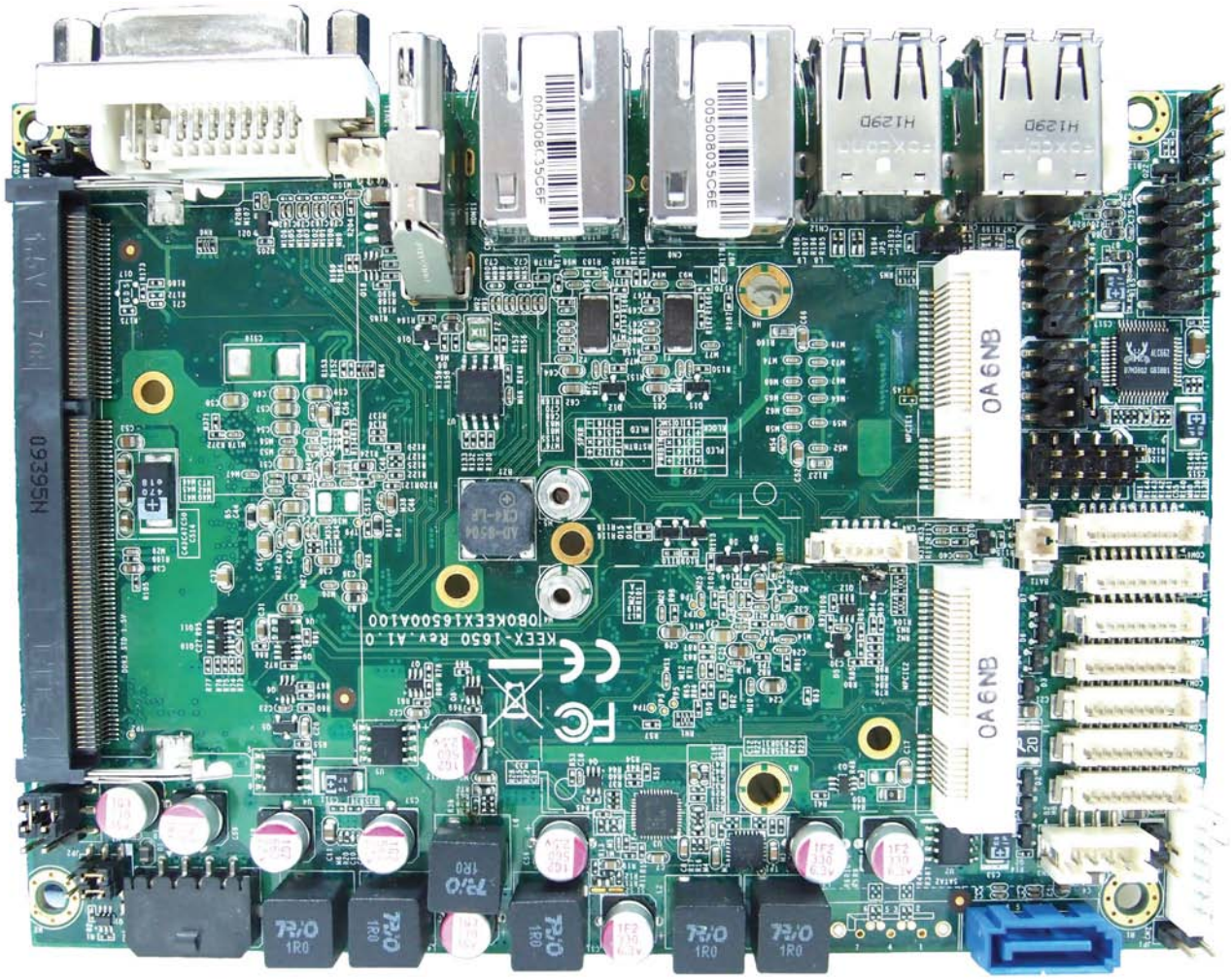
KEEX-1655 Series

Intel® Embedded Compact Extended Form Factor with

Dual Core Intel® Atom™ Processor D2550

User's Guide



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Revision	Date	Edited by	Changes
1.0	2012/3/22	Betsy	Initial Release

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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 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 KEEX-1655 is an Intel® embedded compact extended form factor single board computer (SBC) that equips the Intel® Atom Cedarview-M/D processors D2550 with the high integration of the Intel® NM10 Express chipset. Featured are DDR3 800/1066 SO-DIMM up to 4GB, 1x single channel LVDS, HDMI, DVI-I, 2x Gigabit Ethernet, 2x SATA, 2x mini PCI Expansion slot, 6x USB 2.0, 6x COM ports, HD audio and Digital I/O.

Checklist

- Driver/ Manual CD
- Quick Installation Guide
- KEEX-1655 main board
- 1x SATA Cable*
- 1x SATA Power Cable*
- 1x DC Jack Cable*

Features

- Intel® Atom™ Processor D2550 (1M Cache, 1.86 GHz)
- Intel® NM10 Express Chipset
- Intel® Graphics Media Accelerator 3650
- Single-channel DDR3 800/1066 MHz memory support
- 6xUSB2.0, 6xCOM, 2xGbE LAN, 2xSATA
- 8-bits Digital I/O supported
- LVDS, HDMI, DVI-I Supported
- Mini-PCIe

■ Product Specifications

Model Name	KEEX-1655 Series
Form Factor	▪ ECX, 146x105mm
Processor	Intel® Atom™ Processor D2550 (1M Cache, 1.86GHz)
Memory	▪ 1x DDR3 SO-DIMM socket
Chipset	▪ Intel NM10 Express Chipset
Graphics	▪ Intel® Graphics Media Accelerator 3650 ▪ 1x Single channel 18-bit/24-bit LVDS ▪ 1x HDMI type A connector on rear I/O ▪ 1x DVI-I connector on rear I/O
Ethernet	▪ **2x Gb/s Ethernet ports supported** ● 2x Realtek RTL8111E Gigabit Ethernet controllers onboard ◆ 2x RJ-45 with Gb/s transformer connectors on rear I/O ● PXE/RPL/WOL supported
Audio	▪ **Realtek ALC662-VC HD codec onboard** ● Line-out, Line-in and MIC-in ● Jack detection supported ▪ **2W audio amplifier onboard** ● 2x Speaker out
Peripheral Support	▪ **Storage supported** ● 1x SATA and 1x mSATA, ▪ **6x ports USB2.0 Host supported** ● 4x type A USB2.0 ports supported ● 2x USB2.0 ports supported ▪ **6x COM ports supported** ● 4x RS-232 supported ● 2x TTL level UART supported ● RS-232/422/485 selected on COM1 ▪ **FAN supported** ● 1x 5VDC FAN supported ● Smart FAN supported ▪ **Digital I/O supported** ● 1x 8-bit digital I/O supported ● Input / Output can be programmable ▪ **Front panel supported** ● Reset button, HDD LED and External Speaker supported ● Power button, Power LED, Keyboard lock and SM bus supported ▪ **2x mini PCIe usage (USB2.0 supported)** ▪ **One buzzer onboard**
Expansion Slot	▪ 1x Mini-PCIe and 1x mSATA
BIOS	▪ AMI uEFI BIOS ▪ 1x 16Mb SPI flash ROM onboard
Hardware Monitor	▪ Voltages monitoring ▪ Temperature monitoring.
Watchdog	▪ Super I/O integrated WDT, max. 65535 seconds/minutes selectable

Real Time Clock	▪ NM10 integrated RTC
Battery	▪ 1x CR2032 battery connection ▪ Lithium Battery, 3V
Power	▪ 12VDC power input ▪ AT / ATX power mode supported
Operation Temp.	▪ -20°C ~ 70°C (Wide Range Operating Temperature)
Certifications	▪ CE, FCC Class A

Table 1 KEEX-1655 Series Specification

■ System Block Diagram

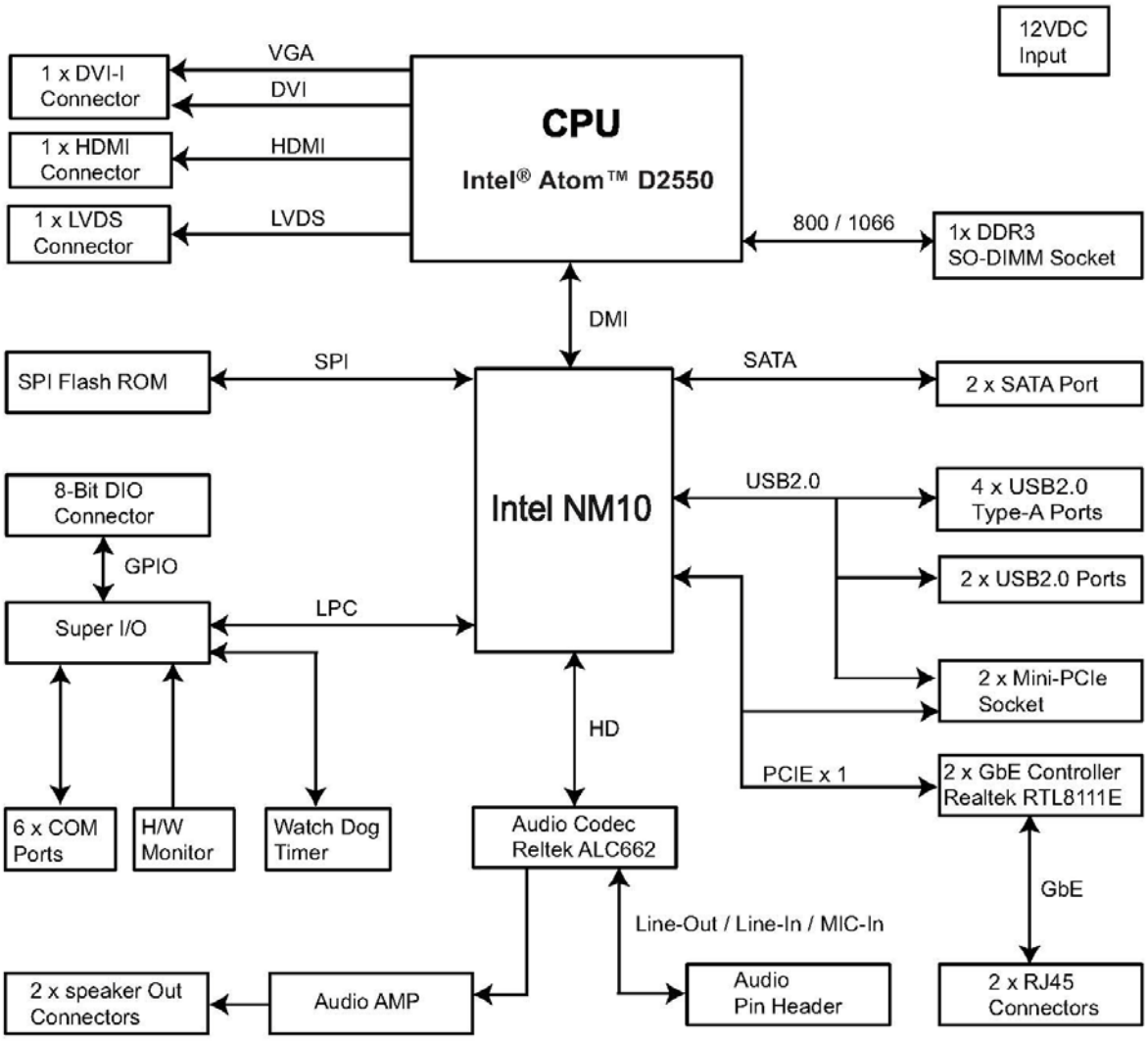
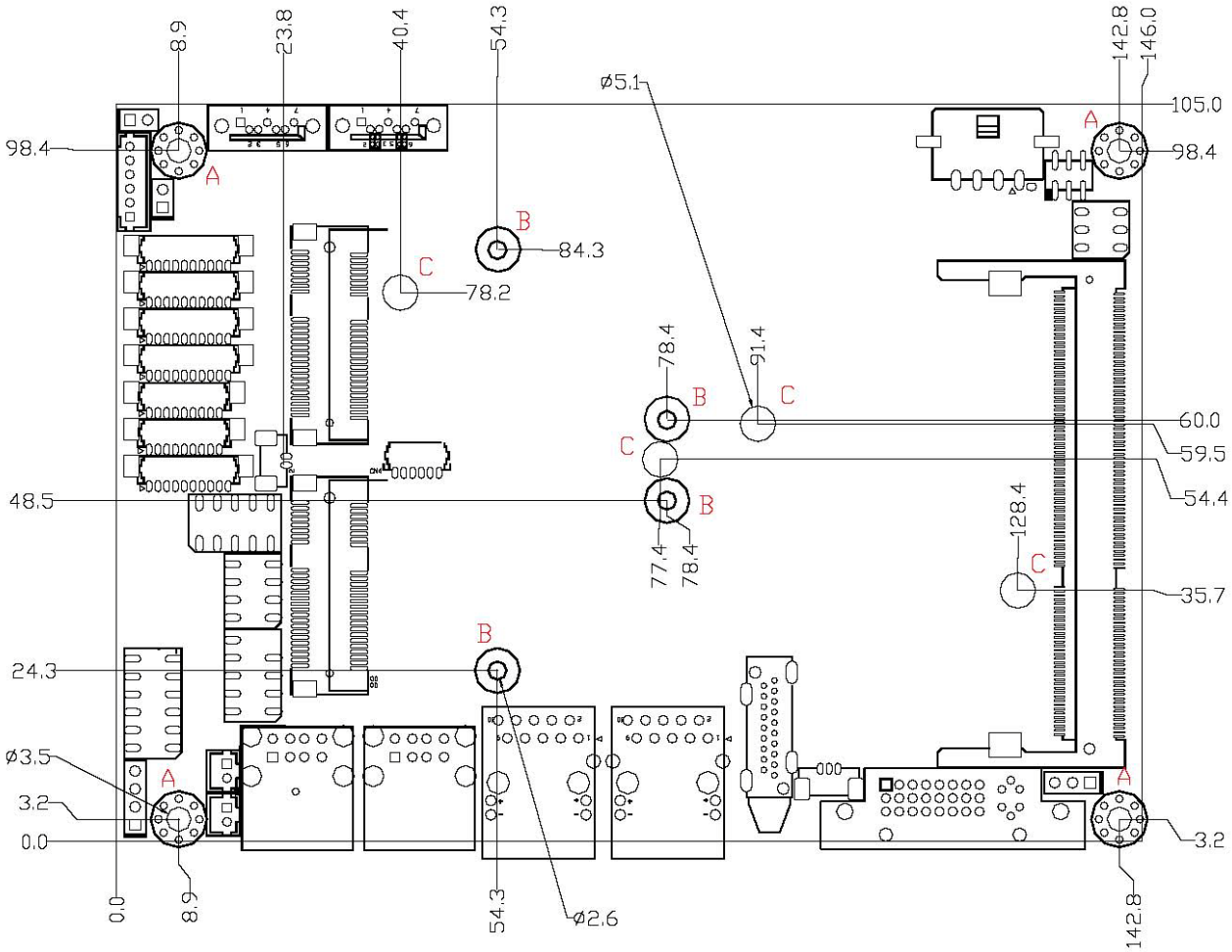


Figure 1 Block Diagram

■ Mechanical Dimensions



*A-ø: 3.5mm * B-ø: 2.6mm * C-ø: 5.1mm

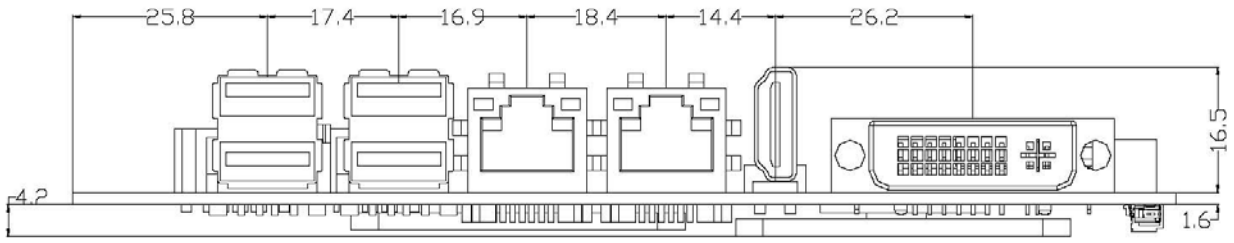


Figure 2 Mechanical Dimensions

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.

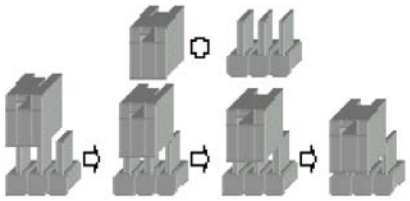


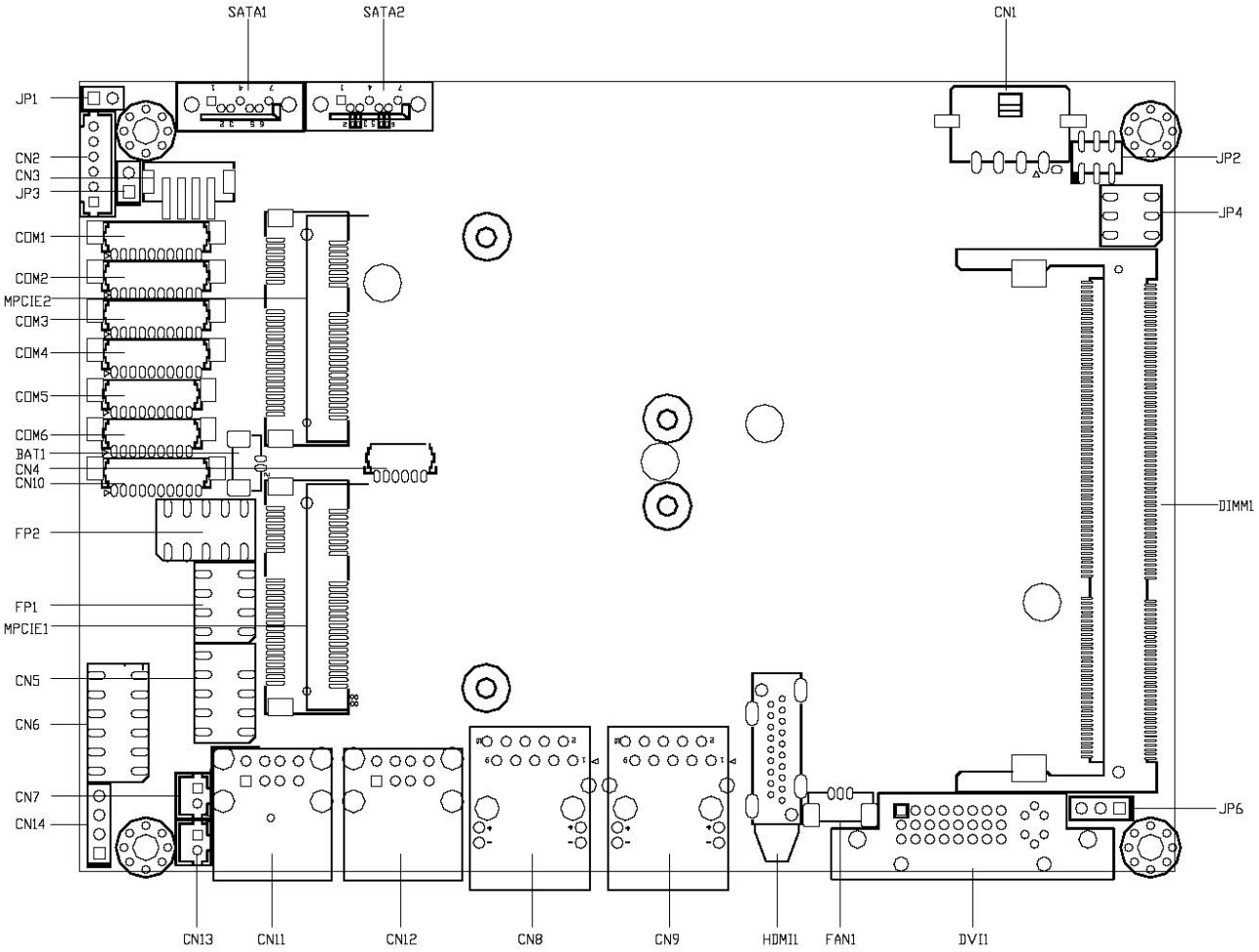
Figure 3 Jumper Connector

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.

Top View



Bottom View

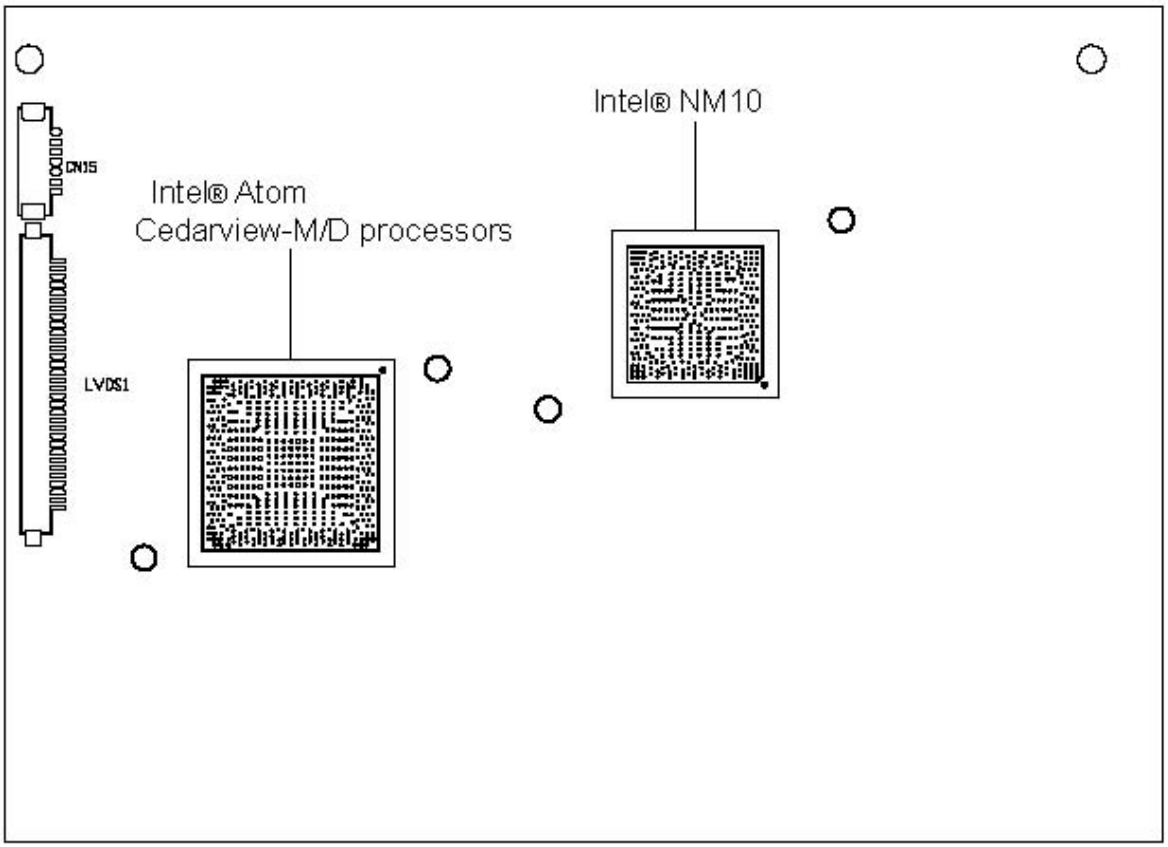


Figure 4 Jumper and Connector Locations

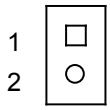
Jumper Settings

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

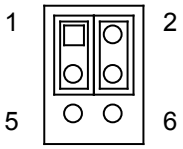
Label	Function
JP1	RTC Reset Selection
JP2	Backlight Enable Selection for LVDS1
JP3	USB Power Selection
JP4	Panel & Backlight Power Selection for LVDS1
JP5	MPCIE Activity LED Indication
JP6	AT / ATX Power Mode Selection

Table 3 JP1 RTC Reset Selection



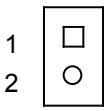
Jumper	Status
1-2 Open	Normal Operation
1-2 Short	Clear CMOS
Pitch:2.54mm [YIMTEX3321*02SAGR(6T)]	

Table 4 JP2 Backlight Enable Selection for LVDS1



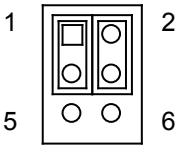
Jumper	Setting	Function
1	1-3	Backlight Enable Level = +3.3V
	3-5	Backlight Enable Level = +5V
2	2-4	Backlight Enable High Active
	4-6	Backlight Enable Low Active
Pitch:2.0mm [PINREX 222-97-03GBB1]		

Table 5 JP3 USB Power Selection



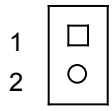
Jumper	Status
1-2 Open	USB power will be cut off in S4 & S5 state.
1-2 Short	USB power is always supply.
Pitch:2.54mm [YIMTEX 3321*02SAGR(6T)]	

Table 6 JP4 Panel & Backlight Power Selection for LVDS1



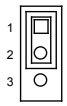
Jumper	Setting	Function
1	1-3	Backlight Power = +12V
	3-5	Backlight Power = +5V
2	2-4	Panel Power = +3.3V
	4-6	Panel Power = +5V
Pitch:2.54mm [YIMTEX 3362*03SAGR]		

Table 7 JP5 MPCIE Activity LED Indication



Pin	Description
1	LED+
2	LED-
Pitch:2.54mm [YIMTEX 3321*02SAGR(6T)]	

Table 8 JP6 AT / ATX Power Mode Selection



Jumper	Status
1-2 Short	ATX Mode
2-3 Short	AT Mode
Pitch:2.54mm [YIMTEX 3321*02SAGR(6T)]	

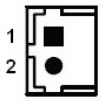
Main Board Pin Assignments

Internal Connector List

Table 9 Internal Connector List

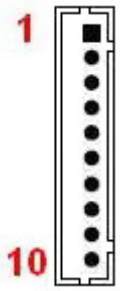
Label	Function
BAT1	CR2032 Battery Power Input Wafer
BZ1	Onboard Buzzer
COM1	RS-232/422/485 Port 1 Wafer
COM2	RS-232 Port 2 Wafer
COM3	RS-232 Port 3 Wafer
COM4	RS-232 Port 4 Wafer
COM5	TTL Level Serial Port 5 Wafer
COM6	TTL Level Serial Port 6 Wafer
CN1	DC12V Power Input Wafer
CN2	PS/2 Keyboard / Mouse Wafer
CN3	HDD Power Output Wafer
CN4	SIM Interface Wafer for MPCIE1
CN5	USB2.0 Port 4, 5 Pin Header
CN6	Audio Input / Output Pin Header
CN7	Left Channel 2W Audio AMP Output Wafer
CN10	Digital Input / Output Wafer
CN13	Right Channel 2W Audio AMP Output Wafer
CN14	SPD/IF Output Pin Header
CN15	Backlight Power Output Wafer for LVDS1
DIMM1	DDR3 Memory SO-DIMM Socket
FAN1	DC5V FAN Wafer
FP1	Front Panel 1 Pin Header
FP2	Front Panel 2 Pin Header
LVDS1	18/24-bit, Single Channel LVDS Panel Connector
MPCIE1	Mini-PCI Express v1.2 Socket 1
MPCIE2	mSATA Socket / Mini-PCI Express v1.2 Socket 2
SATA1	Serial ATA Port 0 Connector
SATA2	Serial ATA Port 1 Connector

Table 10 BAT1 CR2032 battery Power Input Wafer



Pin	Signal Name
1	Battery+
2	Battery-
Pitch:1.25mm [Pinrex 712-73-02TWR0]	

Table 11 COM1 RS-232/422/485 Port 1 Wafer

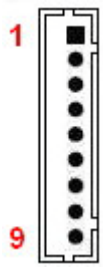


Pin	RS-232	RS-422	Half Duplex RS-485	Full Duplex RS-485
1	DCD	TX-	DATA-	TX-
2	DSR	N/A	N/A	N/A
3	RXD	RX+	N/A	RX+
4	RTS	N/A	N/A	N/A
5	TXD	TX+	DATA+	TX+
6	CTS	N/A	N/A	N/A
7	DTR	RX-	N/A	RX-
8	RI	N/A	N/A	N/A
9	GND	GND	GND	GND
10	+5V	+5V	+5V	+5V
Pitch:1.25mm [Pinrex 712-73-10TWB0]				

Table 12 COM2, 3, 4 RS-232 Port 2, 3, 4 Wafer

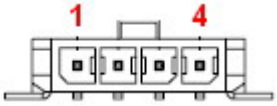
Pin	Signal Name
1	DCD
2	DSR
3	RXD
4	RTS
5	TXD
6	CTS
7	DTR
8	RI
9	GND
10	+5V
Pitch:1.25mm [Pinrex 712-73-10TWB0]	

Table 13 COM5, 6 TTL Level Serial Port 5, 6 Wafer



Pin	Signal Name
1	DCD
2	DSR
3	RXD
4	RTS
5	TXD
6	CTS
7	DTR
8	RI
9	GND
Pitch:1.25mm [Pinrex 712-73-10TWB0]	

Table 14 CN1 DC12V Power Input Wafer



Pin	Signal
1	+12Vin
2	GND
3	GND
4	+12Vin
Pitch: 3.0mm WAFER [Pinrex 733-97-04TBR1]	

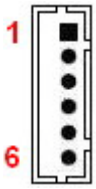
Table 15 CN2 PS/2 Keyboard/Mouse Wafer

Pin	Signal Name
1	MSCLK
2	VCC
3	MSDAT*
4	KBDAT
5	GND
6	KBCLK
Pitch:2.0mm [YIMTEX 503PW1*06ST-1R]	

Table 16 CN3 HDD Power Output Wafer

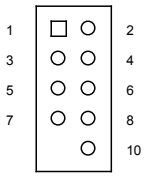
Pin	Signal
1	+12V
2	GND
3	GND
4	+5V
Pitch: 2.0mm WAFER [Pinrex 721-93-04TWR9]	

Table 17 CN4 SIM Interface Wafer for mPCIE1



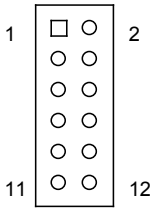
Pin	Signal Name
1	UIM_PWR
2	UIM_DATA
3	UIM_RESET
4	UIM_VPP
5	UIM_CLK
6	GND
Pitch:1.25mm [Pinrex 712-73-06TWB0]	

Table 18 CN5 USB 2.0 Port 4, 5 Pin Header



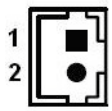
Pin	Signal Name	Pin	Signal Name
1	+USBVCC	2	+USBVCC
3	USB_A-	4	USB_B-
5	USB_A+	6	USB_B+
7	GND	8	GND
9	KEY	10	GND
Pitch:2.54mm [YIMTEX 3362*05SANGR-09]			

Table 19 CN6 Audio Input / Output Pin Header



Pin	Signal Name	Pin	Signal Name
1	MIC-In_L	2	MIC-In_R
3	MIC-In_JD#	4	GND
5	Line-In_L	6	Line-In_R
7	Line-In_JD#	8	GND
9	Line-Out_L	10	Line-Out_R
11	Line-Out_JD#	12	GND
Pitch:2.54mm [Pinrex 212-92-06GBE1]			

Table 20 CN7 Left Channel 2W Audio AMP Output Wafer

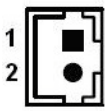


Pin	Signal Name
1	Speaker+
2	Speaker-
Pitch:2.0mm [YIMTEX 503PW1*02STR]	

Table 21 CN10 Digital Input / Output Wafer

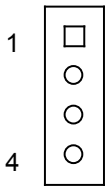
Pin	Signal Name
1	+5V
2	DIO_0
3	DIO_1
4	DIO_2
5	DIO_3
6	DIO_4
7	DIO_5
8	DIO_6
9	DIO_7
10	GND
Pitch:1.25mm [Pinrex 712-73-10TWB0]	

Table 22 CN13 Right Channel 2W Audio AMP Output Wafer



Pin	Signal Name
1	Speaker+
2	Speaker-
Pitch:2.0mm [YIMTEX 503PW1*02STR]	

Table 23 CN14 S/PDIF Output Pin Header



Pin	Signal
1	BIOS_REC#*
2	GND
3	S/PDIF Output
4	GND
Pitch: 3.0mm WAFER [Pinrex 733-97-04TBR1] * : Quanmax validation only.	

Table 24 CN15 Backlight Power Output Wafer for LVDS1

Pin	Signal Name
1	BL_EN***
2	GND
3	+5V / +12V **
4	+5V / +12V **
5	GND
6	BL_ADJ_VOL *
7	NC
Pitch:1.25mm [YIMTEX 501MW1X07MTR-1R] * : BL_ADJ can be setting in BIOS setup. ** : Backlight Power can be selected by JP4. *** : BL_EN can be selected by JP2.	

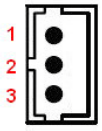


Table 25 FAN1 DC5V FAN Wafer

Pin	Signal
1	SENSE
2	+5V
3	GND
Pitch: 1.25mm WAFER [Pinrex 712-73-03TWE0]	

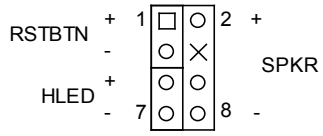


Table 26 FP1 Front Panel 1 Pin Header

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.			

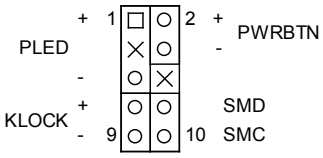


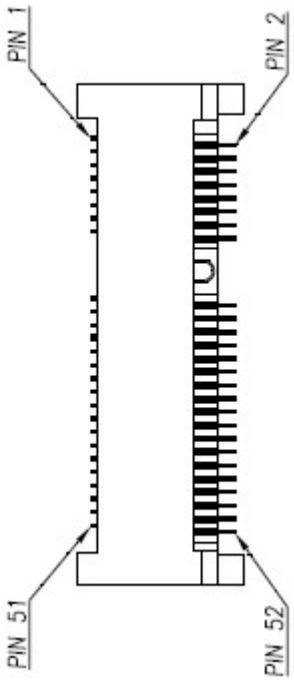
Table 27 FP2 Front Panel 2 Pin Header

Pin	Signal	Pin	Signal
1	Power LED +	2	Power Button +
3	NC	4	Power Button -
5	Power LED -	6	NC
7	Keyboard Lock	8	SMBus Data
9	GND	10	SMBus Clock
Pitch:2.54mm [YIMTEX 3362*05SANGR]			

Table 28 LVDS1 18/24-bit, Single Channel LVDS Panel Connector

Pin	Signal Name	Pin	Signal Name
1	LVDS_TX0-	16	NC
2	LVDS_TX0+	17	GND
3	LVDS_TX1-	18	NC
4	LVDS_TX1+	19	NC
5	LVDS_TX2-	20	NC
6	LVDS_TX2+	21	NC
7	GND	22	NC
8	LVDS_CLK-	23	NC
9	LVDS_CLK+	24	GND
10	LVDS_TX3-/NC*	25	DDC_DATA
11	LVDS_TX3+/NC*	26	VDDEN
12	NC	27	DDC_CLK
13	NC	28	+3.3V / +5V **
14	GND	29	+3.3V / +5V **
15	NC	30	+3.3V / +5V **
Pitch:1.0mm [JAE FI-X30SSL-HF] * ：24-bit LVDS, LVDS_TX3 for Atom D2700 only ** ：Panel Power can be selected by JP4.			

Table 29 MPCIe1 Mini-PCI 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*
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:9.9mm [FOXCONN AS0B226-S99Q-7H] * ： These pins are connected to CN4 directly.			

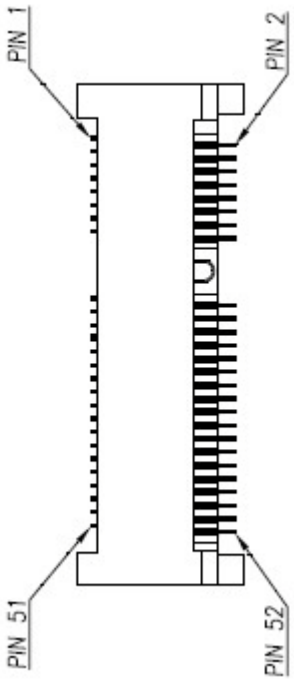
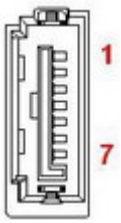


Table 30 MPCIE2 mSATA Socket

Signal	Pin	Pin	Signal
NC	1	2	+3.3V
NC	3	4	Ground
NC	5	6	NC
N/A	7	8	NC
Ground	9	10	NC
NC	11	12	NC
NC	13	14	NC
Ground	15	16	NC
NC	17	18	Ground
NC	19	20	NC
Ground	21	22	NC
SATA_RX+	23	24	+3.3V
SATA_RX-	25	26	Ground
Ground	27	28	NC
Ground	29	30	NC
SATA_TX-	31	32	NC
SATA_TX+	33	34	Ground
Ground	35	36	NC
Ground	37	38	NC
+3.3V	39	40	Ground
+3.3V	41	42	NC
Ground	43	44	NC
NC	45	46	NC
NC	47	48	NC
NC	49	50	Ground
NC	51	52	+3.3V
Height:9.9mm [FOXCONN AS0B226-S99Q-7H]			

Table 31 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]	

Rear Panel Pin Assignments

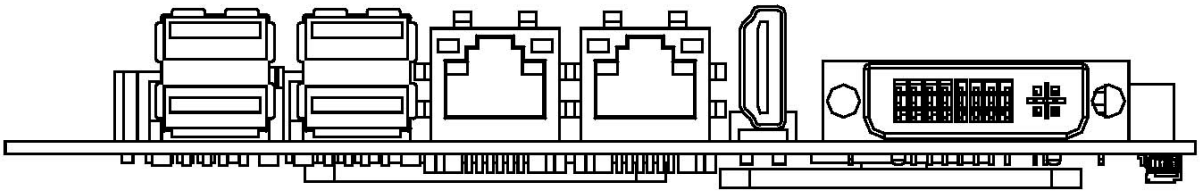
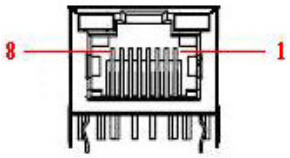


Figure 5 Rear Panel IO

Table 32 Rear Panel Connector List

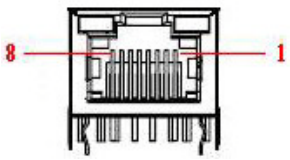
Label	Function
CN8	GbE LAN1 RJ-45 Connector
CN9	GbE LAN2 RJ-45 Connector
CN11	USB2.0 Port 0,1 Type-A Connector
CN12	USB2.0 Port 2,3 Type-A Connector
DVI1	DVI-I Connector
HDMI1	HDMI Connector

Table 33 CN8 GbE LAN1 RJ-45 Connector



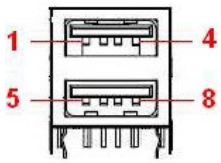
Pin	Signal Name	Pin	Signal Name
1	TX1+	5	TX3-
2	TX1-	6	TX2-
3	TX2+	7	TX4+
4	TX3+	8	TX4-
[UDE RT7-174AAM1A(XA)]			

Table 34 CN9 GbE LAN2 RJ-45 Connector



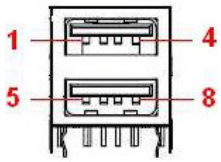
Pin	Signal Name	Pin	Signal Name
1	TX1+	5	TX3-
2	TX1-	6	TX2-
3	TX2+	7	TX4+
4	TX3+	8	TX4-
[UDE RT7-174AAM1A(XA)]			

Table 35 CN11 USB2.0 Port 0, 1 Type-A Connector



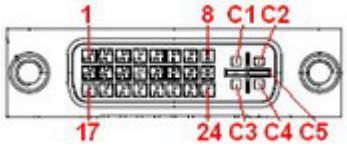
Pin	Signal Name	Pin	Signal Name
1	+USBVCC	5	+USBVCC
2	USB_A-	6	USB_B-
3	USB_A+	7	USB_B+
4	GND	8	GND
[FOXCONN UB1112C-8FDE-4F]			

Table 36 CN12 USB2.0 Port 2, 3 Type-A Connector



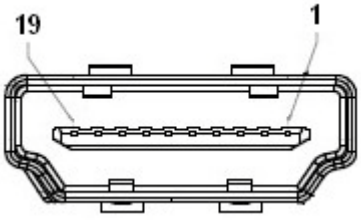
Pin	Signal Name	Pin	Signal Name
1	+USBVCC	5	+USBVCC
2	USB_A-	6	USB_B-
3	USB_A+	7	USB_B+
4	GND	8	GND
[FOXCONN UB1112C-8FDE-4F]			

Table 37 DVI1 DVI-I Connector



Pin	Signal	Pin	Signal	Pin	Signal
1	TX2-	13	NC	C1	R
2	TX2+	14	+5V	C2	G
3	GND	15	GND	C3	B
4	NC	16	HTPLG	C4	HSYNC
5	NC	17	TX0-	C5	GND
6	DDC_CLK	18	TX0+		
7	DDC_DATA	19	GND		
8	VSYNC	20	NC		
9	TX1-	21	NC		
10	TX1+	22	GND		
11	GND	23	TXC+		
12	NC	24	TXC-		

Table 38 HDMI1 HDMI 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
[FOXCONN QJ3119C-WFB1-4F]	

Chapter 3

System Installation

■ Expansive Interfaces

- 2x full size mini-PCIE slot supported
- 1x SIM card slot supported (Optional)

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.

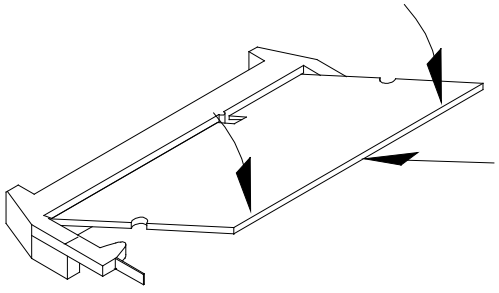


Figure 6 Align the SO-DIMM Memory Module with the onboard socket

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

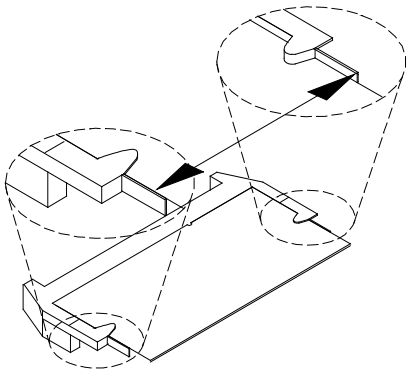


Figure 7 Press down on the SO-DIMM Memory Module to lock it in place

Removing a 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.

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 39 BIOS Main Menu

BIOS SETUP UTILITY					
Main	Advanced	Boot	Security	Save & Exit	
Product Information					
Product Name		KEEX-1655			
BIOS Version		0.08			
BIOS Build Date		01/13/2012			
CPU Information Intel® Atom™ CPU D2550@1.86GHz					
Microcode Revision		109		→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit	
Processor Cores		2			
Memory Information					
Total Size		1024 MB			
Frequency		1067 MHz (DDR3)			
System date		[Thu 12/08/2011]			
System time		[22:44:19]			
Version 2.14.1219. Copyright (C) 2011, American Megatrends, Inc.					

■ Advanced Menu

Table 40 Advanced Menu

BIOS SETUP UTILITY		
Main **Advanced** Boot Security Server Mgmt Save & Exit		
Onboard LAN1 Controller	[Enabled]	
Onboard LAN1 Boot	[Disabled]	
Onboard LAN2 Controller	[Enabled]	
Onboard LAN2 Boot	[Disabled]	
Audio Controller	[Enabled]	
> Display Configuration		→ ← Select Screen
> Power Management Configuration		↑↓ Select Item
> CPU Advanced Configuration		Enter: Select
> SATA Configuration		+- Change Opt.
> USB Configuration		F1: General Help
> DIO Configuration		F2: Previous Values
> Super IO Configuration		F3: Optimized Defaults
> H/W Monitor		F4 Save & Exit
		ESC Exit
Version 2.14.1219. Copyright (C) 2011, 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 41 Advanced Menu – Display Configuration

BIOS SETUP UTILITY						
Main	**Advanced**	Boot	Security	Server Mgmt	Save & Exit	
Display Configuration						
Auto Disable IGD		[Enabled]				
Fixed Graphics Memory Size		[128 MB]				
IGFX – Boot Type		[VBIOS Default]			→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit	
Active LFP		[No LVDS]				
LVDS Backlight Control-Voltage M		[2.5V]				
Version 2.14.1219. Copyright (C) 2011, American Megatrends, Inc.						

Fixed Graphics Memory Size

Options: 128MB, 256MB

IGFX – Boot Type

Options: VBIOS Default, CRT, DVI, HDMI

Active LFP

Options: No LVDS, Int-LVDS

Active LFP 【Int-LVDS】

- **LCD Panel Color**

  Options: 18 Bit, 24Bit

- **LCD Panel Type**

  Options: VBIOS Default,

  800x600 18Bit 1CH

  1024X768 18B it 1CH

  1280X1024 1 8Bit 1CH

  1366X768 18B it 1CH

LVDS Backlight Control – Voltage

Options: 0.0V, 0.5V, 1.0V, 1.5V, 2.0V, 2.5V, 3.0V, 3.5V, 4.0V, 4.5V, 5.0V

Table 42 Advanced Menu –Power Management Configuration

BIOS SETUP UTILITY		
Main **Advanced** Boot Security Server Mgmt Save & Exit		
Power Management Configuration		
ACPI Sleep State	[S3 (Suspend to RAM)]	
Restore AC Power Loss	[Power Off]	
Resume By PCIE Device	[Disabled]	→ ← Select Screen
Resume By RTC Alarm	[Disabled]	↑↓ Select Item
>Watchdog Timer Configuration		Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit
Version 2.14.1219. Copyright (C) 2011, 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

Resume By PCIE Device

Options: Disabled, Enabled

Resume By RTC Alarm

Options: Disabled, Enabled

Watchdog Timer Configuration

- **WDT Function**

  Options: Disabled, Enabled

Table 43 Advanced Menu –CPU Advanced Configuration

BIOS SETUP UTILITY					
Main	**Advanced**	Boot	Security	Save &	Exit
CPU Advanced Configuration					
Hyper-Treading		[Enabled]		→ ← Select Screen	
Execute Disable Bit		[Enabled]		↑↓ Select Item	
Limit CPUID Maximum		[Disabled]		Enter: Select	
EIST		[Enabled]		+- Change Opt.	
				F1: General Help	
				F2: Previous Values	
				F3: Optimized Defaults	
				F4 Save & Exit	
				ESC Exit	
Version 2.14.1219. Copyright (C) 2011, American Megatrends, Inc.					

Hyper-Treading

Options: Disabled, Enabled

Execute Disable Bit

Options: Disabled, Enabled

Limit CPUID Maximum

Options: Disabled, Enabled

EIST

Options: Disabled, Enabled

Table 44 Advanced Menu –SATA Configuration

BIOS SETUP UTILITY					
Main	**Advanced**	Boot	Security	Save & Exit	
Configure SATA as		[AHCI]			
SATA Port 1		TOSHIBA MK8046 (80.0G)		→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit	
SATA Port 2		Not Present			
Version 2.14.1219. Copyright (C) 2011, American Megatrends, Inc.					

Configure SATA as

Options: IDE, AHCI

Table 45 Advanced Menu –USB Configuration

BIOS SETUP UTILITY					
Main	**Advanced**	Boot	Security	Save & Exit	
USB Configuration				.	
USB Devices:				→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit	
1 Drive, 1 Keyboard, 1 Mouse					
Legacy USB Support		[Enabled]			
EHCI Hand-off		[Disabled]			
Mass Storage Devices:					
San Disk		[Auto]			
Version 2.14.1219. Copyright (C) 2011, American Megatrends, Inc.					

Legacy USB Support

Options: Disabled, Enabled, Auto

EHCI hand-off

Options: Disabled, Enabled

San Disk

Options: Auto, Floppy, Forced FDD, Hard Disk, CD-ROM

Table 46 Advanced Menu –DIO Configuration

BIOS SETUP UTILITY		
Main **Advanced** Boot Security Save & Exit		
DIO Configuration		
DIO-0	[Output Low]	
DIO-1	[Output Low]	
DIO-2	[Output Low]	
DIO-3	[Output Low]	
DIO-4	[Output Low]	
DIO-5	[Output Low]	
DIO-6	[Output Low]	
DIO-7	[Output Low]	
DIO-0 Value	0	
DIO-1 Value	0	
DIO-2 Value	0	
DIO-3 Value	0	→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit
DIO-4 Value	0	
DIO-5 Value	0	
DIO-6 Value	0	
DIO-7 Value	0	
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DIO-0

Options: Output Low, Output High, Input

DIO-1

Options: Output Low, Output High, Input

DIO-2

Options: Output Low, Output High, Input

DIO-3

Options: Output Low, Output High, Input

DIO-4

Options: Output Low, Output High, Input

DIO-5

Options: Output Low, Output High, Input

DIO-6

Options: Output Low, Output High, Input

DIO-7

Options: Output Low, Output High, Input

Table 47 Advanced Menu – Super IO Configuration

BIOS SETUP UTILITY				
Main	**Advanced**	Boot	Security	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				→ ← 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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Table 48 Advanced Menu – Super IO Configuration – Serial Port 1 Configuration

BIOS SETUP UTILITY						
Main	**Advanced**	Boot	Chipset	Power	Security	Exit
Serial Port 1 Configuration Serial Port Device Settings Change Settings Serial Port 1 Type			[Enabled] IO=3F8h ; IRQ=4; [Auto] [RS232]			→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save and 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, 10, 11, 12;

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

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

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

Serial Port Type

Options: RS232, RS422, RS485

Table 49 Advanced Menu – Super IO Configuration – Serial Port 2 Configuration

BIOS SETUP UTILITY					
Main	Advanced	Boot	Security	Save & Exit	
Serial Port 2 Configuration					
Serial Port		[Enabled]			
Device Settings		IO=2F8h; IRQ=3;		→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit	
Change Settings		[Auto]			
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Serial Port

Options: Disabled, Enabled

Change Settings

Options: Auto,

IO=2F8h; IRQ=3;

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

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

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

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

Table 50 Advanced Menu – Super IO Configuration – Serial Port 3 Configuration

BIOS SETUP UTILITY					
Main	Advanced	Boot	Security	Save & Exit	
Serial Port 3 Configuration					
Serial Port		[Enabled]			
Device Settings		IO=3E8h; IRQ=7;		→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit	
Change Settings		[Auto]			
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Serial Port

Options: Disabled, Enabled

Change Settings

Options: Auto,

IO=3E8h; IRQ=7;

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

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

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

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

IO=2F0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12

IO=2E0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12

Table 51 Advanced Menu – Super IO Configuration – Serial Port 4 Configuration

BIOS SETUP UTILITY					
Main	Advanced	Boot	Security	Save & Exit	
Serial Port 4 Configuration					
Serial Port		[Enabled]		→ ← Select Screen	
Device Settings		IO=2E8h; IRQ=7;		↑↓ Select Item	
Change Settings		[Auto]		Enter: Select	
				+- Change Opt.	
				F1: General Help	
				F2: Previous Values	
				F3: Optimized Defaults	
				F4 Save & Exit	
				ESC Exit	
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Serial Port

Options: Disabled, Enabled

Change Settings

Options: Auto,

IO=2E8h; IRQ=7;

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

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

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

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

IO=2F0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12

IO=2E0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12

Table 52 Advanced Menu – Super IO Configuration – Serial Port 5 Configuration

BIOS SETUP UTILITY					
Main	Advanced	Boot	Security	Save &	Exit
Serial Port 5 Configuration					
Serial Port		[Enabled]			
Device Settings		IO=2F0h; IRQ=10;			
Change Settings		[Auto]		→ ← 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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Serial Port

Options: Disabled, Enabled

Change Settings

Options: Auto,

IO=2E0h; IRQ=7;

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

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

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

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

IO=2F0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12

IO=2E0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12

Table 53 Advanced Menu – Super IO Configuration – Serial Port 6 Configuration

BIOS SETUP UTILITY					
Main	Advanced	Boot	Security	Save & Exit	
Serial Port 6 Configuration					
Serial Port		[Enabled]			
Device Settings		IO=2E0h; IRQ=10;			
Change Settings		[Auto]		→ ← 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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Serial Port

Options: Disabled, Enabled

Change Settings

Options: Auto,

IO=2F0h; IRQ=7;

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

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

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

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

IO=2F0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12

IO=2E0h; IRQ=3, 4, 5, 6, 7, 10, 11, 12

Table 54 Advanced Menu –H/W Monitor

BIOS SETUP UTILITY					
Main	**Advanced**	Boot	Security	Save & Exit	
PC Health Status					
CPU Warning Temperature		[Enabled]			
>Smart FAN Function					
CPU Temperature		: +63 C			
SYS Temperature		: +50 C			
Fan Speed		: N/A			
+VCORE		: +1.216 V		→ ← Select Screen	
+VGFX		: +1.072 V		↑↓ Select Item	
+3.3V		: +3.360 V		Enter: Select	
+5V		: +5.016 V		+- Change Opt.	
+VIN		: +12.032 V		F1: General Help	
+1.05V		: +1.072V		F2: Previous Values	
+1.5V		: +1.508 V		F3: Optimized Defaults	
+VSBVCC		: +4.963 V		F4 Save & Exit	
				ESC Exit	
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CPU Warning Temperature

Options: Disabled, 80 ºC , 85 ºC, 90 ºC

Smart FAN Function

- **Smart Fan 1 Mode**

  Options: Full on Mode, Automatic Mode, Manual Mode

■ Boot Menu

Table 55 Boot Menu

BIOS SETUP UTILITY				
Main	Advanced	**Boot**	Security	Save & Exit
Boot Configuration				
Full Screen LOGO Display	[Disabled]			
Setup Prompt Timeout	1			
Bootup NumLock State	[On]			
Boot Option Priorities				→ ← Select Screen ↑↓ Select Item Enter: Select +- Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4 Save & Exit ESC Exit
Boot Option #1	[UEFI: SanDisk]			
Boot Option#2	[SATA PM: TOSHIBA…]			
Hard Drive BBS Priorities				
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Full Screen LOGO Display

Options: Disabled, Enabled

Bootup Numlock State

Options: On, Off

Boot Option #1

Options: UEFI: SanDisk , SATA PM: TOSHIBA, Disabled

Boot Option #2

Options: UEFI: SanDisk , SATA PM: TOSHIBA, Disabled

Hard Drive BBS Priorities

- **Boot Option #1: SATA PM: TOSHIBA**

  Options: UEFI: SanDisk , SATA PM: TOSHIBA, Disabled

- **Boot Option #2 : SanDisk**

  Options: UEFI: SanDisk , SATA PM: TOSHIBA, Disabled

■ Security Menu

Table 56 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 Maximum length Administrator Password User Password HDD Security Configuration: HDD 0:	→ ← 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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■ Save & Exit Menu

Table 57 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
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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 KEEX-1655 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 KEEX-1655 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.

Appendix A

DIO (Digital I/O) Sample Code

```
//*************************************************************//
//DIO sample code for KEEX-1655                                  //
//Please compile with Turbo C 3.0 to utilized the program      //
//                                        //
//DIO GPIO pin define from SIO IT8783E                  //
// DIO_0 : GP60         DIO_4 : GP64                    //
// DIO_1 : GP61         DIO_5 : GP65                    //
// DIO_2 : GP62         DIO_6 : GP66                    //
// DIO_3 : GP63   DIO_7 : GP67                  //
//                                        //
//GPIO BASE : 0xA05                          //
//Bit0 : DIO_0 value   0:Low   1:High                  //
//Bit1 : DIO_1 value   0:Low   1:High                  //
//Bit2 : DIO_2 value   0:Low   1:High                  //
//Bit3 : DIO_3 value   0:Low   1:High                  //
//Bit4 : DIO_4 value   0:Low   1:High                  //
//Bit5 : DIO_5 value   0:Low   1:High                  //
//Bit6 : DIO_6 value   0:Low   1:High                  //
//Bit7 : DIO_7 value   0:Low   1:High                  //
//*************************************************************//
#include<stdio.h>

#define INDEX_PORT 0x2E
#define DATA_PORT 0x2F
#define REG_LD 0x07

void Unlock_SIO (void)
{
      outportb(INDEX_PORT, 0x87);
      outportb(INDEX_PORT, 0x01);
      outportb(INDEX_PORT, 0x55);
```

```
    outportb(INDEX_PORT, 0x55);
}

void Lock_SIO (void)
{
    outportb(INDEX_PORT, 0x02);
    outportb(DATA_PORT, 0x02);
}

//----------------------------------------------------------------------
void Set_SIO_LD( int LD)
{
    Unlock_SIO();
    outportb(INDEX_PORT, REG_LD);
    outportb(DATA_PORT, LD);
    Lock_SIO();
}
//----------------------------------------------------------------------
void Set_SIO_Reg( int REG, int DATA)
{
    Unlock_SIO();
    outportb(INDEX_PORT, REG);
    outportb(DATA_PORT, DATA);
    Lock_SIO();
}
//----------------------------------------------------------------------
int Get_SIO_Reg(int REG)
{
    int Result;
    Unlock_SIO();
    outportb(INDEX_PORT, REG);
    Result = inportb(DATA_PORT);
    Lock_SIO();

    return Result;
}

int main()
```

```
{
    int     GPIOBASE = 0xA05;
    int     RetVal;
    int     i;
    int     Temp;

//Set DIO_0~7 as Input
//0:input 1:output
    Set_SIO_LD(0x07);
    RetVal = Get_SIO_Reg(0xCD);
    RetVal &= 0x00;
    Set_SIO_Reg(0xCD, RetVal);

//Read DIO_0~7 value
    RetVal = inportb(GPIOBASE);

    printf("Read DIO_0~7 value\n");
    for (i=0; i<8; i++)
    {
        Temp = (RetVal>>i) & 0x01;
        printf("DIO_%d = %d\n",i ,Temp);
    }
    system("pause");

//Set DIO_0~7 as Output
//0:input 1:output
    Set_SIO_LD(0x07);
    RetVal = Get_SIO_Reg(0xCD);
    RetVal |= 0xFF;
    Set_SIO_Reg(0xCD, RetVal);

//set DIO_0~7 to High
    printf("Set DIO_0~7 to High\n");
    outportb(GPIOBASE, 0xFF);
    system("pause");

//set DIO_0~7 to Low
    printf("Set DIO_0~7 to Low\n");
```

```
    outportb(GPIOBASE, 0x00);
    system("pause");
return 0;
}
```

Appendix B

WatchDog Timer Sample Code

```
//==========================================
//KEEX-1655 DOS Watchdog sample program
//Please compile with Turbo C 3.0 to utilized the program
//==========================================

#include<stdio.h>
int main()
{
    int value;

//Enter the MB PnP Mode
    outp(0x2E,0x87);
    outp(0x2E,0x01);
    outp(0x2E,0x55);
    outp(0x2E,0x55);

//Setting Logical Device Number to 0x07
    outp(0x2E,0x07);
    outp(0x2F,0x07);

//Set Timer unit
//(0x72 bit7(0: Minute, 1: Secont) of watchdog timer by setting this bit)
    outp(0x2E,0x72);
    value = inp(0x2F) & 0x5F;
    value = value | 0x80;//set unit sec.
    outp(0x2F,value);

//Set WDT output through KRST
//(0x72 bit6(1: Enable, 0: Disable))
    outp(0x2E,0x72);
    value = inp(0x2F) & 0xBF;
    value = value | 0x40;//Enable WDT output
    outp(0x2F,value);

//Set Timer Value
//(0x73 Time of watchdog timer)
    outp(0x2E,0x73);
    outp(0x2F,0x14);//set to 20 sec (0x14)
```

```
//Exit the MB PnP Mode
    outp(0x2E,0x02);
    outp(0x2F,0x02);

return 0;
}
```