



**MITX-6936**

Mini-ITX Motherboard

User Manual V1.0

# 用户手册

## USER'Manual



**Industrial & Communication Computer** →

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# Safety Instruction

1. Please read this manual carefully before using this product.
2. Please put all unused/uninstalled boards and cards in anti-static bags.
3. Please first place your hands on grounding metal object for a while before you go to take out the board from its package, so as to release the static electricity of your body.
4. please wear antistatic gloves to take the board and have the habit of holding the board by edges.
5. Please first check the power voltage before connecting the motherboard to power supply.
6. To prevent electric shock to body or damage to products, please turn off the AC power or unplug the power cord out of power sockets before connecting or disconnecting the main board or do reconfiguration.
7. Please first unplug the AC power cord out of the power socket before you move the board.
8. Before you want to connect or unplug any equipments, please make sure all power cords are unplugged in advance
9. To prevent any unnecessary damage to the products due to frequent power on/off, please wait at least 30 seconds before you restart the unit after a shutdown.
10. If any unexpected problems happened during the operation, please seek help from professionals
11. This is a Class A product. It may cause radio interference in its working environments. In this case, users need to take measures to prevent the interference.

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Chapter 1 Product Introduction

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# Chapter 1 Product Introduction

## 1.1 Overview

Intel Cedar Trail Powered Mini ITX motherboard with Intel Atom N2800/D2500/D2550 CPU + Intel NM10 chipset, offering DDR3 800/1066MHz system memory up to 4GB. Board provides VGA/DVI-D/LVDS multiple video out and supports dual independent display, 2x Gigabit Ethernet, 6x USB2.0, suitable for most embedded applications in digital signage, Retail, Industrial, Self-service, automobile, transportation, etc.

## 1.2 Product Specification

### Structure Standard

- Standard Mini-ITX Motherboard

### Dimension

- 170mm×170mm (L×W)

### CPU

- Intel Atom N2800/D2500/D2550 Series

### Chipset

- Intel NM10

### Display

- GPU: Intel N2800/D2500/D2550 integrated GMA3650
- VGA: 1x standard DB15 VGA port with resolution upto 1920×1200@60Hz
- DVI: 1x standard DVI-D with resolution upto 1920×1200@60Hz
- LVDS: 1x single channel 18/24bit LVDS port. N2000 series support LVDS with resolution upto 1366×768@60Hz. D2000 series support LVDS with resolution upto 1440×900@60Hz.

### Memory

- 1x single channel SO-DIMM slot supports DDRIII 800/1066 RAM upto 4GB

### Storage

- 2x standard 7 Pin SATA ports

**LAN**

- LAN Controller: utilize 2x Realtek RTL8111E Gigabit LAN chip
- 2x standard RJ45 Ports
- Transmission rate: 10/100/1000Mbps

**USB**

- Provide 6x USB 2.0 ports
- 4x USB 2.0 . One 2×5Pin USB 2.0 Pin, converted to 2x standard USB 2.0 ports.

**I/O**

- Adopt W83627DHG-P I/O Chip
- 2x COM. COM1 & COM2 are the standard DB9 serial ports. COM1& COM2 support RS232 mode. COM2 also supports RS485.

**Power Supply**

- DC +12V

**Watchdog**

- Trigger system reset when timer overflows

**BIOS**

- 2MB SPI BIOS

**Environment**

- Operating Temp: 0°C~50°C
- Storage Temp: -40°C~80°C
- Operating Humidity: 5% ~ 95% relative humidity, non-condensing.



## Chapter 2 Installation Instructions

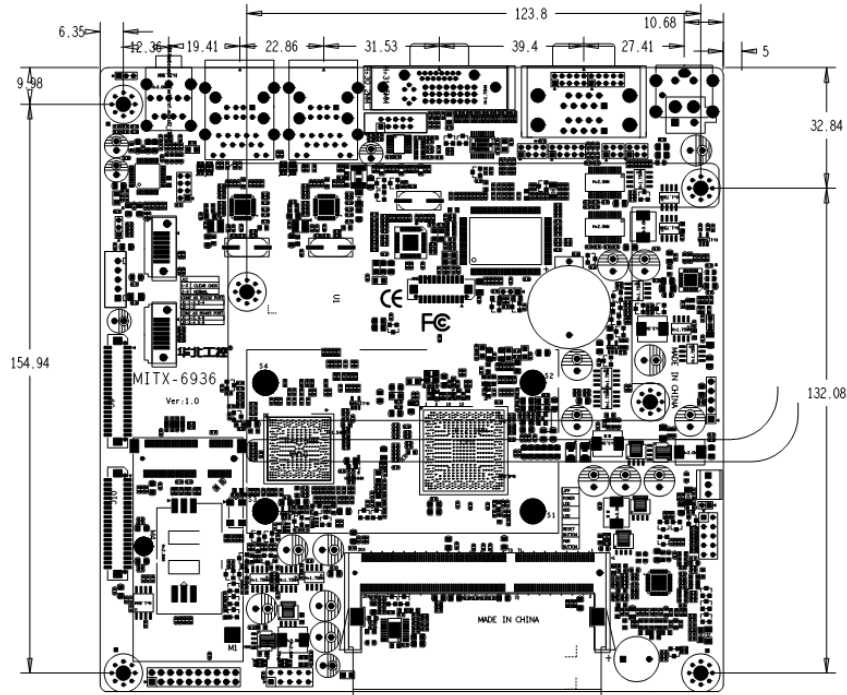
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## Chapter 2 Installation Instructions

### 2.1 Interfaces Location and Dimension

The following picture shows the front panel interfaces location and the dimension of the board MITX-6936. Please pay attention to the installation procedures. Improper installation of any components will lead to system malfunction.

**Note: Before installation, please put on anti-static gloves, in case that the static electricity causes damage to the motherboard.**



MITX-6936 Interfaces Location and Dimension

### 2.2 Installation Steps

Please follow the steps below to install your computer

1. Adjust all jumpers onboard according to the user manual
2. Install SO-DIMM
3. Install other expansion cards

4. Connect all signal cables, power cable, panel control circuit and power adaptor
5. Start the computer and finish BIOS settings



**Key components of this motherboard are Integrated circuit, and these components could be easily damaged by electrostatic influence. So, before installing this unit, please always keep the following precautions in mind:**

1. Hold the board by edges, don't touch any components or plug and socket pins
2. Wear anti-static gloves/wrist strap while touching the integrated circuit components, such as CPU, RAM, etc.
3. Put those unused or uninstalled components in static shielding bags or trays
4. Please first check the power switch is off before connecting the power plug

## 2.3 Install SO-DIMM

Onboard 1x DDR3 SO-DIMM slot. Please keep following two points in mind when installing the memory bank:

1. First, please align the notch of the memory bank with the alignment mark on the socket and press the memory bank slowly into the socket.
2. Please choose the proper memory bank that matches your motherboard.

## 2.4 Jumper Settings

Please refer to following instructions to do jumper settings before installing your hardware devices.

Remark: How to identify the PIN1 of all jumpers and interfaces: Please observe the word mark on the side of the plug socket, which will be a "1" or bold line or triangular symbol; And please look at the back of PCB, each with a square shape will be the PIN 1; and all the jumpers' PIN1 have a white arrow on the side.

### 2.4.1 CMOS Clear/Hold Jumper Settings (JCC)

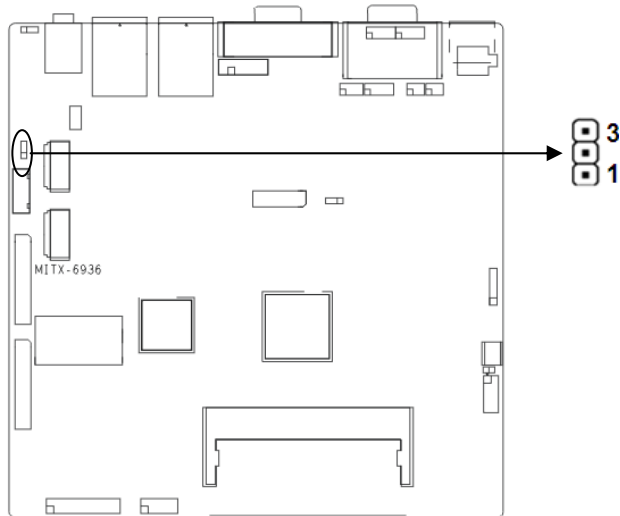
CMOS is powered by the onboard button cell. Clear CMOS will lead to permanent elimination of previous system settings and back to the original system setting (factory default).

**Steps:**

- (1) Turn off the computer and disconnect the power supply
- (2) Use Jumper Cap JCC Pin1-2 short for 5~6 sec. Then restore the default setting with Pin2-3 connected

(3) Turn on the computer, then press “DEL” key to enter BIOS setting and reload optimal defaults.

(4) Save and Exit

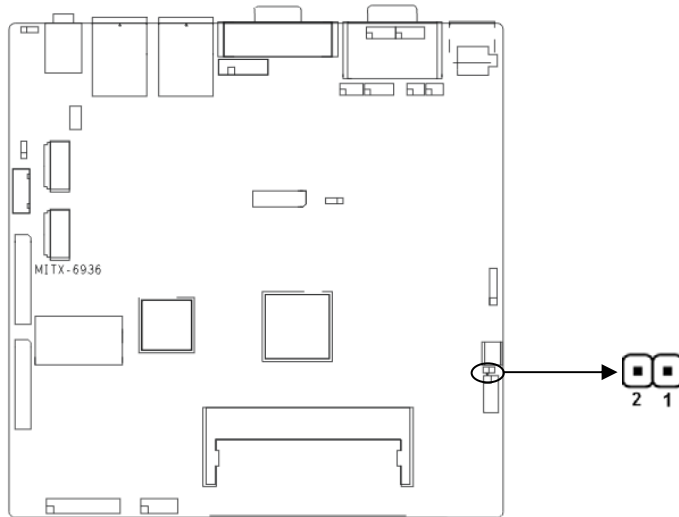


JCC:

Setting	JCC
1-2	BIOS back to initialization (factory default)
2-3	Normal Status, System default

**⚠ Do not clear CMOS when the computer is power on, otherwise, it will cause damage to the motherboard!**

2.4.2 Hardware Switch for System Auto Boot upon Power On (JAT)

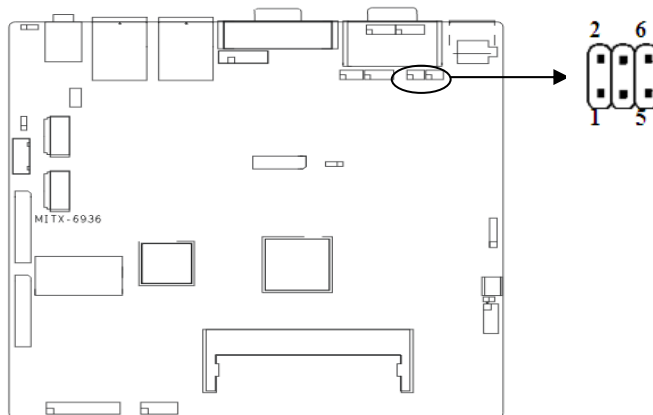


JAT:

Setting	JAT
Open	Disable this auto boot function
Close	Enable this auto boot function

2.4.3 COM2 Jumper Setting (J1, J2)

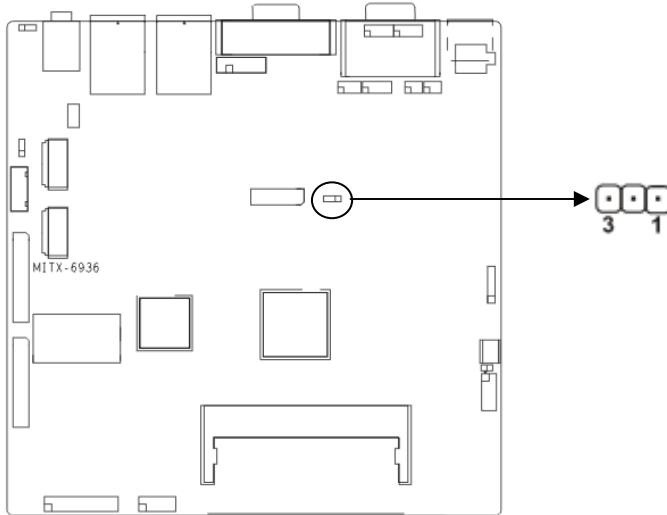
J1, J2 jumpers are used to configure COM2 transmission mode. COM2 supports RS232/RS485. Default mode as RS232.



COM2	RS232 (Default)	COM2	RS485
J1	1-3 2-4	J1	3-5 4-6
J2	1-2	J2	3-4 5-6

**2.4.4 LVDS Rated Voltage Select Jumper (J8)**

Before using the LVDS, please first check the rated operating voltage.



J8:

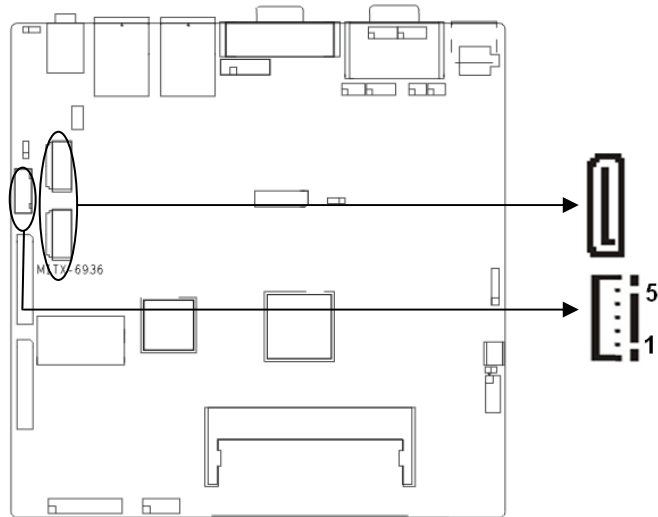
Setting	3.3V	5V
J8	1-2	2-3

**2.5 Interfaces Description**

**⚠ Please read the following instructions carefully before you connecting the external connectors in case of any damage caused to the motherboard.**

**2.5.1 SATA Interface (SATA1, SATA2, PWROUT)**

Board provides 2x standard 7 Pin SATA interfaces and one 5Pin PWROUT interface. HDD is power-up through the PWROUT interface with an adapter cable.



## SATA:

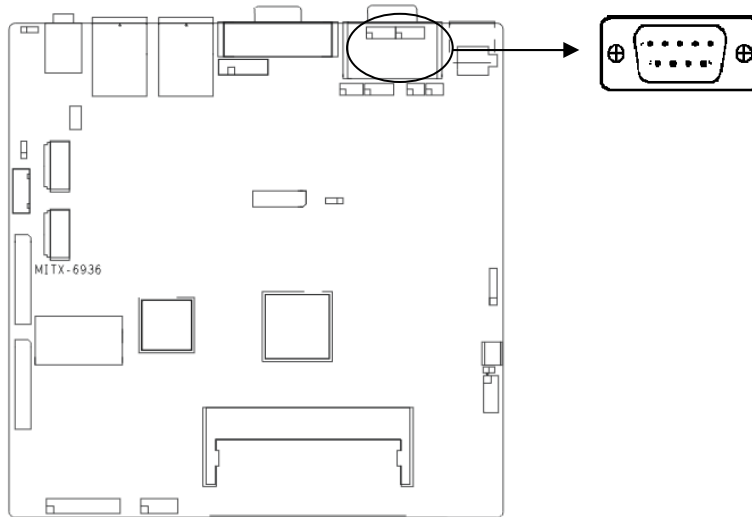
Pin	Signal Name
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

## PWROUT:

Pin	Signal Name
1	+12V
2	GND
3	VCC
4	GND
5	VCC3

## 2.5.2 Serial Ports (COM)

Board provides 2x standard DB9 serial ports( Reserved two Pins :JCOM1, JCOM2)



## COM1:RS232

Pin	Signal Name
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

## COM2: RS232/RS485:

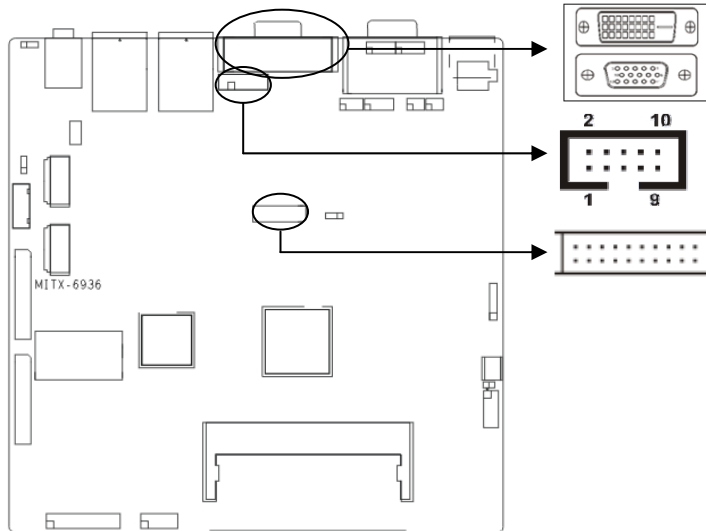
Pin	RS232 (default)	RS485
1	DCD	DATA-
2	TXD	DATA+
3	RXD	NC
4	DTR	NC
5	GND	GND
6	DSR	NC
7	RTS	NC



8	CTS	NC
9	RI	NC

**2.5.3 Display Port (VGA, DVI, LVDS)**

1x standard DB15 VGA port , 1x DVI-D, 1x standard single channel 18/24bit LVDS port.  
Reserved one 2x5 Pin VGA Pin optional.



VGA:

Pin	Signal Name	Pin	Signal Name	Pin	Signal Name
1	RED	6	GND	11	NC
2	GREEN	7	GND	12	SDA
3	BLUE	8	GND	13	HSYNC
4	NC	9	+5V	14	VSYNC
5	GND	10	GND	15	SCL

DVI:

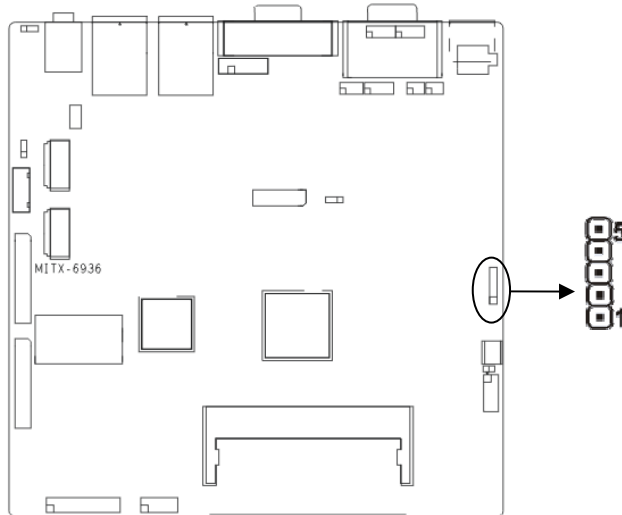
Signal Name	Pin		Signal Name
TDC2#	1	2	TDC2
GND	3	4	NC
NC	5	6	SC-DDC

SD-DDC	7	8	NC
TDC1#	9	10	TDC1
GND	11	12	NC
NC	13	14	VCC
GND	15	16	HP-DETECT
TDC0#	17	18	TDC0
GND	19	20	NC
NC	21	22	GND
TLC	23	24	TLC#
GND	25	26	GND
NC	27	28	NC

LVDS:

Signal Name	Pin		Signal Name
VCC	1	2	VCC
GND	3	4	GND
LA_DATA_N0	5	6	L_DDC_DATA
LA_DATA_P0	7	8	L_DDC_CLK
GND	9	10	GND
LA_DATA_N1	11	12	LA_CLK_N
LA_DATA_P1	13	14	LA_CLK_P
GND	15	16	GND
LA_DATA_N2	17	18	LA_DATA_N3
LA_DATA_P2	19	20	LA_DATA_P3

## 2.5.4 LVDS Backlight Control Interface (J2)

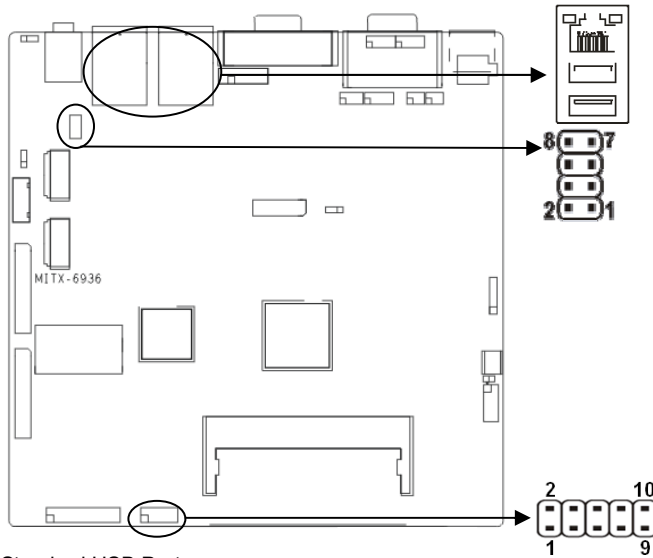


J2:

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

## 2.5.5 USB Ports (USB\_LAN1, USB\_LAN2, USB56, J6)

External USB and LAN ports. 2x separate slots provide 2x standard USB2.0 ports and 1x RJ 45 port. USB\_56 is the internal USB port. The one 2x 5Pin header can be converted into 2x standard USB ports. Both sides of the RJ45 network interface with a LED lamp. The yellow one indicates the data transmission status. The green one indicates the network link status. J6 is the LAN LED for LAN 1 and LAN2.



Standard USB Port:

Pin	Signal Name
1	+5V
2	USB DATA-
3	USB DATA+
4	GND

USB\_56:

Signal Name	Pin		Signal Name
VCC	1	2	GND
USB DATA-	3	4	GND
USB DATA+	5	6	USB DATA+
GND	7	8	USB DATA-
GND	9	10	VCC

LED Status:

LILED (Green/Orange)	Function	ACTLED (Yellow)	Function
Green	1000M Link	Flash	Data Transfer
Orange	100M Link	Flash	Data Transfer
OFF	10M	Flash	Data Transfer
OFF	no link	Flash	No data

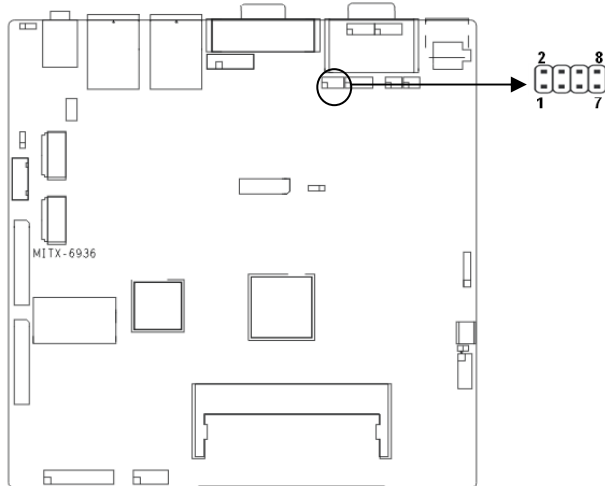
J6:

Signal Name	Pin	Signal Name
-------------	-----	-------------

LAN1_ACTIVE_LED-	1	2	LAN_LED+
LAN1_LINK_LED-	3	4	LAN_LED+
LAN2_ACTIVE_LED-	5	6	LAN_LED+
LAN2_LINK_LED-	7	8	LAN_LED+

### 2.5.6 Keyboard & Mouse Connector (KBMS)

One 2x4Pin header, to be converted to PS keyboard and mouse connector with a convert cable.

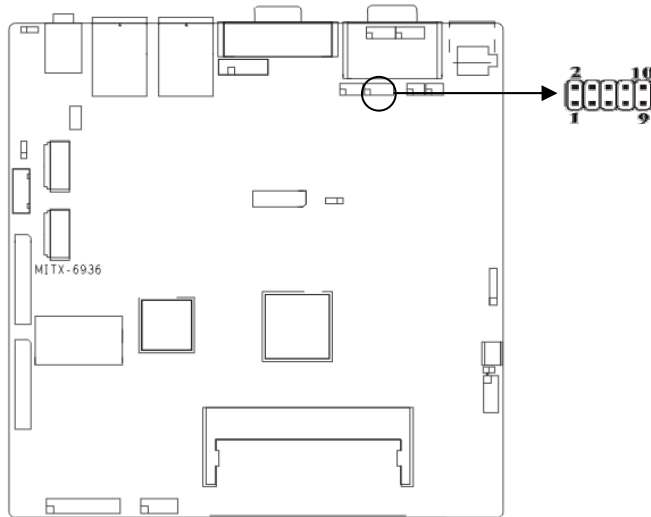


KBMS:

Signal Name	Pin		Signal Name
VCC5	1	2	MS_CLK
GND	3	4	MS_DATA
KB_DATA	5	6	GND
KB_CLK	7	8	VCC5

### 2.5.7 Programmable Input/Output Interface (JGP)

General purpose programmable Input/Output. 8bit GPIO, one 2x 5Pin header.

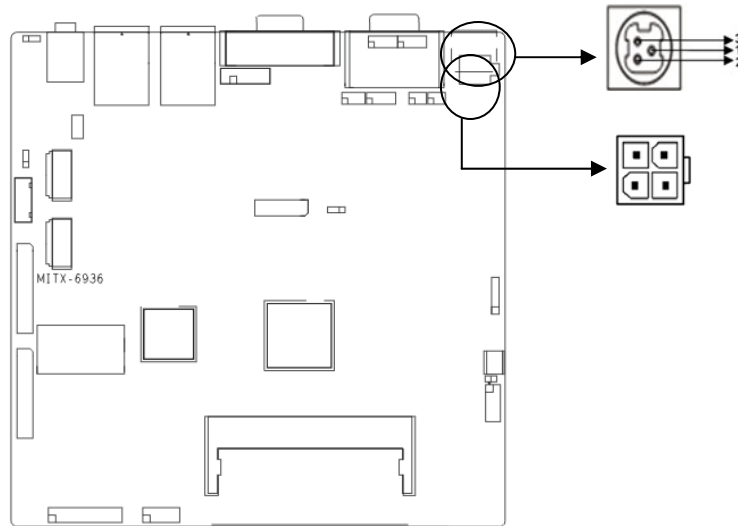


GPIO:

Signal Name	Pin		Signal Name
SIO_GP30	1	2	VCC
SIO_GP31	3	4	SIO_GP34
SIO_GP32	5	6	SIO_GP35
SIO_GP33	7	8	SIO_GP36
GND	9	10	SIO_GP37

### 2.5.8 Power Interface (PWR1, PWR2)

Inbuilt power interface PWR1 is reserved. PWR2 is the default external power interface.



#### Internal Power Interface PWR1:

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

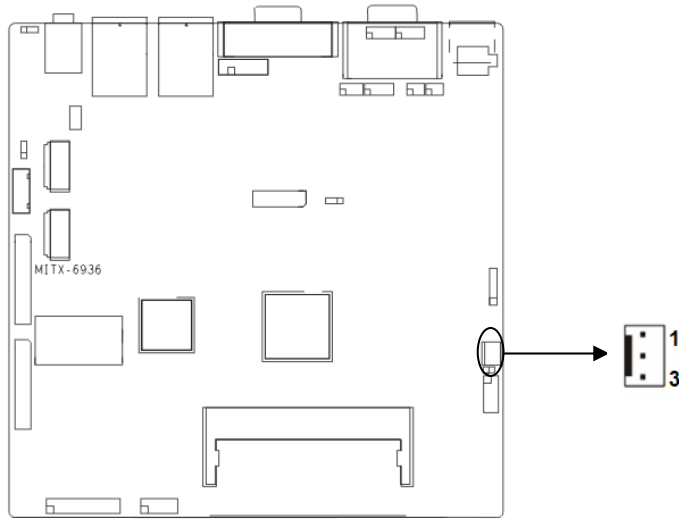
#### External Power Interface PWR2:

Pin	Signal Name
1	+12V
2	GND
3	NC

#### 2.5.9 FAN Connector (CPU\_FAN)

Board provides 1x CPU\_FAN interface. Please pay attention to following remarks:

- (1) The electric current of the FAN  $\leq 350\text{mA}$  (4.2W, 12V)
- (2) Please check if the fan cable matches the socket wiring. The power cable is generally the red one in the middle. Then the grounding cable (black) and the FAN speed pulse signal out cable (other color). Some FANs without speed detect function but the output voltage upto 12V, which will damage the motherboard. Recommend to use FANs with speed detect function.

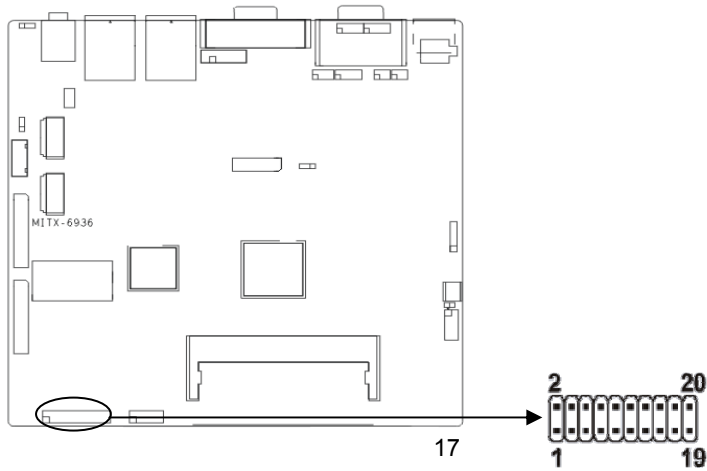


CPU\_FAN:

Pin	Signal Name
1	GND
2	+12V
3	Speed detect

**2.5.10 JLPC (JLPC)**

Board provides one 2×10Pin JLPC (Low Pin Count Interface Specification) to connect external devices.



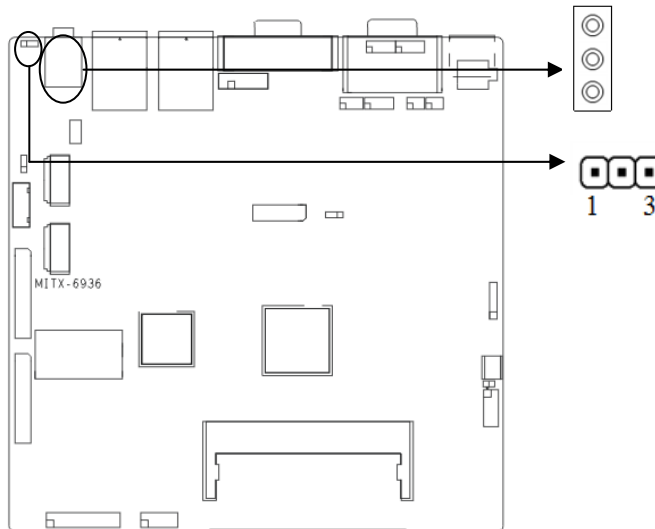


JLPC:

Signal Name	Pin		Signal Name
CLK_LPC	1	2	GND
LFRAME_N	3	4	CLK_LPC_48M
LPC_RST#	5	6	VCC
LPC_AD3	7	8	LPC_AD2
VCC3	9	10	LPC_AD1
LPC_AD0	11	12	GND
SMB_CLK	13	14	SMB_DATA
3.3VSB	15	16	SIO_SERIRQ
GND	17	18	NC
PM_SUS_STAT#	19	20	LDRQ_1

### 2.5.11 Audio Interface (JACKHDA, J11)

Board provides one Audio interface. Green is the Line-out . Red is the Mic-in. Internal Audio extension pin ,1x Line in Pin.



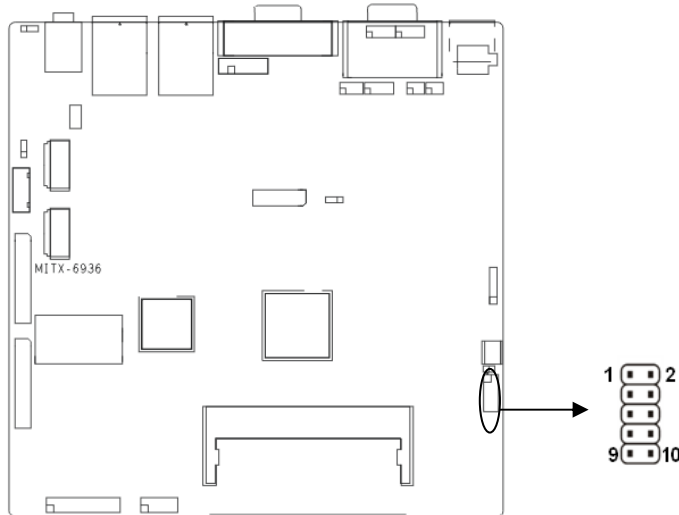
J11:

Pin	Signal Name
1	AGND
2	LINE_IN_L

3	LINE_IN_R
---	-----------

**2.5.12 Front Panel Connector (JFP)**

One 2x 5Pin front panel pin, is used to connect all the function buttons and LED Lamp on the front panel.



JFP:

Signal Name	Pin		Signal Name
POWER LED+	1	2	POWER LED-
HD LED+	3	4	HD LED-
VCC	5	6	BUZZDATA-
RESET BUTTON	7	8	GND
POWER BUTTON	9	10	GND

Please refer to following guide to connect and pay attention to its anode and cathode. Improper connection will lead to system malfunction.

POWER LED
HDD LED
BUZZ

RESET BUTTON
PWR BUTTON

**1) System Power LED Pins ( pin1, pin2 for PWLED)**

Connecting system power LED cable to these pins, (pin 1 is LED anode),when system power switch on, power LED on; When system power switches off, power LED off.

**2) HDD LED Pins ( pin3,pin4 for HDD LED)**

As a rule, there is a HD LED on the panel of chassis, while HD device (like hard Disk) is reading or writing (no matter which HD device), LED will flash, shows that IDE device is running. Connect IDE LED on chassis panel and these pins (pin3 is LED anode).

**3) Buzzer Pins ( Pin5/Pin6 for SPEAKER)**

To connect external speaker pins.

**4) Reset Button Pins(pin7,pin8 for RESET )**

Connect this pins and RESET switch on panel of chassis with cable. When system can not work on, reset can make system restart, without turning on/off the power, thereby it can prolong system life span.


**5) Power On/Off Control Pins (pin9, pin10 for POWER BUTTON)**

Connect these two pins with bounce switch on panel of chassis, to switch-on or switch-off the power.

**2.5.13 SO-DIMM Slot (SO-DIMM)**

Board with one single channel SO-DIMM slot supports DDRIII 800/1066 RAM upto 4GB.

**2.5.14 PCI Slot (PCI)**

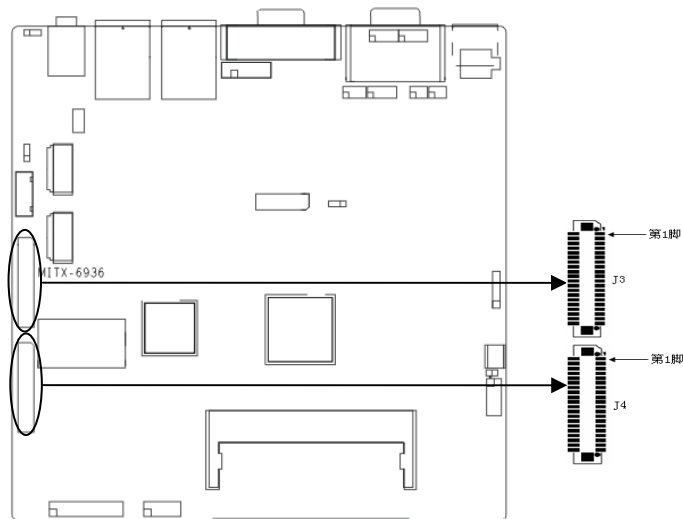
 **Note: Please follow the instructions below to connect motherboard with the PCI adapter card and to install PCI card. Please first check if all cables and the installation of PCI card is ok before connecting to power supply. Otherwise, motherboard or PCI card may be burned or damaged.**

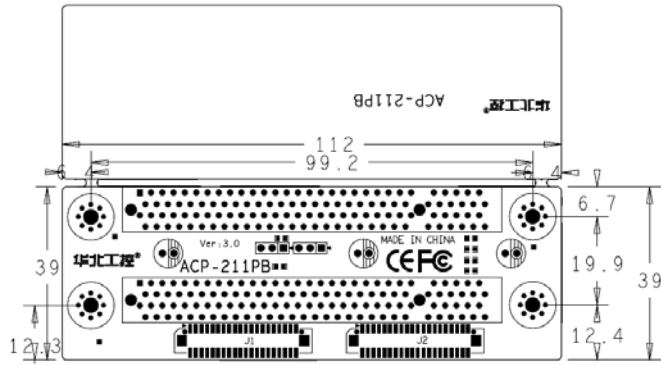
PCI Card Installation: If the PCI connecting finger has two notches, then align the notch that is far from the IO port with the fool-proofing buckle of the PCI socket.



Align the notch that is far from the IO with the fool-proofing buckle of the PCI socket

PCI slot is extended with the Riser Card ACP-211PB V3.0. Onboard J3 is connected to J1 on the Riser Card. Onboard J4 is connected to J2 on the Riser Card.





## PCI Define, J3:

Signal Name	Pin		Signal Name
C_BE#0	1	2	CLK_PCI_CONN1
P_STOP_N	3	4	GND
P_FRAME_N	5	6	CLK_PCI_CONN2
AD19	7	8	GND
AD16	9	10	AD0
P_TRDY_N	11	12	P_PME_N
GND	13	14	PCIRST_N
P_SERR_N	15	16	P_REQ2_N
AD25	17	18	AD7
P_PLOCK_N	19	20	GND
AD27	21	22	AD5
P_INTB_N	23	24	AD6
AD9	25	26	P_GNT1_N
AD29	27	28	AD3
GND	29	30	GND
AD15	31	32	AD1
AD12	33	34	AD4
AD14	35	36	AD2
AD13	37	38	AD8
AD11	39	40	C_BE#3

J4:

Signal Name	Pin		Signal Name
C_BE#1	1	2	P_DEVSEL_N
GND	3	4	AD10
P_INTC_N	5	6	C_BE#2
AD22	7	8	GND
P_INTA_N	9	10	AD28
P_INTD_N	11	12	P_PERR_N
AD31	13	14	AD18
AD30	15	16	AD26
GND	17	18	AD20
VCC3	19	20	AD21
VCC3	21	22	AD17
VCC3	23	24	GND
GND	25	26	AD23
GND	27	28	P_PAR
GND	29	30	P_IRDY_N
GND	31	32	P_REQ1_N
VCC	33	34	P_GNT2_N
VCC	35	36	GND
VCC	37	38	AD24
12V	39	40	3.3VSB

**Chapter 3 BIOS SETUP**



## Chapter 3 BIOS SETUP

### AMI BIOS Refresh

It is true that hardware and software are upgrading all the time. When your IPC can not support the newest processor (for example), you should upgrade the BIOS to try to keep up with the latest technology. Upgrading (or flashing) the BIOS is not an easy attempt. To make sure upgrade succeed, please follow the instruction below:

AFUDOS.EXE is the program for BIOS to modify and upgrade, need to be run in DOS mode.

Use boot disk load DOS, run AFUDOS.EXE and write the newest file: XXXX.ROM into the Flash IC.

#### Order Format:

A:\Afudos XXXX.rom / P /B /N /X /R

If you need to add other parameters, please add <space>/? after the order format.

Remarks:

1. Upgrading BISO may cause your system crash, so please operate carefully.
2. Please use the upgrading program in the CD-ROM provided by us or download the latest program on related websites
3. Please do not power off or reboot the system when upgrading, otherwise, the BIOS maybe be damaged.
4. After BIOS flash, to load default optimum manually
5. Please backup your BIOS before upgrading

### AMI BIOS Description

When the computer is power on, BIOS will conduct self-diagnosis to its hardware on motherboard and configure hardware parameter, finally the operating system will take control. BIOS is the communication bridge between hardware and O/S. Correct configuration of BIOS is critical for maintaining system stability and its optimized performance.

### BIOS Settings

1. Power on or reboot the computer, self-detection information will show:
2. When message shows as "Press <DEL> to enter setup", pls press <DEL>, then enter into BIOS SETUP Program.
3. Use the "← ↑ → ↓" to choose the option which your want to modify, press <Enter> to go to



its sub-menu.

4. Use the “← ↑ → ↓” and <Enter> to modify the value of the chosen option, then press “Enter” to modify BIOS options that you choose
5. At any time, press <Esc> can go back to the father-menu.

**Remark!** BIOS settings have direct impacts to computer performance. Incorrect configurations will cause damage to the computer and even lead to system halted. Please use BIOS default settings to recovery system. As our company is always ceaselessly update the BIOS SETUP Utility, so, following BIOS SETUP screens are only for your reference. Some may be different from the BIOS you are using now.

### 3.1 Main Menu

BIOS SETUP UTILITY	
BIOS Information	Set the Date. Use Tab to switch between Date elements.
BIOS Vendor	American Megatrends
Project Version	6936T101
Build Date and Time	08/10/2012 08:51:28
CPU Information	→←: Select Screen
Intel(R) Atom(TM) CPU D2550 @ 1.86GHz	↑↓: Select Item
Memory Information	Enter: Select
Memory Frequency	+/-: Change Opt.
Total Memory	F1: General Help
System Date	F9: Optimized Defaults
System Time	F10: Save&Exit
	ESC: Exit
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System Time

System time format: Hour/Minute/Second.

System Date

System Date Format: Week/Month/Day/Year.

### 3.2 Advanced Menu

BIOS SETUP UTILITY	
BIOS Information	Enabled or Disabled Boot Option for Legacy Network Devices.
Legacy OpROM Support	
Launch LAN1 PXE OpROM [Disabled]	
Launch LAN2 PXE OpROM [Disabled]	
<ul style="list-style-type: none"> <li>▶ ACPI Settings</li> <li>▶ APM Configuration</li> <li>▶ CPU Configuration</li> <li>▶ SATA Configuration</li> <li>▶ USB Configuration</li> <li>▶ Super IO Configuration</li> <li>▶ H/W Monitor</li> <li>▶ Serial Port Console Redirection</li> </ul>	→ ← : Select Screen ↑ ↓ : Select Item Enter: Select +/-: Change Opt. F1: General Help F9: Optimized Defaults F10: Save&Exit ESC: Exit
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Launch LAN1/2 PXE OpROM

Enables or disables the boot option for legacy network devices connected to LAN1 and LAN2.

#### 3.2.1 ACPI Settings

BIOS SETUP UTILITY	
ACPI Settings	Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed.
ACPI Sleep State [S1 (CPU Stop Clock) ]	

	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F9: Optimized Defaults F10: Save&Exit ESC: Exit
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#### ACPI Sleep State

Select the highest ACPI sleep state the system will enter when the suspend button is pressed.

Different modes are defined with different power consumption.

S1 (CPU Stop Clock): CPU stops working while other devices are still connected to power supply.

#### 3.2.2 APM Configuration

BIOS SETUP UTILITY		
		Enable or disable System wake on alarm event. When enabled.
RTC Power On Function	[Enabled]	System will wake on the
RTC Power On Hour	0	hr::min::sec specified
RTC Power On Minute	0	
RTC Power On Second	0	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F9: Optimized Defaults F10: Save&Exit ESC: Exit
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## RTC Power On Function

When Enabled, users can set the date and time at which the RTC (real time clock) alarm awakens the system from Suspend mode. The choices :< Enabled>, <Disabled (default)>.

## 3.2.3 CPU Configuration

BIOS SETUP UTILITY		
CPU Configuration		Enabled for Windows XP and Linux ( OS optimized for Hyper-Threading Technology ) and Disabled for other OS ( OS not optimized for Hyper-Threading Technology ) .
Processor Type	Intel(R) Atom(TM) CPU EMT64	→ ← : Select Screen ↑ ↓ : Select Item Enter: Select +/-: Change Opt. F1: General Help F9: Optimized Defaults F10: Save&Exit ESC: Exit
Processor Speed	1865 MHz	
Ratio Status	14	
Actual Ratio	14	
System Bus Speed	533 MHz	
Processor Stepping	30661	
Microcode Revision	268	
L1 Cache RAM	2×56 K	
L2 Cache RAM	2×512 K	
Processor Core	Dual	
Hyper-Threading	Supported	
Hyper-Threading	[Enabled]	
Execute Disabled Bit	[Enabled]	
Limit CPUID Maximum	[Disabled]	
EIST	[Disabled]	
CPU C state Report	[Disabled]	
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The read only option contains detailed information of CPU, including CPU manufacturer, model,frequency, L1 Cache, L2 Cache, etc.

## Hyper-Threading

Disable or enable the Hyper-Threading Technology.

Intel® Hyper-Threading Technology uses resources efficiently, enabling multiple threads to run

on each core, and increasing processor throughput.

#### Execute Disabled Bit

When this field is set to Disabled, it will force the XD feature flag to always return to 0. XD can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SuSE Linux 9.2, RedHat Enterprise 3 Update 3).

#### Limit CPUID Maximum

The CPUID instruction of some newer CPUs will return a value greater than 3. The default is Disabled because this problem does not exist in the Windows series operating systems. If you are using an operating system other than Windows, this problem may occur. To avoid this problem, enable this field to limit the return value to 3 or lesser than 3.

#### EIST

To enable or disable the Enhanced Intel SpeedStep Technology (EIST). Enhanced Intel SpeedStep Technology allows the system to dynamically adjust processor voltage and core frequency, which can result in decreased average power consumption and decreased average heat production.

#### CPU C state Report

Enable or disable the CPU C-states.

### 3.2.4 SATA Configuration

BIOS SETUP UTILITY	
SATA Configuration	SATA Ports (0-3) Device Names if Present and Enabled.
Serial ATA Port1	Not Present

Serial ATA Port2	Not Present	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F9: Optimized Defaults F10: Save&Exit ESC: Exit
Serial-ATA Controller(s)	[Enabled]	
SATA Mode	[AHCI]	
Serial ATA Port1	[Enabled]	
Serial ATA Port2	[Enabled]	
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## Serial-ATA Controller (S)

To enable or disable the SATA controller (S).

## SATA Mode

To configure the SATA Mode: [AHCI] or [IDE].

## Serial ATA Port1/2

To enable or disable the two ports (SATA & CF) under AHCI mode.

## 3.2.5 USB Configuration

BIOS SETUP UTILITY		
USB Configuration		Enable / Disable USB Function.
USB Devices:		→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F9: Optimized Defaults F10: Save&Exit ESC: Exit
1 Keyboard ,1 Mouse		
USB function	[Enabled]	
USB 2.0 (EHCI) Support	[Enabled]	
Legacy USB Support	[Enabled]	
Mass Storage Devices;		
KingstonDataTraveler G2 PMAP	[Auto]	

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#### USB function

To enable or disable the USB port.

#### USB 2.0 (EHCI) Support

[Enabled]: Enable USB EHCI (USB 2.0) functions, max. transmission rate upto 480Mbps

[Disabled]: Disable USB2.0 function. The transmission rate is 12Mbps.

#### Legacy USB Support

To support USB device in DOS mode: such as USB Flash Disk, USB keyboard, please select <Enabled> or <Auto>.

If not , pls select < Disabled>

#### Mass Storage Devices

To select the types of the connected USB devices. [Auto], or [ floppy] or [Forced FDD], [HDD ] or CD-ROM. System defaults as [Auto].

### 3.2.6 Super IO Configuration

BIOS SETUP UTILITY	
Super IO Configuration	Set Parameters of Serial Port 1 (COMA)
<ul style="list-style-type: none"> <li>▶ Serial Port 1 Configuration</li> <li>▶ Serial Port 2 Configuration</li> </ul>	<ul style="list-style-type: none"> <li>→ ← : Select Screen</li> <li>↑ ↓ : Select Item</li> <li>Enter: Select</li> <li>+/-: Change Opt.</li> <li>F1: General Help</li> <li>F9: Optimized Defaults</li> <li>F10: Save&amp;Exit</li> <li>ESC: Exit</li> </ul>
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## Serial Port 1 Configuration

## 1) Serial Port

To enable or disable the serial port functions.

## 2) Device Setting (Read Only)

Display serial port IRQ and base address.

## 3) Change Setting

To change serial port settings. Recommend to select [Auto].

Serial Port 2 Configuration follows the same steps as above.

## 3.2.7 H/W Monitor

BIOS SETUP UTILITY	
PC Health Status	
SYSTIN temperature	: +28°C
CPUTIN temperature	: +41°C
CPUVCore	: +1.192V
+3.3VIN	: +3.328V
+5VIN	: +4.992V
VBAT	: +3.296V
→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F9: Optimized Defaults F10: Save&Exit ESC: Exit	
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**PC Health Status**

PC Health Status Detect. BIOS will display current system temperature, CPU temperature, FAN rotate speed, and related voltage value.



3.2.8 Serial Port Console Redirection

BIOS SETUP UTILITY	
COM1 Console Redirection [Disabled] ▶ Console Redirection Settings	Console Redirection Enable or Disable.
Serial Port for Out-of-Band Management/ Windows Emergency Management Services(EMS) Console Redirection [Disabled] ▶ Console Redirection Settings	→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F9: Optimized Defaults F10: Save&Exit ESC: Exit
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Console Redirection

To enable or disable the console redirection function.

3.3 Chipset Menu

BIOS SETUP UTILITY	
▶ South Bridge	North Bridge Parameters
	→←: Select Screen ↑ ↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F9: Optimized Defaults F10: Save&Exit ESC: Exit
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## 3.3.1 South Bridge

BIOS SETUP UTILITY		
South Bridge		Audio Controller
LAN1 Controller	[Enabled]	→ ← : Select Screen ↑ ↓ : Select Item Enter: Select +/-: Change Opt. F1: General Help F9: Optimized Defaults F10: Save&Exit ESC: Exit
LAN2 Controller	[Enabled]	
Restore AC Power Loss	[Power On]	
Power On Bypass	[Disabled]	
Power Off Bypass	[Disabled]	
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## LAN 1-4 Controller

To enable or disable the onboard LAN Controller.

## Restore AC Power Loss

This option is to setup the system status while connecting the power again after the AC Power Loss

<Power Off>: System remains the status of power off. Users need to press the power button to start the computer.

<Power On>: System will reboot automatically when connecting to power supply.

<Last State>: Remain the same state as that before the power loss.

## Bypass Power On

BYPASS enabled or disabled when system is power on.

## Bypass Power Off

Bypass enabled or disabled when system is power off.

### 3.4 Boot Menu

BIOS SETUP UTILITY		
Boot Configuration		Number of seconds to wait for setup activation key. 65535(0×FFFF) means indefinite waiting.
Setup Prompt Timeout	1	→←: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F9: Optimized Defaults F10: Save&Exit ESC: Exit
Bootup Numlock State	[On]	
Show Full Logo	[Enabled]	
Boot Option Priorities		
Boot Option #1	[SATA PM:WDC WD10... ]	
Boot Option #2	[UEFI: Built-in EFI...]	
Hard Drive BBS Priorities		
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#### Setup Prompt Timeout

Number of seconds to wait for setup shortcut key. 60s is the max seconds of timeout. If don't press Setup key within the preset time, system will continue to start.

#### Bootup Numlock State

This function allows users to activate Numlock function when boot up.

[ON]: Numlock open when boot up

[OFF]: Numlock under cursor control

#### Show Full Logo

[Enabled]: Computer boot screen will show supplier's LOGO.

[Disabled]: Self-detect info will show when system boots

#### Boot Option #1/2

System will detect devices according to the preset sequency until to find a boot device. Option #1 is the prior boot device.

#### Hard Drive BBS Priorities



BIOS SETUP UTILITY	
Load Defaults Save Changes and Exit Discard Changes and Exit	Restore/Load Default values for all the setup options.
	→ ← : Select Screen ↑ ↓ : Select Item Enter: Select +/-: Change Opt. F1: General Help F9: Optimized Defaults F10: Save&Exit ESC: Exit
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Load Defaults

Restore/Load Default values for all the setup options.

Save Change and Exit

Press [Enter] to select this option and press [Enter] to confirm to save all BIOS changes and Exit.

Discard Change and Exit

Press [Enter] to select this option and press [Enter] to confirm to discard all changes and exit.

Appendix

**NORCO**

# Appendix

## Appendix 1: Watchdog Programming Guide

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watchdog reference code (ASM)

---

Set the port to realize watchdog function through DEBUG order, so that it can carry out Watchdog Timer's various functions.

Port Instruction:

```
void main()
{
    intindexp = 0x2e,datap = 0x2f;
    unsigned char temp;

    outportb(indexp,0x87);
    outportb(indexp,0x87); //unlock

    outportb(indexp,0x2d);
    temp = (unsigned char)inportb(datap);
    temp &= 0xfe;
    outportb(indexp,0x2d);
    outportb(datap,temp); //set pin for watchdog

    outportb(indexp,0x07);
    outportb(datap,0x08);
    outportb(indexp,0x30);
    outportb(datap,0x01); //enable logical device
    outportb(indexp,0xf5);
    outportb(datap,0x00); //set second
    /*outportb(datap,0x08); set minute*/

    outportb(indexp,0xf6);
    outportb(datap,0x03); //set 3 seconds
```

```
outportb(indexp,0xf7);  
outportb(datap,0x00);  
  
outportb(indexp,0xaa); //lock  
}
```



## Appendix 2: IRQ & System Memory Map, 1st MB Memory Map

IRQ:

Priority	Interrupt#	Interrupt source
1	NMI	Parity error detected
2	00	System timer
3	01	Available
-	02	Interrupt from controller 2 (cascade)
4	08	System CMOS/real time clock
5	09	Microsoft ACPI-Compliant System
6	10	Available
7	11	Communication Port (COM3,4,5,6)
8	12	Available
9	13	Numeric data processor
10	14	Available
11	15	Available
12	03	Communication Port (COM2)
13	04	Communication Port (COM1)
14	05	Available
15	06	Available
16	07	Intel(R) N10/ICH7 Family SMBus Controller – 27DA

System Memory Map:

Addr. range	Device
00000000 – 00003FFF	Motherboard resources
000A0000 – 0000BFFF	Intel(R) Corporation Atom N2000/D2000 Series Embedded Media and Graphics Driver
000C0000 – 000DFFFF	PCI bus
000E0000 – 000EFFFF	PCI bus
000F0000 – 000FFFFF	PCI bus
CF800000 – CFFFFFFF	PCI bus
D0000000 – FEBFFFFF	PCI bus
DFC00000 – DFCFFFFF	Intel Corporation Atom N2000/D2000 Series Embedded Media and Graphics Driver

DFD00000 – DFD03FFF	Realtek PCIe GBE Family Controller
DFD00000 – DFDF0000	Intel (R) N10/ICH7 Family PCI Express Root Port – 27D2
DFD04000 – DFD04FFF	Realtek PCIe GBE Family Controller
DFE00000 – DFE03FFF	Realtek PCIe GBE Family Controller #2
DFE00000 – DFEF0000	Intel (R) N10/ICH7 Family PCI Express Root Port – 27D0
DFE04000 – DFE04FFF	Realtek PCIe GBE Family Controller #2
DFF00000 – DFF03FFF	Microsoft UAA Bus Driver for High Definition Audio
DFF04000 – DFF043FF	Intel (R) N10/ICH7 Family Serial ATA Storage Controller – 27C0
DFF05000 – DFF053FF	Intel (R) N10/ICH7 Family USB2 Enhanced Host Controller –27CC
E0000000 – EFFFFFFF	System board
FEC00000 – FEC00FFF	Motherboard resources
FED00000 – FED003FF	High precision event timer
FED14000 – FED19FFF	System board
FED1C000 – FED1FFFF	Motherboard resources
FED1C000 – FED1FFFF	Motherboard resources
FED20000 – FED8FFFF	Motherboard resources
FED45000 – FED8FFFF	Motherboard resources
FEE00000 – FEE00FFF	Motherboard resources
FF000000 – FFFFFFFF	Intel (R) 82802 Firmware Hub Device
FF000000 – FFFFFFFF	Intel (R) 82802 Firmware Hub Device
FFE00000 – FFFFFFFF	Motherboard resources

**Appendix 3: Glossary**

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**ACPI**

Advanced Configuration and Power Management. ACPI specifications allow O/S to control most power of the computer and its add-ons

Windows 98/98SE, Windows 2000 and Windows ME all support this function, which enable users to manage the system power flexibly.

**BIOS**

Basic input/output system. It's a kind of software including all in/out control code interface in PC. It will do hardware testing while system is booting, then system runs, it provides an interface between OS and hardware. BIOS is stored in a ROM chip.

**BUS**

In a computer system, it is the channel among different parts for exchanging data; it's also a group of hardware lines. BUS here refers to part lines inside CPU and main components of memory.

**Chipset**

Integrated chips for executing one or more functions. Here "Chipset" refers to system level chipset structured by Southbridge & Northbridge; it determines motherboard's structure and main functions.

**CMOS**

Complementary Metal-Oxide Semiconductor, a widely used semiconductor with the characteristic of high speed but low-power-consumption. CMOS here refers to part of reserved space in on-board CMOS RAM, for saving date, time, system information and system parameter etc.

**COM**

Computer-Output Microfilmer. A universal serial communication interface, usually adopts normative DB9 connector.

**DIMM**

Dual-Inline-Memory-Module. It's a small circuit board with memory chipset, providing 64bit RAM bus width.

**DRAM**

Dynamic Random Access Memorizer. It's a normal type of universal memory often with a transistor and a capacitance to store 1 bit. With the development of the technology, more and more types of ORAM with various specifications exist in computer application, such as SDRAM, DDR SDRAM and RDRAM

**I2C**

I2C (Inter—Integrated Circuit) , generically referred to as two-wire interface, is a multi-master serial single-ended computer bus invented by Philips that is used to attach low-speed peripherals to a motherboard, embedded system, cellphone, or other electronic device.

**LAN**

Network interface. Network grouped by correlative computers in a small area, generally in a company or a building. Local area network is generally buildup by sever, workstation, some communication links. Terminals can access data and devices anywhere through cables so that many users can share costly device and resource.

**LED**

Light-Emitting Diode. a semiconductor device that shines when power supply is connected, often used to denote info directly by light, for example, to denote power on or HDD work normally.

**PnP**

Plug-and-Play. It is a specification that allows PC to configure its external devices automatically and can work independently without the manual operation by its user . To achieve this function, its BIOS should be able to support PnP and a PnP expansion card.

**POST**

Self-test when power on. While booting, BIOS will do an uninterrupted testing to the system,

including RAM, keyboard, hard disk driver etc. to check if all the components are in normal situation and work well.

**PS/2**

A keyboard & mouse connective interface specification developed by IBM.PS/2 is a DIN interface with only 6PIN; it also can connect other devices, like modem.

**USB**

It is the Universal Serial Bus for short. A hardware interface adapts to low speed external devices, and is always used to connect keyboard, mouse etc. One PC can connect maximum 127 USB devices, providing 12Mbit/s transmit bandwidth; USB supports hot swap and multi-data stream, namely, you can plug USB devices while system is running, system can auto-detect and makes it work.



敬请参阅

<http://www.norco.com.cn>

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