

ESM-A50M

AMD eOntario COM Express Type 6 Module with AMD A50M Chipset

User's Manual

1st Ed –14 May 2012

Notice

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5. Write the RMA number visibly on the outside of the package and ship it prepaid to your dealer.

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1. Getting Started

1.1 Safety Precautions

Warning!



Always completely disconnect the power cord from your chassis whenever you work with the hardware. Do not make connections while the power is on. Sensitive electronic components can be damaged by sudden power surges. Only experienced electronics personnel should open the PC chassis.

Caution!



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

1.2 Packing List

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

- 1 x ESM-A50M AMD COM Express Type 6 CPU module with AMD A50M chipset.
- 1 x Quick Installation Guide
- 1 x DVD-ROM contains the followings:
 - User's Manual
 - Chipset and Ethernet drivers



If any of the above items is damaged or missing, contact your retailer.

1.3 Document Amendment History

Revision	Date	Comment
1 st	May 2012	Initial Release

1.4 Manual Objectives

This manual describes in detail the Avalue Technology ESM-A50M Single Board.

We have tried to include as much information as possible but we have not duplicated information that is provided in the standard IBM Technical References, unless it proved to be necessary to aid in the understanding of this board.

We strongly recommend that you study this manual carefully before attempting to interface with ESM-A50M series or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance.

Please be aware that it is possible to create configurations within the CMOS RAM that make booting impossible. If this should happen, clear the CMOS settings, (see the description of the Jumper Settings for details).

If you have any suggestions or find any errors concerning this manual and want to inform us of these, please contact our Customer Service department with the relevant details.

1.5 System Specifications

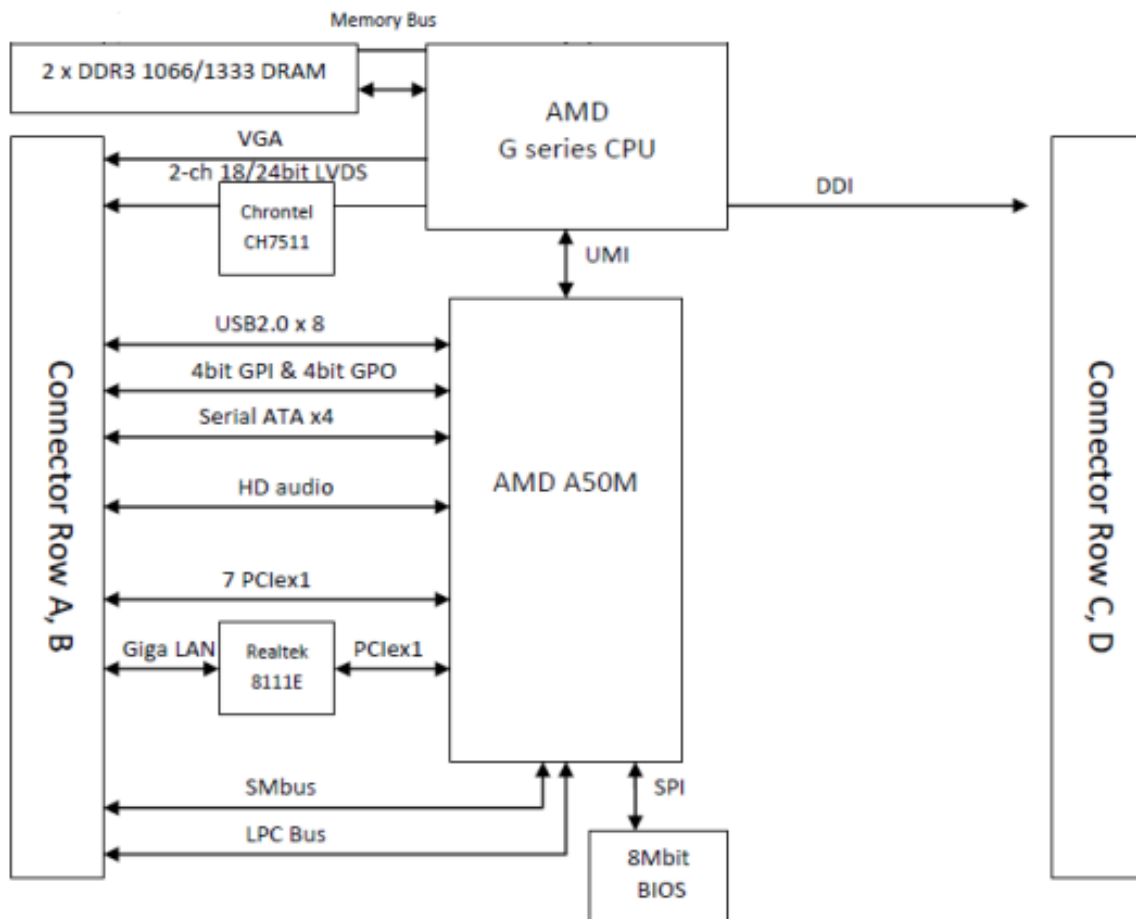
System	
CPU	AMD G-series processor
BIOS	AMI 32M-bit SPI BIOS
System Chipset	AMD A50M
System Memory	Two 204-pin DDR3 SODIMM socket, supports up to 8GB DDR3 1066/1333 SDRAM
Expansion	7 PCIe x1
I/O	
MIO	4 x Serial ATA ports SMBus/I ² C Bus
USB	8 x USB 2.0 ports
IrDA	N/A
DIO	4-bit GPI, 4-bit GPO
Display	
Chipset	AMD Fusion Accelerated Processors
Resolution	CRT mode: 1920 x 1200 @ 60Hz (with T40E CPU)
	2560 x 1600 @ 60Hz (with T56N CPU)
	LCD/Simultaneous mode : 1920 x 1200 @ 60 Hz
Multiple Display	CRT+DP0(LVDS), CRT+DP1(HDMI/DP), DP0(LVDS)+DP1(HDMI/DP)
LCD Interface	Dual channel 18/24-bit LVDS
TV-out	N/A
Ethernet	
LAN Chip	Realtek 8111E
Ethernet Interface	10/100/1000 Base-Tx Gigabit Ethernet Compatible
Mechanical & Environmental	
Power Requirement	+8~ +18V
ACPI	Single power ATX Support S0, S3, S4, S5 ACPI 3.0 Compliant
Power Type	AT/ATX
Operating Temp.	0 to 60°C
Storage Temp.	-40~-75°C

Quick Installation Guide

Operating Humidity	0%~90% relative humidity, non-condensing
Size (L x W)	125 mm x 95 mm
Weight	0.44lbs(0.2kg)
Ordering Information	ESM-A50M
	ESM-A50M: AMD eOntario COM Express Module

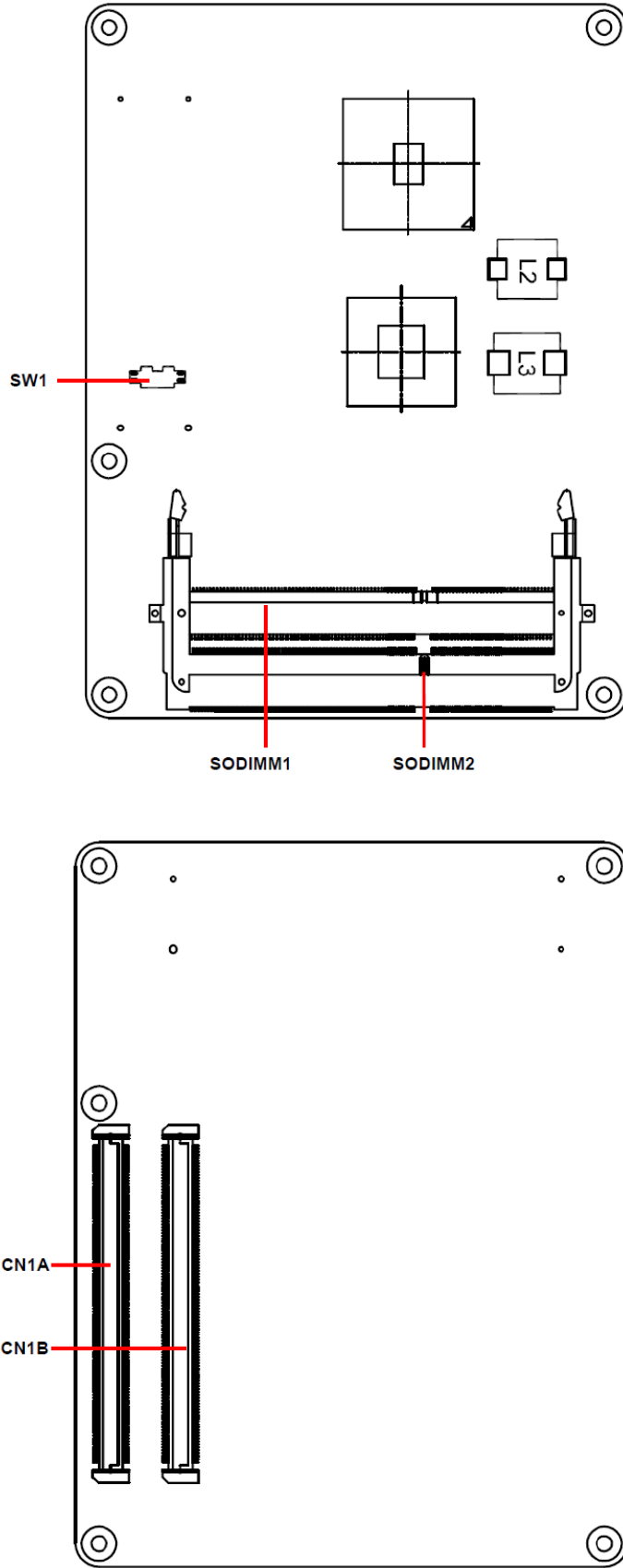
1.6 Architecture Overview – Block Diagram

The following block diagram shows the architecture and main components of ESM-A50M



2. Hardware Configuration

2.1 Product Overview



2.2 Installation Procedure

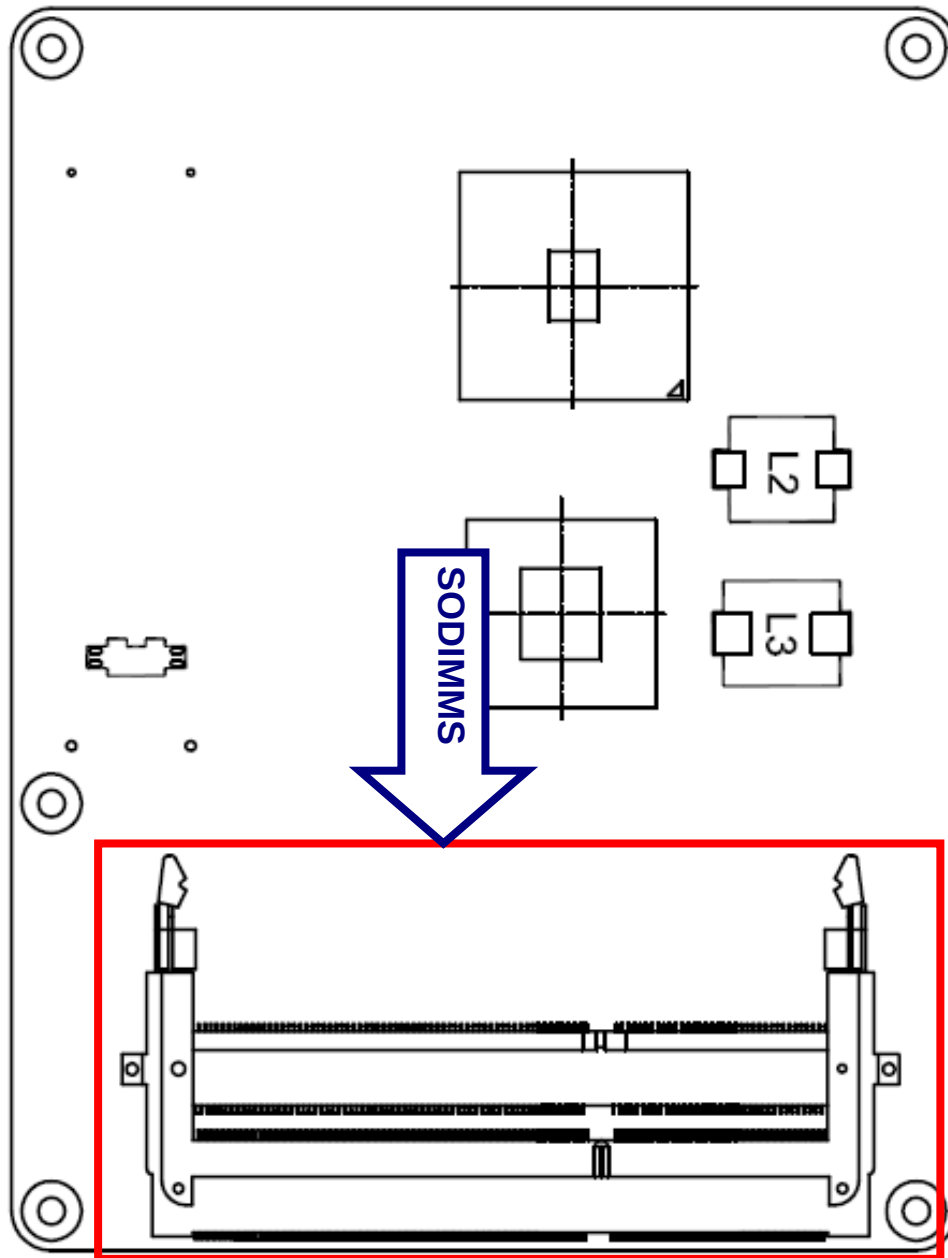
This chapter gives you the instructions on how to setup your system.

1. Turn off the power supply.
2. Insert the SODIMM module (be careful with the orientation).
3. Insert all external cables for hard disk, floppy, keyboard, mouse, USB etc. except for flat panel. A CRT monitor must be connected in order to change CMOS settings to support flat panel.
4. Connect power supply to the board via the ATXPWR.
5. Turn on the power.
6. Enter the BIOS setup by pressing the delete key during boot up. (more details on page 37)
7. If TFT panel display is to be utilized, make sure the panel voltage is correctly set before connecting the display cable and turning on the power.

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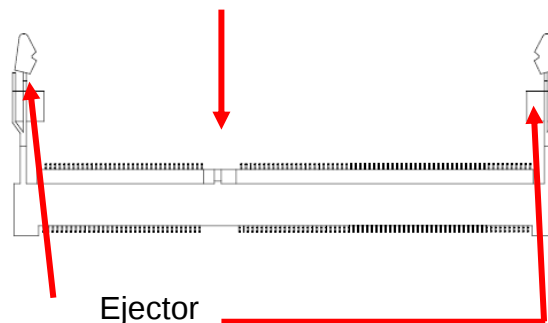
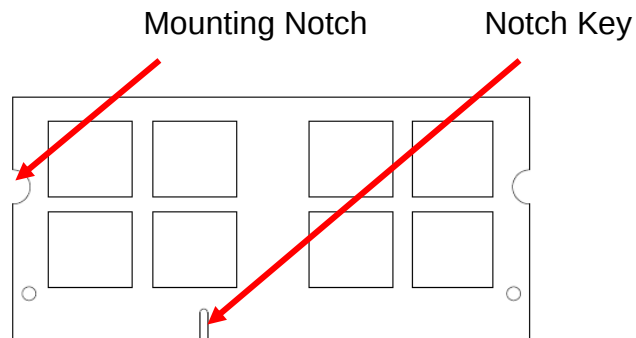
2.2.1 Main Memory

ESM-A50M provides two 204-pin SODIMM sockets up to 8GB DDR3 1066/1333 SDRAM



Make sure to unplug the power supply before adding or removing SODIMMs or other system components. Failure to do so may cause severe damage to both board and components.

- Locate the SODIMM socket on the board.
- Hold two edges of the SODIMM module carefully. Keep away from touching its connectors.
- Align the notch key on the module with the rib on the slot.
- Firmly press the module into the socket which automatically snaps into the mounting notch. Do not force the SODIMM module in with extra force as the SODIMM module only fits in one direction.



204-pin DDR3 SODIMM

- To remove the SODIMM modules, push the two ejector tabs on the slot outward simultaneously, and then pull out the SODIMM module.



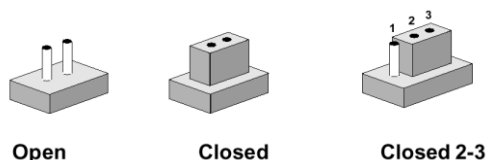
Note:

- (1) Please do not change any DDR3 SDRAM parameter in BIOS setup to increase your system's performance without acquiring technical information in advance.
- (2) Static electricity can damage the electronic components of the computer or optional boards. Before starting these procedures, ensure that you are discharged of static electricity by touching a grounded metal object briefly.

2.3 Connector List

You can configure your board 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 two pins.



The jumper settings are schematically depicted in this manual as follows:



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

Connectors on the board are linked to external devices such as hard disk drives, a keyboard, or floppy drives. In addition, the board has a number of jumpers that allow you to configure your system to suit your application.

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

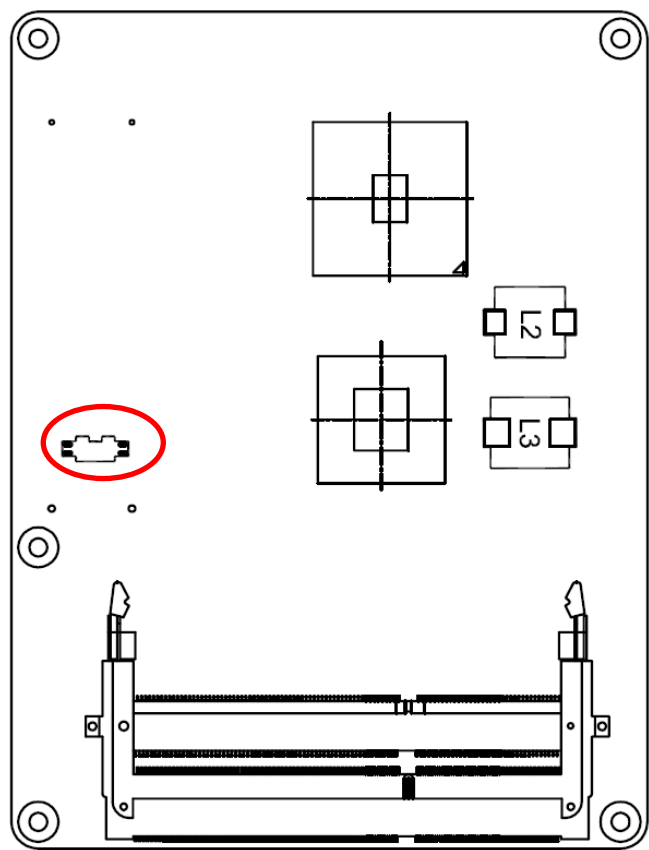
The following tables list the function of each of the board’s jumpers and connectors.

Connectors

Label	Function	Note
CN1A	COM Express connector 1	
CN1B	COM Express connector 2	
SODIMM1	204-pin DDR3 SDRAM DIMM socket	
SODIMM2	204-pin DDR3 SDRAM DIMM socket	
SW1	AT/ATX mode selector	

2.4 Setting Jumpers & Connectors

2.4.1 AT/ATX mode selector (SW1)



*Default

AT/ATX mode



AT mode

OFF	1		➡	ON
	2			

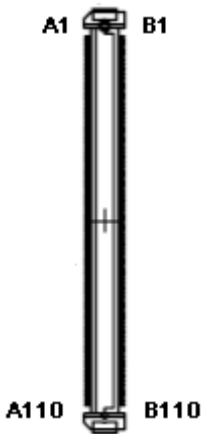
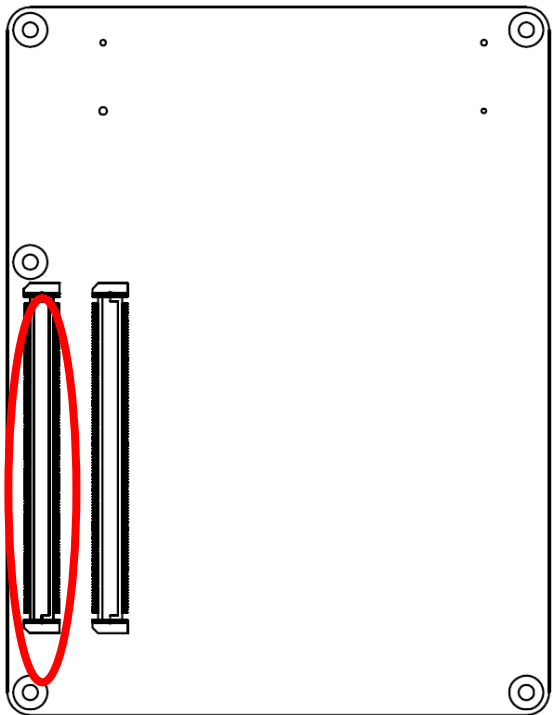
ATX mode*

OFF	1	⬅		ON
	2			

2.4.1.1 Signal Description –AT/ATX mode selection

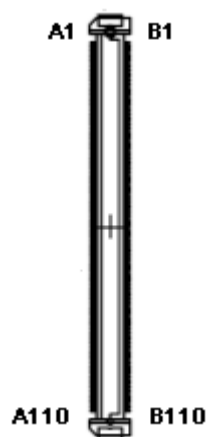
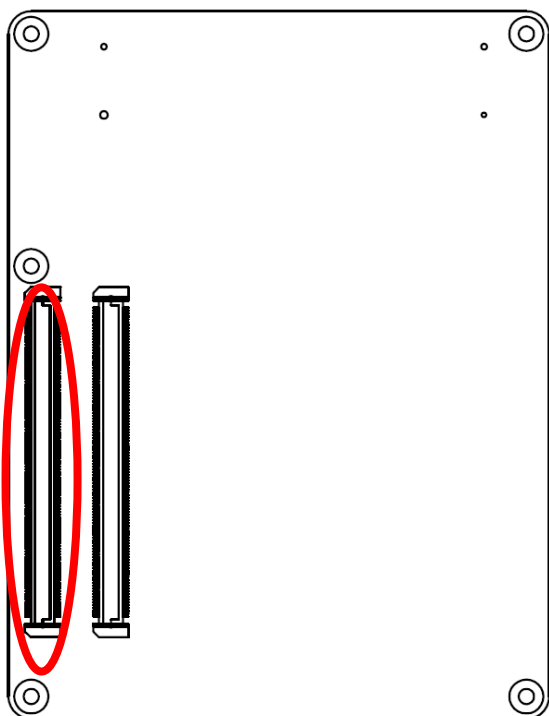
AT/ATX mode	Description
AT mode	This Mode supports AT power supply, no need to press Power button to enable power on/off
ATX mode	This Mode supports ATX power supply. Press the ATX power button to enable power on/off

2.4.1 COM Express Connector 1 (CN1A)



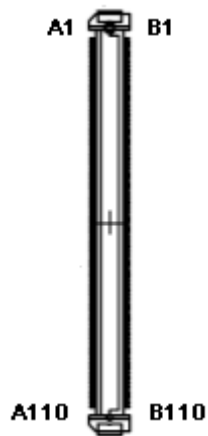
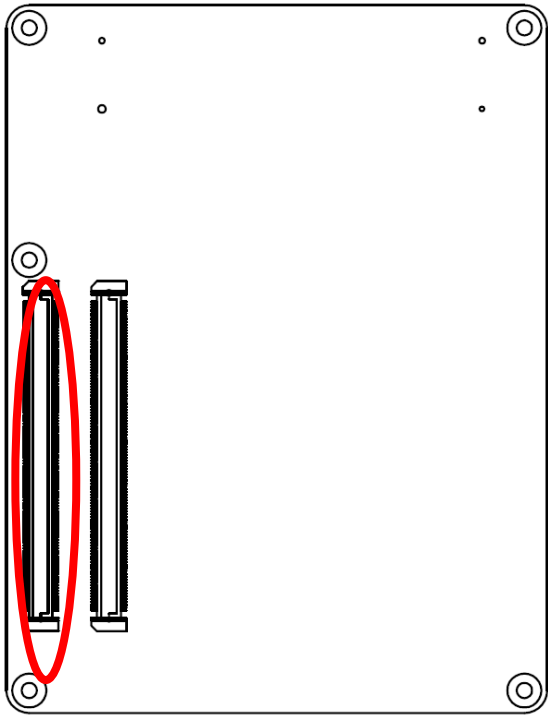
Signal	PIN	PIN	Signal
GND	A1	B1	GND
GBE0_MDI3-	A2	B2	GBE0_ACT#
GBE0_MDI3+	A3	B3	LPC_FRAME#
GBE0_LINK100#	A4	B4	LPC_AD0
GBE0_LINK1000#	A5	B5	LPC_AD1
GBE0_MDI2-	A6	B6	LPC_AD2
GBE0_MDI2+	A7	B7	LPC_AD3
GBE0_LINK#	A8	B8	LPC_DRQ0#
GBE0_MDI1-	A9	B9	LPC_DRQ1#
GBE0_MDI1+	A10	B10	CLK_LPC_33M
GND	A11	B11	GND
GBE0_MDI0-	A12	B12	PWRBTN#
GBE0_MDI0+	A13	B13	SMB_CLK
GBE0_1.5V	A14	B14	SMB_DATA
SLP_S3#	A15	B15	LINKALERT#
SATAP0_TXP	A16	B16	SATAP1_TXP
SATAP0_TXN	A17	B17	SATAP1_TXN
SUS_S4#	A18	B18	PM_SUS_SATA#
SATAP0_RXP	A19	B19	SATAP1_RXP
SATAP0_RXN	A20	B20	SATAP1_RXN
GND	A21	B21	GND
SATAP2_TXP	A22	B22	SATAP3_TXP
SATAP2_TXN	A23	B23	SATAP3_TXN
SUS_S5#	A24	B24	POWER_OK
SATAP2_RXP	A25	B25	SATAP3_PXP
SATAP2_RXN	A26	B26	SATAP3_PXN
PM_BATLOW#	A27	B27	WDT
SATA_LED#	A28	B28	AC/HDA_SDIN2
AC/HDA_SYNC	A29	B29	AC/HDA_SDIN1
AC/HDA_RST#	A30	B30	AC/HDA_SDIN0

Quick Installation Guide



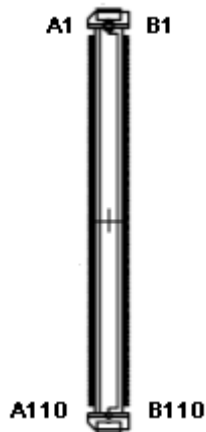
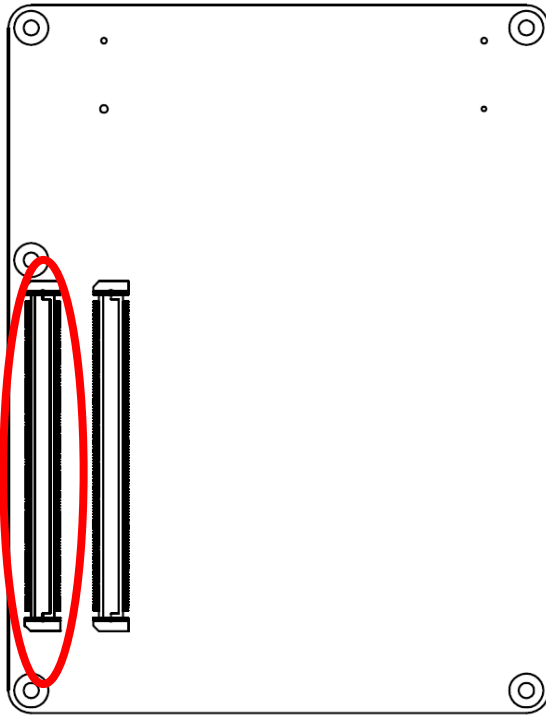
Signal	PIN	PIN	Signal
GND	A31	B31	GND
AC/HDA_BIT_CLK	A32	B32	AC/HDA_SPKR
AC/HDA_SDOUT	A33	B33	I2C_CLK
BIOS_DIS0#	A34	B34	I2C_DAT
THRMTRIP#	A35	B35	THRM#
USB_PN6	A36	B36	USB_PN7
USB_PP6	A37	B37	USB_PP7
USB_OC67#	A38	B38	USB_OC45#
USB_PN4	A39	B39	USB_PN5
USB_PP4	A40	B40	USB_PP5
GND	A41	B41	GND
USB_PN2	A42	B42	USB_PN3
USB_PP2	A43	B43	USB_PP3
USB_OC23#	A44	B44	USB_OC01#
USB_PN0	A45	B45	USB_PN1
USB_PP0	A46	B46	USB_PP1
RTC_VCC	A47	B47	EXCD1_PERST#
EXCD0_PERST#	A48	B48	EXCD1_CPPE#
EXCD0_CPPE#	A49	B49	SYSRST#
LPC_SERIRQ	A50	B50	CB_PLTRST#
GND	A51	B51	GND
PCIE5_TX+	A52	B52	PCIE5_RX+
PCIE5_TX-	A53	B53	PCIE5_RX-
GPI0	A54	B54	GPO1
PCIE4_TX+	A55	B55	PCIE4_RX+
PCIE4_TX-	A56	B56	PCIE4_RX-
GND	A57	B57	GPO2
PCIE3_TX+	A58	B58	PCIE3_RX+
PCIE3_TX-	A59	B59	PCIE3_RX-
GND	A60	B60	GND

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Signal	PIN	PIN	Signal
PCIE2_TX+	A61	B61	PCIE2_RX+
PCIE2_TX-	A62	B62	PCIE2_RX-
GPI1	A63	B63	GPO3
PCIE1_TX+	A64	B64	PCIE1_RX+
PCIE1_TX-	A65	B65	PCIE1_RX-
GND	A66	B66	WAKE0#
GPI2	A67	B67	WAKE1#
PCIE0_TX+	A68	B68	PCIE0_RX+
PCIE0_TX-	A69	B69	PCIE0_RX-
GND	A70	B70	GND
LVDSA_DATA0	A71	B71	LVDSB_DATA0
LVDSA_DATA#0	A72	B72	LVDSB_DATA#0
LVDSA_DATA1	A73	B73	LVDSB_DATA1
LVDSA_DATA#1	A74	B74	LVDSB_DATA#1
LVDSA_DATA2	A75	B75	LVDSB_DATA2
LVDSA_DATA#2	A76	B76	LVDSB_DATA#2
LVDS_VDD_EN	A77	B77	LVDSB_DATA3
LVDSA_DATA3	A78	B78	LVDSB_DATA#3
LVDSA_DATA#3	A79	B79	LVDS_BKLT_EN
GND	A80	B80	GND
LVDSA_CLK	A81	B81	LVDSB_CLK
LVDSA_CLK#	A82	B82	LVDSB_CLK#
LVDS_DDC_CLK	A83	B83	LVDS_BKLT_CTRL
LVDS_DDC_DATA	A84	B84	5VSB
GPI3	A85	B85	5VSB
NC	A86	B86	5VSB
NC	A87	B87	5VSB
PCIE_CLK_REF+	A88	B88	BIOS_DIS1
PCIE_CLK_REF-	A89	B89	VGA_RED
GND	A90	B90	GND

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Signal	PIN	PIN	Signal
+3.3V_SPI	A91	B91	VGA_GREEN
SPI_MISO	A92	B92	VGA_BLUE
GPO0	A93	B93	VGA_HSYNC
SPI_CLK	A94	B94	VGA_VSYNC
SPI_MOSI	A95	B95	VGA_DDC_CLK
PP_TPM	A96	B96	VGA_DDC_DATA
TYPE 10#	A97	B97	SPI_CS#
SER0_TX	A98	B98	NC
SER0_RX	A99	B99	NC
GND	A100	B100	GND
SER1_TX	A101	B101	FAN_PWMOUT
SER1_RX	A102	B102	FAN_TACHIN
LID#	A103	B103	SLEEP#
+12V	A104	B104	+12V
+12V	A105	B105	+12V
+12V	A106	B106	+12V
+12V	A107	B107	+12V
+12V	A108	B108	+12V
+12V	A109	B109	+12V
GND	A110	B110	GND

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2.4.2.1 Signal Description – COM Express Connector 1 (CN1A)

2.4.2.1.1 Audio Signals

Signal	Signal Description
AC/HDA_SYNC	HD Audio Sync
AC/HDA_RST#	HD Audio Reset
AC/HDA_SDIN[0:2]	Audio CODEC Serial Data
AC/HDA_BITCLK	HD Audio Clock
AC/HDA_SDOUT	HD Audio Data

2.4.2.1.2 Gigabit Ethernet Signals

Signal	Signal Description			
GBE0_MD[0:3] +/-	Gigabit Ethernet Controller 0: Media Dependent Interface Differential Pairs 0,1,2,3. The MDI can operate in 1000, 100 and 10 Mbit / sec modes. Some pairs are unused in some modes, per the following:			
		1000B-T	100B-T	10B-T
	MDI[0]+/-	B1_DA+/-	TX+/-	TX+/-
	MDI[1]+/-	B1_DB+/-	RX+/-	RX+/-
	MDI[2]+/-	B1_DC+/-	X	X
	MDI[3]+/-	B1_DD+/-	X	X
GBE0_ACT#	Gigabit Ethernet Controller 0 activity indicator, active low.			
GBE0_Link#	Gigabit Ethernet Controller 0 link indicator, active low.			
GBE0_Link100#	Gigabit Ethernet Controller 0 100 Mbit / sec link indicator, active low.			
GBE0_Lin1000#	Gigabit Ethernet Controller 0 1000 Mbit / sec link indicator, active low.			

2.4.2.1.3 GPIO Signals

Signal	Signal Description
GPI[0:4]	General purpose input pins.
GPO[0:4]	General purpose output pins. Upon a hardware reset, these outputs will be low.

2.4.2.1.4 Flat Panel LVDS Signals

Signal	Signal Description
BIASON	Controls panel contrast voltage.
DIGON	Controls panel digital power.
ENBKL#	Controls backlight power enable.
I ² C_DAT, I ² C_CLK	I ² C interface for panel parameter EEPROM. This EEPROM is mounted on the LVDS receiver. The data in the EEPROM allows the EXT module to automatically set the proper timing parameters for a specific LCD panel.

2.4.2.1.5 LPC Signals

Signal	Signal Description
LPC_FRAME#	LPC frame indicates the start of an LPC cycle
LPC_AD[0:3]	LPC multiplexed address, command and data bus
LPC_DRQ[0:1]#	LPC serial DMA request
LPC_CLK	LPC clock output - 33MHz nominal
LPC_SERIRQ	LPC serial interrupt

2.4.2.1.6 Miscellaneous Signals

Signal	Signal Description
I ² C_CK	General purpose I ² C port clock output
I ² C_DAT	General purpose I ² C port data I/O line
SPKR	Output for audio enunciator - the "speaker" in PC-AT systems
BIOS_DISABLE#	Module BIOS disable input. Pull low to disable module BIOS. Used to allow off-module BIOS implementations.
KB_RST#	Input to module from (optional) external keyboard controller that can force a reset. Pulled high on the module. This is a legacy artifact of the PC-AT.
KB_A20GATE	Input to module from (optional) external keyboard controller that can be used to control the CPU A20 gate line. The A20GATE restricts the memory access to the bottom megabyte and is a legacy artifact of the PC-AT. Pulled low on the module.

2.4.2.1.7 PCI Express Signals

Signal	Signal Description
PCIE_TX[0:4] +/-	PCI Express Differential Transmit Pair 0-4
PCIE_RX[0:4] +/-	PCI Express Differential Receive Pair 0-4
PCIE0_CK_REF+/-	Reference clock output for PCI Express lanes 0-7 and for PCI Express Graphics lanes 0-15

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2.4.2.1.8 Power Signals

Signal	Signal Description
VCC_5V_SBY	Standby power input: +5.0V nominal. See Electrical Specifications for allowable input range. If VCC5_SBY is used, all available VCC_5V_SBY pins on the connector(s) must be used. Only used for standby and suspend functions. May be left unconnected if these functions are not used in the system design.
VCC_RTC	Real-time clock circuit-power input. Nominally +3.0V. See Electrical Specifications section for details.

2.4.2.1.9 Power & System Management Signals

Signal	Signal Description
SUS_S3#	Indicates system is in Suspend to RAM state. Active low output.
SUS_S4#	Indicates system is in Suspend to Disk state. Active low output.
SUS_S5#	Indicates system is in Soft Off state. Also known as "PS_ON" and can be used to control an ATX power supply.
BATLOW#	Indicates that external battery is low
PWRBTN#	Power button to bring system out of S5 (soft off), active on rising edge.
SMB_CK	System Management Bus bidirectional clock line. Power sourced through 5V standby rail and main power rails.
SMB_DTA	System Management Bus bidirectional data line. Power sourced through 5V standby rail and main power rails.
SMB_ALERT#	System Management Bus Alert - input can be used to generate an SMI# (System Management Interrupt) or to wake the system. Power sourced through 5V standby rail and main power rails.
SUS_STAT#	Indicates imminent suspend operation; used to notify LPC devices
PWR_OK	Power OK from main power supply
THRMTRIP#	Active low output indicating that the CPU has entered thermal shutdown.
THRM#	Input from off-module temp sensor indicating and over-temp situation.
SYS_RESET#	Reset button input. Active low input. System is held in hardware reset while this input is low, and comes out of reset upon release.
RSMRST#	Resume reset input, active low. Resets power plane logic. May be left open on carrier board if not used.
WAKE0#	PCI Express wake up signal
WAKE1#	General purpose wake up signal

2.4.2.2.0 SATA Signals

Signal	Signal Description
SATA[0:3]_TX +/-	Serial ATA Channel 0-3 transmit differential pair.
SATA[0:3]_RX +/-	Serial ATA Channel 0-3 receive differential pair.
ATA_ACT#	ATA (parallel and serial) activity indicator, active low.

2.4.2.2.1 VGA Signals

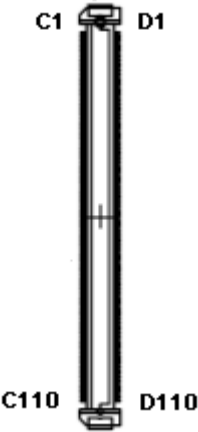
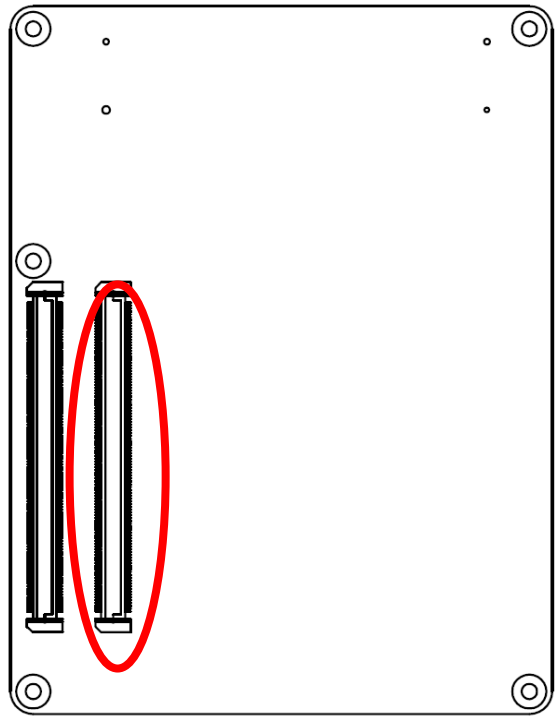
Signal	Signal Description
VGA_RED	Red for monitor. Analog DAC output, designed to drive a 37.5-Ohm equivalent load.
VGA_GRN	Green for monitor. Analog DAC output, designed to drive a 37.5-Ohm equivalent load.
VGA_BLU	Blue for monitor. Analog DAC output, designed to drive a 37.5-Ohm equivalent load.
VGA_HSYNC	Horizontal sync output to VGA monitor
VGA_VSYNC	Vertical sync output to VGA monitor
VGA_I ² C_CLK	DDC clock line (I2C port dedicated to identify VGA monitor capabilities)
VGA_I ² C_DAT	DDC data line.

2.4.2.2.2 USB Signals

Signal	Signal Description
USB[0:7] +/-	USB differential pairs, channels 0 through 7
USB_0_1_OC#	USB over-current sense, USB channels 0 and 1
USB_2_3_OC#	USB over-current sense, USB channels 2 and 3
USB_4_5_OC#	USB over-current sense, USB channels 4 and 5
USB_6_7_OC#	USB over-current sense, USB channels 6 and 7

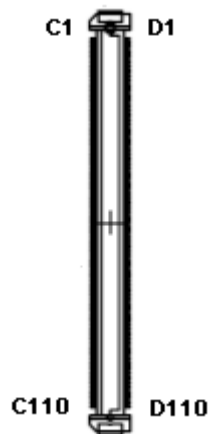
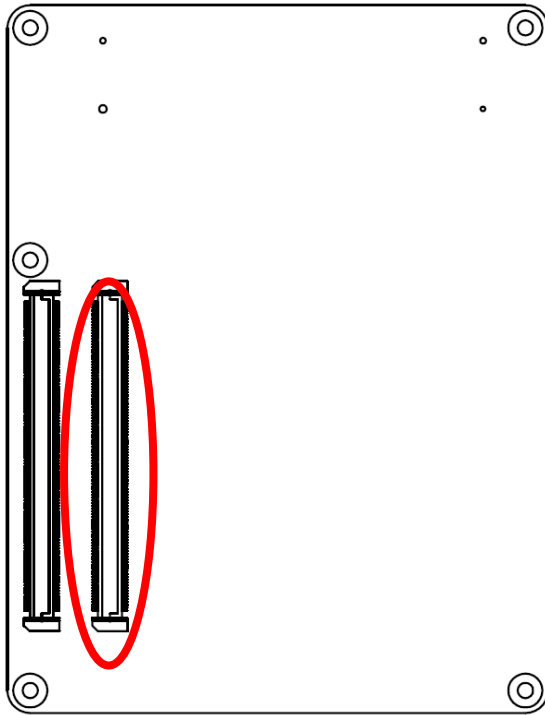
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2.4.3 COM Express Connector 1 (CN1B)



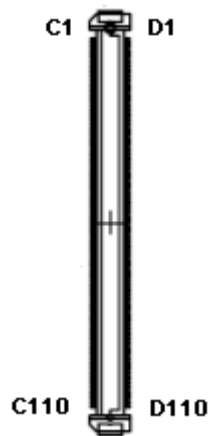
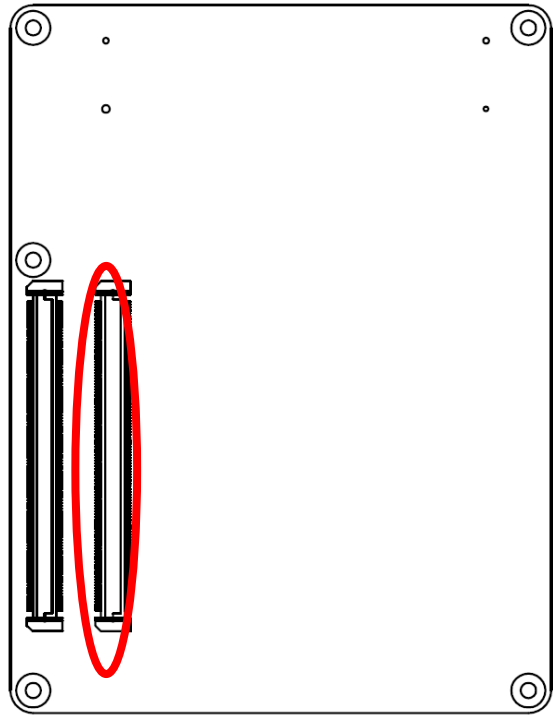
Signal	PIN	PIN	Signal
GND	C1	D1	GND
GND	C2	D2	GND
NC	C3	D3	NC
NC	C4	D4	NC
GND	C5	D5	GND
NC	C6	D6	NC
NC	C7	D7	NC
GND	C8	D8	GND
NC	C9	D9	NC
NC	C10	D10	NC
GND	C11	D11	GND
NC	C12	D12	NC
NC	C13	D13	NC
GND	C14	D14	GND
NC	C15	D15	DDI1_CTRLCLK_AUX+
NC	C16	D16	DDI1_CTRLDATA_AUX-
NC	C17	D17	NC
NC	C18	D18	NC
PCIE_RX6+	C19	D19	PCIE_TX6+
PCIE_RX6-	C20	D20	PCIE_TX6-
GND	C21	D21	GND
NC	C22	D22	NC
NC	C23	D23	NC
DDI1_HPD	C24	D24	NC
NC	C25	D25	NC
NC	C26	D26	DDI1_PAIR0+
NC	C27	D27	DDI1_PAIR0-
NC	C28	D28	NC
NC	C29	D29	DDI1_PAIR1+
NC	C30	D30	DDI1_PAIR1-

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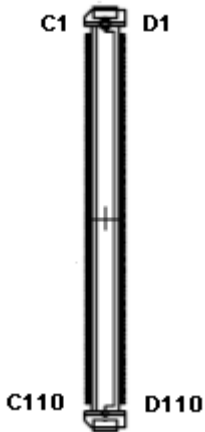
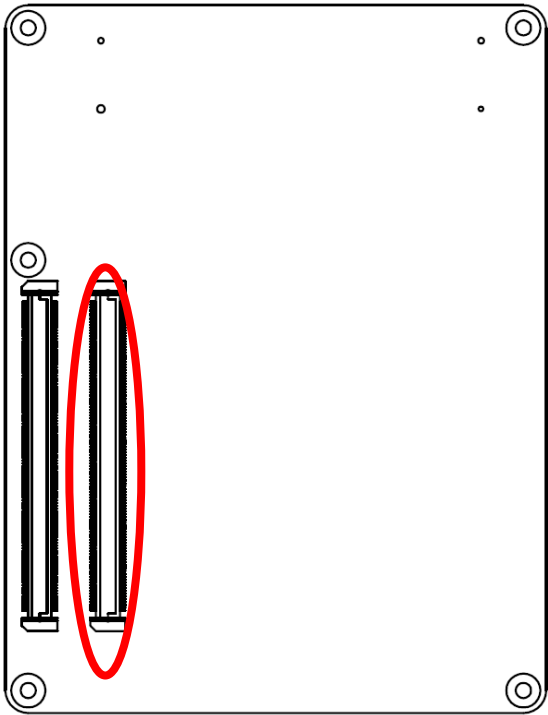
Signal	PIN	PIN	Signal
GND	C31	D31	GND
NC	C32	D32	DDI1_PAIR2+
NC	C33	D33	DDI1_PAIR2-
NC	C34	D34	DDI1_DDC_AUX_SEL
NC	C35	D35	NC
NC	C36	D36	DDI1_PAIR3+
NC	C37	D37	DDI1_PAIR3-
NC	C38	D38	NC
NC	C39	D39	NC
NC	C40	D40	NC
GND	C41	D41	GND
NC	C42	D42	NC
NC	C43	D43	NC
NC	C44	D44	NC
NC	C45	D45	NC
NC	C46	D46	NC
NC	C47	D47	NC
NC	C48	D48	NC
NC	C49	D49	NC
NC	C50	D50	NC
GND	C51	D51	GND
NC	C52	D52	NC
NC	C53	D53	NC
TYPE0#	C54	D54	NC
NC	C55	D55	NC
NC	C56	D56	NC
TYPE1#	C57	D57	TYPE2#
NC	C58	D58	NC
NC	C59	D59	NC
GND	C60	D60	GND

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Signal	PIN	PIN	Signal
NC	C61	D61	NC
NC	C62	D62	NC
NC	C63	D63	NC
NC	C64	D64	NC
NC	C65	D65	NC
NC	C66	D66	NC
NC	C67	D67	GND
NC	C68	D68	NC
NC	C69	D69	NC
GND	C70	D70	GND
NC	C71	D71	NC
NC	C72	D72	NC
GND	C73	D73	GND
NC	C74	D74	NC
NC	C75	D75	NC
GND	C76	D76	GND
NC	C77	D77	NC
NC	C78	D78	NC
NC	C79	D79	NC
GND	C80	D80	GND
NC	C81	D81	NC
NC	C82	D82	NC
NC	C83	D83	NC
GND	C84	D84	GND
NC	C85	D85	NC
NC	C86	D86	NC
GND	C87	D87	GND
NC	C88	D88	NC
NC	C89	D89	NC
GND	C90	D90	GND

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Signal	PIN	PIN	Signal
NC	C91	D91	NC
NC	C92	D92	NC
GND	C93	D93	GND
NC	C94	D94	NC
NC	C95	D95	NC
GND	C96	D96	GND
NC	C97	D97	NC
NC	C98	D98	NC
NC	C99	D99	NC
GND	C100	D100	GND
NC	C101	D101	NC
NC	C102	D102	NC
GND	C103	D103	GND
+12V	C104	D104	+12V
+12V	C105	D105	+12V
+12V	C106	D106	+12V
+12V	C107	D107	+12V
+12V	C108	D108	+12V
+12V	C109	D109	+12V
GND	C110	D110	GND

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2.4.3.1 Signal Description – COM Express Connector 1 (CN1B)

Key changes in Type 6 are:

- PCI interface is no longer supported and the pins are used instead for digital display interfaces (DDI) and two additional PCI Express lanes
- IDE (PATA) parallel interface is no longer supported and the pins are used instead for additional transmit and receive pairs for four USB 3.0 ports. (USB 3.0 is not supported on the ETXexpress-AI module.)
- Three dedicated DDI ports have been added. Ports 1, 2, and 3 can be configured individually for Display Port (DP), HDMI, or DVI and port 1 can also be used for SDVO.
- SDVO is no longer supported on the PEG port. Instead SDVO is multiplexed on DDI port 1.

3. BIOS Setup

3.1 Introduction

The BIOS setup program allows users to modify the basic system configuration. In this following chapter will describe how to access the BIOS setup program and the configuration options that may be changed.

3.2 Starting Setup

The AMIBIOS™ is immediately activated when you first turn on the computer. The BIOS reads the system information contained in the CMOS and begins the process of checking out the system and configuring it. When it finishes, the BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

While the BIOS is in control, the Setup program can be activated in one of two ways:

By pressing immediately after switching the system on, or

By pressing the key when the following message appears briefly at the bottom of the screen during the POST (Power On Self Test).

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to.

Press F1 to Continue, DEL to enter SETUP

3.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Button	Description
↑	Move to previous item
↓	Move to next item
←	Move to the item in the left hand
→	Move to the item in the right hand
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 key	Previous Values.
F3 key	Optimized defaults
F4 key	Save & Exit Setup

- **Navigating Through The Menu Bar**

Use the left and right arrow keys to choose the menu you want to be in.



Note: Some of the navigation keys differ from one screen to another.

- **To Display a Sub Menu**

Use the arrow keys to move the cursor to the sub menu you want. Then press <Enter>. A “➤” pointer marks all sub menus.

3.4 Getting Help

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window press <Esc>.

3.5 In Case of Problems

If, after making and saving system changes with Setup, you discover that your computer no longer is able to boot, the AMIBIOS™ supports an override to the CMOS settings which resets your system to its defaults.

The best advice is to only alter settings which you thoroughly understand. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing you to use the override function.



Note: The BIOS setup screens shown in this chapter are for reference purposes only, and may not exactly match what you see on your screen.

Visit the Avalue website (www.avalue.com.tw) to download the latest product and BIOS information.

3.6 BIOS setup

Once you enter the AMIBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

Note that a brief description of each highlighted selection appears at the bottom of the screen.

3.6.1 Main Menu

This section allows you to record some basic hardware configurations on your computer and set the system clock.



3.6.1.1 System Language

This option allows choosing the system default language: English.

3.6.1.2 System Date

Use the system time option to set the system time. Manually enter hours, minutes and seconds.

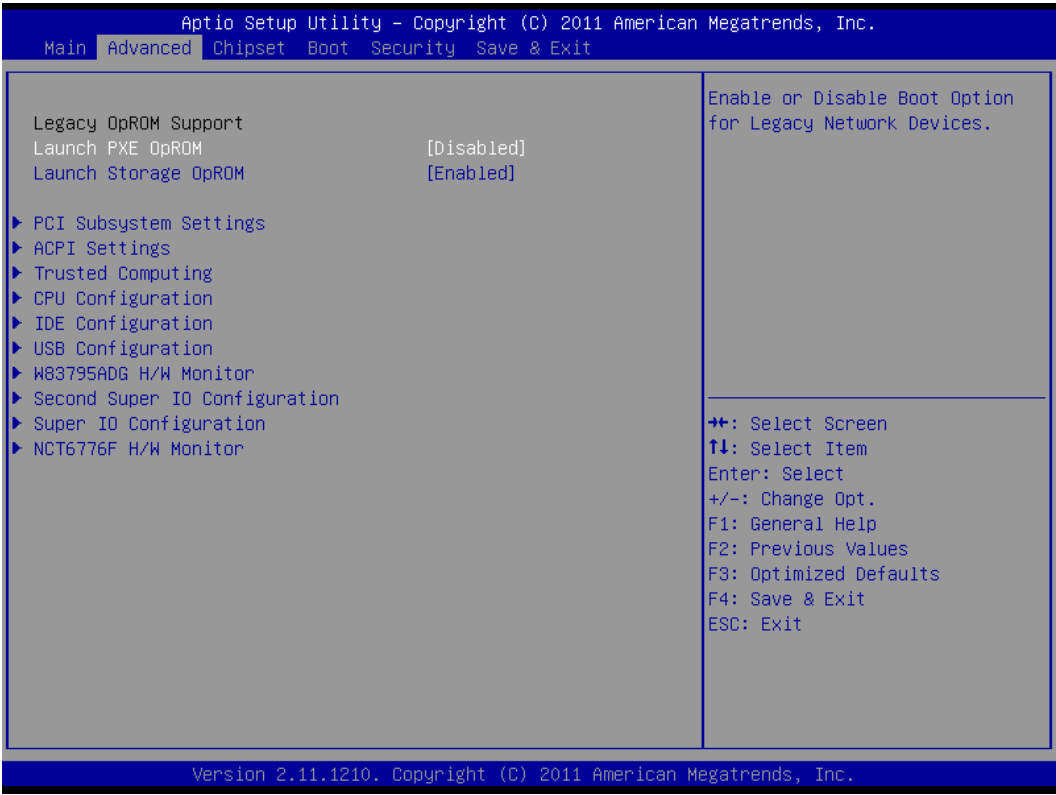
3.6.1.3 System Time

Use the system Date option to set the system date. Manually enter the day, month and year.

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3.6.2 Advanced Menu

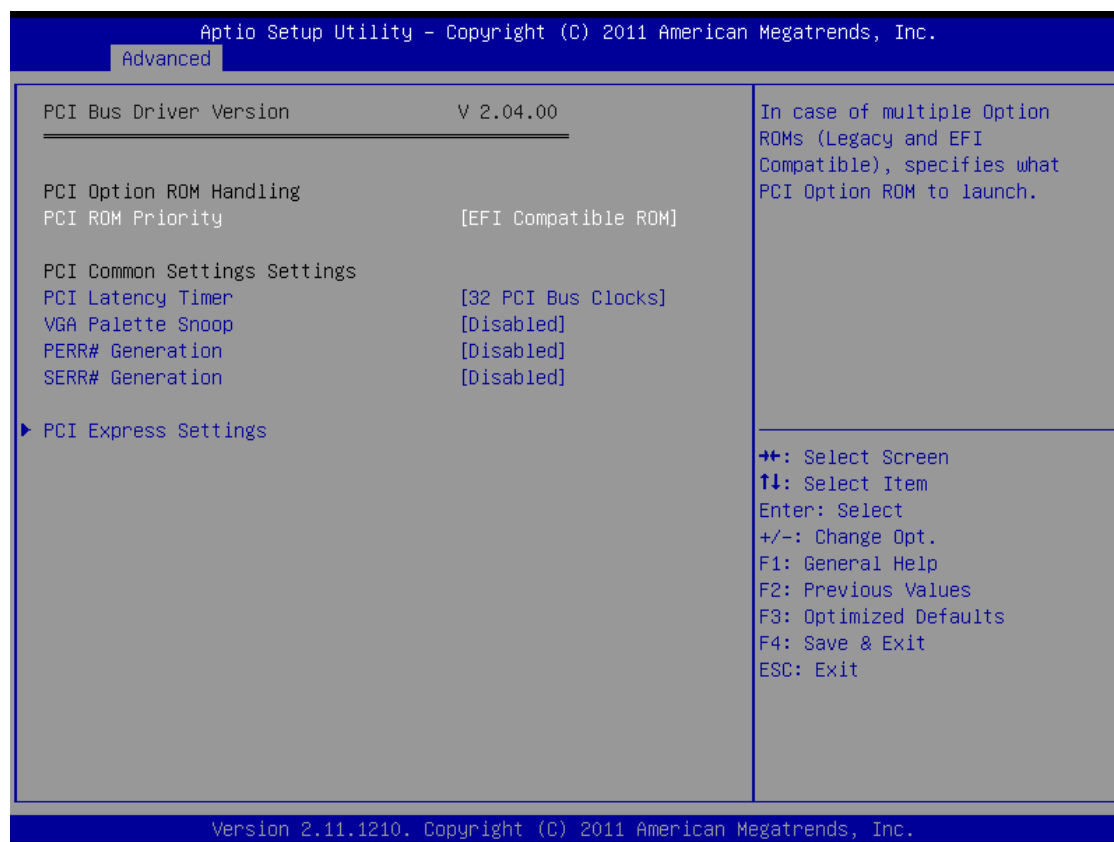
This section allows you to configure your CPU and other system devices for basic operation through the following sub-menus.



Item	Options	Description
Launch PXE OpROM	Disabled[Default], Enabled	Enable or disable Boot Option for Legacy Network Devices
Launch Storage OpROM	Disabled, Enabled[Default]	Enable or disable Boot Option for Legacy Mass storage devices With Option ROM.

3.6.2.1 PCI Subsystem Settings

Use this item to configure PCI Subsystem

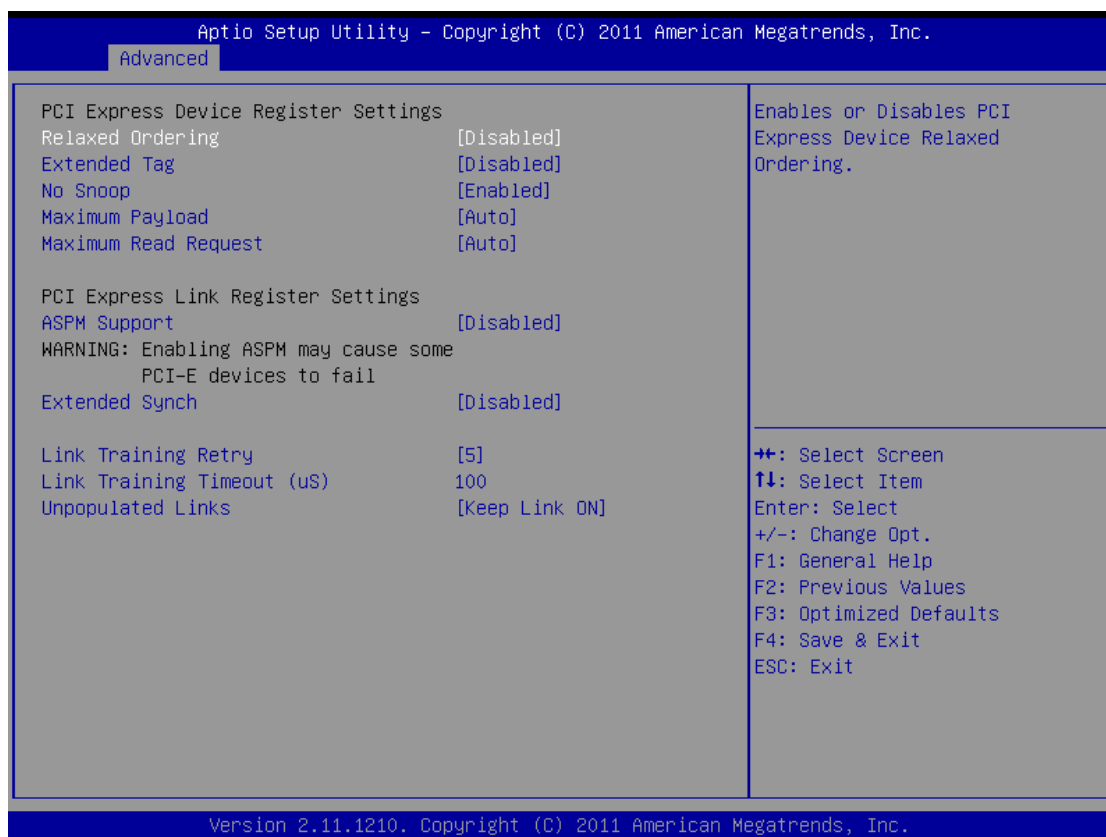


Item	Options	Description
PCI ROM Priority	Legacy ROM EFI Compatible ROM [Default]	In case of multiple Option ROMs(Legacy and EFI Compatible), specifies what PCI Option ROM to launch
PCI Latency Timer	32/64/96/128/160/192/224/248	Value to be programmed into PCI Latency Timer Register
VGA Palette Snoop	Enabled Disabled [Default]	Enables or Disables VGA Palette Registers Snooping
PERR# Generation	Enabled Disabled [Default]	Enables or Disables PCI Device to Generate PERR#
SERR# Generation	Enabled Disabled [Default]	Enables or Disables PCI Device to Generate SERR#

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3.6.2.1.1 PCI Express Settings

You can use this item to configure PCI Express



Item	Options	Description
Relaxed Ordering	Disabled [Default] Enabled	Enables or Disables PCI Express Device Relaxed Ordering.
Extended Tag	Disabled [Default] Enabled	If ENABLED allows Device to use 8-bit Tag field as a requester.
NO Snoop	Disabled, Enabled [Default]	Enables or Disables PCI Express Device No Snoop option.
Maximum Payload	Auto [Default] 128 Bytes 256 Bytes 512 Bytes 1024 Bytes 4096 Bytes	Set Maximum Payload of PCI Express Device or allow System BIOS to select the value.
Maximum Read Request	Auto [Default] 128 Bytes 256 Bytes 512 Bytes 1024 Bytes	Set Maximum Request Size of PCI Express Device or allow System BIOS to select the value.

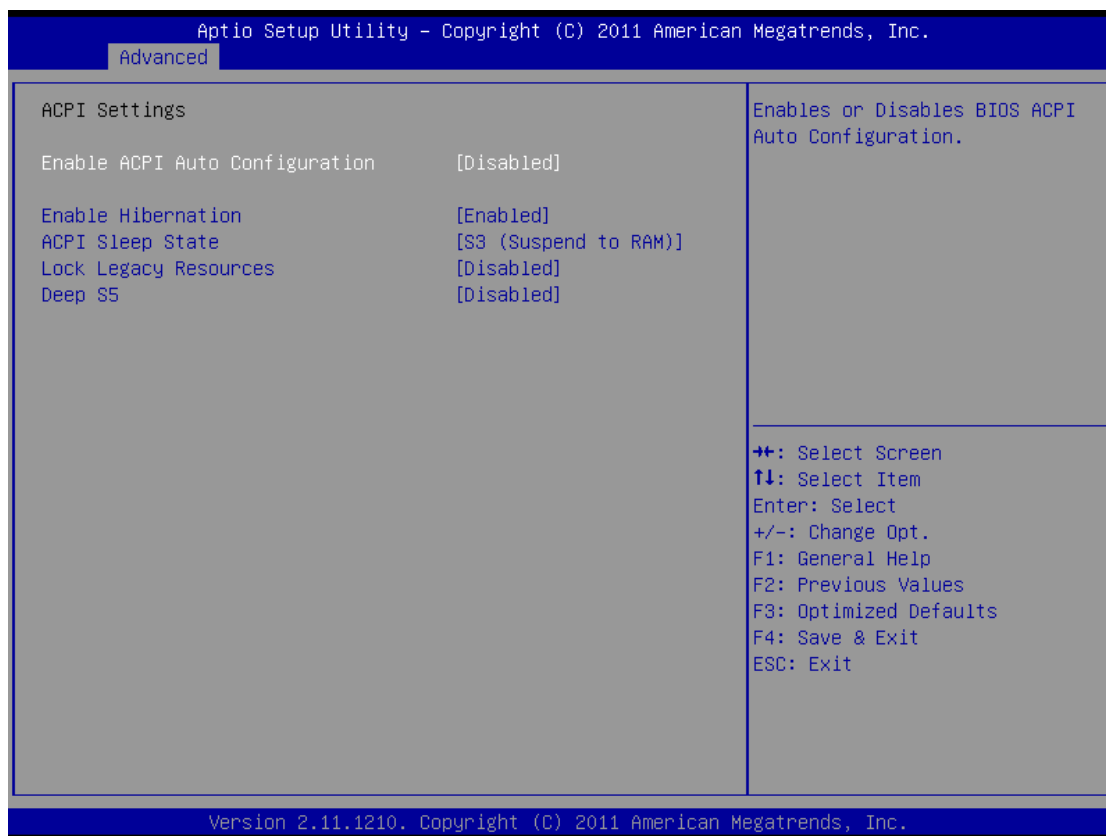
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	4096 Bytes	
ASPM Support	Disabled [Default] Auto Force L0s	Set the ASPM Level:Force L0s-Force all links to L0s State: AUTO-BIOS auto configure:DISABLE-Disables ASPM
Extended Synch	Disabled [Default] Enabled	If ENABLED allows generation of Extended Synchronization patterns.
Link Training Retry	Disabled 2 3 5 [Default]	Defines number of Retry Attempts software will take to retrain the link if previous training attempt was unsuccessful.
Link Training Timeout (uS)	1 ~100[Default]	Defines number of Microseconds software will wait before polling 'Link Training' bit in Link Status register. Value range from 1 to 100 uS.
Unpopulated Links	Keep Link ON [Default] Disable Link	In order to save power, software will disable unpopulated PCI Express links, if this option set to 'Disable Link'.

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3.6.2.2 ACPI Settings

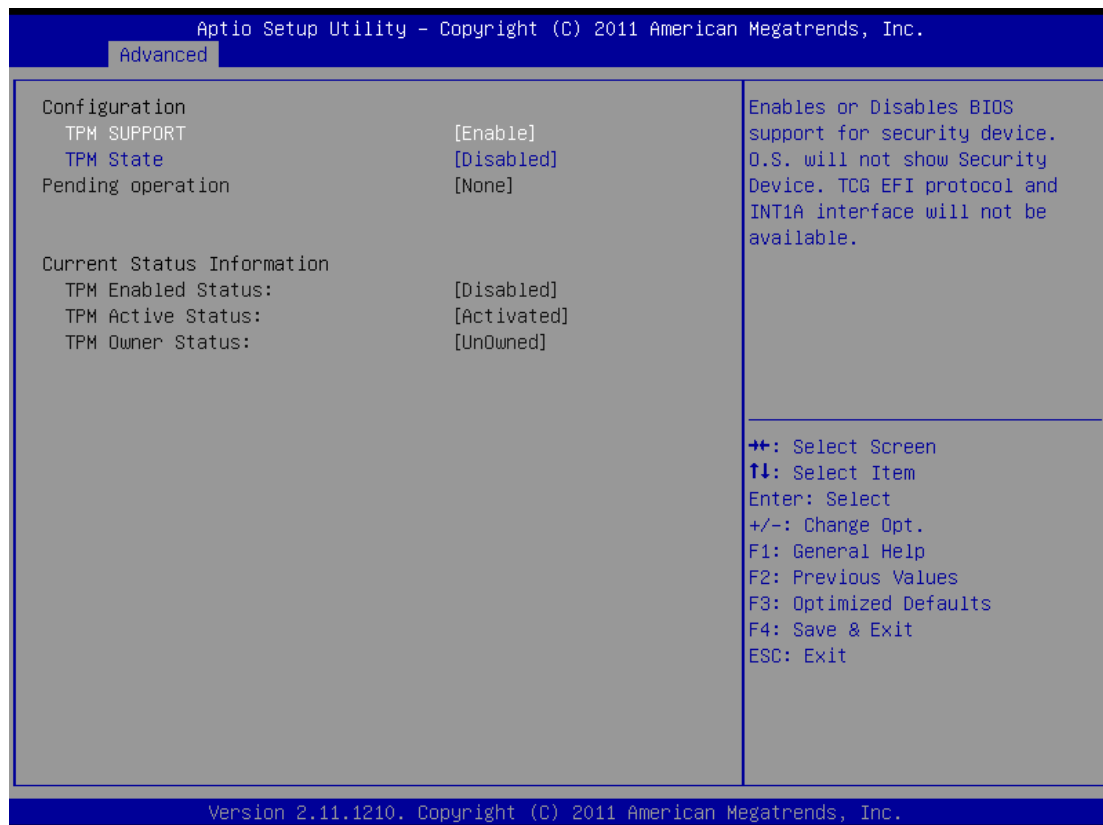
You can use this item to configure ACPI



Item	Options	Description
Enable ACPI Auto Configuration	Disabled[Default] Enabled	Enables or Disables BIOS ACPI Auto Configuration.
Enable Hibernation	Disabled, Enabled[Default]	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
ACPI Sleep State	Suspend Disable, S3 (Suspend to RAM) [Default]	Select the highest ACPI sleep state the system will enter, when the SUSPEND button is pressed.
Lock Legacy Resources	Disabled[Default], Enabled	Enables or Disables Lock of Legacy Resources.
Deep S5	Disabled [Default] Enabled	Enables or Disables deep S5 function.

3.6.2.3 Trusted computing

This section allows you to configure Trusted Platform Module

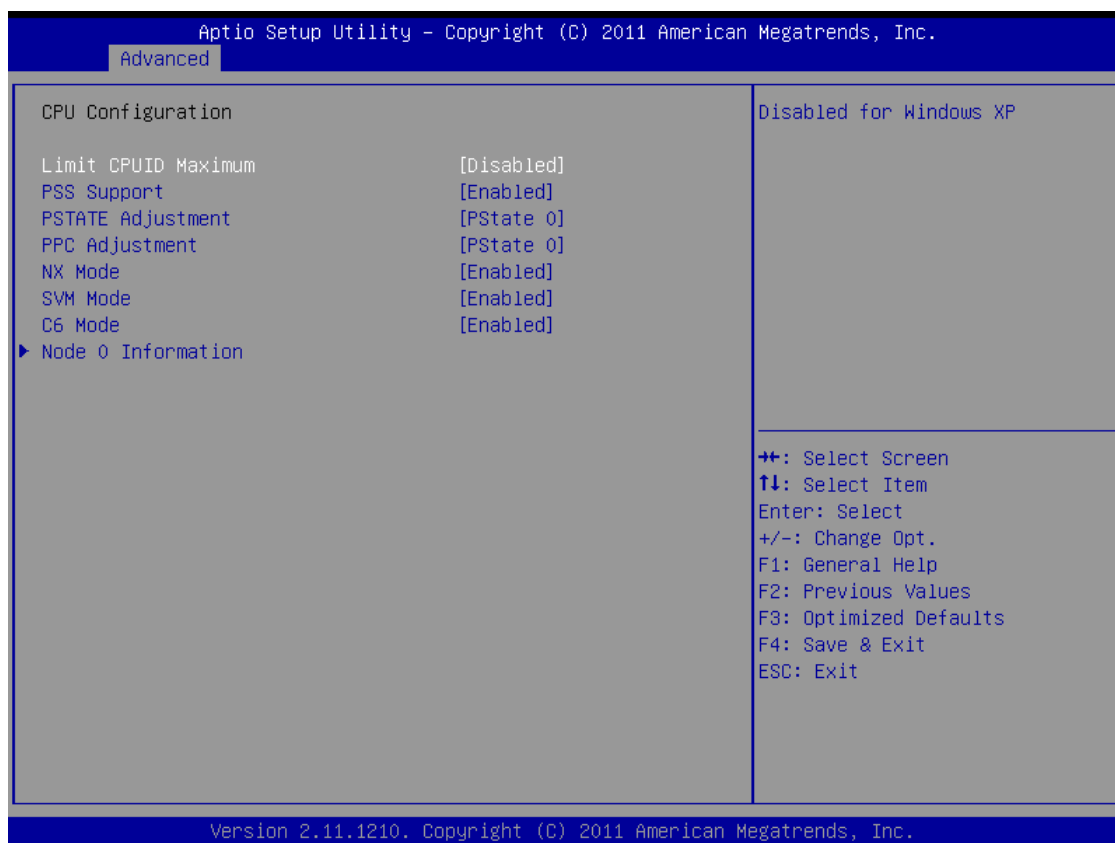


Item	Options	Description
TPM Support	Disabled Enabled[Default]	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.
TPM State	Disabled[Default] Enabled	Enable/Disable Security Device. NOTE: Your Computer will reboot during restart in order to changes State of the Device.

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3.6.2.4 CPU Configuration

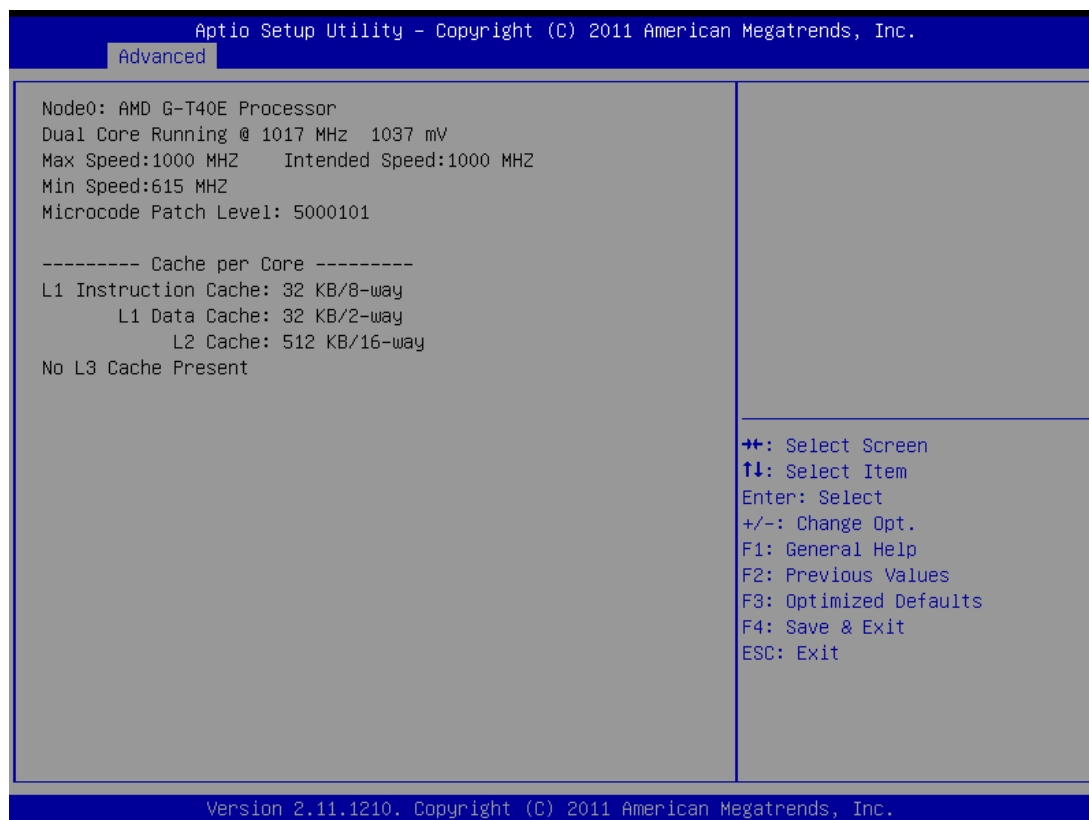
Use the CPU configuration menu to view detailed CPU specification and configure the CPU



Item	Options	Description
Limit CPUID Maximum	Disable [Default] Enable	Disabled for Windows XP.
PSS Support	Disable Link Enabled [Default]	Enable/disable the generation of ACPI_PPC,_PSS, and _PCT objects.
PSTATE Adjustment	PState0 [Default] PS tate1 PS tate2 PS tate3 PS tate4 PS tate5 PS tate6 PS tate7	Provide to adjust startup P-state level.
PPC Adjustment	PState0 [Default]	Provide to adjust _PPC object.
NX Mode	Disable Link Enabled [Default]	Enable/disable No-execute page protection Function.
SVM Mode	Disable Link Enabled [Default]	Enable/disable CPU Virtualization.

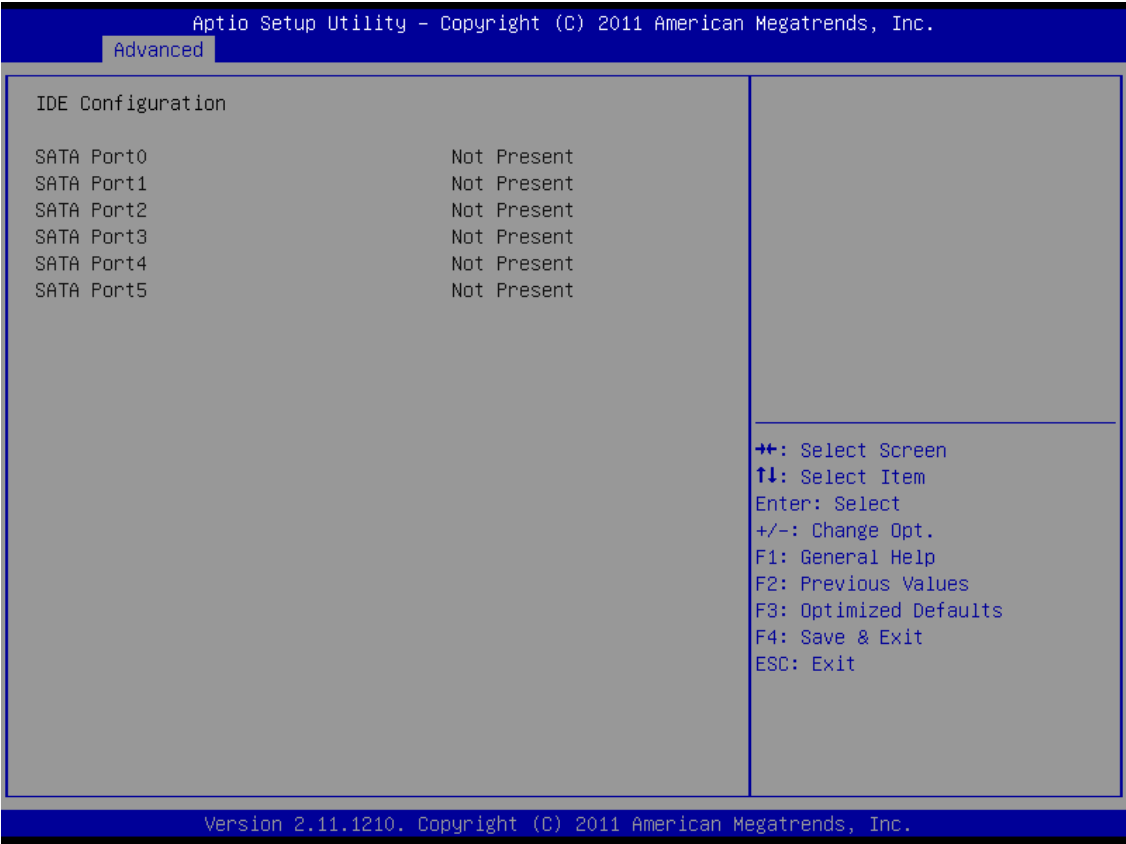
C6 Mode	Disable Link Enabled[Default] Auto	Enable/disable C6.
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3.6.2.4.1 Node 0 Information



3.6.2.5 IDE Configuration

Use the IDE configuration menu to view detailed IDE specification



3.6.2.6 USB Configuration

The USB configuration menu is used to read USB configuration information and configure the USB setting.



3.6.2.6.1 Legacy USB support

Use the Legacy USB Support BIOS option to enable USB mouse and USB keyboard support. Normally if this option is not enabled, any attached USB mouse or USB keyboard does not become available until a USB compatible operating system is fully booted with all USB drivers loaded. When this option is enabled, any attached USB mouse or USB keyboard can control the system even when there is no USB driver loaded onto the system.
Options: Enabled, Disabled, Auto

3.6.2.6.2 EHCI Hand-off

This is a workaround for OSES without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
Options: Enabled, Disabled

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3.6.2.6.3 USB transfer timeout

Time-out value for Control, Bulk, and Interrupt transfers

Options 1, 5, 10, 20 Sec

3.6.2.6.4 Device Reset timeout

USB mass storage device start Unit command timeout.

Options: 10, 20, 30, 40 sec.

3.6.2.6.5 Device Power-up delay

This refers to the amount of Time taken by a device to properly report itself to the Host controller.

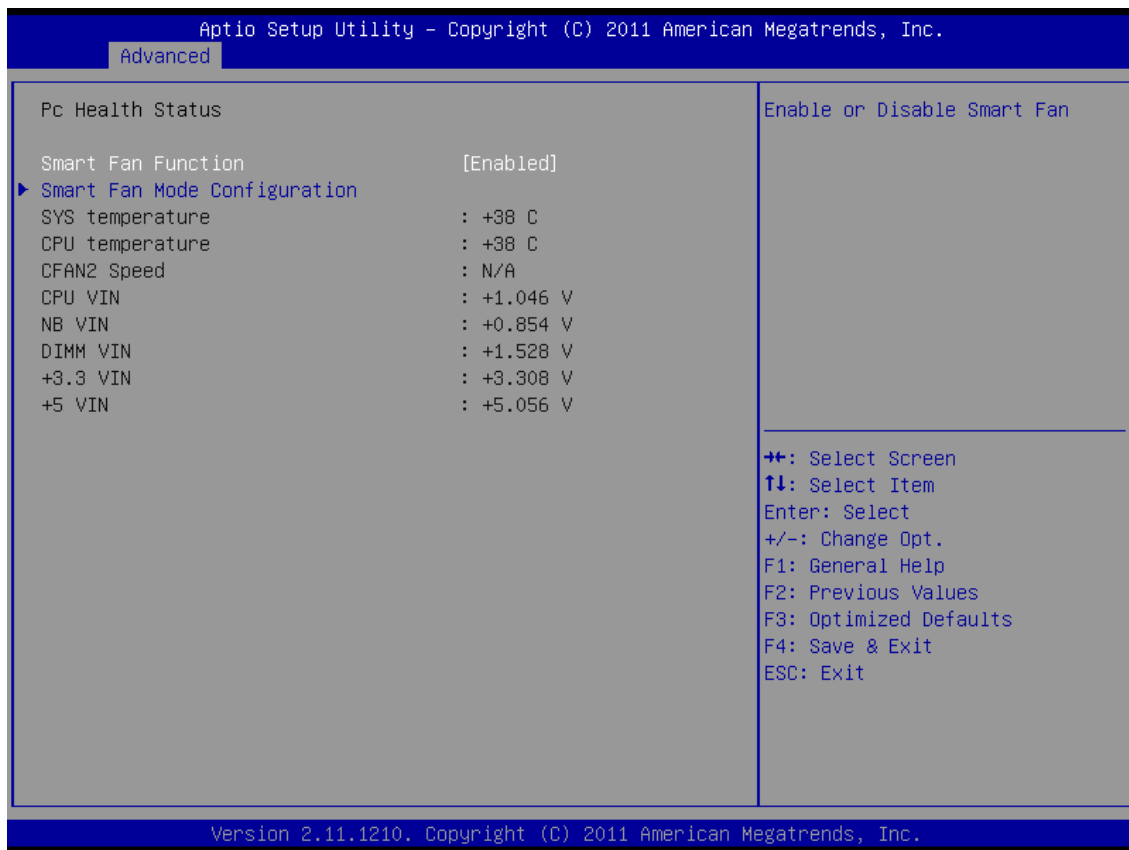
Options: Auto, Manual

3.6.2.6.6 Mass Storage Devices

Mass storage device emulation type. 'AUTO' enumerates devices according to their media format. Optical drives are emulated as 'CDROM', drives with no media will be emulated according to a drive type.

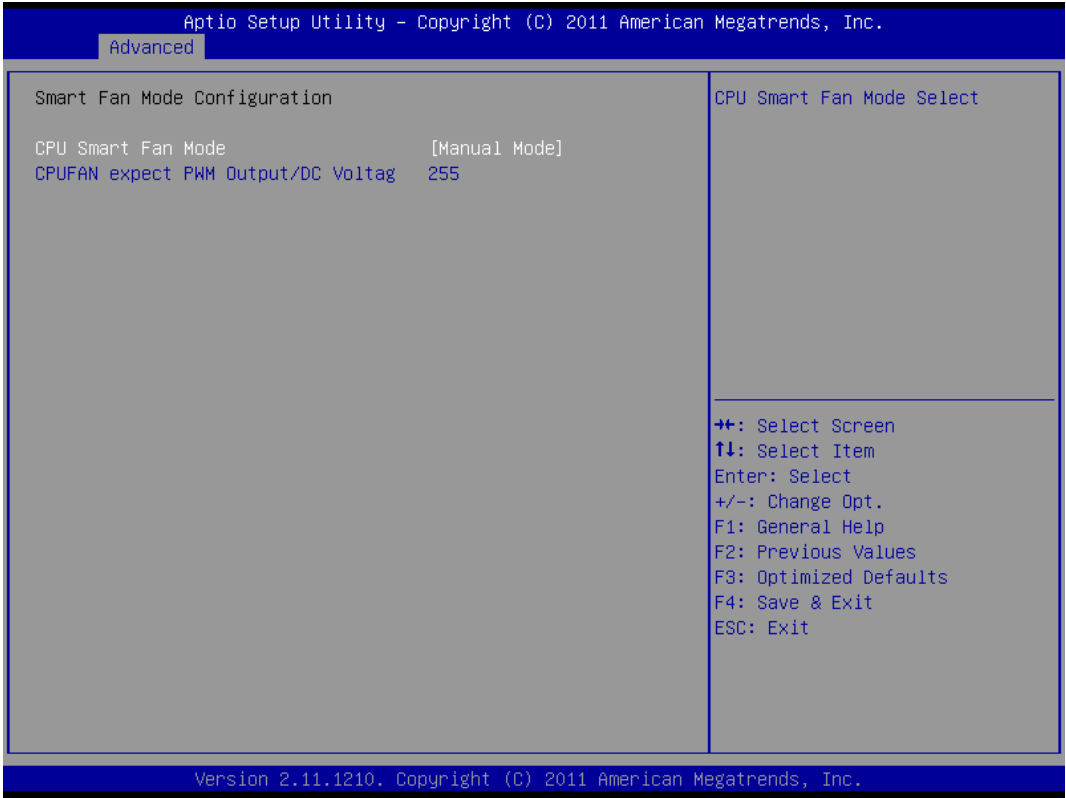
Options:Auto,Floppy,Forced Fdd,HardDisk,CD-ROM.

3.6.2.7 W83795ADG H/W Monitor



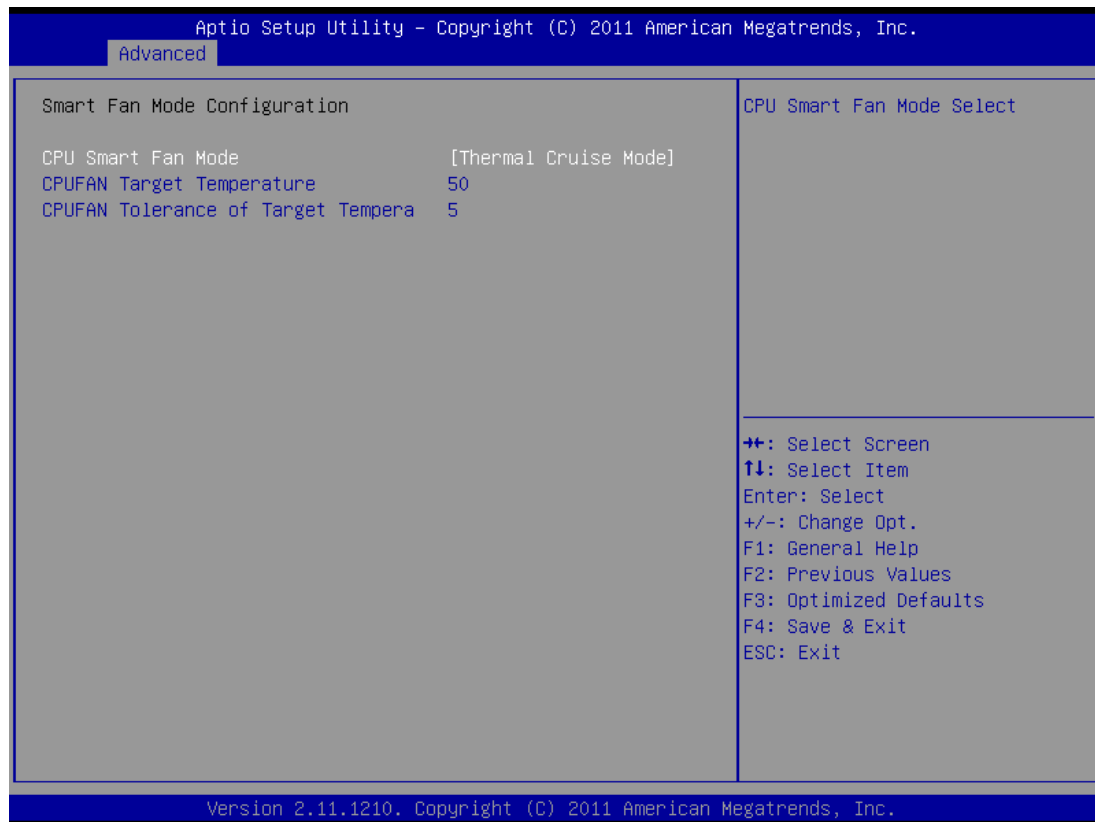
Item	Options	Description
Smart Fan Function	Disable Enabled[Default]	Enable or Disable Smart Fan.
Smart Fan Mode Configuration	Smart Fan Mode Select.	

3.6.2.7.1 Smart Fan Mode Configuration(Manual Mode)



Item	Options	Description
CPU Smart Fan Mode	Manual Mode[Default] Thermal Cruise Mode	CPU Smart Fan Mode Select.
CPUFAN expect PWM Output/DC Voltag	100-255[Default]	Input expect PWM Output Value(Range:100-255)

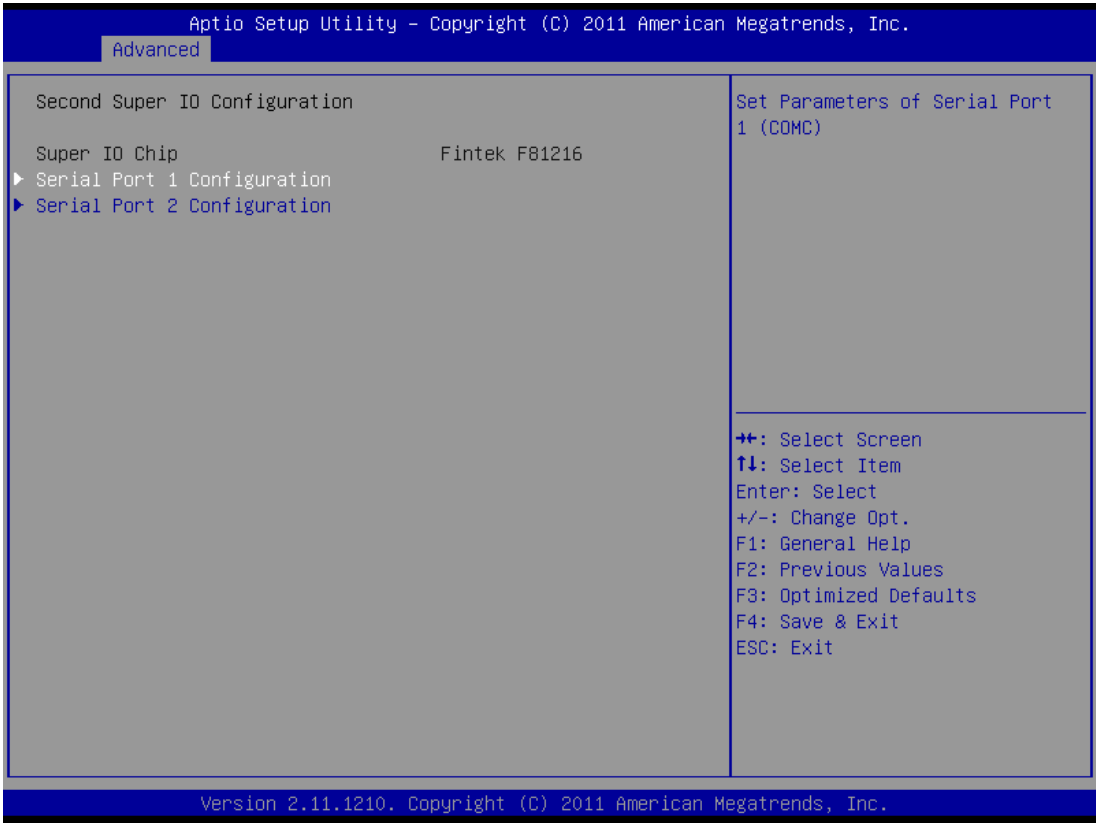
3.6.2.7.2 Smart Fan Mode Configuration “Thermal Cruise Mode”



Item	Options	Description
CPU Smart Fan Mode	Thermal Cruise Mode	CPU Smart Fan Mode Select
CPUFAN Target Temperature	50[Default]	Input SYSFAN Target Temperature (Range:0-127)
CPUFAN Tolerance of Target Temperat	5[Default]	Input Tolerance of Target Temperature (Range:0-15)

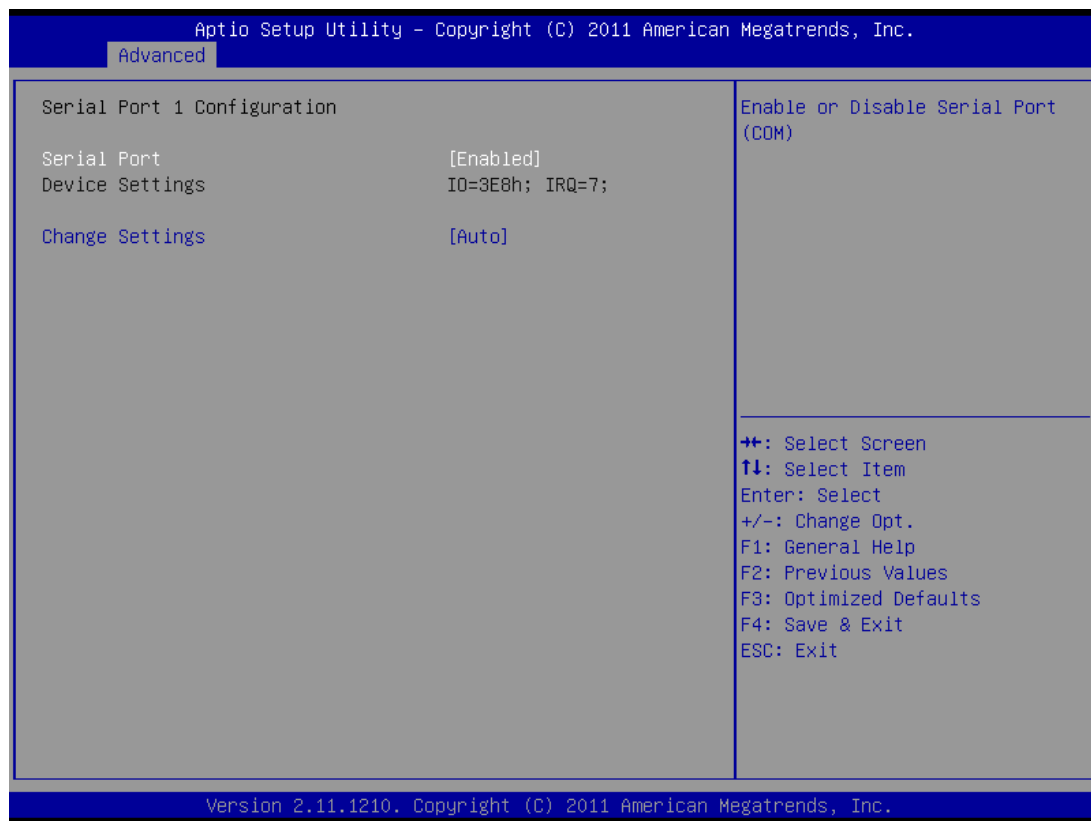
3.6.2.8 Second Super IO Configuration

You can use this item to set up or change the Second Super IO configuration for FDD controllers, parallel ports and serial ports.



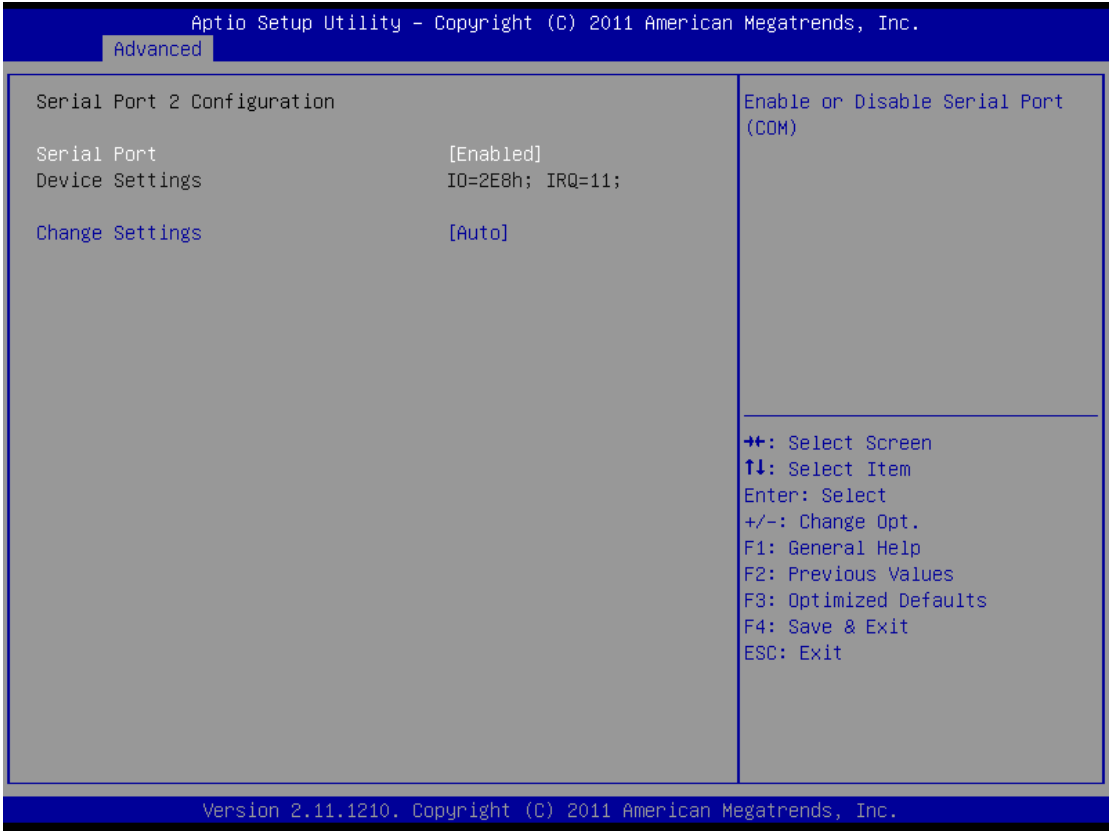
Item	Description
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMC)
Serial Port 2 Configuration	Set Parameters of Serial Port 2 (COMD)

3.6.2.8.1 Serial Port 1 Configuration



Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM)
Change settings	Auto[Default] IO=3F8h;IRQ=3; IO=3F8h;IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h;IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h;IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h;IRQ=3,4,5,6,7,9,10,11,12;	Select an optimal setting for Super IO device.

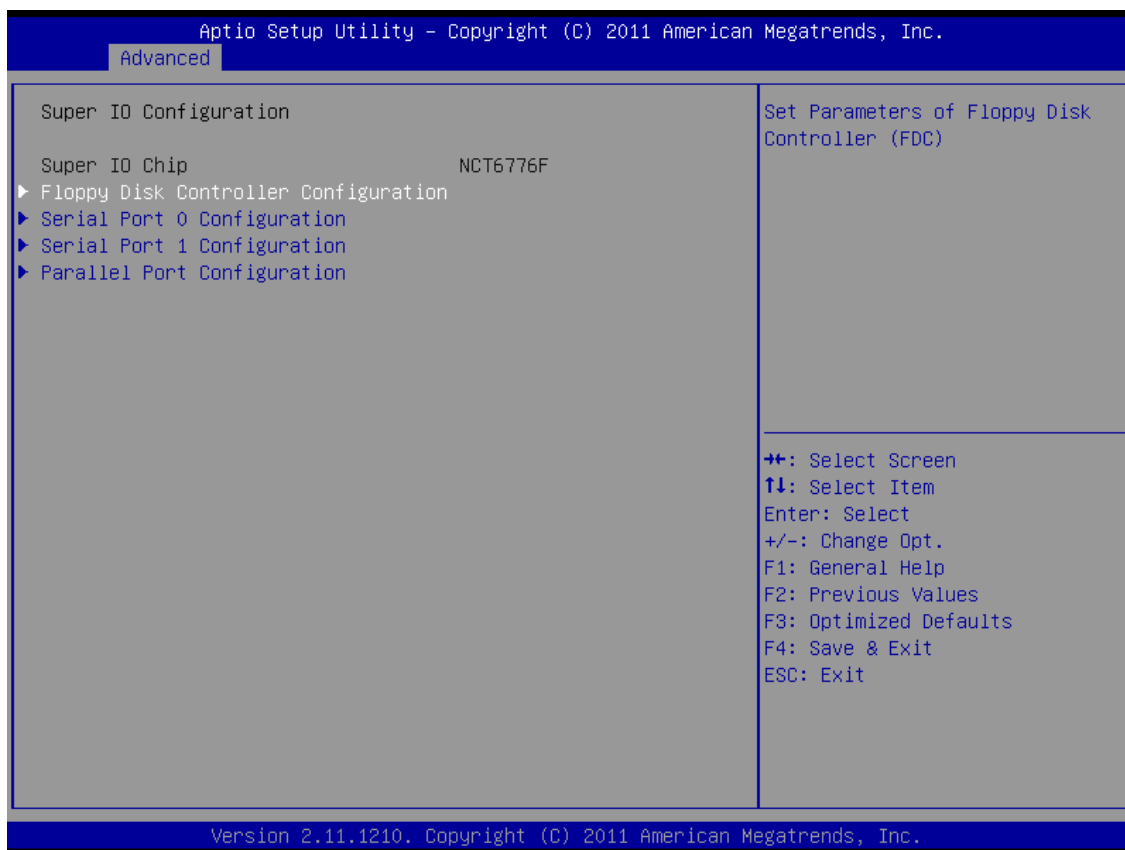
3.6.2.8.2 Serial Port 2 Configuration



Item	Option	Description
Serial Port	Disabled Enabled[Default],	Enable or Disable Serial Port (COM)
Change settings	Auto[Default] IO=2F8h;IRQ=3; IO=3F8h;IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h;IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h;IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h;IRQ=3,4,5,6,7,9,10,11,12;	Select an optimal setting for Super IO device.

3.6.2.9 Super IO Configuration

You can use this item to set up or change the Super IO configuration for FDD controllers, parallel ports and serial ports.



Item	Description
Floppy Disk Controller Configuration	Set Parameters of Floppy Disk Controller (FDC).
Serial Port 0 Configuration	Set Parameters of Serial Port 0 (COMA).
Serial Port 1 Configuration	Set Parameters of Serial Port 1 (COMB).
Parallel Port Configuration	Set Parameters of Parallel Port (LPT/LPTE).

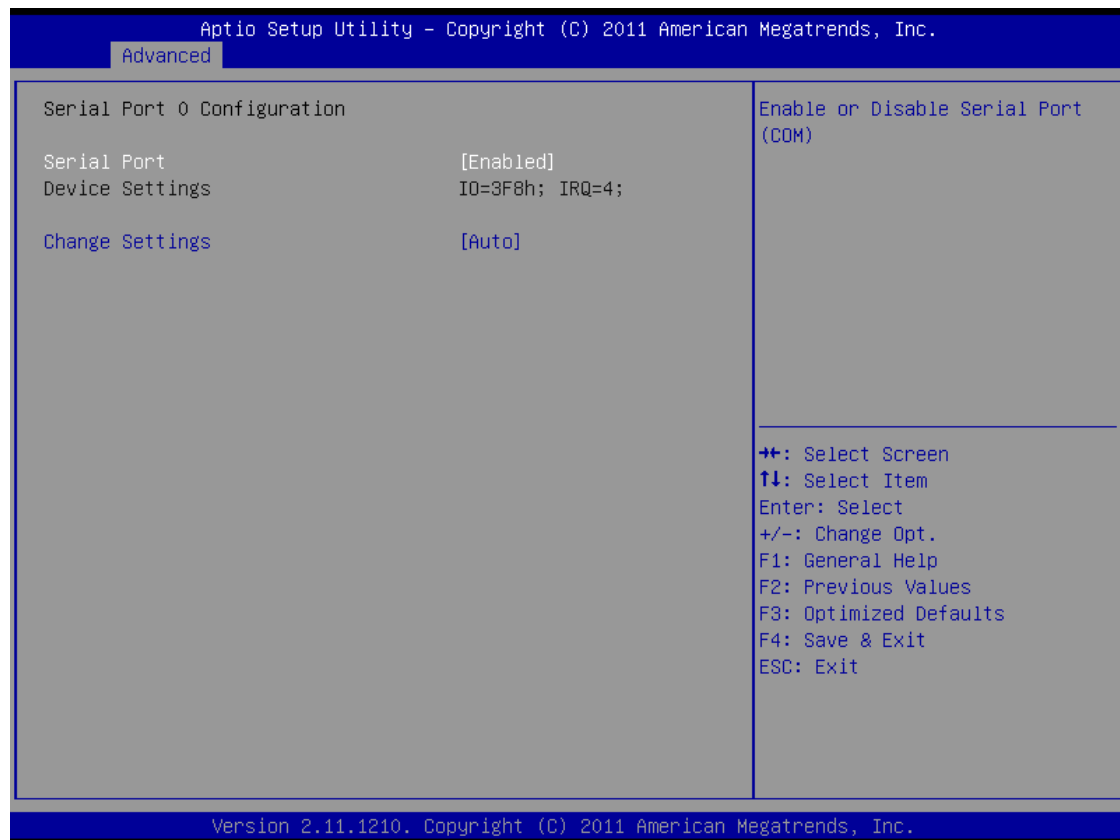
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3.6.2.9.1 Floppy Disk Controller Configuration



Item	Option	Description
Floppy Disk Controller	Disabled Enabled[Default]	Enable or Disable Floppy Disk Controller.
Change Settings	Auto[Default] IO=3F0h;IRQ=6;DMA=2;	Select an optimal settings for Super IO device.
Device Mode	Read Write[Default] Write Protect	Change mode of Floppy Disk Controller. Select 'Read Write' for normal operation. Select 'Write Protect' mode for read only operation.

3.6.2.9.2 Serial Port 0 Configuration



Item	Option	Description
Serial Port	Disabled Enabled[Default]	Enable or Disable Serial Port (COM)
Change Settings	Auto[Default] IO=3F8h;IRQ=4; IO=3F8h;IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h;IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h;IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h;IRQ=3,4,5,6,7,9,10,11,12;	Select an optimal settings for Super IO device.

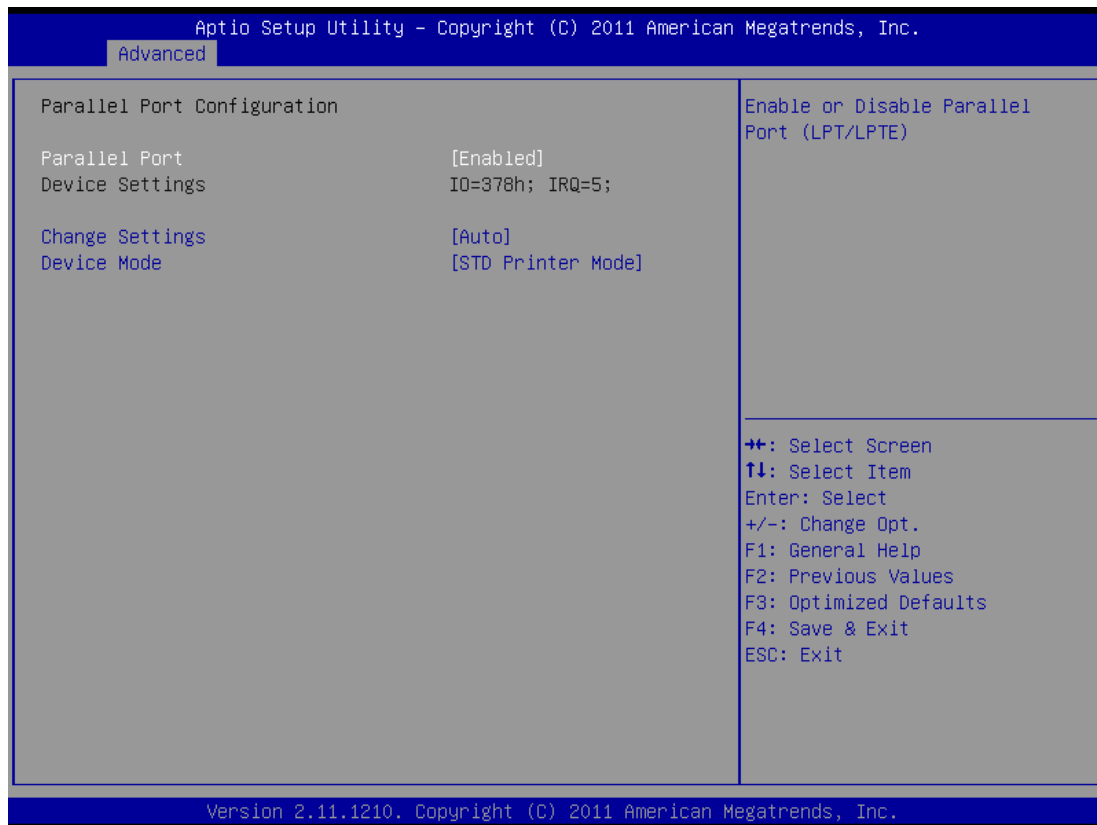
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3.6.2.9.3 Serial Port 1 Configuration



Item	Option	Description
Serial Port	Disabled Enabled[Default]	Enable or Disable Serial Port (COM).
Change Settings	Auto[Default] IO=2F8h;IRQ=3; IO=3F8h;IRQ=3,4,5,6,7,9,10,11,12; IO=2F8h;IRQ=3,4,5,6,7,9,10,11,12; IO=3E8h;IRQ=3,4,5,6,7,9,10,11,12; IO=2E8h;IRQ=3,4,5,6,7,9,10,11,12;	Select an optimal settings for Super IO device.
Device Mode	Standard Serial port Mode[Default] IrDA 1.0 (HP SIR) Mode ASKIR Mode	Change the Serial Port mode. Select <High Speed> or <Normal mode> mode.
Serial Port 232/422/485	RS232 [Default] RS422 RS485	Change the Serial Port mode. Select <RS232>or<RS485><RS422> mode.

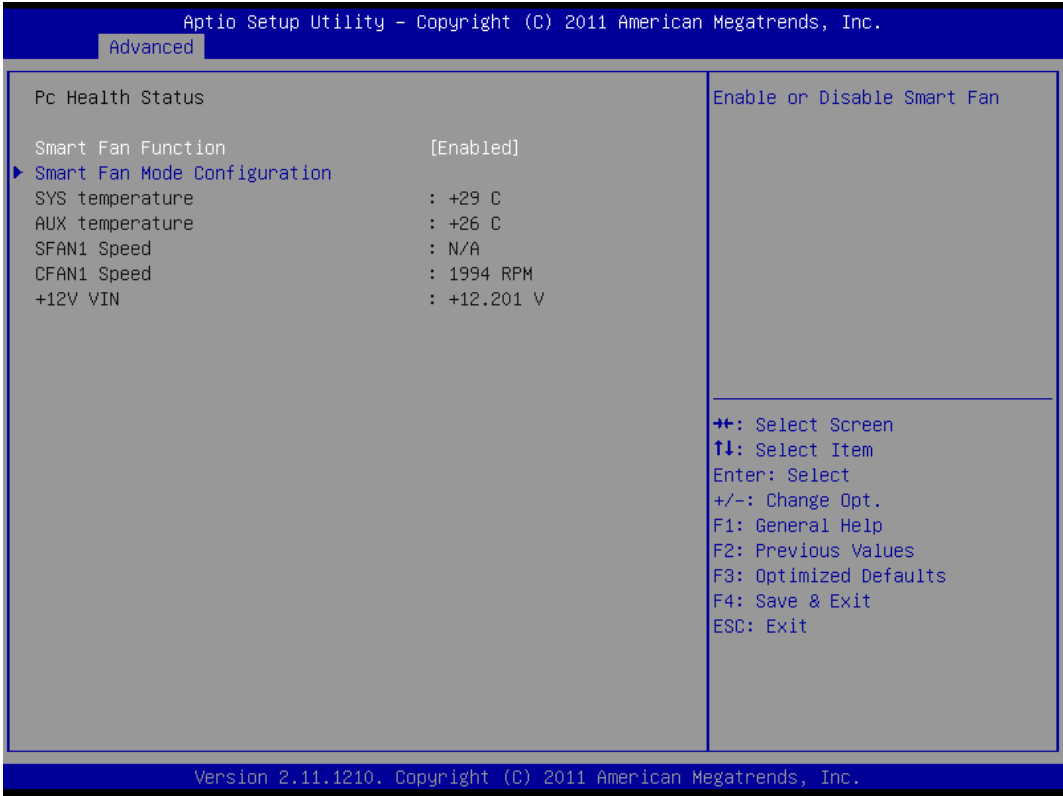
3.6.2.9.4 Parallel Port Configuration



Item	Option	Description
Parallel Port	Disabled Enabled[Default]	Enable or Disable Parallel Port (LPT/LPTE).
Change Settings	Auto[Default] IO=378h;IRQ=5;DMA=3; IO=378h;IRQ=5,6,7,9,10,11,12;DMA=1,3; IO=278h;IRQ=5,6,7,9,10,11,12;DMA=1,3; IO=3BCh;IRQ=5,6,7,9,10,11,12;DMA=1,3;	Select an optimal settings for Super IO device.
Device Mode	STD Print Mode[Default] SPP Mode EPP-1.9 and SPP Mode EPP-1.7 and SPP Mode ECP Mode ECP and EPP 1.9 Mode ECP and EPP 1.7 Mode	Change the Printer Port mode.

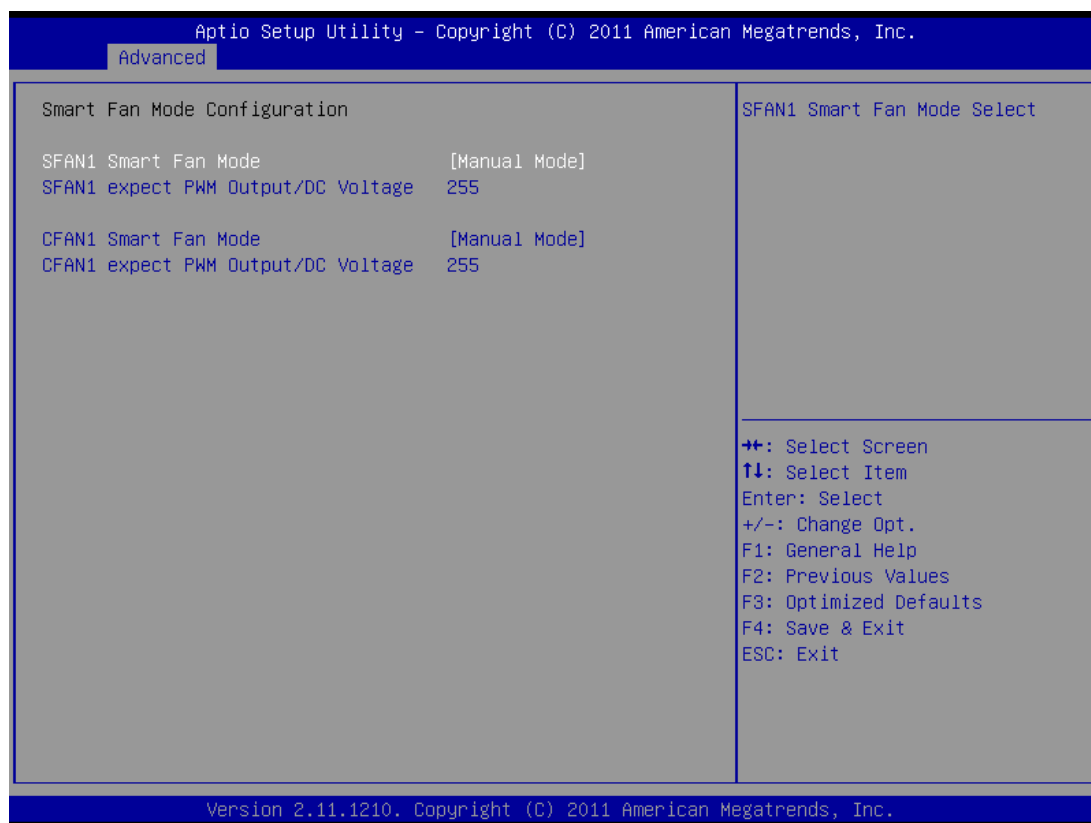
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3.6.2.10 NCT6776F H/W Monitor



Item	Options	Description
Smart Fan Function	Disable Enabled[Default]	Enable or Disable Smart Fan.
Smart Fan Mode Configuration	Smart Fan Mode Select.	

3.6.2.10.1 Smart Fan Mode Configuration (Manual Mode)



Item	Options	Description
SFAN1 Smart Fan Mode	Manual Mode[Default] Thermal Cruise Mode	SFAN1 Smart Fan Mode Select.
SFAN1 expect PWM Output/DC Voltage	100-255[Default]	Input expect PWM Output Value(Range:100-255)
CFAN1 Smart Fan Mode	Manual Mode[Default] Thermal Cruise Mode	CFAN1 Smart Fan Mode Select.
CFAN1 expect PWM Output/DC Voltage	100-255[Default]	Input expect PWM Output Value(Range:100-255)

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3.6.2.10.2 Smart Fan Mode Configuration “Thermal Cruise Mode”

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Smart Fan Mode Configuration	SFAN1 Smart Fan Mode Select
SFAN1 Smart Fan Mode	[Thermal Cruise Mode]
SFAN1 Target Temperature	50
SFAN1 Tolerance of Target Temperat	5
SFAN1 StartUP/Stop Value	100
CFAN1 Smart Fan Mode	[Manual Mode]
CFAN1 expect PWM Output/DC Voltage	255
 ⇐+: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.	

Aptio Setup Utility - Copyright (C) 2011 American Megatrends, Inc.	
Advanced	
Smart Fan Mode Configuration	CFAN1 Smart Fan Mode Select
SFAN1 Smart Fan Mode	[Thermal Cruise Mode]
SFAN1 Target Temperature	50
SFAN1 Tolerance of Target Temperat	5
SFAN1 StartUP/Stop Value	100
CFAN1 Smart Fan Mode	[Thermal Cruise Mode]
CFAN1 Target Temperature	50
CFAN1 Tolerance of Target Temperat	5
CFAN1 StartUP/Stop Value	100
 ⇐+: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.11.1210. Copyright (C) 2011 American Megatrends, Inc.	

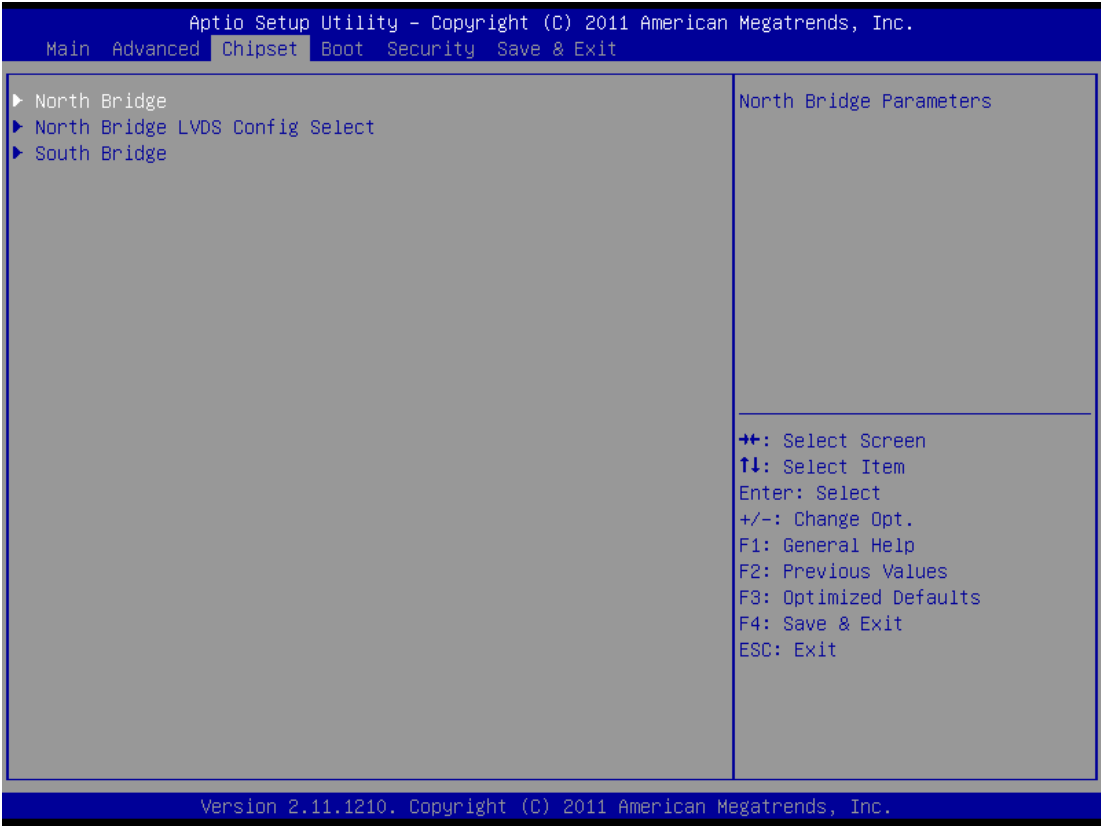
Quick Installation Guide

Item	Options	Description
SFAN1 Smart Fan Mode	Thermal Cruise Mode	SFAN1 Smart Fan Mode Select.
SFAN1 Target Temperature	50[Default]	Input SYSFAN Target Temperature (Range:0-127)
SFAN1 Tolerance of Target Temperat	5[Default]	Input Tolerance of Target Temperature (Range:0-15)
SFAN1 StartUP/Stop Value	100[Default]	Input Target Speed Count (Range:100-255)
CFAN1 Smart Fan Mode	Thermal Cruise Mode	CFAN1 Smart Fan Mode Select.
CFAN1 Target Temperature	50[Default]	Input CPUFAN0 Target Temperature (Range:0-127)
CFAN1 Tolerance of Target Temperat	5[Default]	Input Tolerance of Target Temperature (Range:0-15)
CFAN1 StartUP/Stop Value	100[Default]	Input Target Speed Count (Range:100-255)

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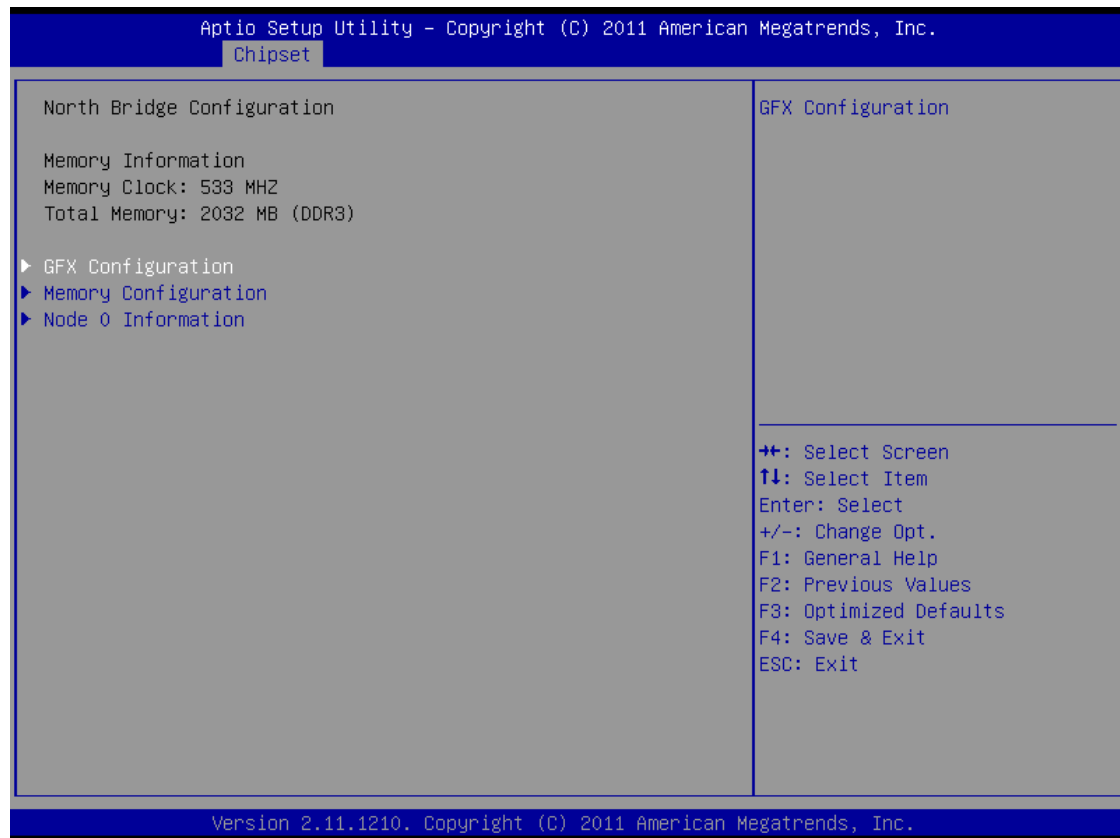
3.6.3 Chipset Menu

This option configures the North bridge, North Bridge LVDS Config select and South Bridge.



Item	Description
North Bridge	North Brideg Parameters.
North Bridge LVDS Config Select	Specify INT15 options for LVDS.
South Brideg	South Bridge Parameters.

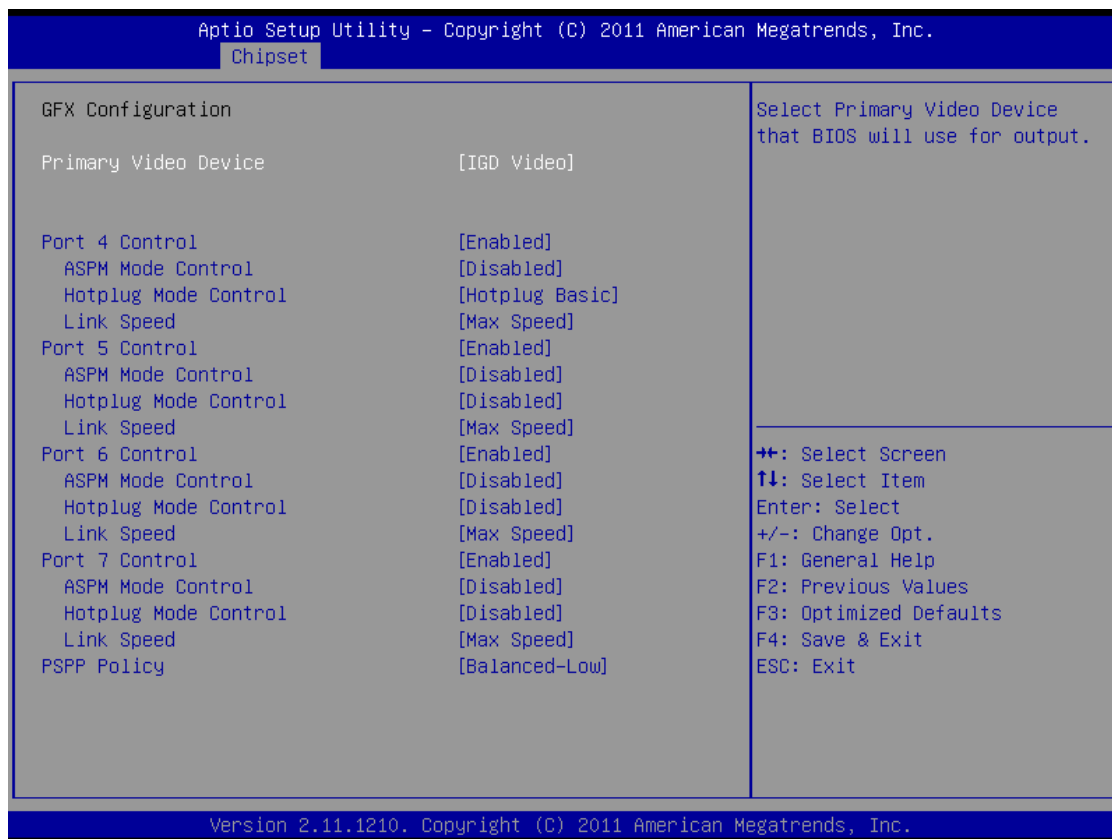
3.6.3.1 North Bridge



Item	Description
GFX Configuration	GFX Configuration.
Memory Configuration	Memory Configuration.
Node 0 Information	View Memory Information related to Node 0.

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3.6.3.1.1 GFX Configuration



Item	Option	Description
Primary Video Device	IGD Video [Default] NB PCIe slot Video	Select Primary Video Device that BIOS will use for output.
Port 4 Control	Disabled Enabled [Default]	Port 4 Enabled/Disabled
ASPM Mode Control	Disabled [Default] L0s Entry L1 Entry L0s and L1 Entry	NB root port ASPM mode control.
Hotplug Mode Control	Disabled Hotplug Basic [Default] Hotplug Server Hotplug Enhanced Hotplug Inboard	NB root port hotplug mode control
Link Speed	Max Speed [Default] Pcie Gen1 Pcie Gen2	NB root port Pcie link speed, the link may overwritten by Pspp settings.
Port 5 Control	Disabled Enabled [Default]	Port 5 Enabled/Disabled

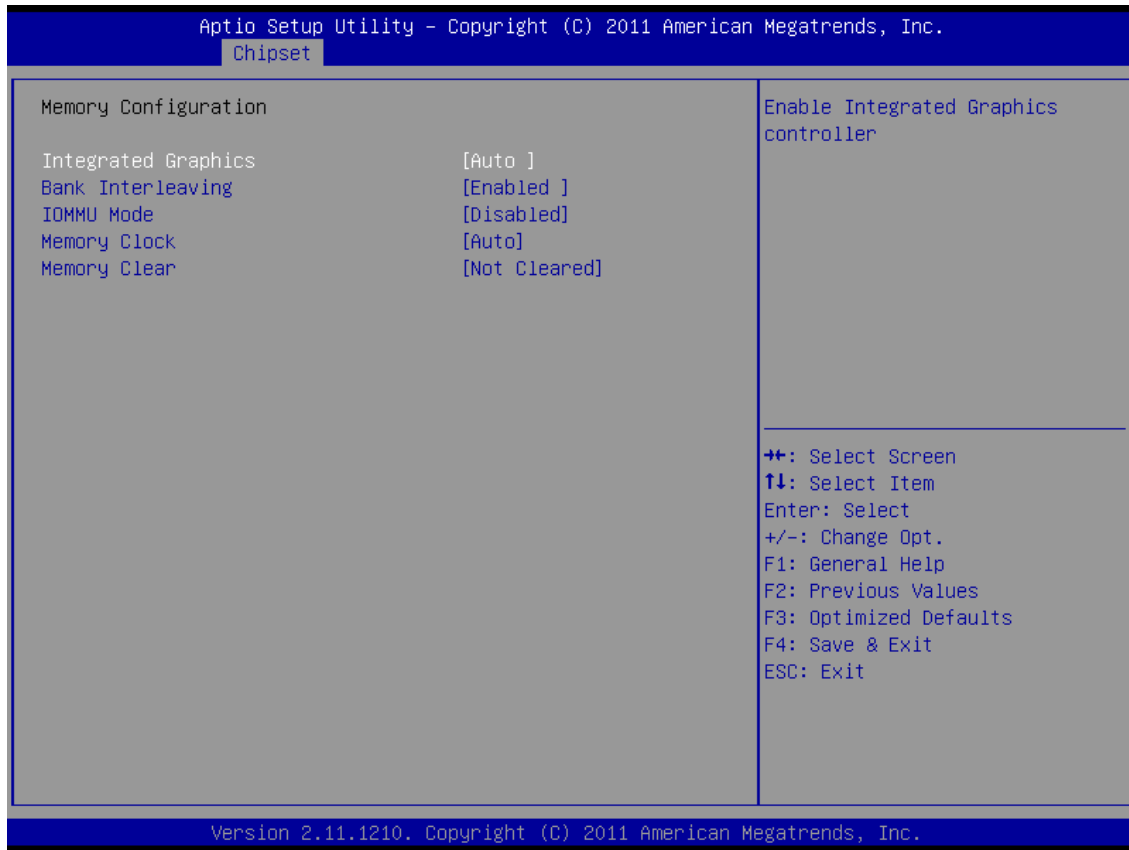
Quick Installation Guide

ASPM Mode Control	Disabled[Default] L0s Entry L1 Entry L0s and L1 Entry	NB root port ASPM mode control.
Hotplug Mode Control	Disabled[Default] Hotplug Basic Hotplug Server Hotplug Enhanced Hotplug Inboard	NB root port hotplug mode control
Link Speed	Max Speed[Default] Pcie Gen1 Pcie Gen2	NB root port Pcie link speed, the link may overwritten by Pspp settings.
Port 6 Control	Disabled Enabled[Default]	Port 6 Enabled/Disabled
ASPM Mode Control	Disabled[Default] L0s Entry L1 Entry L0s and L1 Entry	NB root port ASPM mode control.
Hotplug Mode Control	Disabled[Default] Hotplug Basic Hotplug Server Hotplug Enhanced Hotplug Inboard	NB root port hotplug mode control
Link Speed	Max Speed[Default] Pcie Gen1 Pcie Gen2	NB root port Pcie link speed, the link may overwritten by Pspp settings.
Port 7 Control	Disabled Enabled[Default]	Port 7 Enabled/Disabled
ASPM Mode Control	Disabled[Default] L0s Entry L1 Entry L0s and L1 Entry	NB root port ASPM mode control.
Hotplug Mode Control	Disabled[Default] Hotplug Basic Hotplug Server Hotplug Enhanced Hotplug Inboard	NB root port hotplug mode control
Link Speed	Max Speed[Default] Pcie Gen1 Pcie Gen2	NB root port Pcie link speed, the link may overwritten by Pspp settings.

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PSPP Policy	Disabled Performance Balanced-High Balanced-Low [Default] Power Saving	PCIe speed power policy.
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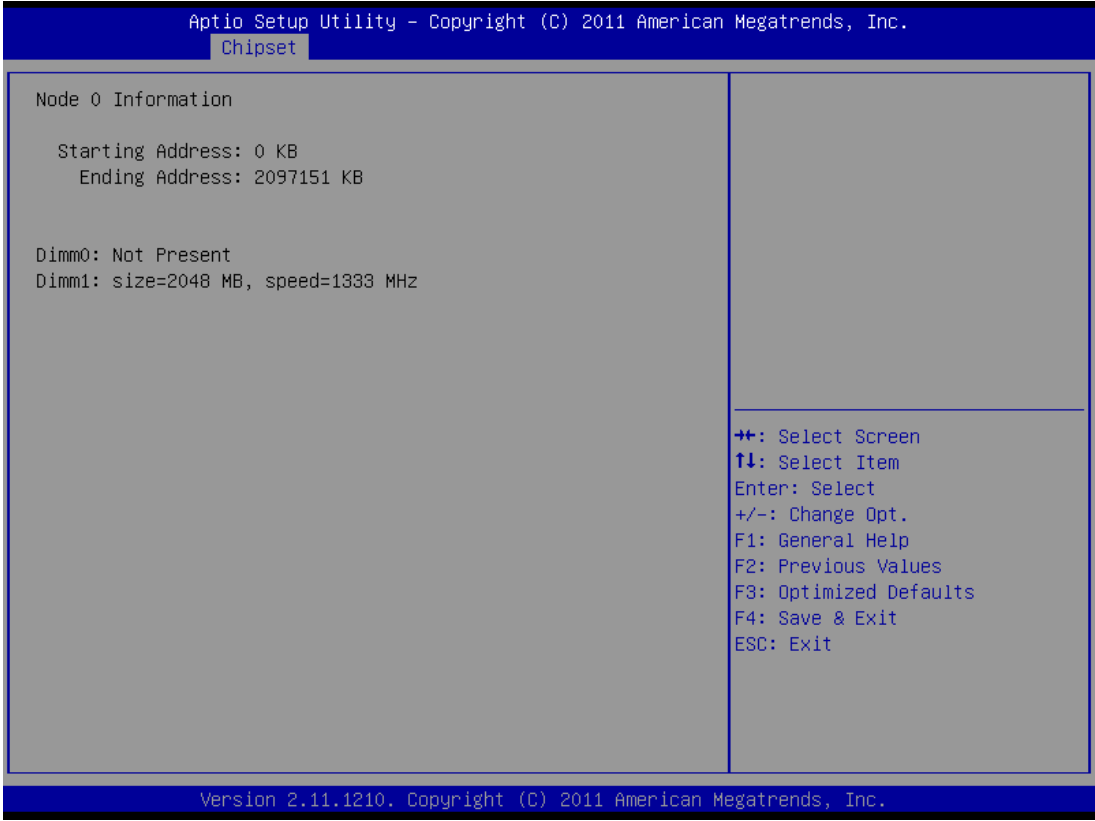
3.6.3.1.2 Memory Configuration



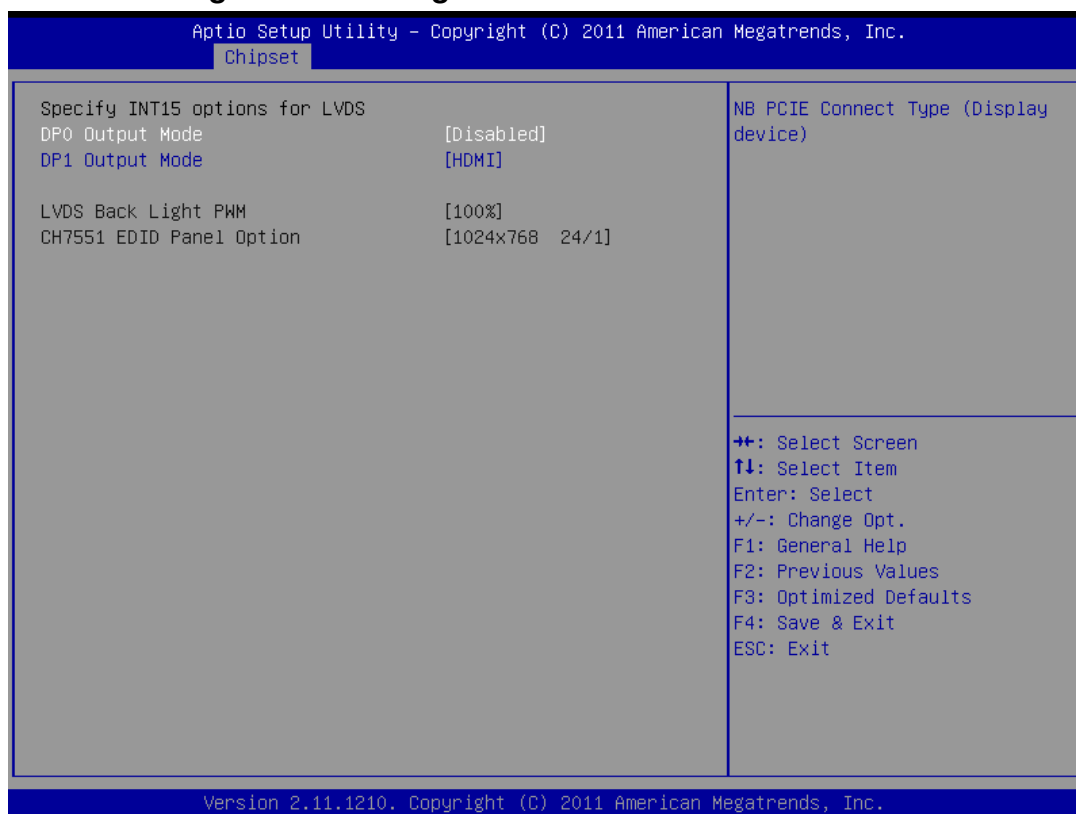
Item	Option	Description
Integrated Graphics	Auto[Default] Disabled Force	Enable Integrated Graphics controller.
Bank Interleaving	Disabled Enabled[Default]	Bank Interleaving
IOMMU Mode	Disabled[Default] 32MB 64MB 128MB 256MB 512MB 1GB 2GB	IOMMU is supported on LINUX based systems to convert 32bit I/O to 64bit MMIO.
Memory Clock	Auto[Default] 400 MHz 533 MHz 667 MHz	This Option Allows User to select different Memory Clock, Default value is 400Mhs.
Memory Clear	Not Cleared[Default] Cleared	Memory Clear functionality control.

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3.6.3.1.3 Node 0 Information



3.6.3.2 North Bridge LVDS Config Select

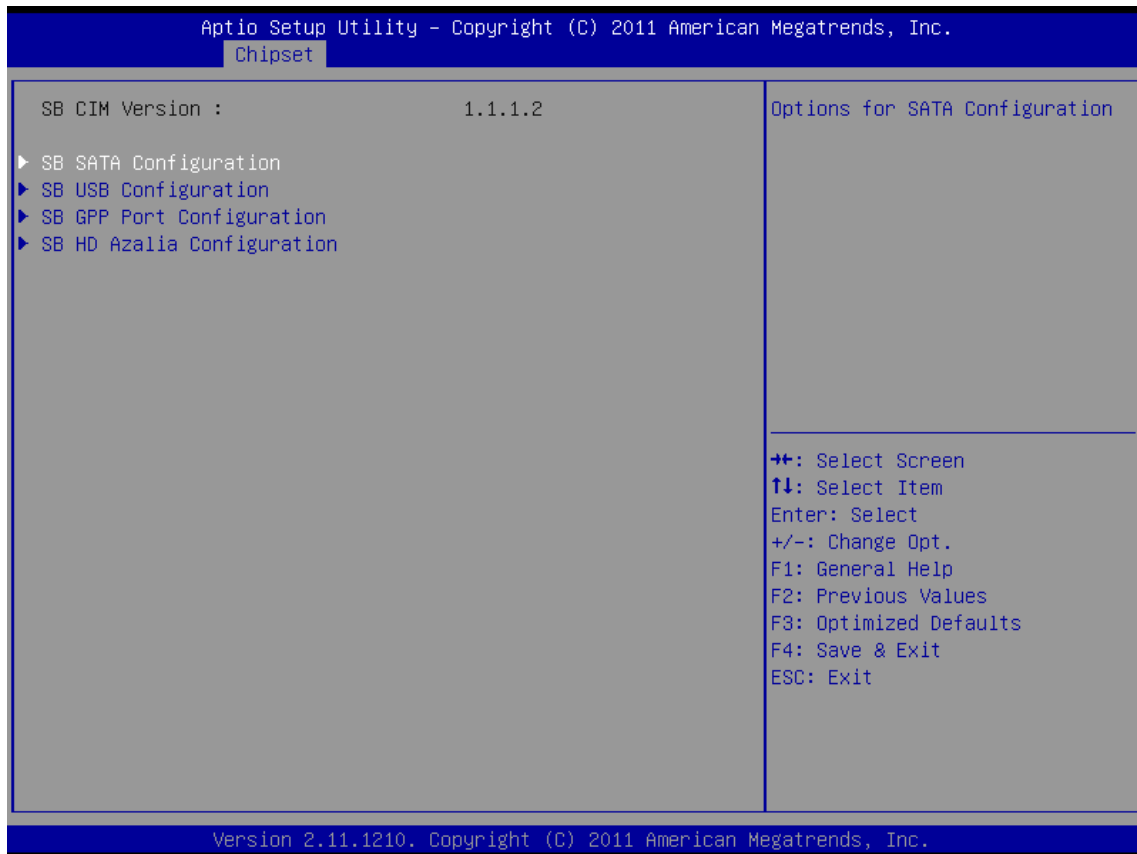


Item	Option	Description
DP0 Output Mode	eDP-to-LVDS[Default] Disabled	NB PCIE Connect Type (Display device).
DP1 Output Mode	DP HDMI [Default] Disabled	NB PCIE Connect Type (Display device)
LVDS backlight PWM	00% 25% 50% 75% 100%[Default]	Select LVDS back light PWM duty.
CH7551 EDID Panel Option	1024x768 24/1[Default] 800x600 24/1 1024x768 18/1 1024x576 18/1 1024x600 18/1 1280x800 18/1 1920x1200 18/2 640x480 24/1 800x480 24/1 1280x768 18/1	DP0-EDP to LVDS(Chrotel 7551) Panel EDID Option.

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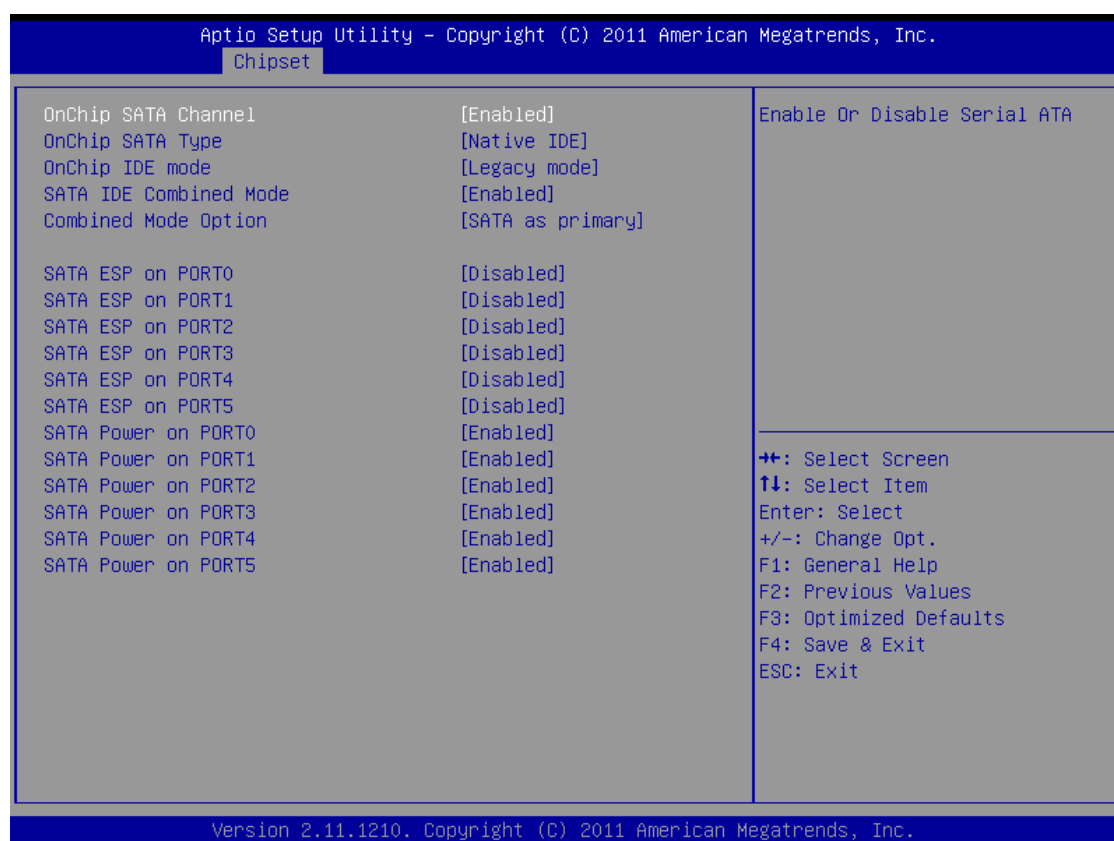
	1280x1024 24/2	
	1440x900 24/2	
	1600x1200 24/2	
	1366x768 24/1	
	1920x1080 24/2	
	1680x1050 24/2	

3.6.3.3 South Bridge



Item	Description
SB SATA Configuration	Options for SATA Configuration
SB USB Configuration	Options for SB USB Configuration
SB GPP Port Configuration	Options for SB GPP Port Config
SB HD Azalia Configuration	Options for SB HD Azalia

3.6.3.3.1 SB SATA Configuration

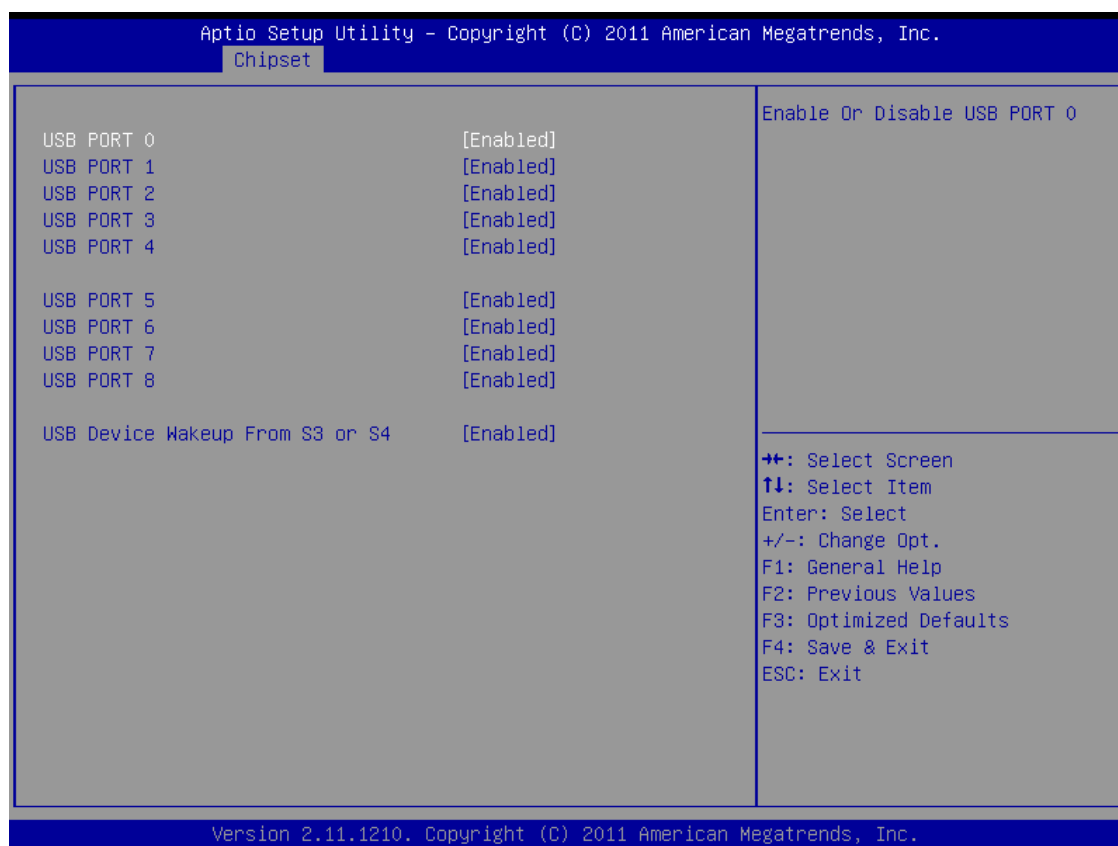


Item	Option	Description
OnChip SATA Channel	Disabled Enabled[Default]	Enable or Disable Serial ATA.
OnChip SATA Type	Native IDE[Default] AHCI Legacy IDE	Native IDE /n RAID /n AHCI /n Legacy IDE /n IDE->AHCI /n HyperFlash.
OnChip IDE mode	Legacy mode[Default] Native mode	OnChip IDE mode Select.
SATA IDE Combined Mode	Enabled[Default] Disabled	Enable Or Disable SATA IDE Combined Mode.
Combined Mode Option	SATA as primary [Default] SATA as secondary	Combined Mode Option
SATA ESP on PORT0	Disabled[Default] Enabled	Enable Or Disable SATA ESP on PORT0.
SATA ESP on PORT1	Disabled[Default] Enabled	Enable Or Disable SATA ESP on PORT1.
SATA ESP on PORT2	Disabled[Default] Enabled	Enable Or Disable SATA ESP on PORT2.
SATA ESP on PORT3	Disabled[Default]	Enable Or Disable SATA ESP on

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	Enabled	PORT3.
SATA ESP on PORT4	Disabled[Default] Enabled	Enable Or Disable SATA ESP on PORT4.
SATA ESP on PORT5	Disabled[Default] Enabled	Enable Or Disable SATA ESP on PORT5.
SATA Power on PORT0	Enabled[Default] Power Down	Enable Or Disable SATA Power on PORT0.
SATA Power on PORT1	Enabled[Default] Power Down	Enable Or Disable SATA Power on PORT1.
SATA Power on PORT2	Enabled[Default] Power Down	Enable Or Disable SATA Power on PORT2.
SATA Power on PORT3	Enabled[Default] Power Down	Enable Or Disable SATA Power on PORT3.
SATA Power on PORT4	Enabled[Default] Power Down	Enable Or Disable SATA Power on PORT4.
SATA Power on PORT5	Enabled[Default] Power Down	Enable Or Disable SATA Power on PORT5.

3.6.3.3.2 SB USB Configuration

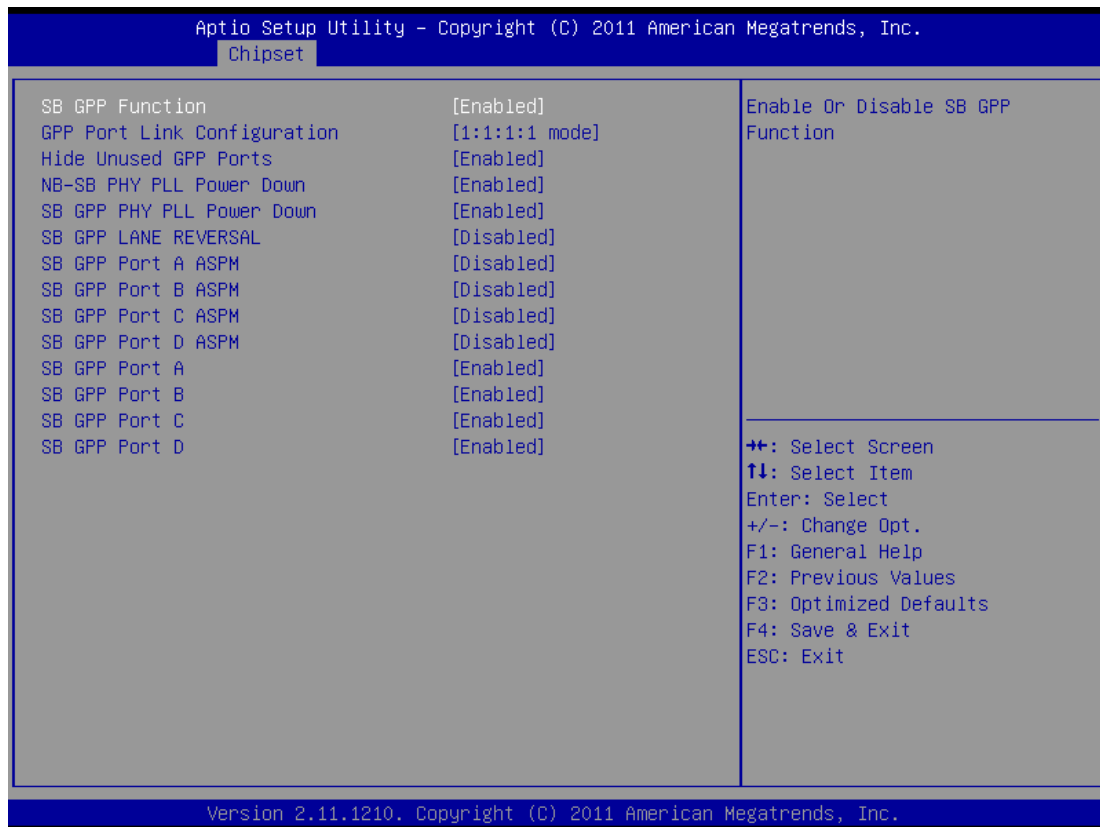


Item	Option	Description
USB PORT 0	Disabled Enabled[Default]	Enable Or Disable USB PORT 0
USB PORT 1	Disabled Enabled[Default]	Enable Or Disable USB PORT 1
USB PORT 2	Disabled Enabled[Default]	Enable Or Disable USB PORT 2
USB PORT 3	Disabled Enabled[Default]	Enable Or Disable USB PORT 3
USB PORT 4	Disabled Enabled[Default]	Enable Or Disable USB PORT 4
USB PORT 5	Disabled Enabled[Default]	Enable Or Disable USB PORT 5
USB PORT 6	Disabled Enabled[Default]	Enable Or Disable USB PORT 6
USB PORT 7	Disabled Enabled[Default]	Enable Or Disable USB PORT 7
USB PORT 8	Disabled	Enable Or Disable USB PORT 8

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	Enabled[Default]	
USB Device Wakeup From S3 or S4	Disabled Enabled[Default]	Enable Or Disable USB Device Wakeup From S3 or S4.

3.6.3.3.3 SB GPP Port Configuration

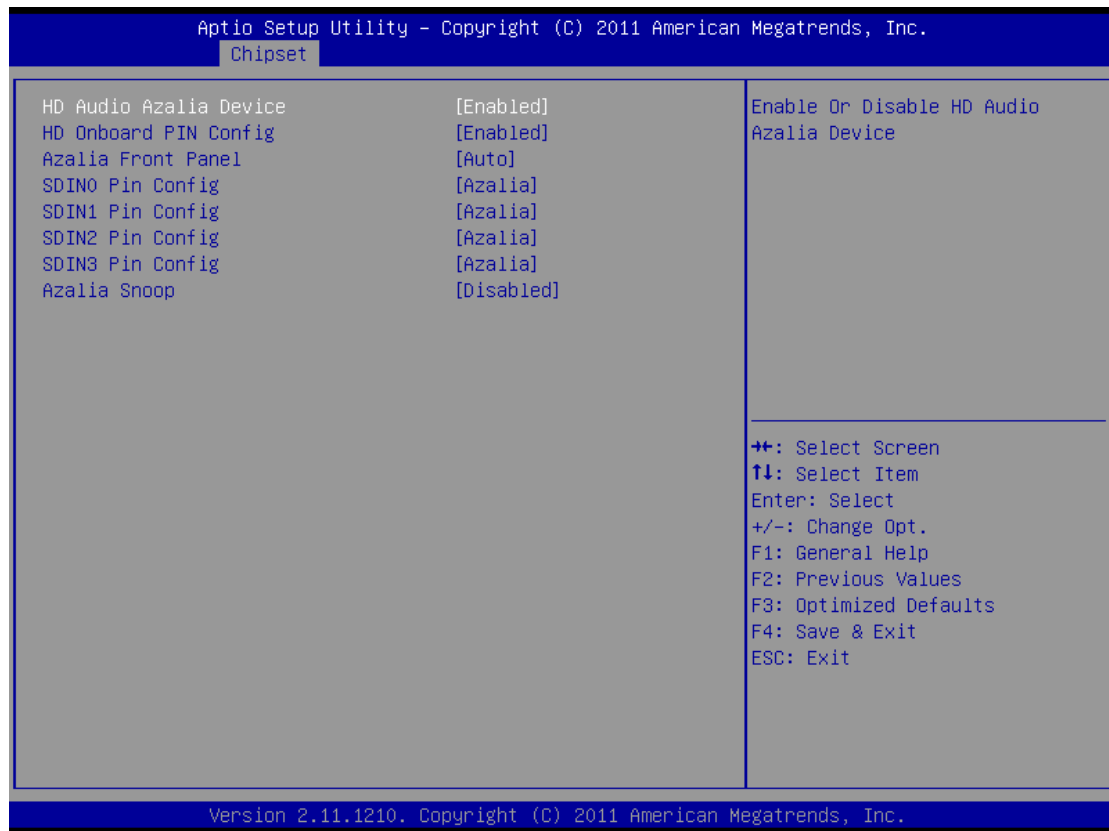


Item	Option	Description
SB GPP Function	Disabled Enabled [Default]	Enable Or Disable SB GPP Function.
GPP Port Link Configuration	x4 mode 2:2 mode 2:1:1 mode 1:1:1:1 mode [Default]	GPP Port Link Configuration Select.
Hide Unused GPP Ports	Disabled Enabled [Default]	Enable Or Disable Hide Unused GPP Ports
NB-SB PHY PLL Power Down	Disabled Enabled [Default]	Enable Or Disable NB-SB PHY PLL Power Down.
SB GPP PHY PLL Power Down	Disabled Enabled [Default]	Enable Or Disable SB GPP PHY PLL Power Down.
SB GPP LANE REVERSAI	Disabled [Default] Enabled	Enable Or Disable SB GPP LANE REVERSAL.
SB GPP Port A/BC/D ASPM	Disabled [Default] L0s L1 L0s+L1	Enable Or Disable SB GPP Port A B/C/D ASPM.
SB GPP Port A/B/C/D	Disabled	Enable Or Disable SB GPP Port A

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	Enabled[Default]	B/C/D.
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3.6.3.3.4 SB HD Azalia Configuration

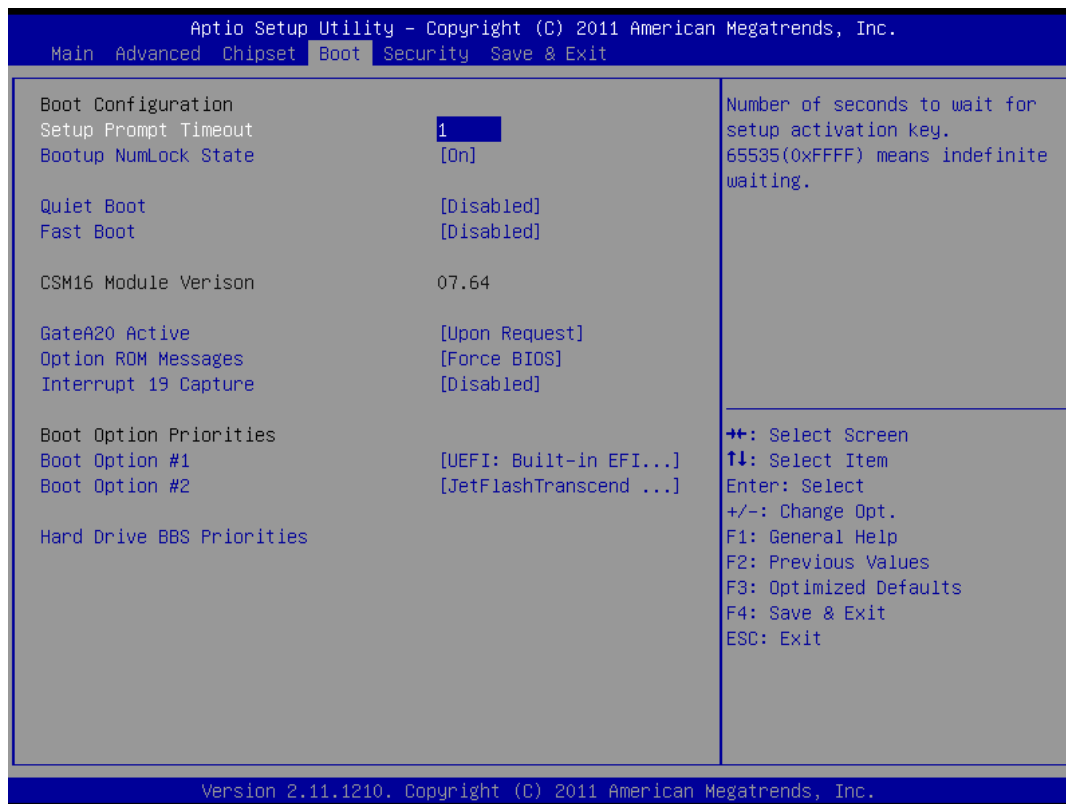


Item	Option	Description
HD Audio Azalia Device	Auto Disabled Enabled[Default]	Enable Or Disable HD Audio Azalia Device.
HD Onboard PIN Config	Disabled Enabled[Default]	Enable Or Disable HD Onboard PIN Config.
Azalia Front Panel	Auto[Default] Disabled	Config Azalia Front Panel.
SDIN0 Pin Config	GPIO Azalia[Default]	SDIN0 Pin Config
SDIN1 Pin Config	GPIO Azalia[Default]	SDIN1 Pin Config
SDIN2 Pin Config	GPIO Azalia[Default]	SDIN2 Pin Config
SDIN3 Pin Config	GPIO Azalia[Default]L0s+L1	SDIN3 Pin Config

Azalia Snoop	Disabled [Default] Enabled	Enable Or Disable Azalia Snoop.
---------------------	--------------------------------------	---------------------------------

3.6.4 Boot

Use Boot menu to set system boot options.



Item	Option	Description
Setup Prompt Timeout	1	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	On, Off [Default]	Select the keyboard NumLock state.
Quiet Boot	Disable [Default] Enable	Enables or disables Quiet Boot option.
Fast Boot	Disabled [Default] Enabled,	Enables or disables boot with initialization of a minimal set of devices required to launch active boot option. Has no effect for BBS boot options.
GataA20 Active	Upon Request [Default] , Always	UPON REQUEST-GA20 can be disabled using BIOS services. ALWAYS-do not allow disabling GA20;this option is useful when any RT code is executed above 1MB.
Option ROM Messages	Force BIOS [Default] ,	Set display mode for Option ROM.

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	Keep Current	
Interrupt 19 Capture	Disabled [Default] Enabled	Enabled: Allows Option ROMs to trap Int 19.
Boot option Priorities	These settings specify the boot priority of hard drive devices. The highest priority device is displayed on the main Boot Option Priorities list.	
Hard Drive BBS Priorities	Use this setting to access the Hard Drive BBS Priorities submenu to re-order or disable bootable hard drive devices.	

3.6.5 Security

Use the Security menu to set system and user password.



3.6.5.1 Administrator Password

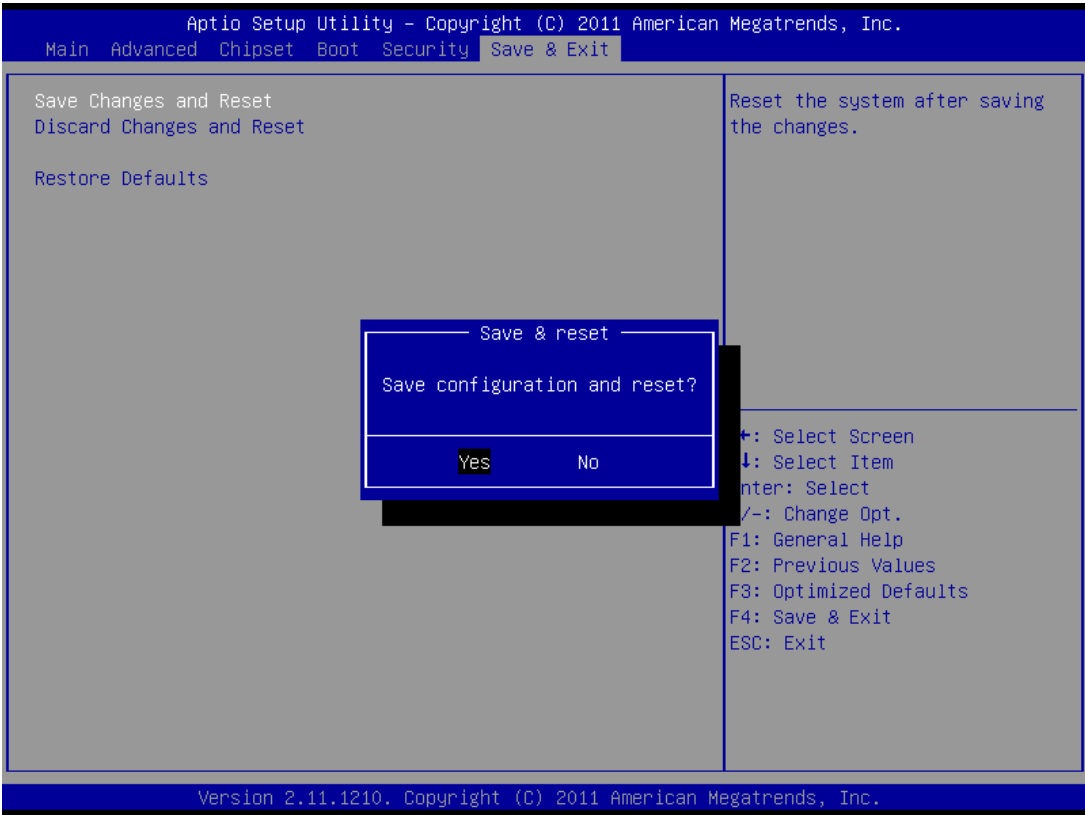
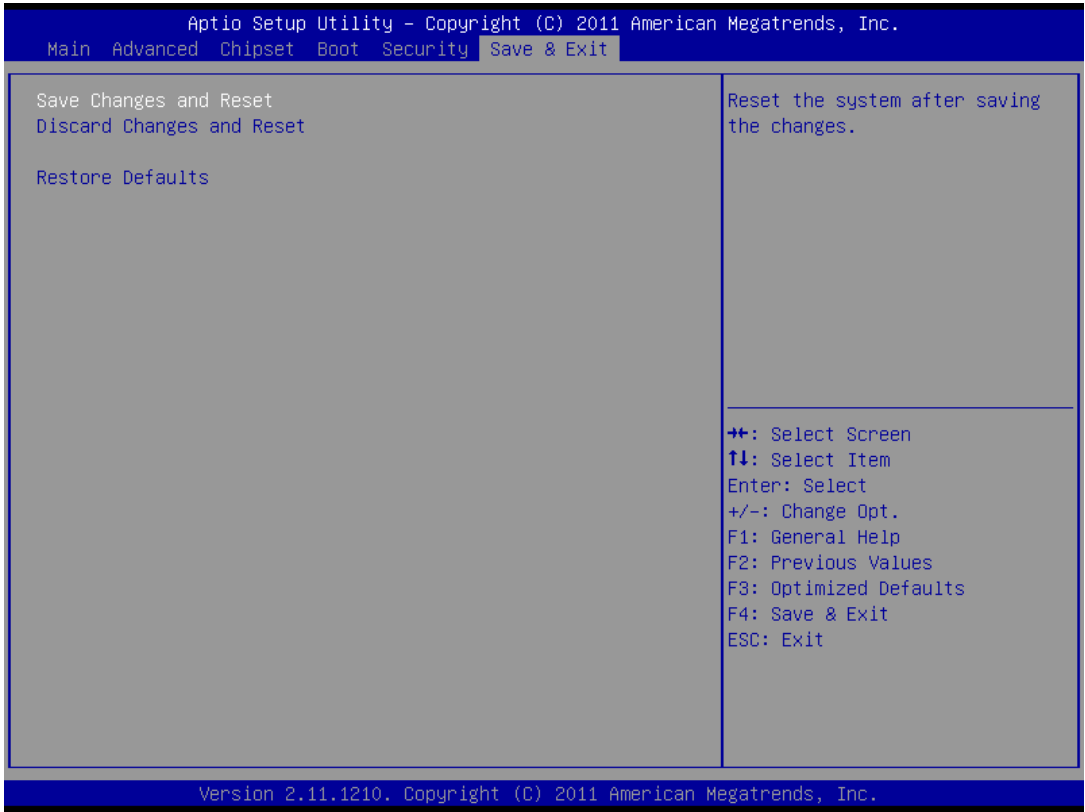
This setting specifies a password that must be entered to access the BIOS Setup Utility. If only the Administrator's password is set, then this only limits access to the BIOS setup program and is only asked for when entering the BIOS setup program. By default, no password is specified.

3.6.5.2 User Password

This setting specifies a password that must be entered to access the BIOS Setup Utility or to boot the system. If only the User's password is set, then this is a power on password and must be entered to boot or enter the BIOS setup program. In the BIOS setup program, the User will have Administrator rights. By default, no password is specified.

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3.6.6 Save & Exit



3.6.6.1 Save Changes and Reset

Any changes made to BIOS settings are stored in NVRAM. The setup program then exits and reboots the controller.

3.6.6.2 Discard Changes and Reset

Any changes made to BIOS settings during this session of the BIOS setup program are discarded. The setup program then exits and reboots the controller.

3.6.6.3 Restore Defaults

This option restores all BIOS settings to the factory default. This option is useful if the controller exhibits unpredictable behavior due to an incorrect or inappropriate BIOS setting.

4. Drivers Installation



Note: Installation procedures and screen shots in this section are for your reference and may not be exactly the same as shown on your screen.

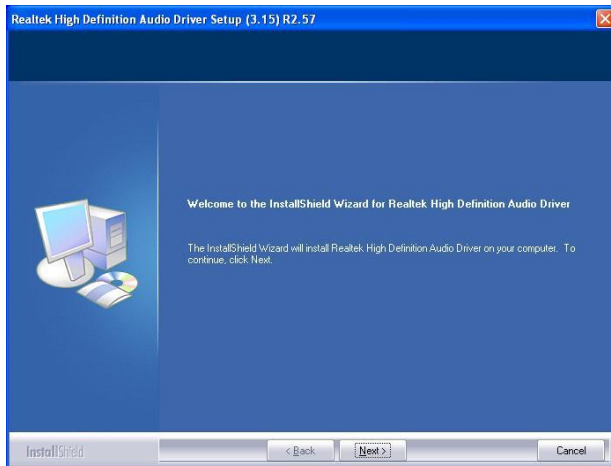
4.1 Install Audio Driver (For AMD A50M High Definition Audio)

Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to

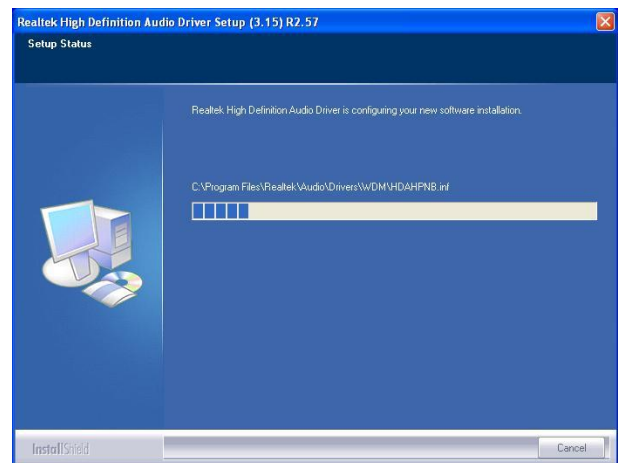
`\\Driver_Audio\\Realtek\\ALC892\\EEV-EX14_Audio`



Note: The installation procedures and screen shots in this section are based on Windows XP operation system. If the warning message appears while the installation process, click Continue to go on.



Step1. Click **Next** to Install..



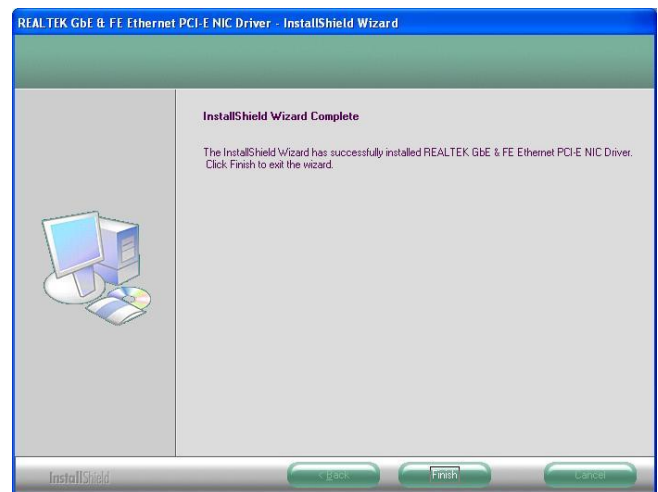
Step 2. Installing.

4.2 Install LAN Driver (For Realtek 8111E Gigabit Ethernet)

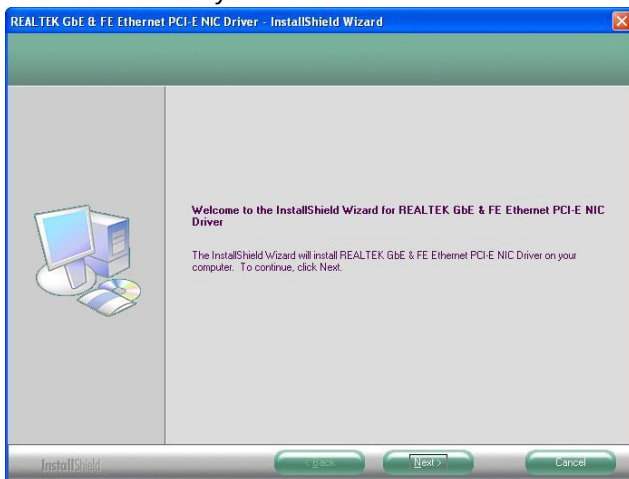
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to \Driver_Gigabit\Realtek\RTL8111E\EEV-EX14_LAN ESM-A50M.



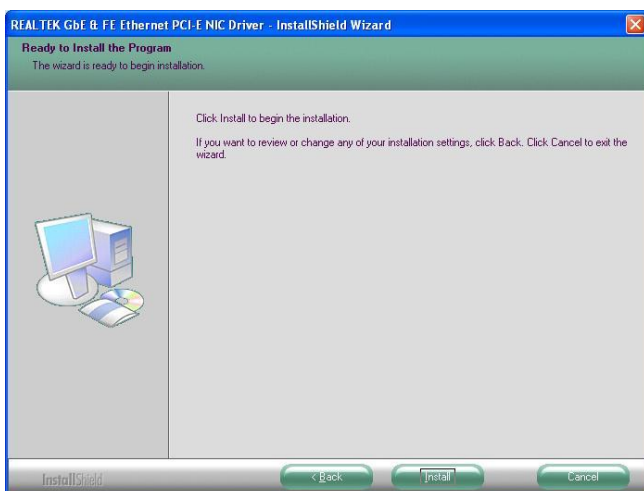
Note: The installation procedures and screen shots in this section are based on Windows XP operation system.



Step 3. Click **Finish** to complete setup.



Step 1. Click **Next** to Install..



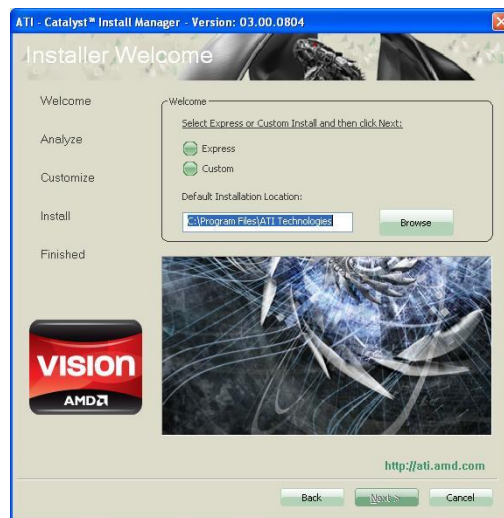
Step 2. Click **Install** to begin the installation.

4.3 Install VGA Driver (For AMD Fusion Accelerated Processors)

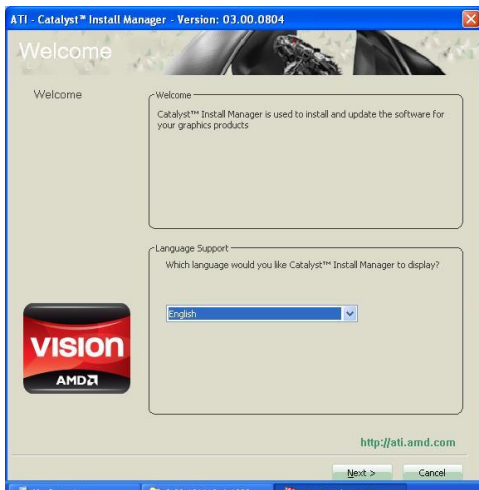
Insert the Supporting DVD-ROM to DVD-ROM drive, and it should show the index page of Avalue's products automatically. If not, locate Index.htm and choose the product from the menu left, or link to **D:\VGA\ESM-A50M-VGA**.



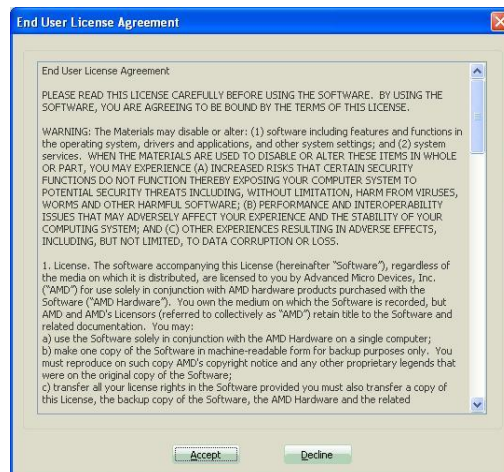
Note: The installation procedures and screen shots in this section are based on Windows XP operation system.



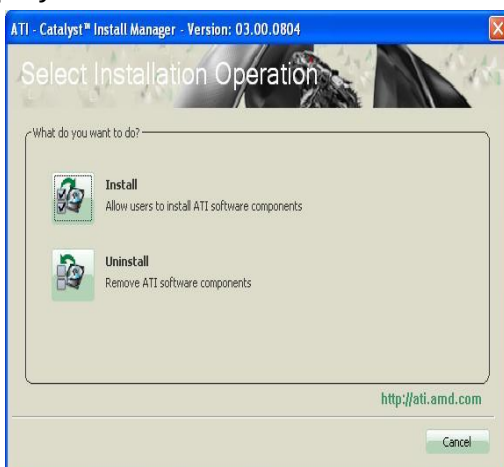
Step 3. Click Next.



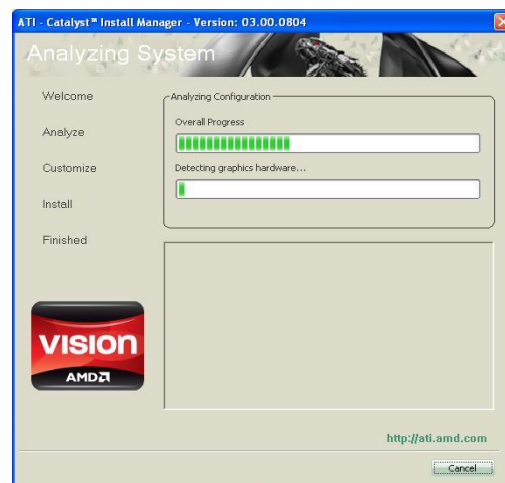
Step 1. Locate 「VGA\ESM-A50M-VGA」 and Select Which language you would like to display.



Step 4. Click Accept to next step.

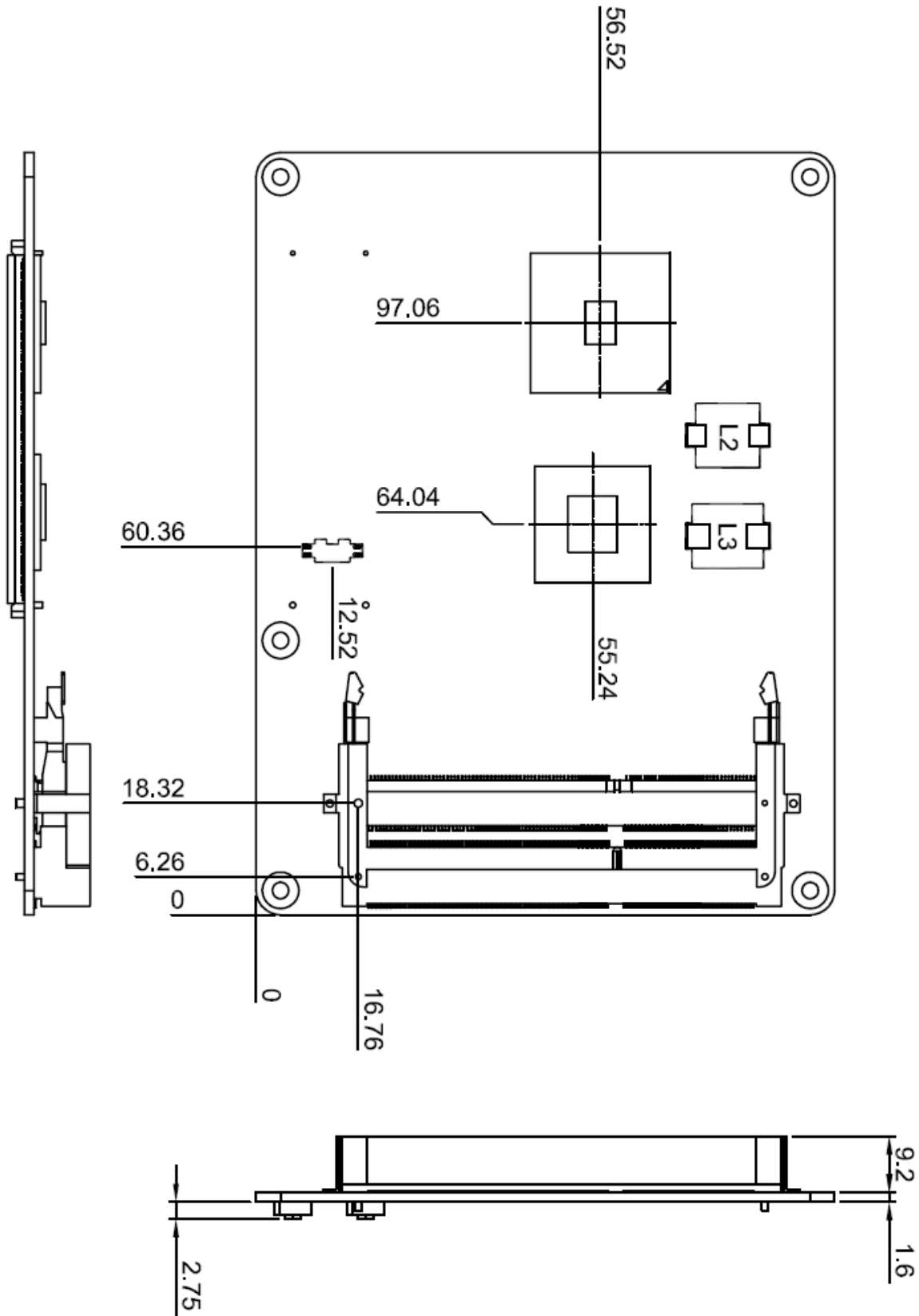


Step 2. Click Install to continue.

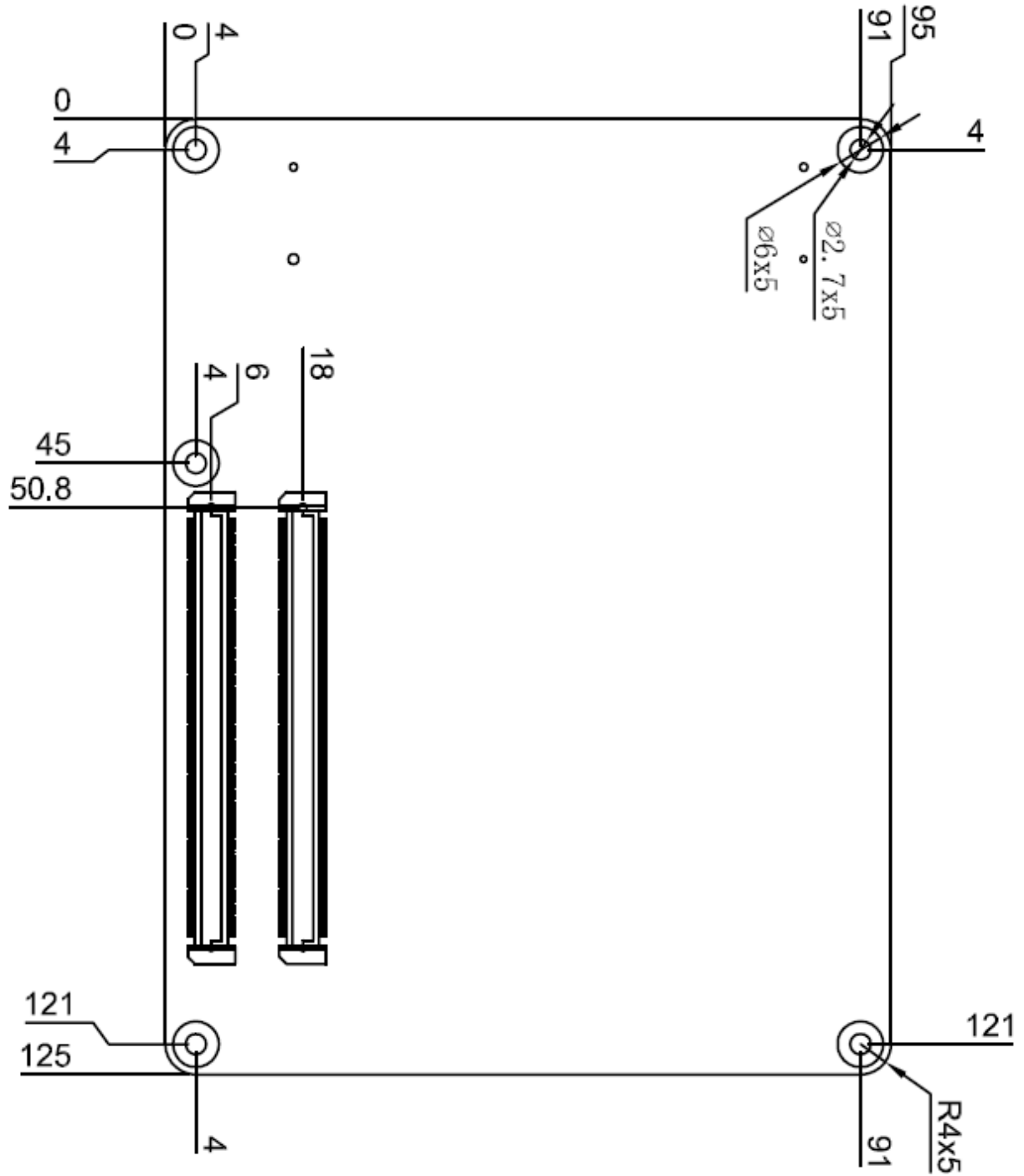


Step 5. Installing.

5. Mechanical Drawing



Unit: mm



Unit: mm