



BCT-2040

PICMG v1.0 Single Board Computer

User Guide

Document Reference: Product User Guide

Document Issue: 1.0

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Regulatory Statements

CE

This product meets the essential protection requirements of the European EMC Directive (2004/108/EC) and the Low Voltage Directive (2006/95/EC), and is eligible to bear the CE mark.

Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC

NOTE:

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

WARNING:

Changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

Safety Warning for North America

If the power lead (cord) is not supplied with the computer, select a power lead according to your local electrical regulations. In the USA use a 'UL listed' lead. In Canada use a CSA approved or 'cUL listed' lead.

Si le cordon secteur n'est pas livré avec l'ordinateur, utiliser un cordon secteur en accord avec votre code électrique nationale. En l'Etat Unis utiliser un cordon secteur 'UL listed'. En Canada utiliser un cordon secteur certifié CSA, ou 'cUL listed'.

Manual Organisation

This manual describes in detail the BCT-2040 Industrial SBC.

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

The manual is sectioned as follows:

Introduction

Overview, listing the unit's features and specification

Installation, including what software to install

Layout, showing where the various connectors are located, and their pin-out details

How to upgrade the system

Bios Setup

Maintenance details

We strongly recommend that you study this manual carefully before attempting to interface with the BCT-2040 SBC or change the standard configurations. Whilst all the necessary information is available in this manual we would recommend that unless you are confident, you contact your supplier for guidance. ***IT IS PARTICULARLY IMPORTANT THAT YOU READ THE SECTION 'PRECAUTIONS' BEFORE HANDLING ANY COMPONENTS INSIDE THE UNIT.***

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

Introduction

The Blue Chip Technology PICMG BCT-2040 Single Board PC enhances the product range with the latest advances in processor, graphics, memory, and I/O technologies. The PICMG BCT-2040 complies with the PICMG 1.0 form factor providing ISA and PCI bus interfaces on a single plug-in card. The PICMG single board PC is an ideal platform for the increasing requirements of today and tomorrow's embedded applications.

This Full-length PICMG design is optimized for LGA775 Intel® Core™ 2 Duo Desktop/Pentium® D/ Pentium® 4 / Celeron® D processors supporting 533/800/1066 MHz Front Side Bus. The memory sub-system is designed to support up to 4Gb dual channel DDR2 533/667/800 SDRAM memory.

The PICMG BCT-2040 single board PC uses the Intel® Q965 Express +ICH8FO chipset with integrated GMA 3000 graphics to provide outstanding graphics performance and increased integration over previous single board PC designs.

The PICMG BCT-2040 uses the ITE IT8718F Super I/O Controller Hub along with the ICH8R allows support for four serial ports, four Hi-speed USB 2.0 ports, one SATA to PATA IDE interface and four S-ATA high speed ports transferring at up to 3 GB/s.

Dual Marvell 88E8053 Gigabit Ethernet as standard offer 10/100/1000 Mbps Base-TX Ethernet support. This device can auto-negotiate network speeds and comes complete with drivers for most network environments

PS/2 keyboard and mouse support can be provided via cables.

Specification

CPU:	LGA775 Intel® Core™ 2 Duo Desktop/Pentium® D/ Pentium® 4 / Celeron® D processor Supports 533/800/1066 FSB
Chipsets:	Intel® Q965+ ICH8DO ITE IT8718F I/O controller
Graphics Controller:	Integrated GMA 3000 Maximum Resolution 2048 x 1536 @75Hz Analogue 2048 x 1536 @ 60Hz Flat panels
BIOS:	AMI BIOS
Memory:	Dual Channel Memory Architecture 2 x 240-pin DIMM sockets supporting up to 4Gb Of unbuffered non-ECC 533/667/800 Mhz DDR2 memory modules
LAN:	Dual Marvell 88E8053 PCI Express Gigabit Ethernet controller IEEE 802.3 10BASE-T/100BASE-TX/1000BASE-T
System Management:	CPU and System temperature Monitoring CPU and System Voltage detection CPU and secondary fan speed detection
SATA Storage	Four S-ATA ports Supports data transfer rates up to 300MB/s
IDE Interface:	Single Port supporting up to 2 devices
External I/O Interface:	Standard VGA connector Two USB 2.0 Connectors Two RJ-45 10/100/1Gb Base-T Ethernet LAN connectors One FDD via cable Four 9-way Serial connectors (RS232) via cable PS/2 Keyboard via cable PS/2 mouse via cable 2 x USB 2.0 Connectors via cable
Watchdog:	Reset: 1 sec-255min. with 1 sec or 1min. step
Environmental Conditions:	Operating temperature range 0°C to +60°C Storage Temperature range -20°C to +80°C Relative Humidity 10-90% non-condensing
Dimensions	338.5mm x 122mm

General Precautions

Your Single Board Computer is susceptible to damage by electrostatic discharges. In order to avoid damage, you should work at an anti-static bench and observe normal anti-static precautions. Wear an anti-static wrist strap connected to an earth point *before* opening any packaging.

Where a wrist strap is not available, discharge any static charge you may have built-up by touching an earth point. Avoid any further movement that could build up another static charge. Touch an earth point from time to time to avoid further build-up, and remove the items from their anti-static bags only when required

PS/2 Devices

It is important that PS/2 devices (mouse and keyboard) are not connected or disconnected with the unit powered on. Damage or data corruption may occur if this precaution is not observed.

Electro-Static Discharges

If you are going to open up the unit, it is important to realise that the devices on the cards within this unit can be damaged by static electricity. Bear in mind that the damage caused by static electricity may vary from total destruction to partial damage, which may not be immediately obvious. This could have an effect on the product's reliability and warranty. Before opening the chassis, ensure that you take necessary static precautions. Ideally you should work at an anti-static bench and wear an approved wrist strap or if that is not possible, touch a suitable ground to discharge any static build up before touching the electronics. This should be repeated if the handling continues for any length of time.

If it is necessary to remove a board or electronic assembly, place it into an anti-static bag. This will prevent any static electricity build up damaging the board. Metallised bags are preferred. Do not use black anti-static bags for any item containing a battery because these tend to be conductive and will discharge the battery.

On-Board Battery

The processor board is fitted with a Lithium battery. Great care should be taken with this type of battery. If the battery is mistreated in any way there is a very real possibility of fire, explosion, and personal harm. Under NO circumstances should it be short-circuited, exposed to temperatures in excess of 100 °C or burnt, immersed in water, recharged or disassembled.

Expired batteries remain hazardous and must be disposed of in a safe manner, according to local regulations.

Le panneau de processeur est équipé d'une batterie de lithium. Le grand soin devrait être pris avec ce type de batterie. Si la batterie est mistreated il y a de dans de toute façon un possibility très vrai du feu, d'explosion et de mal personnel. Dans au cunes circonstances il est sous peu circuité, exposé aux températures au dessus de 100 degrés de centigrade ou brûlé, immergé dans l'eau, rechargée ou dissassembled.

Les batteries expirées restent dazaedous et doivent être reejetées d'une façon sûre, selon des règlements locaux.

BIOS & CMOS Memory

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

Electromagnetic Compatibility

This product has been assessed operating in representative, standard configurations. As with any PC product, however, final installation & configuration can vary significantly, and so the following guidelines are offered to help ensure that compatibility is maintained.

- All components added to a system should either carry appropriate equivalent levels of compliance, or be tested for compliance as part of the final system, and should be installed in accordance with supplier recommendations.
- The external enclosure should be securely fastened (with standard lids and covers in place) to ensure good metal-to-metal contact around the internal electronics
- Any metal back plate must be securely screwed to the chassis of the computer to ensure good metal-to-metal (i.e. earth) contact.
- Metal, screened, connector bodies should be securely connected to the enclosure.
- The external cabling to boards causes most EMC problems. It is recommended that any external cabling to the board be totally screened, and that the screen of the cable connects to the metal end bracket of the board or the enclosure and hence to earth. Round, screened cables with a braided wire screen are used in preference to those with a foil screen and drain wire. Wherever possible, use metal connector shells that connect around the full circumference of the cable screen: they are far superior to those that earth the screen by a simple “pig-tail”.
- The keyboard and mouse will play an important part in the compatibility of the processor card since they are ports into the board. Similarly, they will affect the compatibility of the complete system. Fully compatible peripherals must be used otherwise the complete system could be degraded. They may radiate or behave as if keys/buttons are pressed when subject to interference. Under these circumstances it may be beneficial to add a ferrite clamp on the leads as close as possible to the connector. A suitable type is the Chomerics type H8FE-1004-AS.
- USB cables should be high quality screened types.
- Ensure that the screens of any external cables are bonded to a good RF earth at the remote end of the cable.

Failure to observe these recommendations may invalidate the EMC compliance.

Quick Start

The following sections explain how to install the BCT-2040 Single Board Computer in your System Unit.

First ensure that you are familiar with the contents of the section "Precautions". It contains important information to avoid damage to the board.

Next, read the appropriate documentation from your System Unit supplier on how to install or upgrade a processor board into the intended system unit.

If choosing your own cooling solution for the CPU, check the application notes for the particular CPU from the Intel website to ensure that your solution is capable of cooling the processor throughout the desired operating temperature range. Note that the upper operating limit of 60°C is for the boards operation in free air, which would equate to the air temperature inside the System Unit with the lid closed. It is important to ensure that the operating temperature inside the system unit in the vicinity of the processor board does not exceed the 60°C limit.

If a PC/2 mouse and keyboard are to be removed for normal operation, shut down the computer and switch off the power before removing them.

Installation

Connector Locations

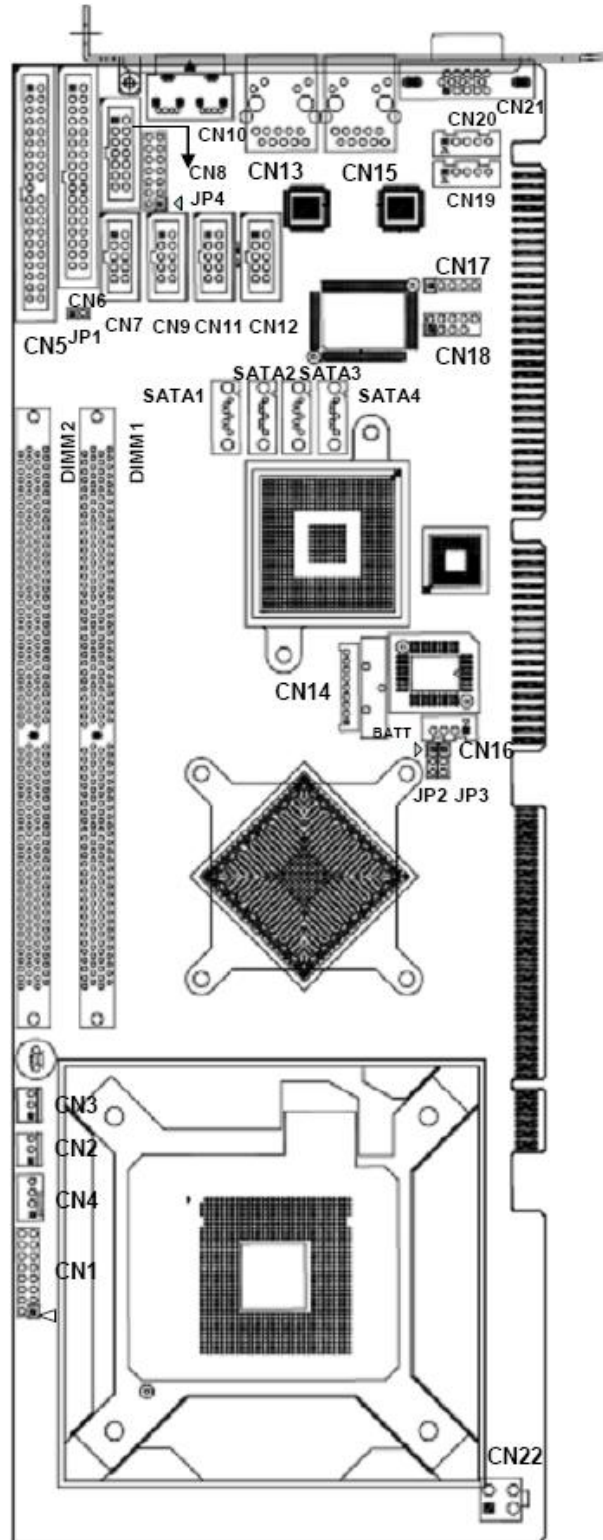


Figure 1: Connector Locations

Connector	Description	Connector	Description
CN1	System Utility Header	CN13	LAN 1 RJ-45 connector
CN2	System Fan Connector	CN14	Audio Connector
CN3	Chassis Fan Connector	CN15	LAN 2 R-45 connector
CN4	CPU Fan Connector	CN16	ATX Power Control
CN5	Primary IDE connector	CN17	IrDA connector
CN6	FDD Connector	CN18	Internal USB 2 & 3
CN7	Serial Port 1 connector	CN19	Internal Mouse Connector
CN8	Serial Port 2 connector	CN20	Internal Keyboard connector
CN9	Serial Port 3 connector	CN21	VGA
CN10	USB 0 & 1 connector	CN22	ATX 12V
CN11	Serial Port 4 connector	SATA1,23,4	Serial ATA
CN12	Digital I/O connector	DIMM1,2	240-pin DDR2 DIMM socket

Jumper	Description	Jumper	Description
JP1	PATA IDE select	JP2	Clear CMOS setting select
JP3	BIOS Write Protect select	JP4	COM2 RS-232/422/485 select

CPU Installation

The PICMG BCT-2040 board supports a single Intel® Core™ 2 Duo Desktop/Pentium® D/ Pentium® 4 / Celeron® D processor.

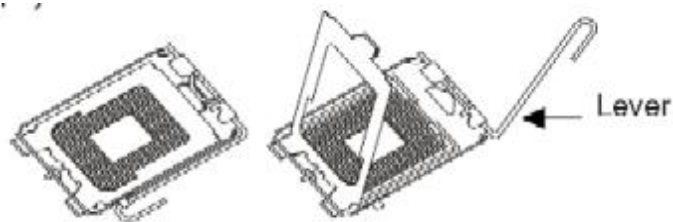


Figure A1: CPU LGA 775 Socket

Before installing the processor, raise the lever on the side of socket 775, perpendicular to the board, and flip up the cover. Place the CPU onto the socket in the correct orientation. **AVOID TOUCHING BOTH THE UNDERSIDE OF THE CPU AND THE PINS ON THE CONNECTOR AS THIS MAY CAUSE DAMAGE.** Lower the cover over the CPU, and lower the lever to lock the cover in place. Apply heatsink Thermal compound to the top of the CPU ensuring an even distribution.

The PICMG BCT-2040 is usually supplied without any CPU cooling method. This allows the user to select the appropriate cooling method for their particular application.

Caution: Insufficient contact, incorrect types of Fans, heatsink or Thermal Compound used, or improper amounts of Thermal compound applied, can cause the processor to overheat and may result in the System crashing.

Memory Installation

The PICMG BCT-2040 board supports two 240 pin DDR2 memory Modules. Figure A2 shows a DDR2 module and how the notch on the module aligns with the notch on the Socket. If the notches do not align, then DO NOT FORCE the module into the socket as this will cause damage.

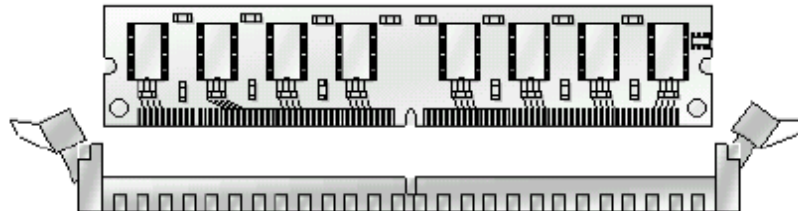


Figure A2: DIMM Socket and notches

When fitting more than one DDR2 module, ensure that both modules are of identical capacity and manufacture. Failure to do so may result in poor performance and data corruption.

CPU Heatsink

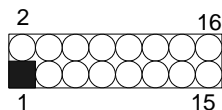
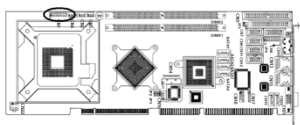
When Selecting a suitable CPU heatsink, you must take into account the both the anticipated operating environment as well as any height restrictions that may apply.

When attaching your heatsink, follow the recommended guidelines from the heatsink manufacturer to ensure correct attachment.

CAUTION

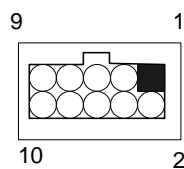
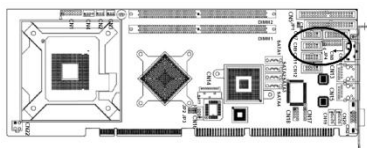
If the heatsink is incorrectly attached, this may result in the CPU overheating and eventual failure

System Front Panel Utility Connector



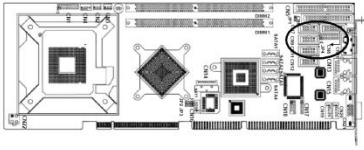
Pin #	Assignment	Pin #	Assignment
System Power On LED		External Speaker	
1	N/C	2	Speaker
3	+5V	4	On –board buzzer (2-4)
5	N/C	6	N/C
7	PWLED (ground)	8	+5V
Keyboard Lock		System Reset	
9	KBLOCK	10	Reset
11	Ground	12	Ground
HDLED		System power On Switch	
13	+5V (Pull-up for HDD LED)	14	Power Button control Signal
15	HDDLED-	16	Ground

COM Ports RS232



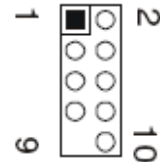
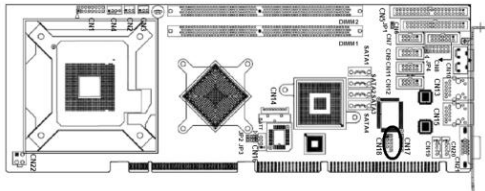
Pin #	Assignment	Pin #	Assignment
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request To Send (RTS)
5	Transmit Data (TXD)	6	Clear To Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground	10	Ground

COM Port Rs-232/422/485



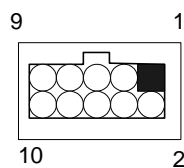
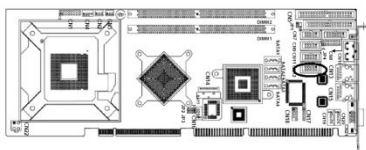
Pin #	Assignment	Pin #	Assignment
1	Data Carrier Detect (DCD)	2	Data Set Ready (DSR)
3	Receive Data (RXD)	4	Request To Send (RTS)
5	Transmit Data (TXD)	6	Clear To Send (CTS)
7	Data Terminal Ready (DTR)	8	Ring Indicator (RI)
9	Ground	10	Ground
11	TxD+	12	TxD-
13	RxD+	14	RxD-

USB Header



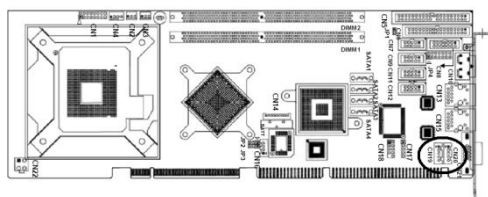
Pin #	Assignment	Pin #	Assignment
1	VCC	2	VCC
3	USB2- / USB4-	4	USB3- / USB5-
5	USB2+ / USB4+	6	USB3+ / USB5+
7	Ground	8	Ground
9	---	10	N/C

Digital I/O Port



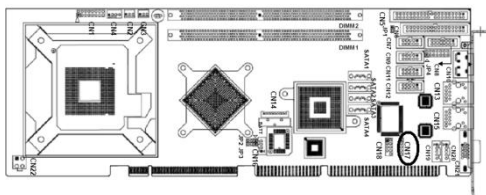
Pin #	Assignment	Pin #	Assignment
1	EXT_VDD	2	ISO_I1
3	ISO_O1	4	ISO_I2
5	ISO_O2	6	ISO_I3
7	ISO_O3	8	ISO_I4
9	ISO_O4	10	EXT_VSS

Keyboard / Mouse headers



Keyboard		Mouse	
Pin #	Assignment	Pin #	Assignment
1	PS2_KBCLK	1	PS2_MSCLK
2	PS2_KBDATA	2	PS2_MSDATA
3	NC	3	NC
4	Ground	4	Ground
5	5VSB	5	5VSB

IrDA connector



Pin #	Assignment
1	+5V
2	NC
3	IRRX
4	GND
5	IRTX

Jumper Settings

Pin #	Description
JP1 PATA IDE	
1 - 2	Disabled
OPEN	Enabled
JP2 CMOS Clear	
1 - 2	Normal operation
2 - 3	Clear CMOS
JP3 BIOS Write Protect	
1 - 2	BIOS Write enabled
2 -3	BIOS write disabled

JP4 COM2 RS-232/422/485

Pin No	RS-232	RS-422	RS-485
1 – 2	OFF	ON(Term.)	ON(Term.)
3 – 4	OFF	ON(Term.)	ON(Term.)
5 – 6	OFF	OFF	ON
7 – 8	OFF	ON	OFF
9 – 10	OFF	ON	ON
11 – 12	ON	OFF	OFF
13 - 14	OFF	OFF	ON

Software Configuration

Installing Operating Systems

The necessary operating system drivers can be found on the Blue Chip Support CD which should have been supplied with your PICMG BCT-2040 Single Board Computer. The necessary files can also be downloaded from the Blue Chip Technology website at www.bluechiptechnology.co.uk

The manner in which any drivers are loaded will vary depending upon the actual operating system used. Details follow for Microsoft XP.

Microsoft XP

Install the drivers for Windows XP from the Support CD/DVD supplied with board in the order as follows

The drivers can be found in the Drivers\SBPC\BCT2040\ directory on the DVD

- Chip set INF driver v7.2.1.1003 or later
 - run infirst_autol.exe
- VGA driver v6.14.10.4704 or later
 - run setup.exe
- Marvell Yukon Gigabit Ethernet driver
 - from the Device Manager page, select update driver and point search filed to the relevant directory

Watchdog Timer Programming

The Watchdog Timer (WDT) is a special hardware device that monitors the computer system during normal operation. The WDT has a clock circuit that counts down from a set number to zero. If a monitored item occurs before that timer reaches zero, the WDT resets and counts down again. If for some reason the monitored item doesn't occur before the timer reaches zero, the WDT performs an action, such as a diagnostic operation (rebooting the computer) or generate an NMI.

Watchdog Configuration		
Address Port: 2Eh	Data Port: 2Fh	Description
87h		Enter Key
01h		Enter Key
55h		Enter Key
55h		Enter Key
07h	07h	Setup Watch Dog Function
71h	F0h	Setup Watch Dog Function
72h	C0h	C0h: select second mode, 40h: select minute mode
73h	00h	Time out occurs after 0-255 second/minute, 00h: Time out disable

Example (C):

The following example sets up the watchdog time to 5 mins.

1. `outportb(0x2e,0x87);`
2. `outportb(0x2e,0x01);`
3. `outportb(0x2e,0x55);`
4. `outportb(0x2e,0x55);`
5. `outportb(0x2e,0x07);`
6. `outportb(0x2f,0x07);`
7. `outportb(0x2e,0x71);`
8. `outportb(0x2f,0xF0);`
9. `outportb(0x2e,0x72);`
10. `outportb(0x2f,0x40);`
11. `outportb(0x2e,0x73);`
12. `outportb(0x2f,0x05);`

GPIO Programming

The general purpose I/O pins are provided for custom system design. The pin programming as input mode or output mode are defined by the following table

GPIO Pin definitions							
Pin No	GPIO Mode	Default Corresponding Pin	Default Power On	Pin No	GPIO Mode	Default Corresponding Pin	Default Power On
3	Digital Output 1	0	Read low	2	Digital Input 1	0	low
5	Digital Output 2	0	Read low	4	Digital Input 2	0	low
7	Digital Output 3	0	Read low	6	Digital Input 3	0	low
9	Digital Output 4	0	Read low	8	Digital Input 4	0	low

GPIO base address: A20h

GPO base address: A21h

GPI base address: A22h

The following “C” example sets the digital outputs to High.

1. `outportb(0xA20,0xFF);`
2. `outportb(0xA21,0x0F);`

The following “C” example sets the digital outputs to Low.

1. `outportb(0xA20,0xFF);`
2. `outportb(0xA21,0x00);`

BIOS SETUP

The PICMG BCT-2040 Single Board Computer uses AMI BIOS™ from American Megatrends. The AMI BIOS™ provides a built-in Setup program which allows the user to modify the basic system configuration and hardware parameters. The modified data is stored in a battery-backed CMOS, so that data is retained even when the power is turned off.

It is possible for the CMOS battery to fail, and in such an instance the BIOS settings will revert to default and the user will require to reset them once the CMOS battery has been replaced.

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

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

1. By pressing immediately during POST after switching on

Note: On some slower CRT displays, the unit can boot up quickly and complete POST before there is anything shown on the Display. On most systems, a Splash screen is displayed during POST

If the message disappears before you respond, then you will have to restart the system again by either turning the power OFF and then ON again, pressing the “RESET” button on the system case if there is one, or by simultaneously pressing the <Ctrl>, <Alt> and keys

Caution: Setting the wrong value can lead to an unstable system and should only be attempted by experienced personnel

The following pages provide a starting point to locate items that may be useful. They do not provide full in depth descriptions of each item

For example; Configuring Serial Ports can be found under the SuperIO Configuration Sub menu on the Advanced Settings page, and to have the system start automatically when power is applied, then the “Restore on AC Power Loss” setting can be found in the same sub-menu (set this to Power ON)

Common User configurable options will be identified as appropriate

Main Menu

The Main menu shows detail fo the BIOS and allows the setting of Date and Time. Use the left/right arrow keys to highlight a particular configuration screen from the top menu bar or use the down arrow key to access and configure the information below.

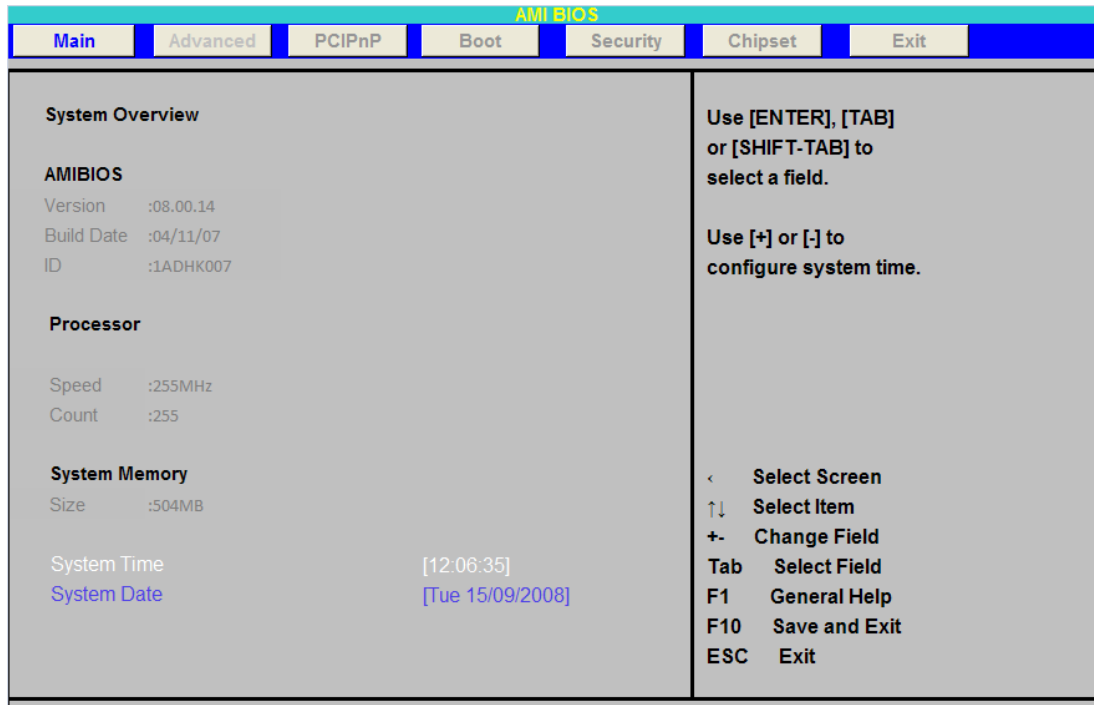


Figure B1

Advanced Setting

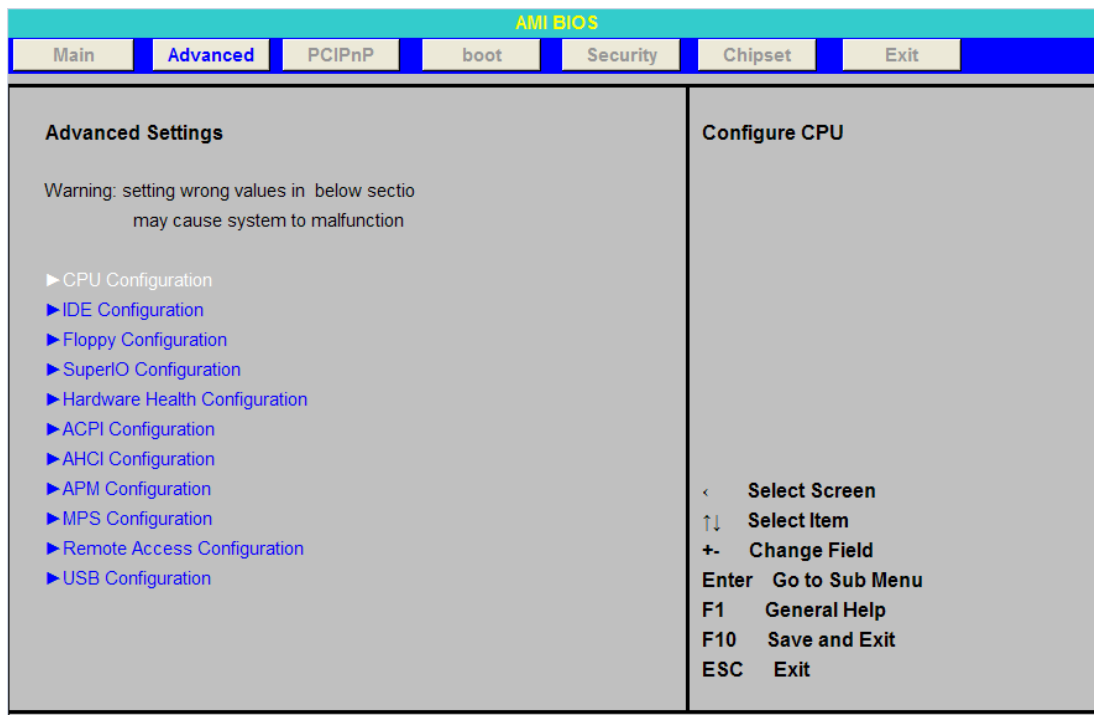


Figure B2

There are 11 categories within the Advanced Settings page, with each category having no, one, or more than one setup item. Use the arrow keys to highlight the item and then the <ENTER> key to select the Sub Menu.

CPU Configuration

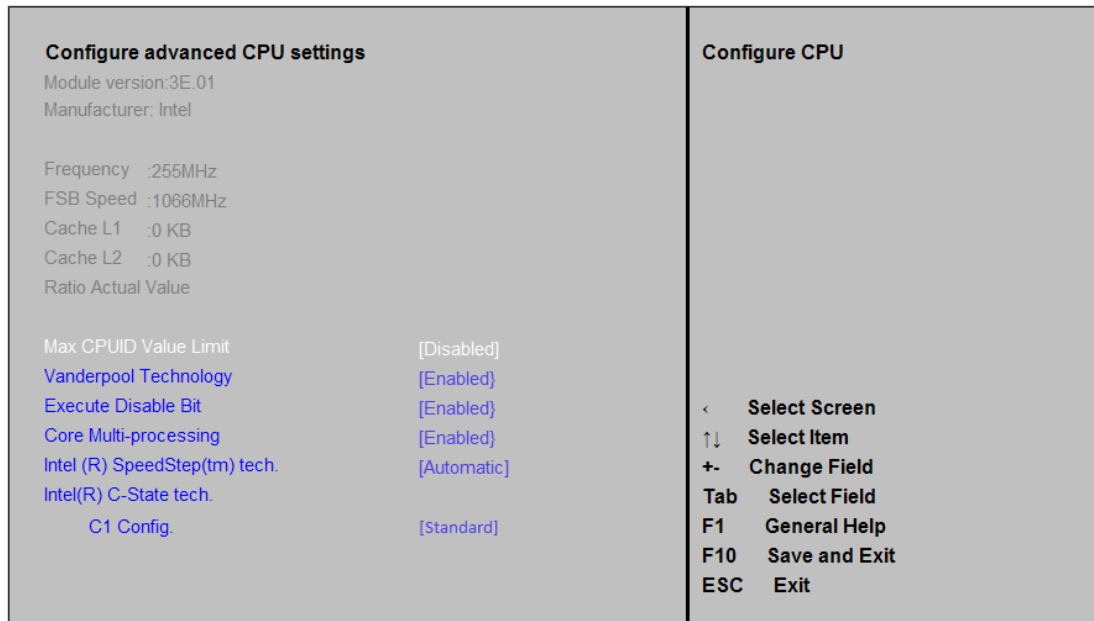


Figure B2.1

The CPU Configuration page varies depending on CPU installed. If SpeedStep is set to Automatic, then you need to set the Power Schemes within windows to Portable/laptop as well, in order to utilise the power saving features.

IDE Configuration



Figure B2.2

Floppy Configuration

Floppy Configuration		Select the type of floppy drive connected to the system
Floppy A	[1.44 MB 3½"]	
Floppy B	[Disabled]	

Figure B2.3

SuperIO Configuration

Configure ITE8718 Super IO Chipset		Allows BIOS to Enable or Disable Floppy Controller
Onboard Floppy Controller	[Enabled]	
Floppy Drive Swap	[Disabled]	
Serial Port1 Address	[3F8/IRQ4]	
Serial Port2 Address	[2F8/IRQ3]	
Serial Port2 mode	[Normal]	
Restore on AC loss by IO	[Last State]	
Serial Port3 Address	[3E8]	
Serial Port3 IRQ	[IRQ10]	
Serial Port4 Address	[2E8]	
Serial Port4 IRQ	[IRQ11]	

Figure B2.4

If Devices are not being used then set the appropriate option to Disabled, in order to free up resources for other use.

Hardware Health Configuration

Hardware Health Configuration		Enables Hardware Health Monitoring Device
H/W Health Function	[Enabled]	
CPU Fan Mode Setting	[Full on Mode]	
System Temperature	:27°C/95°F	
CPU Temperature	:27°C/95°F	
CPU Fan Speed	:N/A	
System Fan Speed	:6887 RPM	
Chassis Fan Speed	:N/A	
VDIMM	:1.776 V	
Vcore	:1.248 V	
+3.30V	:2.992 V	
+5.00V	:4.838 V	
+12.0V	:11.712 V	
5Vsb	:4.892 V	
VBAT	:3.040 V	
< Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit		

Figure B2.5

If the system is operating in a controlled environment and noise is an inconvenience, then setting the CPU Fan mode to Automatic Mode, allows for the CPU fan to run at variable speeds depending on temperature.

ACPI Settings

ACPI Settings		Enable / Disable ACPI support for Operating System
ACPI Aware O/S	[Yes]	
		Enable: If OS supports ACPI
		Disable: If OS does not support ACPI

Figure B2.6

AHCI Settings

AHCI Port 0	[Not Detected]
AHCI Port 1	[Not Detected]
AHCI Port 2	[Not Detected]
AHCI Port 3	[Not Detected]
AHCI Port 4	[Not Detected]
AHCI Port 5	[Not Detected]

Figure B2.7

The AHCI settings page will only show AHCI devices if the option for SATA1 in the IDE configuration page is set to either RAID or AHCI. If it is set to IDE, then all devices will be shown as Not detected

APM Configuration

APM Configuration		Enable or Disable APM.
Power Management/APM	[Enabled]	
Video Power Down Mode	[Suspend]	
Hard Disk Power Down Mode	[Suspend]	
Suspend time Out	[Disabled]	
Throttle Slow Clock Ratio	[50%]	
Keyboard & PS/2 Mouse	[MONITOR]	
Power Button Mode	[On/Off]	
Advanced resume Event Controls		
Resume On Ring	[Disabled]	
Resume On LAN	[Disabled]	
Resume On PME#	[Disabled]	
Resume On RTC Alarm	[Disabled]	
+12.0V	:11.712 V	
5Vsb	:4.892 V	
VBAT	:3.040 V	
		< Select Screen ↑↓ Select Item + - Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit

Figure B2.8

MPS Configuration

<p>MPS Configuration MPS Revision [1.4]</p>	<p>Select MPS revision</p>
--	----------------------------

Figure B2.9

Remote Access Configuration

<p>Configure Remote Access type and parameters Remote Access [Disabled]</p>	<p>Select Remote Access type</p>
--	----------------------------------

Figure B2.10

USB Configuration

<p>USB Configuration Module Version - 2.24.0-12.4</p> <p>USB Devices Enabled :</p> <p>Legacy USB Support [Enabled] Port 64/60 Emulation [Disabled] USB 2.0 Controller Mode [HiSpeed] BIOS EHCI Hand-Off [Enabled]</p>	<p>Enables support for legacy USB. AUTO Option disables legacy support if no USB devices are connected</p>
--	--

Figure B2.11

Legacy USB support provides support for USB Keyboard, Mice and FDD.

Port 64/60 Emulation should be Enabled for USB Keyboard support

Advanced PCI/PnP Setting

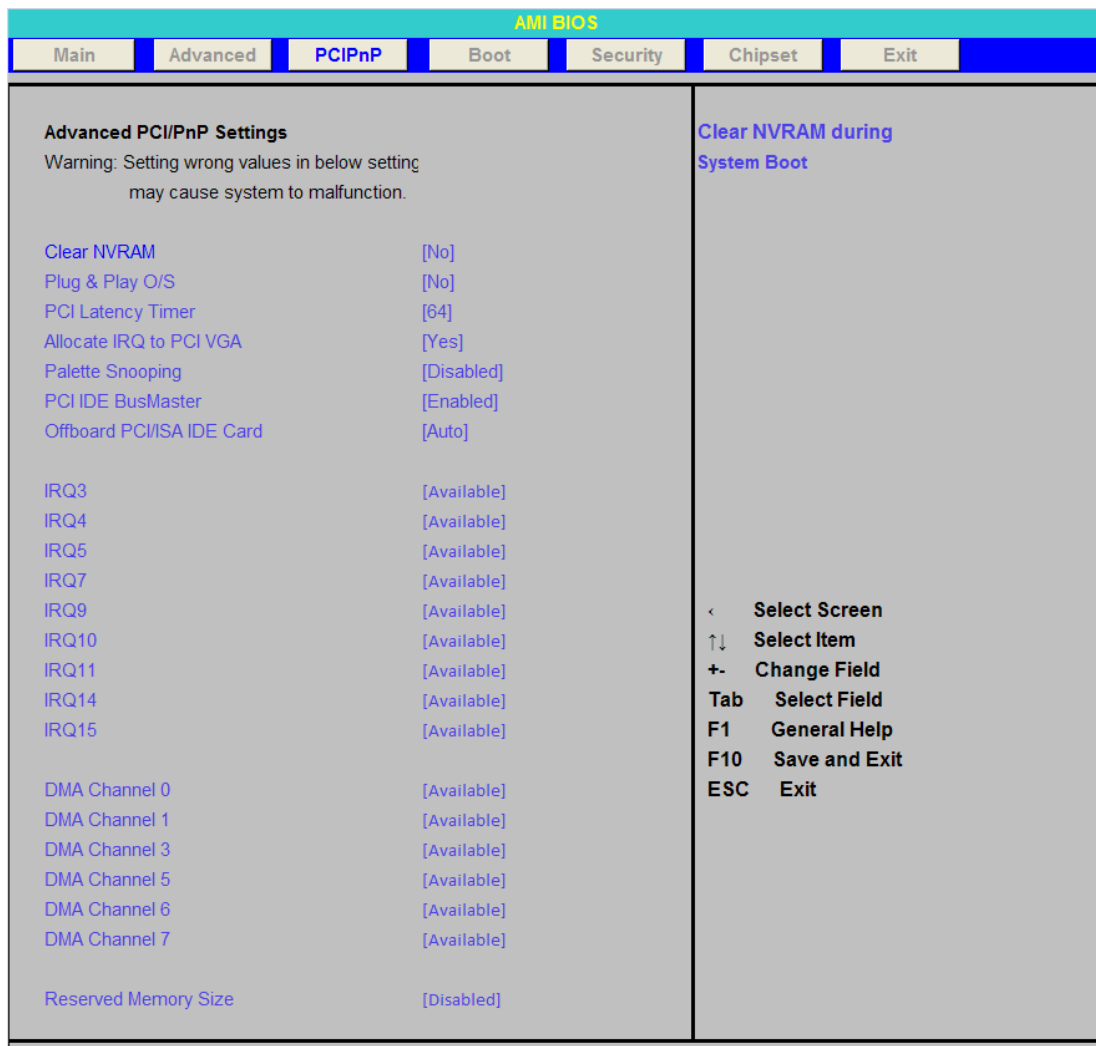


Figure B3

For Legacy ISA card use, the relevant IRQ and DMA resource should be set to RESERVED. Leaving the resource set to Available, allows PCI/PnP devices to use this resource causing potential conflicts

Similarly, if a memory area needs to be reserved for an ISA device, then change the default DISABLED setting to the appropriate option (16K, 32K or 64K)

Boot Options

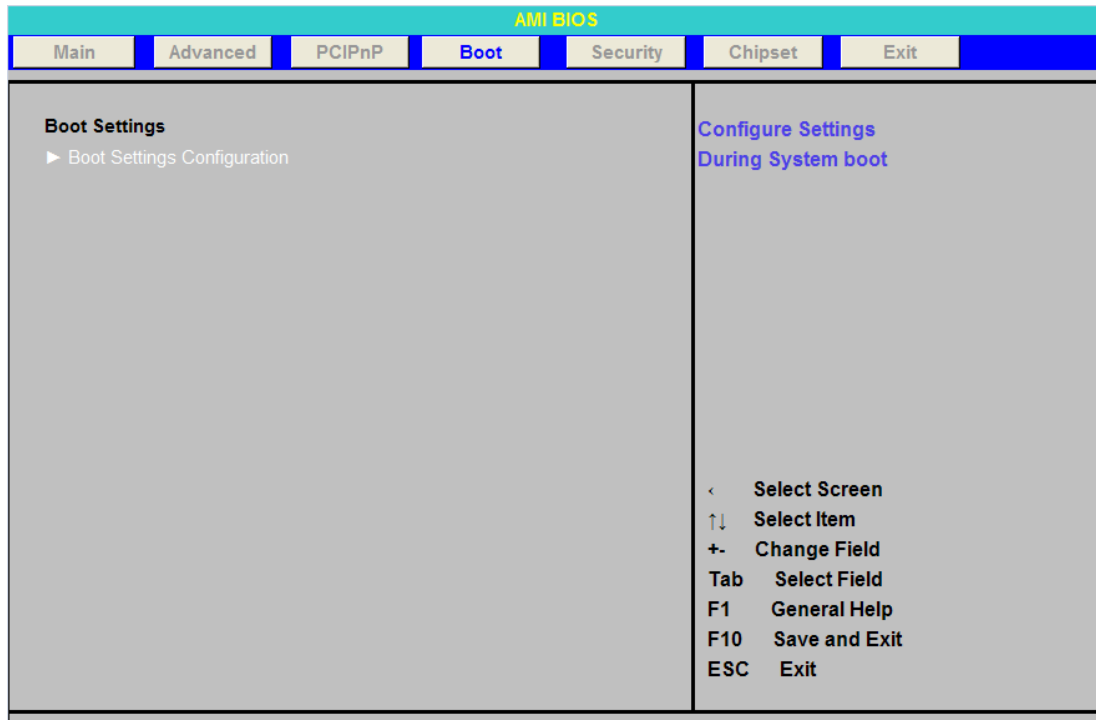


Figure B4

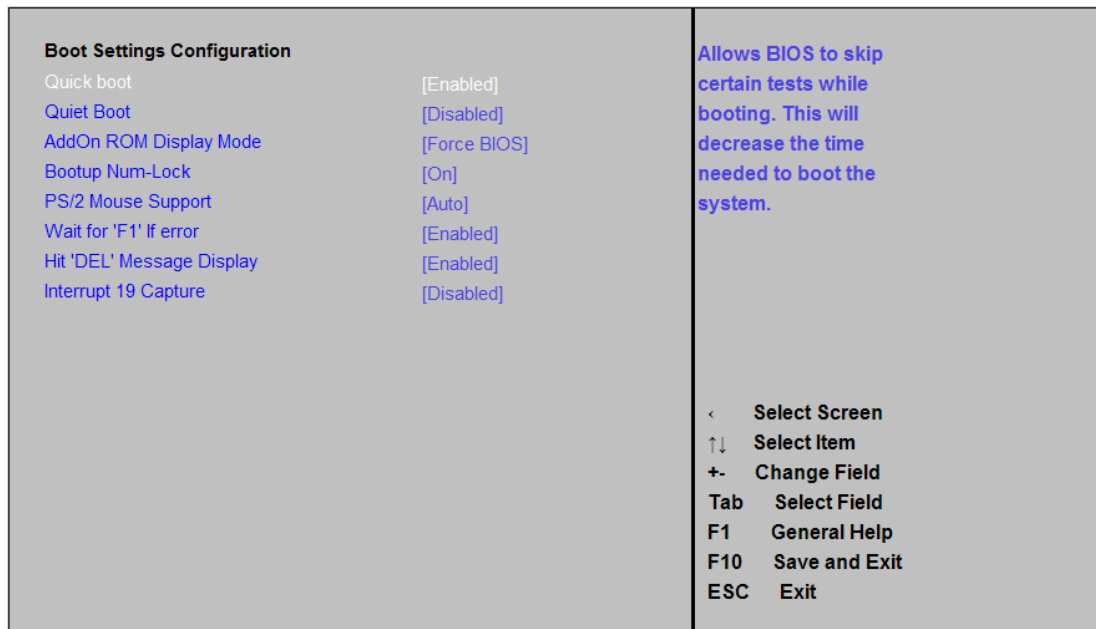


Figure B4.1

If there is a known reason for a BIOS error to appear, such as no Keyboard present, then set this to Disabled or the system will wait at the message

Security Settings

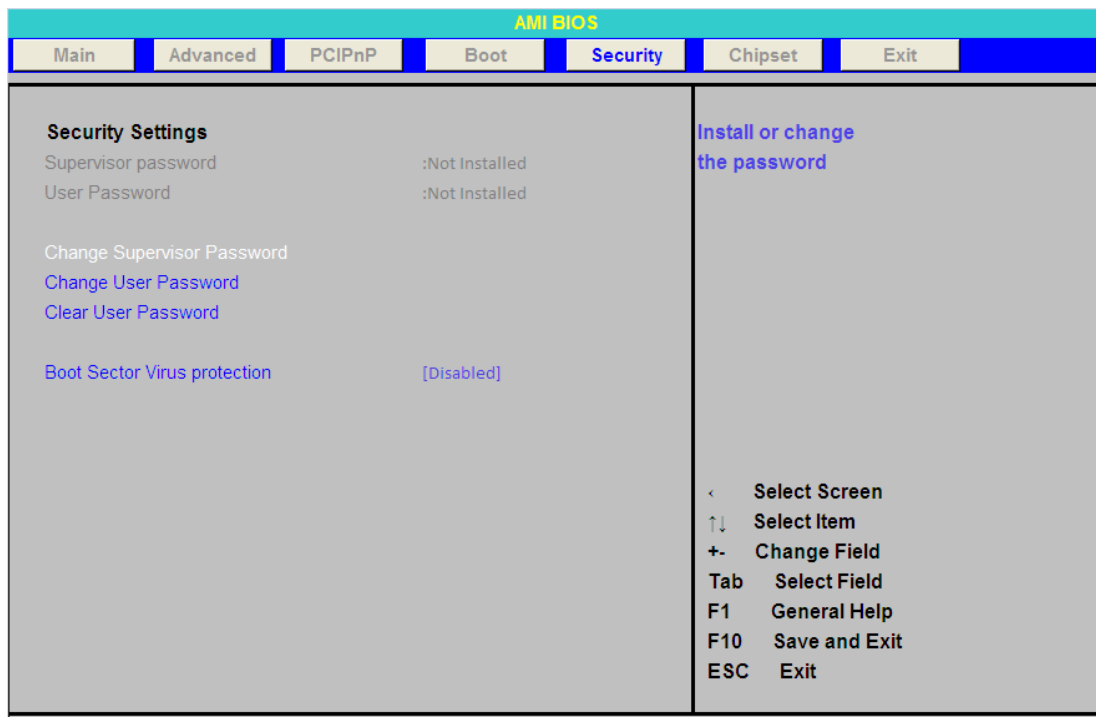


Figure B5

Chipset Settings

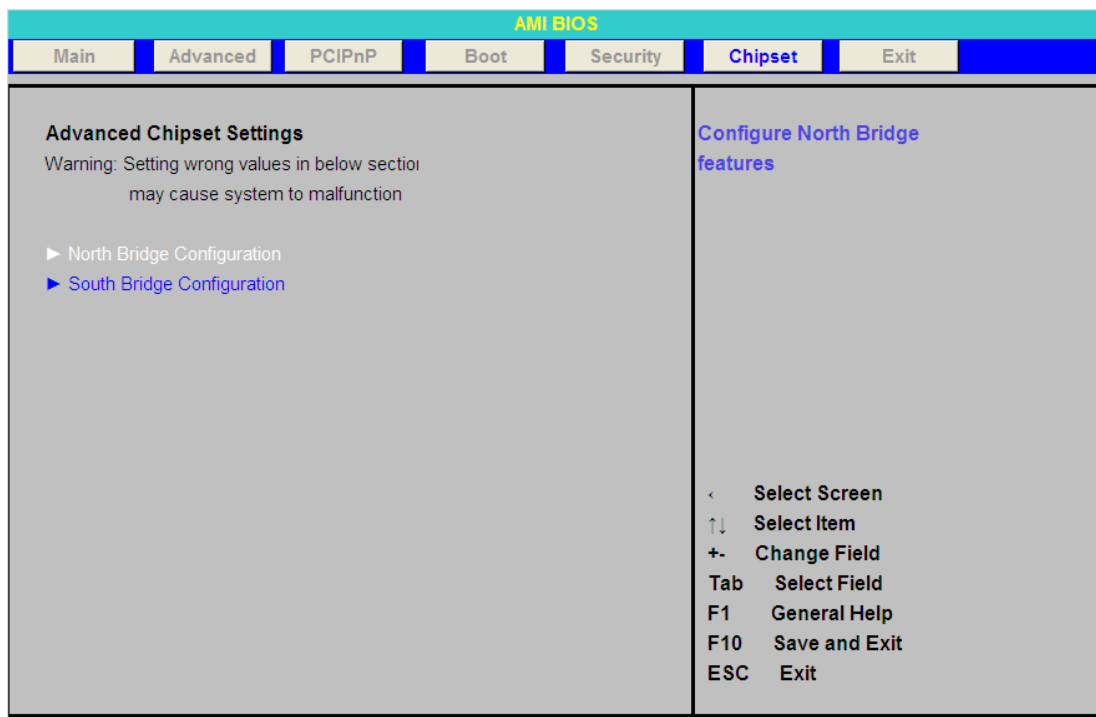


Figure B6

North Bridge Configuration

North Bridge Chipset Configuration Memory Remap Feature [Enabled] PCI MMIO Allocation: 4GB to 2816MB DRAM Frequency [Auto] Configure DRAM Timing by SPD [Enabled] Initial Graphic Adapter [PEG/PCI] Internal Graphics Mode Select [Enabled, 8MB] PEG Port Configuration PEG Port [Auto]		Enabled: Allow remapping of overlapped PCI memory above the total physical memory Disable: Do not allow remapping of memory < Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit
--	--	--

Figure B6.1

South Bridge Configuration

South Bridge Chipset Configuration USB Functions [Enabled] USB 2.0 Controller [Enabled] HDA Controller [Disabled] SLP_S4# Min. Assertion Width [1 to 2 seconds]		Disabled 2 USB Ports 4 USB Ports 6 USB Ports 8 USB Ports 10 USB Ports
PCIe Ports Configuration PCIe Port 0 [Auto] PCIe Port 1 [Auto] PCIe Port 2 [Auto] PCIe Port 3 [Auto] Onboard LAN 1 Control [Enabled] Onboard LAN 2 Control [Enabled] PCIe High Priority Port [Disabled] Onboard ITE8888 ISA Bridge [Disabled]		< Select Screen ↑↓ Select Item +- Change Field Tab Select Field F1 General Help F10 Save and Exit ESC Exit

Figure B6.2

If ISA cards are being used then the ITE8888 ISA Bridge should be set to Enabled

Exit Options

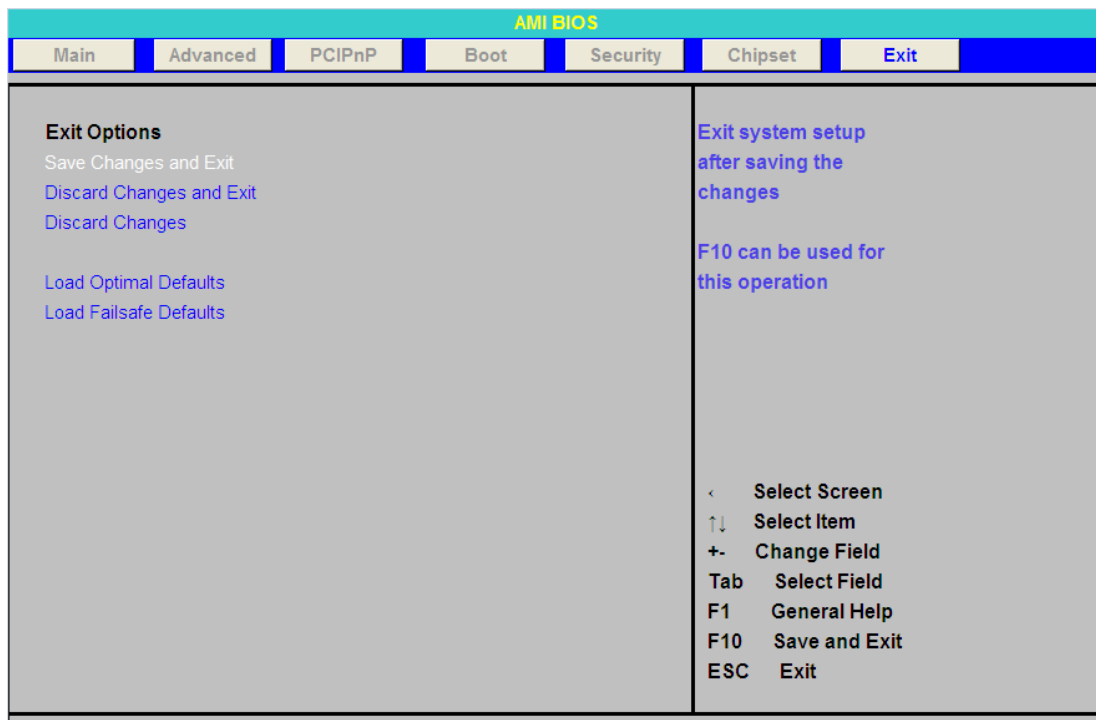


Figure B7

If a new BIOS has been installed, then immediately after reboot, enter BIOS setup and select Load Optimal Defaults to complete the BIOS installation

The BCT-2040 Single Board Computer should not require any regular maintenance. After a period of several years, it may be necessary to replace the battery on the processor board, if it cannot maintain the CMOS memory whilst the AC power is disconnected.

On a regular basis the inside of the System Unit which houses the BCT-2040 Single Board Computer should be cleaned out to prevent dust build up which could eventually clog the fans and prevent efficient operation.

For general maintenance of the System unit, follow the recommended maintenance schedule set out by the manufacturer of the System Unit.

Replacing the Processor Battery

The processor board includes a small 3V lithium battery (type CR-2032) to retain the BIOS settings in the CMOS memory. Before attempting to replace the battery, please read the precautions detailed in the introductory section. Remember that even discharged batteries can present a real personnel hazard if mistreated.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type recommended by the manufacturer.

Dispose of used batteries according to the manufacturer's instruction.

ATTENTION

Il y a danger d'explosion s'il y a remplacement incorrect de la batterie.

Remplacer uniquement avec une batterie du même type ou d'un type recommandé par le constructeur.

Mettre au rebut les batteries usagées conformément aux instructions du fabricant.

Do NOT under any circumstances try to remove the battery with metallic tools (pliers, tweezers etc.). They will short out the battery with possible disastrous results.

Replace the battery by one of the same type, ensuring that it is fitted with the positive terminal facing the CPU, and that the clip is fully engaged. When the battery has been replaced, the BIOS settings will revert to their default settings. Reset them as necessary to suit your application.

Fuses

There are no user-serviceable or replaceable fuses on the Computer Board.

Amendment History

Issue Level	Issue Date	Author	Amendment Details
1.0	17-09-08	T Mck	First Release

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