



CT-DBT0x

3.5" Industrial Single Board Computer
with Intel® Atom™ Processor E3800

User's Manual
Version 100 Preliminary
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Preface

Revision History

Rev.	Date	Description
100	13/04/2015	Initial release

Disclaimer

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Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. Please recycle to minimize pollution and ensure environment protection.



Safety Precautions

Before installing and using the equipment, please read the following precautions:

- Put this equipment on a reliable surface during installation. Dropping it or letting it fall could cause damage.
- The power outlet shall be installed near the equipment and shall be easily accessible.
- Turn off the system power and disconnect the power cord from its source before making any installation. Be sure both the system and the external devices are turned OFF. Sudden surge of power could ruin sensitive components. Make sure the equipment is properly grounded.
- When the power is connected, never open the equipment. The equipment should be opened only by qualified service personnel.
- Make sure the voltage of the power source is correct before connecting the equipment to the power outlet.
- Disconnect this equipment from the power before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.
- Avoid the dusty, humidity and temperature extremes.
- Do not place heavy objects on the equipment.
- If the equipment is not used for long time, disconnect it from the power to avoid being damaged by transient over-voltage.
- The storage temperature shall be above -20°C and below 80°C.
- The computer is provided with a battery-powered real-time clock circuit. There is a danger of explosion if incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer.
- If one of the following situation arises, get the equipment checked by service personnel:
 - The power cord or plug is damaged.
 - Liquid has penetrated into the equipment.
 - The equipment has been exposed to moisture.
 - The equipment does not work well or it cannot work according to the user's manual.
 - The equipment has been dropped and damaged.
 - The equipment has obvious signs of breakage.

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1. Introduction

1.1 Product Description

The CT-DBT0x is a single board computer in 3.5" SBC form factor featuring the Intel® Atom™ Processor E3800 Series in FCBGA1170 package on 22nm process technology in a single chip solution. One 240-pin SODIMM sockets supports non-ECC/unbuffered DDR3L 1333MHz memory up to 4GB. The Intel® HD graphics controller integrated within the processor supports three independent displays (VGA, HDMI, LVDS). The CT-DBT0x supports 2x Gigabit Ethernet, USB 3.0/2.0, COM, GPIO, 2x Mini-PCIe slots, microSD card SIM card to support a variety of industrial applications.

1.2 Specifications

■ CPU

Intel® Atom™ Processor E3800 Series and Intel® Celeron®

Processor J1900 SoC in FCBGA1170 package

- Atom™ E3845: 4-core, 1.91GHz, TDP 10W
- Atom™ E3827: 2-core, 1.75GHz. TDP 8W
- Atom™ E3815: 1-core, 1.46GHz, TDP 5W
- Celeron® J1900: 4-core, 2.00GHz, TDP 10W
- Celeron® N2807: 4-cores, 1.58GHz, TDP 4.3W

■ System Memory

- One 204-pin DDR3L SODIMM socket
- 1333MHz, non-ECC unbuffered
- Data transfer rates up to 1333MT/s
- Up to 4GB

■ BIOS

- AMI uEFI BIOS
- 8MB SPI flash ROM

■ Graphics

- Intel® HD Graphics Gen 7 integrated in CPU
- 1x VGA, resolution up to 2560x1600@60Hz
- 1x HDMI 1.4a interface, up to 1920x1080@60Hz

■ Ethernet

- Two Intel® I210IT GbE Controllers
- 10/100/1000BASE-TX Ethernet
- WOL/PXE support

■ Audio

- Realtek ALC886
- Line-In, Line-Out and Mic-In

■ **Internal I/O**

- 2x 7-pin SATA 3Gb/s ports (w/ 2x +12V/+5V/GND power)
- 4x USB 2.0 ports via header (1 from SoC, 3 from USB 2.0 Hub IC, Genesys GL852GT-OHY12)
- 1x RS-232/422/485 port (BIOS selectable, supports auto-flow)
- 3x RS-232 ports via header (COM2-4)
- 1x 8-bit GPIO (4-bit input, 4-bit output, +5V level, GPO default "High", GPI supports SMI trigger)
- 1x PS/2 keyboard and mouse
- 1x front panel audio
- 1x Reset button header
- 1x Power on/off header
- 1x wafer connector for external CMOS battery (included)
- 1x header for I2C Serial IO interface from SoC
- 1x Clear CMOS header
- 1x 4-pin fan connector
- 1x 4-pin ATX power connector for +12VDC power input

■ **External I/O**

- +12V DC power input
- 1x HDMI port (vertical)
- 1x VGA (DB-15)
- 2x GbE (RJ-45)
- 1x USB 3.0
- 1x USB 2.0
- 1x RS-232/422/485 COM1 (DB-9, RS-485 auto low control supported)

■ **Expansion**

- 2x Mini PCIe slots, full size
 - ◆ Mini PCIe slot #1: PCIe x1 only or mSATA only (by BOM option, see *1.3 Available Models*)
 - ◆ Mini PCIe slot #2: PCIe x1 & USB 2.0 (USB 2.0 port from USB Hub IC)
- 1x microSD card slot
- 1x SIM card slot

■ **Watchdog Timer**

- H/W Reset, 1-255 sec./min.
- 1 sec. or 1min. increments

- **Hardware Monitor**
 - System voltages
 - CPU core power
 - CPU I/O power
 - DDR power
 - VCC3
 - Vin
 - Temperatures monitoring
 - Smart Fan support
- **Power**
 - DC +12V input
 - ACPI 5.0 compliant
- **Form Factor**
 - 3.5" SBC, 146mm x 102mm
- **Operating Temp.**
 - -20°C to 70°C
- **Storage Temp.**
 - -40°C to 85°C
- **Operating Humidity**
 - 10% to 90% relative humidity, non-condensing
- **Certifications**
 - CE
 - FCC Class A

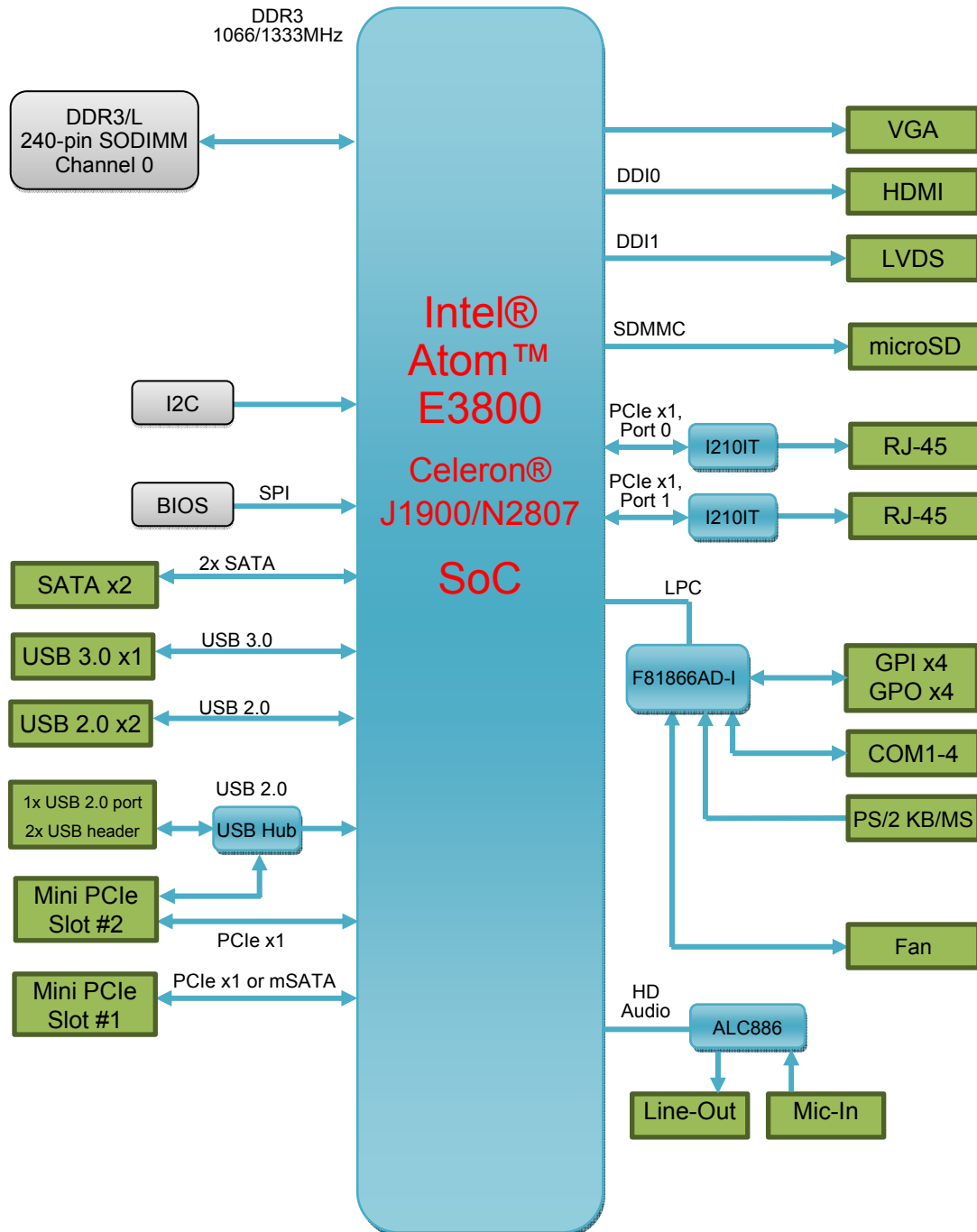
1.3 Available Models

Model	Processor	Ordering Information	Part Number
CT-DBT01	Atom™ E3845	CT-DBT01-E3845	6-DBT0101S100-P0
	Atom™ E3827	CT-DBT01-E3827	6-DBT0102S100-P0
	Atom™ E3815	CT-DBT01-E3815	6-DBT0103S100-P0
	Celeron® J1900	CT-DBT01-J1900	6-DBT0104S100-P0
	Celeron® N2807	CT-DBT01-N2807	6-DBT0105S100-P0
CT-DBT02	Atom™ E3845	CT-DBT02-E3845	6-DBT0201S100-P0
	Atom™ E3827	CT-DBT02-E3827	6-DBT0202S100-P0
	Atom™ E3815	CT-DBT02-E3815	6-DBT0203S100-P0
	Celeron® J1900	CT-DBT02-J1900	6-DBT0204S100-P0
	Celeron® N2807	CT-DBT02-N2807	6-DBT0205S100-P0

Mini PCIe Slot BOM Options

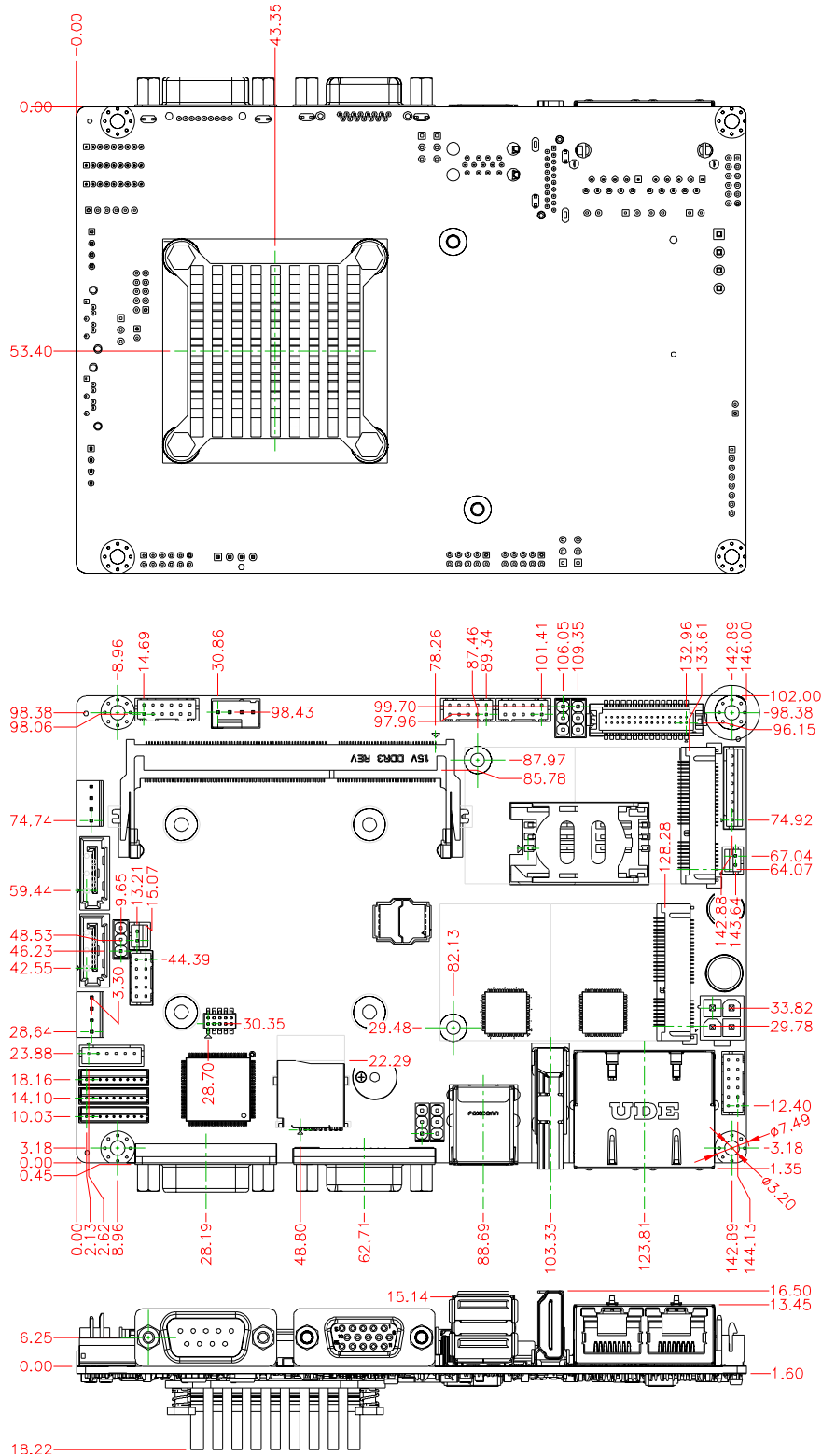
	Mini PCIe slot #1	Mini PCIe slot #2
CT-DBT01	PCIe x1 only	PCIe x1 & USB 2.0
CT-DBT02	mSATA only	PCIe x1 & USB 2.0

1.4 Block Diagram



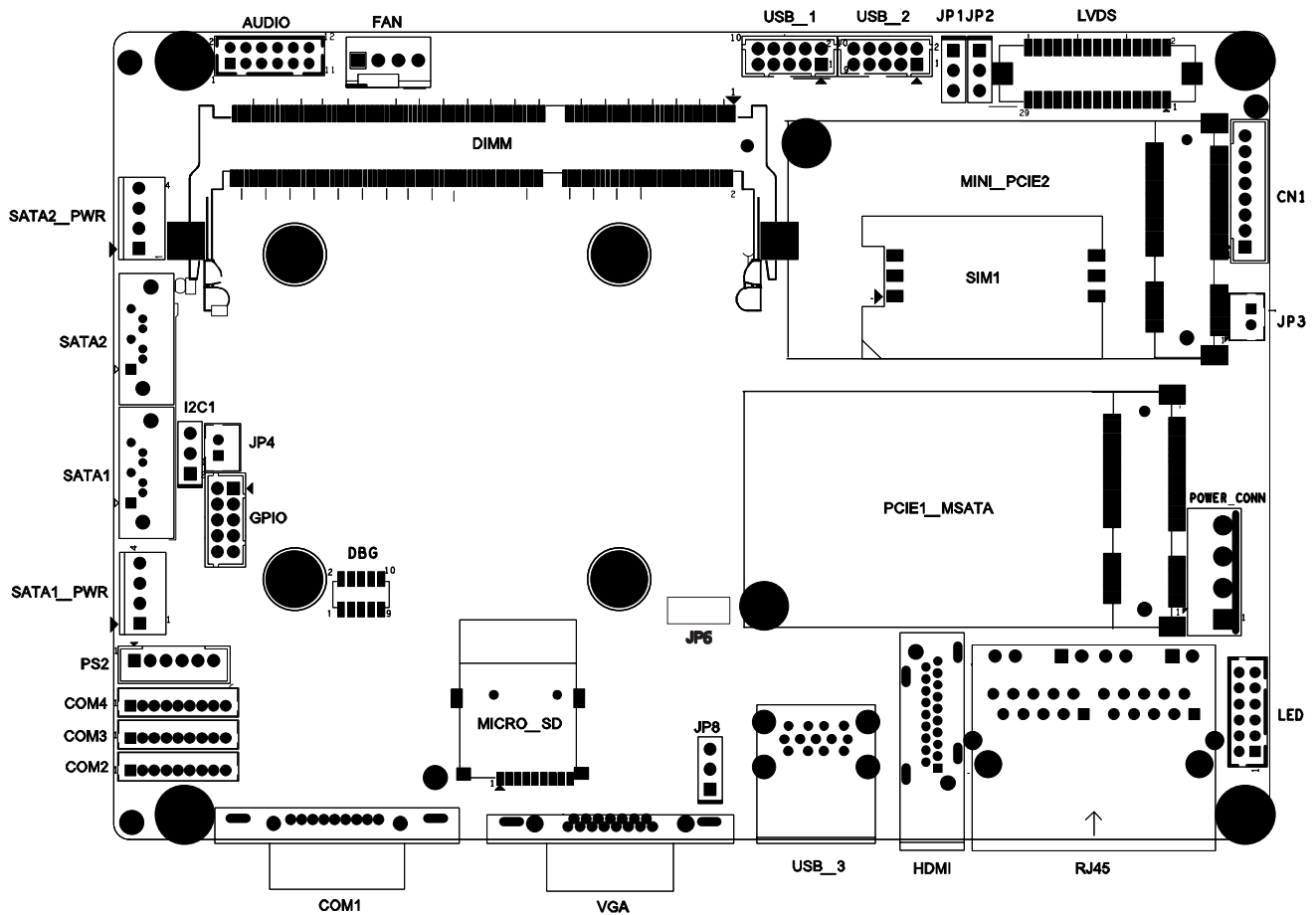
2. Mechanical Specifications

2.1 Dimensions



Units: mm

2.2 Board Layout



2.2.1 Connectors & Jumpers

Connector	Description	Connector	Description
AUDIO	Front Audio connector	I2C1	I2C header
CN1	Backlight Control connector	LED	LED header
COM1	RS-232/422/485 DB9 connector	LVDS	LVDS connector
COM2-4	RS-232 COM2-4 headers	MICRO_SD	microSD card slot
DBG	LPC connector	MINI_PCIE2	Mini PCI Express slot 2
DIMM	240-pin SODIMM socket	PCIE1_MSATA	Mini PCI Express slot 1
FAN	Fan connector	POWER_CONN	ATX Power connector
GPIO	GPIO header	PS2	PS/2 KB/MS wafer connector
HDMI	HDMI port	RJ45	LAN ports
JP1	Backlight Power Select jumper	SATA1/2	SATA Port 1/2 signal connector
JP2	Panel Power Select jumper	SATA1/2_PWR	SATA Port 1/2 power connector
JP3	Power Button header	SIM1	SIM card slot
JP4	Reset Button header	USB_1/2	USB 2.0 headers
JP6	Battery connector	USB_3	USB 2/0/3.0 ports
JP8	Clear CMOS	VGA	VGA connector

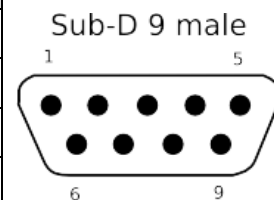
2.3 External Connectors



2.3.1 Serial Port COM1

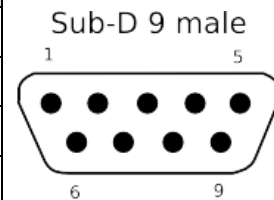
2.3.1.1 RS-232 Mode

Pin	Signal	Pin	Signal
1	DCD, Data Carrier Detect	6	DSR, Data Set Ready
2	RXD, Receive Data	7	RTS, Ready To Send
3	TXD, Transmit Data	8	CTS, Clear To Send
4	DTR, Data Terminal Ready	9	RI, Ring Indicator
5	GND, Ground		



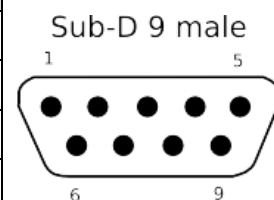
2.3.1.2 RS-422 Mode

Pin	Signal	Pin	Signal
1	TXD-, Transmit Data	6	NA
2	RXD+, Receive Data	7	NA
3	TXD+, Transmit Data	8	NA
4	RXD-, Receive Data	9	NA
5	NA		



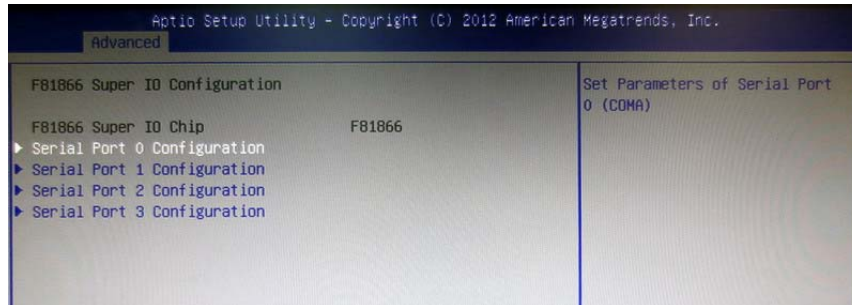
2.3.1.3 RS-485 Mode

Pin	Signal	Pin	Signal
1	Data-	6	NA
2	Data+	7	NA
3	NA	8	NA
4	NA	9	NA
5	NA		

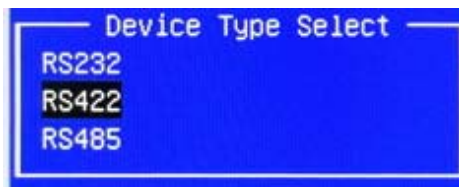


2.3.1.4 COM1 RS-232/422/485 Mode Selection

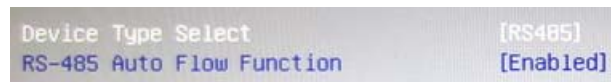
To set the COM mode, boot the system into BIOS Setup Utility and select **Advanced > F81866 Super IO configuration**. You will see the following screen.



Select the COM port you wish to setup and choose from RS-232, RS-422 and RS-485.



If RS-485 is selected, you can enable/disable the RS-485 Auto Flow Function which automatically handles half-duplex control.

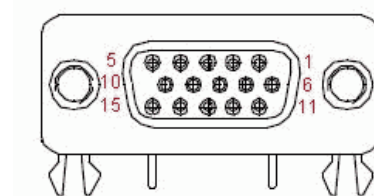


Save the configuration and exit the BIOS Setup Utility ("F4" hotkey).

2.3.2 VGA Connector

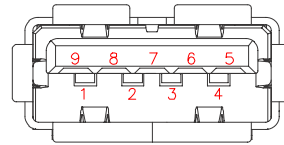
15-pin D-sub Female Connector

Pin	Signal	Pin	Signal
1	VGA_RED	9	VCC
2	VGA_GRN	10	GND
3	VGA_BLU	11	NC
4	NC	12	VGA_DDC_DAT
5	GND	13	VGA_HSYNC
6	GND	14	VGA_VSYNC
7	GND	15	VGA_DCC_CLK
8	GND		



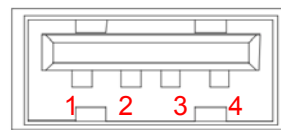
2.3.3 USB 3.0 Connector

Pin	Signal	Pin	Signal
1	USB +5V	5	USB_SSRX-
2	USB_D-	6	USB_SSRX+
3	USB_D+	7	GND_DRAIN
4	GND	8	USB_SSTX-
		9	USB_SSTX+



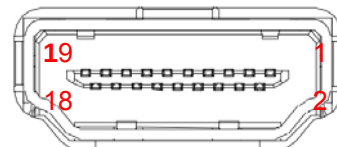
2.3.4 USB 2.0 Connectors

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



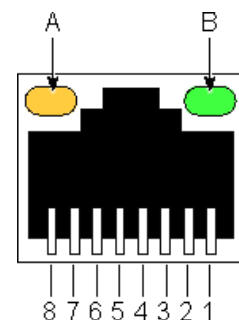
2.3.5 HDMI Connector

Pin	Signal	Pin	Signal
1	HDMI_TX2_DP_B	2	GND
3	HDMI_TX2_DN_B	4	HDMI_TX1_DP_B
5	GND	6	HDMI_TX1_DN_B
7	HDMI_TX0_DP_B	8	GND
9	HDMI_TX0_DN_B	10	HDMI_CLK_DP_B
11	GND	12	HDMI_CLK_DN_B
13	NC	14	NC
15	HDMI_SCLDDC_B	16	HDMI_SDADDC_B
17	GND	18	+5V



2.3.6 LAN Connector

Pin	Signal	Pin	Signal
1	MDI0+	5	MDI2-
2	MDI0-	6	MDI1-
3	MDI1+	7	MDI3+
4	MDI2+	8	MDI3-
A	Active LED (Yellow)	B	10 LAN LED (OFF) 100 LAN LED (Green) 1000 LAN LED (Orange)

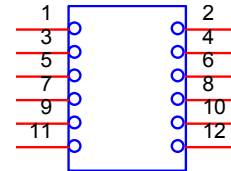


2.4 Internal Connectors

2.4.1 Front Panel Audio Connector (AUDIO)

Connector Type: 2x6-pin pitch 2.00mm wafer connector

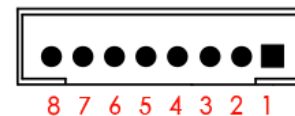
Pin	Signal	Pin	Signal
1	MICIN_L	2	MICIN_R
3	MIC1_JD	4	AGND
5	LOUT_L	6	LOUT_R
7	FRONT_JD	8	AGND
9	LIN_L	10	LIN_R
11	LINE1_JD	12	AGND



2.4.2 Backlight Control Connector (CN1)

Connector Type: 1x8-pin pitch 2.0mm wafer connector

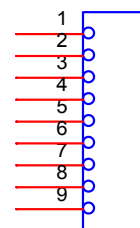
Pin	Signal	Pin	Signal
1	Backlight Enable	2	Backlight CTRL
3	Backlight PWR	4	Backlight PWR
5	GND	6	GND
7	Brightness UP	8	Brightness DOWN



2.4.3 COM2-4 Serial Ports (COM2-4)

Connector Type: 1-9-pin pitch 2.0mm wafer connector

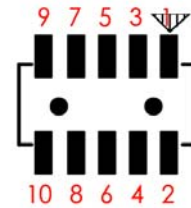
Pin	Signal	Pin	Signal
1	DCD, Data Carrier Detect	2	DSR, Data Set Ready
3	RXD, Receive Data	4	RTS, Request To Send
5	TXD, Transmit Data	6	CTS, Clear To Send
7	DTR, Data Terminal Ready	8	RI, Ring Indicator
9	GND		



2.4.4 LPC Connector (DBG)

Connector Type: 2x5 pin pitch 1.27mm box header

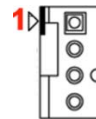
Pin	Signal	Pin	Signal
1	GND	2	+3.3V
3	LPC_AD3	4	NC
5	LPC_AD2	6	RESET_DBG
7	LPC_AD1	8	CLOCK_DEBUG
9	LPC_AD0	10	LPC_FRAME



2.4.5 Fan Connector (FAN)

Connector Type: 1x4 pin pitch 2.54mm wafer connector

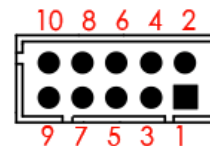
Pin	Signal
1	GND
2	+12V Fan Power
3	Fan Sensor
4	Fan PWM



2.4.6 GPIO Connector: GPIO

Connector Type: 2x5-pin pitch 2.0mm wafer connector

Pin	Signal	Pin	Signal
1	+5V	2	GND
3	GPO0	4	GPI0
5	GPO1	6	GPI1
7	GPO2	8	GPI2
9	GPO3	10	GPI3



2.4.7 Power Button Pin Header (JP3)

Connector Type: 1x2-pin pitch 2.00mm wafer connector

Pin	Signal
1	PS_ON_BUTTON_N
2	GND



2.4.8 Reset Button Pin Header (JP4)

Connector Type: 1x2-pin pitch 2.00mm wafer connector

Pin	Signal
1	RESET_BUTTON_N
2	GND



2.4.9 Battery Pin Header (JP6)

Connector Type: 1x2-pin pitch 1.25mm wafer connector

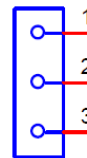
Pin	Signal
1	GND
2	+3V



2.4.10 I2C Pin Header (I2C1)

Connector Type: 1x3-pin pitch 2.54mm pin header connector

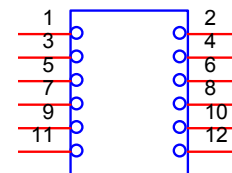
Pin	Signal
1	CLOCK
2	GND
3	DATA



2.4.11 Multi-LED Pin Header (LED)

Connector Type: 2x6-pin pitch 2.00mm wafer connector

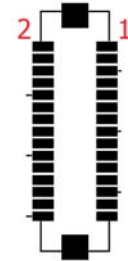
Pin	Signal	Pin	Signal
1	+5V	2	+5V
3	Power ON/OFF	4	HDD LINK/ACTIVE
5	+3.3V	6	LAN1 Speed 1000
7	LAN1 LINK/ACTIVE	8	LAN1 Speed 100
9	+3.3V	10	LAN2 Speed 1000
11	LAN2 LINK/ACTIVE	12	LAN2 Speed 100



2.4.12 LVDS Connector: LVDS

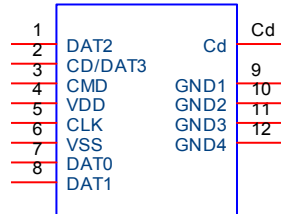
Connector Type: 2x15-pin pitch1.25mm LVDS connector

Pin	Signal	Pin	Signal
1	LVDS_B3-	2	LVDS_B3+
3	LVDS_B_CLK-	4	LVDS_B_CLK+
5	LVDS_B2-	6	LVDS_B2+
7	LVDS_B1-	8	LVDS_B1+
9	LVDS_B0-	10	LVDS_B0+
11	LVDS_I2C_DAT	12	LVDS_I2C_CK
13	GND	14	GND
15	GND	16	GND
17	LVDS_A3+	18	LVDS_A3-
19	LVDS_A_CLK+	20	LVDS_A_CLK-
21	LVDS_A2+	22	LVDS_A2-
23	LVDS_A1+	24	LVDS_A1-
25	LVDS_A0+	26	LVDS_A0-
27	Panel PWR	28	Panel PWR
29	Panel PWR	30	Panel PWR



2.4.13 microSD Connector (MICRO_SD)

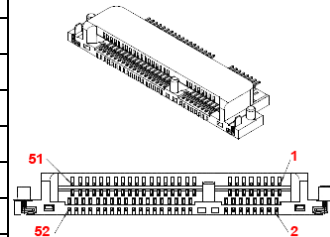
Pin	Signal	Pin	Signal
1	DAT2	2	CD/DAT3
3	CMD	4	VDD
5	CLK	6	VSS
7	DAT0	8	DAT1



2.4.14 Mini-PCle Slot #1 (PCIE1_MSATA)

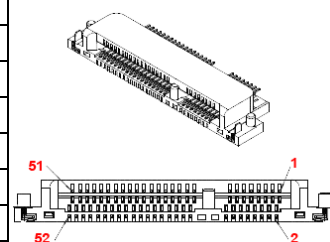
PCle x1 only (CT-DBT01 BOM option)

Pin	Signal	Pin	Signal	Pin	Signal
1	WAKE#	19	Reserved	37	Reserved
2	+3.3V	20	Reserved	38	USB_D+
3	Reserved	21	GND	39	Reserved
4	GND	22	PERST#	40	GND
5	Reserved	23	PERn0	41	Reserved
6	+1.5V	24	+3.3Vaux	42	LED_WWAN#
7	CLKREQ#	25	PERp0	43	Reserved
8	UIM_PWR	26	GND	44	LED_WLAN#
9	GND	27	GND	45	Reserved
10	UIM_DATA	28	+1.5V	46	LED_WPAN#
11	REFCLK-	29	GND	47	Reserved
12	UIM_CLK	30	SMB_CLK	48	+1.5V
13	REFCLK+	31	PETn0	49	Reserved
14	UIM_RESET	32	SMB_DATA	50	GND
15	GND	33	PETp0	51	Reserved
16	UIM_VPP	34	GND	52	+3.3V
17	Reserved	35	GND		
18	GND	36	USB_D-		



mSATA only (CT-DBT02 BOM option)

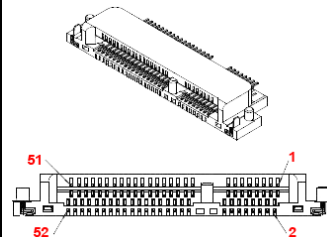
Pin	Signal	Pin	Signal	Pin	Signal
1	NC	19	NC	37	SATA GND
2	+3.3V	20	NC	38	NC
3	NC	21	SATA GND	39	+3.3V
4	DGND	22	NC	40	DGND
5	NC	23	TXP (out)	41	+3.3V
6	NC	24	+3.3V	42	NC
7	NC	25	TXN (out)	43	NC
8	NC	26	SATA GND	44	NC
9	DGND	27	SATA GND	45	NC
10	NC	28	NC	46	NC
11	NC	29	SATA GND	47	NC
12	NC	30	NC	48	NC
13	NC	31	RXN (in)	49	DA/DSS (option)
14	NC	32	NC	50	DGND
15	DGND	33	RXP (in)	51	GND
16	NC	34	DGND	52	+3.3V
17	NC	35	SATA GND		
18	DGND	36	NC		



2.4.15 Mini-PCle Slot #2 (MINI_PCIE1)

PCIe x1 & USB 2.0

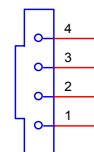
Pin	Signal	Pin	Signal	Pin	Signal
1	WAKE#	19	Reserved	37	Reserved
2	+3.3V	20	Reserved	38	USB_D+
3	Reserved	21	GND	39	Reserved
4	GND	22	PERST#	40	GND
5	Reserved	23	PERn0	41	Reserved
6	+1.5V	24	+3.3Vaux	42	LED_WWAN#
7	CLKREQ#	25	PERp0	43	Reserved
8	UIM_PWR	26	GND	44	LED_WLAN#
9	GND	27	GND	45	Reserved
10	UIM_DATA	28	+1.5V	46	LED_WPAN#
11	REFCLK-	29	GND	47	Reserved
12	UIM_CLK	30	SMB_CLK	48	+1.5V
13	REFCLK+	31	PETn0	49	Reserved
14	UIM_RESET	32	SMB_DATA	50	GND
15	GND	33	PETp0	51	Reserved
16	UIM_VPP	34	GND	52	+3.3V
17	Reserved	35	GND		
18	GND	36	USB_D-		



2.4.16 ATX Power Connector (POWER_CONN)

Connector Type: 1x4-pin pitch 2.54mm wafer connector

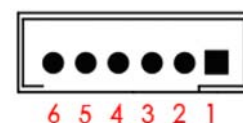
Pin	Signal	Pin	Signal
1	GND	3	+12V
2	GND	4	+12V



2.4.17 PS/2 Keyboard/Mouse Connector (PS2)

Connector Type: 1x6-pin pitch 2.0mm wafer connector

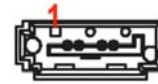
Pin	Signal	Pin	Signal
1	KB_DATA	2	KB_CLK
3	+5V	4	GND
5	MS_DATA	6	MS_CLK



2.4.18 SATA Signal Connectors: SATA1-2

Connector Type: 7-pin SATA connector

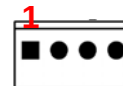
Pin	Signal
1	GND
2	SATA_TX+
3	SATA_TX-
4	GND
5	SATA_RX-
6	SATA_RX+
7	GND



2.4.19 SATA Power Connectors (SATA1/2_PWR)

Connector Type: 4-pin pitch 2.54mm connector

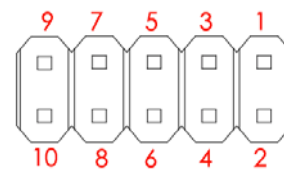
Pin	Signal
1	+5V
2	GND
3	GND
4	+12V



2.4.20 USB 2.0 Pin Header (USB_1/2)

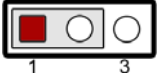
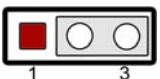
Connector Type: 2x5-pin pitch 2.54mm pin header connector

Pin	Signal	Pin	Signal
1	USB +5V	2	USB +5V
3	USB_D-	4	USB_D-
5	USB_D+	6	USB_D+
7	GND	8	GND
9	KEY	10	NC

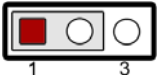
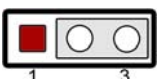


2.5 Jumper Settings

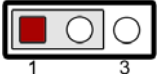
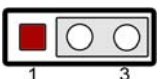
2.5.1 Backlight Power (JP1)

Function	Setting	Jumper
+12V	1-2 closed	
+5V (Default)	2-3 closed	

2.5.2 Panel Power (JP2)

Function	Setting	Jumper
+3.3V (Default)	1-2 closed	
+5V	2-3 closed	

2.5.3 Clear CMOS (JP8)

Function	Setting	Jumper
Normal (Default)	1-2 closed	
Clear CMOS	2-3 closed	

3. Features & Interfaces

3.1 Processor

The cPCI-3620 Series supports the Intel® Atom™ processor E3800 Series which utilizes 22nm process technology with 3-D Tri-Gate transistors to deliver significant improvement in computational performance and energy-efficiency. Based on a new micro-architecture, the processor is designed for a one-chip platform. This system-on-chip (SoC) solution platform brings enhanced graphics, greater performance, lower cost, easier validation, and improved x-y footprint to a broad range of intelligent systems. The processor includes an Integrated Display Engine, Processor Graphics and Integrated Memory Controller.

3.2 BIOS

AMI uEFI BIOS on 8MB SPI Flash ROM is used on the CT-DBT0x.

3.3 System Memory

The Integrated Memory Controller (IMC) of the processor supports single channel, non-ECC, unbuffered DDR3L-1333 memory up to 4 GB with data transfer rates up to 1333MT/s.

3.4 Graphics

The graphics is integrated in the processor and based on Intel® HD Graphics 4000 technology, enabling substantial gains in performance and lower power consumption.

- DirectX 11 support
- OpenGL 4.0 support
- Graphics Base Frequency: 542 MHz
- Graphics Max Dynamic Frequency: 792 MHz
- Full HD video playback
- Maximum resolution of 2560x1600@60Hz

LVDS support is provided by a Realtek RTD2136R-CG DP-to-LVDS converter with dual channel 24-bit output up to 1920x1200 resolution.

3.5 USB

The CT-DBT0x supports 1x USB 3.0 and 1x USB 2.0 external ports, and 4x internal USB 2.0 ports.

3.6 Ethernet

The CT-DBT0x features 1x 10/100/1000BASE-TX Ethernet by Intel I210IT GbE Controller supporting WOL/PXE.

3.7 SATA

The CT-DBT0x supports 2x SATA 3Gb/s ports.

3.8 Audio

The CT-DBT0x supports HD audio via Realtek ALC886 codec.

3.9 Expansion

The CT-DBT0x provides the following expansion interfaces.

- 2x Mini-PCle slots
 - Mini PCIe slot #1: PCIe x1 only or mSATA only
 - Mini PCIe slot #2: PCIe x1 & USB 2.0
- 1x microSD card slot
- 1x SIM card slot

3.10 General Purpose Input Output

GPI and GPO pins may be implemented as GPIO. GPI and GPO pins may be implemented as SDIO.

Signal	I/O	Description
GPO[0:3]	O	General purpose output pins. Upon a hardware reset, these outputs should be low.
GPI[0:3]	I	General purpose input pins. Pulled high internally on the Module.

3.10.1 GPIO Configuration

Board Design

Pin#	GPIO#	Default Configuration
1	—	VCC3
2	—	GND
3	DIO_PH_OUT0	GPO0
4	DIO_PH_IN0	GPI0
5	DIO_PH_OUT1	GPO1
6	DIO_PH_IN1	GPI1
7	DIO_PH_OUT2	GPO2
8	DIO_PH_IN2	GPI2
9	DIO_PH_OUT3	GPO3
10	DIO_PH_IN3	GPI3

Notes

1. Output pin default setting is “**HIGH**”

The GPIO function is provided by a Fintek F81866 AD-I, and it can be accessed through its GPIO index/data port. The index port is the base address +0 and the data port is the base address +1. To access the GPIO register, write index to the index port, and then read/write from/to data port. The configuration on the CT-DBT0x is described as below.

Index Port	0xA00
Data Port	0xA01

Registers Description

GPIO Input/Output Select

■ GPIO8x Configuration Registers

(Index port=0xA00, Data port=0xA01, Offset=0x88)

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
GPO3	GPO2	GPO1	GPO0	GPI3	GPI2	GPI1	GPI0

Note.

Bit X = 0 means Input Mode

Bit X = 1 means Output Mode

GPIO Output Data Select

● GPIO Output Data Register

(Index port=0xA00, Data port=0xA01, Offset=0x89)

Bit 7	Bit 6	Bit 5	Bit 4	Bit 3	Bit 2	Bit 1	Bit 0
GPO3	GPO2	GPO1	GPO0	GPI3	GPI2	GPI1	GPI0

Note.

Bit X = 0 outputs 0 when in output mode

Bit X = 1 outputs 1 when in output mode

3.11 Watchdog Timer

3.11.1 Board Design

The Watchdog Timer (WDT) is implemented by Fintek F81866AD-I.

Register	Address
WDT Base Address	0xA10

3.11.2 Psuedo Code

■ Set WDT Time Unit (Second Unit)

Step1: ByteData = ReadIOByte(0xA15)	//Read current setting
Step2: ByteData = ByteData & 0xF7	//Set time unit to "second"
Step3: WriteIOByte(0xA15, ByteData)	//Write back

■ Set WDT Time Value

Step1: WriteIOByte(0xA16, Time)	//Set watch dog time value
---------------------------------	----------------------------

■ Enable WDT

Step1: ByteData = ReadIOByte(0xA15)	//Read current setting
Step2: ByteData = ByteData 0x20	//Enable WDT
Step3: WriteIOByte(0xA15, ByteData)	//Write back

4. Driver Installation

The drivers for the CT-DBT0x can be found on the driver DVD included with the system.

Install the following drivers in the order listed.

1. Chipset
2. Graphics
3. Audio
4. LAN
5. USB 3.0
6. Intel Serial IO
7. Intel Sideband Fabric Device (Intel MBI)
8. Intel Trusted Execution Engine (Intel TXE)

5. System BIOS

The system BIOS software is stored on EEPROM. The BIOS provides an interface to modify the configuration. When the battery is removed, all the parameters will be reset.

Turn on the computer and press or <F2> to enter the setup screens.

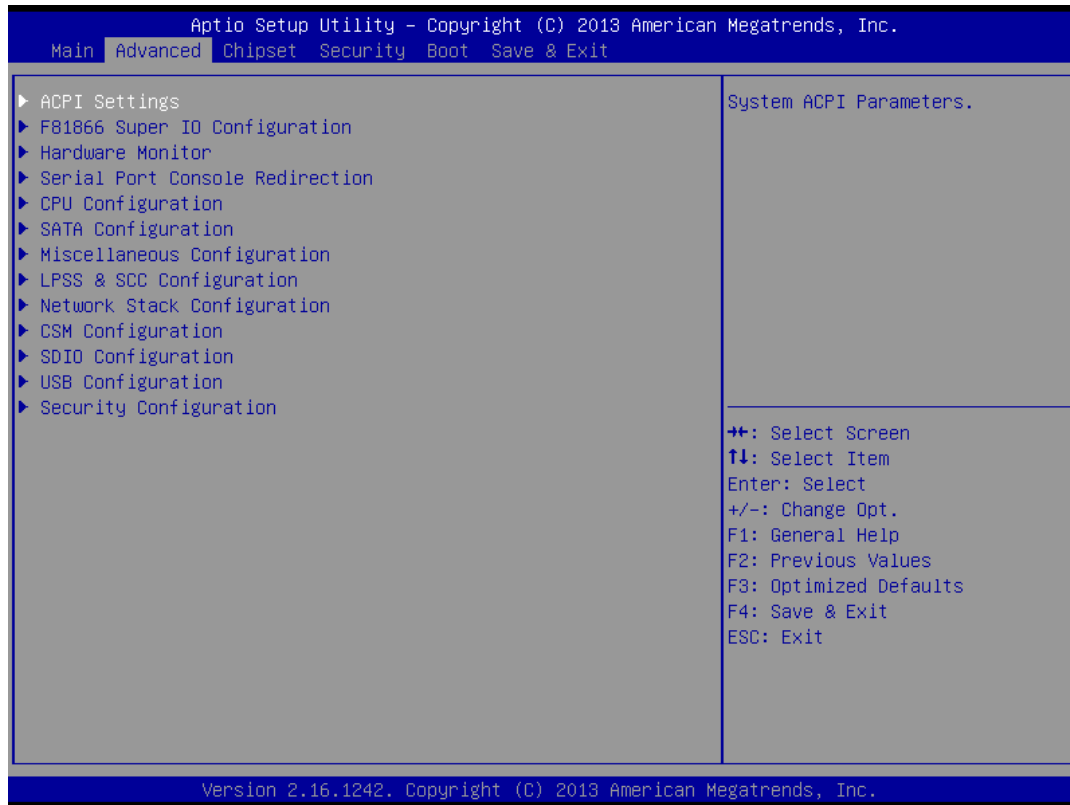


System Date: MM/DD/YYYY

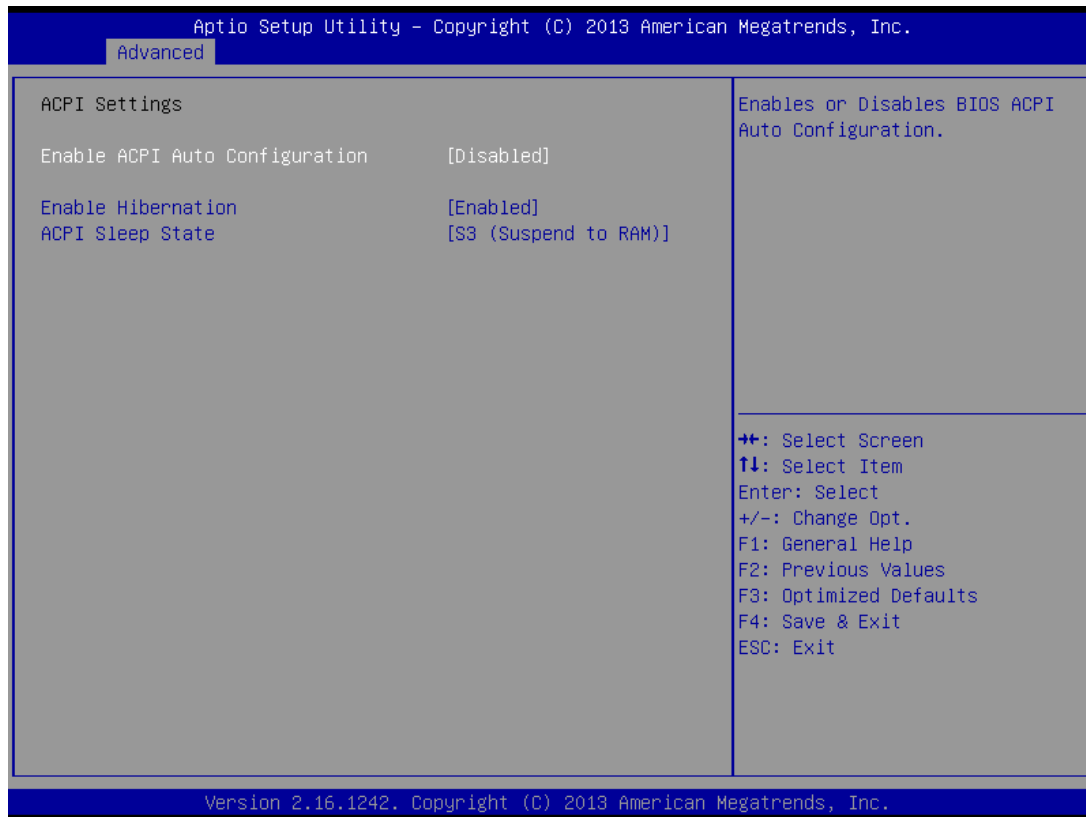
System Time: HH:MM:SS

Use Tab to switch between Date and Time elements.

5.1 Advanced



5.1.1 ACPI Settings



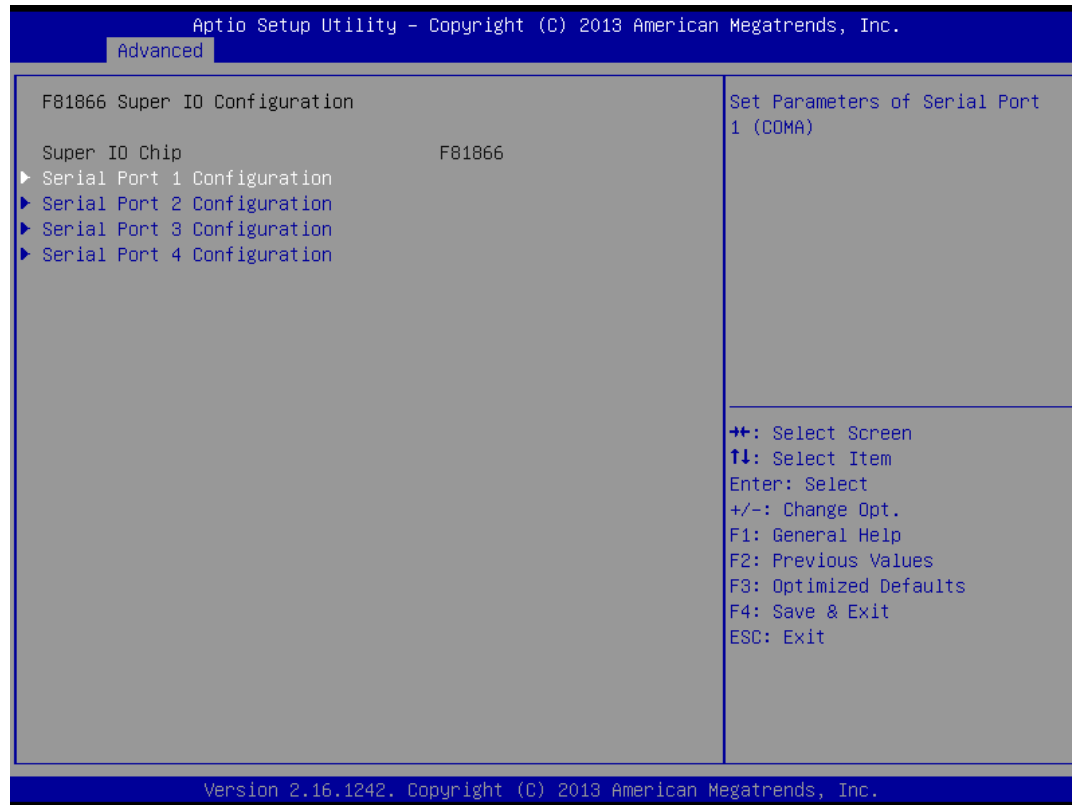
Enable ACPI Auto Configuration: Enables or disables BIOS ACPI Auto Configuration.

Enable Hibernation: Enable or Disable system ability to Hibernate.

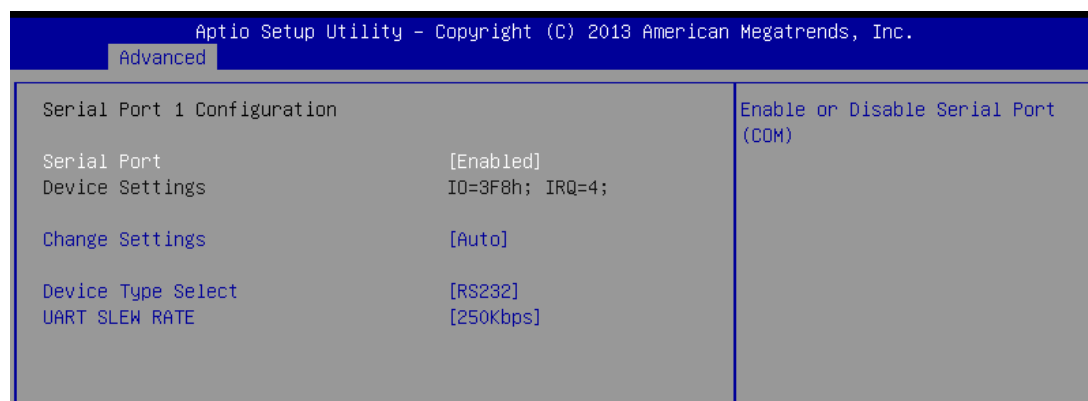
ACPI Sleep state: Select the highest ACPI sleep state the system will enter when the SUSPEND button is pressed. Options: Suspend Disable, S3 (Suspend to RAM).

5.1.2 F81866 Super IO Configuration

Enable/disable and configure the serial ports.



5.1.2.1 Serial Port 1 Configuration



Device Type Select: Choose from RS-232, RS-422 and RS-485.

5.1.2.2 Serial Port 2-4 Configuration

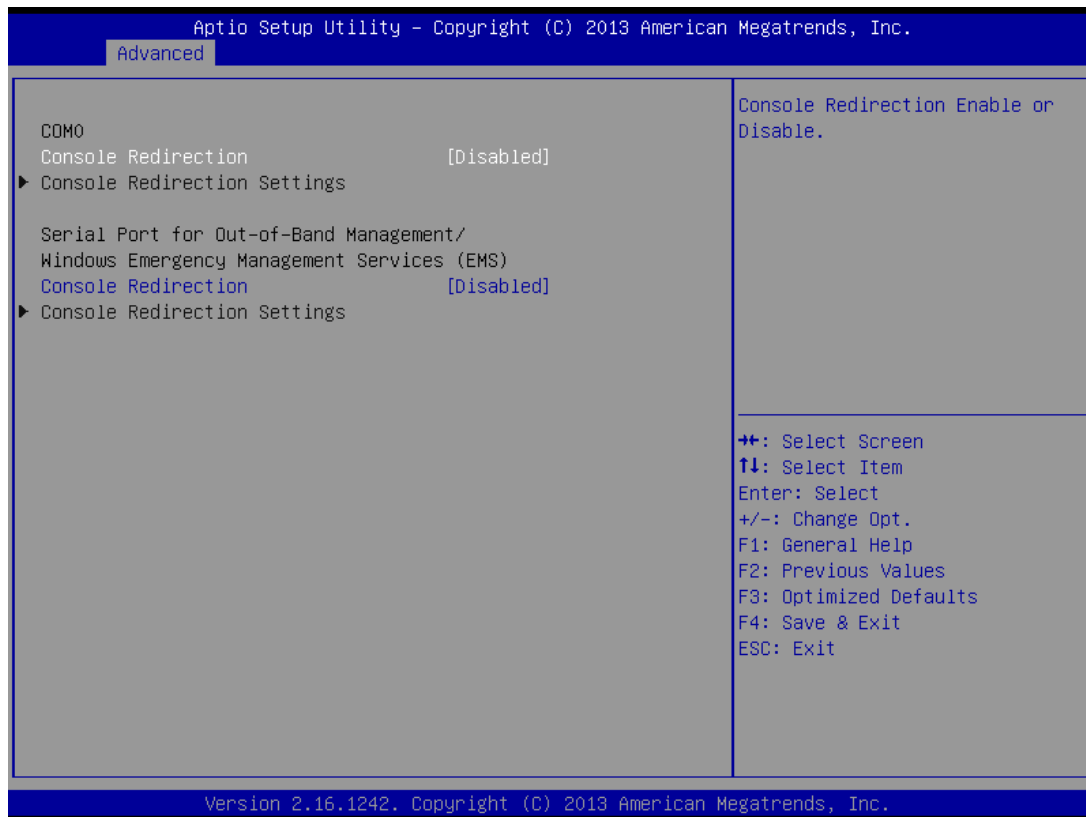
Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Advanced	
Serial Port 2 Configuration	
Serial Port	[Enabled]
Device Settings	IO=2F8h; IRQ=3;
Change Settings	[Auto]
Enable or Disable Serial Port (COM)	
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.	

5.1.3 Hardware Monitor

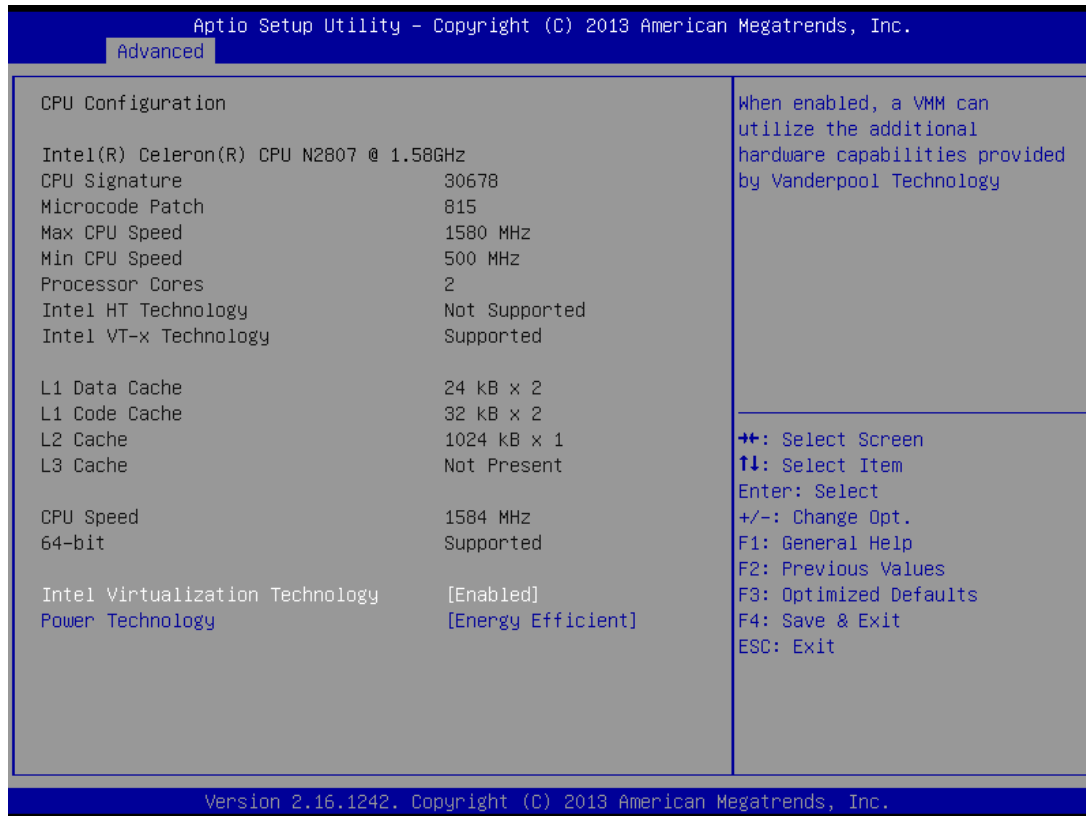
Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.	
Advanced	
Pc Health Status	
CPU Temperature	: +26 %
System Temperature	: +22 %
Fan Speed	: N/A
VCORE	: +0.752 V
VIO	: +1.813 V
VDDR	: +1.366 V
VIN	: +12.144 V
VCC3V3	: +3.360 V
VCC5V	: +5.088 V
++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit	
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.	

5.1.4 Serial Port Console Redirection

Serial port console redirection settings.



5.1.5 CPU Configuration



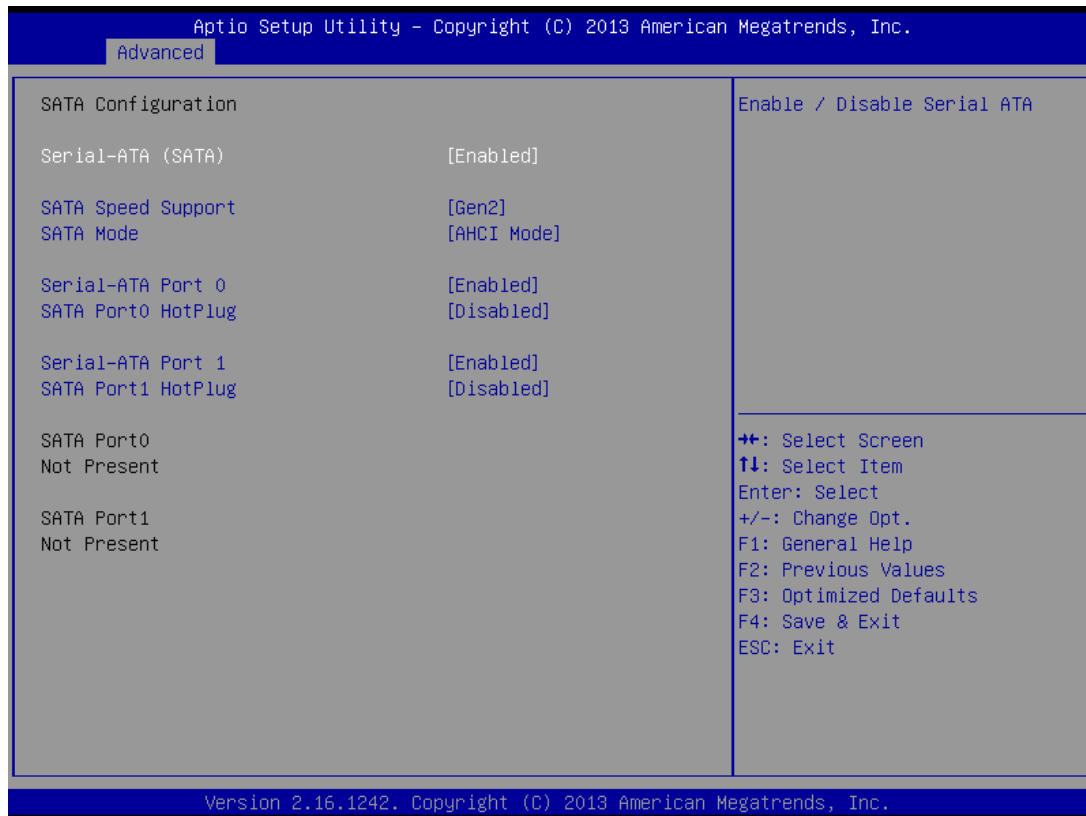
Intel Virtualization Technology: When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology

Execute Disable Bit: XP can prevent certain classes of malicious buffer overflow attacks when combined with a supporting OS (Windows Server 2003 SP1, Windows XP SP2, SusE Linux 9.2, RedHat Enterprise 3 Update 3.)

Power Technology: Configure the power management features.

5.1.6 SATA Configuration

The BIOS automatically detects the presence of SATA device and the hardware installed in the SATA ports will be showed in the configuration. Each port can be enabled or disabled individually.



SATA Speed Support: Options: Gen 1, Gen 2.

SATA Mode: Select IDE or AHCI Mode

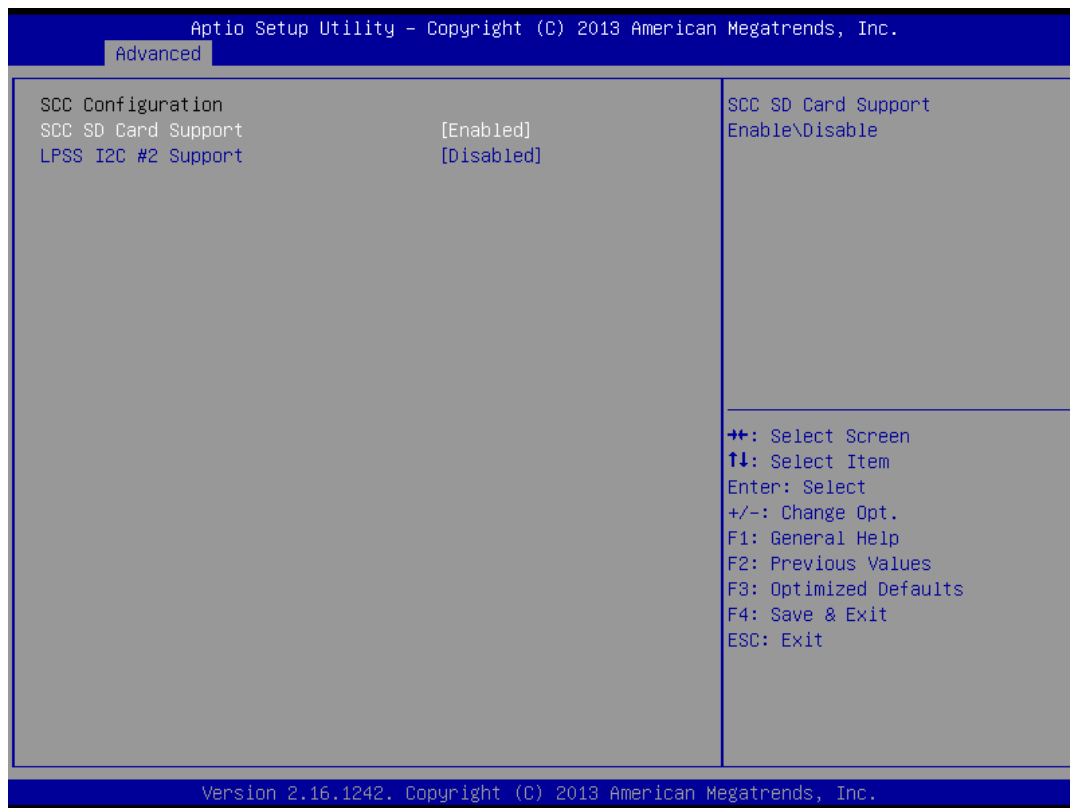
SATA Port Hot Plug: Enable/disable the port as Hot Pluggable.

5.1.7 Miscellaneous Configuration



OS Selection: Select the OS.

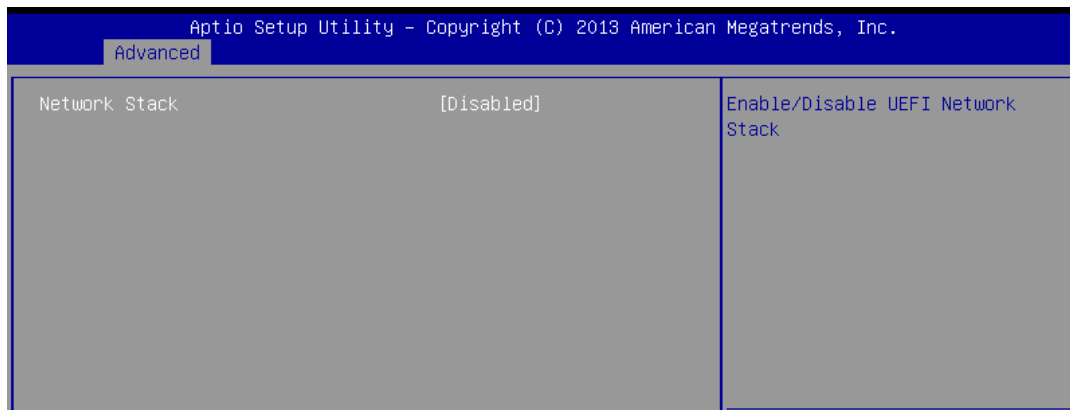
5.1.8 LPSS & SCC Configuration



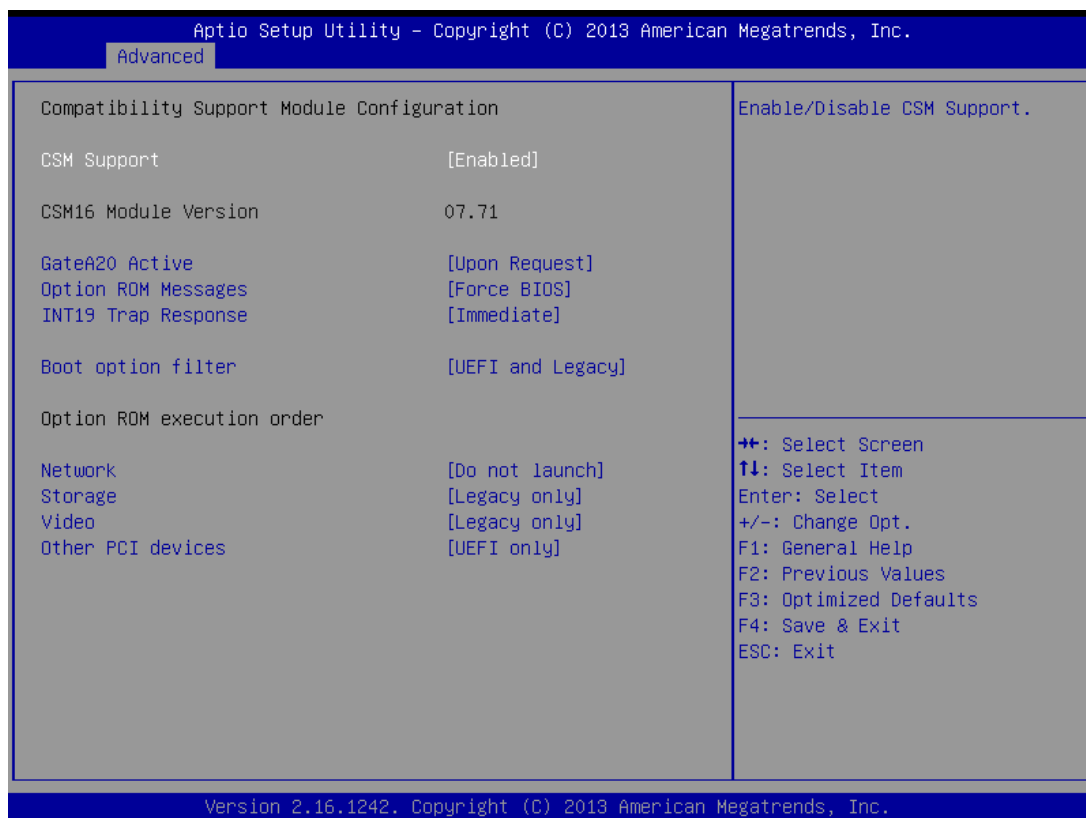
SCC SD Card Support: Options: Disable, Enable.

LPSS I2C #2 Support: Options: Disable, Enable.

5.1.9 Network Stack Configuration



5.1.10 CSM Configuration



GateA20 Active:

[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.

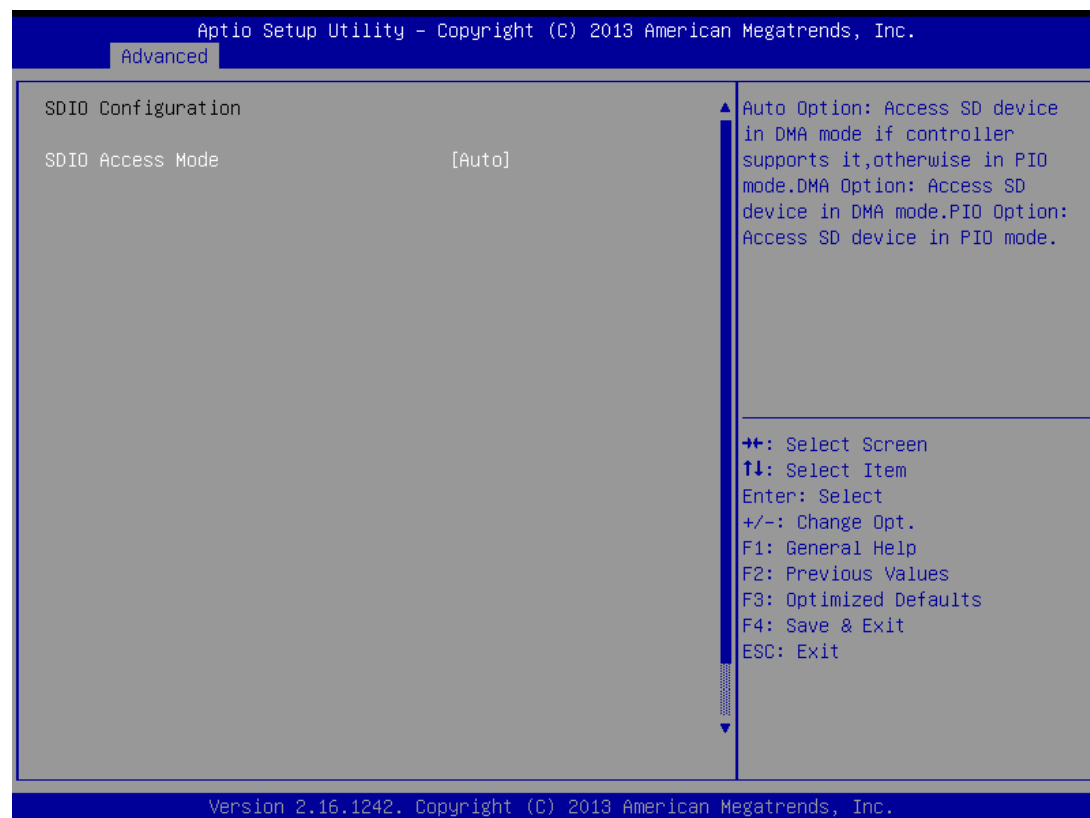
Option ROM Message: Set display mode [Force BIOS] or [Keep Current] for Option ROM.

INT19 Trap Response: BIOS reaction on INT19 trapping by Option ROM: IMMEDIATE – execute the trap right away; POSTPONED – execute the traps during legacy boot.

Boot option filter: This option controls what devices system can boot to [UEFI and Legacy], [Legacy only] or [UEFI only].

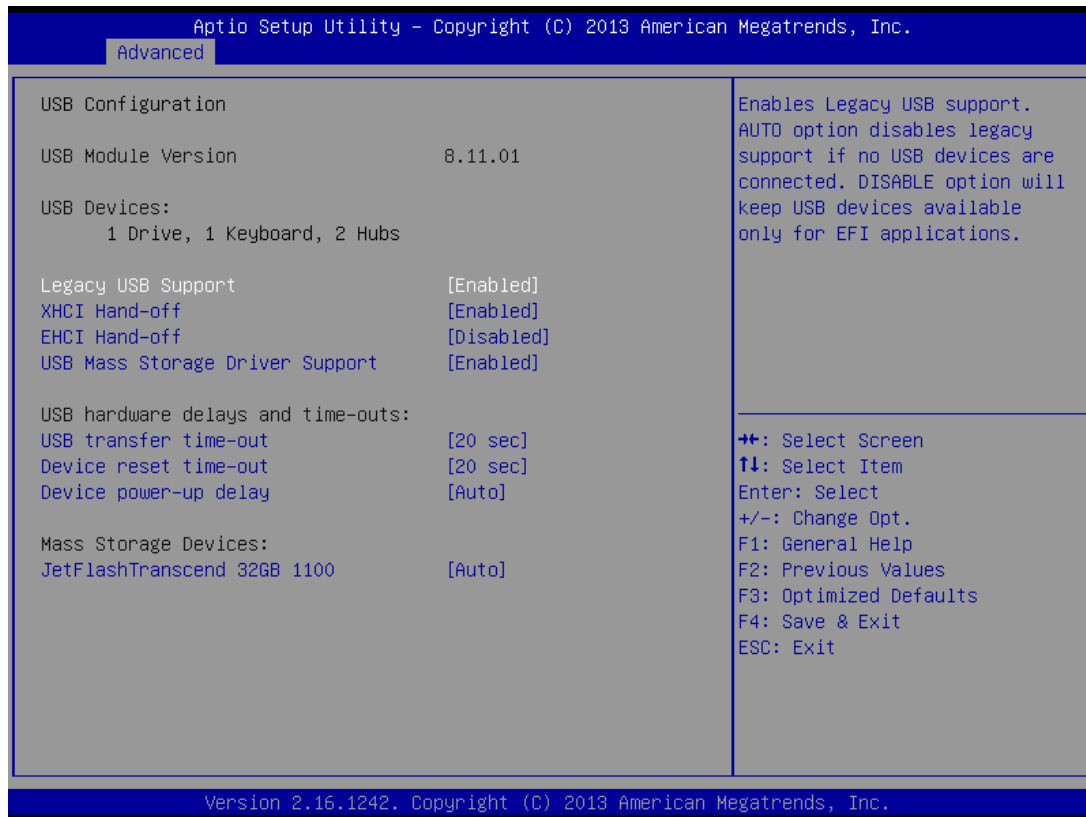
Option ROM Execution Order: Controls the execution Option ROM, [Do not launch], [UEFI only] or [Legacy only].

5.1.11 SDIO Configuration



SDIO Access Mode: Auto Option: Access SD device in DMA mode if controller supports it, otherwise in PIO mode. DMA Option: Access SD device in DMA mode. PIO Option: Access SD device in PIO mode.

5.1.12 USB Configuration



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.

XHCI Hand-off: This is a workaround for OSeS without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

EHCI Hand-off: This is a workaround for OSeS without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.

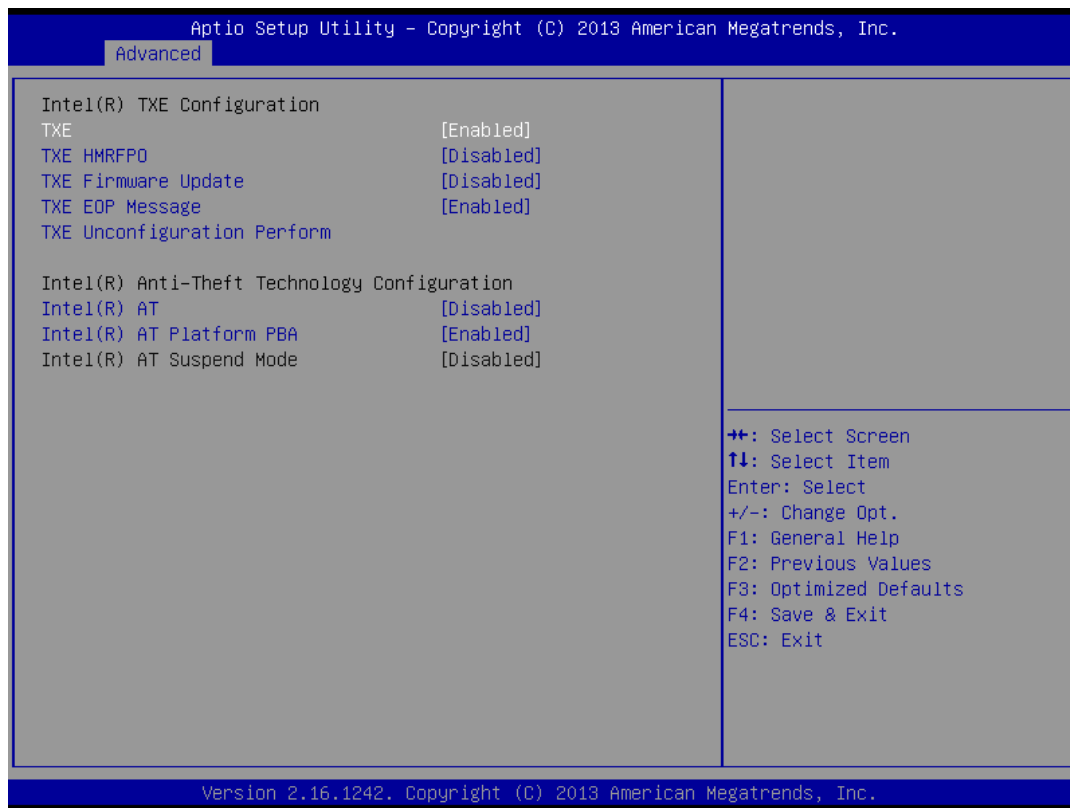
USB Mass Storage Driver Support: Enable/Disable USB Mass Storage Driver Support.

USB transfer time-out: The time-out value for Control, Bulk, and Interrupt transfers.

Device reset time-out: USB mass storage device Start Unit command time-out.

Device power-up delay: Maximum time the device will take before it properly reports itself to the Host Controller. "Auto" uses default value: for a Root port it is 100ms, for a Hub port the delay is taken from Hub descriptor.

5.1.13 Security Configuration

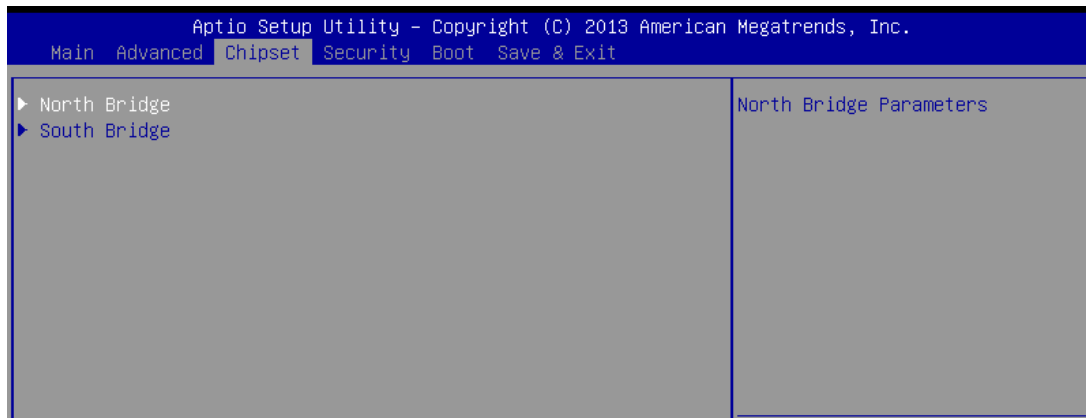


TXE EOP Message: Send EOP Message Before Enter OS.

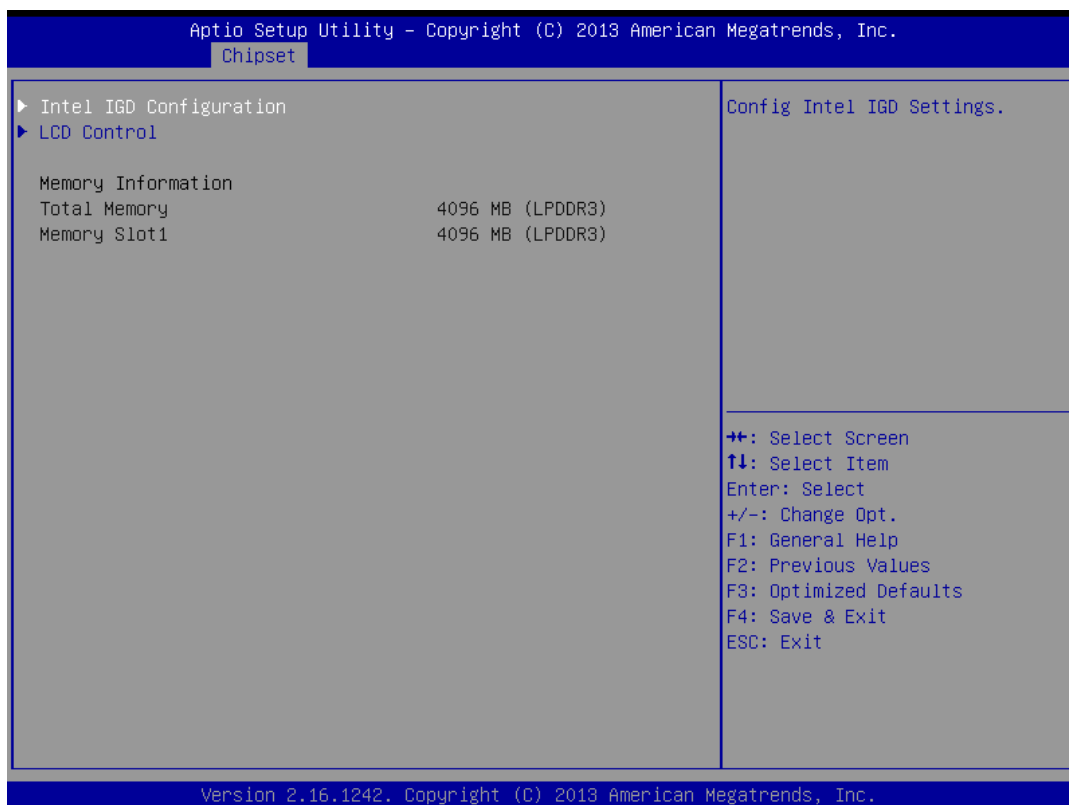
Intel® AT: Enable/Disable BIOS AT Code from Running.

Intel® AT Platform PBA: Enable/Disable BIOS AT Code from Running.

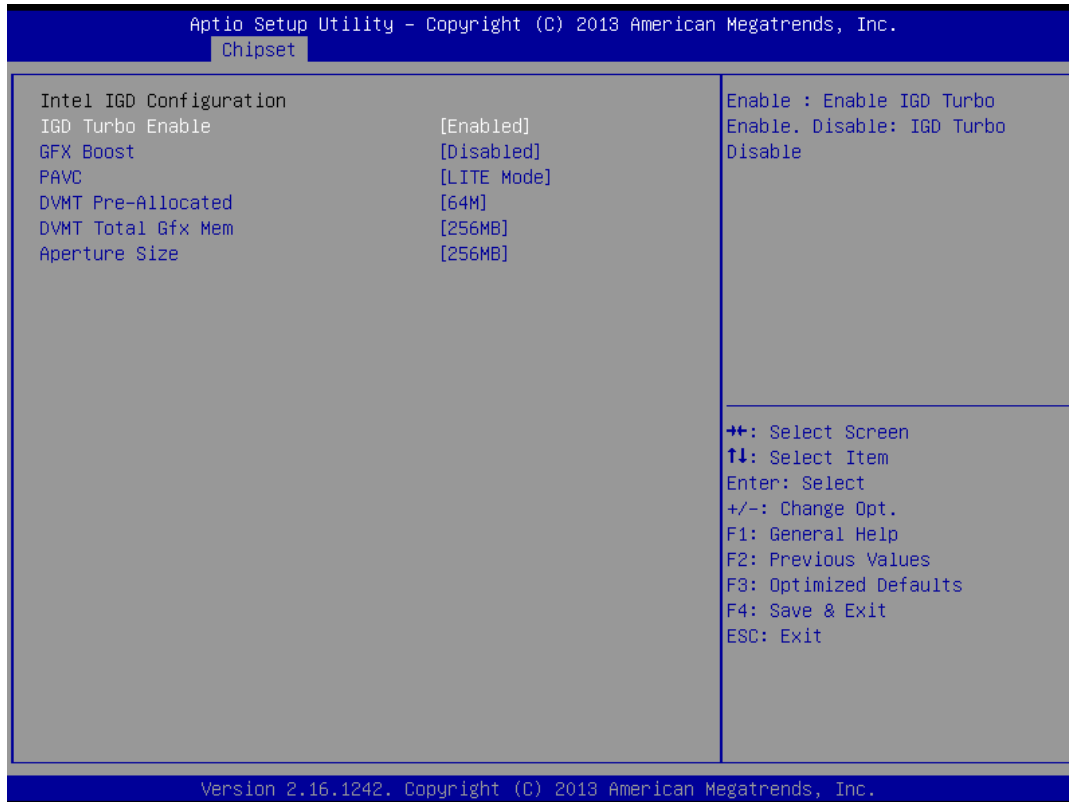
5.2 Chipset



5.2.1 Northbridge Configuration



5.2.1.1 Intel IGD Configuration



IGD Turbo Enable: Enable/Disable: IGD Turbo.

GFX Boost: Enable/Disable GFX Boost.

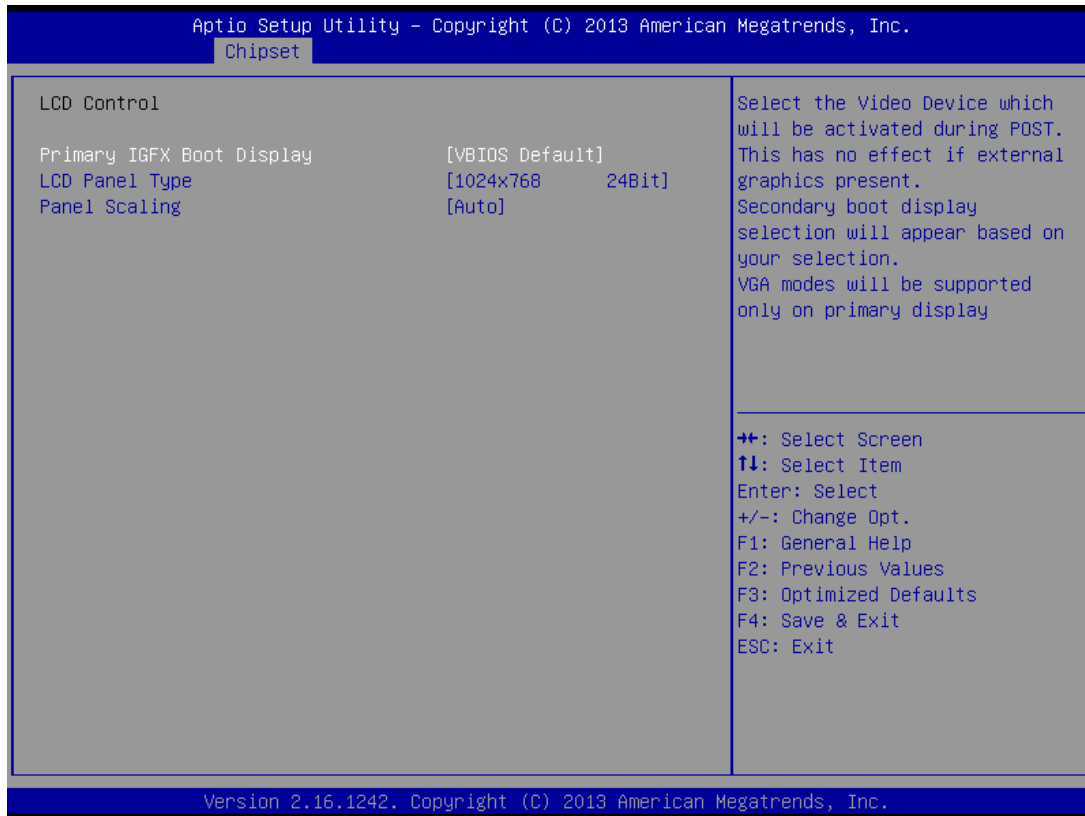
PAVC: Enable/Disable Protected Audio Video Control.

DVMT Pre-Allocated: Select DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

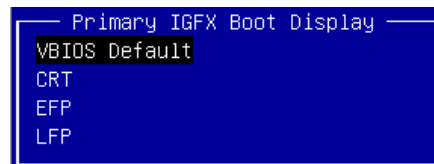
DVMT Total Gfx Mem: Select DVMT 5.0 Total Graphics Memory size used by the Internal Graphics Device.

Aperture Size: Select the Aperture Size.

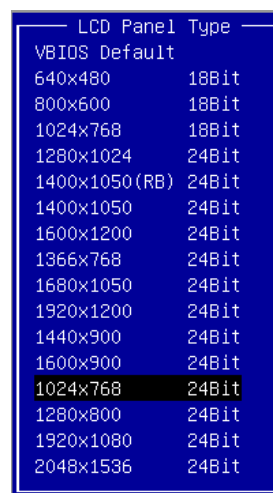
5.2.1.2 LCD Control



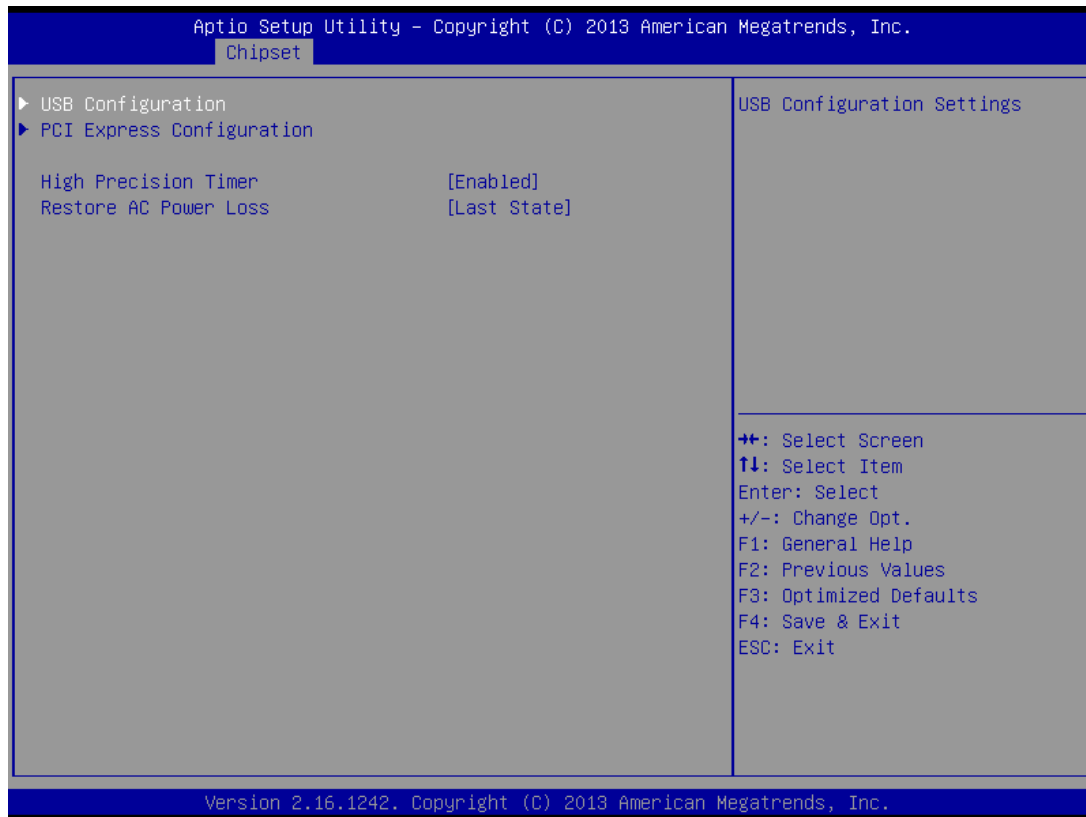
Primary IGFX Boot Display: Default setting is “VBIOS Default”. “CRT”selects VGA, “EFP” selects DisplayPort, “LFP” selects LVDS.



LCD Panel Type: Default setting is “1024x768 LVDS 24-bit”.



5.2.2 Southbridge Configuration



High Precision Timer: Enable or Disable the High Precision Event Timer.

Restore AC Power Loss: Select AC power state when power is re-applied after a power failure.

5.2.2.1 USB Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.		
Chipset		
USB Configuration		Control the USB EHCI (USB 2.0) functions. One EHCI controller must always be enabled
XHCI Mode	[Disabled]	
USB 2.0(EHCI) Support	[Enabled]	
USB RMH Mode	[Enabled]	
USB EHCI debug	[Disabled]	
USB Per Port Control	[Enabled]	
USB Port 0 (USB_1)	[Enabled]	
USB Port 1 (USB Onboard HUB)	[Enabled]	
USB Port 2 (USB_3)	[Enabled]	
USB Port 3 (USB_3)	[Enabled]	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.		

5.2.2.2 PCI Express Configuration

Aptio Setup Utility - Copyright (C) 2013 American Megatrends, Inc.		
Chipset		
PCI Express Configuration		Enable or Disable the PCI Express Port 0 in the Chipset.
PCI Express Port 0	[Enabled]	
Hot Plug	[Disabled]	
Speed	[Auto]	
PCI Express Port 1		
Hot Plug	[Disabled]	
Speed	[Auto]	
PCI Express Port 2		
Hot Plug	[Disabled]	
Speed	[Auto]	
PCI Express Port 3		
Hot Plug	[Disabled]	
Speed	[Auto]	
		++: Select Screen ↑↓: Select Item Enter: Select +/-: Change Opt. F1: General Help F2: Previous Values F3: Optimized Defaults F4: Save & Exit ESC: Exit
Version 2.16.1242. Copyright (C) 2013 American Megatrends, Inc.		

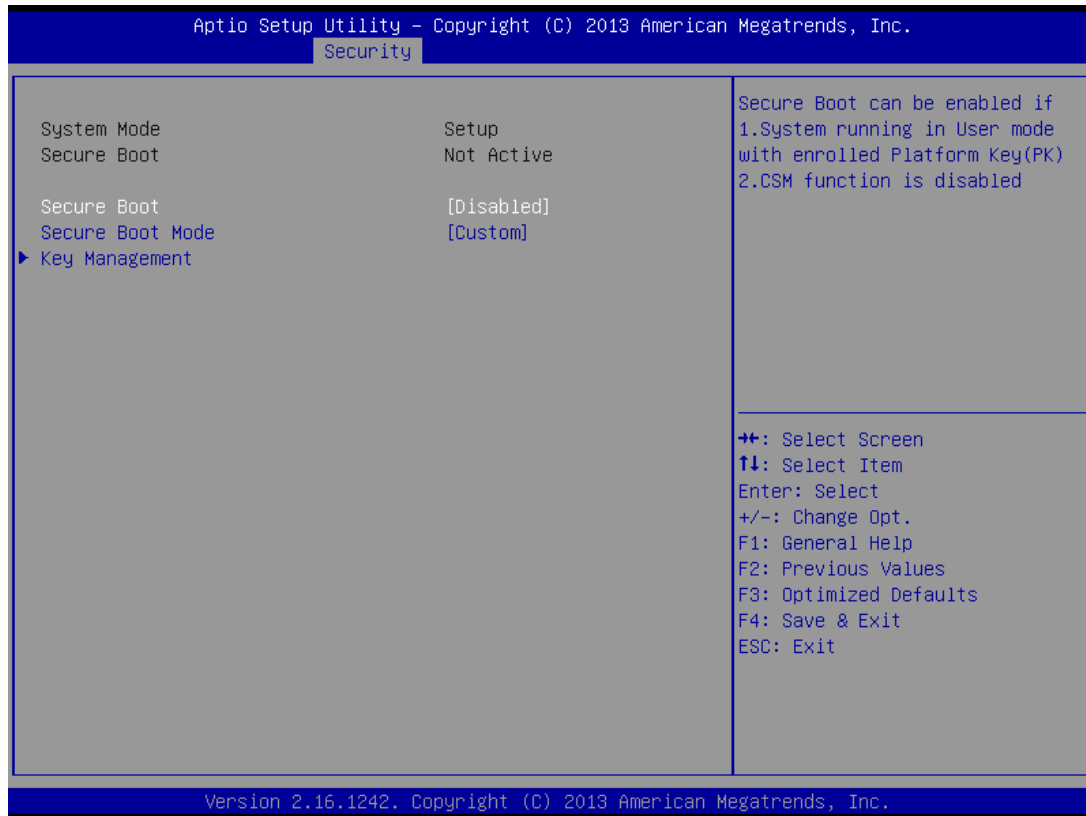
5.3 Security

Administrator's and User's passwords could be set.

If ONLY the Administrator's password is set, then this only limits access to Setup and is only asked for when entering Setup. If ONLY the User's password is set, then this is a power on password and must be entered to boot or enter Setup. In Setup, the user will have administrator rights. The minimum length of the password is 3 and the maximum length is 20.



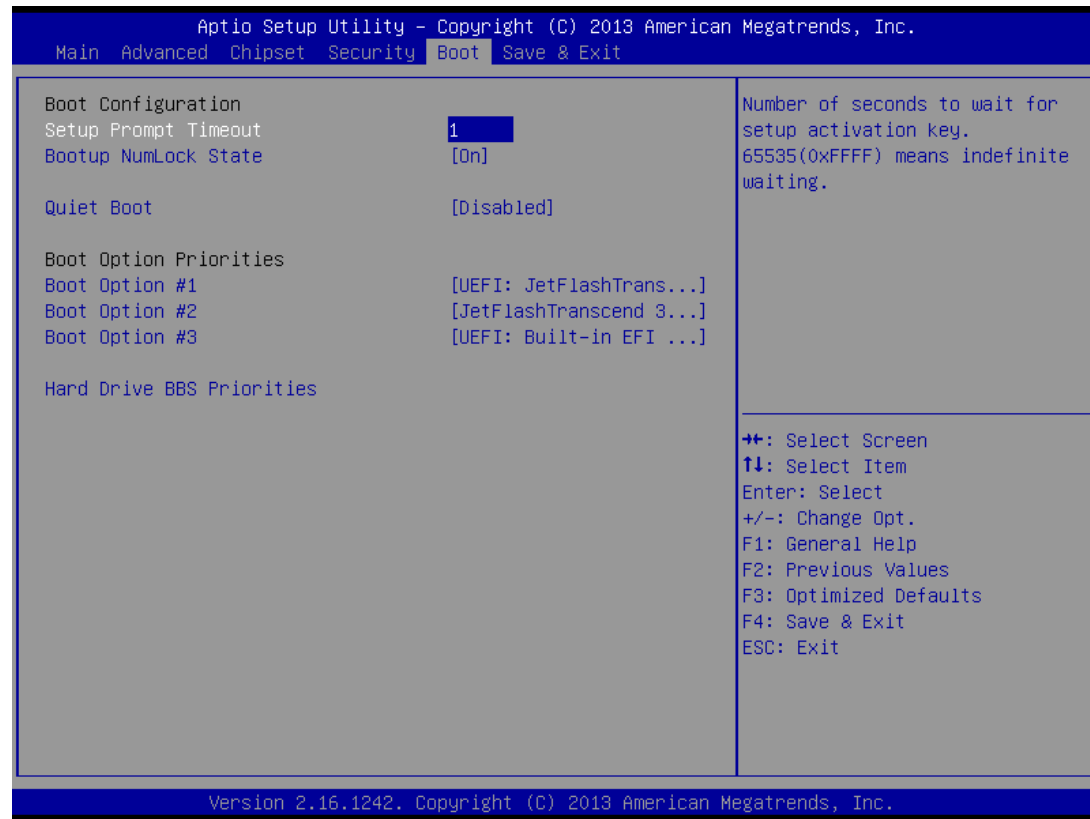
5.3.1 Secure Boot Menu



Secure Boot: Secure Boot can be enabled if the System running in User mode with enrolled Platform Key (PK) and CSM function is disabled.

Secure Boot Mode: Secure Boot mode selector. 'Custom' Mode enables users to change Image Execution policy and manage Secure Boot Keys.

5.4 Boot



Setup Prompt Timeout: Number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

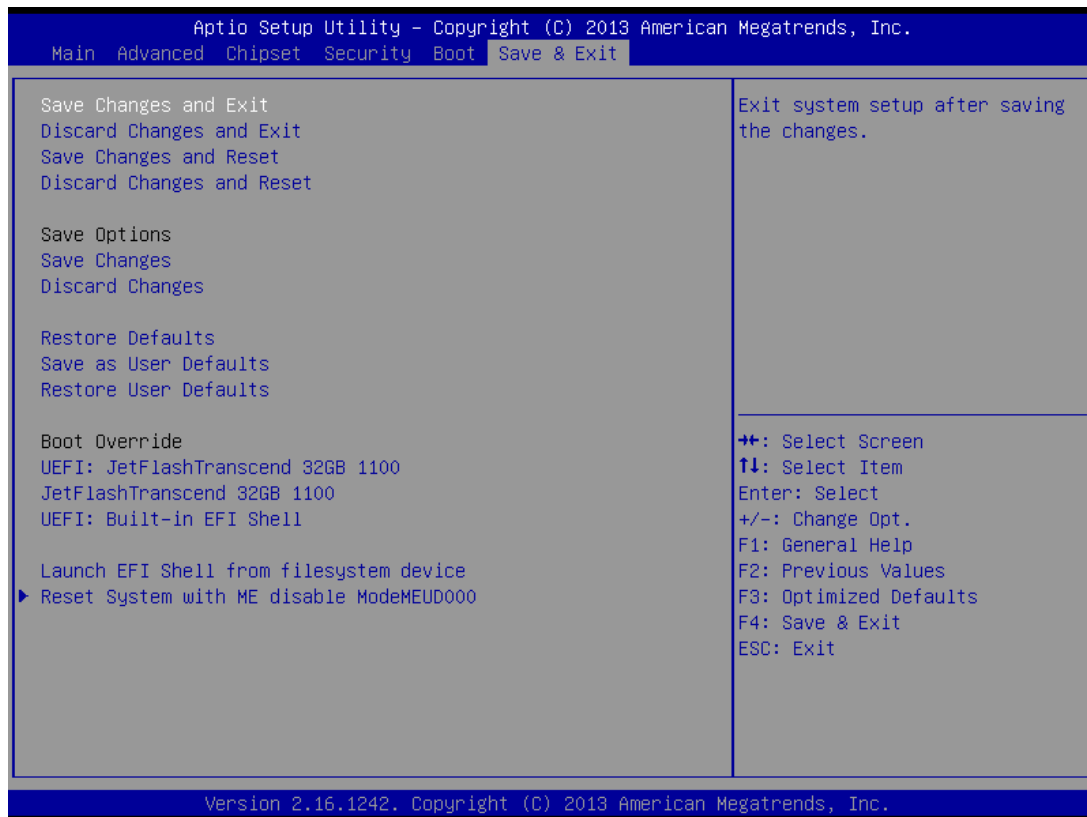
Bootup NumLock State: Select [Enable] or [Disable] for the keyboard NumLock state.

Quiet Boot: Enables or disables Quiet Boot option.

Boot Order Priorities: Set the system boot order.

Hard Drive BBS Priorities: Set the order of the legacy devices in this group.

5.5 Save and Exit



6. Address Map

6.1 I/O Port Address Map

The assignments of the I/O port addresses for the CT-DBT0x under Windows® 7 Ultimate 64-bit are shown below.

Input/output (IO)	
[0000000000000000 - 000000000000006F]	PCI Express Root Complex
[0000000000000020 - 0000000000000021]	Programmable interrupt controller
[0000000000000020 - 0000000000000021]	Programmable interrupt controller
[0000000000000020 - 0000000000000021]	Programmable interrupt controller
[0000000000000024 - 0000000000000025]	Programmable interrupt controller
[0000000000000024 - 0000000000000025]	Programmable interrupt controller
[0000000000000024 - 0000000000000025]	Programmable interrupt controller
[0000000000000028 - 0000000000000029]	Programmable interrupt controller
[0000000000000028 - 0000000000000029]	Programmable interrupt controller
[0000000000000028 - 0000000000000029]	Programmable interrupt controller
[0000000000000028 - 0000000000000029]	Programmable interrupt controller
[000000000000002C - 000000000000002D]	Programmable interrupt controller
[000000000000002C - 000000000000002D]	Programmable interrupt controller
[000000000000002C - 000000000000002D]	Programmable interrupt controller
[0000000000000030 - 0000000000000031]	Programmable interrupt controller
[0000000000000030 - 0000000000000031]	Programmable interrupt controller
[0000000000000030 - 0000000000000031]	Programmable interrupt controller
[0000000000000034 - 0000000000000035]	Programmable interrupt controller
[0000000000000034 - 0000000000000035]	Programmable interrupt controller
[0000000000000034 - 0000000000000035]	Programmable interrupt controller
[0000000000000038 - 0000000000000039]	Programmable interrupt controller
[0000000000000038 - 0000000000000039]	Programmable interrupt controller
[0000000000000038 - 0000000000000039]	Programmable interrupt controller
[000000000000003C - 000000000000003D]	Programmable interrupt controller
[000000000000003C - 000000000000003D]	Programmable interrupt controller
[000000000000003C - 000000000000003D]	Programmable interrupt controller
[0000000000000040 - 0000000000000043]	System timer
[0000000000000040 - 0000000000000043]	System timer
[0000000000000040 - 0000000000000043]	System timer
[000000000000004E - 000000000000004F]	Motherboard resources
[0000000000000050 - 0000000000000053]	System timer
[0000000000000050 - 0000000000000053]	System timer
[0000000000000050 - 0000000000000053]	System timer
[0000000000000060 - 0000000000000060]	Standard PS/2 Keyboard
[0000000000000061 - 0000000000000061]	Motherboard resources
[0000000000000063 - 0000000000000063]	Motherboard resources
[0000000000000064 - 0000000000000064]	Standard PS/2 Keyboard
[0000000000000065 - 0000000000000065]	Motherboard resources
[0000000000000067 - 0000000000000067]	Motherboard resources
[0000000000000070 - 0000000000000070]	Motherboard resources
[0000000000000070 - 0000000000000077]	System CMOS/real time clock
[0000000000000078 - 00000000000000CF7]	PCI Express Root Complex
[0000000000000080 - 000000000000008F]	Motherboard resources
[0000000000000092 - 0000000000000092]	Motherboard resources
[00000000000000A0 - 00000000000000A1]	Programmable interrupt controller
[00000000000000A0 - 00000000000000A1]	Programmable interrupt controller
[00000000000000A0 - 00000000000000A1]	Programmable interrupt controller
[00000000000000A4 - 00000000000000A5]	Programmable interrupt controller
[00000000000000A4 - 00000000000000A5]	Programmable interrupt controller
[00000000000000A4 - 00000000000000A5]	Programmable interrupt controller
[00000000000000A8 - 00000000000000A9]	Programmable interrupt controller

I/O Port Address Map (cont'd)

	[00000000000000A8 - 00000000000000A9]	Programmable interrupt controller
	[00000000000000AC - 00000000000000AD]	Programmable interrupt controller
	[00000000000000AC - 00000000000000AD]	Programmable interrupt controller
	[00000000000000AC - 00000000000000AD]	Programmable interrupt controller
	[00000000000000B0 - 00000000000000B1]	Programmable interrupt controller
	[00000000000000B0 - 00000000000000B1]	Programmable interrupt controller
	[00000000000000B0 - 00000000000000B1]	Programmable interrupt controller
	[00000000000000B2 - 00000000000000B3]	Motherboard resources
	[00000000000000B4 - 00000000000000B5]	Programmable interrupt controller
	[00000000000000B4 - 00000000000000B5]	Programmable interrupt controller
	[00000000000000B4 - 00000000000000B5]	Programmable interrupt controller
	[00000000000000B8 - 00000000000000B9]	Programmable interrupt controller
	[00000000000000B8 - 00000000000000B9]	Programmable interrupt controller
	[00000000000000B8 - 00000000000000B9]	Programmable interrupt controller
	[00000000000000BC - 00000000000000BD]	Programmable interrupt controller
	[00000000000000BC - 00000000000000BD]	Programmable interrupt controller
	[00000000000000BC - 00000000000000BD]	Programmable interrupt controller
	[00000000000002E8 - 00000000000002EF]	Communications Port (COM4)
	[00000000000002F8 - 00000000000002FF]	Communications Port (COM2)
	[00000000000003B0 - 00000000000003BB]	Intel(R) HD Graphics
	[00000000000003C0 - 00000000000003DF]	Intel(R) HD Graphics
	[00000000000003E8 - 00000000000003EF]	Communications Port (COM3)
	[00000000000003F8 - 00000000000003FF]	Communications Port (COM1)
	[0000000000000400 - 000000000000047F]	Motherboard resources
	[00000000000004D0 - 00000000000004D1]	Programmable interrupt controller
	[00000000000004D0 - 00000000000004D1]	Programmable interrupt controller
	[00000000000004D0 - 00000000000004D1]	Programmable interrupt controller
	[0000000000000500 - 00000000000005FE]	Motherboard resources
	[0000000000000680 - 000000000000069F]	Motherboard resources
	[0000000000000A00 - 0000000000000A0F]	Motherboard resources
	[0000000000000A10 - 0000000000000A1F]	Motherboard resources
	[0000000000000A20 - 0000000000000A2F]	Motherboard resources
	[0000000000000D00 - 000000000000FFFF]	PCI Express Root Complex
	[0000000000000C00 - 0000000000000C0F]	Intel(R) I210 Gigabit Network Connection
	[0000000000000C00 - 0000000000000C0F]	Intel(R) I210 Gigabit Network Connection #3
	[0000000000000C00 - 000000000000CFFF]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A
	[0000000000000C00 - 000000000000CFFF]	PCI standard PCI-to-PCI bridge
	[0000000000000C00 - 000000000000CFFF]	PCI standard PCI-to-PCI bridge
	[0000000000000D00 - 0000000000000D0F]	Intel(R) I210 Gigabit Network Connection #2
	[0000000000000D00 - 0000000000000D0F]	Intel(R) I210 Gigabit Network Connection #4
	[0000000000000D00 - 000000000000DFFF]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48
	[0000000000000D00 - 000000000000DFFF]	PCI standard PCI-to-PCI bridge
	[0000000000000D00 - 000000000000DFFF]	PCI standard PCI-to-PCI bridge
	[0000000000000E00 - 0000000000000E0F]	Intel Device
	[0000000000000E00 - 0000000000000E0F]	Intel Device
	[0000000000000E00 - 0000000000000E0F]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
	[0000000000000E20 - 0000000000000E3F]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
	[0000000000000E20 - 0000000000000E3F]	Standard SATA AHCI Controller
	[0000000000000E20 - 0000000000000E3F]	Standard SATA AHCI Controller
	[0000000000000E40 - 0000000000000E43]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
	[00000000000000BC - 00000000000000BD]	Programmable interrupt controller
	[00000000000000BC - 00000000000000BD]	Programmable interrupt controller
	[00000000000002E8 - 00000000000002EF]	Communications Port (COM4)
	[00000000000002F8 - 00000000000002FF]	Communications Port (COM2)
	[00000000000003B0 - 00000000000003BB]	Intel(R) HD Graphics
	[00000000000003C0 - 00000000000003DF]	Intel(R) HD Graphics
	[00000000000003E8 - 00000000000003EF]	Communications Port (COM3)
	[00000000000003F8 - 00000000000003FF]	Communications Port (COM1)
	[0000000000000400 - 000000000000047F]	Motherboard resources
	[00000000000004D0 - 00000000000004D1]	Programmable interrupt controller
	[00000000000004D0 - 00000000000004D1]	Programmable interrupt controller

I/O Port Address Map (cont'd)

	[00000000000004D0 - 00000000000004D1] Programmable interrupt controller
	[0000000000000500 - 00000000000005FE] Motherboard resources
	[0000000000000680 - 000000000000069F] Motherboard resources
	[0000000000000A00 - 0000000000000A0F] Motherboard resources
	[0000000000000A10 - 0000000000000A1F] Motherboard resources
	[0000000000000A20 - 0000000000000A2F] Motherboard resources
	[0000000000000D00 - 0000000000000FFF] PCI Express Root Complex
	[0000000000000C00 - 0000000000000C0F] Intel(R) I210 Gigabit Network Connection
	[0000000000000C00 - 0000000000000C0F] Intel(R) I210 Gigabit Network Connection #3
	[0000000000000C00 - 0000000000000CFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A
	[0000000000000C00 - 0000000000000CFF] PCI standard PCI-to-PCI bridge
	[0000000000000C00 - 0000000000000CFF] PCI standard PCI-to-PCI bridge
	[0000000000000D00 - 0000000000000D0F] Intel(R) I210 Gigabit Network Connection #2
	[0000000000000D00 - 0000000000000D0F] Intel(R) I210 Gigabit Network Connection #4
	[0000000000000D00 - 0000000000000DFF] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48
	[0000000000000D00 - 0000000000000DFF] PCI standard PCI-to-PCI bridge
	[0000000000000D00 - 0000000000000DFF] PCI standard PCI-to-PCI bridge
	[0000000000000E00 - 0000000000000E0F] Intel Device
	[0000000000000E00 - 0000000000000E0F] Intel Device
	[0000000000000E00 - 0000000000000E0F] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
	[0000000000000E20 - 0000000000000E3F] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
	[0000000000000E20 - 0000000000000E3F] Standard SATA AHCI Controller
	[0000000000000E20 - 0000000000000E3F] Standard SATA AHCI Controller
	[0000000000000E40 - 0000000000000E43] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
	[0000000000000E40 - 0000000000000E43] Standard SATA AHCI Controller
	[0000000000000E40 - 0000000000000E43] Standard SATA AHCI Controller
	[0000000000000E50 - 0000000000000E57] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
	[0000000000000E50 - 0000000000000E57] Standard SATA AHCI Controller
	[0000000000000E50 - 0000000000000E57] Standard SATA AHCI Controller
	[0000000000000E60 - 0000000000000E63] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
	[0000000000000E60 - 0000000000000E63] Standard SATA AHCI Controller
	[0000000000000E60 - 0000000000000E63] Standard SATA AHCI Controller
	[0000000000000E70 - 0000000000000E77] Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
	[0000000000000E70 - 0000000000000E77] Standard SATA AHCI Controller
	[0000000000000E70 - 0000000000000E77] Standard SATA AHCI Controller
	[0000000000000E80 - 0000000000000E87] Intel(R) HD Graphics
	[0000000000000E80 - 0000000000000E87] Intel(R) HD Graphics
	[0000000000000E80 - 0000000000000E87] Intel(R) HD Graphics

6.2 Interrupt Controller (IRQ) Map

The interrupt controller map for the CT-DBT0x under Windows® 7 Ultimate 64-bit is shown below.

Interrupt request (IRQ)	
	(ISA) 0x00000000 (00) System timer
	(ISA) 0x00000000 (00) System timer
	(ISA) 0x00000000 (00) System timer
	(ISA) 0x00000001 (01) Standard PS/2 Keyboard
	(ISA) 0x00000003 (03) Communications Port (COM2)
	(ISA) 0x00000004 (04) Communications Port (COM1)
	(ISA) 0x00000005 (05) ASMedia USB 3.0 eXtensible Host Controller - 0096 (Microsoft)
	(ISA) 0x00000005 (05) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
	(ISA) 0x00000005 (05) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A
	(ISA) 0x00000005 (05) Intel(R) I210 Gigabit Network Connection
	(ISA) 0x00000005 (05) Intel(R) I210 Gigabit Network Connection #3
	(ISA) 0x00000005 (05) PCI standard PCI-to-PCI bridge
	(ISA) 0x00000005 (05) PCI standard PCI-to-PCI bridge
	(ISA) 0x00000005 (05) Standard SATA AHCI Controller
	(ISA) 0x00000007 (07) Communications Port (COM3)
	(ISA) 0x00000007 (07) Communications Port (COM4)
	(ISA) 0x00000008 (08) High precision event timer
	(ISA) 0x0000000A (10) ASMedia USB 3.0 eXtensible Host Controller - 0096 (Microsoft)
	(ISA) 0x0000000A (10) High Definition Audio Controller
	(ISA) 0x0000000A (10) High Definition Audio Controller
	(ISA) 0x0000000A (10) Intel Device
	(ISA) 0x0000000A (10) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
	(ISA) 0x0000000A (10) PCI standard PCI-to-PCI bridge
	(ISA) 0x0000000A (10) PCI standard PCI-to-PCI bridge
	(ISA) 0x0000000A (10) SDA Standard Compliant SD Host Controller
	(ISA) 0x0000000A (10) SDA Standard Compliant SD Host Controller
	(ISA) 0x0000000B (11) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48
	(ISA) 0x0000000B (11) Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor EHCI USB - 0F34
	(ISA) 0x0000000B (11) Intel(R) HD Graphics
	(ISA) 0x0000000B (11) Intel(R) HD Graphics
	(ISA) 0x0000000B (11) Intel(R) I210 Gigabit Network Connection #2
	(ISA) 0x0000000B (11) Intel(R) I210 Gigabit Network Connection #4
	(ISA) 0x0000000B (11) Intel(R) Trusted Execution Engine Interface
	(ISA) 0x0000000B (11) Intel(R) USB 3.0 eXtensible Host Controller - 0100 (Microsoft)
	(ISA) 0x0000000B (11) Intel(R) USB 3.0 eXtensible Host Controller - 0100 (Microsoft)
	(ISA) 0x0000000B (11) PCI standard PCI-to-PCI bridge
	(ISA) 0x0000000B (11) Standard Enhanced PCI to USB Host Controller
	(ISA) 0x0000000C (12) PS/2 Compatible Mouse
	(ISA) 0x00000030 (48) GPIO Controller
	(ISA) 0x00000031 (49) GPIO Controller
	(ISA) 0x00000032 (50) GPIO Controller
	(ISA) 0x00000051 (81) Microsoft ACPI-Compliant System
	(ISA) 0x00000052 (82) Microsoft ACPI-Compliant System
	(ISA) 0x00000053 (83) Microsoft ACPI-Compliant System
	(ISA) 0x00000054 (84) Microsoft ACPI-Compliant System
	(ISA) 0x00000055 (85) Microsoft ACPI-Compliant System
	(ISA) 0x00000056 (86) Microsoft ACPI-Compliant System
	(ISA) 0x00000057 (87) Microsoft ACPI-Compliant System
	(ISA) 0x00000058 (88) Microsoft ACPI-Compliant System
	(ISA) 0x00000059 (89) Microsoft ACPI-Compliant System

Interrupt Controller (IRQ) Map (cont'd)

	(ISA) 0x0000005A (90)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005B (91)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005C (92)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005D (93)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005E (94)	Microsoft ACPI-Compliant System
	(ISA) 0x0000005F (95)	Microsoft ACPI-Compliant System
	(ISA) 0x00000060 (96)	Microsoft ACPI-Compliant System
	(ISA) 0x00000061 (97)	Microsoft ACPI-Compliant System
	(ISA) 0x00000062 (98)	Microsoft ACPI-Compliant System
	(ISA) 0x00000063 (99)	Microsoft ACPI-Compliant System
	(ISA) 0x00000064 (100)	Microsoft ACPI-Compliant System
	(ISA) 0x00000065 (101)	Microsoft ACPI-Compliant System
	(ISA) 0x00000066 (102)	Microsoft ACPI-Compliant System
	(ISA) 0x00000067 (103)	Microsoft ACPI-Compliant System
	(ISA) 0x00000068 (104)	Microsoft ACPI-Compliant System
	(ISA) 0x00000069 (105)	Microsoft ACPI-Compliant System
	(ISA) 0x0000006A (106)	Microsoft ACPI-Compliant System
	(ISA) 0x0000006B (107)	Microsoft ACPI-Compliant System
	(ISA) 0x0000006C (108)	Microsoft ACPI-Compliant System
	(ISA) 0x0000006D (109)	Microsoft ACPI-Compliant System
	(ISA) 0x0000006E (110)	Microsoft ACPI-Compliant System
	(ISA) 0x0000006F (111)	Microsoft ACPI-Compliant System
	(ISA) 0x00000070 (112)	Microsoft ACPI-Compliant System
	(ISA) 0x00000071 (113)	Microsoft ACPI-Compliant System
	(ISA) 0x00000072 (114)	Microsoft ACPI-Compliant System
	(ISA) 0x00000073 (115)	Microsoft ACPI-Compliant System
	(ISA) 0x00000074 (116)	Microsoft ACPI-Compliant System
	(ISA) 0x00000075 (117)	Microsoft ACPI-Compliant System
	(ISA) 0x00000076 (118)	Microsoft ACPI-Compliant System
	(ISA) 0x00000077 (119)	Microsoft ACPI-Compliant System
	(ISA) 0x00000078 (120)	Microsoft ACPI-Compliant System
	(ISA) 0x00000079 (121)	Microsoft ACPI-Compliant System
	(ISA) 0x0000007A (122)	Microsoft ACPI-Compliant System
	(ISA) 0x0000007B (123)	Microsoft ACPI-Compliant System
	(ISA) 0x0000007C (124)	Microsoft ACPI-Compliant System
	(ISA) 0x0000007D (125)	Microsoft ACPI-Compliant System
	(ISA) 0x0000007E (126)	Microsoft ACPI-Compliant System
	(ISA) 0x0000007F (127)	Microsoft ACPI-Compliant System
	(ISA) 0x00000080 (128)	Microsoft ACPI-Compliant System
	(ISA) 0x00000081 (129)	Microsoft ACPI-Compliant System
	(ISA) 0x00000082 (130)	Microsoft ACPI-Compliant System
	(ISA) 0x00000083 (131)	Microsoft ACPI-Compliant System
	(ISA) 0x00000084 (132)	Microsoft ACPI-Compliant System
	(ISA) 0x00000085 (133)	Microsoft ACPI-Compliant System
	(ISA) 0x00000086 (134)	Microsoft ACPI-Compliant System
	(ISA) 0x00000087 (135)	Microsoft ACPI-Compliant System
	(ISA) 0x00000088 (136)	Microsoft ACPI-Compliant System
	(ISA) 0x00000089 (137)	Microsoft ACPI-Compliant System
	(ISA) 0x0000008A (138)	Microsoft ACPI-Compliant System
	(ISA) 0x0000008B (139)	Microsoft ACPI-Compliant System
	(ISA) 0x0000008C (140)	Microsoft ACPI-Compliant System
	(ISA) 0x0000008E (142)	Microsoft ACPI-Compliant System
	(ISA) 0x0000008F (143)	Microsoft ACPI-Compliant System
	(ISA) 0x00000090 (144)	Microsoft ACPI-Compliant System
	(ISA) 0x00000091 (145)	Microsoft ACPI-Compliant System
	(ISA) 0x00000092 (146)	Microsoft ACPI-Compliant System
	(ISA) 0x00000093 (147)	Microsoft ACPI-Compliant System
	(ISA) 0x00000094 (148)	Microsoft ACPI-Compliant System
	(ISA) 0x00000095 (149)	Microsoft ACPI-Compliant System
	(ISA) 0x00000096 (150)	Microsoft ACPI-Compliant System

Interrupt Controller (IRQ) Map (cont'd)

	(ISA) 0x00000097 (151)	Microsoft ACPI-Compliant System
	(ISA) 0x00000098 (152)	Microsoft ACPI-Compliant System
	(ISA) 0x00000099 (153)	Microsoft ACPI-Compliant System
	(ISA) 0x0000009A (154)	Microsoft ACPI-Compliant System
	(ISA) 0x0000009B (155)	Microsoft ACPI-Compliant System
	(ISA) 0x0000009C (156)	Microsoft ACPI-Compliant System
	(ISA) 0x0000009D (157)	Microsoft ACPI-Compliant System
	(ISA) 0x0000009E (158)	Microsoft ACPI-Compliant System
	(ISA) 0x0000009F (159)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A0 (160)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A1 (161)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A2 (162)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A3 (163)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A4 (164)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A5 (165)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A6 (166)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A7 (167)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A8 (168)	Microsoft ACPI-Compliant System
	(ISA) 0x000000A9 (169)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AA (170)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AB (171)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AC (172)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AD (173)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AE (174)	Microsoft ACPI-Compliant System
	(ISA) 0x000000AF (175)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B0 (176)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B1 (177)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B2 (178)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B3 (179)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B4 (180)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B5 (181)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B6 (182)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B7 (183)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B8 (184)	Microsoft ACPI-Compliant System
	(ISA) 0x000000B9 (185)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BA (186)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BB (187)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BC (188)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BD (189)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BE (190)	Microsoft ACPI-Compliant System
	(ISA) 0x000000BF (191)	Microsoft ACPI-Compliant System
	(ISA) 0x00000100 (256)	Microsoft ACPI-Compliant System
	(ISA) 0x00000101 (257)	Microsoft ACPI-Compliant System
	(ISA) 0x00000102 (258)	Microsoft ACPI-Compliant System
	(ISA) 0x00000103 (259)	Microsoft ACPI-Compliant System
	(ISA) 0x00000104 (260)	Microsoft ACPI-Compliant System
	(ISA) 0x00000105 (261)	Microsoft ACPI-Compliant System
	(ISA) 0x00000106 (262)	Microsoft ACPI-Compliant System
	(ISA) 0x00000107 (263)	Microsoft ACPI-Compliant System
	(ISA) 0x00000108 (264)	Microsoft ACPI-Compliant System
	(ISA) 0x00000109 (265)	Microsoft ACPI-Compliant System
	(ISA) 0x0000010A (266)	Microsoft ACPI-Compliant System
	(ISA) 0x0000010B (267)	Microsoft ACPI-Compliant System
	(ISA) 0x0000010C (268)	Microsoft ACPI-Compliant System
	(ISA) 0x0000010D (269)	Microsoft ACPI-Compliant System
	(ISA) 0x0000010E (270)	Microsoft ACPI-Compliant System
	(ISA) 0x0000010F (271)	Microsoft ACPI-Compliant System
	(ISA) 0x00000110 (272)	Microsoft ACPI-Compliant System
	(ISA) 0x00000111 (273)	Microsoft ACPI-Compliant System
	(ISA) 0x00000112 (274)	Microsoft ACPI-Compliant System
	(ISA) 0x00000113 (275)	Microsoft ACPI-Compliant System

Interrupt Controller (IRQ) Map (cont'd)

	(ISA) 0x00000114 (276)	Microsoft ACPI-Compliant System
	(ISA) 0x00000115 (277)	Microsoft ACPI-Compliant System
	(ISA) 0x00000116 (278)	Microsoft ACPI-Compliant System
	(ISA) 0x00000117 (279)	Microsoft ACPI-Compliant System
	(ISA) 0x00000118 (280)	Microsoft ACPI-Compliant System
	(ISA) 0x00000119 (281)	Microsoft ACPI-Compliant System
	(ISA) 0x0000011A (282)	Microsoft ACPI-Compliant System
	(ISA) 0x0000011B (283)	Microsoft ACPI-Compliant System
	(ISA) 0x0000011C (284)	Microsoft ACPI-Compliant System
	(ISA) 0x0000011D (285)	Microsoft ACPI-Compliant System
	(ISA) 0x0000011E (286)	Microsoft ACPI-Compliant System
	(ISA) 0x0000011F (287)	Microsoft ACPI-Compliant System
	(ISA) 0x00000120 (288)	Microsoft ACPI-Compliant System
	(ISA) 0x00000121 (289)	Microsoft ACPI-Compliant System
	(ISA) 0x00000122 (290)	Microsoft ACPI-Compliant System
	(ISA) 0x00000123 (291)	Microsoft ACPI-Compliant System
	(ISA) 0x00000124 (292)	Microsoft ACPI-Compliant System
	(ISA) 0x00000125 (293)	Microsoft ACPI-Compliant System
	(ISA) 0x00000126 (294)	Microsoft ACPI-Compliant System
	(ISA) 0x00000127 (295)	Microsoft ACPI-Compliant System
	(ISA) 0x00000128 (296)	Microsoft ACPI-Compliant System
	(ISA) 0x00000129 (297)	Microsoft ACPI-Compliant System
	(ISA) 0x0000012A (298)	Microsoft ACPI-Compliant System
	(ISA) 0x0000012B (299)	Microsoft ACPI-Compliant System
	(ISA) 0x0000012C (300)	Microsoft ACPI-Compliant System
	(ISA) 0x0000012D (301)	Microsoft ACPI-Compliant System
	(ISA) 0x0000012E (302)	Microsoft ACPI-Compliant System
	(ISA) 0x0000012F (303)	Microsoft ACPI-Compliant System
	(ISA) 0x00000130 (304)	Microsoft ACPI-Compliant System
	(ISA) 0x00000131 (305)	Microsoft ACPI-Compliant System
	(ISA) 0x00000132 (306)	Microsoft ACPI-Compliant System
	(ISA) 0x00000133 (307)	Microsoft ACPI-Compliant System
	(ISA) 0x00000134 (308)	Microsoft ACPI-Compliant System
	(ISA) 0x00000135 (309)	Microsoft ACPI-Compliant System
	(ISA) 0x00000136 (310)	Microsoft ACPI-Compliant System
	(ISA) 0x00000137 (311)	Microsoft ACPI-Compliant System
	(ISA) 0x00000138 (312)	Microsoft ACPI-Compliant System
	(ISA) 0x00000139 (313)	Microsoft ACPI-Compliant System
	(ISA) 0x0000013A (314)	Microsoft ACPI-Compliant System
	(ISA) 0x0000013B (315)	Microsoft ACPI-Compliant System
	(ISA) 0x0000013C (316)	Microsoft ACPI-Compliant System
	(ISA) 0x0000013D (317)	Microsoft ACPI-Compliant System
	(ISA) 0x0000013E (318)	Microsoft ACPI-Compliant System
	(ISA) 0x0000013F (319)	Microsoft ACPI-Compliant System
	(ISA) 0x00000140 (320)	Microsoft ACPI-Compliant System
	(ISA) 0x00000141 (321)	Microsoft ACPI-Compliant System
	(ISA) 0x00000142 (322)	Microsoft ACPI-Compliant System
	(ISA) 0x00000143 (323)	Microsoft ACPI-Compliant System
	(ISA) 0x00000144 (324)	Microsoft ACPI-Compliant System
	(ISA) 0x00000145 (325)	Microsoft ACPI-Compliant System
	(ISA) 0x00000146 (326)	Microsoft ACPI-Compliant System
	(ISA) 0x00000147 (327)	Microsoft ACPI-Compliant System
	(ISA) 0x00000148 (328)	Microsoft ACPI-Compliant System
	(ISA) 0x00000149 (329)	Microsoft ACPI-Compliant System
	(ISA) 0x0000014A (330)	Microsoft ACPI-Compliant System
	(ISA) 0x0000014B (331)	Microsoft ACPI-Compliant System
	(ISA) 0x0000014C (332)	Microsoft ACPI-Compliant System
	(ISA) 0x0000014D (333)	Microsoft ACPI-Compliant System
	(ISA) 0x0000014E (334)	Microsoft ACPI-Compliant System
	(ISA) 0x0000014F (335)	Microsoft ACPI-Compliant System

Interrupt Controller (IRQ) Map (cont'd)

	(ISA) 0x00000150 (336)	Microsoft ACPI-Compliant System
	(ISA) 0x00000151 (337)	Microsoft ACPI-Compliant System
	(ISA) 0x00000152 (338)	Microsoft ACPI-Compliant System
	(ISA) 0x00000153 (339)	Microsoft ACPI-Compliant System
	(ISA) 0x00000154 (340)	Microsoft ACPI-Compliant System
	(ISA) 0x00000155 (341)	Microsoft ACPI-Compliant System
	(ISA) 0x00000156 (342)	Microsoft ACPI-Compliant System
	(ISA) 0x00000157 (343)	Microsoft ACPI-Compliant System
	(ISA) 0x00000158 (344)	Microsoft ACPI-Compliant System
	(ISA) 0x00000159 (345)	Microsoft ACPI-Compliant System
	(ISA) 0x0000015A (346)	Microsoft ACPI-Compliant System
	(ISA) 0x0000015B (347)	Microsoft ACPI-Compliant System
	(ISA) 0x0000015C (348)	Microsoft ACPI-Compliant System
	(ISA) 0x0000015D (349)	Microsoft ACPI-Compliant System
	(ISA) 0x0000015E (350)	Microsoft ACPI-Compliant System
	(ISA) 0x0000015F (351)	Microsoft ACPI-Compliant System
	(ISA) 0x00000160 (352)	Microsoft ACPI-Compliant System
	(ISA) 0x00000161 (353)	Microsoft ACPI-Compliant System
	(ISA) 0x00000162 (354)	Microsoft ACPI-Compliant System
	(ISA) 0x00000163 (355)	Microsoft ACPI-Compliant System
	(ISA) 0x00000164 (356)	Microsoft ACPI-Compliant System
	(ISA) 0x00000165 (357)	Microsoft ACPI-Compliant System
	(ISA) 0x00000166 (358)	Microsoft ACPI-Compliant System
	(ISA) 0x00000167 (359)	Microsoft ACPI-Compliant System
	(ISA) 0x00000168 (360)	Microsoft ACPI-Compliant System
	(ISA) 0x00000169 (361)	Microsoft ACPI-Compliant System
	(ISA) 0x0000016A (362)	Microsoft ACPI-Compliant System
	(ISA) 0x0000016B (363)	Microsoft ACPI-Compliant System
	(ISA) 0x0000016C (364)	Microsoft ACPI-Compliant System
	(ISA) 0x0000016D (365)	Microsoft ACPI-Compliant System
	(ISA) 0x0000016E (366)	Microsoft ACPI-Compliant System
	(ISA) 0x0000016F (367)	Microsoft ACPI-Compliant System
	(ISA) 0x00000170 (368)	Microsoft ACPI-Compliant System
	(ISA) 0x00000171 (369)	Microsoft ACPI-Compliant System
	(ISA) 0x00000172 (370)	Microsoft ACPI-Compliant System
	(ISA) 0x00000173 (371)	Microsoft ACPI-Compliant System
	(ISA) 0x00000174 (372)	Microsoft ACPI-Compliant System
	(ISA) 0x00000175 (373)	Microsoft ACPI-Compliant System
	(ISA) 0x00000176 (374)	Microsoft ACPI-Compliant System
	(ISA) 0x00000177 (375)	Microsoft ACPI-Compliant System
	(ISA) 0x00000178 (376)	Microsoft ACPI-Compliant System
	(ISA) 0x00000179 (377)	Microsoft ACPI-Compliant System
	(ISA) 0x0000017A (378)	Microsoft ACPI-Compliant System
	(ISA) 0x0000017B (379)	Microsoft ACPI-Compliant System
	(ISA) 0x0000017C (380)	Microsoft ACPI-Compliant System
	(ISA) 0x0000017D (381)	Microsoft ACPI-Compliant System
	(ISA) 0x0000017E (382)	Microsoft ACPI-Compliant System
	(ISA) 0x0000017F (383)	Microsoft ACPI-Compliant System
	(ISA) 0x00000180 (384)	Microsoft ACPI-Compliant System
	(ISA) 0x00000181 (385)	Microsoft ACPI-Compliant System
	(ISA) 0x00000182 (386)	Microsoft ACPI-Compliant System
	(ISA) 0x00000183 (387)	Microsoft ACPI-Compliant System
	(ISA) 0x00000184 (388)	Microsoft ACPI-Compliant System
	(ISA) 0x00000185 (389)	Microsoft ACPI-Compliant System
	(ISA) 0x00000186 (390)	Microsoft ACPI-Compliant System
	(ISA) 0x00000187 (391)	Microsoft ACPI-Compliant System
	(ISA) 0x00000188 (392)	Microsoft ACPI-Compliant System
	(ISA) 0x00000189 (393)	Microsoft ACPI-Compliant System
	(ISA) 0x0000018A (394)	Microsoft ACPI-Compliant System
	(ISA) 0x0000018B (395)	Microsoft ACPI-Compliant System

Interrupt Controller (IRQ) Map (cont'd)

 (ISA) 0x0000018C (396)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018D (397)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018E (398)	Microsoft ACPI-Compliant System
 (ISA) 0x0000018F (399)	Microsoft ACPI-Compliant System
 (ISA) 0x00000190 (400)	Microsoft ACPI-Compliant System
 (ISA) 0x00000191 (401)	Microsoft ACPI-Compliant System
 (ISA) 0x00000192 (402)	Microsoft ACPI-Compliant System
 (ISA) 0x00000193 (403)	Microsoft ACPI-Compliant System
 (ISA) 0x00000194 (404)	Microsoft ACPI-Compliant System
 (ISA) 0x00000195 (405)	Microsoft ACPI-Compliant System
 (ISA) 0x00000196 (406)	Microsoft ACPI-Compliant System
 (ISA) 0x00000197 (407)	Microsoft ACPI-Compliant System
 (ISA) 0x00000198 (408)	Microsoft ACPI-Compliant System
 (ISA) 0x00000199 (409)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019A (410)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019B (411)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019C (412)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019D (413)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019E (414)	Microsoft ACPI-Compliant System
 (ISA) 0x0000019F (415)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A0 (416)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A1 (417)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A2 (418)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A3 (419)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A4 (420)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A5 (421)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A6 (422)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A7 (423)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A8 (424)	Microsoft ACPI-Compliant System
 (ISA) 0x000001A9 (425)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AA (426)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AB (427)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AC (428)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AD (429)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AE (430)	Microsoft ACPI-Compliant System
 (ISA) 0x000001AF (431)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B0 (432)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B1 (433)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B2 (434)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B3 (435)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B4 (436)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B5 (437)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B6 (438)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B7 (439)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B8 (440)	Microsoft ACPI-Compliant System
 (ISA) 0x000001B9 (441)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BA (442)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BB (443)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BC (444)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BD (445)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BE (446)	Microsoft ACPI-Compliant System
 (ISA) 0x000001BF (447)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C0 (448)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C1 (449)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C2 (450)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C3 (451)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C4 (452)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C5 (453)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C6 (454)	Microsoft ACPI-Compliant System
 (ISA) 0x000001C7 (455)	Microsoft ACPI-Compliant System

Interrupt Controller (IRQ) Map (cont'd)

	(ISA) 0x000001C8 (456)	Microsoft ACPI-Compliant System
	(ISA) 0x000001C9 (457)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CA (458)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CB (459)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CC (460)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CD (461)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CE (462)	Microsoft ACPI-Compliant System
	(ISA) 0x000001CF (463)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D0 (464)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D1 (465)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D2 (466)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D3 (467)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D4 (468)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D5 (469)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D6 (470)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D7 (471)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D8 (472)	Microsoft ACPI-Compliant System
	(ISA) 0x000001D9 (473)	Microsoft ACPI-Compliant System
	(ISA) 0x000001DA (474)	Microsoft ACPI-Compliant System
	(ISA) 0x000001DB (475)	Microsoft ACPI-Compliant System
	(ISA) 0x000001DC (476)	Microsoft ACPI-Compliant System
	(ISA) 0x000001DD (477)	Microsoft ACPI-Compliant System
	(ISA) 0x000001DE (478)	Microsoft ACPI-Compliant System
	(ISA) 0x000001DF (479)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E0 (480)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E1 (481)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E2 (482)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E3 (483)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E4 (484)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E5 (485)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E6 (486)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E7 (487)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E8 (488)	Microsoft ACPI-Compliant System
	(ISA) 0x000001E9 (489)	Microsoft ACPI-Compliant System
	(ISA) 0x000001EA (490)	Microsoft ACPI-Compliant System
	(ISA) 0x000001EB (491)	Microsoft ACPI-Compliant System
	(ISA) 0x000001EC (492)	Microsoft ACPI-Compliant System
	(ISA) 0x000001ED (493)	Microsoft ACPI-Compliant System
	(ISA) 0x000001EE (494)	Microsoft ACPI-Compliant System
	(ISA) 0x000001EF (495)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F0 (496)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F1 (497)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F2 (498)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F3 (499)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F4 (500)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F5 (501)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F6 (502)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F7 (503)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F8 (504)	Microsoft ACPI-Compliant System
	(ISA) 0x000001F9 (505)	Microsoft ACPI-Compliant System
	(ISA) 0x000001FA (506)	Microsoft ACPI-Compliant System
	(ISA) 0x000001FB (507)	Microsoft ACPI-Compliant System
	(ISA) 0x000001FC (508)	Microsoft ACPI-Compliant System
	(ISA) 0x000001FD (509)	Microsoft ACPI-Compliant System
	(ISA) 0x000001FE (510)	Microsoft ACPI-Compliant System

Interrupt Controller (IRQ) Map (cont'd)

	(ISA) 0x000001FF (511)	Microsoft ACPI-Compliant System
	(PCI) 0x0000000A (10)	Intel Device
	(PCI) 0x00000010 (16)	PCI standard PCI-to-PCI bridge
	(PCI) 0x00000011 (17)	PCI standard PCI-to-PCI bridge
	(PCI) 0x00000012 (18)	SDA Standard Compliant SD Host Controller
	(PCI) 0x00000013 (19)	Standard SATA AHCI Controller
	(PCI) 0x00000016 (22)	High Definition Audio Controller
	(PCI) 0x00000017 (23)	Standard Enhanced PCI to USB Host Controller
	(PCI) 0xFFFFFFF1 (-15)	Intel(R) I210 Gigabit Network Connection #5
	(PCI) 0xFFFFFFF2 (-14)	Intel(R) I210 Gigabit Network Connection #5
	(PCI) 0xFFFFFFF3 (-13)	Intel(R) I210 Gigabit Network Connection #5
	(PCI) 0xFFFFFFF4 (-12)	Intel(R) I210 Gigabit Network Connection #5
	(PCI) 0xFFFFFFF5 (-11)	Intel(R) I210 Gigabit Network Connection #5
	(PCI) 0xFFFFFFF6 (-10)	Intel(R) I210 Gigabit Network Connection #5
	(PCI) 0xFFFFFFF7 (-9)	Intel(R) I210 Gigabit Network Connection #6
	(PCI) 0xFFFFFFF8 (-8)	Intel(R) I210 Gigabit Network Connection #6
	(PCI) 0xFFFFFFF9 (-7)	Intel(R) I210 Gigabit Network Connection #6
	(PCI) 0xFFFFFFFA (-6)	Intel(R) I210 Gigabit Network Connection #6
	(PCI) 0xFFFFFFF8 (-5)	Intel(R) I210 Gigabit Network Connection #6
	(PCI) 0xFFFFFFFC (-4)	Intel(R) I210 Gigabit Network Connection #6
	(PCI) 0xFFFFFFFD (-3)	Intel(R) Trusted Execution Engine Interface
	(PCI) 0xFFFFFFE (-2)	Intel(R) HD Graphics

6.3 Memory Map

The memory map of DRAM for the CT-DBT0x under Windows® 7 Ultimate 64-bit is shown below.

Memory	
[0000000000A0000 - 0000000000BFFFF]	Intel(R) HD Graphics
[0000000000A0000 - 0000000000BFFFF]	PCI Express Root Complex
[0000000000C0000 - 0000000000DFFFF]	PCI Express Root Complex
[0000000000D0000 - 0000000000DFFFF]	SDA Standard Compliant SD Host Controller
[0000000000E0000 - 0000000000FFFFFF]	PCI Express Root Complex
[00000000A0000000 - 00000000AFFFFFFF]	Intel(R) HD Graphics
[00000000A0000000 - 00000000AFFFFFFF]	Intel(R) HD Graphics
[00000000A0000000 - 00000000AFFFFFFF]	Intel(R) HD Graphics
[00000000A0000000 - 00000000B0808FFE]	PCI Express Root Complex
[00000000B0000000 - 00000000B03FFFFFF]	Intel(R) HD Graphics
[00000000B0000000 - 00000000B03FFFFFF]	Intel(R) HD Graphics
[00000000B0000000 - 00000000B03FFFFFF]	Intel(R) HD Graphics
[00000000B0400000 - 00000000B04FFFFFF]	Intel(R) Trusted Execution Engine Interface
[00000000B0400000 - 00000000B04FFFFFF]	Intel(R) Trusted Execution Engine Interface
[00000000B0500000 - 00000000B05FFFFFF]	Intel(R) Trusted Execution Engine Interface
[00000000B0500000 - 00000000B05FFFFFF]	Intel(R) Trusted Execution Engine Interface
[00000000B0600000 - 00000000B0607FFF]	ASMedia USB 3.0 eXtensible Host Controller - 0096 (Microsoft)
[00000000B0600000 - 00000000B067FFFF]	Intel(R) I210 Gigabit Network Connection #5
[00000000B0600000 - 00000000B067FFFF]	Intel(R) I210 Gigabit Network Connection
[00000000B0600000 - 00000000B067FFFF]	Intel(R) I210 Gigabit Network Connection #3
[00000000B0600000 - 00000000B06FFFFFF]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 2 - 0F4A
[00000000B0600000 - 00000000B06FFFFFF]	PCI standard PCI-to-PCI bridge
[00000000B0600000 - 00000000B06FFFFFF]	PCI standard PCI-to-PCI bridge
[00000000B0600000 - 00000000B06FFFFFF]	PCI standard PCI-to-PCI bridge
[00000000B0680000 - 00000000B0683FFF]	Intel(R) I210 Gigabit Network Connection #5
[00000000B0680000 - 00000000B0683FFF]	Intel(R) I210 Gigabit Network Connection
[00000000B0680000 - 00000000B0683FFF]	Intel(R) I210 Gigabit Network Connection #3
[00000000B0700000 - 00000000B0707FFF]	ASMedia USB 3.0 eXtensible Host Controller - 0096 (Microsoft)
[00000000B0700000 - 00000000B077FFFF]	Intel(R) I210 Gigabit Network Connection #6
[00000000B0700000 - 00000000B077FFFF]	Intel(R) I210 Gigabit Network Connection #2
[00000000B0700000 - 00000000B077FFFF]	Intel(R) I210 Gigabit Network Connection #4
[00000000B0700000 - 00000000B077FFFF]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48
[00000000B0700000 - 00000000B077FFFF]	PCI standard PCI-to-PCI bridge
[00000000B0700000 - 00000000B077FFFF]	PCI standard PCI-to-PCI bridge
[00000000B0700000 - 00000000B077FFFF]	PCI standard PCI-to-PCI bridge
[00000000B0780000 - 00000000B0783FFF]	Intel(R) I210 Gigabit Network Connection #6
[00000000B0780000 - 00000000B0783FFF]	Intel(R) I210 Gigabit Network Connection #2
[00000000B0780000 - 00000000B0783FFF]	Intel(R) I210 Gigabit Network Connection #4
[00000000B0800000 - 00000000B0803FFF]	High Definition Audio Controller
[00000000B0800000 - 00000000B0803FFF]	High Definition Audio Controller
[00000000B0800000 - 00000000B0803FFF]	High Definition Audio Controller
[00000000B0800000 - 00000000B080FFFF]	Intel(R) USB 3.0 eXtensible Host Controller - 0100 (Microsoft)
[00000000B0804000 - 00000000B080401F]	Intel Device
[00000000B0804000 - 00000000B080401F]	Intel Device
[00000000B0804000 - 00000000B080401F]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
[00000000B0805000 - 00000000B08053FF]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor EHCI USB - 0F34
[00000000B0805000 - 00000000B08053FF]	Standard Enhanced PCI to USB Host Controller
[00000000B0805000 - 00000000B08053FF]	Standard Enhanced PCI to USB Host Controller
[00000000B0806000 - 00000000B08067FF]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
[00000000B0806000 - 00000000B08067FF]	Standard SATA AHCI Controller

Memory Map (cont'd)

	[00000000B0600000 - 00000000B06FFFFF]	PCI standard PCI-to-PCI bridge
	[00000000B0600000 - 00000000B06FFFFF]	PCI standard PCI-to-PCI bridge
	[00000000B0600000 - 00000000B06FFFFF]	PCI standard PCI-to-PCI bridge
	[00000000B0680000 - 00000000B0683FFF]	Intel(R) I210 Gigabit Network Connection #5
	[00000000B0680000 - 00000000B0683FFF]	Intel(R) I210 Gigabit Network Connection
	[00000000B0680000 - 00000000B0683FFF]	Intel(R) I210 Gigabit Network Connection #3
	[00000000B0700000 - 00000000B0707FFF]	ASMedia USB 3.0 eXtensible Host Controller - 0096 (Microsoft)
	[00000000B0700000 - 00000000B077FFFF]	Intel(R) I210 Gigabit Network Connection #6
	[00000000B0700000 - 00000000B077FFFF]	Intel(R) I210 Gigabit Network Connection #2
	[00000000B0700000 - 00000000B077FFFF]	Intel(R) I210 Gigabit Network Connection #4
	[00000000B0700000 - 00000000B077FFFF]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor PCI Express - Root Port 1 - 0F48
	[00000000B0700000 - 00000000B077FFFF]	PCI standard PCI-to-PCI bridge
	[00000000B0700000 - 00000000B077FFFF]	PCI standard PCI-to-PCI bridge
	[00000000B0700000 - 00000000B077FFFF]	PCI standard PCI-to-PCI bridge
	[00000000B0780000 - 00000000B0783FFF]	Intel(R) I210 Gigabit Network Connection #6
	[00000000B0780000 - 00000000B0783FFF]	Intel(R) I210 Gigabit Network Connection #2
	[00000000B0780000 - 00000000B0783FFF]	Intel(R) I210 Gigabit Network Connection #4
	[00000000B0800000 - 00000000B0803FFF]	High Definition Audio Controller
	[00000000B0800000 - 00000000B0803FFF]	High Definition Audio Controller
	[00000000B0800000 - 00000000B0803FFF]	High Definition Audio Controller
	[00000000B0800000 - 00000000B080FFFF]	Intel(R) USB 3.0 eXtensible Host Controller - 0100 (Microsoft)
	[00000000B0804000 - 00000000B080401F]	Intel Device
	[00000000B0804000 - 00000000B080401F]	Intel Device
	[00000000B0804000 - 00000000B080401F]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor Platform Control Unit - SMBus Port - 0F12
	[00000000B0805000 - 00000000B08053FF]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor EHCI USB - 0F34
	[00000000B0805000 - 00000000B08053FF]	Standard Enhanced PCI to USB Host Controller
	[00000000B0805000 - 00000000B08053FF]	Standard Enhanced PCI to USB Host Controller
	[00000000B0806000 - 00000000B08067FF]	Intel(R) Atom(TM)/Celeron(R)/Pentium(R) Processor AHCI - 0F23
	[00000000B0806000 - 00000000B08067FF]	Standard SATA AHCI Controller
	[00000000B0806000 - 00000000B08067FF]	Standard SATA AHCI Controller
	[00000000B0807000 - 00000000B0807FFF]	SDA Standard Compliant SD Host Controller
	[00000000B0807000 - 00000000B0807FFF]	SDA Standard Compliant SD Host Controller
	[00000000B0807000 - 00000000B0807FFF]	SDA Standard Compliant SD Host Controller
	[00000000B0808000 - 00000000B0808FFF]	SDA Standard Compliant SD Host Controller
	[00000000B0808000 - 00000000B0808FFF]	SDA Standard Compliant SD Host Controller
	[00000000B0A00000 - 00000000B0A0FFFF]	Intel(R) USB 3.0 eXtensible Host Controller - 0100 (Microsoft)
	[00000000E0000000 - 00000000FFFFFFFF]	Motherboard resources
	[00000000FED00000 - 00000000FED003FF]	High precision event timer
	[00000000FED01000 - 00000000FED01FFF]	Motherboard resources
	[00000000FED03000 - 00000000FED03FFF]	Motherboard resources
	[00000000FED04000 - 00000000FED04FFF]	Motherboard resources
	[00000000FED08000 - 00000000FED08FFF]	Motherboard resources
	[00000000FED0C000 - 00000000FED0CFFF]	GPIO Controller
	[00000000FED0D000 - 00000000FED0DFFF]	GPIO Controller
	[00000000FED0E000 - 00000000FED0EFFF]	GPIO Controller
	[00000000FED1C000 - 00000000FED1CFFF]	Motherboard resources
	[00000000FEE00000 - 00000000FEEFFFFFFF]	Motherboard resources
	[00000000FEF00000 - 00000000FEFFFFFFFF]	Motherboard resources
	[00000000FF000000 - 00000000FFFFFFFF]	Intel(R) 82802 Firmware Hub Device
	[00000000FF000000 - 00000000FFFFFFFF]	Intel(R) 82802 Firmware Hub Device
	[00000000FF000000 - 00000000FFFFFFFF]	Intel(R) 82802 Firmware Hub Device