

PICO-HD01

AMD G-series Dual Core T40E/
Single Core T40R Processor
Gigabit Ethernet
5 USB 2.0, 2 COM
4-bit Digital I/O
1 Mini Card/ mSATA(Half-size)
1 SATA 3.0Gb/s

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Packing List

Before you begin installing your card, please make sure that the following materials have been shipped:

- 1 Heatsink
- 1 SATA Power Cable
- 1 Power Cable
- 1 SATA Cable
- 1 DVD-ROM for Manual (in PDF Format) and Drivers
- 1 PICO-HD01

If any of these items should be missing or damaged, please contact your distributor or sales representative immediately.

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Chapter

1

**General
Information**

1.1 Introduction

The PICO-HD01 is the embedded board with PICO-ITX form factor AAEON developed. It supports AMD G-series T40R/T40E processor up to 1.0 GHz. Moreover, it equips AMD A50M chipset offers a high performance computing platform with low power consumption. This new product supports DDR3 SODIMM at speeds of 1066 MHz, up to 4 GB.

One SATA 3.0Gb/s and one mSATA interfaces provide ample storages. With one Gigabit Ethernet, two COM ports, and five USB2.0, the PICO-HD01 meets the requirements of today's demanding applications.

Display requirements are met with an abundance of interfaces such as VGA, HDMI, and LVDS. In addition, the PICO-HD01 supports 18-bit Single Channel LVDS with PWM function.

With all of its integrated features, the PICO-HD01 strikes a balance of performance and price. This versatile product targets Industrial Automation, Entertainment, Networking, KIOSK/POS, Transportation, Banking, Healthcare and Digital Signage applications that require high performance and high reliability.

1.2 Features

- Onboard AMD G-Series T40R/T40E Single/Dual Processor
- AMD G-Series APU +A50M
- 204-pin SODIMM DDR3 1066MHz up to 4GB
- One Realtek RTL-8111E for 10/1000/1000Base-TX
- CRT, 18-bit Single Channel LVDS, HDMI
- HD Audio for Line-in/out & MIC
- SATA 3.0Gb/s x 1, mSATA (Half-Size) Slot x 1 Co-lay with Mini Card
- USB 2.0 x 5, COM x 2, 4-bit Digital I/O
- Expansion : Mini Card x 1
- DC 12V Operating
- Supports Mini HDMI Connector on Rear I/O

1.3 Specifications

System

- **From Factor** PICO-ITX
- **Processor** AMD G-series T40E/ T40R processor up to 1.0 GHz
- **System Memory** 204-pin SODIMM DDR3 1066 MHz, up to 4 GB
- **Chipset** AMD G-series + A50M
- **I/O Chipset** Fintek F81801U-I
- **Ethernet** Realtek RTL-8111E, 10/100/1000Base-TX, RJ-45 x 1
- **BIOS** AMI BIOS-32 Mb ROM
- **Wake On LAN** Yes
- **Watchdog Timer** Programmable 255 levels system reset
- **H/W Status Monitoring** Vcore, +1.5V_DDR
- **Expansion Interface** mSATA/ Mini Card (Half-size) x 1
- **Battery** Lithium Battery
- **Power Requirement** DC 12V, AT/ATX (Default)
- **Board Size** 3.94" x 2.76" (100mm x 72mm)
- **Gross Weight** 1.7 lb (0.77 Kg)
- **Operating Temperature** 32°F~140°F (0°C~60°C)
- **Storage Temperature** -40°F~176°F (-40°C~80°C)
- **Operating Humidity** 0% ~ 90% relative humidity, non-condensing

Display: Supports CRT/LCD, HDMI/DVI/LCD simultaneous / dual view displays

- **Chipset** AMD G-series Processor integrated
- **Resolution** Up to 1366 x 768 (18-bit) @ 60 Hz for LVDS;
Up to 1920 x 1200 @ 60 Hz for CRT and HDMI
- **LCD Interface** 18-bit single channel LVDS with PWM function

I/O: Fintek F81801U-I

- **Storage** SATA 3.0Gb/s x 1 , mSATA x 1 co-lay with Mini Card
- **Serial Port** RS-232 x 1
RS-232/422/485 x 1
- **USB** USB2.0 x 5
- **Digital I/O** 4-bit Programmable (2-in/ 2-out)
- **Audio** Buzzer x 1, HD Audio Codec (Realtek ALC662) for Line-in/out & MIC x 1

Chapter

2

**Quick
Installation
Guide**

2.1 Safety Precautions

Warning!

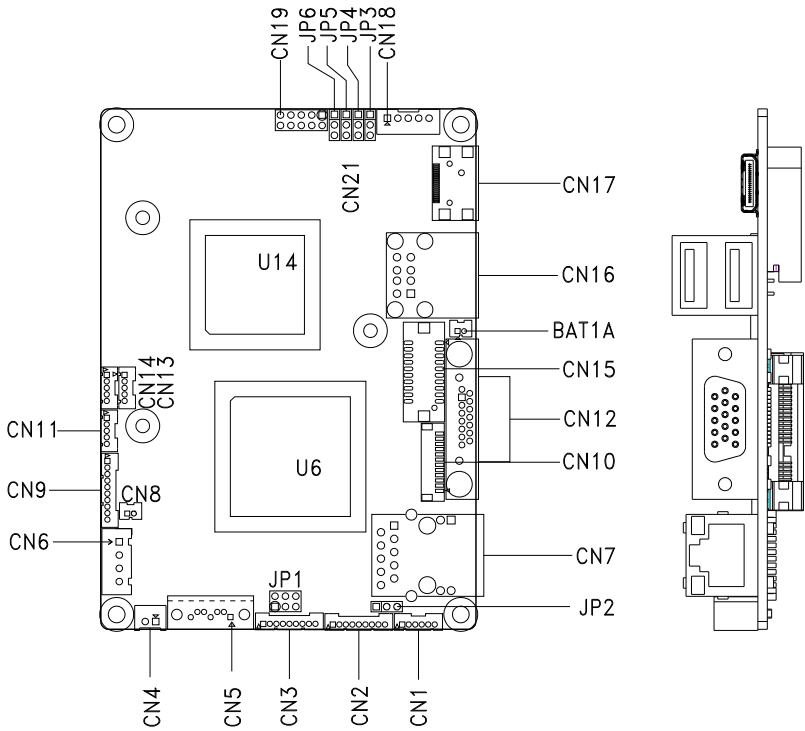
Always completely disconnect the power cord from your board whenever you are working on it. Do not make connections while the power is on, because a sudden rush of power can damage sensitive electronic components.

Caution!

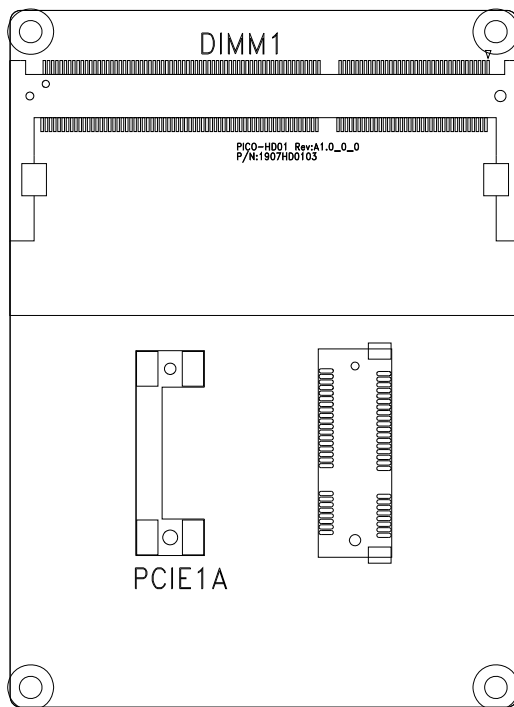
Always ground yourself to remove any static charge before touching the board. Modern electronic devices are very sensitive to static electric charges. Use a grounding wrist strap at all times. Place all electronic components on a static-dissipative surface or in a static-shielded bag when they are not in the chassis

2.2 Location of Connectors and Jumpers

Component Side

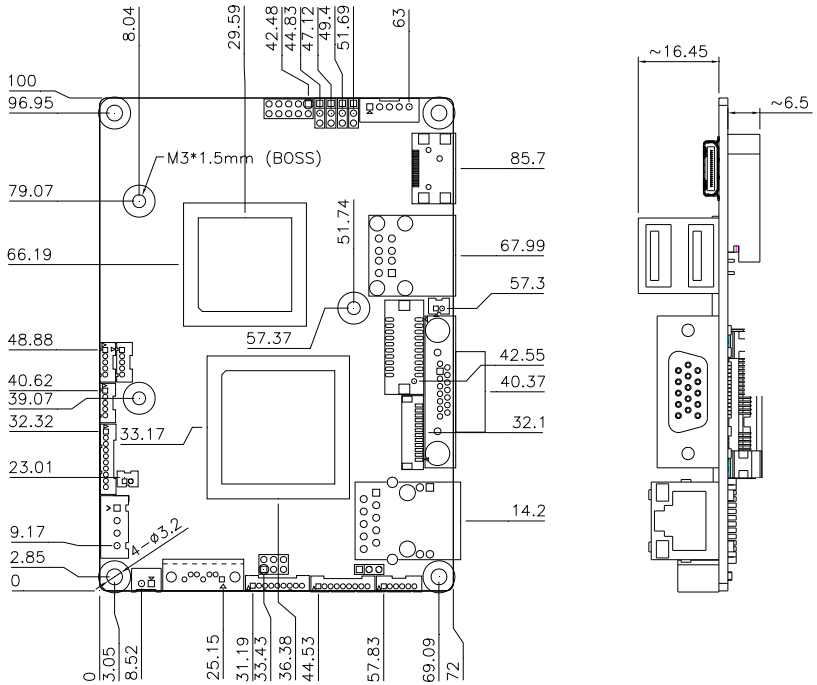


Solder Side

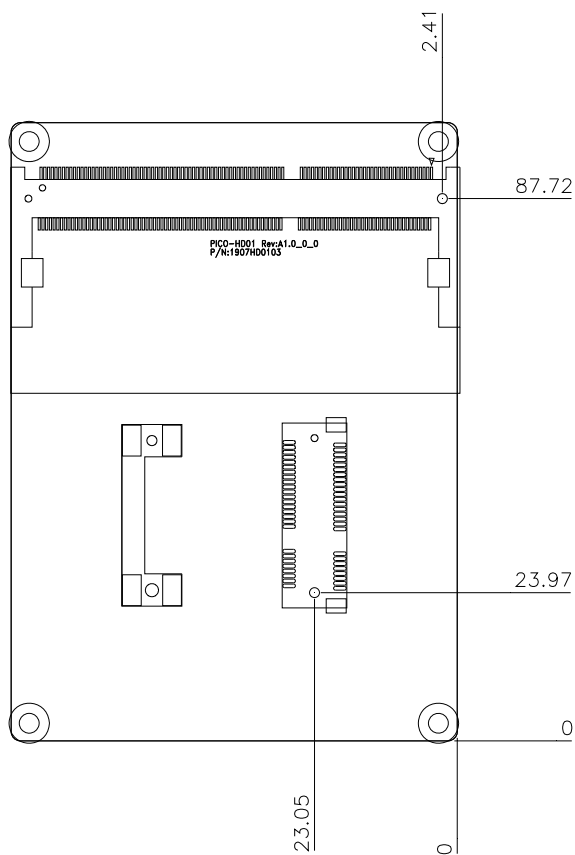


2.3 Mechanical Drawing

Component Side



Solder Side



2.4 List of Jumpers

The board has a number of jumpers that allow you to configure your system to suit your application.

The table below shows the function of each of the board's jumpers:

Label	Function
JP1	COM2 RI/+5/+12V Selection
JP2	Clear CMOS
JP3	LVDS Inverter/ Backlight Voltage Selection
JP4	LVDS Operating Voltage Selection
JP5	LVDS Backlight Lightness Control Mode Selection
JP6	AT/ATX Power Supply Mode Selection

2.5 List of Connectors

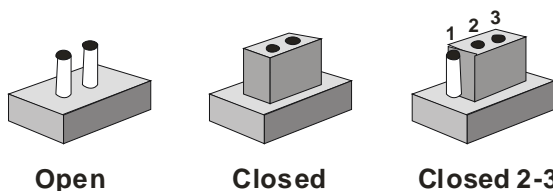
The board has a number of connectors that allow you to configure your system to suit your application. The table below shows the function of each board's connectors:

Label	Function
CN1	Digital I/O Connector
CN2	COM Port #1
CN3	COM Port #2
CN4	+5V Output For SATA HDD
CN5	SATA Port
CN6	External 12V Input
CN7	RJ-45 Ethernet
CN8	Buzzer
CN9	Audio Line In/Out and MIC Connector
CN10	LPC Expansion I/F
CN11	USB Port #5
CN12	Analog CRT Display Connector
CN13	USB Port #3
CN14	USB Port #4
CN15	18-bit LVDS Output
CN16	USB Port 1 & 2
CN17	HDMI TYPE C
CN18	LVDS Inverter/ Backlight Connector
CN19	Front Panel

2.6 Setting Jumpers

You configure your card to match the needs of your application by setting jumpers. A jumper is the simplest kind of electric switch. It consists of two metal pins and a small metal clip (often protected by a plastic cover) that slides over the pins to connect them. To “close” a jumper you connect the pins with the clip.

To “open” a jumper you remove the clip. Sometimes a jumper will have three pins, labeled 1, 2 and 3. In this case you would connect either pins 1 and 2 or 2 and 3.

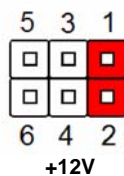
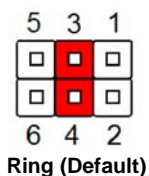
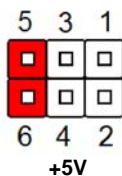


A pair of needle-nose pliers may be helpful when working with jumpers.

If you have any doubts about the best hardware configuration for your application, contact your local distributor or sales representative before you make any change.

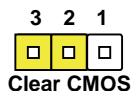
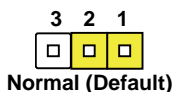
Generally, you simply need a standard cable to make most connections.

2.7 COM2 RI/+5/+12V Selection (JP1)



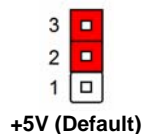
JP1	Function
1-2	+12V
3-4	Ring (Default)
5-6	+5V

2.8 Clear CMOS Selection (JP2)



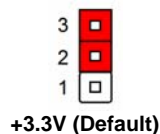
JP2	Function
1-2	Normal (Default)
2-3	Clear CMOS

2.9 LVDS Backlight Inverter VCC Selection (JP3)



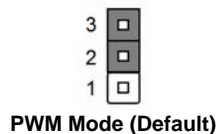
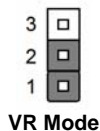
JP3	Function
1-2	+12V
2-3	+5V (Default)

2.10 LVDS Operating Voltage Selection (JP4)



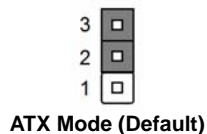
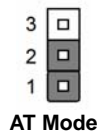
JP4	Function
1-2	+5V
2-3	+3.3V (Default)

2.11 LVDS Backlight Lightness Control Mode Selection (JP5)



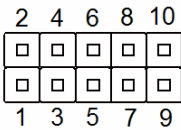
JP5	Function
1-2	VR Mode
2-3	PWM Mode (Default)

2.12 AT/ATX Power Supply Mode Selection (JP6)



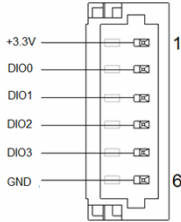
JP6	Function
1-2	AT Mode
2-3	ATX Mod (Default)

2.13 Front Panel Connector (JP9)



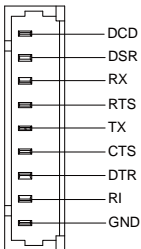
Pin	Pin Name	Signal Type	Signal Level
1	PWR_BTN-		
2	PWR_BTN+		
3	HDD_LED-		
4	HDD_LED+		
5	SPEAKER-		
6	SPEAKER+		
7	PWR_LED-		
8	PWR_LED+		
9	H/W RESET-		
10	H/W RESET+		

2.14 Digital IO Port Connector (CN1)



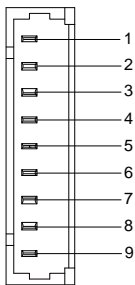
Pin	Pin Name	Signal Type	Signal Level
1	+3.3V	PWR	+3.3V
2	DIO0	I/O	+3.3V
3	DIO1	I/O	+3.3V
4	DIO2	I/O	+3.3V
5	DIO3	I/O	+3.3V
6	GND	GND	GND

2.15 COM Port 1 Connector (CN2)



Pin	Pin Name	Signal Type	Signal Level
1	DCDA	IN	
2	DSRA	IN	
3	RXA	IN	
4	RTSA	OUT	$\pm 9V$
5	TXA	OUT	$\pm 9V$
6	CTSA	IN	
7	DTRA	OUT	$\pm 9V$
8	RIA	IN	
9	GND	GND	

2.16 COM Port 2 Connector (CN3)



RS-232

Pin	Pin Name	Signal Type	Signal Level
1	DCDB	IN	
2	DSRB	IN	
3	RXB	IN	

PICO-ITX Board**PICO-HD01**

4	RTSB	OUT	±9V
5	TXB	OUT	±9V
6	CTSB	IN	
7	DTRB	OUT	±9V
8	RI/+5V/+12V	IN/ PWR	+5V/+12V
9	GND	GND	

RS-422

Pin	Pin Name	Signal Type	Signal Level
1	RS422_TX-	OUT	±5V
2	NC		
3	RS422_TX+	OUT	±5V
4	NC		
5	RS422_RX+	IN	
6	NC		
7	RS422_RX-	IN	
8	NC/+5V/+12V	PWR	+5V/+12V
9	GND	GND	

RS-485

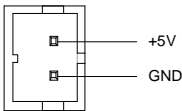
Pin	Pin Name	Signal Type	Signal Level
1	RS485_D-	I/O	±5V
2	NC		
3	RS485_D+	I/O	±5V
4	NC		
5	NC		

6	NC		
7	NC		
8	NC/+5V/+12V	PWR	+5V/+12V
9	GND	GND	

Note 1: COM2 RS-232/422/485 can be set by BIOS setting. Default is RS-232.

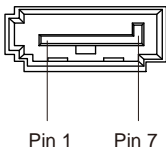
Note 2: Pin 8 function can be set by JP1.

2.17 +5V Output For SATA HDD Connector (CN4)



Pin	Pin Name	Signal Type	Signal Level
1	+5V	PWR	+5V
2	GND	GND	GND

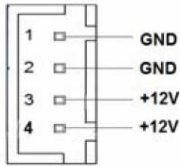
2.18 SATA Port Connector (CN5)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	SATA_TX+	DIFF	
3	SATA_TX-	DIFF	
4	GND	GND	

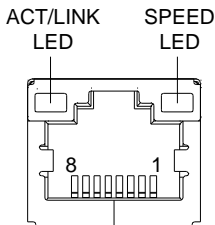
5	SATA_RX-	DIFF
6	SATA_RX+	DIFF
7	GND	GND

2.19 External +12V Input Connector (CN6)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	GND
2	GND	GND	GND
3	+12V	PWR	+12V
4	+12V	PWR	+12V

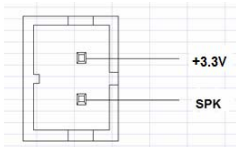
2.20 Realtek LAN (RJ-45) Port Connector (CN7)



Pin	Pin Name	Signal Type	Signal Level
1	MDIO+	DIFF	
2	MDIO-	DIFF	

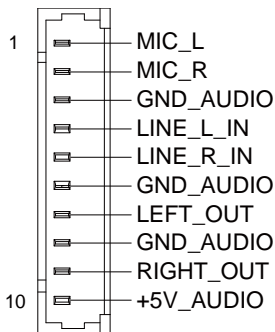
3	MDI1+	DIFF
4	MDI2+	DIFF
5	MDI2-	DIFF
6	MDI1-	DIFF
7	MDI3+	DIFF
8	MDI3-	DIFF

2.21 Buzzer Connector (CN8)



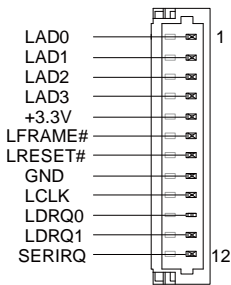
Pin	Pin Name	Signal Type	Signal Level
1	+3.3V	PWR	+3.3V
2	SPK	OUT	

2.22 Audio Line In/Out and MIC Connector (CN9)



Pin	Pin Name	Signal Type	Signal Level
1	MIC_L	IN	
2	MIC_R	IN	
3	GND_AUDIO	GND	
4	LINE_L_IN	IN	
5	LINE_R_IN	IN	
6	GND_AUDIO	GND	
7	LEFT_OUT	OUT	
8	GND_AUDIO	GND	
9	RIGHT_OUT	OUT	
10	+5V_AUDIO	PWR	+5V

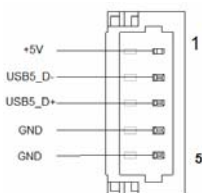
2.23 LPC Port Connector (CN10)



Pin	Pin Name	Signal Type	Signal Level
1	LAD0	I/O	+3.3V
2	LAD1	I/O	+3.3V
3	LAD2	I/O	+3.3V

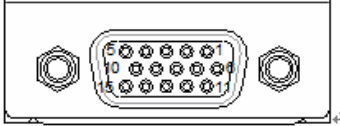
PICO-ITX Board		PICO-HD01	
4	LAD3	I/O	+3.3V
5	+3.3V	PWR	+3.3V
6	LFRAME#	IN	
7	LRESET#	OUT	+3.3V
8	GND	GND	
9	LCLK	OUT	
10	LDRQ0	IN	
11	LDRQ1	IN	
12	SERIRQ	I/O	+3.3V

2.24 USB 2.0 Ports 5 Connector (CN11)



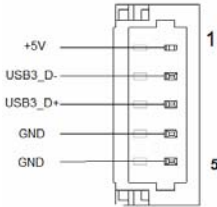
Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB4_D-	DIFF	
3	USB4_D+	DIFF	
4	GND	GND	
5	GND	GND	

2.25 VGA Port Connector (CN12)



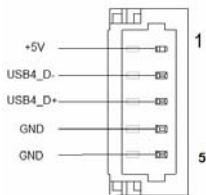
Pin	Pin Name	Signal Type	Signal Level
1	RED	OUT	
2	GREEN	OUT	
3	BLUE	OUT	
4	NC		
5	GND	GND	
6	RED_GND_RTN	GND	
7	GREEN_GND_RTN	GND	
8	BLUE_GND_RTN	GND	
9	+5V	PWR	+5V
10	CRT_PLUG#	GND	+5V
11	NC		
12	DDC_DATA	I/O	+5V
13	HSYNC	OUT	
14	VSYNC	OUT	
15	DDC_CLK	I/O	+5V

2.26 USB 2.0 Port 3 Connector (CN13)



Pin	Pin Name	Signal Type	Signal Level
1	+5V	PWR	+5V
2	USB3_D-	DIFF	
3	USB3_D+	DIFF	
4	GND	GND	
5	GND	GND	

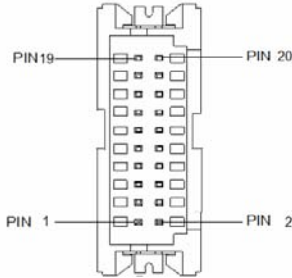
2.27 USB 2.0 Port 4 Connector (CN14)



Pin	Pin Name	Signal Type	Signal Level
1	+5V	PWR	+5V
2	USB4_D-	DIFF	
3	USB4_D+	DIFF	

4	GND	GND
5	GND	GND

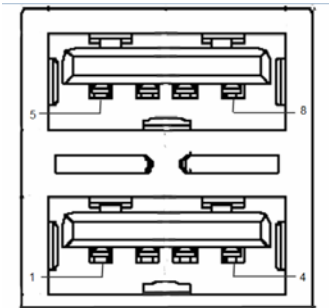
2.28 18-bits LVDS Output Connector (CN15)



Pin	Pin Name	Signal Type	Signal Level
1	BKL_ENABLE	OUT	
2	BKL_CONTROL	OUT	
3	LCD_PWR		+3.3V/+5V
4	LCD_PWR	PWR	+3.3V/+5V
5	LVDS_A_CLK-	DIFF	
6	LVDS_DA2+	DIFF	
7	LVDS_A_CLK+	DIFF	
8	LVDS_DA2-	DIFF	
9	LCD_PWR	DIFF	+3.3V/+5V
10	GND	GND	
11	LVDS_DA0+	DIFF	
12	LVDS_DA3+	DIFF	
13	LVDS_DA0-	DIFF	

PICO-ITX Board**PICO-HD01**

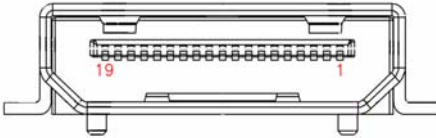
14	LVDS_DA3-	DIFF	
15	GND	GND	
16	GND	GND	
17	LVDS_DA1+	DIFF	
18	DDC_DATA	I/O	+3.3V
19	LVDS_DA1-	DIFF	
20	DDC_CLK	I/O	+3.3V

2.29 USB Port 1 and Port 2 Connector (CN16)

Pin	Pin Name	Signal Type	Signal Level
1	+5VSB	PWR	+5V
2	USB1_D-	DIFF	
3	USB1_D+	DIFF	
4	GND	GND	
5	+5VSB	PWR	+5V
6	USB2_D-	DIFF	
7	USB2_D+	DIFF	

8	GND	GND
---	-----	-----

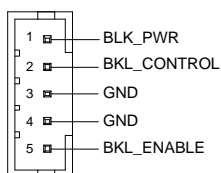
2.30 HDMI Type C Connector (CN17)



Pin	Pin Name	Signal Type	Signal Level
1	GND	GND	
2	HDMI_TX2+	DIFF	
3	HDMI_TX2-	DIFF	
4	GND	GND	
5	HDMI_TX1+	DIFF	
6	HDMI_TX1-	DIFF	
7	GND	GND	
8	HDMI_TX0+	DIFF	
9	HDMI_TX0-	DIFF	
10	GND	GND	
11	HDMI_CLK+	DIFF	
12	HDMI_CLK-	DIFF	
13	GND	GND	
14	NC	NC	
15	HDMI_DDC_CLK	I/O	+5V
16	HDMI_DDC_DATA	I/O	+5V

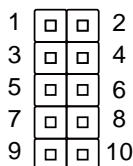
17	NC	NC	
18	DPD_HPDI	IN	
19	DPD_PWR	PWR	+5V

2.31 LVDS Port Inverter / Backlight Connector (CN18)



Pin	Pin Name	Signal Type	Signal Level
1	BKL_PWR	PWR	+5V / +12V
2	BKL_CONTROL	OUT	
3	GND	GND	
4	GND	GND	
5	BKL_ENABLE	OUT	+5V

2.32 Front Panel Connector (CN19)



Pin	Pin Name	Signal Type	Signal Level
1	PWR_BTN-		
2	PWR_BTN+		

3	HDD_LED-
4	HDD_LED+
5	SPEAKER-
6	SPEAKER+
7	PWR_LED-
8	PWR_LED+
9	H/W RESET-
10	H/W RESET+

2.33 DDR3 SODIMM Slot (DIMM1)

Standard Specification

2.34 Mini Card Slot (PCIE1)

Pin	Pin Name	Signal Type	Signal Level
1	PCIE_WAKE#	IN	
2	+3.3VSB	PWR	+3.3V
3	NC		
4	GND	GND	
5	NC		
6	+1.5V	PWR	+1.5V
7	PCIE_CLK_REQ#	IN	
8	UIM_PWR	PWR	
9	GND	GND	
10	UIM_DATA	I/O	

PICO-ITX Board**PICO-HD01**

11	PCIE_REF_CLK-	DIFF	
12	UIM_CLK	IN	
13	PCIE_REF_CLK+	DIFF	
14	UIM_RST	IN	
15	GND	GND	
16	UIM_VPP	PWR	
17	NC		
18	GND	GND	
19	NC		
20	W_DISABLE#	OUT	+3.3V
21	GND	GND	
22	PCIE_RST#	OUT	+3.3V
23	PCIE_RX-	DIFF	
24	+3.3VSB	PWR	+3.3V
25	PCIE_RX+	DIFF	
26	GND	GND	
27	GND	GND	
28	+1.5V	PWR	+1.5V
29	GND	GND	
30	SMB_CLK	I/O	+3.3V
31	PCIE_TX-	DIFF	
32	SMB_DATA	I/O	+3.3V
33	PCIE_TX+	DIFF	
34	GND	GND	

PICO-ITX Board**PICO-HD01**

35	GND	GND	
36	USB_D-	DIFF	
37	GND	GND	
38	USB_D+	DIFF	
39	+3.3VSB	PWR	+3.3V
40	GND	GND	
41	+3.3VSB	PWR	+3.3V
42	NC		
43	GND	GND	
44	NC		
45	NC		
46	NC		
47	NC		
48	+1.5V	PWR	+1.5V
49	NC		
50	GND	GND	
51	NC		
52	+3.3VSB	PWR	+3.3V

Below Table for China RoHS Requirements

产品中有毒有害物质或元素名称及含量

AAEON Main Board/ Daughter Board/ Backplane

部件名称	有毒有害物质或元素					
	铅 (Pb)	汞 (Hg)	镉 (Cd)	六价铬 (Cr(VI))	多溴联苯 (PBB)	多溴二苯醚 (PBDE)
印刷电路板 及其电子组件	×	○	○	○	○	○
外部信号 连接器及线材	×	○	○	○	○	○
<p>O: 表示该有毒有害物质在该部件所有均质材料中的含量均在 SJ/T 11363-2006 标准规定的限量要求以下。</p> <p>X: 表示该有毒有害物质至少在该部件的某一均质材料中的含量超出 SJ/T 11363-2006 标准规定的限量要求。</p> <p>备注：此产品所标示之环保使用期限，系指在一般正常使用状况下。</p>						

Chapter

3

**AMI
BIOS Setup**

3.1 System Test and Initialization

These routines test and initialize board hardware. If the routines encounter an error during the tests, you will either hear a few short beeps or see an error message on the screen. There are two kinds of errors: fatal and non-fatal. The system can usually continue the boot up sequence with non-fatal errors.

System configuration verification

These routines check the current system configuration stored in the CMOS memory and BIOS NVRAM. If system configuration is not found or system configuration data error is detected, system will load optimized default and re-boot with this default system configuration automatically.

There are four situations in which you will need to setup system configuration:

1. You are starting your system for the first time
2. You have changed the hardware attached to your system
3. The system configuration is reset by Clear-CMOS jumper
4. The CMOS memory has lost power and the configuration information has been erased.

The PICO-HD01 CMOS memory has an integral lithium battery backup for data retention. However, you will need to replace the complete unit when it finally runs down.

3.2 AMI BIOS Setup

AMI BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed CMOS RAM and BIOS NVRAM so that it retains the Setup information when the power is turned off.

Entering Setup

Power on the computer and press or <F2> immediately. This will allow you to enter Setup.

Main

Set the date, use tab to switch between date elements.

Advanced

Enable/disable boot option for legacy network devices.

Chipset

Host bridge parameters.

Boot

Enables/disables quiet boot option.

Security

Set setup administrator password.

Save & Exit

Exit system setup after saving the changes.

Setup Menu

Setup submenu: Main

```

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.
Main  Advanced  Chipset  Boot  Security  Save & Exit

BIOS Information
PICO-HD01 R1.1 (PCHDAM11) (10/03/2012)

BIOS Vendor      American Megatrends
Core Version     4.6.4.1 x64
Compliance      UEFI 2.1

System Date      [Fri 01/04/2008]
System Time      [19:23:56]

Access Level     Administrator

Set the Date. Use Tab
to switch between Data
elements.

+/: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

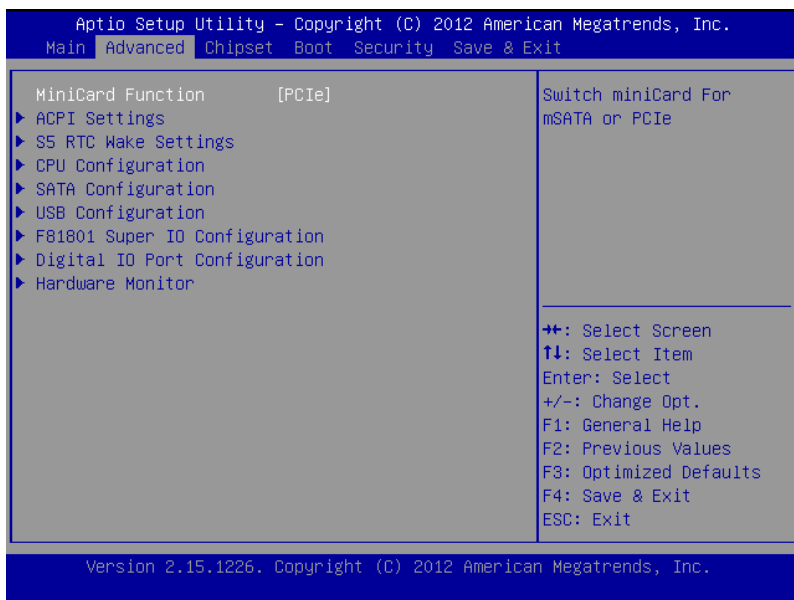
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

```

Options summary: (**default setting**)

System Date	Day MM:DD:YYYY	
Change the month, year and century. The 'Day' is changed automatically.		
System Time	HH : MM : SS	
Change the clock of the system.		

Setup submenu: Advanced

Options summary: (**default setting**)

ACPI Settings		
System ACPI Parameters		
S5 RTC Wake Settings		
Support S5 RTC Wake Function		
CPU Configuration		
CPU Configuration Parameters		
SATA Configuration		
SATA Device Options Settings		
USB Configuration		

USB Configuration Parameters		
F81801 Super IO Configuration		
F81801 Super IO Configuration Parameters		
Digital IO Port Configuration		
DIO configuration		
H/W Monitor		
Monitor hardware status		

ACPI Settings

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Advanced

ACPI Settings		Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
Enable Hibernation	[Enabled]	
ACPI Sleep State	[S3 (Suspend to RAM)]	

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 ESC: Exit

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Options summary: (**default setting**)

Enable Hibernation	Enabled	
	Disabled	
Enabled or disabled hibernate (OS/S4 Sleep State).		
ACPI Sleep State	Suspend Disabled	
	S1 only(CPU Stop Clock)	
	S3 only(Suspend to RAM)	
	AUTO	
Select the ACPI state used for System Suspend		

S5 RTC Wake Settings

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Advanced

Wake system with Fixed Time	[Disabled]	Enable or disable System wake on alarm event. When enabled, System will wake on the hr::min::sec specified
Wake system with Dynamic	[Disabled]	

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 ESC: Exit

Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Options summary: (**default setting**)

Wake system with Fixed Time	Disabled	
	Enabled	
Enable or disable System wake on alarm event. Wake up time is setting by following settings.		
Wake up day	0-31	
Select 0 for daily system wake up 1-31 for which day of the month that you would like the system to wake up		
Wake up hour	0-23	

Wake up minute	0-59	
Wake up second	0-59	
Wake system with	Disabled	
Dynamic Time	Enabled	
Enable or disable System wake on alarm event. Wake up time is current time + Increase minutes.		
Wake up minute increase	1-5	

CPU Configuration

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Advanced

<pre> CPU Configuration Node0: AMD G-T40R Processor Single Core Running @ 1015 MHz 1100 mV Max Speed:1000 MHZ Intended Speed:1000 MHZ Min Speed:615 MHZ Microcode Patch Level: 5000101 ----- Cache per Core ----- L1 Instruction Cache: 32 KB/8-way L1 Data Cache: 32 KB/2-way L2 Cache: 512 KB/16-way No L3 Cache Present Limit CPUID Maximum [Disabled] </pre>	<p>Disabled for Windows XP</p> <hr/> <pre> ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit </pre>
---	--

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Options summary: (**default setting**)

Limit CPUID Maximum	Disabled	
	Enabled	
Disabled for Windows XP		

SATA Configuration

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Advanced

SATA Configuration		IDE /n AHCI
SATA Port0	Not Present	
SATA Port1	Not Present	
OnChip SATA Type	[AHCI]	
SATA Power on PORT0	[Enabled]	
mSATA Power on	[Enabled]	

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 ESC: Exit

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Options summary: (**default setting**)

OnChip SATA Type	IDE	
	AHCI	
Configure SATA controller operating as IDE/AHCI mode.		
SATA Power on PORT0	Enabled	
	Disabled	
Enable / Disable SATA port		
mSATA Power on	Enabled	
	Disabled	
Enable / Disable mSATA port		

USB Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Advanced

USB Configuration USB Devices: 1 Drive, 1 Keyboard, 1 Mouse, 1 Hub Legacy USB Support [Enabled] Mass Storage Devices: JetFlashTranscend 4GB [Auto]	Enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI applications. ++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
--	--

Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Options summary: (*default setting*)

Legacy USB Support	Enabled	
	Disabled	
	Auto	
Enables BIOS Support for Legacy USB Support. When enabled, USB can be functional in legacy environment like DOS. AUTO option disables legacy support if no USB devices are connected. DISABLE option will keep USB devices available only for EFI application		
Device Name (Emulation Type)	Auto	
	Floppy	

	Forced FDD	
	Hard Disk	
	CD-ROM	
<p>If Auto. USB devices less than 530MB will be emulated as Floppy and remaining as Floppy and remaining as hard drive. Forced FDD option can be used to force a HDD formatted drive to boot as FDD(Ex. ZIP drive)</p>		

F81801 Super IO Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Advanced

<p>F81801 Super IO Configuration</p> <p>F81801 Super IO Chip F81801</p> <p>▶ Serial Port 1 Configuration</p> <p>▶ Serial Port 2 Configuration</p>	<p>Set Parameters of Serial Port 1 (COMA)</p> <hr/> <p> ⇧⇩: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit </p>
---	---

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Options summary: (**default setting**)

Serial Port 1/2 Configuration		
Set Parameters of Serial Port 1/2		

Serial Port 1 Configuration

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Advanced

Serial Port 1 Configuration		Enable or Disable Serial Port (COM)
Serial Port	[Enabled]	
Device Settings	IO=3F8h; IRQ=4;	
Change Settings	[Auto]	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Options summary: (**default setting**)

Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		
Change Settings	Auto	
	IO=3F8h; IRQ=4;	
	IO=3F8h; IRQ=3,4,5,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,7,10,11,12;	
	IO=3F8h; IRQ=3,4,5,7,10,11,12;	

	IO=3E8h; IRQ=3,4,5,7,10,11,12;	
	IO=2E8h; IRQ=3,4,5,7,10,11,12;	
Select a resource setting for Super IO device.		

Serial Port 2 Configuration

Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.

Advanced

Serial Port 2 Configuration		Enable or Disable Serial Port (COM)
Serial Port	[Enabled]	
Device Settings	IO=2F8h; IRQ=3;	
Change Settings	[Auto]	
Device Type	[RS232]	
		⇧⇧: Select Screen ⇩⇩: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Options summary: (**default setting**)

Serial Port	Disabled	
	Enabled	
En/Disable specified serial port.		

Change Settings	Auto	
	IO=2F8h; IRQ=3;	
	IO=3F8h; IRQ=3,4,5,7,10,11,12;	
	IO=2F8h; IRQ=3,4,5,7,10,11,12;	
	IO=3E8h; IRQ=3,4,5,7,10,11,12;	
	IO=2E8h; IRQ=3,4,5,7,10,11,12;	
Select a resource setting for Super IO device.		
Device Type	RS232	
	RS422	
	RS485	
Configure COM2 operated as RS232, RS422 or RS485.		

Digital IO Port Configuration

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Advanced

Digital IO Port Configuration GPIO1-4: 0xD1h[0-3]@SIO LDN6	Set GPIO as Input or Output
GPIO1 Direction [Input] GPIO2 Direction [Input] GPIO3 Direction [Output] Output Level [Low] GPIO4 Direction [Output] Output Level [Low]	
	++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Options summary: (**default setting**)

GPIO1/GPIO2	Input	
Direction	Output	
Set GPIO1/GPIO2 as Input or Output		
GPIO3/GPIO4	Input	
Direction	Output	
Set GPIO3/GPIO4 as Input or Output		
Output Level	Hi	
	Low	
Set GPIO Level when used as Output		

H/W Monitor

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Advanced

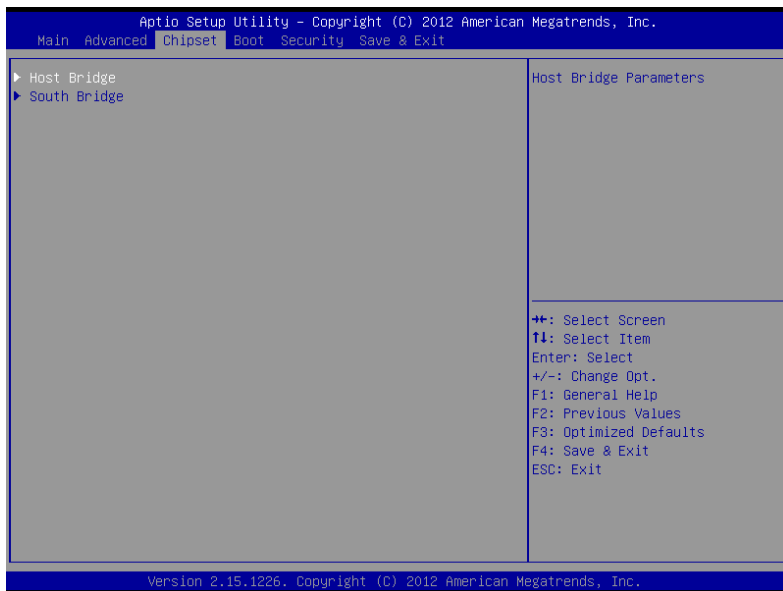
Pc Health Status

CPU temperature : +53 %
System temperature : +48 %
CPU_VCORE : +1.096 V
VCC_DIMM : +1.520 V
3.3V : +3.312 V
3VSB : +3.328 V
VBAT : +3.280 V

++: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit

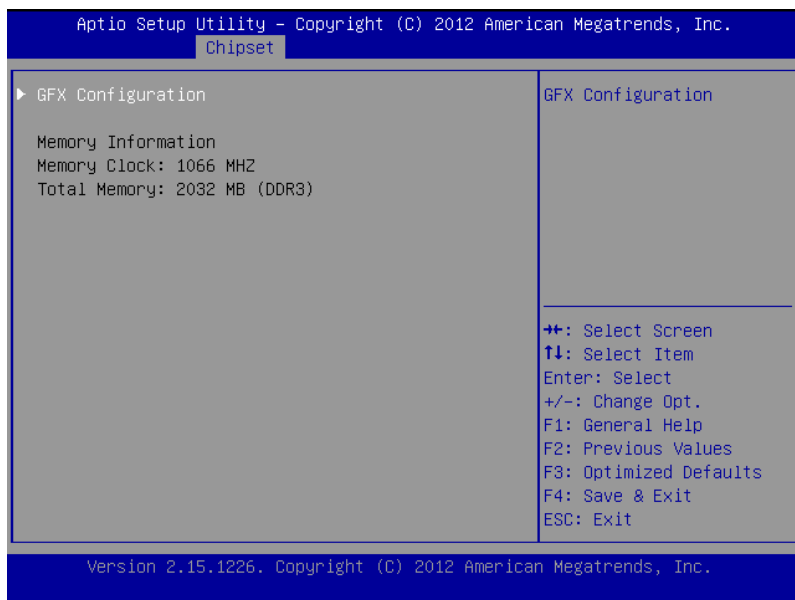
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Setup submenu: Chipset

Options summary: (**default setting**)

Host Bridge		
Host Bridge Parameters		
South Bridge		
South Bridge Parameters		

Host Bridge



Options summary: (**default setting**)

GFX Configuration		
Enter to set GFX Configuration		
Memory Information		
Show current memory information		

GFX Configuration

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Chipset

GFX Configuration		NB PCIE Connect Type (Display device)
DP0 Output Mode	[LVDS]	
DP1 Output Mode	[HDMI]	
LVDS Panel Type	[800x600 18Bit]	
LVDS Backlight Level	[80%]	
LVDS Backlight Type	[Normal]	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit

Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.

Options summary: (**default setting**)

DP0 Output Mode	LVDS	
	Disabled	
LVDS Enable/Disable		
DP1 Output Mode	HDMI	
	Disabled	
HDMI Enable/Disable		
LVDS Panel Type	640x480	
	800x600	
	1024x768	

	1280x768	
	1366x768	
Select panel native resolution. Note: Only support 18-bit panels		
LVDS Backlight Level	100%	
	90%	
	80%	
	70%	
	60%	
	50%	
	40%	
	30%	
	20%	
	10%	
	0%	
Select Backlight Level		
LVDS Backlight Type	Normal	
	Inverted	
<p>Select Backlight control type.</p> <p>Inverted: Brightest for low PWM duty cycle and voltage.</p> <p>Normal: Brightest for high PWM duty cycle and voltage.</p>		

South Bridge

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Chipset

HD Audio Azalia Devic	[Enabled]	Enable Or Disable HD Audio Azalia Device
PCIe	[Enabled]	
RTL8111E	[Enabled]	
Power Mode	[ATX Type]	
Power Failure	[Last state]	

++: Select Screen
 ↑↓: Select Item
 Enter: Select
 +/-: Change Opt.
 F1: General Help
 F2: Previous Values
 F3: Optimized Defaults
 F4: Save & Exit
 ESC: Exit

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Options summary: (**default setting**)

HD Audio Azalia Device	Enabled	
	Disabled	
HD Audio device Enable/Disable		
PCIe	Enable	
	Disabled	
miniCard as PCIe Enable/Disable		
RTL8111E	Enabled	
	Disabled	
RTL8111E LAN Enable/Disable		

Power Mode	ATX Type	
	AT Type	
Select the power type used on the system		
Power Failure	Power On	
	Power Off	
	Last State	
Select AC power state when power is re-applied after a power failure.		

Boot Configuration

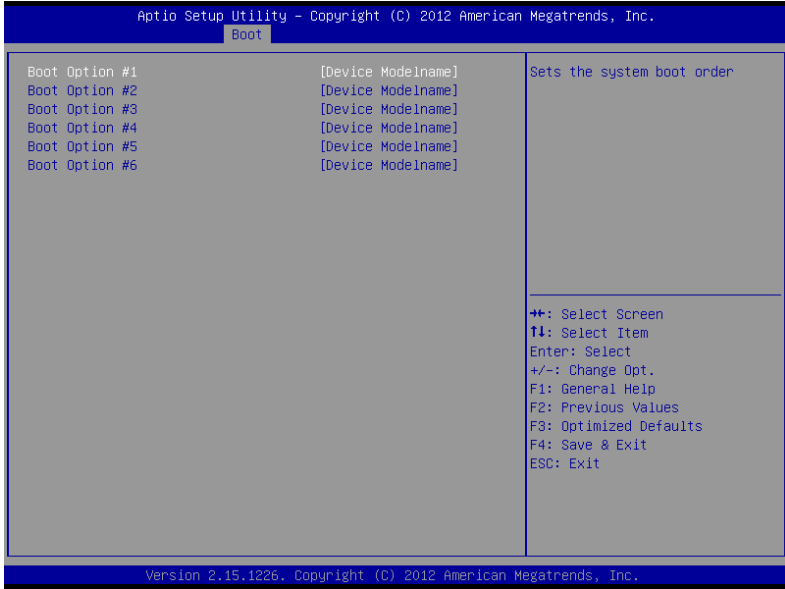
Aptio Setup Utility - Copyright (C) 2012 American Megatrends, Inc.		
Main Advanced Chipset Boot Security Save & Exit		
Boot Configuration Bootup NumLock State [On] Quiet Boot [Enabled] Launch PXE OpROM [Disabled] Driver Option Priorities Boot Option Priorities Boot Option #1 [UEFI: Built-in EFI ...] Boot Option #2 [JetFlashTranscend 4...] Hard Drive BBS Priorities		Select the keyboard NumLock state +/: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.15.1226. Copyright (C) 2012 American Megatrends, Inc.		

Options summary: (**default setting**)

Bootup NumLock State	On	
----------------------	-----------	--

	Off	
Number Lock On/Off		
Quiet Boot	Disabled	
	Enabled	
En/Disable showing boot logo.		
Launch LAN PXE	Disabled	
OpROM	Enabled	
En/Disable PXE boot for RTL8111E LAN		
Boot Option #X/ XXXX Drive BBS Priorities		
The order of boot priorities.		

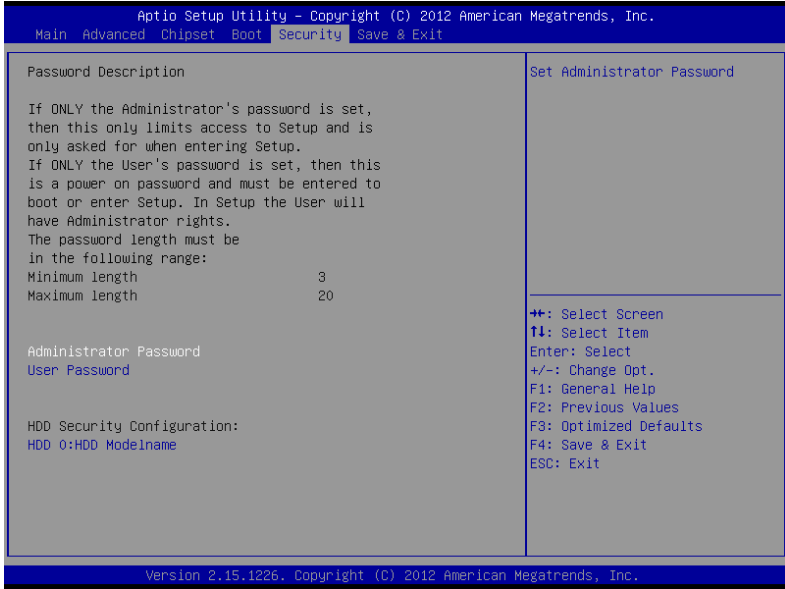
BBS Priorities



Options summary: (**default setting**)

Boot Option #x	Disabled	
	Device name	
Sets the system boot order		

Setup submenu: Security



Options summary: (**default setting**)

Administrator	Not set	
Password/		
User Password		

You can install a Supervisor password, and if you install a supervisor password, you can then install a user password. A user password does not provide access to many of the features in the Setup utility.

Install the Password:

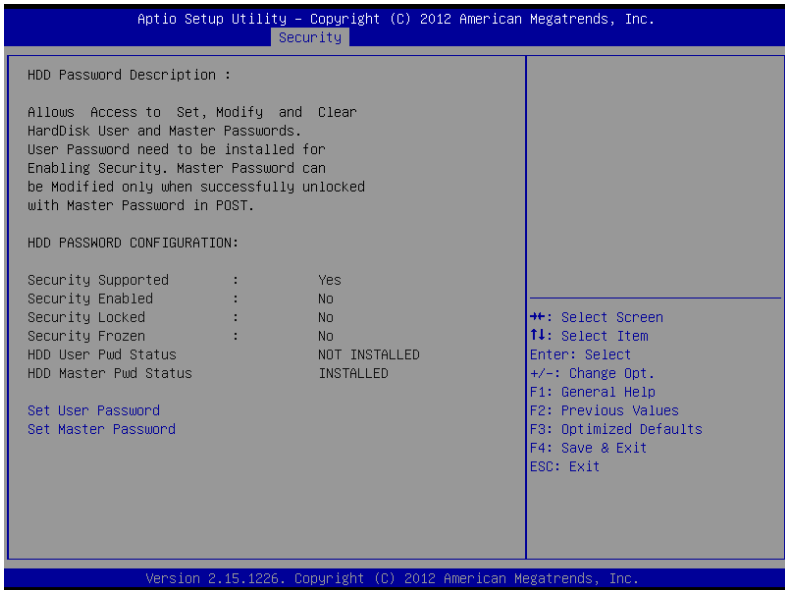
Press Enter on this item, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to

retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Removing the Password:

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

HDD Security



Options summary: (**default setting**)

Set User Password/	Not set	
Set Master Password		

You can install a Master and User password. Before booting to OS, HDD will be set to frozen state. On S3 resume HDD will be unlocked using the HDD Password we entered while system booting.

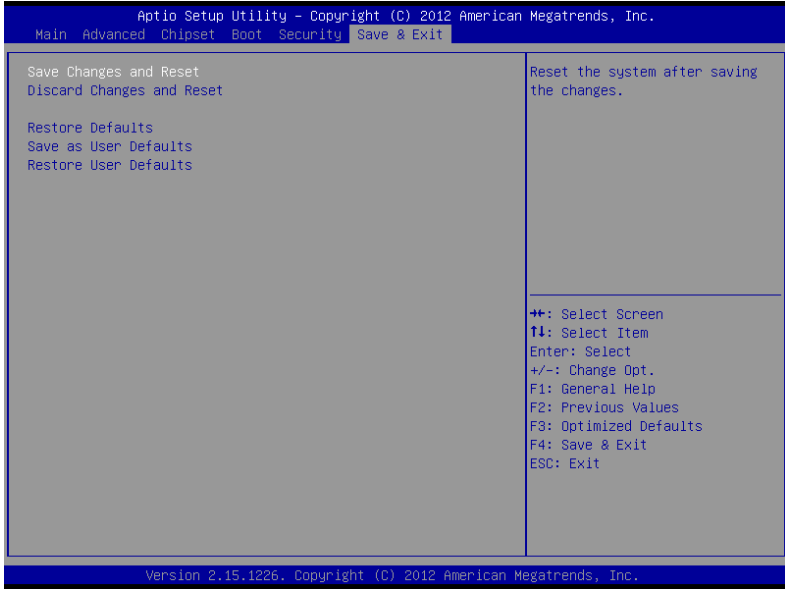
Install the Password:

Press Enter on this item, a dialog box appears which lets you enter a password. You can enter no more than six letters or numbers. Press Enter after you have typed in the password. A second dialog box asks you to retype the password for confirmation. Press Enter after you have retyped it correctly. The password is required at boot time, or when the user enters the Setup utility.

Removing the Password:

Highlight this item and type in the current password. At the next dialog box press Enter to disable password protection.

Setup submenu: Exit



Options summary: (**default setting**)

Save Changes and Reset		
Reset the system after saving the changes		
Discard Changes and Reset		
Reset system setup without saving any changes		
Restore Defaults		
Restore/Load Default values for all the setup options.		
Save as User Defaults		
Save the changes done so far as User Defaults		

Restore User Defaults		
Restore the User Defaults to all the setup options		

Chapter

4

**Driver
Installation**

The PICO-HD01 comes with an AutoRun DVD-ROM that contains all drivers and utilities that can help you to install the driver automatically.

Insert the driver DVD, the driver DVD-title will auto start and show the installation guide. If not, please follow the sequence below to install the drivers.

Follow the sequence below to install the drivers:

Step 1 – Install Chipset Driver

Step 2 – Install AHCI Driver

Step 3 – Install LAN Driver

Step 4 – Install Audio Driver

Step 5 – Bluetooth 3.0 & WiFi (Optional)

Step 6 – Serial Port Driver (Optional)

Please read instructions below for further detailed installations.

4.1 Installation:

Insert the PICO-HD01 DVD-ROM into the DVD-ROM drive. And install the drivers from Step 1 to Step 6 in order.

Step 1 – Install Chipset Driver

1. Click on the **STEP1-CHIPSET** folder and select the OS folder your system is
2. Double click on the **Setup.exe** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 2 – Install AHCI Driver

Please refer to the Appendix D AHCI Setting

Step 3 – Install LAN Driver

1. Click on the **STEP3-LAN** folder and select the OS folder your system is
2. Double click on the **setup.exe** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 4 – Install Audio Driver

1. Click on the **STEP4-AUDIO** folder and select the OS

folder your system is

2. Double click on the **Setup.exe** file located in each OS folder
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

Step 5 – Bluetooth 3.0 & WiFi (optional)

For Window[®] 7:

1. Click on the **STEP5-Bluetooth 3.0 & WiFi(Optional)** folder and then click the **WIN7_32** folder
2. Click on the **BT_7.4.0.98** folder and double click on the **Bluetooth_Suite_win7.exe** file in the folder to install Bluetooth driver
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically
5. Back to the previous level and click on the folder of **WLAN/Install_CD**, double click on the **setup.exe** file in the folder to install WiFi driver
6. Follow the instructions that the window shows
7. The system will help you install the driver automatically

For Window[®] XP:

1. Click on the **STEP5-Bluetooth 3.0 & WiFi(Optional)** folder and then click the **WINXP_32** or **WINXP_64** folder
2. Click on the **BT_7.3.0.130** folder and double click on the **Bluetooth_Suite_XP.exe** file in the folder

3. Follow the instructions that the window shows
4. The system will help you install the driver automatically
5. Back to the previous level and click on the folder of ***XP_9.2.0.458\Install_CD***, double click on the ***setup.exe*** file in the folder to install WiFi driver
6. Follow the instructions that the window shows
7. The system will help you install the driver automatically

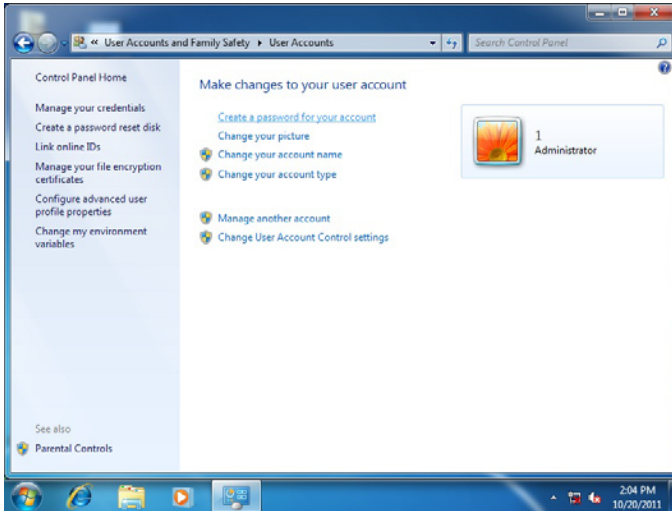
Step 6 – Serial Port Driver (Optional)

For Windows® XP:

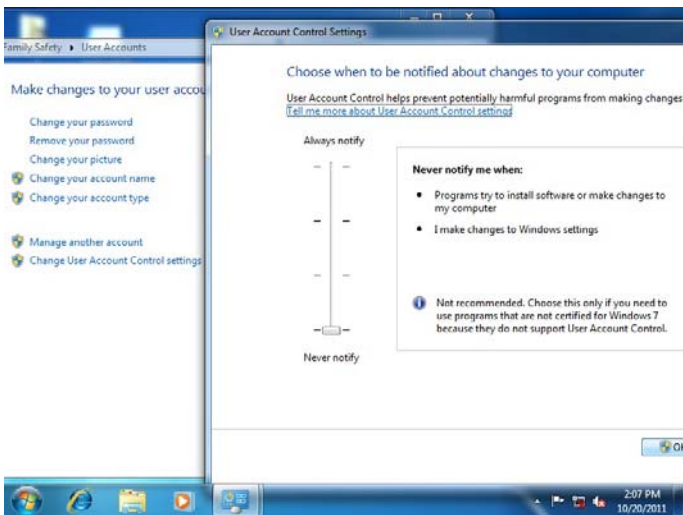
1. Click on the ***STEP6-Serial Port Driver (Optional)*** and select the folder of ***WINXP_32***
2. Double click on ***patch.bat*** file
3. Follow the instructions that the window shows
4. The system will help you install the driver automatically

For Windows® 7:

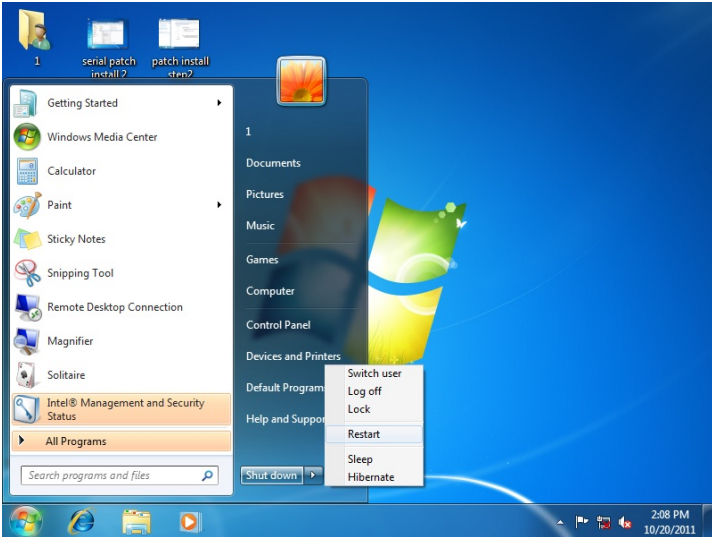
1. Create a password for Administrator account.



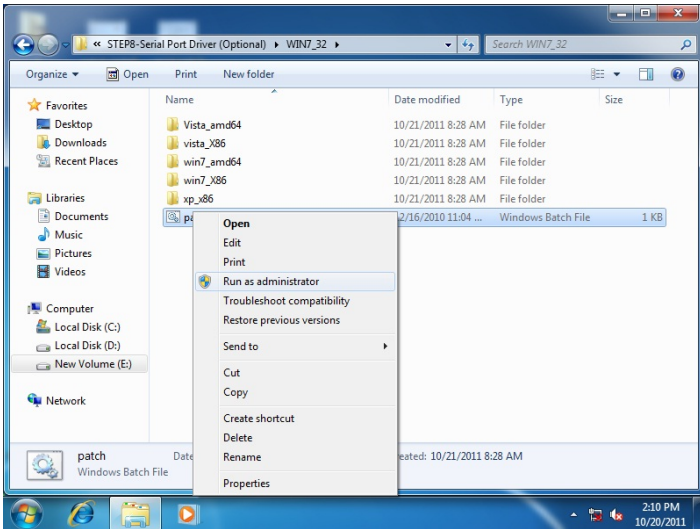
2. Change User Account Control Settings to [Never notify]



3. Reboot and Administrator login.



4. To run patch.bat with [Run as administrator].



Appendix

A

Programming the Watchdog Timer

A.1 Watchdog Timer Registers

Table 1 : Watch dog relative IO address		
	Default Value	Note
I/O Base Address	0xA00	I/O Base address for Watchdog operation. This address is assigned by SIO LDN7, register 0x60-0x61.

Table 2 : Watchdog relative register table				
Register	Offset	BitNum	Value	Note
Watchdog WDTRST# Enable	0x00	7	1	Enable/Disable time out output via WDTRST# 0: Disable 1: Enable
Pulse Width	0x05	0:1	01	Width of Pulse signal 00: 1ms (do not use) 01: 25ms 10: 125ms 11: 5s Pulse width is must longer then 16ms.
Signal Polarity	0x05	2	0	0: low active 1: high active Must set this bit to 0
Counting Unit	0x05	3	0	Select time unit. 0: second 1: minute
Output Signal Type	0x05	4	1	0: Level 1: Pulse Must set this bit to 1
Watchdog Timer Enable	0x05	5	1	0: Disable 1: Enable
Timeout Status	0x05	6	1	1: timeout occurred. Write a 1 to clear timeout status
Timer Counter	0x06			Time of watchdog timer (0~255)

A.2 WatchDog Sample Program

```

*****
// WDT I/O operation relative definition (Please reference to Table 1)
#define WDTAddr      0xA00 // WDT I/O base address
Void WDTWriteByte(byte Register, byte Value);
byte WDTReadByte(byte Register);
Void WDTSetReg(byte Register, byte Bit, byte Val);
// Watch Dog relative definition (Please reference to Table 2)
#define DevReg       0x00 // Device configuration register
    #define WDTRstBit 0x80 // Watchdog WDTRST# (Bit7)
    #define WDTRstVal 0x80 // Enabled WDTRST#
#define TimerReg     0x05 // Timer register
    #define PSWidthBit 0x00 // WDTRST# Pulse width (Bit0:1)
    #define PSWidthVal 0x01 // 25ms for WDTRST# pulse
    #define PolarityBit 0x02 // WDTRST# Signal polarity (Bit2)
    #define PolarityVal 0x00 // Low active for WDTRST#
    #define UnitBit     0x03 // Unit for timer (Bit3)
    #define ModeBit     0x04 // WDTRST# mode (Bit4)
    #define ModeVal     0x01 // 0:level 1: pulse
    #define EnableBit   0x05 // WDT timer enable (Bit5)
    #define EnableVal   0x01 // 1: enable
    #define StatusBit   0x06 // WDT timer status (Bit6)
#define CounterReg   0x06 // Timer counter register
*****

VOID Main(){
    // Procedure : AaeonWDTConfig
    // (byte)Timer : Counter of WDT timer.(0x00~0xFF)
    // (boolean)Unit : Select time unit(0: second, 1: minute).
    AaeonWDTConfig(Counter, Unit);

    // Procedure : AaeonWDTEnable
    // This procedure will enable the WDT counting.

```

```

    AaeonWDTEnable();
}
*****

*****

// Procedure : AaeonWDTEnable
VOID AaeonWDTEnable (){
    WDTEnableDisable(1);
}

// Procedure : AaeonWDTConfig
VOID AaeonWDTConfig (byte Counter, BOOLEAN Unit){
    // Disable WDT counting
    WDTEnableDisable(0);
    // Clear Watchdog Timeout Status
    WDTClearTimeoutStatus();
    // WDT relative parameter setting
    WDTParameterSetting(Timer, Unit);
}

VOID WDTEnableDisable(byte Value){
    If (Value == 1)
        WDTSetBit(TimerReg, EnableBit, 1);
    else
        WDTSetBit(TimerReg, EnableBit, 0);
}

VOID WDTParameterSetting(byte Counter, BOOLEAN Unit){
    // Watchdog Timer counter setting
    WDTWriteByte(CounterReg, Counter);
    // WDT counting unit setting
    WDTSetBit(TimerReg, UnitBit, Unit);
    // WDT output mode set to pulse
    WDTSetBit(TimerReg, ModeBit, ModeVal);
    // WDT output mode set to active low
    WDTSetBit(TimerReg, PolarityBit, PolarityVal);
    // WDT output pulse width is 25ms

```

```

WDTSetBit(TimerReg, PSWidthBit, PSWidthVal);
// Watchdog WDTRST# Enable
WDTSetBit(DevReg, WDTRstBit, WDTRstVal);
}

VOID WDTClearTimeoutStatus(){
    WDTSetBit(TimerReg, StatusBit, 1);
}
*****

*****

VOID WDTWriteByte(byte Register, byte Value){
    IOWriteByte(WDTAddr+Register, Value);
}

byte WDTReadByte(byte Register){
    return IOReadByte(WDTAddr+Register);
}

VOID WDTSetBit(byte Register, byte Bit, byte Val){
    byte TmpValue;

    TmpValue = WDTReadByte(Register);
    TmpValue &= ~(1 << Bit);
    TmpValue |= Val << Bit;
    WDTWriteByte(Register, TmpValue);
}
*****

```












































Appendix

B

I/O Information

B.1 I/O Address Map

Input/output (IO)	
[00000000 - 0000000F]	Direct memory access controller
[00000000 - 0000000F]	Motherboard resources
[00000000 - 000003AF]	PCI bus
[00000010 - 0000001F]	Motherboard resources
[00000020 - 00000021]	Programmable interrupt controller
[00000022 - 0000003F]	Motherboard resources
[00000040 - 00000043]	System timer
[00000044 - 0000005F]	Motherboard resources
[00000060 - 00000060]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000061 - 00000061]	System speaker
[00000062 - 00000063]	Motherboard resources
[00000064 - 00000064]	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
[00000065 - 0000006F]	Motherboard resources
[00000070 - 00000071]	System CMOS/real time clock
[00000072 - 0000007F]	Motherboard resources
[00000080 - 00000080]	Motherboard resources
[00000081 - 00000083]	Direct memory access controller
[00000084 - 00000086]	Motherboard resources
[00000087 - 00000087]	Direct memory access controller
[00000088 - 00000088]	Motherboard resources
[00000089 - 0000008B]	Direct memory access controller
[0000008C - 0000008E]	Motherboard resources
[0000008F - 0000008F]	Direct memory access controller
[00000090 - 0000009F]	Motherboard resources
[000000A0 - 000000A1]	Programmable interrupt controller
[000000A2 - 000000BF]	Motherboard resources
[000000C0 - 000000DF]	Direct memory access controller
[000000E0 - 000000EF]	Motherboard resources
[000000F0 - 000000FF]	Numeric data processor
[00000170 - 00000177]	Secondary IDE Channel
[000001F0 - 000001F7]	Primary IDE Channel
[00000274 - 00000277]	ISAPNP Read Data Port
[00000279 - 00000279]	ISAPNP Read Data Port
[000002E8 - 000002EF]	Communications Port (COM4)
[000002F8 - 000002FF]	Communications Port (COM2)
[00000376 - 00000376]	Secondary IDE Channel

	[00000378 - 0000037F]	Printer Port (LPT1)
	[00000380 - 000003BB]	AMD Radeon HD 6320 Graphics
	[00000380 - 000003DF]	PCI bus
	[000003C0 - 000003DF]	AMD Radeon HD 6320 Graphics
	[000003E0 - 00000CF7]	PCI bus
	[000003E8 - 000003EF]	Communications Port (COM3)
	[000003F6 - 000003F6]	Primary IDE Channel
	[000003F8 - 000003FF]	Communications Port (COM1)
	[0000040B - 0000040B]	Motherboard resources
	[000004D0 - 000004D1]	Motherboard resources
	[000004D6 - 000004D6]	Motherboard resources
	[00000500 - 0000050F]	Motherboard resources
	[00000510 - 0000051F]	Motherboard resources
	[00000520 - 0000052F]	Motherboard resources
	[00000800 - 0000089F]	Motherboard resources
	[00000900 - 0000090F]	Motherboard resources
	[00000910 - 0000091F]	Motherboard resources
	[00000A79 - 00000A79]	ISAPNP Read Data Port
	[00000B20 - 00000B3F]	Motherboard resources
	[00000C00 - 00000C01]	Motherboard resources
	[00000C14 - 00000C14]	Motherboard resources
	[00000C50 - 00000C51]	Motherboard resources
	[00000C52 - 00000C52]	Motherboard resources
	[00000C6C - 00000C6C]	Motherboard resources
	[00000C6F - 00000C6F]	Motherboard resources
	[00000CD0 - 00000CD1]	Motherboard resources
	[00000CD2 - 00000CD3]	Motherboard resources
	[00000CD4 - 00000CD5]	Motherboard resources
	[00000CD6 - 00000CD7]	Motherboard resources
	[00000CD8 - 00000CDF]	Motherboard resources
	[00000D00 - 0000FFFF]	PCI bus
	[0000D000 - 0000D0FF]	Realtek PCIe GBE Family Controller #2
	[0000D000 - 0000DFFF]	PCI standard PCI-to-PCI bridge
	[0000E000 - 0000E0FF]	Realtek PCIe GBE Family Controller
	[0000E000 - 0000EFFF]	PCI standard PCI-to-PCI bridge
	[0000F000 - 0000F0FF]	AMD Radeon HD 6320 Graphics
	[0000F100 - 0000F10F]	Standard Dual Channel PCI IDE Controller
	[0000F110 - 0000F113]	Standard Dual Channel PCI IDE Controller
	[0000F120 - 0000F127]	Standard Dual Channel PCI IDE Controller
	[0000F130 - 0000F133]	Standard Dual Channel PCI IDE Controller
	[0000F140 - 0000F147]	Standard Dual Channel PCI IDE Controller
	[0000F150 - 0000F15F]	Standard Dual Channel PCI IDE Controller
	[0000FE00 - 0000FEFE]	Motherboard resources

B.2 Memory Address Map

Address Range	Device
[000A0000 - 000BFFFF]	AMD Radeon HD 6320 Graphics
[000A0000 - 000BFFFF]	PCI bus
[000C0000 - 000DFFFF]	PCI bus
[2F000000 - 3EFFFFFF]	Motherboard resources
[3F000000 - FFFFFFFF]	PCI bus
[C0000000 - CFFFFFFF]	AMD Radeon HD 6320 Graphics
[D0000000 - D0003FFF]	Realtek PCIe GBE Family Controller #2
[D0000000 - D00FFFFFF]	PCI standard PCI-to-PCI bridge
[D0100000 - D0103FFF]	Realtek PCIe GBE Family Controller
[D0100000 - D01FFFFFF]	PCI standard PCI-to-PCI bridge
[E0000000 - EFFFFFFF]	System board
[FE900000 - FE900FFF]	Realtek PCIe GBE Family Controller #2
[FE900000 - FE9FFFFFF]	PCI standard PCI-to-PCI bridge
[FEA00000 - FEA00FFF]	Realtek PCIe GBE Family Controller
[FEA00000 - FEAFFFFFF]	PCI standard PCI-to-PCI bridge
[FEB00000 - FEB3FFFF]	AMD Radeon HD 6320 Graphics
[FEB40000 - FEB43FFF]	Microsoft UAA Bus Driver for High Definition Audio
[FEB44000 - FEB47FFF]	Microsoft UAA Bus Driver for High Definition Audio
[FEB48000 - FEB480FF]	Standard Enhanced PCI to USB Host Controller
[FEB49000 - FEB49FFF]	Standard OpenHCD USB Host Controller
[FEB4A000 - FEB4AFFF]	Standard OpenHCD USB Host Controller
[FEB4B000 - FEB4B0FF]	Standard Enhanced PCI to USB Host Controller
[FEB4C000 - FEB4CFFF]	Standard OpenHCD USB Host Controller
[FEB4D000 - FEB4D0FF]	Standard Enhanced PCI to USB Host Controller
[FEB4E000 - FEB4EFFF]	Standard OpenHCD USB Host Controller
[FEB4F000 - FEB4F3FF]	Standard Dual Channel PCI IDE Controller
[FEC00000 - FEC00FFF]	Motherboard resources
[FEC10000 - FEC10FFF]	Motherboard resources
[FED00000 - FED003FF]	High precision event timer
[FED00000 - FED00FFF]	Motherboard resources
[FED61000 - FED70FFF]	Motherboard resources
[FED80000 - FED8FFFF]	Motherboard resources
[FEE00000 - FEE00FFF]	Motherboard resources
[FFC00000 - FFFFFFFF]	Motherboard resources

B.3 IRQ Mapping Chart

IRQ	Device
(ISA) 0	System timer
(ISA) 1	Standard 101/102-Key or Microsoft Natural PS/2 Keyboard
(ISA) 3	Communications Port (COM2)
(ISA) 4	Communications Port (COM1)
(ISA) 8	System CMOS/real time clock
(ISA) 9	Microsoft ACPI-Compliant System
(ISA) 10	Communications Port (COM3)
(ISA) 11	Communications Port (COM4)
(ISA) 12	Microsoft PS/2 Mouse
(ISA) 13	Numeric data processor
(ISA) 14	Primary IDE Channel
(PCI) 16	Microsoft UAA Bus Driver for High Definition Audio
(PCI) 16	PCI standard PCI-to-PCI bridge
(PCI) 16	Realtek PCIe GBE Family Controller
(PCI) 17	PCI standard PCI-to-PCI bridge
(PCI) 17	Realtek PCIe GBE Family Controller #2
(PCI) 17	Standard Dual Channel PCI IDE Controller
(PCI) 17	Standard Enhanced PCI to USB Host Controller
(PCI) 17	Standard Enhanced PCI to USB Host Controller
(PCI) 17	Standard Enhanced PCI to USB Host Controller
(PCI) 18	AMD Radeon HD 6320 Graphics
(PCI) 18	Standard OpenHCD USB Host Controller
(PCI) 18	Standard OpenHCD USB Host Controller
(PCI) 18	Standard OpenHCD USB Host Controller
(PCI) 18	Standard OpenHCD USB Host Controller
(PCI) 19	Microsoft UAA Bus Driver for High Definition Audio

B.4 DMA Channel Assignments

DMA Channel	Device
3	Printer Port (LPT1)
4	Direct memory access controller

Appendix

C

Mating Connector

C.1 List of Mating Connectors and Cables

The table notes mating connectors and available cables.

Connector Label	Function	Mating Connector		Available Cable	Cable P/N
		Vendor	Model number		
CN1	Digital I/O	CATCH	1201-700-06S	AAEON DIO Extension Cable	1701060150
CN2	COM1 Port	CATCH	1201-700-09S	Serial Port Cable	1701090150
CN3	COM2 Port	CATCH	1201-700-09S	Serial Port Cable	1701090150
CN4	+5V Output for SATA HDD	CATCH	1192-700-02S	2 Pins for SATA PWR Cable	1702150155
CN5	SATA Port	ASTRON	97-0912HA-7-R	7 Pin 50cm SATA Cable	1709070500
CN6	External 12V Input	CATCH	1191-700-04S	PWR Cable	170204010S
CN7	RJ-45 Ethernet	UDE	RT7-17FAAM1A	N/A	N/A
CN8	Buzzer	CATCH	1201-700-02S	Buzzer Cable	170302010C
CN9	Audio Line In/Out and MIC Connector	CATCH	1201-700-10S	Audio Cable	1709100254
CN10	LPC Expansion I/F	CATCH	1204-700-12S	AAEON LPC Cable	1703120130

PICO-ITX Board**PICO-HD01**

CN11	USB Port 5	CATCH	1201-700-05S	USB Port Cable	1700050207
CN12	Analog CRT Display	ASTRON	HDLH-B15-CF HN1T-1-R	N/A	N/A
CN13	USB Port 3	CATCH	1201-700-05S	USB Port Cable	1700050207
CN14	USB Port 4	CATCH	1201-700-05S	USB Port Cable	1700050207
CN15	18-bit LVDS Output	E-Call	0110-01-553-200	N/A	N/A
CN16	USB Port 1 and 2	TechBest	KS-002D-ANB(2.0)-L	N/A	N/A
CN17	HDMI Type C	ASTRON	360FC19-0N002T-R	N/A	N/A
CN18	LVDS Inverter/ Backlight Connector	CATCH	1192-700-05S	N/A	N/A
CN19	Front Panel	JVE	21B22050-XXS 10B-01G-4/2	AAEON Front Panel Cable	1701100156
BAT1	External RTC Battery Connector	CATCH	1201-700-02S	Battery Cable	175011901 M

Appendix

D

AHCI Setting

D.1 Setting AHCI

OS installation to setup AHCI Mode.

Step 1: Copy the files below from “Driver DVD -> STEP4-AHCI\WinXP\SB8xx_RAID_XP_3.2.1540.92” to Disk



x64

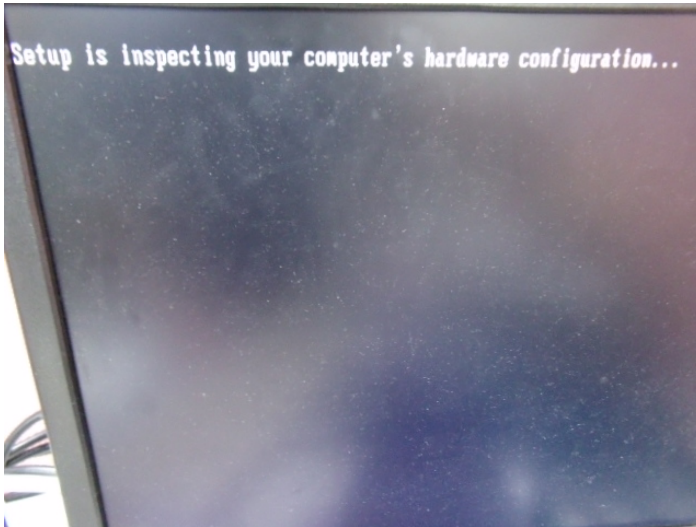


x86

ahci64
檔案
1 KBahci86
檔案
1 KBreadme
文字文件
2 KBbtsetup.0em
OEM 檔案
2 KB

Step 2: Connect the USB Floppy to the board

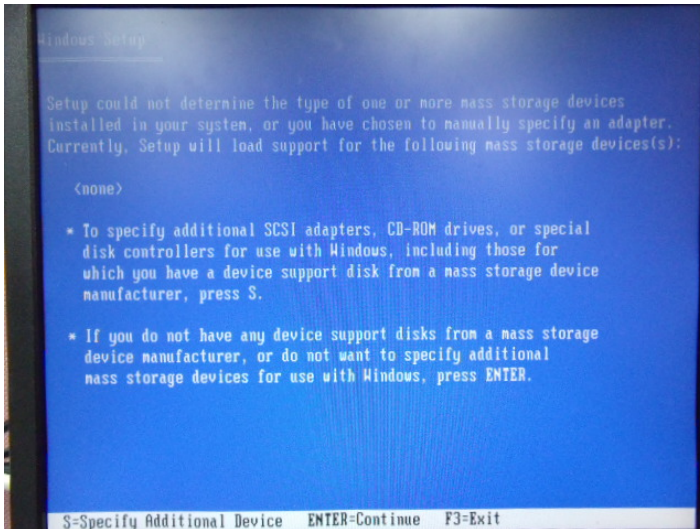
Step 3: Setup OS



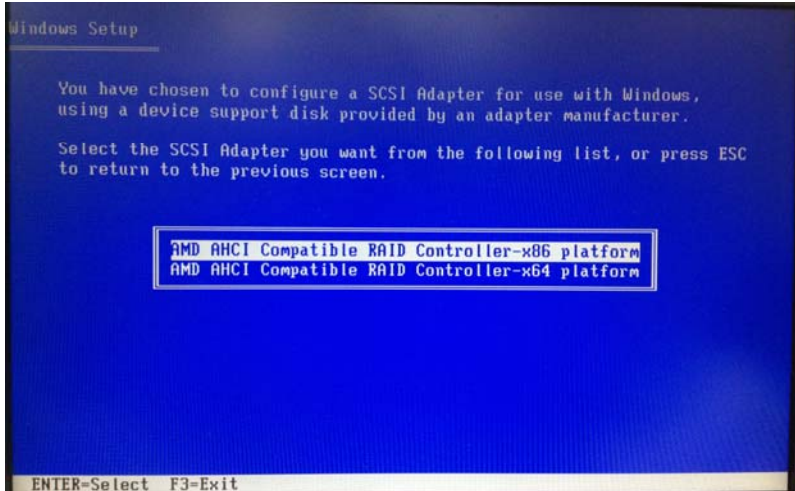
Step 4: Press "F6"



Step 5: Choose "S"

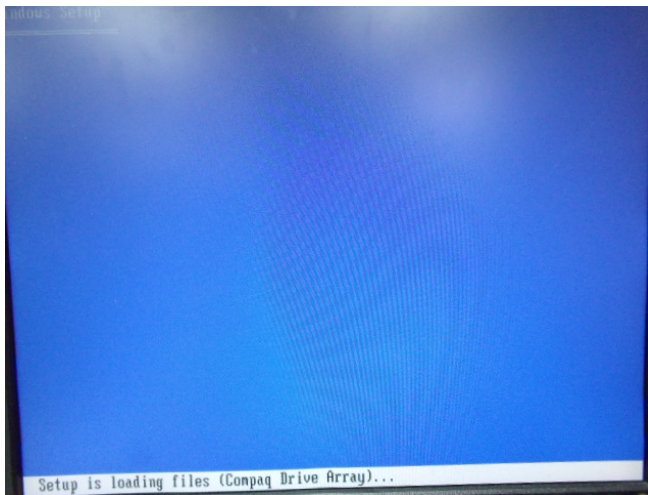


Step 6: Choose “AMD AHCI Compatible RAID Controller-x86 platform”



Step 7: It will show the model number you select and then press “ENTER

Step 8: Setup is loading files



Appendix

E

Electrical Specifications for I/O Ports

E.1 Electrical Specifications for Digital I/O Ports

Table 1 : Digital Input/Output Pin Electrical Specification						
Pin	Type	Input Threshold Voltage		Output Voltage		Note
		Low	High	Low	High	
DIO1	I/O	0.8	2.0	0	3.3	
DIO2	I/O	0.8	2.0	0	3.3	
DIO3	I/O	0.8	2.0	0	3.3	
DIO4	I/O	0.8	2.0	0	3.3	

Note: All DIO pins are 5V tolerance in input mode.

E.2 DIO Programming

PICO-HD01 utilizes FINTEK F81801U chipset as its Digital I/O controller. Below are the procedures to complete its configuration and the AAEMON initial DIO program is also attached based on which you can develop customized program to fit your application. There are three steps to complete the configuration setup: (1) Enter the MB PnP Mode; (2) Modify the data of configuration registers; (3) Exit the MB PnP Mode. Undesired result may occur if the MB PnP Mode is not exited normally.

E.3 Digital I/O Register

	Default Value	Note
Index	0x2E	SIO MB PnP Mode Index Register 0x2E or 0x4E
Data	0x2F)	SIO MB PnP Mode Data Register 0x2F or 0x4F

	LDN	Register	BitNum	Note
GPIO1 Direction	0x06	0xD0	0	0:input, 1: output
GPIO2 Direction	0x06	0xD0	1	
GPIO3 Direction	0x06	0xD0	2	
GPIO4 Direction	0x06	0xD0	3	
GPIO1 Output Level	0x06	0xD1	0	0:low, 1: high
GPIO2 Output Level	0x06	0xD1	1	
GPIO3 Output Level	0x06	0xD1	2	
GPIO4 Output Level	0x06	0xD1	3	
GPIO1 Status	0x06	0xD2	0	0:low, 1: high
GPIO2 Status	0x06	0xD2	1	
GPIO3 Status	0x06	0xD2	2	
GPIO4 Status	0x06	0xD2	3	

E.4 Digital I/O Sample Program

```

*****
// SuperIO relative definition (Please reference to Table 2)
#define SIOIndex 0x2E
#define SIODATA 0x2F
#define DIOLDN 0x06
IOWriteByte(byte IOPort, byte Value);
IOReadByte(byte IOPort);
// DIO relative definition (Please reference to Table 3)
#define DirReg 0xD0 // 0:input, 1: output
    #define InputPin 0x00
    #define OutputPin 0x01
#define OutputReg 0xD1 // 0:low, 1: high
#define StatusReg 0xD2 // 0:low, 1: high
    #define PinLow 0x00
    #define PinHigh 0x01
#define Pin1Bit 0x00
#define Pin2Bit 0x01
#define Pin3Bit 0x02
#define Pin4Bit 0x03
*****

*****

VOID Main(){
    Boolean PinStatus ;

    // Procedure : AaeonReadPinStatus
    // Input :
    //     Example, Read Digital I/O Pin 3 status
    // Output :
    //     InputStatus :
    //         0: Digital I/O Pin level is low
    //         1: Digital I/O Pin level is High
    PinStatus = AaeonReadPinStatus(Pin3Bit);

```

```

// Procedure : AaeonSetOutputLevel
// Input :
// Example, Set Digital I/O Pin 2 to high level
AaeonSetOutputLevel(Pin2Bit, PinHigh);
}
*****

*****

Boolean AaeonReadPinStatus(byte PinBit){
    Boolean PinStatus ;

    PinStatus = SIOBitRead(DIOLDN, StatusReg, PinBit);
    Return PinStatus ;
}
VOID AaeonSetOutputLevel(byte PinBit, byte Value){
    ConfigDioMode(PinBit, OutputPin);
    SIOBitSet(DIOLDN, OutputReg, PinBit, Value);
}
*****

*****VOI
D SIOEnterMBPnPMode(){
    IOWriteByte(SIOIndex, 0x87);
    IOWriteByte(SIOIndex, 0x87);
}

VOID SIOExitMBPnPMode(){
    IOWriteByte(SIOIndex, 0xAA);
}

VOID SIOSelectLDN(byte LDN){
    IOWriteByte(SIOIndex, 0x07); // SIO LDN Register Offset = 0x07
    IOWriteByte(SIOData, LDN);
}

VOID SIOBitSet(byte LDN, byte Register, byte BitNum, byte Value){
    Byte TmpValue;

```

```
SIOEnterMBPnPMode();
SIOSelectLDN(LDN);
IOWriteByte(SIOIndex, Register);
TmpValue = IOReadByte(SIOData);
TmpValue &= ~(1 << BitNum);
TmpValue |= (Value << BitNum);
IOWriteByte(SIOData, TmpValue);
SIOExitMBPnPMode();
}

VOID SIOByteSet(byte LDN, byte Register, byte Value){
    SIOEnterMBPnPMode();
    SIOSelectLDN(LDN);
    IOWriteByte(SIOIndex, Register);
    IOWriteByte(SIOData, Value);
    SIOExitMBPnPMode();
}
*****
```

```

Boolean SIOBitRead(byte LDN, byte Register, byte BitNum){
    Byte TmpValue;

    SIOEnterMBPnPMode();
    SIOSelectLDN(LDN);
    IOWriteByte(SIOIndex, Register);
    TmpValue = IOReadByte(SIOData);
    TmpValue &= (1 << BitNum);
    SIOExitMBPnPMode();
    If(TmpValue == 0)
        Return 0;
    Return 1;
}
VOID ConfigDioMode(byte PinBit, byte Mode){
    Byte TmpValue;

    SIOEnterMBPnPMode();
    SIOSelectLDN(DIOLDN);
    IOWriteByte(SIOIndex, DirReg);
    TmpValue = IOReadByte(SIOData);
    TmpValue |= (Mode << PinBit);
    IOWriteByte(SIOData, DirReg);
    SIOExitMBPnPMode();
}
*****

```