Management Menu – System Event Log

BIOS SETUP UTILITY		
Main Advanced Boot Security **Server Mgmt** Save & Exit		
Enabling/Disabling Options SEL Components	[Disabled]	Change this to enable or disable all features of System Event Logging during boot.
Erasing Settings Erase SEL When SEL is FULL	[No] [Do Nothing]	
Custom EFI Logging Options Log EFI Status Codes	[Both]	→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
NOTE: All values changed here do not take effect until computer is restarted.		
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SEL Components

Options: Disabled, Enabled

Table 60 Server Management Menu – BMC Network Configuration

BIOS SETUP UTILITY		
Main Advanced Boot Security **Server Mgmt** Save & Exit		
BMC network configuration		Select to configure LAN channel parameters statically or dynamically (DHCP). Do nothing option will not modify any BMC network parameters during BIOS phase
BMC Firmware Version	0.4.0	
MAC Address	00-05-08-04-A1-30	
Now IP Address	192.168.0.1	
Now Subnet Mast Address	255.255.255.0	
Now gateway Address	0.0.0.0	
LAN Channel		
Configuration source	[Do Nothing]	
Do Update BMC LAN		→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
Version 2.10.1208. Copyright (C) 2010, American Megatrends, Inc.		

Configure source

Options: Static, Dynamic, Do Nothing

■ Save & Exit Menu

Table 61 Save & Exit Menu

BIOS SETUP UTILITY	
Main Advanced Boot Security **Server Mgmt** **Save & Exit**	
Save Changes and Exit Discard Changes and Reset Save Options Save Changes Discard Changes Restore Defaults Save as User Defaults Restore User Defaults Boot Override SATA: Maxtor 6L120MO	Reset the system after saving the changes. → ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
Version 2.10.1208. Copyright (C) 2010, 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 KEOD-6000 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 KEOD-6000 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

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Chapter 6

IPMI User's Guide

KEOD-6000 provides a user-friendly IPMI Graphics User Interface (GUI). It is designed to be easy to use. It has a low learning curve because it uses a standard Internet browser. You can expect to be up and running in just few minutes.

1. Connect your PC to KEOD- 6000 with Cat.5 Ethernet Cable via RJ-45 connectors to each other.
2. Go to "Control Panel" on your PC.
3. Go to "Network and Internet"
4. Go to "Network and Sharing Center"
5. Go to "Change Adapter Settings"
6. Go to "Local Area Connections" and click right button on your mouse
7. Select "Properties"
8. Select "Internet Protocol version 4(TCP/IPv4) and click "Properties"
9. Select the following IP address → *Change IP address**
10. Go to BIOS menu of your KEOD-6000 and check the IP Address (Please refer to Table 60)
    For Example, the IP address is 192.168.28.56 as shown below

Table 62 Server Management Menu – BMC Network Configuration

BIOS SETUP UTILITY		
Main Advanced Boot Security **Server Mgmt** Save & Exit		
BMC network configuration		Select to configure LAN channel parameters statically or dynamically (DHCP). Do nothing option will not modify any BMC network parameters during BIOS phase
BMC Firmware Version	0.4.0	
MAC Address	00-05-08-04-A1-30	
Now IP Address	**192.168.18.56**	
Now Subnet Mast Address	255.255.255.0	
Now gateway Address	0.0.0.0	
LAN Channel		→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F10 Save & Exit ESC Exit
Configuration source	[Do Nothing]	
Do Update BMC LAN		
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11. Key in 192.168.28.xx on your PC under *Change IP Address* column and then the subnet mask will show up automatically and then click OK (you should key in any number except 56. For example, you can key in 192.168.28.57)
12. Click IE Browser on your PC
13. Go to http://192.168.28.56
14. Now you are entering IPMI Server Manager

Table 63 IPMI Server Manager

15. Default User name: root
16. Default Password: changeme

Table 64 IPMI Server Manager – System Information

17. Now you can configure your IPMI Server Manager on your PC to control the KEOD-6000.

6.1 System Information

Table 65 IPMI Server Manager – System Information

Version: Users are able to see the server board information, BIOS version, product code and so on under this category.

Server Board Version
Description: Server Board Information
BIOS Version: 0.0L
Manufacture Date: 04/26/2011
Manufacture: ATWorks
Product: ATW-HQM6700
Part Number: 80

MBC Version
Description: BMC Board Information
Device ID: 32
Device Revision: 1
Firmware Revision: 0.4.0
IPMI Revision: 2.0

Session Time-Out: users could select an inactivity timeout for this session. Options: 15/30/60/180 minutes.
If your session is inactive for the selected time you will be logged out.

Components: Users are able to see the CPU and memory information here, such as CU model, frequency, memory status, module size, frequency and so on.
Description: CPU Information
CPU: 1
Status: Enabled
Socket: Intel
Model: Intel® Core™ i7-2630QM CPU @2.00 GHz
Frequency: 2000 MHz

6.2 System Monitoring

Table 66 IPMI Server Manager – System Monitoring

Sensor Readings: This page display system sensor information, including readings and status. You can toggle viewing the thresholds for sensors by pressing the Show Thresholds button here. (Temperature/Voltage/fan Sensors)

Name	Status	Reading
+5V	Normal	5.04 Volts
+5VSB	Normal	5 Volts
+12V	Normal	12 Volts
+VCORE	Normal	1 Volts
+ 3.3 V	Normal	3.28 Volts
CPU FAN	Normal	5200 RPM
SYS FAN	Lower Non-Recoverable	0 RPM
AUX FAN	Lower Non-Recoverable	0 RPM
CPU Temp	Normal	0 Degree C
System Temp	Normal	0 Degree C
AUX Temp	Normal	Not Available

Event Log: Here you can view and save the table of events from the system's event log. You can choose a category from the pull-down box to filter the events, and also sort them by clicking on a column header.

View Event Logs

Event ID	Time Stamp	Sensor Name	Sensor Type	Description
909	05/04/2011 20:01:32	CPU Fan	Fan	Lower-Critical – Going Now- Asserted
908	05/04/2011 19:01:34	CPU Fan	Fan	Lower-Non-Critical-Going Low Asserted

6.3 Configuration

Table 67 IPMI Server Manager – Configuration

There are eight categories here; they are Network, E-mail Notification, SSL Certificate, Platform Event Filter, Set Time, Mouse Code, SMTP, and IPFILTER from left to right, respectively.

Network Settings:
Network
IP: 192.168.0.1
Net Mask: 255.255.255.0
Gateway: 0.0.0.0
MTU: 1500
Set DNS
DNS Server: N/A
MAC Address: 00:50:08:04:A1:29

E-Mail Notification - List of Alerts

Alert#	Alert Level	Destination Address
1	Disable All	Not Configured
2	Disable All	Not Configured
3	Disable All	Not Configured
4	Disable All	Not Configured

SSL Certificate
Default Certificate: 1970年1月1日下午 05:00:00
Default Privacy Key: 1970年1月1日下午 05:00:00
New SSL Certificate 瀏覽 (Browse Column)

Platform Event Filter

PEF#	Event Filter Action	Sensor Type	Sensor Num	Event Trigger
1	[Alert]	All Sensor Type	All Sensor	[Any]
2	[Alert]	All Sensor Type	All Sensor	[Any]

Set Time

Date/Time and NTP Server Setting
Here you can setting Date/Time and NTP Server
User Specified Time
Date (mm/dd/yyyy)
Time (hh:mm:ss)
Synchronize with NTP Server
Primary Time Server
Secondary Time Server
The NTP Server Configuration will be cleared if IP auto configuration is configured to either BOOTP or DHCP in the Network Settings and the DHCP/BOOTP server is not providing the NTP server information.

Mouse Mode Setting

Select the mouse mode to use from the options below and press the Save button.

Select Mode to Absolute (for Windows OS)
Select Mode to relative (for Linux OS)

SMTP Setting

Enter IP Address, User Name, Password, Sender Address and Machine Name for the SMTP server below and press Save button.
SMTP Server IP: 127.0.0.1
SMTP Server Port: 25
User Name:
Password:
Sender Address:
Machine Name:

IP Filter Setting

Add the IP/mask which you want to ACEPT/DROP on web or IOL port
IP address [Mask (CIDR format)] port Target

6.4 User Management

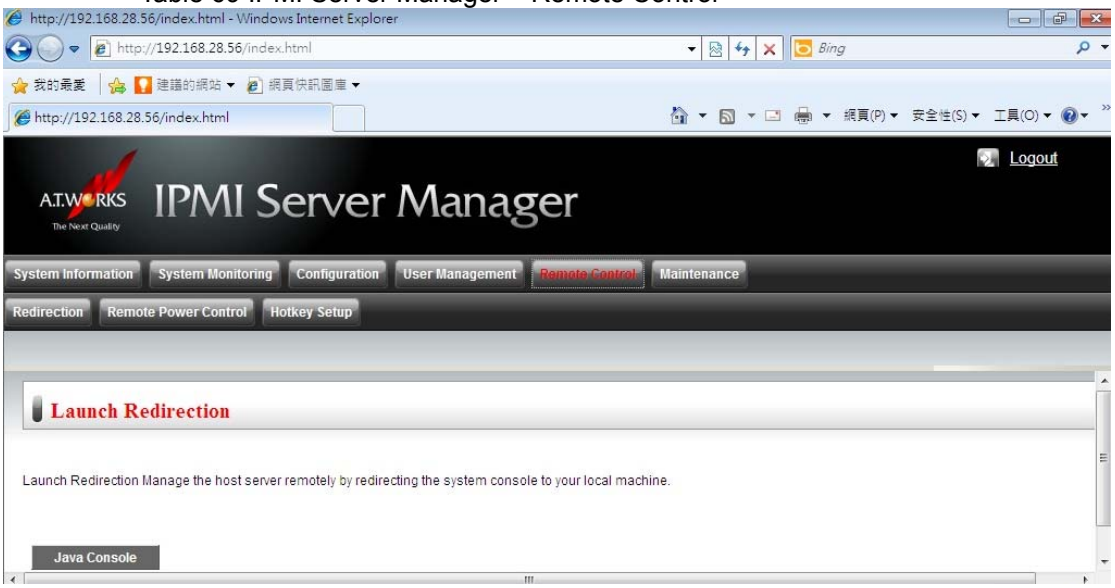
Table 68 IPMI Server Manager – User Management

You can see/add/delete/modify users from the user list here.

User ID	User Name	Network Privilege
1	Root	Administrator
2	~	~

6.5 Remote Control

Table 69 IPMI Server Manager – Remote Control



Launch Redirection manage the host server remotely by redirecting the system console to your local machine.
Users could also manage the power control and monitoring the status, and setup Hotkeys. (Enable JAVA Console column will appear here)

6.6 Maintenance

Table 70 IPMI Server Manager – Maintenance

Users are able to do firmware update and reset BMC here.
Press “Enter Update Mode” under Firmware Update category and upload the file you would like to update.