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DELTA_IA-IPC_MH1-S30D_UM_EN_20140822

Delta MH1-S30D User Guide

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User Information

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Table of Contents

Chapter 1 Preface

1.1 Inspection

Please inspect the following items carefully.

1. Package: Make sure the package is complete.
2. Bubble wrap: It can protect the product. Please make sure the sticker is firmly stuck on it.
3. MH1-S30D: Please check if there is any damage shown on its appearance and the accessories are all attached.
4. Installation guide: Check if there is an installation guide.

1.2 Model Explanation

MH1	-	S30	D	-	A	0	0	D0
(1)		(2)	(3)		(4)	(5)	(6)	(7)

<table>
<tr><td>(1)</td><td>Product Type</td><td>MH1 = Motion Control Hub 1st Generation</td></tr>
<tr><td>(2)</td><td>CPU Type</td><td>S30 = VIA Nano X2 Dual Core 1.2GHz</td></tr>
<tr><td>(3)</td><td>Extension Interface</td><td>D = DMCNET</td></tr>
<tr><td>(4)</td><td>Slot Interface</td><td>0 = no extension slot
A = 2 PCI slot
B = 2 PCIE slot x1+x1</td></tr>
<tr><td>(5)</td><td>DRAM & Micro-SD Card Options</td><td><table><tr><th></th><th>DRAM</th><th>micro-SD</th></tr><tr><td>0</td><td>4GB</td><td>-</td></tr><tr><td>1</td><td>4GB</td><td>4GB</td></tr></table></td></tr>
<tr><td>(6)</td><td>CFast Card &SSD Options</td><td><table><tr><th></th><th>CFast</th><th>SSD</th></tr><tr><td>0</td><td>-</td><td>-</td></tr><tr><td>1</td><td>16GB</td><td>-</td></tr><tr><td>4</td><td>16GB</td><td>64GB</td></tr><tr><td>7</td><td>16GB</td><td>128GB</td></tr></table></td></tr>
<tr><td>(7)</td><td>Customer version</td><td>D0 = Standard version</td></tr>
</table>

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Chapter 2 Specifications

2.1 Product Figure

Figure 2.1 Front View

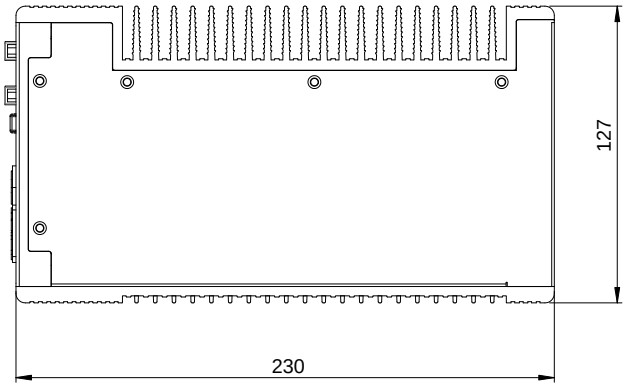
2.2 Specifications and Dimensions of MH1-S30D

2.2.1 Electrical Specifications of MH1-S30D

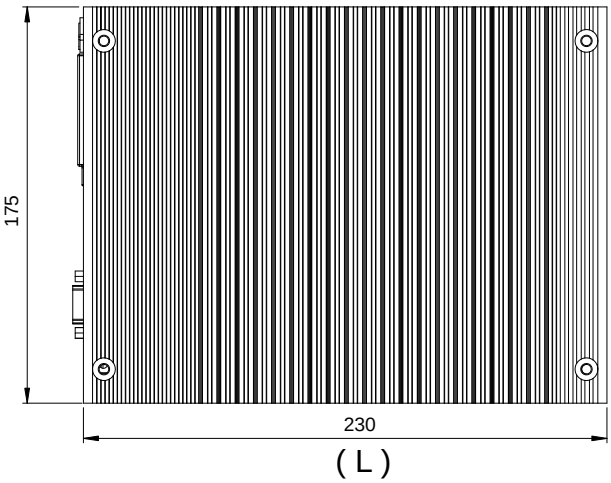
Model Name		MH1-S30D
Processor System	Processor	VIA Nano X2 Dual Core 1.2GHz
	System Chip Set	VIA VX900
	BIOS	AMI BIOS
	System Memory	1 x 4GB DDR3L-1600 800MHz SO-DIMM (Max. up to 8 GB)
Display Interface	CRT	2048 x1536 / 75Hz
	LVDS	-
	HDMI	-
	DVI	-
I/O Interface	Ethernet	2 x IEEE 802.3/802.3u/802.3ab 1Gbps
	Protocol	DMCNET
	USB	4 x USB 2.0
	Serial Port	1 x RS-232 (supports hardware flow control)
	Expansion	2 x PCI slot or 2 x PCIE slot x1
Storage	CFast Card	1 x CFast Card (optional)
	Micro-SD Card	1 x Micro-SD Card (optional)
	Solid State Disk	1 x 2.5" SATA SSD (optional)
Power Requirements	Input Voltage & Type	DC12~30V±10%, ATX
Certification	Safety	CE
Dimensions (W x H x D)		127 x 175 x 250 mm
Operation Temperature		0°C ~50°C
Software Support		Window Embedded, WinCE 7.0, Windows 7, RTX

2.2.2 Dimensions of MH1-S30D

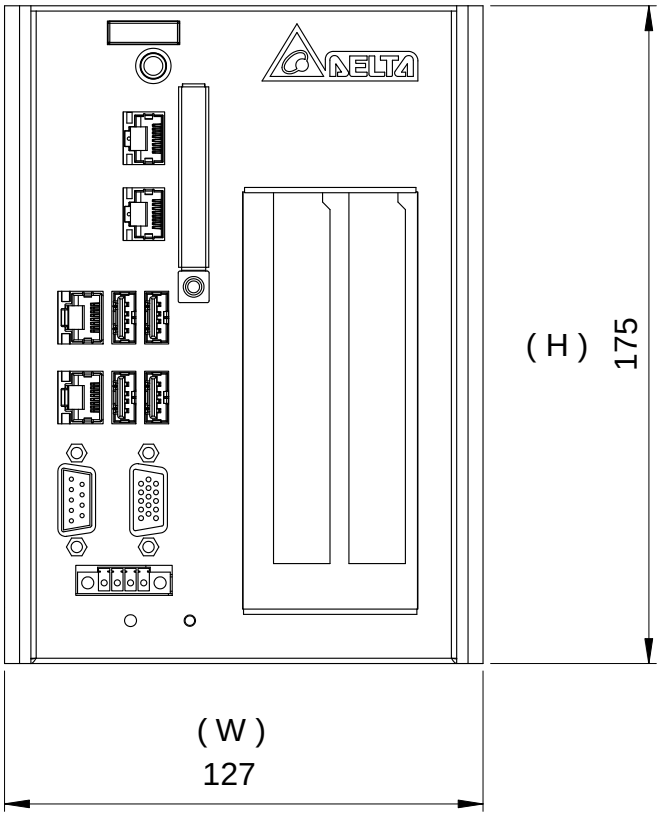
Host dimension of MH1-S30D: 230mm (L) x 127mm (W) x 175mm (H)



▲Bottom view



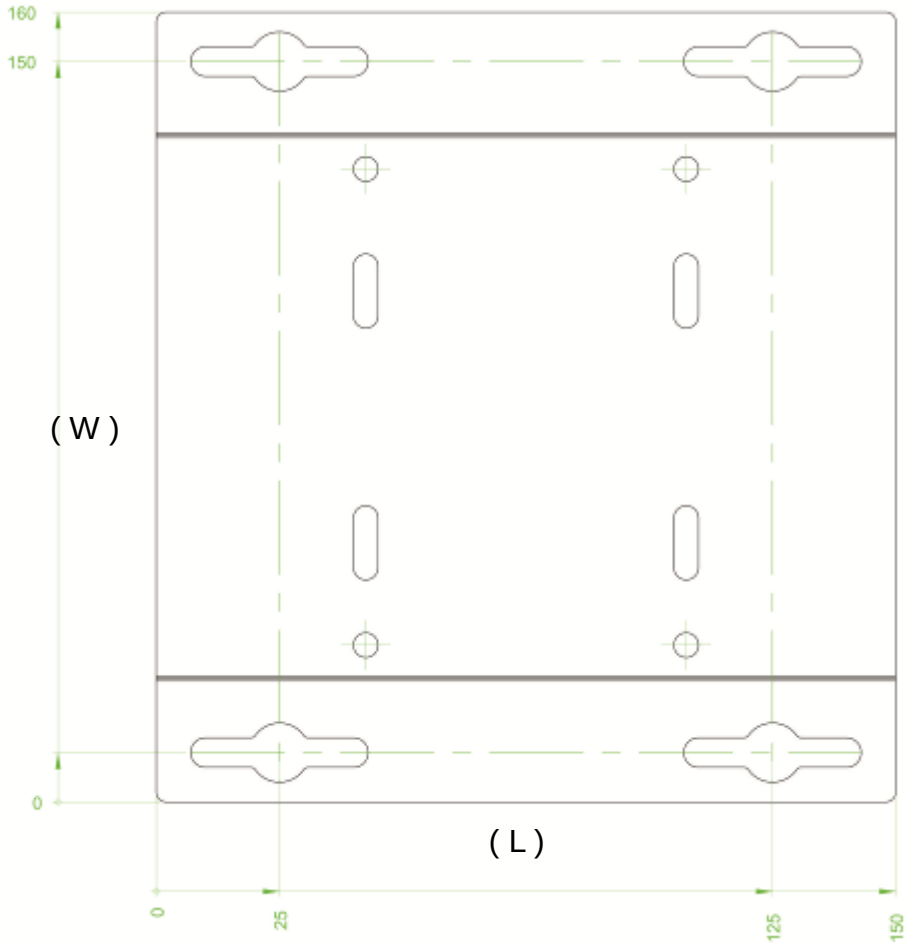
▲Side view



▲Front view

Figure 2.2 Host Dimensions of MH1-S30D

Dimension of MH1-S30DRetainer: 150mm (L) x 160mm (W) x 6mm (H)



▲Front view of base retainer

▲Side view of base retainer

Figure 2.2 MH1-S30D– Dimensions of Base Retainer

Chapter 3 Product Description

3.1 Description of Each Part

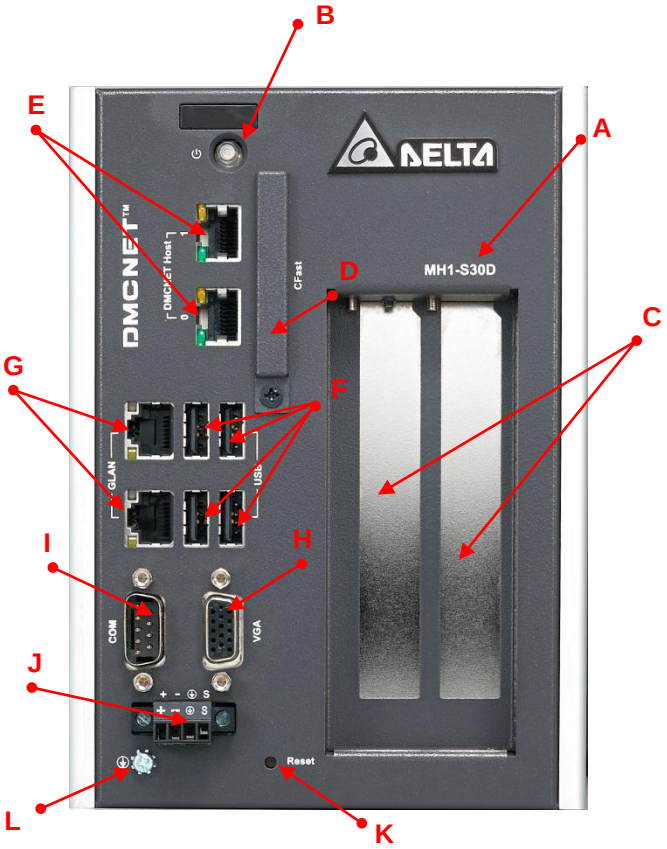


Figure 3.1 MH1-S30D Front View

No.	Description	No.	Description
A	Product ID Number	G	Gigabit LAN
B	Power Switch	H	VGA Connector (D-SUB 15)
C	PCI / PCIE Extension Slot	I	External Serial Port - Comport
D	CFast CompactFlash Memory Card Slot	J	Power Port
E	Connection Port for DMCNET	K	Reset Switch
F	Connection Port for USB	L	Ground Screw

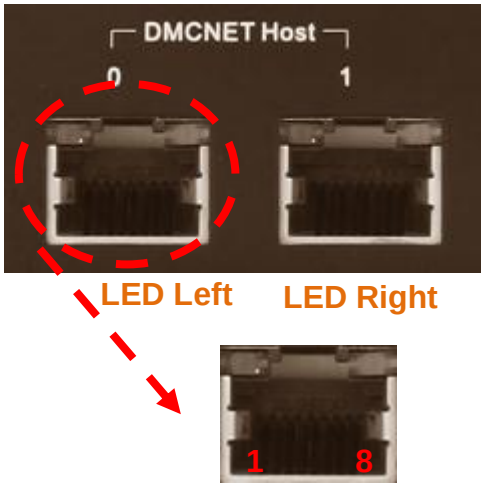


Figure 3.2 Pin Definition of DMCNET

Label	Description
1	1st RS485 Transmission Signal (+)
2	1st RS485 Transmission Signal (-)
3	2nd RS485 Transmission Signal (+)
6	2nd RS485 Transmission Signal (-)
7	External GND
8	External GND
LED Left	Driver Enable Lamp (Yellow)
LED Right	External Power ON Lamp (Green)

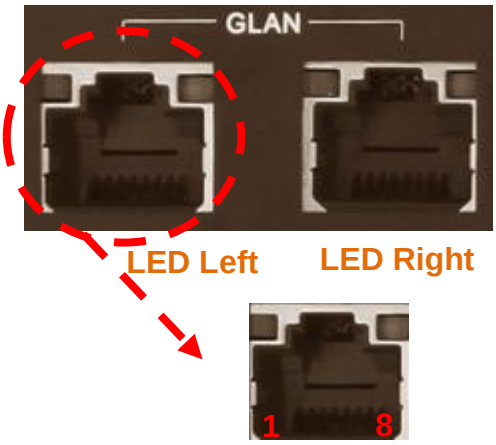


Figure 3.3 Giga LAN Port

Label	Description	
1	Transmitted Data + (TX+)	
2	Transmitted Data - (TX -)	
3	Received Data + (RX+)	
4	NC	
5	NC	
6	Received Data - (RX -)	
7	NC	
8	NC	
LED Left	**ACT/LINK LED** (Yellow)	
LED Right	SPEED LED	Orange: 1000M
		Green: 100M

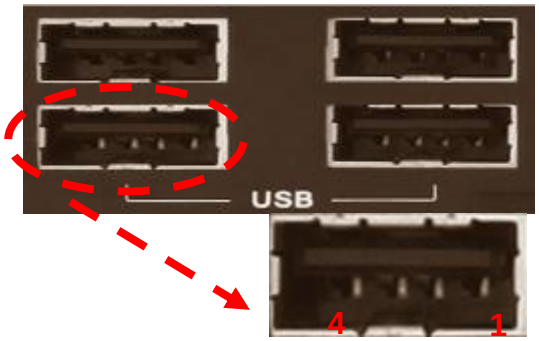


Figure 3.4 Connection Port of USB

Label	Description
1	VCC (+5V)
2	Data -
3	Data +
4	GND

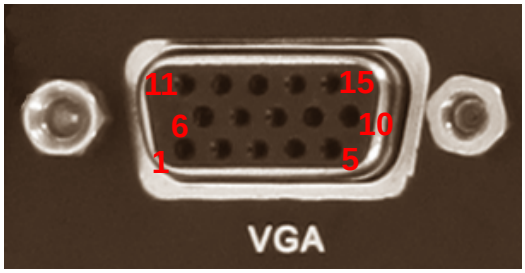


Figure 3.5 Port Definition of VGA

Label	Description	Label	Description
1	Red	9	+5V
2	Green	10	GND
3	Blue	12	SDA
5	GND	13	Horizontal Sync
6	Red GND	14	Vertical Sync
7	Green GND	13	SCL
8	Blue GND	Others	NC

Figure 3.6 Port Definition of VGA

Label	Description
2	Received Data (RX)
3	Transmitted Data (TX)
5	Signal Ground (GND)
7	Request to Send (RTS)
8	Clear to Send (CTS)
Others	NC

Figure 3.7 Power Port Definition

Label	Description
1	Main Power (+24V)
2	Ground (GND)
3	Earth Ground (FGND)
4	UPS Reset Signal (S)

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Chapter 4 Wiring

4.1 Wiring of MH1-S30D Input Point

Wiring of UPS

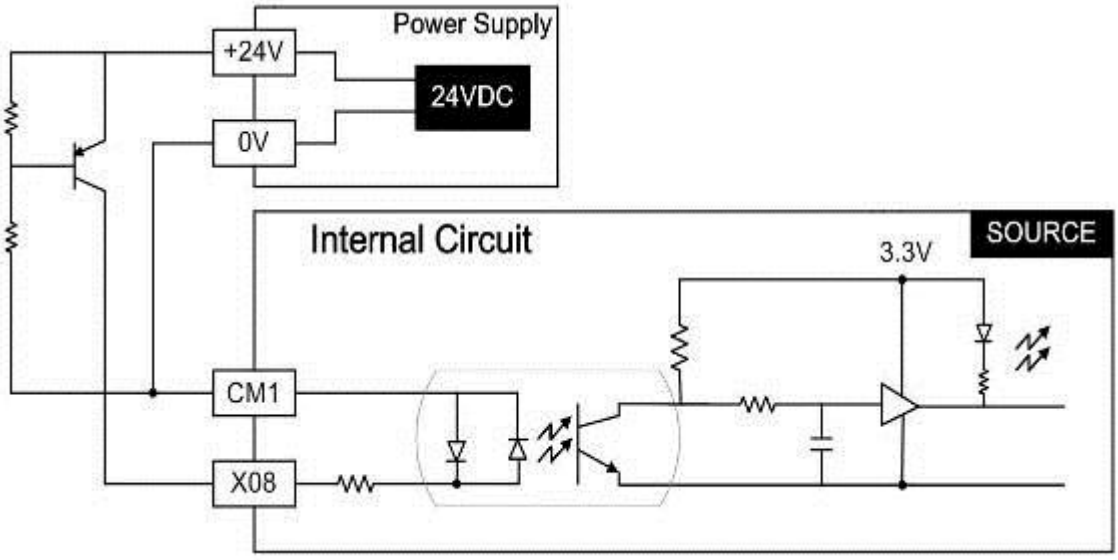

Figure 4.1 Wiring Example of UPS

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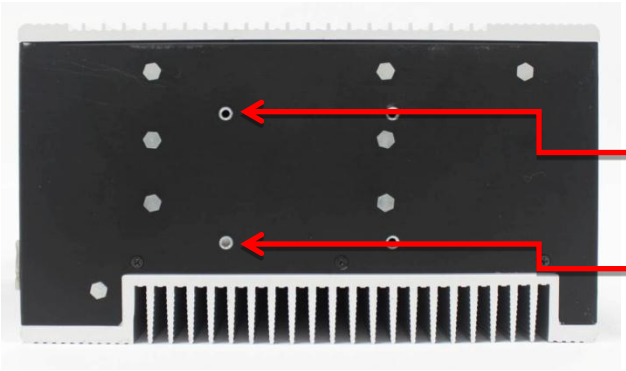
Chapter 5 Disassembling

5.1 Installation and Disassembling Steps

a. Installation steps of disassembling the base retainer:

1. Base plate in figure B and tapped hole in figure A should align.
2. Tighten the attached sole screws (figure C) to fix the base retainer.
3. The completion is shown in figure D.

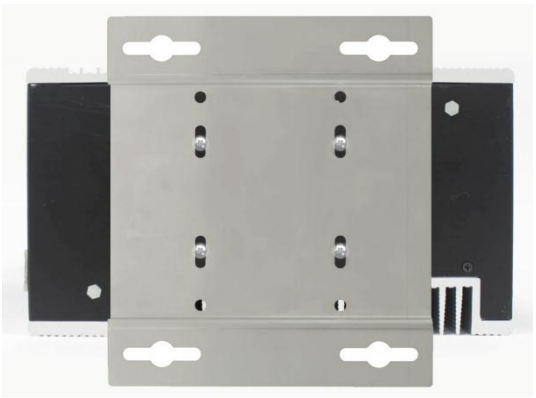
A



B

C

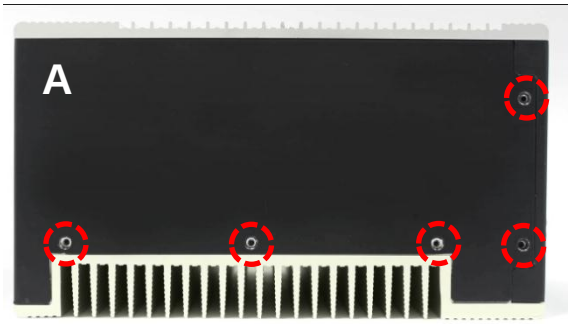
D



b. Install PCI card:

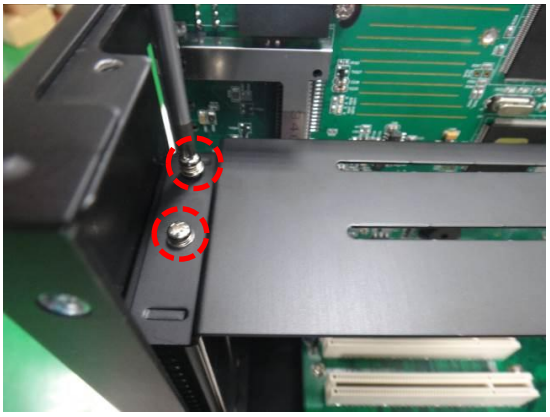
1. Disassemble the thinner heat sink. See the figure below. There are 4 screws in total.

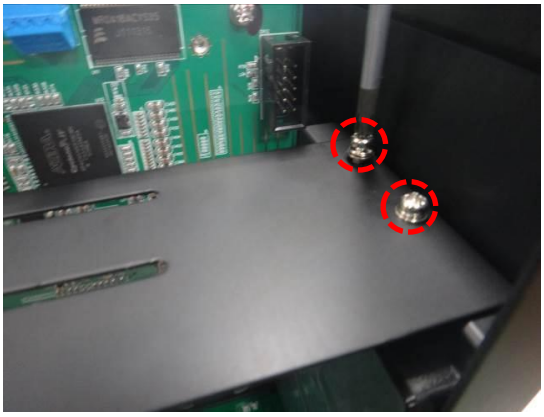
2. Loosen the screws and remove the cover. There are 9 screws in total, which locate at the top (figure A) and in the back (figure B).



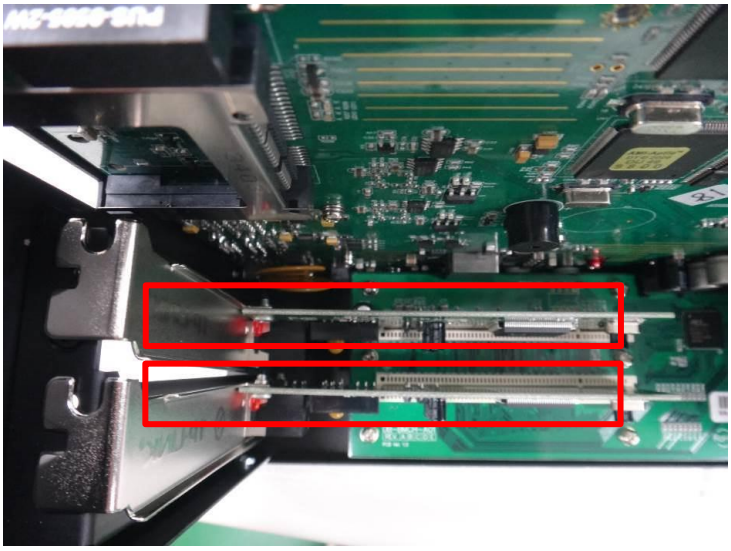
3. Then, remove the cover. (figure C).

4. Loosen the screws inside PCI. There are 4 in total (2 on the left and 2 on the right).

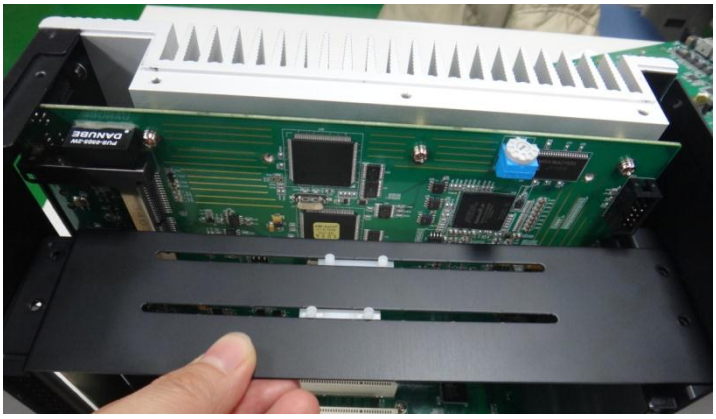




5. Install the PCI card into the slot. See the figure below.

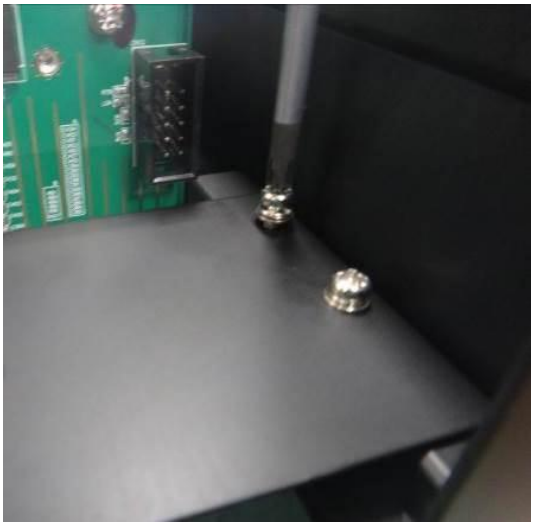


6. Tighten the screws to fix PCI Card.

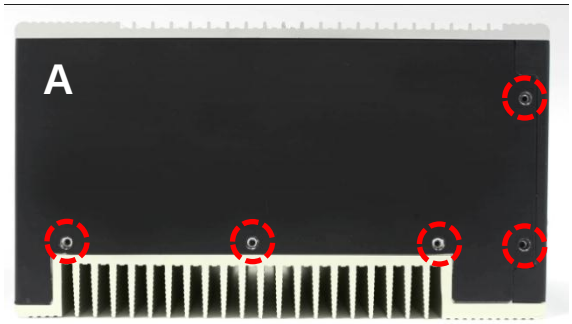


7. Tighten the screws inside PCI. There are 4 in total (2 on the left and 2 on the right).

Do not forget the **BRACKET**.

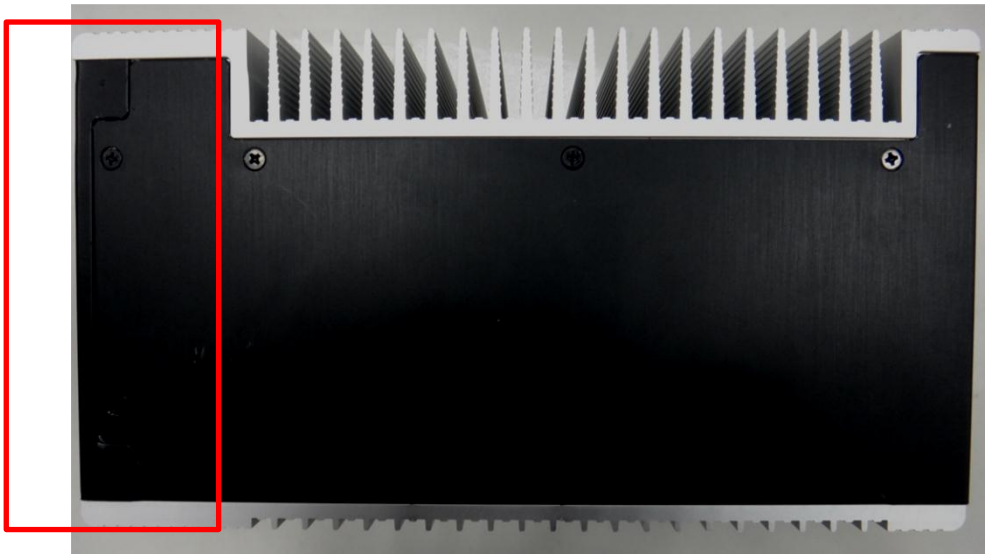


8. Tighten the screws back, which locate at the top (figure A) and in the back (figure B).

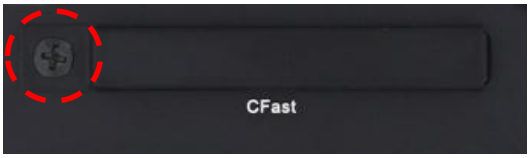


9. Install the heat sink. (Tighten the 4 screws back.)

※ Make sure the direction of two heat sinks has to be correct.

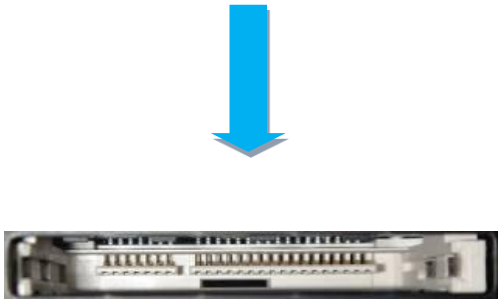


c. Install CFast Card



1. Loosen the screw on CFast protecting masking in the front and remove the masking.

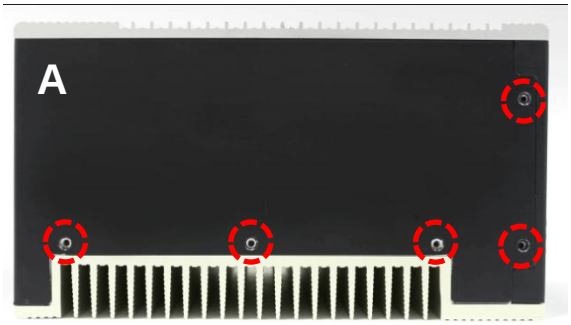
2. Aim the arrowhead of CFast Card at the slot. The sticker side should face PCI card. Insert the card in parallel direction.



d. Install SSD Hardware

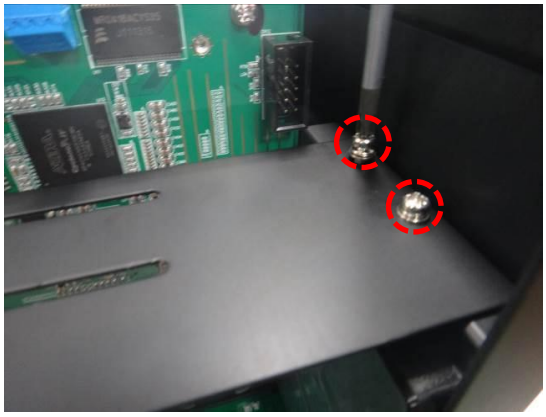
1. Disassemble the thinner heat sink. See the figure below. There are 4 screws in total.

2. Loosen the screws and remove the cover. There are 9 screws in total, which locate at the top (figure A) and in the back (figure B).



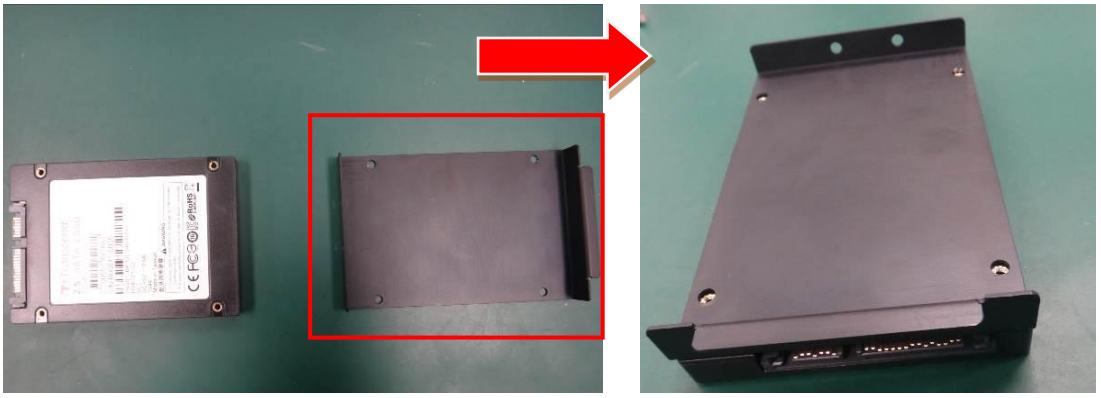
3. Then, remove the cover (figure C).

4. Loosen the screws inside PCI. There are 4 in total (2 on the left and 2 on the right).

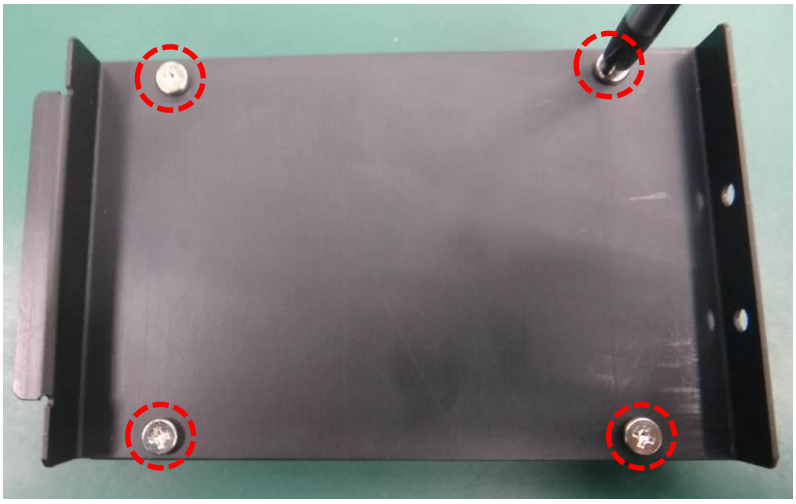


5. Then, disassemble the back cover. See the figure below. Loose the two screws.

6. Place the disassembled back cover on SSD card. See the right figure below.



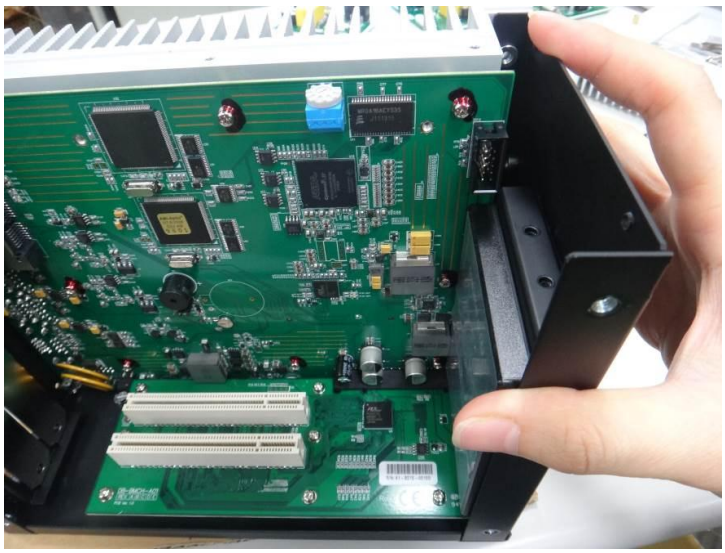
7. Tighten the 4 screws (attached with SSD card).



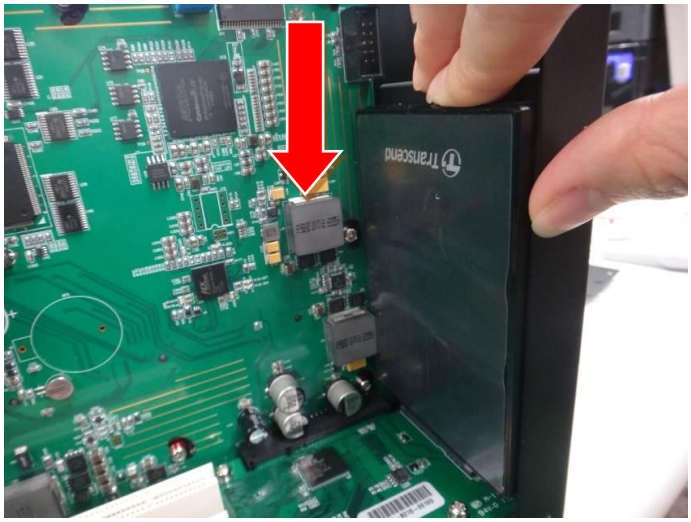
8. Then, place the SSD card into the back cover. (Follow the direction which shown in the figure.)

Follow the arrow and put the cover in.

9. Place the back cover back to the mechanism.



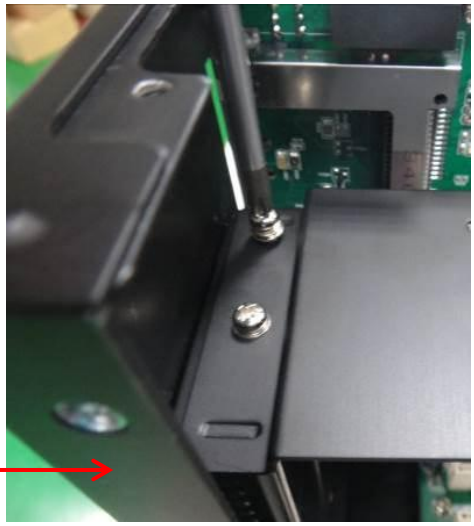
10. Slightly press it to insert the SSD card. Follow the arrow.



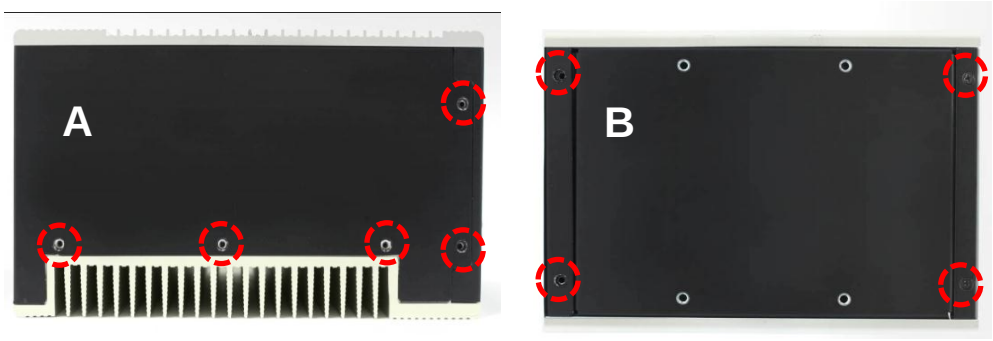
11. Tighten the screws on the back cover.

12. Tighten the screws inside PCI. There are 4 in total (2 on the left and 2 on the right).

Do not forget the **BRACKET.**

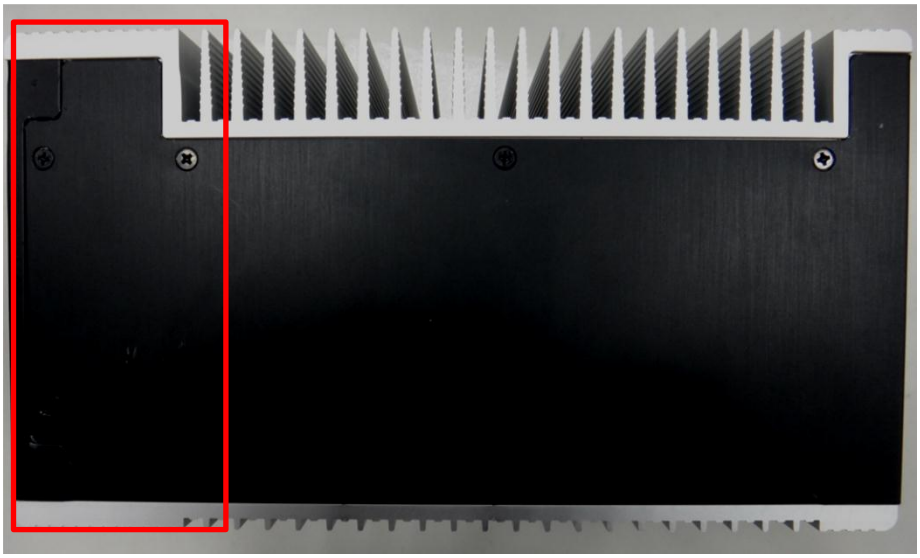


13. Tighten the screws back, which locate at the top (figure A) and in the back (figure B).



9. Install the heat sink. (Tighten the 4 screws back.)

※ Make sure the direction of two heat sinks has to be correct.



Chapter 6 Operation of BIOS

6.1 BIOS Program Setup

6.1.1 Entering BIOS Setup Page

"Press <Del> or <F2> to enter setup" will be shown after starting up. Press <Del> or <F2> key to enter the setup page of BIOS.

6.1.2 Use of Function Keys

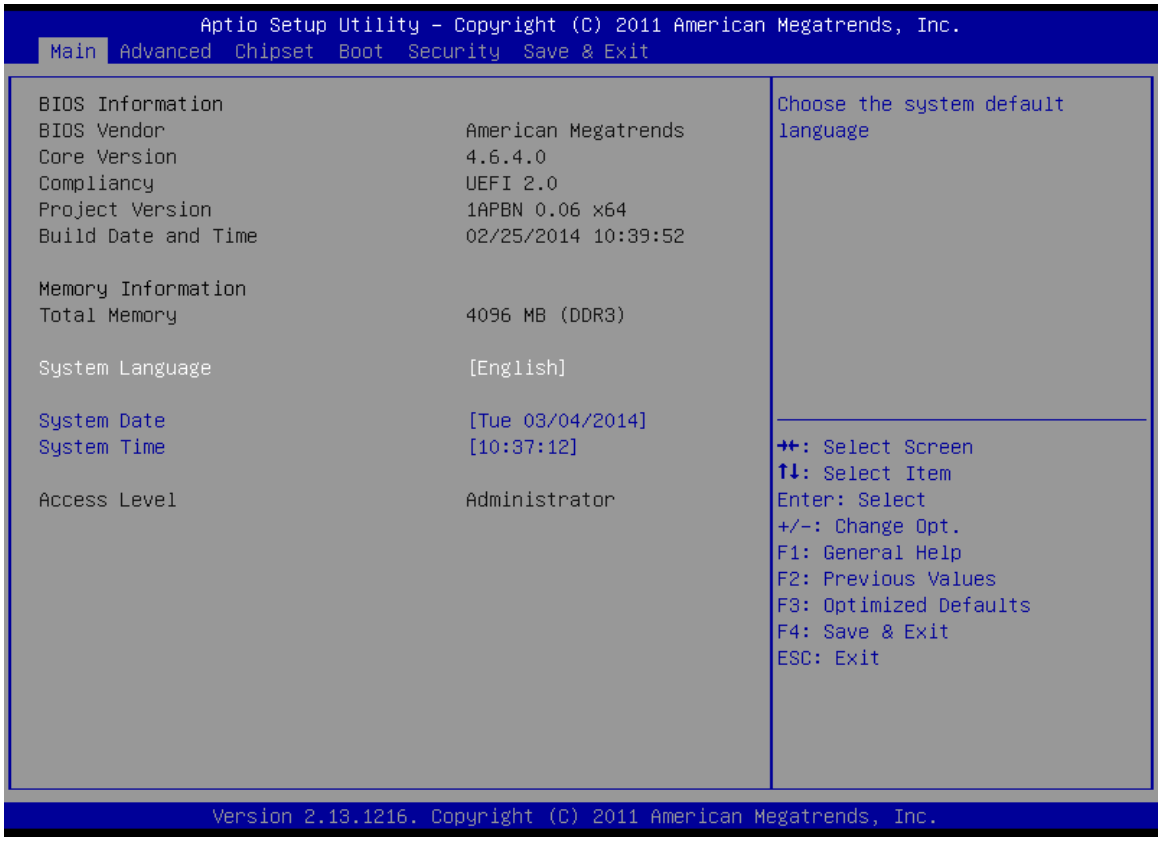
↑↓← →:	Move to Select Screen and Item
Enter:	Enter or Select the Item
+ , -:	Adjust the value
Esc:	Exit the program
F1:	General Help
F2:	Previous Values
F3:	Optimized Defaults (Restore Defaults)
F4:	Save the current setting

6.1.3 Program Menu

Main:	Basic Setup
Advanced:	Advanced Setup
Chipset:	Chipset Setup
Boot:	Power Setup
Security:	Security Setup
Save & Exit:	Set up and Exit

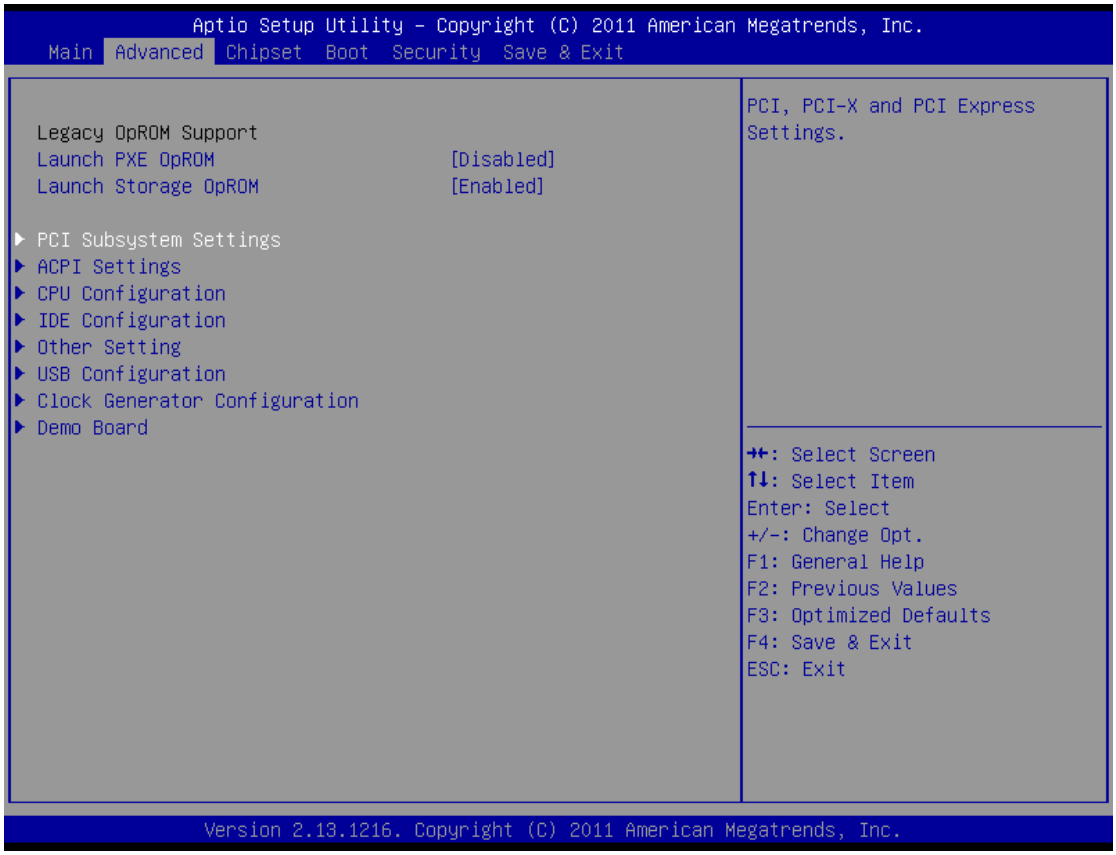
(←, → can be used to browse each menu)

6.2 Main



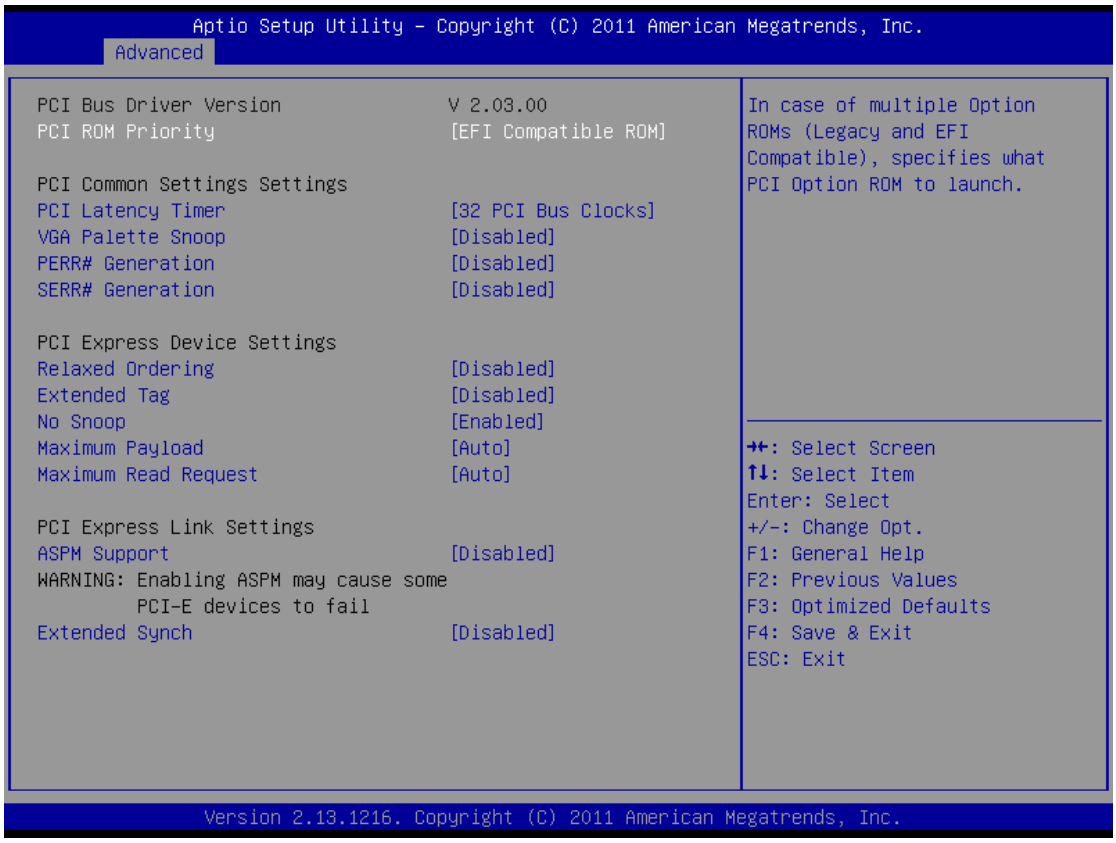
Item	Default	Description
System Language	English	
System Date		System Date Setup
System Time		System Time Setup

6.3 Advanced



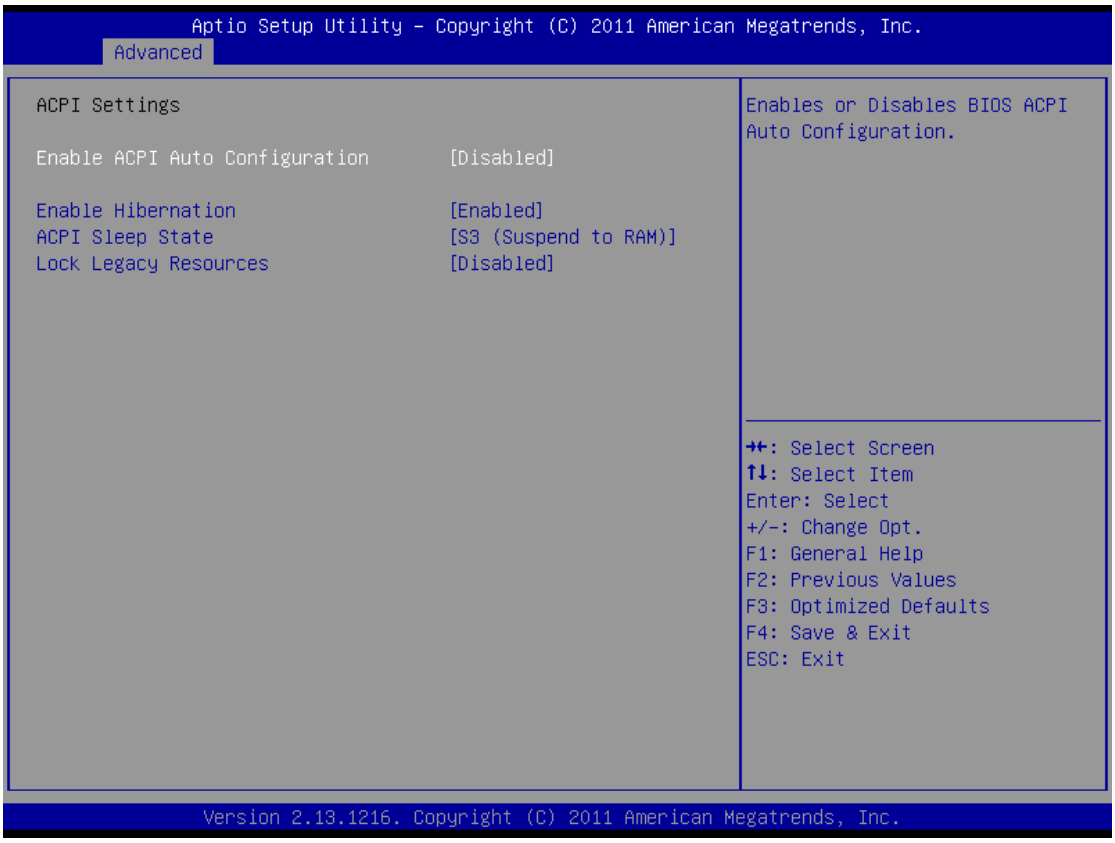
Item	Default	Description
Launch PXE OpROM	Disabled	
Launch Storage OpROM	Enabled	
PCI Subsystem Settings		
ACPI Settings		
CPU Configuration		
IDE Configuration		
Other Setting		
USB Configuration		
Clock Generator Configuration		
Demo Board		

6.3.1 PCI Subsystem Settings



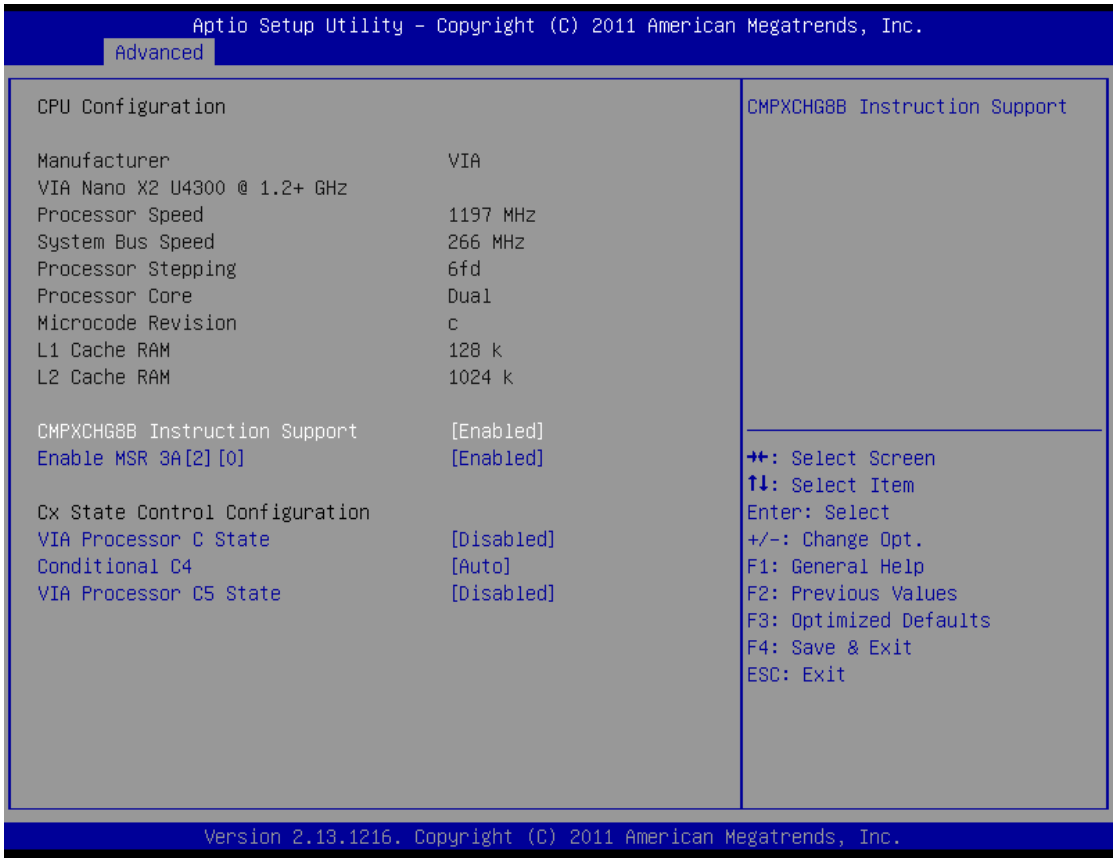
Item	Default	Description
PCI ROM Priority	EFI Compatible ROM	
PCI Latency Timer	32 PCI Bus Clocks	
VGA Palette Snoop	Disabled	
PERR# Generation	Disabled	
SERR# Generation	Disabled	
Relaxed Ordering	Disabled	
Extended Tag	Disabled	
No Snoop	Enabled	
Maximum Payload	Auto	
Maximum Read Request	Auto	
ASPM Support	Disabled	
Extended Synch	Disabled	

6.3.2 ACPI Settings



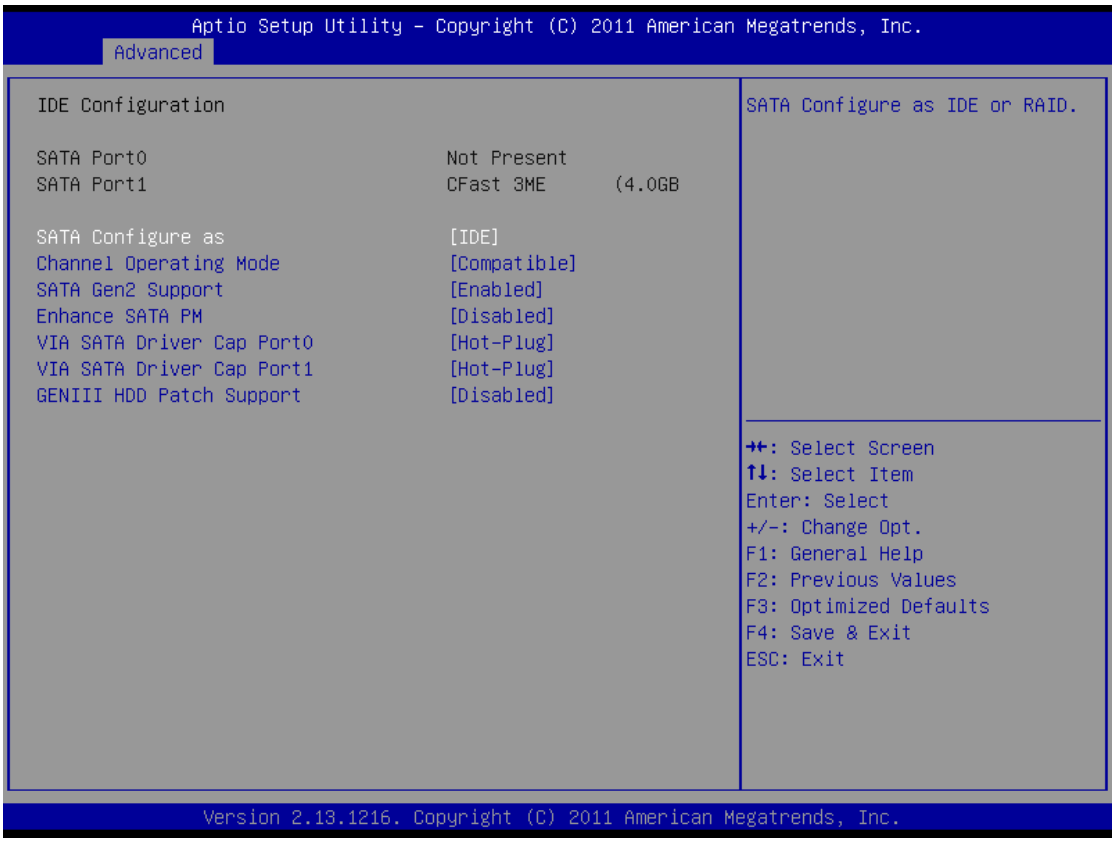
Item	Default	Description
Enable ACPI Auto Configuration	Disabled	
Enable Hibernation	Enabled	
ACPI Sleep State	S3 (Suspend to RAM)	
Lock Legacy Resources	Disabled	

6.3.3 CPU Configuration



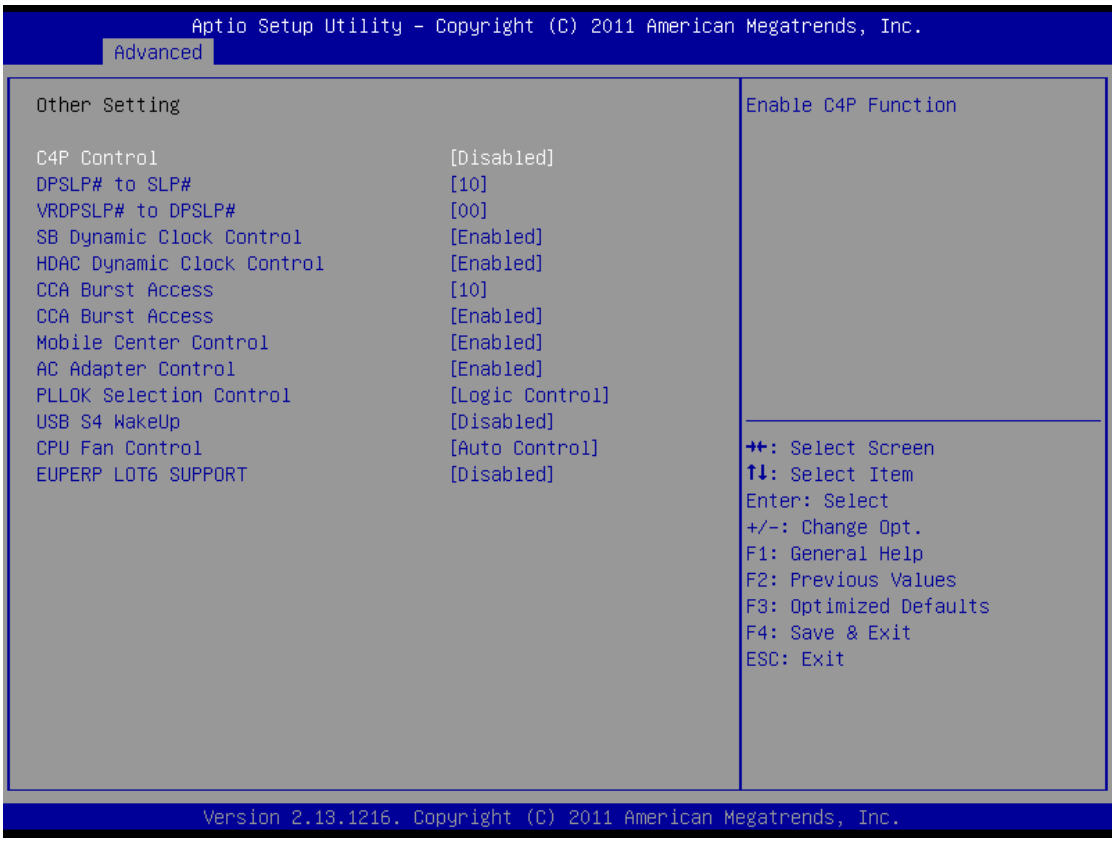
Item	Default	Description
CMPXCHG8B Instruction Support	Enabled	
Enable MSR 3A [2] [0]	Enabled	
VIA Processor C State	Disabled	
Conditional C4	Auto	
VIA Processor C5 State	Disabled	

6.3.4 IDE Configuration



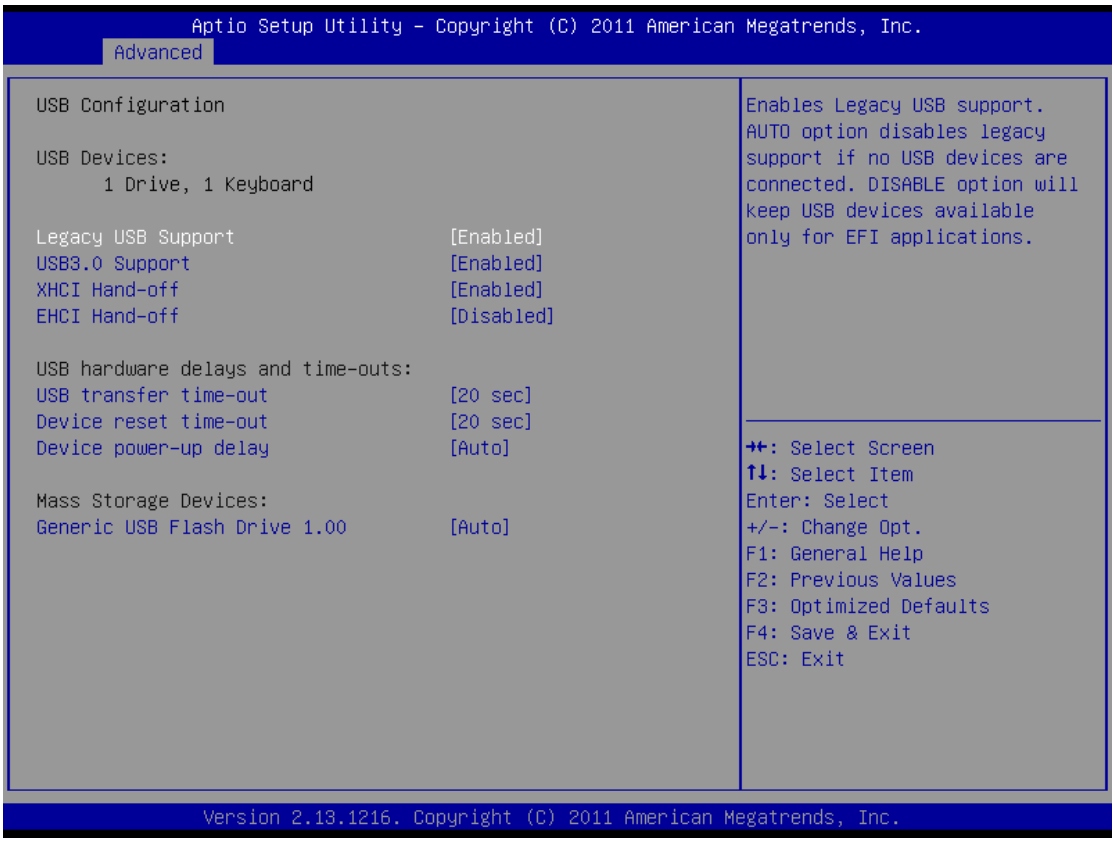
Item	Default	Description
SATA Configure as	IDE	
Channel Operating Mode	Compatible	
SATA Gen2 Support	Enabled	
Enhance SATA PM	Disabled	
VIA SATA Driver Cap Port0	Hot-Plug	
VIA SATA Driver Cap Port1	Hot-Plug	
GENIII HDD Patch Support	Disabled	

6.3.5 Other Setting



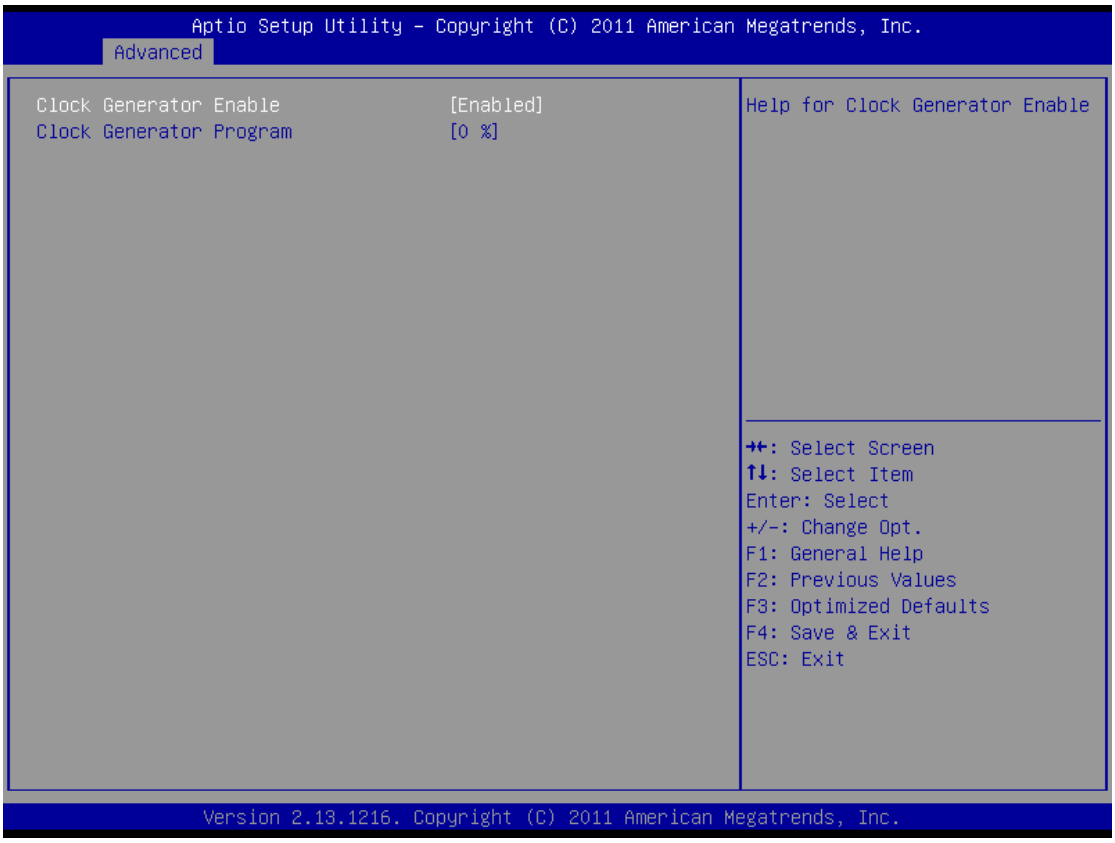
Item	Default	Description
C4P Control	Disabled	
DPSLP# to SLP#	10	
VRDPSLP# to DPSLP#	00	
SB Dynamic Clock Control	Enabled	
HDAC Dynamic Clock Control	Enabled	
CCA Burst Access	10	
CCA Burst Access	Enabled	
Mobile Center Control	Enabled	
AC Adapter Control	Enabled	
PLLOK Selection Control	Logic Control	
USB S4 Wakeup	Disabled	
CPU Fan Control	Auto Control	
EUPERP LOT6 SUPPORT	Disabled	

6.3.6 USB Configuration



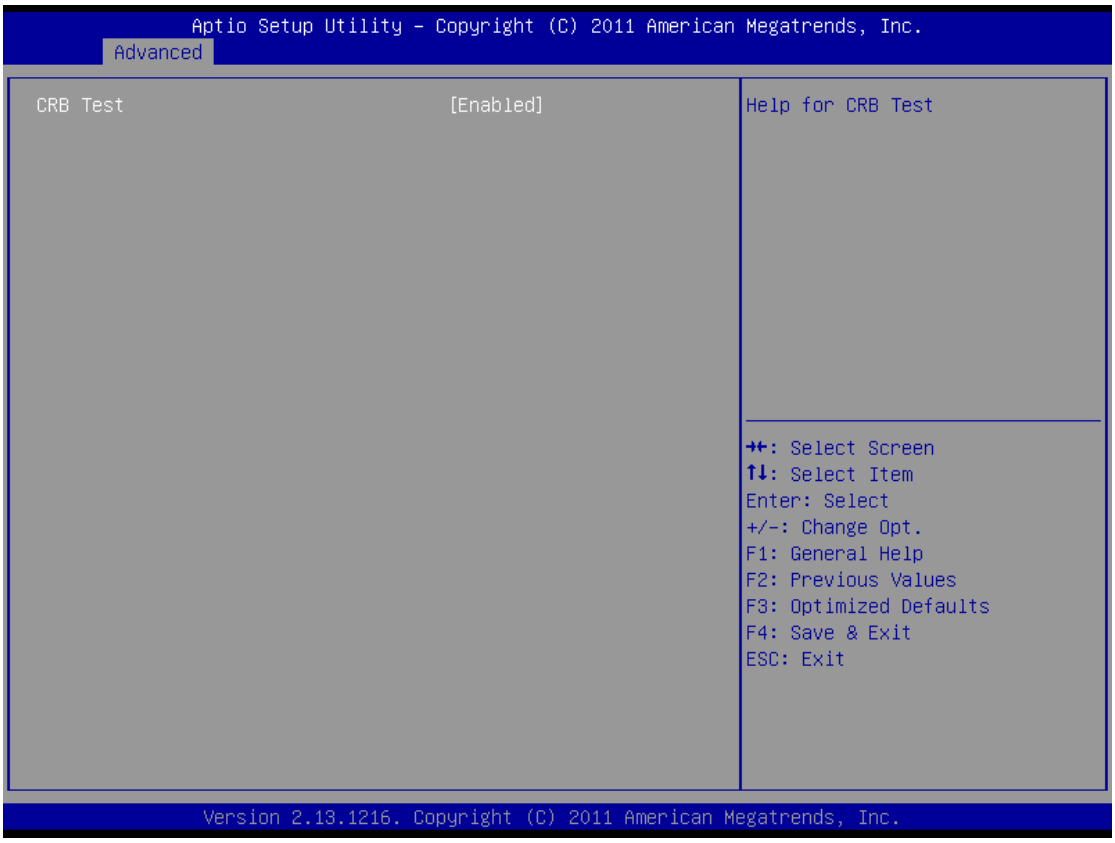
Item	Default	Description
Legacy USB Support	Enabled	
USB3.0 Support	Enabled	
XHCI Hand-off	Enabled	
EHCI Hand-off	Disabled	
USB transfer time-out	20 sec	
Device reset time-out	20 sec	
Device power-up delay	Auto	
Generic USB Flash Drive 1.00	Auto	

6.3.7 Clock Generator Configuration



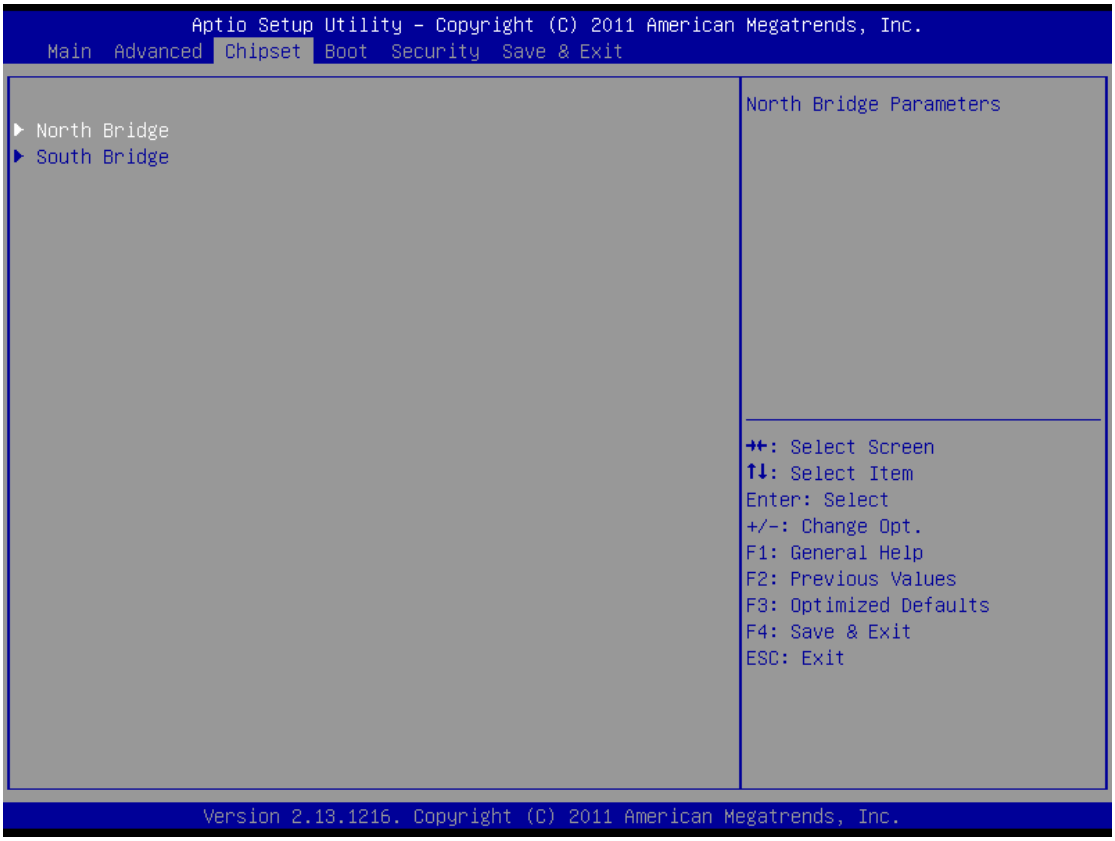
Item	Default	Description
Clock Generator Enable	Enabled	
Clock Generator Program	0 %	

6.3.8 Demo Board



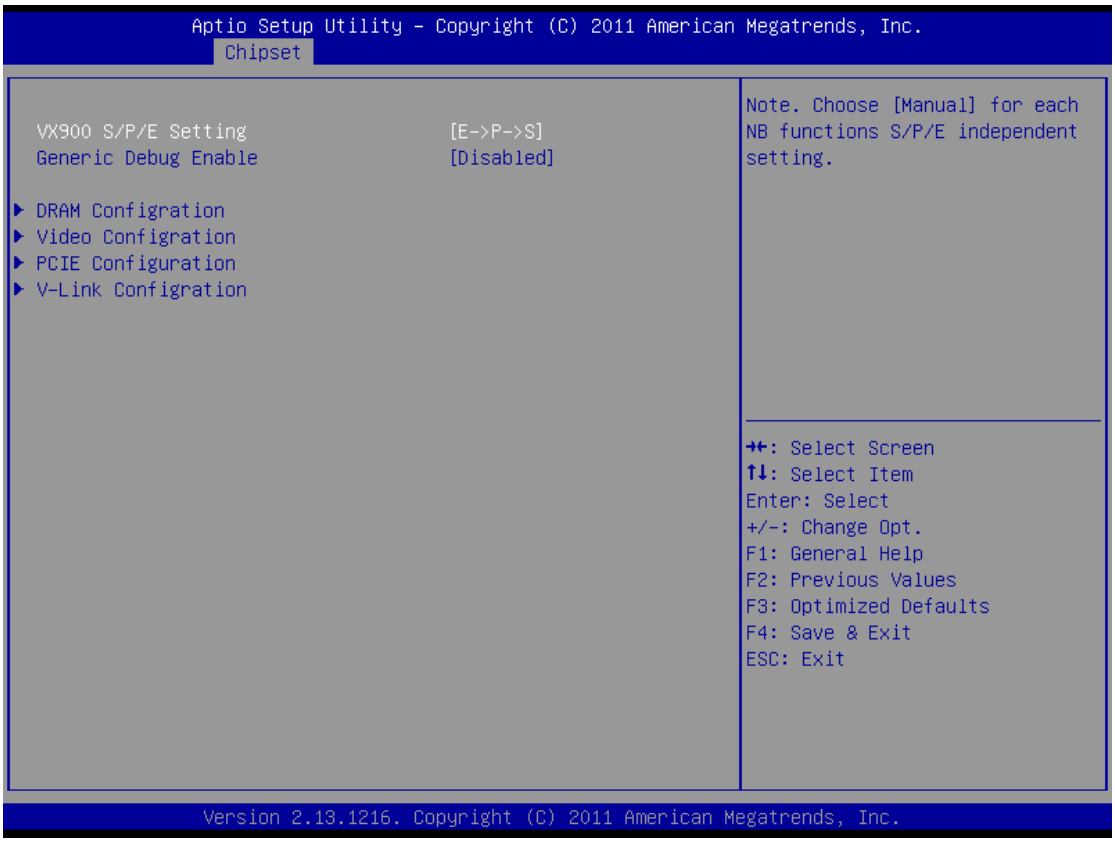
Item	Default	Description
CRB Test	Enabled	

6.4 Chipset



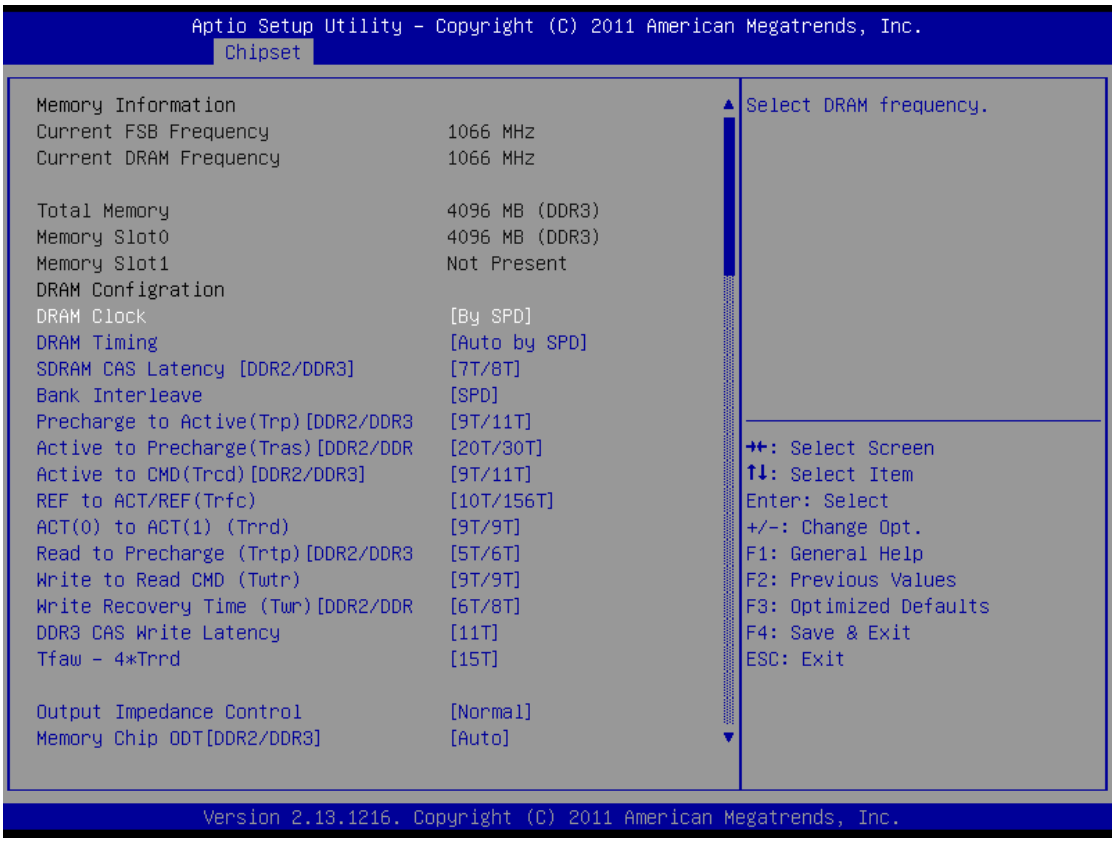
Item	Default	Description
North Bridge		
South Bridge		

6.4.1 North Bridge

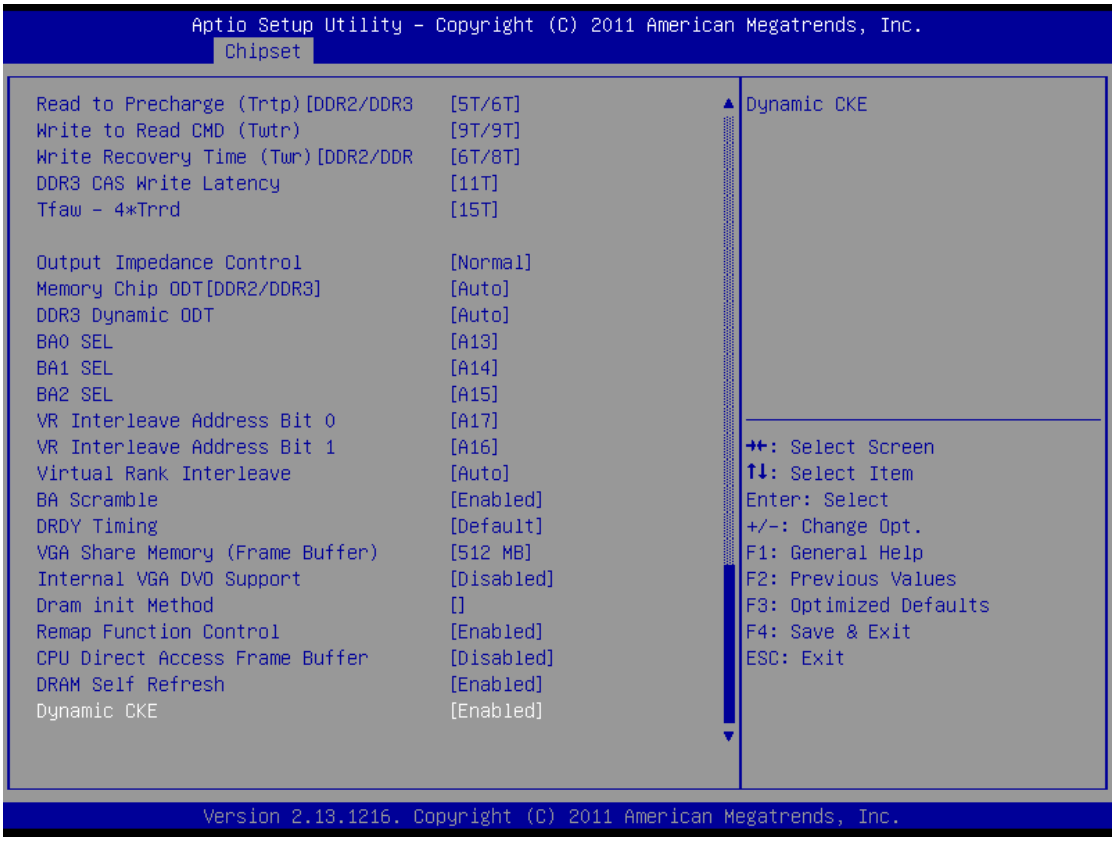


Item	Default	Description
VX900 S/P/E Setting	E->P->S	
Generic Debug Enable	Disabled	
DRAM Configuration		
Video Configuration		
PCIE Configuration		
V-Link Configuration		

6.4.1.1 DRAM Configuration

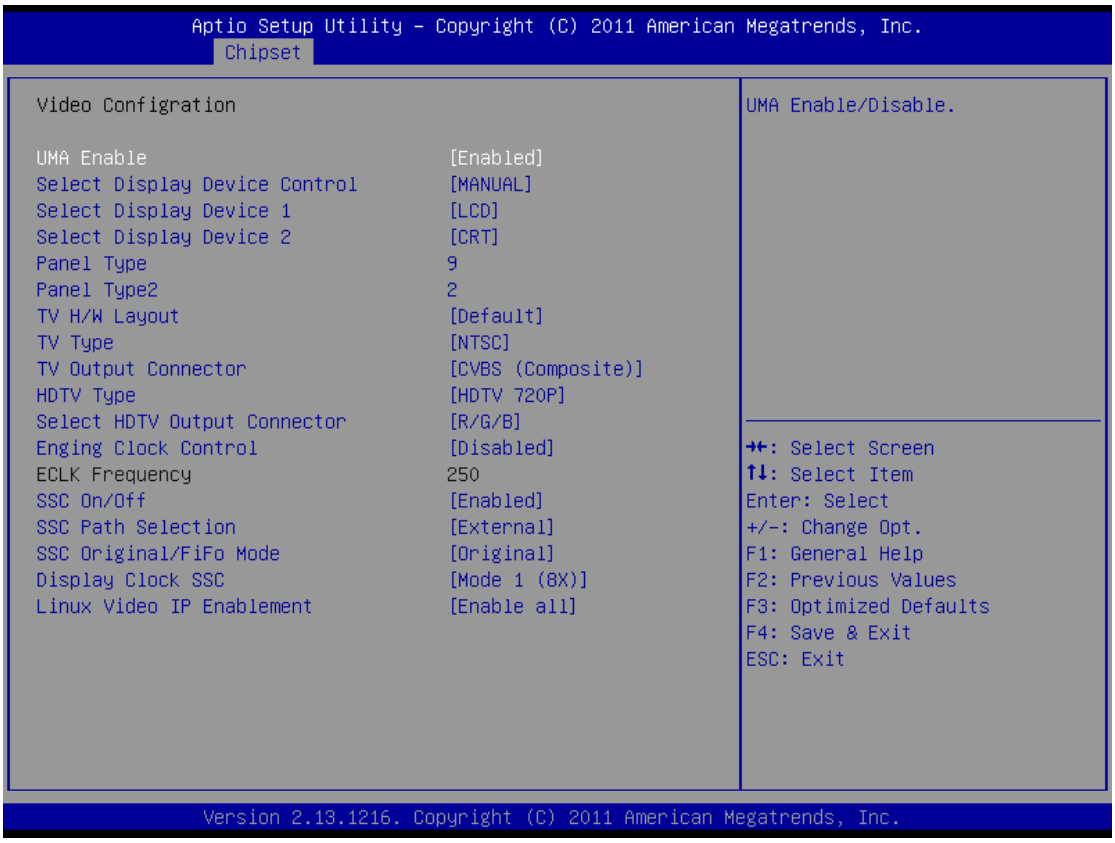


Item	Default	Description
DRAM Clock	By SPD	
DRAM Timing	Auto by SPD	
SDRAM CAS Latency	7T/8T	
Bank Interleave	SPD	
Precharge to Active (Trp)	9T/11T	
Active to Precharge (Tras)	20T/30T	
Active to CMD (Trcd)	9T/11T	
REF to ACT/REF (Tric)	10T/156T	
ACT(0) to ACT(1) (Trrd)	9T/9T	
Read to Precharge (Trtp)	5T/6T	
Write to Read CMD (Twtr)	9T/9T	
Write Recovery Time (Twr)	6T/8T	
DDR3 CAS Write Latency	11T	
Tfaw – 4*Trrd	15T	



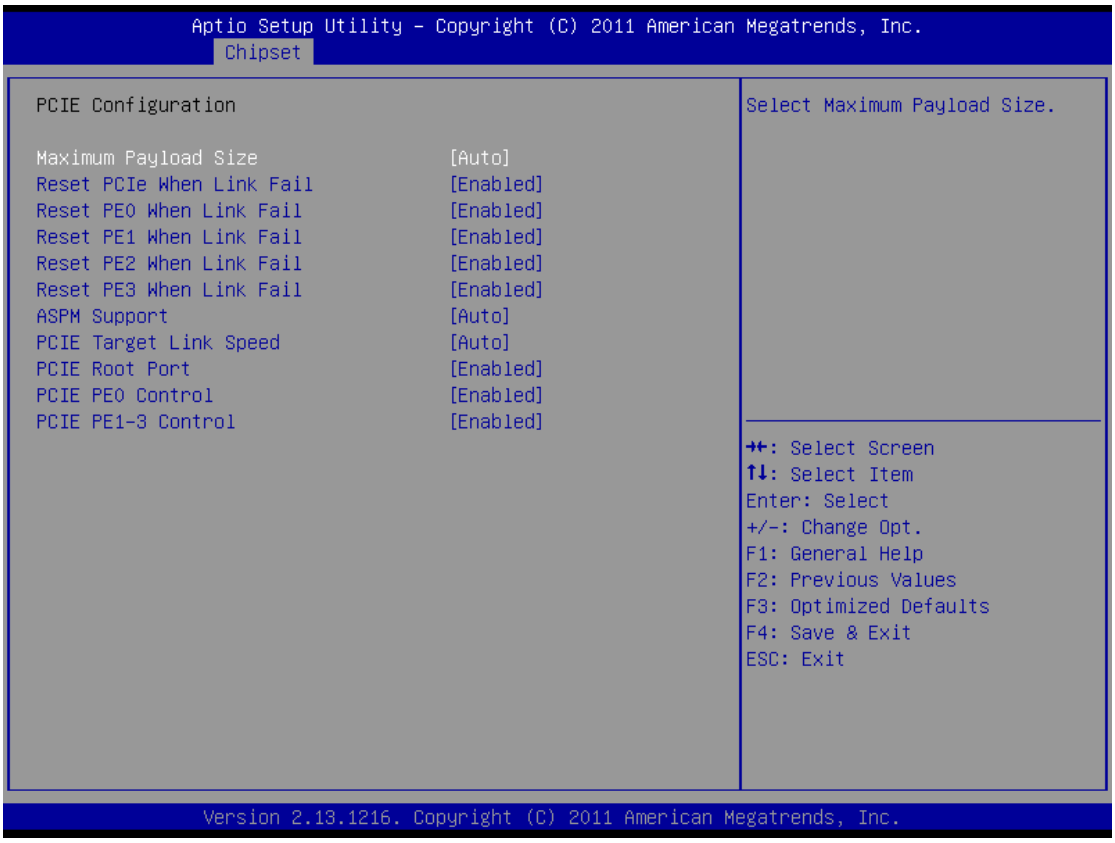
Item	Default	Description
Output Impedance Control	Normal	
Memory Chip ODT	Auto	
DDR3 Dynamic ODT	Auto	
BA0 SEL	A13	
BA1 SEL	A14	
BA2 SEL	A15	
VR Interleave Address Bit 0	A17	
VR Interleave Address Bit 1	A16	
Virtual Rank Interleave	Auto	
BA Scramble	Enabled	
DRDY Timing	Default	
VGA Share Memory (Frame Buffer)	512 MB	
Internal VGA DV0 Support	Disabled	
Dram init Method		
Remap Function Control	Enabled	
CPU Direct Access Frame Buffer	Disabled	
DRAM Self Refresh	Enabled	
Dynamic CKE	Enabled	

6.4.1.2 Video Configuration



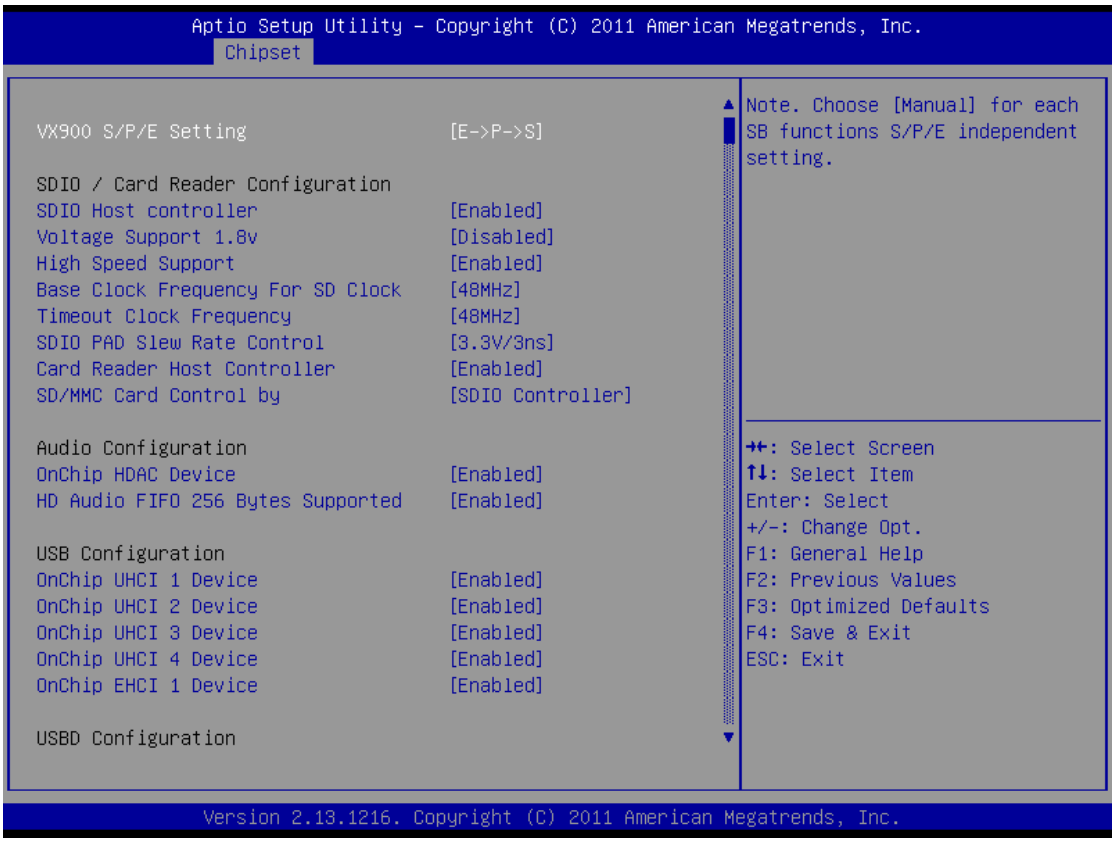
Item	Default	Description
UMA Enable	Enabled	
Select Display Device Control	MANUAL	
Select Display Device 1	LCD	
Select Display Device 2	CRT	
Panel Type	9	
Panel Type2	2	
TV H/W Layout	Default	
TV Type	NTSC	
TV Output Connector	CVBS (Composite)	
HDTV Type	HDTV 720P	
Select HDTV Output Connector	R/G/B	
Engine Clock Control	Disabled	
SSC On/Off	Enabled	
SSC Path Selection	External	
SSC Original/FiFo Mode	Original	
Display Clock SSC	Mode 1 (8X)	
Linux Video IP Enablement	Enabled all	

6.4.1.3 PCIE Configuration

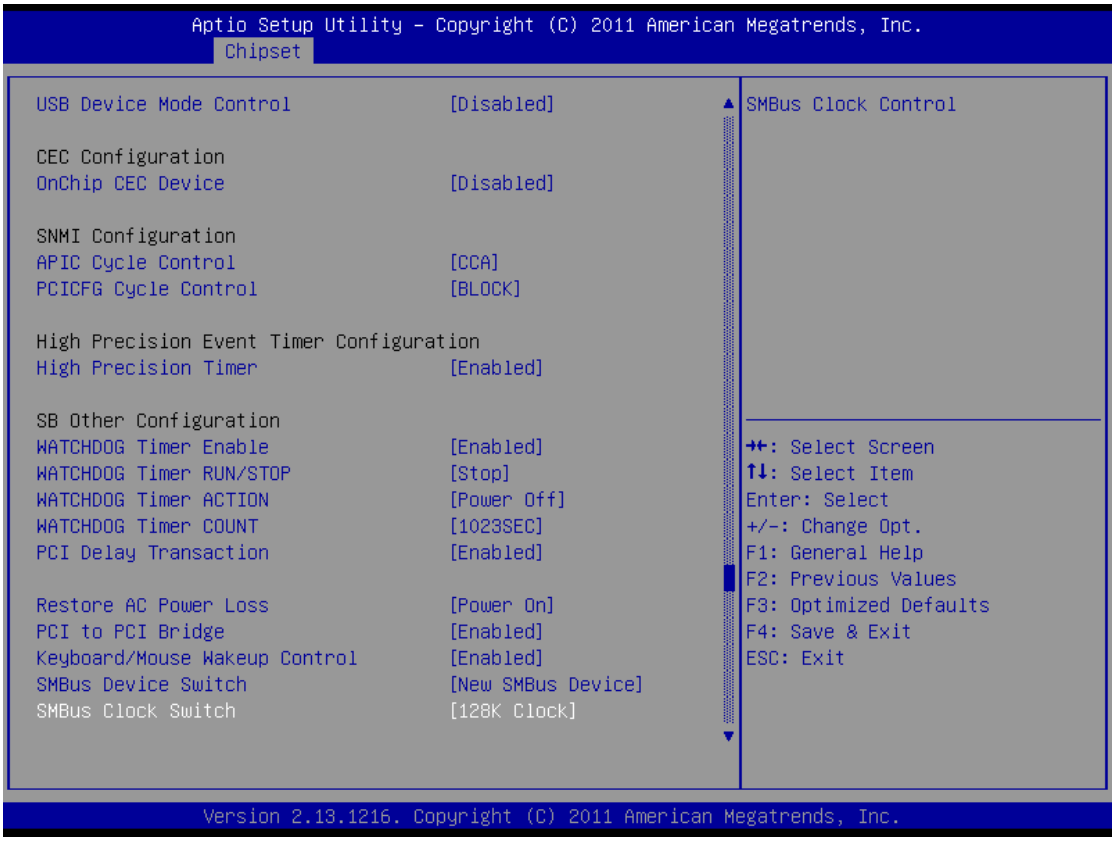


Item	Default	Description
Maximum Payload Size	Auto	
Reset PCIe When Link Fail	Enabled	
Reset PE0 When Link Fail	Enabled	
Reset PE1 When Link Fail	Enabled	
Reset PE2 When Link Fail	Enabled	
Reset PE3 When Link Fail	Enabled	
ASPM Support	Auto	
PCIE Target Link Speed	Auto	
PCIE Root Port	Enabled	
PCIE PE0 Control	Enabled	
PCIE PE1-3 Control	Enabled	

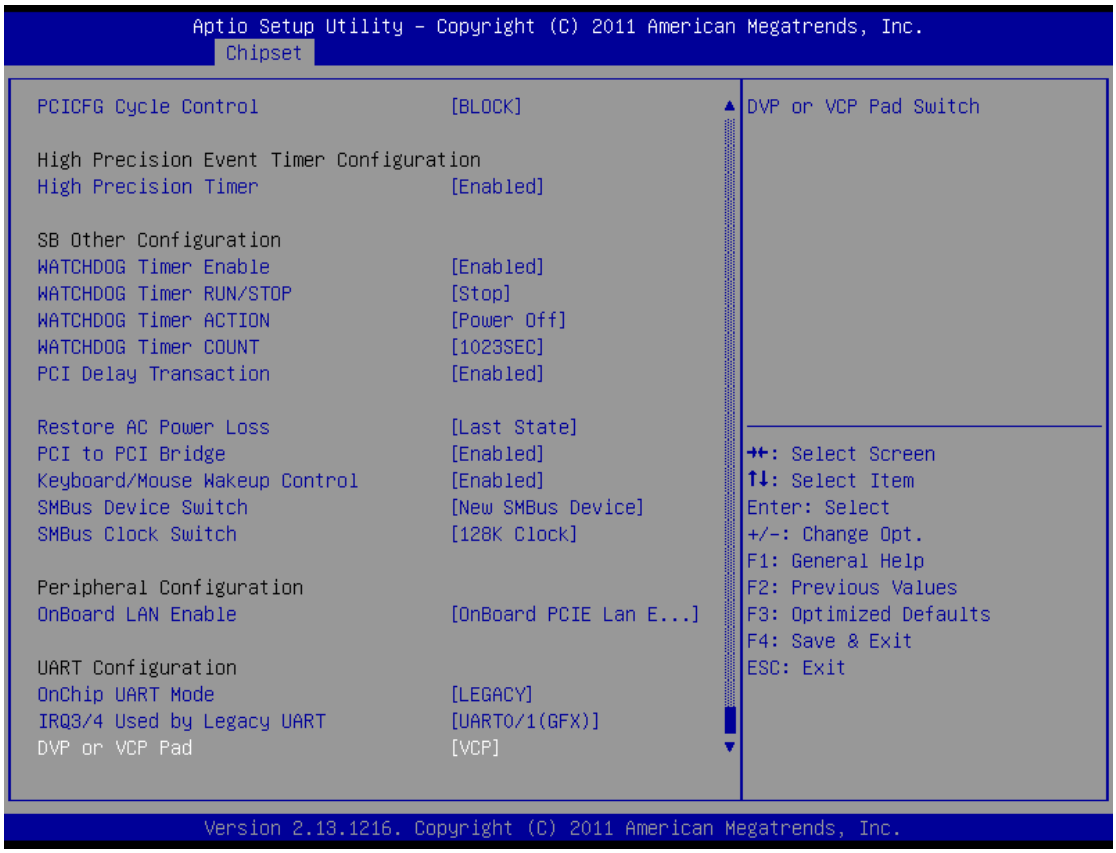
6.4.2 South Bridge



Item	Default	Description
VX900 S/P/E Setting	E->P->S	
SDIO Host controller	Enabled	
Voltage Support 1.8V	Disabled	
High Speed Support	Enabled	
Base Clock Frequency For SD Clock	48MHz	
Timeout Clock Frequency	48MHz	
SDIO PAD Slew Rate Control	3.3V/3ns	
Card Reader Host Controller	Enabled	
SD/MMC Card Control by	SDIO Controller	
OnChip HDAC Device	Enabled	
HD Audio FIFO 256 Bytes Supported	Enabled	
OnChip UHCI 1 Device	Enabled	
OnChip UHCI 2 Device	Enabled	
OnChip UHCI 3 Device	Enabled	
OnChip UHCI 4 Device	Enabled	
OnChip EHCI 1 Device	Enabled	

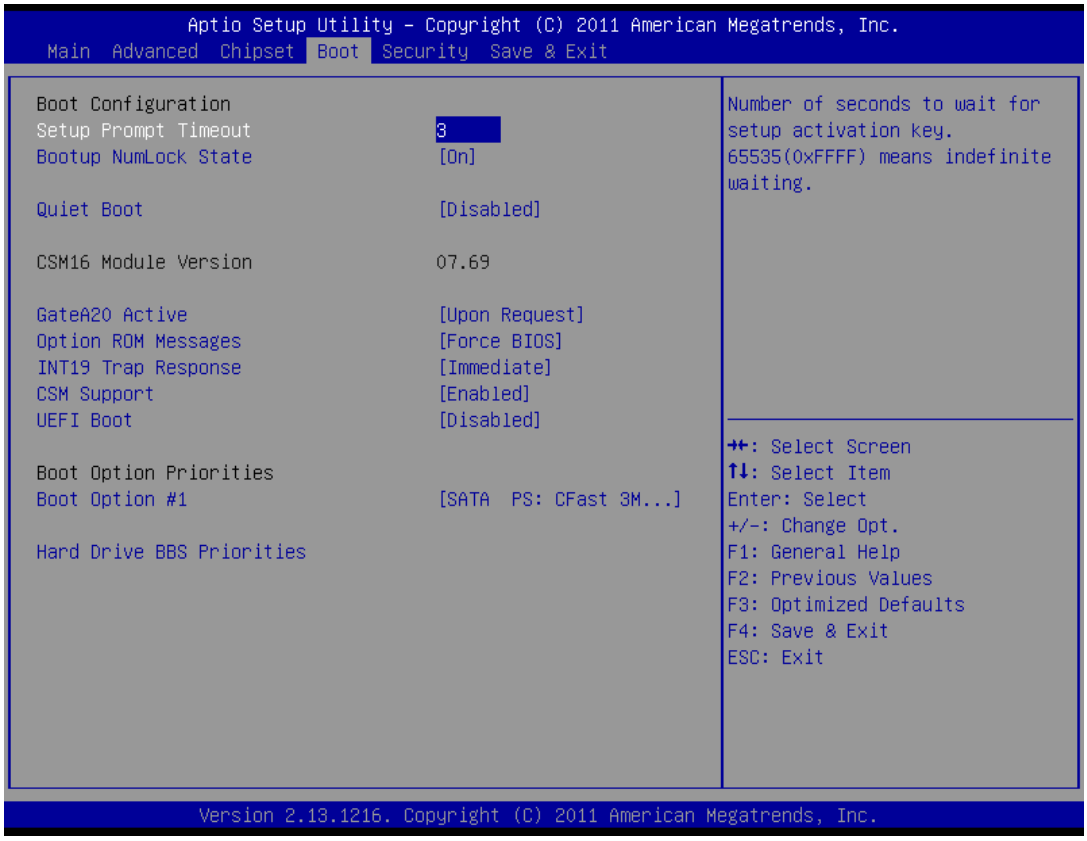


Item	Default	Description
USB Device Mode Control	Disabled	
OnChip CEC Device	Disabled	
APIC Cycle Control	CCA	
PCICFG Cycle Control	BLOCK	
High Precision Timer	Enabled	
WATCHDOG Timer Enable	Enabled	
WATCHDOG Timer RUN/STOP	Stop	
WATCHDOG Timer ACTION	Power Off	
WATCHDOG Timer COUNT	1023SEC	
PCI Delay Transaction	Enabled	
Restore AC Power Loss	Power On	
PCI to PCI Bridge	Enabled	
Keyboard/Mouse Wakeup Control	Enabled	
SMBus Device Switch	New SMBus Device	
SMBus Clock Switch	128K Clock	



Item	Default	Description
OnBoard LAN Enable	OnBoard PCIE LAN Enabled	
OnChip UART Mode	LEGACY	
IRQ3/4 Used by Legacy UART	UART0/1 (GFX)	
DVP or VCP Pad	VCP	

6.5 Boot

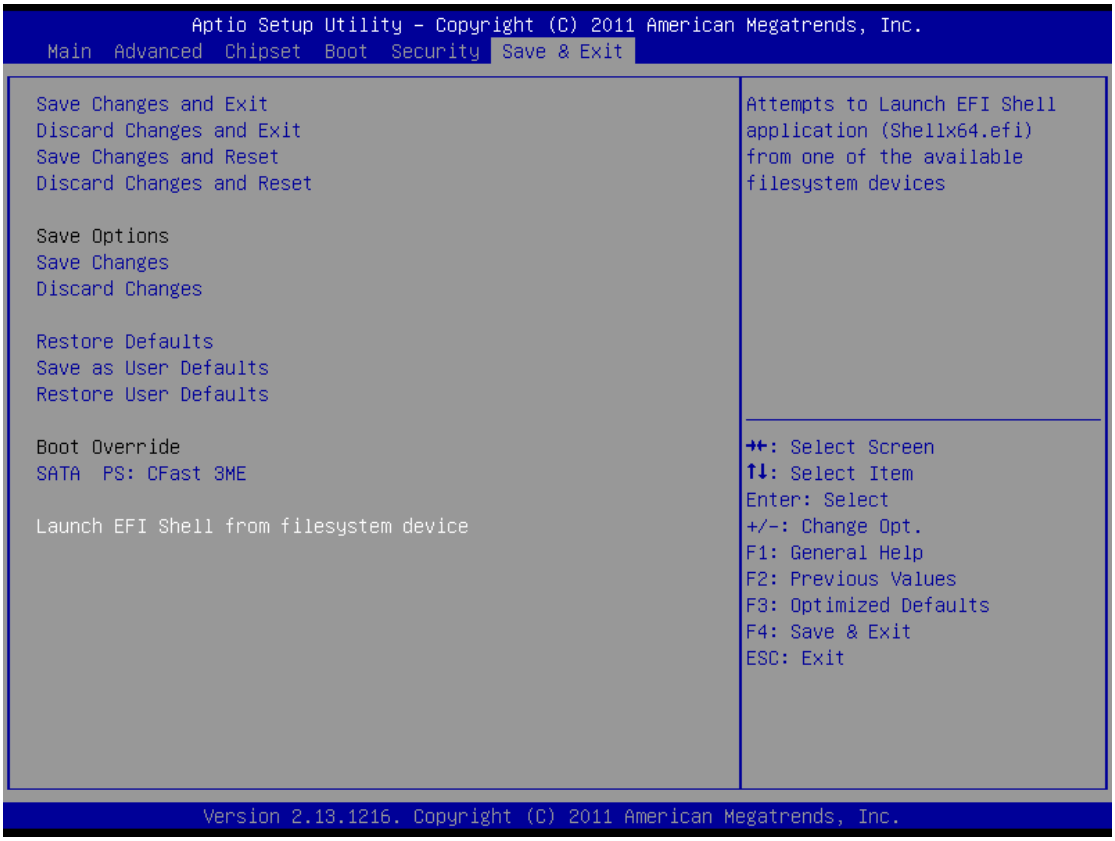


Item	Default	Description
Setup Prompt Timeout	3	
Bootup NumLock State	On	
Quiet Boot	Disabled	
GateA20 Active	Upon Request	
Option ROM Messages	Force BIOS	
INT19 Trap Response	Immediate	
CSM Support	Enabled	
UEFI Boot	Disabled	
Boot Option Priorities		Choose the device that you wish to use when start-up.
Hard Drive BBS Priorities		Set the priority when starting up with hard drives.

6.6 Security

Item	Default	Description
Administrator Password		Set up/change administrator password
User Password		Set up/change user password
HDD Security Configuration		Hardware drive configuration

6.7 Save & Exit



Item	Default	Description
Save Changes and Exit		Save the current setting and exit
Discard Changes and Exit		Restore the previous setting and exit
Save Changes and Reset		Save the current setting and restart
Discard Changes and Reset		Restore previous setting and restart
Save Changes		Save the current setting
Discard Changes		Restore the previous setting
Restore Defaults		
Save as User Defaults		Save user's default setting
Restore User Defaults		Restore user's default setting
Boot Override		Force shutdown

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