



灵江工控

PCM5-928EM

用户手册

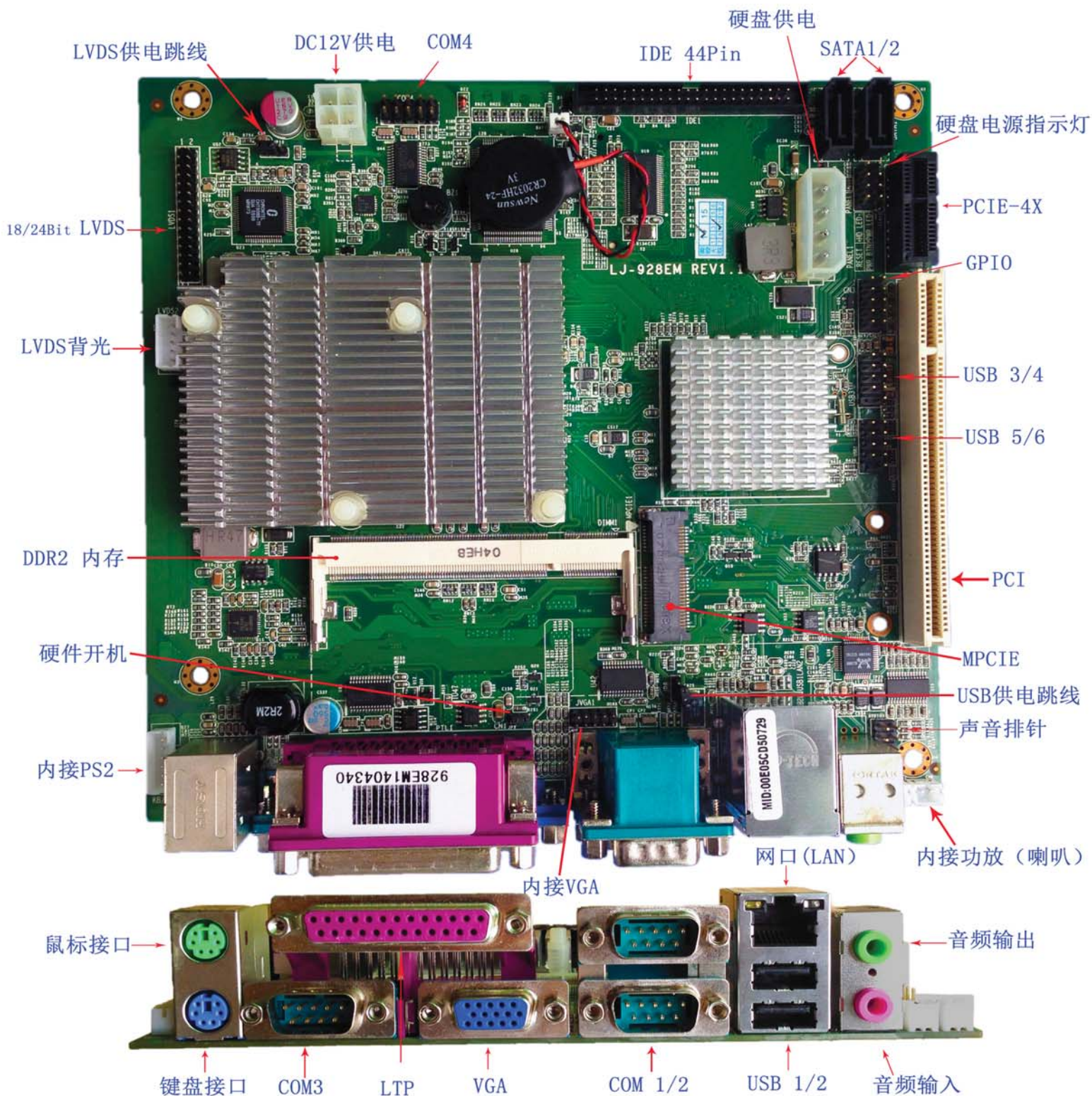
PCM5-928EM

Industrial Motherboard in Mini-ITX form factor
with Intel® Atom N270

User's Guide

灵江工控

PCM5-928EM



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



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Safety Instructions

■ Before You Begin

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

- Always use caution when handling/operating a computer. Only qualified, experienced, authorized electronics service personnel should access the interior of a computer. The power supplies produce high voltages and energy hazards, which can cause bodily harm.
- Use extreme caution when installing or removing components. Refer to the installation instructions in this user’s guide for precautions and procedures. If you have any questions, please contact Ling jiang 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.ling-jiang.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 ling jiang customer service immediately.
3. Inspect the product for damage. If there is damage, notify ling jiang 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.ling-jiang.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 ling jiang or its authorized agent; or if the failure is caused by accident, acts of God, or other causes beyond the control of ling-jiang 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.

ling jiang 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.ling-jiang.com and login to obtain a Return Material Authorization (RMA) Number. If you do not have an account, send an email to Zjchenj8688@vip.sohu.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 ling jiang shipping container. If the original container has been lost or damaged, new shipping containers may be obtained from ling jiang Customer Service at a nominal cost. ling jiang owns all parts removed from repaired products. ling jiang uses new and reconditioned parts made by various manufacturers in performing warranty repairs and building replacement products. If ling jiang 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 ling jiang.

Limitation of Liability

In no event shall ling jiang 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. ling jiang'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 authorized agent.

■ Maintaining Your Computer

Environmental Factors

■ Temperature

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

Consideration should be given to the maximum rated ambient temperature.

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

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

■ Humidity

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

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

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

■ **Altitude**

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

Power Protection

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

■ **Surge Protector**

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

■ **Line Conditioner**

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

■ **Uninterruptible Power Supply**

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

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

Chapter 1

Introduction

■ Overview

The PCM5-928EM is a Mini-ITX form factor industrial motherboard combining the latest Intel 45nm Intel® Atom™ processor with the high integration of the Intel® 945GSE/ ICH7-M chipset. The new architecture of Atom™ N270 enable the lowest power consumption and smallest form factor for thin client and fundamental use. Featured are DDR2-400/533 SODIMM up to 2GB, 18/ 24-bit LVDS, Fast Ethernet, SATA, PCIe riser for 3x PCIe x1/ PCI/ mini PCIE Expansion slot, 6x USB 2.0, 4 COM ports with Power Selection, HD audio, and keyboard/mouse. The PCM5-928EM is a compact, high performance industrial motherboard that is ideal for multimedia, gaming, mobile PC, and thin client applications.

Checklist

- Driver/ Manual CD
- Quick Installation Guide
- I/O Shield
- TX Embedded Board
- SATA cable (7-pin connector with lock, L=46cm)

Features

- Intel® Atom™ Processor N270
- Intel® 945GSE / ICH7-M
- Supports Dual Display, VGA, 18/24-bit LVDS
- DDR2 SO-DIMM Socket, total up to 2 GB
- I slot, PCIe riser for 3x PCIe x1
- Fast Ethernet (Optional GbE)
- 4x COM ports, 4x DI/DO
-

■ Product Specifications

CPU Support	Intel® Atom™ N270
Chipset	Intel® 945GSE + ICH7-M
Memory	1x DDR2 400/533 SO-DIMM Socket, up to 2GB
BIOS	AMI PnP 8Mb SPI ROM
Display	Integrated on Intel® 945GSE Chipset 18/24-bit dual-channel LVDS from Chrontel CH7308 18-bit Dual channel LVDS from 945GSE optional 1x VGA
LAN	1x RJ-45, Gigabit Ethernet (Realtek RTL8111C)
Audio	HD Audio Codec, supports Line-in, Line-out & Microphone (Realtek ALC888) Speak-out with AMP. 2x 2W
Peripheral Support	1x IDE (UltraDMA 100 / 66 / 33) 2x SATA 4x COMs with Power Selection (1x RS-232/422/485, 3x RS-232) 6x USB 2.0 1x PS/2 Keyboard connector 1x PS/2 Mouse connector 1x Parallel port (Box Header) 4x DI/DO 1x CF
	ATX-4P or DC 12V Power Input only
Expansion	1x PCI slot, 1x Mini PCIE 1x PCIe riser for 3x PCIe x1
Watchdog Timer	1-255 step, can be set with software on Super I/O
Hardware Monitor	Operating voltage, CPU temperature and fan speed
	Mini-ITX (170 x 175 mm)
Environmental Factors	Operation Temp: 0°C - 60°C Storage Temp.: -20°C - 85°C Humidity: 0% - 90%
Certifications	CE, FCC Class A

Table 1 PCM5-928EM Specification

System Block Diagram

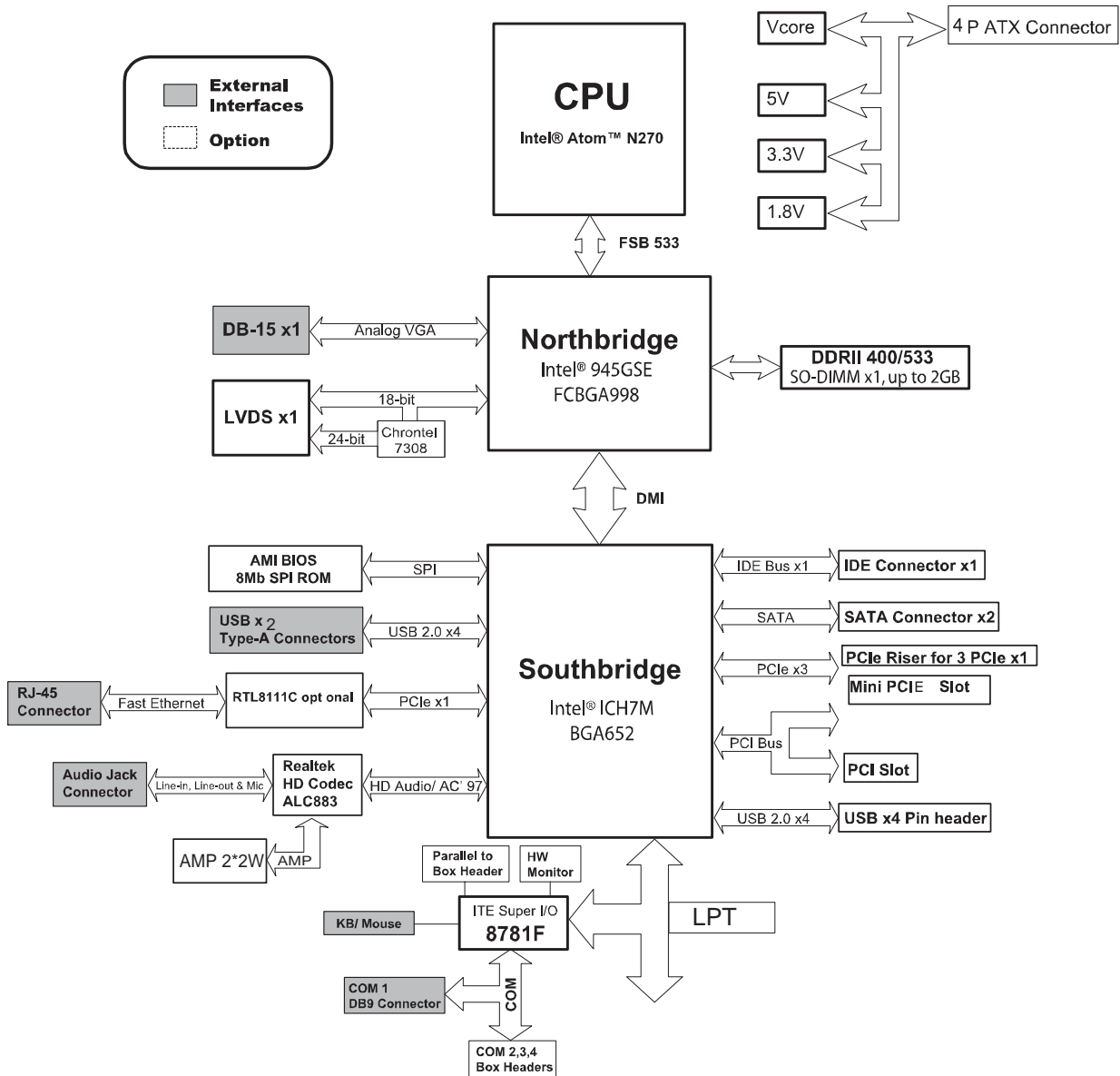


Figure 1 Block Diagram

■ Mechanical Dimensions

Chapter 2

Hardware Settings

■ Overview

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

Jumpers

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

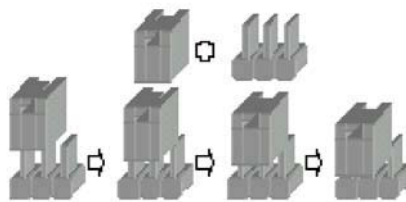


Figure 3 Jumper Connector

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

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

■ Jumper Settings and Pin Definitions

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

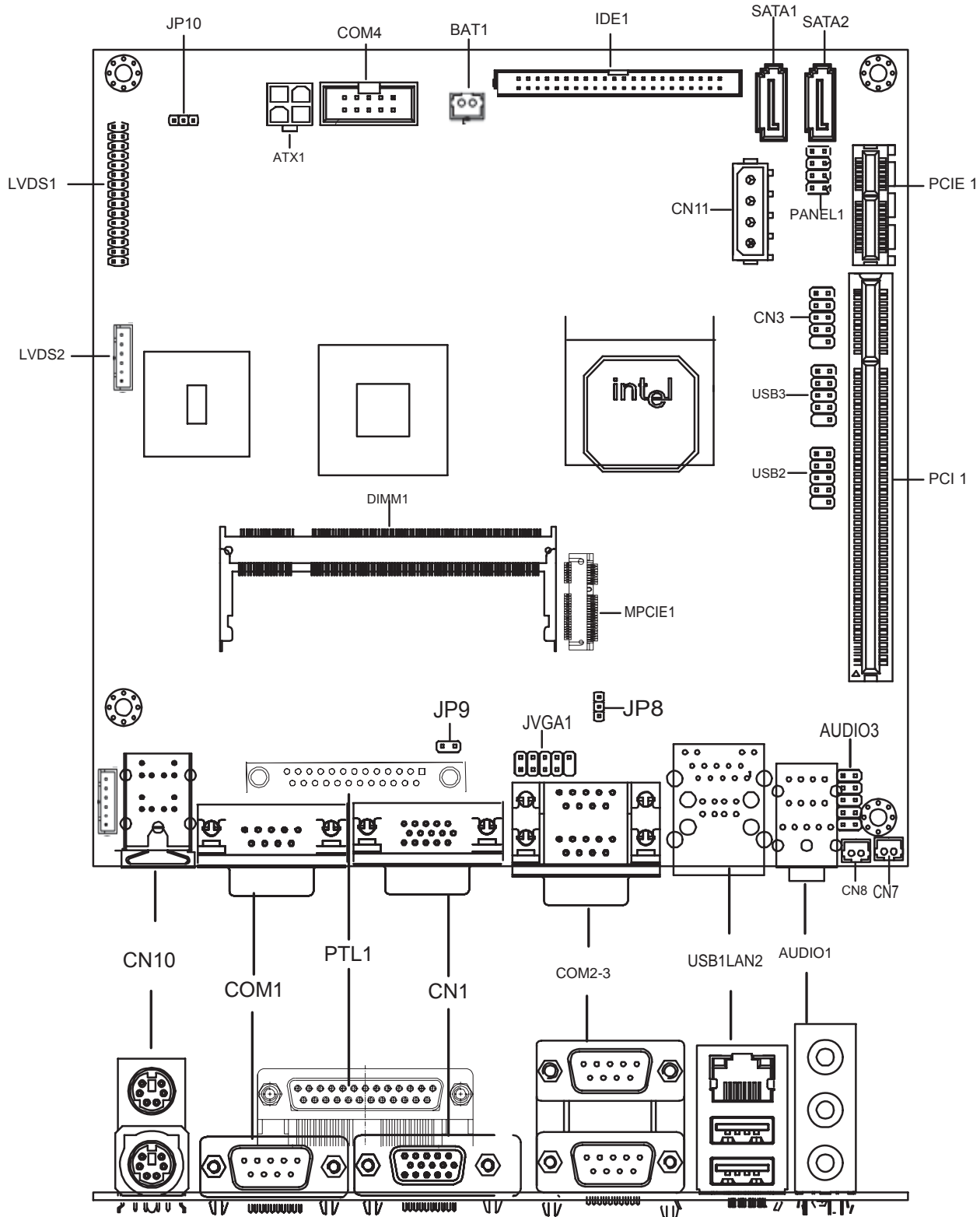


Figure 4 Jumper and Connector Locations

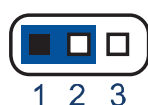
Jumper Settings

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

Table 2 Jumper List

Label	Function
JP10	LVDS POWER Selection
KB/MS2	PS/2 KB/MS OUT
JP3	Clear CMOS Selection
JVGA1	VGA OUT
AUDIO3	Audio Selection
JP6	COM3 Signal / Power Selection
JP7	COM4 Signal / Power Selection
JP8	USB Power Select
JP9	Power Mode Selection

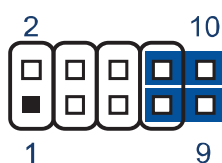
Table 3 JP1 LVDS Power selection



Jumper	Status
1-2	5V (Default)
2-3	12V

Pitch:2.0mm [YIMTEX 3291*03SAGR(6T)]

Table 4 AUDIO3 selection



Jumper	Setting	Status
	1	LIN_R
	2-6-10	GND
	3	LIN_L
	4	MIC_R
	5	MIC_L
	7	NC
	8	LOUT_L
	9	LOUT_R

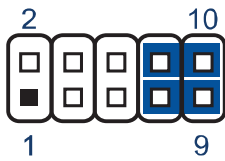
Table 5 JP3 Clear CMOS Selection



Jumper	Status
Open	Normal Operation (Default)
Short	Clear CMOS

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

Table 6 JVGA1 OUT



Jumper	Setting	Function
	1Pin	CRT_R
	2Pin	GND
	3Pin	CRT_G
	4Pin	GND
	5Pin	CRT_B
	6Pin	GND
	7Pin	CRT_HSYNC
	8Pin	GND
	9Pin	CRT_VSYNC
	10Pin	GND

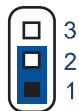
Pitch:2.0mm [YIMTEX 3322*05SAGR(6T)]

Table 7 KB/MS2 OUT



Jumper	Setting	Function
	1Pin	KB-DAT
	2Pin	GND
	3Pin	MS-DAT
	4Pin	KB-CLK
	5Pin	KB-VCC
	6Pin	MS-CLK

Table 8 JP8 USB Power Select



Jumper	Status
1-2	+5VSB (Default)
2-3	+5V

Pitch:2.0mm [YIMTEX 3291*03SAGR(6T)]

Table 9 JP9 Power Mode Selection



Jumper	Status
Open	AT Mode
Short	ATX Mode (Default)

Pitch:2.0mm [YIMTEX 3391*03SAGR(6T)]

Rear Panel Pin Assignments

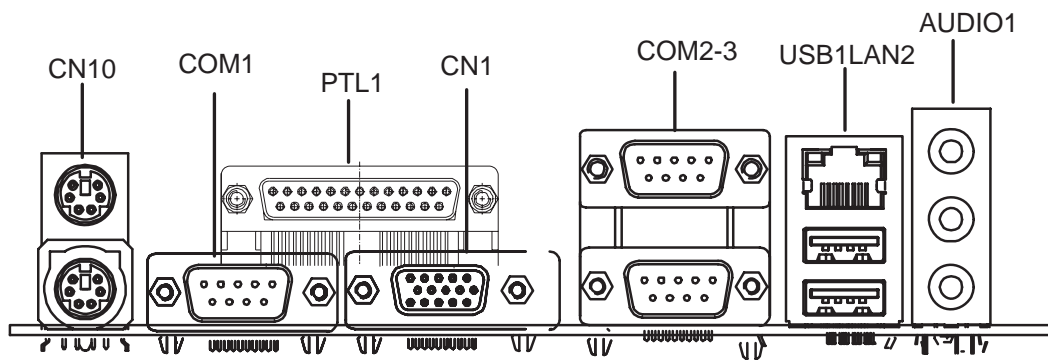





Figure 5 Rear Panel IO

Table 10 Rear Panel Connector List

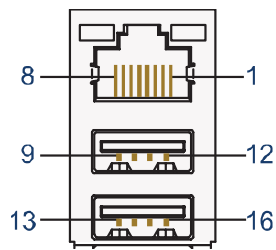
Label	Function
AUDIO1	3-Port Audio phone jack
COM1	RS232/485/482 Port A DB-9 Connector
USB1LAN2	USB2.0 Port 0, 1 Type A Connector & 10/100 Ethernet RJ-45 Connector
CN1	VGA Connector
CN10	PS/2 KB/MS Connector
COM2/3	RS232 Port 2*DB9 Connector
PTL1	LPT Port 25PIN Connector

Table 11 AUDIO1, 3-Port Audio phone jack

	Signal Name
 Blue	BLUE LINE IN
 Green	GREEN LINE OUT
 Pink	PINK MIC IN

AUDIO JACK*3 DIP Vertical [Foxconn JA33331-H11P-4F]

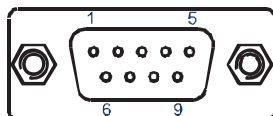
Table 13 CN9, USB2.0 Port 0, 1 Connector & Ethernet RJ-45 Connector



Pin	Signal	Pin	Signal
1	MDI[0]+	U1	+5V
2	MDI[0]-	U2	USB0-
3	MDI[1]+	U3	USB0+
4	MDI[1]-	U4	GND
5	MDI[2]+	U5	+5V
6	MDI[2]-	U6	USB1-
7	MDI[3]+	U7	USB1+
8	MDI[3]-	U8	GND

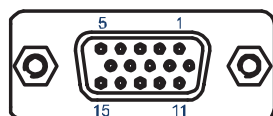
USB*2/RJ45*1+TFM+LED(10/100)22P DIP 90° [UDE RU1-161A1Z1F(XB)]

Table 14 COM1 RS-232/422/485 Port A DB-9 Connector



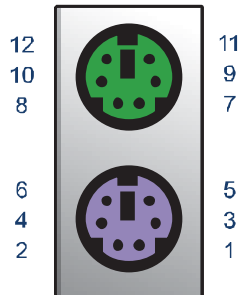
Pin	RS232	RS422	RS485
1	DCD, Data carrier detect	TX+	RTX-
2	RXD, Receive data	RX+	N/A
3	TXD, Transmit data	TX-	RTX+
4	DTR, Data terminal ready	RX-	N/A
5	GND, ground		
6	DSR, Data set ready		
7	RTS, Request to send		
8	CTS, Clear to send		
9	RI, Ring indicator		

CN1 D-SUB15S VGA Connector



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		

Table 15 CN 10, PS/2 KB/MS Connector



Pin	Signal	Function
1	KBDAT	Keyboard Data
2	NC	No Connect
3	GND	Ground
4	KB5V	+5VSB Power Source
5	KBCLK	Keyboard Clock
6	NC	No Connect
7	MSDAT	Mouse Data
8	NC	No Connect
9	GND	Ground
10	KB5V	+5VSB Power Source
11	MSCLK	Mouse Clock
12	NC	No Connect

MINI DIN DIP 6/6P MH11061-P36-4F 90D(F) Kb/Ms for PC99 CONNECTOR
[FOXCONN]

**NOTE**

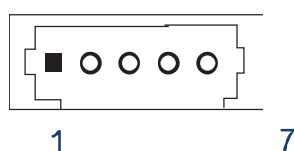
Do not use J1 & ATX1 connectors at the same time.

Main Board Pin Assignments

Table 17 Internal Connector List

Label	Function
LVDS2	Panel Backlight Wafer
CN3	Digital Input / Output Pin Header
AUDIO3	Front Panel Audio Pin Header
CN7	Audio AMP Right Output Wafer
CN8	Audio AMP Left Output Wafer
CN11	AT Power Wafer
DIMM1	DDR2 Memory SO-DIMM Socket
PANEL1	Front Panel 1 Pin Header
LVDS1	LVDS Panel Pin Header
IDE1	44PIN 2.0mm Pin Header
SATA1	Serial ATA Connector
SATA2	Serial ATA Connector
USB2	USB2.0 Port 3, 4 Pin Header
USB3	USB2.0 Port 5, 6 Pin Header
COM4	RS-232 Port 4 With Power Wafer
PCIE1	PCIE slots
MPCIE1	Mini PCIE slots
PCI1	PCI slots
ATX1	+12V Power Input Connector
PTL1	Parallel Port Wafer

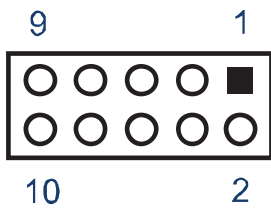
Table 18 CN2, Panel Backlight Wafer



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

Pitch:2.0mm WAFER [YIMTEX 501MW1*5STR]

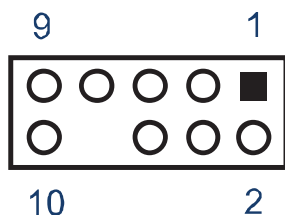
Table 19 CN3, Digital Input / Output Pin Header



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

Pitch:2.54mm [YIMTEX 3322*05SAGR(6T)]

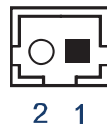
Table 20 AUDIO3, Front Panel Audio Pin Header



Pin	Signal	Pin	Signal
1	LIN-R	2	Audio GND
3	LIN-L	4	MIC-L
5	MIC-R	6	AudioGND
7	NC	8	LOUT-L
9	LOUE-R	10	AudioGND

Pitch:2.54mm w/o Pin 8 [YIMTEX 3322*05SAGR(6T)-08]

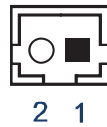
Table 23 CN7, Audio AMP Right Output Wafer



Pin	Signal Name
1	Speaker+
2	Speaker-

Pitch=2.0mm WAFER [YIMTEX 503PW1*02STR]

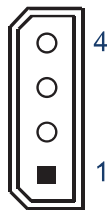
Table 24 CN8, Audio AMP Left Output Wafer



Pin	Signal Name
1	Speaker+
2	Speaker-

Pitch=2.0mm WAFER [YIMTEX 503PW1*02STR]

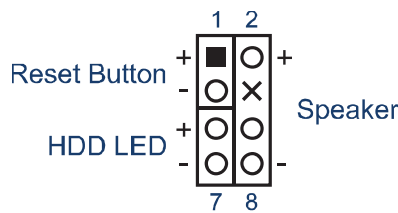
Table 25 CN11, AT Power Output Wafer



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

Pitch: 5.08mm W/O LOCK [VENSİK 2470-F-04PST-PB]

Table 26 PANEL1, Front Panel 1 Pin Header



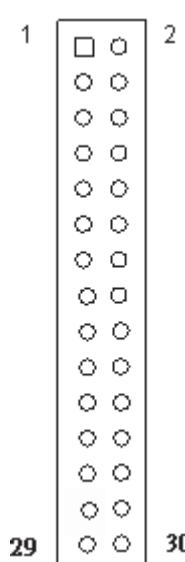
Pin	Signal	Pin	Signal
1	PN_SW +	2	Reset button +
3	PN_SW -	4	Reset Button -
5	PW_LED+	6	HDD LED +
7	PW_LED-	8	HDD LED -

Pins 2, 8: External Speaker wire

Pins 6-8 shorted: Internal Speaker Enable (default)

Pitch:2.54mm [YIMTEX 3322*04SAGR(6T)]

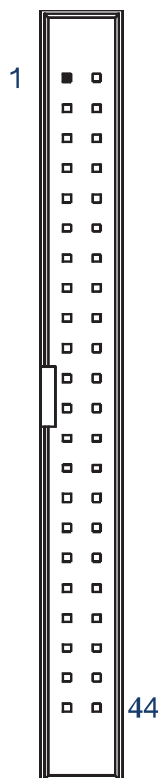
Table 28 LVDS1, LVDS Panel Connector



Pin	Signal Name	Pin	Signal Name
1	+3.3V	2	+5V/12V
3	+3.3V	4	+5V/12V
5	+3.3V	6	+5V/12V
7	LVDS_B3-	8	LVDS_A3-
9	LVDS_B3+	10	LVDS_A3+
11	GND	12	GND
13	LVDS_BCK-	14	LVDS_ACK-
15	LVDS_BCK+	16	LVDS_ACK_
17	GND	18	GND
19	LVDS_B0-	20	LVDS_A0-
21	LVDS_B0+	22	LVDS_A0+
23	LVDS_B1-	24	LVDS_A1-
25	LVDS_A1+	26	LVDS_A1+
27	LVDS_B2-	28	LVDS_A2-
29	LVDS_B2+	30	LVDS_A2+

Pitch:2.0mm CUT27 [YIMTEX 3292*15SAGR(6T)-27]

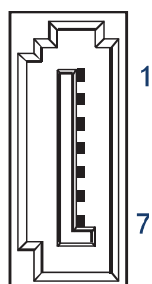
Table 29 IDE1, Primary 44-pin IDE Box Header



Signal Name	Pin	Pin	Signal Name
Reset IDE	1	2	GND
IDE Data 7	3	4	IDE Data 8
IDE Data 6	5	6	IDE Data 9
IDE Data 5	7	8	IDE Data 10
IDE Data 4	9	10	IDE Data 11
IDE Data 3	11	12	IDE Data 12
IDE Data 2	13	14	IDE Data 13
IDE Data 1	15	16	IDE Data 14
IDE Data 0	17	18	IDE Data 15
Ground	19	20	NC
DREQ0	21	22	GND
IDEIOW#	23	24	GND
IDEIOR#	25	26	GND
IDEIORDY	27	28	CBSEL
DACK0#	29	30	GND
IDEIRQ14	31	32	NC
IDE Address 1	33	34	PDIAG#
IDE Address 0	35	36	IDE Address 2
IDE Chip select 1#	37	38	IDE Chip select 3#
IDE activity	39	40	GND
+5V	41	42	+5V
GND	43	44	NC

Pitch:2.0mm [YIMTEX 32644SAGR(6T)]

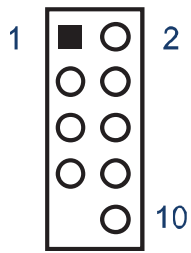
Table 30 SATA1,2, SATA Connector



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

SATA WATM-07ABN4B2B8UW4 [WIN WIN]

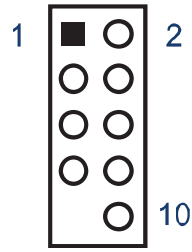
Table 31 USB2, USB2.0 Port 3, 4 Pin Header



Pin	Signal Name	Pin	Signal Name
1	+5V	2	+5V
3	USB3-	4	USB4-
5	USB3+	6	USB4+
7	GND	8	GND
9	KEY	10	GND

Pitch:2.54mm [YIMTEX 3322*05SAGR(6T) -09]

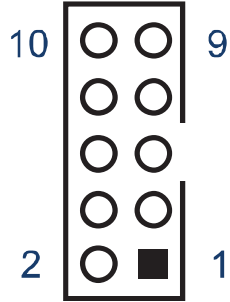
Table 32 USB3, USB2.0 Port 5, 6 Pin Header



Pin	Signal Name	Pin	Signal Name
1	+5V	2	+5V
3	USB5-	4	USB6-
5	USB5+	6	USB6+
7	GND	8	GND
9	KEY	10	GND

Pitch:2.54mm [YIMTEX 3322*05SAGR(6T) -09]

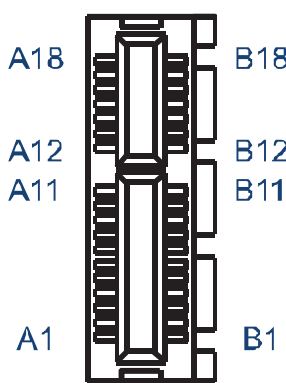
Table 33 COM4 RS-232 Port-x Box Header



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

Pitch:2.54mm [YIMTEX 32510SAG1R(6T)]

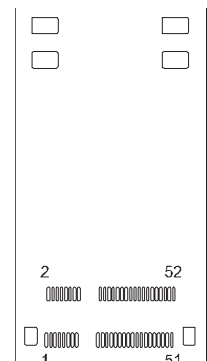
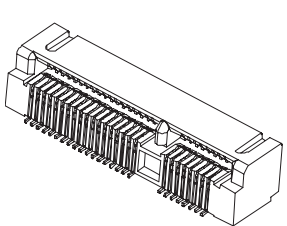
Table 34 PCIE1 PCIE slots



PCIE slots		
Pin	Side B	Side A
1	12V	3.3V
2	12V	3.3V
3	3.3VSB	Ground
4	PCIE_WAKE#	CLK100_PCIE+
5	PCI_RST#	CLK100_PCIE-
6	Ground	Ground
7	PCIE_TXP2	PCIE_RXP2
8	PCIE_TXN2	PCIE_RXN2
9	Ground	Ground
10	PCIE_TXP3	PCIE_RXP3
11	PCIE_TXN3	PCIE_RXN3
12	Ground	Ground
13	Ground	Ground
14	NC	NC
15	NC	NC
16	Ground	Ground
17	NC	NC
18	NC	NC

PCI 18*2P EXPRESS 180D(F) Black [Win Win WPES--036AN41B22UWS]

Table 35 MPCIE1, Mini-PCIE Socket

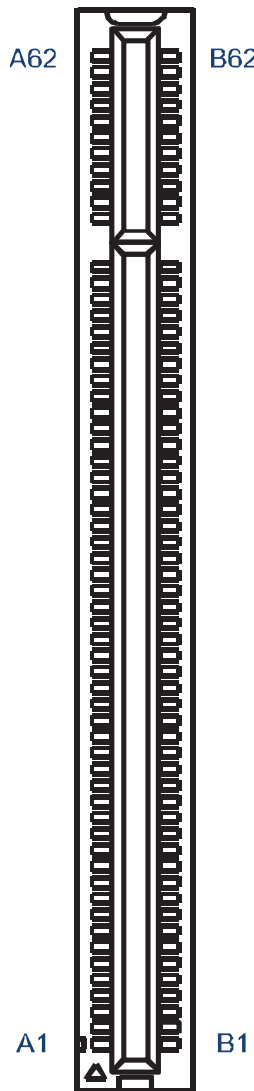



Pin	Signal	Pin	Signal
1	WAKE#	2	+3.3V
3	NC	4	GND
5	NC	6	+1.5V
7	NC	8	NC
9	GND	10	NC
11	PCIECLK-	12	NC
13	PCIECLK+	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	NC
21	GND	22	RST
23	RX2-	24	+3.3V_SB
25	RX2+	26	GND
27	GND	28	+1.5V
29	GND	30	SMB_CLE
31	TX2-	32	SMB_DAT

33	TX2+	34	GND
35	GND	36	USB7N
37	NC__	38	USB7P
39	NC__	40	GND
41	NC	42	NC
43	_NC_	44	_NC_
45	_NC_	46	_NC_
47	_NC_	48	+1.5V
49	_NC_	50	GND
51	NC	52	+3.3V

[FOXCONN AS0B226-S56N-7F]

Table 36 PCI1, PCI slots



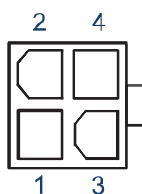
The diagram shows a side view of a PCI slot. The pins are numbered 1 to 49 from top to bottom. The slot is labeled with A1, A62, B1, and B62 at the corners. Pin 1 is at the top left, and pin 49 is at the bottom right. The slot is divided into two halves by a central notch. The left half is labeled A1 and A62, and the right half is labeled B1 and B62.

5V Board PCI Revision 2.1			
Pin	Side B	Side A	Comments
1	-12V	TRST_L	32-bit start
2	TCK	+12V	
3	Ground	TMS	
4	TDO	TDI	
5	+5V	+5V	
6	+5V	INTA_L	
7	INTB_L	INTC_L	
8	INTD_L	+5V	
9	PRSNT1_L	Reserved	
10	Reserved	+5V	
11	PRSNT2_L	Reserved	
12	Ground	Ground	3.3V key
13	Ground	Ground	3.3V key
14	Reserved	Reserved	
15	Ground	RST_L	
16	CLK	+5V	
17	Ground	GNT_L	
18	REQ_L	Ground	
19	+5V	Reserved	
20	AD[31]	AD[30]	
21	AD[29]	+3.3V	
22	Ground	AD[28]	
23	AD[27]	AD[26]	
24	AD[25]	Ground	
25	+3.3V	AD[24] +3.3V	
26	C/BE[3]_L	IDSEL	
27	AD[23]	+3.3V	
28	Ground	AD[22]	
29	AD[21]	AD[20]	
30	AD[19]	Ground	
31	+3.3V	AD[18]	
32	AD[17]	AD[16]	
33	C/BE[2]_L	+3.3V	
34	Ground	FRAME_L	
35	IRDY_L	Ground	
36	+3.3V	TRDY_L	
37	DEVSEL_L	Ground	
38	Ground	STOP_L	
39	LOCK_L	+3.3V	
40	PERR_L	Reserved	
41	+3.3V	Reserved	
42	SERR_L	Ground	
43	+3.3V	PAR	
44	C/BE[1]_L	AD[15]	
45	AD[14]	+3.3V	
46	Ground	AD[13]	
47	AD[12]	AD[11]	
48	AD[10]	Ground	
49	Ground	AD[09]	

5V Board PCI Revision 2.1			
Pin	Side B	Side A	Comments
50	KEYWAY	KEYWAY	5V key
51	KEYWAY	KEYWAY	5V key
52	AD[08]	C/BE[0]_L	
53	AD[07]	+3.3V	
54	+3.3V	AD[06]	
55	AD[05]	AD[04]	
56	AD[03]	Ground	
57	Ground	AD[02]	
58	AD[01]	AD[00]	
59	+5V	+5V	
60	ACK64_L	REQ64_L	
61	+5V	+5V	
62	+5V	+5V	32-bit end

PCI 60*2P 180D (F) [FOXCONN EH06001-DAW-DF]

Table 37 ATX1, +12V Power Input Connector



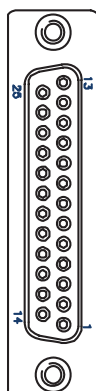
Pin	Signal Name
1	GND
2	GND
3	+12V
4	+12V

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



NOTE

Table 38 PTL1 Parallel Port DB-25 Connector



Signal	Pin	Pin	Signal
Line printer strobe	1	14	AutoFeed
PD0, parallel data 0	2	15	Error
PD1, parallel data 1	3	16	Initialize
PD2, parallel data 2	4	17	Select In
PD3, parallel data 3	5	18	Ground
PD4, parallel data 4	6	19	Ground
PD5, parallel data 5	7	20	Ground
PD6, parallel data 6	8	21	Ground
PD7, parallel data 7	9	22	Ground
ACK, acknowledge	10	23	Ground
Busy	11	24	Ground
Paper empty	12	25	Ground
Select	13		

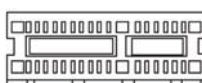
Chapter 3

System Installation

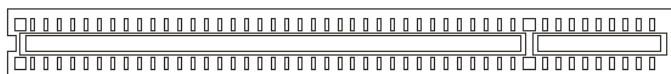
■ Expansive Interfaces

The board comes with one PCIe x1 slot , one PCI slot and one Mini-PCI interface.

1x PCIe riser for 3x PCIe x1



32-bit, 33MHz PCI slot



MPCIE SLOT

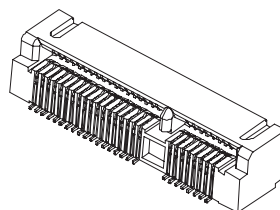


Figure 6 Expansive Interfaces

NOTE



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

■ Memory Module Installation

Carefully follow the steps below in order to install the 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. To make sure the correct DDR2 SO-DIMM notches should match with the DDR2 SO-DIMM.
4. Hold the SO-DIMM with its notch aligned with the memory socket of the board and insert it at a 30-degree angle into the socket.

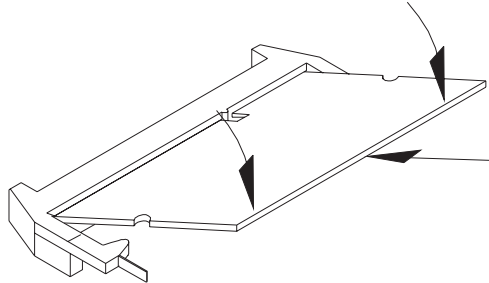


Figure 7 Align the SO-DIMM Memory Module with the onboard socket

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

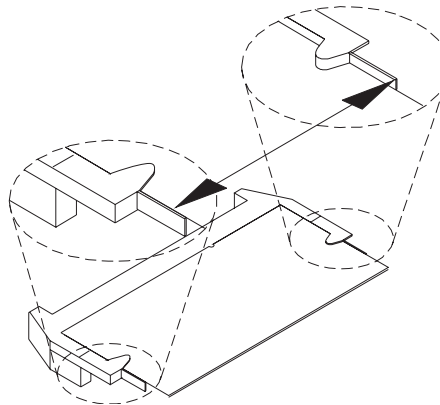


Figure 8 Press down on the SO-DIMM Memory Module to lock it in place

Removing a DIMM:

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

Chapter 4

AMI BIOS Setup

■ Overview

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



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 Ling jiang

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	Chipset	Power	Security	Exit
System Date			[Wed 11/05/2008]			Use [ENTER], [TAB] or [SHIFT-TAB] to select a field.
System Time			[10:18:15]			Use [+] or [-] to configure system Time.
> Primary IDE Master			: [Not Detected]			
> Primary IDE Slave			: [Not Detected]			
> Secondary IDE Master			: [Not Detected]			
> Secondary IDE Slave			: [Not Detected]			
> System Information						<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
V02.61 (C) Copyright 1985-2006, American Megatrends, Inc.						

Below table is described for Primary IDE Master, Primary IDE Slave, Secondary IDE Master, and Secondary IDE Slave setting.

Table 40 IDE Device Setting Menu

BIOS SETUP UTILITY						
Main						
Primary Master						Disable: Disables LBA Mode. Auto: Enables LBA Mode if the device supports it and the device is not already formatted with LBA Mode disabled.
Device			: Not Detected			
LBA/ Large Mode			[Auto]			<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
DMA Mode			[Auto]			
S.M.A.R.T			[Auto]			
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LBA/ Large Mode

Enables or disables the LBA (Logical Block Addressing)/ Large mode. Setting to Auto enables the LBA mode if the device supports this mode, and if the device was not previously formatted with LBA mode disabled. Options: Disabled, Auto

DMA Mode

Options: Auto

S.M.A.R.T

SMART stands for Smart Monitoring, Analysis, and Reporting Technology. It allows AMIBIOS to use the SMART protocol to report server system information over a network. Options: Auto, Disabled, Enabled

Table 41 System Information

BIOS SETUP UTILITY	
Main	
AMIBIOS Version : 1.3 Build Date: :12/26/08 Processor Intel® Atom™ CPU N270 @ 1.60GHz Speed :1600MHz Count :1 System Memory Size :1016MB	<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
V02.61 (C)Copyright 1985-2006, American Megatrends, Inc.	

■ Advanced Menu

Table 42 Advanced Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	Security	Exit
Advanced Settings <hr/> Warning: Setting wrong values in below sections may cause system to malfunction. > I/O Configuration > OnBoard Peripherals Configuration > Trusted Computing > Hardware Health Configuration		<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit				
V02.61 (C)Copyright 1985-2006, American Megatrends, Inc.						

Press <Enter> to select a sub-menu for detailed options.

Table 43 Onboard I/O Configuration

BIOS SETUP UTILITY	
Advanced	
Onboard I/O Configuration	Allow BIOS to Select Serial Port1 Base Address.
COM1 Address [3F8]	
COM1 IRQ [4]	
COM1 Function Type [RS232]	
COM2 Address [2F8]	
COM2 IRQ [4]	
COM3 Address [3E8]	<> Select Screen
COM3 IRQ [10]	↑↓ Select Item
COM3 Mode [Normal]	+ - Change Field
COM4 Address [2E8]	Tab Select Field
COM4 IRQ [11]	F1 General Help
COM4 Mode [Normal]	F10 Save and Exit
Parallel Port Address [378]	ESC Exit
Parallel Port Mode [Normal]	
Parallel Port IRQ [IRQ7]	
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COM1 Address

Options: Disabled, 3F8, 3E8, 2E8

COM1 IRQ

Options: 3, 4, 10, 11

COM1 Function Type

Options: RS232, RS422, RS485

COM2 Address

Options: Disabled, 2F8, 3E8, 2E8

COM2 IRQ

Options: 3, 4, 10, 11

COM3 Address

Options: Disabled, 3F8, 2F8, 3E8, 2E8, 2F0, 2E0

COM3 IRQ

Options: 3, 4, 10, 11

COM3 Mode

Options: Normal, IrDA, ASK IR, Smart Card Reader

COM4 Address

Options: Disabled, 3F8, 2F8, 3E8, 2E8, 2F0, 2E0

COM4 IRQ

Options: 3, 4, 10, 11

COM4 Mode

Options: Normal, IrDA, ASK IR, Smart Card Reader

Parallel Port Address

Options: 378, 278, 3BC

Parallel Port Mode

Options: Normal, EPP, ECP, EPP+ECP

Parallel Port IRQ

Options: IRQ5, IRQ7

Table 44 OnBoard Peripherals Configuration Settings

BIOS SETUP UTILITY	
Advanced	
OnBoard Peripherals Configuration Settings	Options
USB Controller [Enable]	Disabled
USB Device Legacy Support [Enable]	Enabled
Audio Controller [Enable]	
Onboard LAN Controller [Enable]	<> Select Screen
Onboard LAN OPTROM [Disabled]	↑↓ Select Item
	+ - Change Field
	Tab Select Field
	F1 General Help
	F10 Save and Exit
	ESC Exit
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USB Controller

Options: Enabled, Disabled

USB Device Legacy Support

Options: Enabled, Disabled, Auto

Audio Controller

Options: Enabled, Disabled

Onboard LAN Controller

Options: Enabled, Disabled

Onboard LAN OPTROM

Options: Enabled, Disabled

Table 45 Trusted Computing

BIOS SETUP UTILITY	
Advanced	
Trusted Computing	Enable/ Disable TPM
TCG/TPM SUPPORT	[NO]
	TCG (TPM 1.1/1.2) supp in BIOS
	<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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TCG/TPM SUPPORT

Options: No, Yes

Table 46 Hardware Health Configuration

BIOS SETUP UTILITY	
Advanced	
Hardware Health Configuration	
CPU Warning Temperature	[Disabled]
CPU Shutdown Temperature	[Disabled]
Temperature Sensor #1	:57°C/ 134°F
Temperature Sensor #1	:43°C/ 109°F
+V CORE	:1.136 V
+1.05V	:1.040 V
+3.3V	:3.166 V
+5V	:4.958 V
+12V	:11.182 V
+1.8v	:1.758 V
+VCC RTC	:3.365 V
	<> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
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CPU Warning Temperature

Options: Disabled, 80°C/176°F, 85°C/185°F, 90°C/194°F, 95°C/203°F

CPU Shutdown Temperature

Options: Disabled, 80°C/176°F, 85°C/185°F, 90°C/194°F, 95°C/203°F

■ Boot Menu

Table 47 Boot Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	Security	Exit
Boot Settings <hr/> Quick Boot [Enabled] Bootup Num-Lock [ON] Wait For 'F1' If Error [Enabled] Hit 'DEL' Message Display [Enabled]					Allow BIOS to Skip certain tests while booting. This will decrease the time needed to boot the system. <> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
V02.61 (C)Copyright 1985-2006, American Megatrends, Inc.						

Quick Boot

Enabling this item allows BIOS to skip some Power On Self Tests (POST) while booting to decrease the time needed to boot the system. When set to [Disabled], BIOS performs all the POST items.

Options: Disabled, Enabled

Bootup Num-Lock [On]

Allow you to select the power-on state for the NumLock.

Options: Off, On

Wait for 'F1' If Error [Enabled]

When set to Enabled, the system waits for F1 key to be pressed when error occurs.

Options: Disabled, Enabled

Hit 'DEL' Message Display [Enabled]

When set to Enabled, the system displays the message 'Press DEL to run Setup' during POST.

Options: Disabled, Enabled

■ Chipset Menu

Table 48 Chipset Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	Security	Exit
Chipset Settings				Options		
DRAM Frequency				[Auto]		
Boots Graphic Adapter Priority				[PEG/PCI]		
Internal Graphics Mode Select				[Enabled, 8MB]		
Hyper Threading Technology				[Enabled]		
> Video Function Configuration						
				Auto		
				400 MHz		
				533 MHz		
				<> Select Screen		
				↑↓ Select Item		
				+- Change Field		
				Tab Select Field		
				F1 General Help		
				F10 Save and Exit		
				ESC Exit		
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DRAM Frequency

Options: Auto, 400 MHz, 533MHz

Boots Graphic Adapter Priority

Select which graphics controller to use as the primary boot device.

Options: IGD, PCI/IGD, PCI/PEG, PEG/IGD, PEG/PCI

Internal Graphics Mode Select

Select the amount of system memory used by the Internal graphics device.

Options: Disabled, Enabled 1MB, Enabled 8M

Hyper Threading Technology

Options: Disabled, Enabled

■ Video Function Configuration

Table 49 Video Function Configuration

BIOS SETUP UTILITY		
Chipset		
Video Function Configuration		Options
DVMT Mode Select	[DVMT Mode]	Fixed Mode
DVMT/FIXED Memory	[128M]	DVMT Mode
Boot Display Device	[VGA]	Combo Mode
Flat Panel Type	[1024X768 24Bit 1C]	
Local Flat Panel Scaling	[Auto]	
Panel BackLight Voltage	[2.5]	
		<> Select Screen
		↑↓ Select Item
		+ - Change Field
		Tab Select Field
		F1 General Help
		F10 Save and Exit
		ESC Exit
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DVMT Mode Select

Options: Fixed Mode, DVMT Mode, Combo Mode

DVMT/FIXED Memory

Options: 64MB, 128MB, Maximum DVMT

Boot Display Device

Options: VGA, LVDS, VGA+LVDS

Flat Panel Type

Options:

640x480 24Bit 1CH

1024x768 24Bit 1CH

1280x1024 24Bit 2CH

1600x1200 24Bit 2CH

Local Flat Panel Scaling

Options: Auto, Forced Scaling, Disabled

Panel BackLight Voltage

Options: Min 0.0V, Max: 5.0V

■ Power Menu

Table 50 Power Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	Security	Exit
Power Management Setting					Select the ACPI state used for System Suspend	
ACPI Function			[Enabled]			
Suspend mode			[S3 (STR)]			
Repost Video on S3 Resume			[No]		<> Select Screen	
Suspend Time Out			[Disabled]		↑↓ Select Item	
Restore on AC Power Loss			Power Off]		+- Change Field	
Resume By USB Device			[Disabled]		Tab Select Field	
Resume On PME#			[Disabled]		F1 General Help	
Resume By PCI-E Device			[Disabled]		F10 Save and Exit	
Resume On RTC Alarm			[Disabled]		ESC Exit	
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ACPI Function

Enable/ Disable ACPI support for Operating System.

ENABLE: If OS supports ACPI, DISABLE: IF OS Does not support ACPI.

Suspend mode

Options: S1 (POS), S3 (STR)

Repost Video on S3 Resume

Options: No, Yes

Suspend Time Out

Options: Disabled, 1 Min, 2 Min, 4 Min, 8 Min, 10 Min, 20 Min, 30 Min, 40 Min, 50 Min, 60 Min

Restore on AC Power Loss

Options: Power OFF, Power ON, Last State

Resume By USB Device

Enable/ Disable USB Device Wakeup From S3/S4

Options: Disabled, Enabled

Resume On PME#

Options: Disabled, Enabled

Resume By PCI-E Device

Options: Disabled, Enabled

Resume On RTC Alarm

Options: Disabled, Enabled,

If the value is Enabled.

RTC Alarm Date (Days) [Every Day]	KeyIn "+" "-" to select
RTC Alarm Time [00:00:00]	Use [ENTER], [TAB] or [SHIFT+TAB] to select a field Use [+] or [-] to configure system time

Security Menu

Table 51 Security Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	Security	Exit
Security Setting Supervisor Password :Not Installed User Password :Not Installed Change Supervisor Password Change User Password					Install or Change the password. <> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
V02.61 (C)Copyright 1985-2006, American Megatrends, Inc.						

Change Supervisor Password

Select this item to set or change the supervisor password. The Supervisor Password item on top of the screen displays the default Not Installed. After you have set a password, this item displays Installed.

Change User Password

Select this item to set or change the user password. The User Password item on top of the screen displays the default Not Installed. After you have set a password, this item displays Installed.

■ Exit Menu

Table 52 Exit Menu

BIOS SETUP UTILITY						
Main	Advanced	Boot	Chipset	Power	Security	Exit
Exit Setting					Exit System Setup after saving the changes.	
Save Changes and Exit Discard Changes and Exit Discard Changes Load Optimal Defaults Load Failsafe Defaults					F10 key can be used for this operation. <> Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit	
V02.61 (C)Copyright 1985-2006, 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 PCM5-928EM 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 PCM5-928EM from the Ling jiang website at www.Ling-jiang.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

System Resources

Interrupt Request (IRQ) Lines

IRQ #	Used For	Comment
0	Timer0	
1	keyboard controller	
2	Cascade	
3	COM2	Note (1)
4	COM1	Note (1)
5	Free	
6	Floppy disk controller	Note (1)
7	Free	
8	Real Time Clock	
9	ACPI-Compliant System	
10	Free	
11	COM3&4	Note (1)
12	PS/2 Mouse	Note (1)
13	Floating point unit (FPU / NPU / Math coprocessor)	
14	Primary IDE channel	Note (1)
15	Secondary IDE channel	Note (1)

Note: If the “Used For” device is disabled in setup, the corresponding interrupt is available for other devices.

DMA Channels

DMA #	Used For	Comment
0	Memory Refresh	
1	Sound	Note (1)
2	Floppy disk controller	Note (1)
3	free	Unavailable if LPT used in ECP mode.
4	Cascade	
5	Sound	Note (1)
6	free	
7	free	

Note: If the "Used For" device is disabled in setup, the corresponding interrupt is available for other devices.

Memory Mapping

Upper Memory	Used For	Comment
C0000h - CBFFFh	VGA BIOS	No
CC000h - CFFFFh CD000h - CDFFFh	LAN Option ROM	Yes
E0000h - FFFFFh	System BIOS	No

PCI Devices

PCI Device	PCI Interrupt	Comment
LAN	INTA	AD20

PCI Express Devices

PCIe Device	PCIe Interrupt	Comment
PCIe x1 Slot 1	INTC	

Inter-IC Bus (I2C)

I2C Address	Used For	Comment
A0h	DDR2-RAM DIMM Socket 0 Address	

ISA I/O Port

I2C Address	Used For	Comment
2Eh	Super I/O	
2Eh	WatchDog Timer	Reference register in Super I/O

I/O Address Map

I/O Address	Used For	Comment
00h – 0Fh C0h – DFh	8237DMA Controller	
20h, 21h	8259A PIC	
2Eh, 2Fh	SuperIO Access Port	
A0h, A1h	8259A PIC	
40h – 43h (XT/AT)	8254PIT	

44h – 47h (PS/2)		
60h – 64h	KeyBoard Controller	
90h – 96h	PS/2 P OS	
F0h – FFh	Math Co-Processor, X87 Unit	
170h – 177h	Secondary IDE	
1F0h – 1F7h	Primary IDE	
200h – 22Fh	GAME I/O	
220h – 22Fh	Sound Blaster / AD Lib	
279h, A79h	Plug and Play Configuration Register	
A15h, A16h	HW Monitor Access Port	
2E8h – 2EFh	COM4	
2F8h – 2FFh	COM2	
378h – 37Ah	Parallel Printer Port	
3B0h – 3BFh	MDA / MGA	
3C0h – 3CFh	EGA / VGA	
3D4h – 3D9h	CGA/CRT Register, Controller and Palette Register	
3F0h – 3F7h	Floppy Diskette	
3F6h, 3F7h	Enhanced IDE	
3E8h – 3EFh	COM3	
3F8h – 3FFh	COM1	
0CF8h	PCI Configuration Register/address	
0CFCh	PCI Configuration Register/data	

Hardware Monitor Parameters

IT8781F Pin Name	Voltage/Temperature	Function/Comments
VIN0	+VCORE	Processor core voltage
VIN1	+1.05V	+/- 5%
VIN2	+3.3V	+/- 5%
VIN3	+5V	+/- 5%
VIN4	+12V	+/- 5%
VIN5	Chip core 1.5V	+/- 5%
VIN6	DDR 1.8V	+/- 5%
5VSB	5VSB	+/- 5%
SYS_TEMP	System Temperature	
CPU_TEMP	CPU Temperature	
PRDCHOT#		CPU over temperature shutdown output
BEEP		Beep function for hardware monitor

Appendix B

DIO (Digital I/O) KIT User Guide

The purpose of this document is to provide detail instruction on how to install and utilized the Ling jiang DIO Tool on Microsoft Windows XP.



WARNING

The program is platform specific. Therefore, do not use the DIO Tool to other platform to prevent adverse effect.

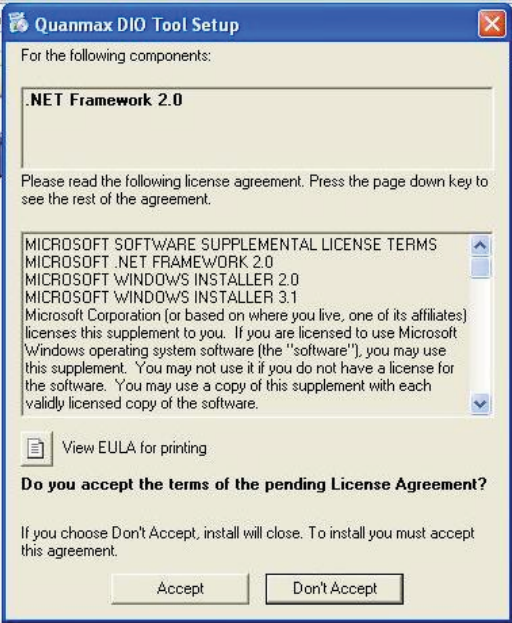
How to install the test program:

Go in to the “DIO KITS” folder. Double Click on the DIO installation program to start the installation.

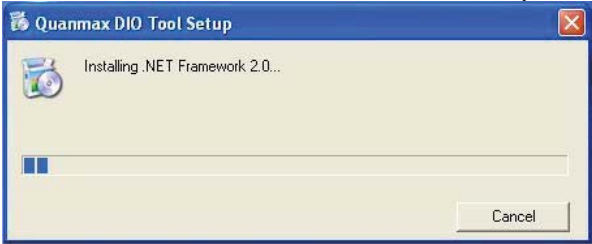


The installation program name will vary according to the platform which it applied to. For example, if the platform name is PCM5-928EM, the installation program will be name as “DIO Tool for PCM5-928EM.exe”.

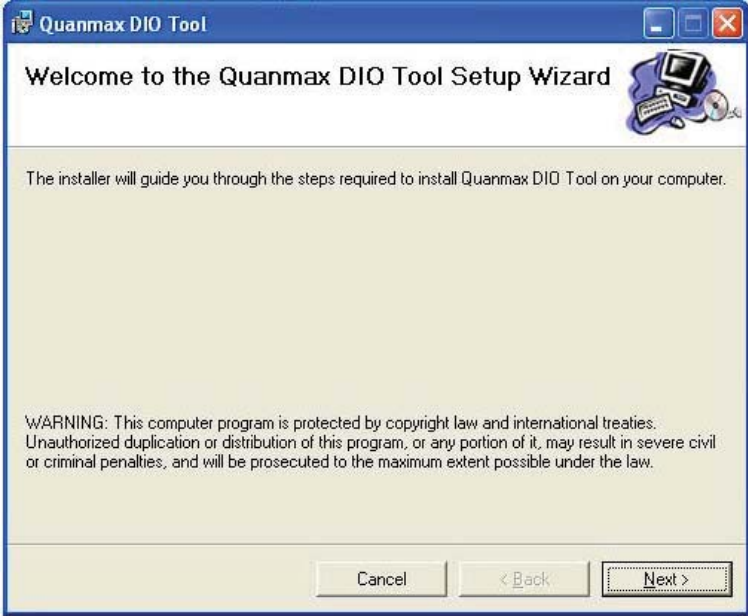
As the .NET Framework 2.0 is a prerequisite, the installation program will prompt to install .NET Framework installation first should the .NET Framework 2.0 is not installed.



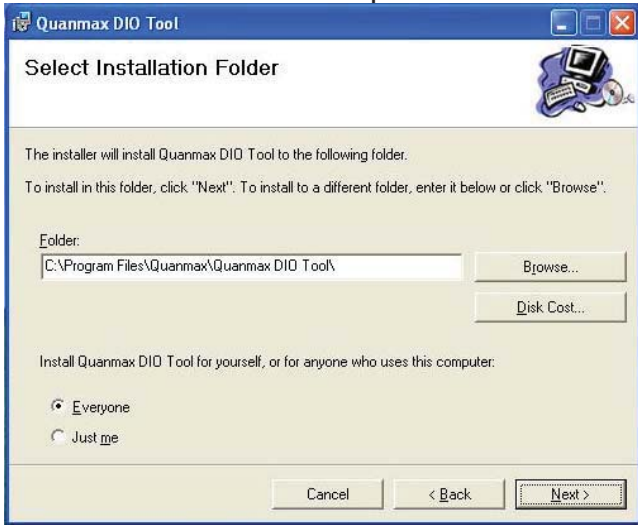
The .NET Framework 2.0 installation would take a couple minutes to finish.



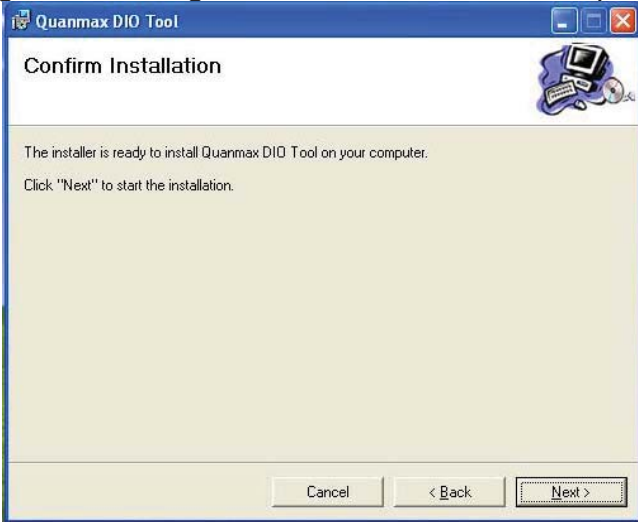
Click "Next" to agree to start installation program



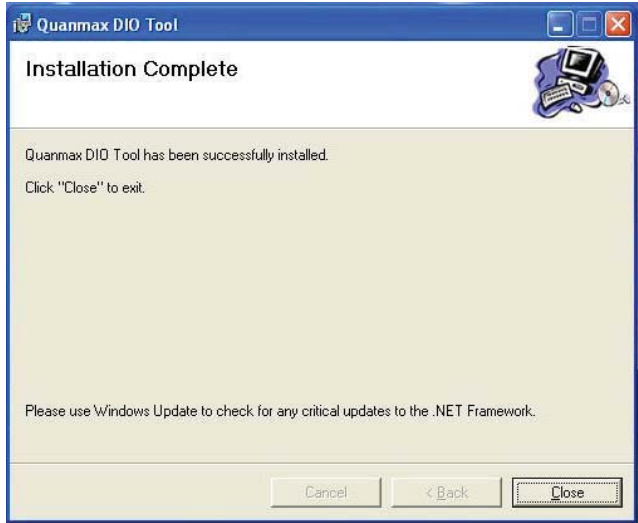
After enter the path where you wish to install the DIO Test Package, Click “Next” to agree to continue the installation process



Click “Next” to agree all setting made and start installation process



After the installation process is complete, click “Close” to close down the installation program



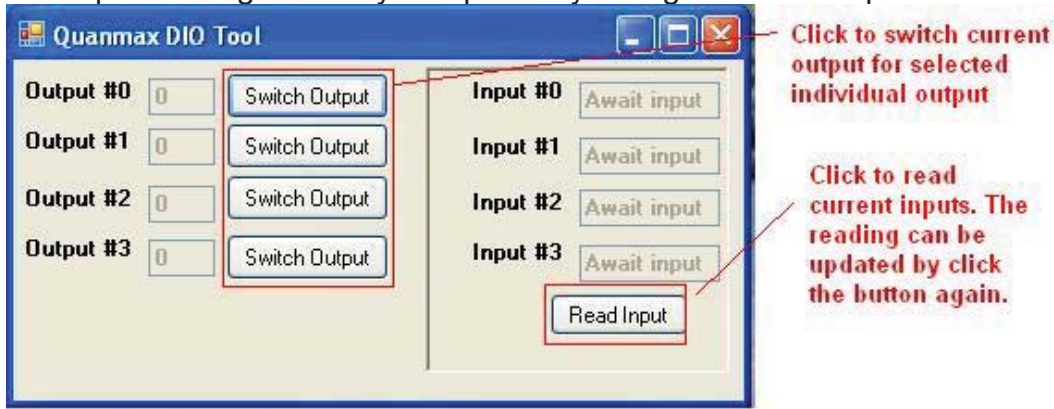
Installation is now complete.

How to run the test program:

Click on “Start”->”All Programs”->”Quanmax DIO Tool”->”DIO TOOL” to start the DIO test program

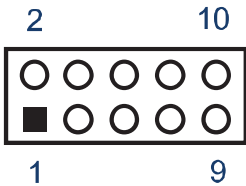


The test tool is launch.
 All output will be set to low as default value when program initialized.
 Click on “Switch Output” button can switch the corresponding output.
 The input readings will only be update by hitting the “Read Input” button.



CN3 to DIO Program look up table:

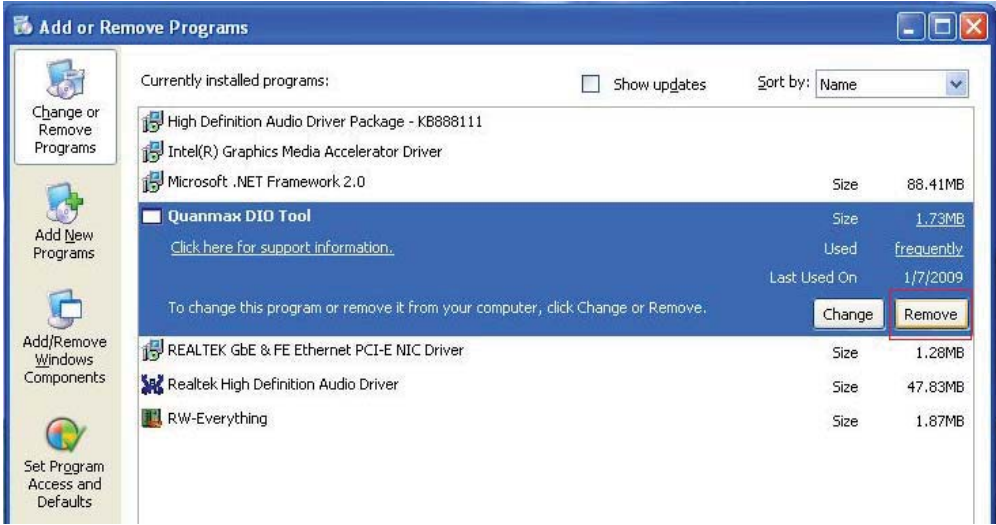
Pin #	2	4	6	8	10 (GND)
DIO Input#	0	1	2	3	--



Pin #	1	3	5	7	9 (+5V)
DIO Output #	0	1	2	3	--

How to uninstall the test program:

From Control Panel, select the “Add or Remove Program”. Select the “Quanmax DIO Tool”, click on “Remove” button to start the uninstall process



Click on “Yes” button to confirm the removal of the DIO Tool Kit.

