

Single Board Computer  
**EBC 420 Series**  
User's Manual

04-18-2006 Build

## **Preface**

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### **Acknowledgements**

The EBC 420 series is a trademark of NEXCOM international CO., LTD. All other product names mentioned herein are registered trademarks of their respective owners.

### **Regulatory Compliance Statements**

This section provides the FCC compliance statement for Class A devices and describes how to keep the system CE compliant.

### **Federal Communications Commission (FCC) For Class A Device**

This equipment has been tested and verified to comply with the limits for a Class A digital device, pursuant to Part 15 of 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 instructions, may cause harmful interference to radio communications. Operation of this equipment in a residential area (domestic environment) is likely to cause harmful interference, in which case the user will be required to

correct the interference (take adequate measures) at their own expense.

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## CE Certification

The product(s) described in this manual complies with all applicable European Union (CE) directives if it has a CE marking. For computer systems to remain CE compliant, only CE-compliant parts may be used. Maintaining CE compliance also requires proper cable and cabling techniques.

### **WARNINGS**

Read and adhere to all warnings, cautions, and notices in this guide and the documentation supplied with the chassis, power supply, and accessory modules. If the instructions for the chassis and power supply are inconsistent with these instructions or the instructions for accessory modules, contact the supplier to find out how you can ensure that your computer meets safety and regulatory requirements.

### **CAUTION**

Electrostatic discharge (ESD) can damage NSA components. Do the described procedures only at an ESD workstation. If no such station is available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the computer chassis.

## Safety Information

Before installing and using the EBC 420, note the following precautions:

- Read all instructions carefully.
- Do not place the unit on an unstable surface, cart, or stand.
- Follow all warnings and cautions in this manual.
- When replacing parts, ensure that your service technician uses parts specified by the manufacturer.
- Avoid using the system near water, in direct sunlight, or near a hearing device.

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# **Chapter 1**

## **General Information**

## 1.1 Main Feature

Support AMD Geode Castle processor with 128KB L2 cache

- AMD Geode Castle processor with 128KB L2 cache
- One 184 pin DIMM sockets, up to 1GB Non-Registered Non-ECC DDR SDRAM with 64-bit 400 MHz bus speed
- Audio with Speaker-Out on the rear panel and Internal Audio Connector for Mic In and Line In
- Onboard CompactFlash Socket
- Support CRT and TTL LCD
- Support IEEE 1394a Interface

## 1.2 Specifications

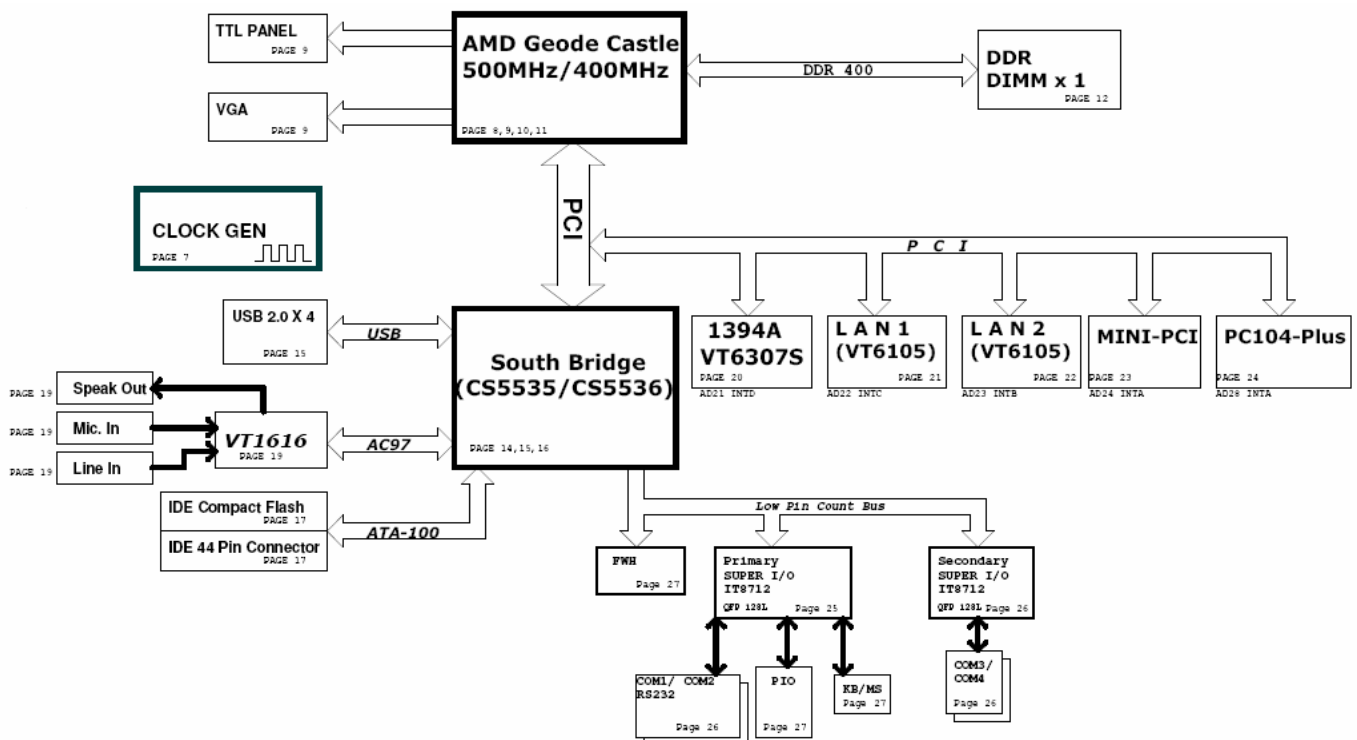


Figure 1.1: Block Diagram of EBC 420

<b>System Architecture</b>	<ul style="list-style-type: none"> <li>- Embedded SBC</li> </ul>
<b>CPU Support</b>	<ul style="list-style-type: none"> <li>- AMD Geode Castle</li> <li>- 500MHz / 400MHZ</li> <li>- 64 KB I-cache/64 KB D-cache</li> <li>- 128 KB L2 cache</li> </ul>
<b>Memory</b>	<ul style="list-style-type: none"> <li>- One 184 pin DIMM sockets, up to 1GB Non-Registered Non-ECC DDR SDRAM with 64-bit 400 MHz bus speed</li> </ul>
<b>BIOS</b>	<ul style="list-style-type: none"> <li>- Award system BIOS</li> <li>- 4M bits flash ROM (SST)</li> </ul>
<b>Chipset</b>	<ul style="list-style-type: none"> <li>- AMD Geode Castle and CS 5536 companion chip</li> </ul>
<b>LAN</b>	<ul style="list-style-type: none"> <li>- 10/100 Ethernet controller x 2 (VIA VT6105)</li> <li>- Flow control support (IEEE802.3x) / Priority Queuing support (IEEE 802.1p) / Virtual LAN (VLAN) Support (IEEE802.1Q)</li> <li>- Include the MDI-X (Auto detect straight or cross cable)</li> </ul> <p>RJ45 w/LED LAN Connectors x 2</p>
<b>Display</b>	<ul style="list-style-type: none"> <li>- Supports CRT resolutions up to 1920x1440x32 bpp at 85 Hz</li> <li>- DB15 CRT VGA Connector x 1</li> <li>- Supports up to 24bit, 1600x1200x32 bpp at 60 Hz for TFT</li> <li>- DF13, 40-pin connector x 1 for TFT TTL LCD panel output</li> <li>- Compatible with EBK LVDS66</li> </ul>
<b>IDE</b>	<ul style="list-style-type: none"> <li>- IDE with 44 pin connector × 1</li> <li>- Onboard CompactFlash socket (Supports Type 1 and 2)</li> </ul>
<b>Audio</b>	<ul style="list-style-type: none"> <li>- Audio AC97 CODEC: VT1616</li> <li>- Speaker Out on rear panel.</li> <li>- Internal Audio Connector for Mic In and Line In</li> </ul>
<b>I/O Interface</b>	<ul style="list-style-type: none"> <li>- SIO× 4, with 4x16C550 UARTs, Two 9 pins 2.0mm Pin Header and Two DB9 Connector (RS-232 Only)</li> <li>- USB2.0 connector x 4</li> <li>- One 6 pin Mini-Din for PS/2 Keyboard and Mouse</li> <li>- Box header near rear panel for optional cable connection</li> <li>- HDD: Support IDE with 44 pin connector × 1</li> <li>- Internal CompactFlash socket x 1</li> <li>- Support One Type I &amp; II CompactFlash Card</li> <li>- Onboard buzzer</li> <li>- Onboard Power On/Off Switch</li> </ul>



- 8 GPIO lines via header (4 IN and 4 Out) (TTL Level 5V)
- Digital I/O: 4-bit TTL input, 4-bit TTL output (TTL Level: 0~5V)
- 2 GPIO connect to Front Alarm and Status LEDs
- Power /HDD LED
- LAN 1~2 LEDs: ACT/LNK x 2; Speed X 2
- User Interface Utility of Windows XP, XPe and Linux to configure the Alarm Status of Thermal and FAN status on the Front LEDs
- Firewire IEEE 1394a x 1
- PC/104 Plus Connector x 4 (Without -12V and -5V)
- Mini-PCI Socket x 1

## Expansion Slot

- Power Button
- USB x 4
- COM x 2
- Audio
- DB-15 for VGA
- RJ-45 x 2 for LAN
- IEEE 1394
- PS/2
- Power Connector

## I/O on Bracket

Remark: Please refer to the picture as shown in Figure 1.2

- Derived from Super IO to support system Voltage, fan speed, temperature monitoring
- Watchdog Timer: Watchdog timeout can be programmable by - Software from 1 Sec/Min to 256 Sec/Min (Tolerance 10% under room temperature 25°C)

## System Management

### Real Time Clock

- On chip RTC with battery back up
- External Li-ion Battery x 1 (Socket type field replaceable)

### Dimensions

- 165mm(L) x 142mm(W)
- Support AT Mode Only for wake-up Ring

### Power Supply

- On Board DC to DC circuit support DC Voltage +12V +-5% Input
- Reserved Mini-Din 4 Pins and two pin Power Input connector

## Environments

- Board-level operating temperatures: 0°C to 45°C
- Storage temperatures: -20°C to 80°C
- Relative humidity: 10% to 90% (Non-condensing)

## Certification

- CE
- FCC Class A

## Ordering Information

**EBC 420-LX8** (P/N: 1E00042001X0)

**NEW** Low Power Embedded Board AMD Geode LX800 with 128KB L2 cache and  
VGA/Audio/COM/USB2.0 /Dual LAN

**12V Power Adapter for EBC 420** (P/N: 7410050001X0)

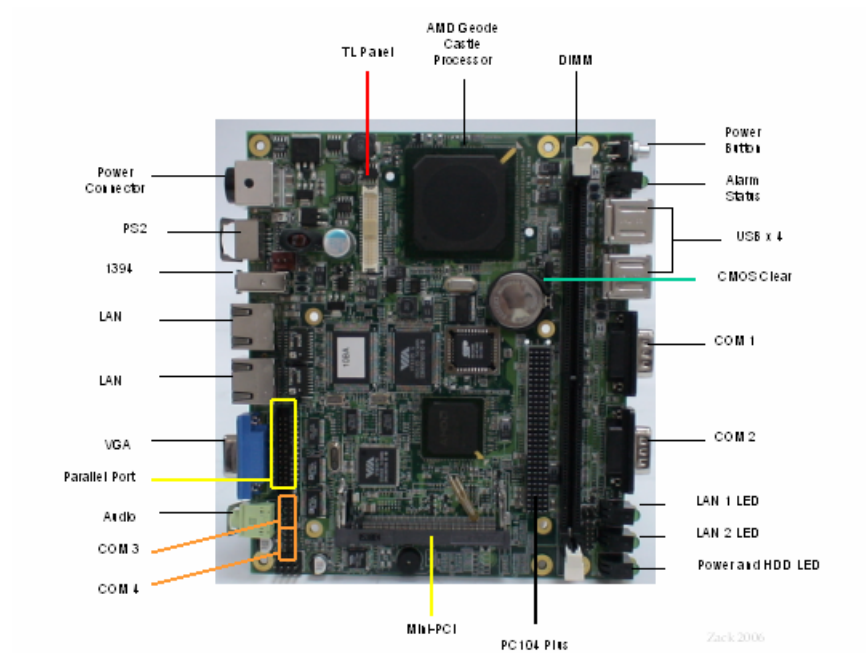
**NEW** POWER ADAPTER 50W, 12V/4.2A,EDAC, PBFREE

## 1.3 Power Consumption Measurement

### EBC 420-LX8 Power Consumption

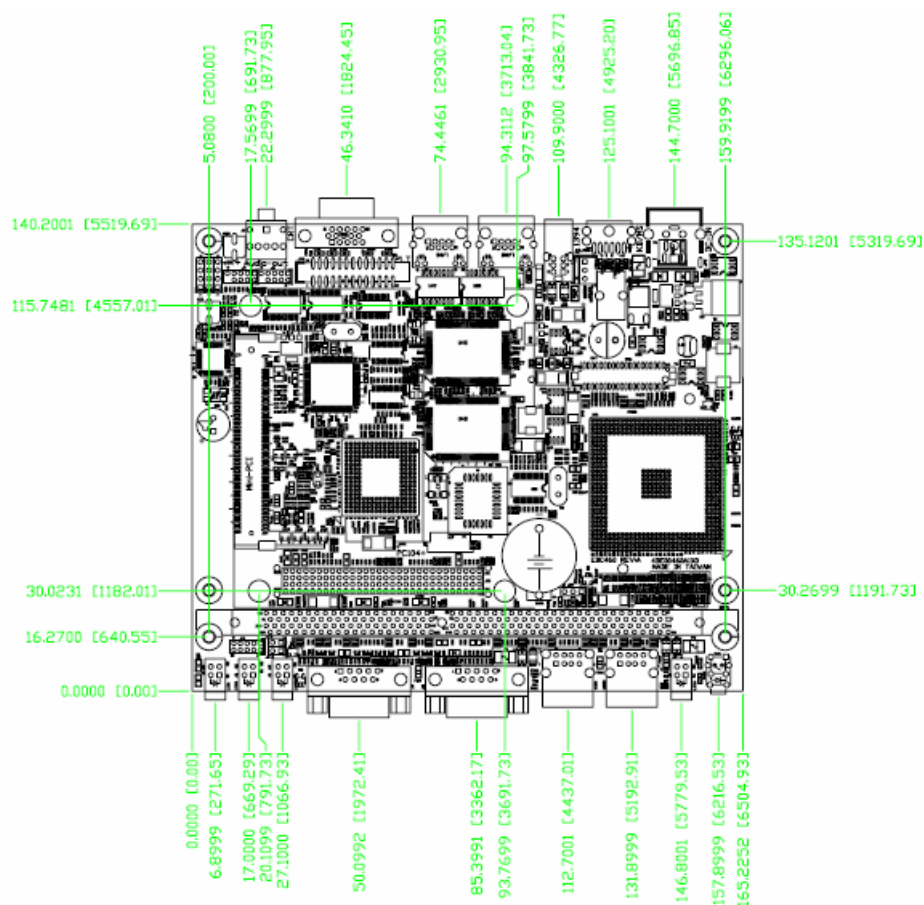
Power Type	+12V_IN	+12V	TOTAL	NICE3120
Consumed watts	75	74	75	44
Consumed currents (Item A)	6.25	6.17	6.25	3.67
Actually required currents (Item A/0.85)	7.82	7.71	7.82	4.58

## 1.4 Board Layout



**Figure 1.2: Overview of EBC 420**

## 1.5 Board Dimensions



**Figure 1.3: Mechanical Drawing of the EBC 420**



## **Chapter 2**

# **Jumper Setting**

This chapter of the User's Manual describes how to set jumpers.

*Note: The procedures that follow are generic for all EBC 420 series.*

## 2.1 Before You Begin

Ensure you have a stable, clean working environment. Dust and dirt can get into components and cause a malfunction. Use containers to keep small components separated.

Adequate lighting and proper tools can prevent you from accidentally damaging the internal components. Most of the procedures that follow require only a few simple tools, including the following:

- ◆ A Philips screwdriver
- ◆ A flat-tipped screwdriver
- ◆ A set of jewelers Screwdrivers
- ◆ A grounding strap
- ◆ An anti-static pad

Using your fingers can disconnect most of the connections. It is recommended that you do not use needle-nosed pliers to disconnect connections as these can damage the soft metal or plastic parts of the connectors.

Before working on internal components, make sure that the power is off. Ground yourself before touching any internal components, by touching a metal object. Static electricity can damage many of the electronic components. Humid environment tend to have less static electricity than dry environments. A grounding strap is warranted whenever danger of static electricity exists.

## 2.2 Precautions

Computer components and electronic circuit boards can be damaged by discharges of static electricity. Working on the computers that are still connected to a power supply can be extremely dangerous. Follow the guidelines below to avoid damage to your computer or yourself:

- ◆ Always disconnect the unit from the power outlet whenever you are working inside the case.
- ◆ If possible, wear a grounded wrist strap when you are working inside the computer case. Alternatively, discharge any static electricity by touching the bare metal chassis of the unit case, or the bare metal body of any other grounded appliance.
- ◆ Hold electronic circuit boards (such as the EBC 420 board) by the edges only. Do not touch the components on the board unless it is necessary to do so. Don't flex or stress the circuit board.
- ◆ Leave all components inside the static-proof packaging that they shipped with until they are ready for installation.
- ◆ Use correct screws and do not over tighten screws.

## 2.3 Setting Jumpers

A jumper is the simplest kind of electric switch. It consists of two metal pins and a cap. When setting the jumpers, ensure that the jumper caps are placed on the correct pins. When the jumper cap is placed on both pins, the jumper is **SHORT**. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is **OPEN**. Please see the following illustrations

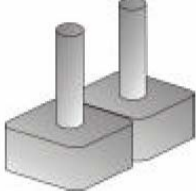
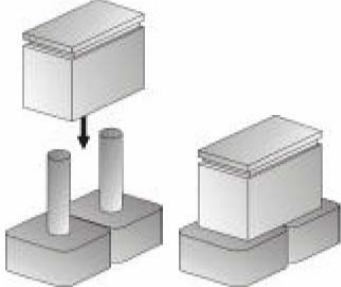
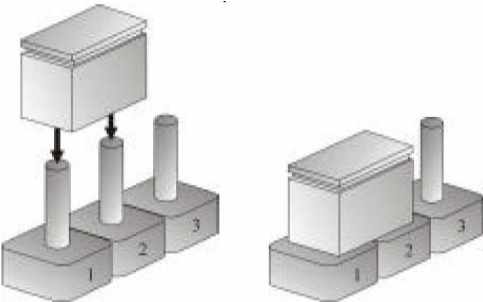
<p>The illustrations on the right show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is <b>SHORT</b>. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is <b>OPEN</b>.</p>		
	Open (Off)	Short (On)
<p>These illustrations show a 3-pin jumper. Pins 1 and 2 are <b>SHORT</b>.</p>		

Table 2-1: Setting Jumpers



## 2.4 Location of Jumpers

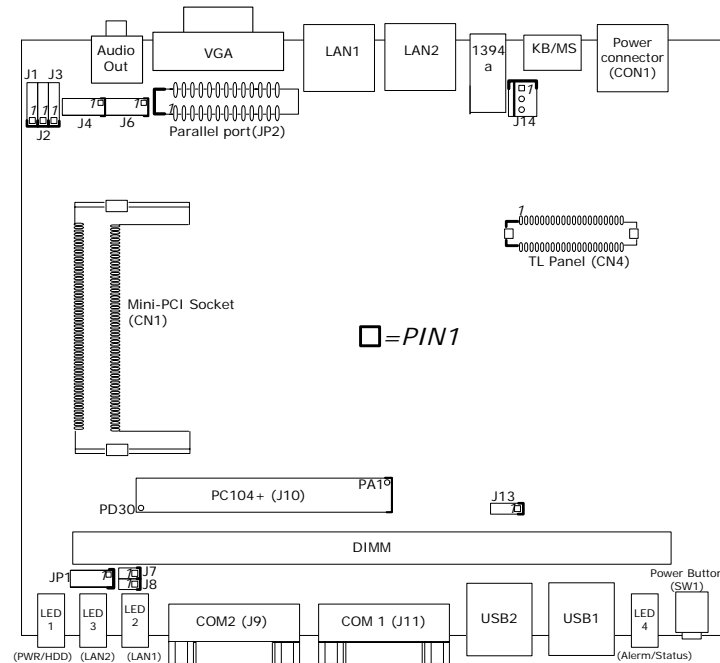


Figure 2-1: Jumper Location

## 2.5 Functions of Jumpers and Connectors

### 1. POWER ON Button (SW1)

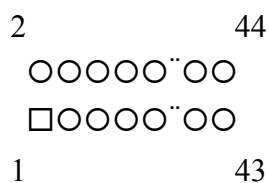


SW

### 2. IDE connector (IDE1)

A. Connector size: 2 x 22 = 44Pins BOX Header, ( 2.0 mm Pitch )

B. Connector location:



C. Connector pin definition

Pin	Definition	Pin	Definition
1	RSTDRV-	2	GND
3	IDED7	4	IDED8
5	IDED6	6	IDED9
7	IDED5	8	IDED10
9	IDED4	10	IDED11
11	IDED3	12	IDED12
13	IDED2	14	IDED13
15	IDED1	16	IDED14
17	IDED0	18	IDED15
19	GND	20	NC
21	IDEREQ-	22	GND
23	IDEIOW-	24	GND
25	IDEIOR-	26	GND
27	IDERDY	28	IDE-PD1
29	IDEACK-	30	GND
31	IDEIPQ	32	NC
33	DA1	34	66 DETECT
35	DA0	36	DA2
37	SCS1	38	SCS3
39	IDEACT-	40	GND
41	+5V	42	+5V
43	GND	44	NC

### 3. AUDIO LINE- IN (J1)

A. Connector size: 1 X 4 = 4 Pin Header (2.54mm Pitch)

B. Connector location

□ ○ ○ ○

1 2 3 4

C. Connector pin definition

Pin	Definition	Pin	Definition
1	LINE IN - R	2	AUDIO GROUND
3	AUDIO GROUND	4	LINE IN – L

### 4. AUDIO MIC- IN (J2)

A. Connector size: 1 X 4 = 4 Pin Header ( 2.54mm Pitch)

B. Connector location

□ ○ ○ ○

1 2 3 4

C. Connector pin definition

Pin	Definition	Pin	Definition
1	MIC_BIAS	2	AUDIO GROUND
3	AUDIO GROUND	4	MIC_IN

### 5. AUDIO CD- IN (J3)

A. Connector size: 1 X 4 = 4 Pin Header (2.54mm Pitch)

B. Connector location

□ ○ ○ ○

1 2 3 4

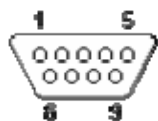
C. Connector pin definition

Pin	Definition	Pin	Definition
1	CD - L	2	AUDIO GROUND
3	AUDIO GROUND	4	CD – R

## 6. Serial Ports connector COM1-2 (J9,J11)

A. Connector size: 2 X 5 = 9 Pin

B. 9 PIN D-SUB MALE



2 8

○○○○

□○○○○

1 9

PIN HEADER connector COM3-4 (J4, J6)

C. Connector pin definition

Pin	Definition	Pin	Definition
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CST
9	RI		

## 7. AUDIO LINE (J5)

OUT PHONE JACK



## 8. SMBUS connector (J7)

A. Connector size: 1 X 2 = 2 Pin Header (2.54mm Pitch)

B. Connector location

○ ○

1 2

C. Connector pin definition

Pin	Definition	Pin	Definition
1	SMBDATA	2	SMBCLK

## 9. Hardware Reset connector (J8)

A . Connector size: 1 X 2 = 2 Pin Header (2.54 Pitch)

B . Connector location

1 2



### C. Connector pin definition

Pin	Definition	Pin	Definition
1	GND	2	Reset

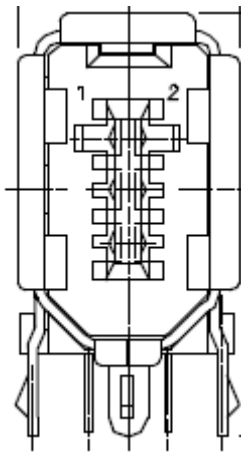
### 10. PC-104 PLUS connector (J10~**PCI only 3.3v Device**)

Pin No.	Description	Description	Description	Description
	A	B	C	D
1	Gnd/5.0V KEY	Reserved	+5V	AD00
2	VI/O	AD02	AD01	+5V
3	AD05	Gnd	AD04	AD03
4	C/BE0#	AD07	Gnd	AD06
5	Gnd	AD09	AD08	Gnd
6	AD11	VI/O	AD10	M66EN
7	AD14	AD13	Gnd	AD12
8	+3.3V	C/BE1#	AD15	+3.3V
9	SERR#	GND	SB0#	PAR
10	Gnd	PERR#	+3.3V	SDONE
11	STOP#	+3.3V	LOCK#	Gnd
12	+3.3V	TRDY#	Gnd	DEVSEL#
13	FRAME#	Gnd	IRDY#	+3.3V
14	Gnd	AD16	+3.3V	C/BE2#
15	AD18	+3.3V	AD17	Gnd
16	AD21	AD20	Gnd	AD19
17	+3.3V	AD23	AD22	+3.3V
18	IDSEL0	Gnd	IDSEL1	IDSEL2
19	AD24	C/BE3#	VI/O	IDSE;3
20	Gnd	AD26	AD25	Gnd
21	AD29	+5V	AD28	AD27
22	+5V	AD30	Gnd	AD31
23	REQ0#	Gnd	REQ1#	VI/O
24	Gnd	REQ2#	+5V	GNT0#
25	GNT1#	VI/O	GNT2#	Gnd
26	+5V	CLK0	Gnd	CLK1
27	CLK2	+5V	CLK3	Gnd
28	Gnd	INTD#	+5V	RST#
29	+12V	INTA#	INTB#	INTC#
30	-12V	Reserved	Reserved	Gnd/3.3V KEY

### 11. 1394A connector (J12)

A. Connector size: 1394 PORT

B. Connector location:



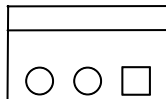
C. 1394A Connector pin definition:

Pin	Definition	Pin	Definition
1	+12V	2	GNDA
3	XTPB0M	4	XTPB0P
5	XTPB1M	6	XTPB1P

### 12. FAN POWER connector (J14)

A. Connector size: 1 X 3 = 3PIN W/FAN (2.54mm Pitch)

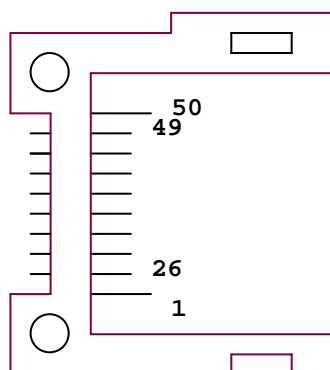
B. Connector location



C. Connector pin definition

Pin	Definition	Pin	Definition
1	GND	2	+12V
3	Sensor		

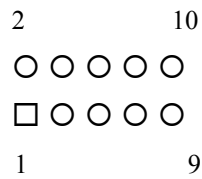
### 13. J15 – COMPACTFLASH SOCKET (PRIMARY CHANNEL: DEFAULT MASTER)



#### 14. GPIO connector (JP1)

A. Connector size: 2 X 5 = 10 Pin Header (2.00mm Pitch)

B. Connector location



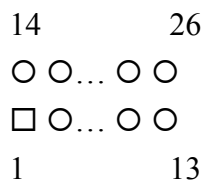
C. Connector pin definition

Pin	Definition	Pin	Definition
1	GP27IN (PIN20)	2	GP23OUT (PIN24)
3	GP26IN (PIN21)	4	GP22OUT (PIN25)
5	GP25IN (PIN22)	6	GP21OUT (PIN26)
7	GP24IN (PIN23)	8	GP20OUT (PIN27)
9	+5V	10	GND

#### 15. PIO connector (JP2)

A. Connector size: 2 X 13 = 25 Pin BOX Header (2.0 mm Pitch)

B. Connector location



C. Connector pin definition

Pin	Definition	Pin	Definition
1	STB#	14	AFD#
2	PD0	15	ERR#
3	PD1	16	PINIT#
4	PD2	17	SLIN#
5	PD3	18	GND
6	PD4	19	GND
7	PD5	20	GND
8	PD6	21	GND
9	PD7	22	GND
10	ACK#	23	GND
11	BUSY	24	GND
12	PE	25	GND
13	SLCT	26	N.C

## 16. POWER INPUT (JP3)

(+12V) DC Adapter Board Power Input Connector



## 17. VGA connector (VGA1)

A. Connector size: 3 X 5 = 15 Pin

B. **15 PIN D-SUB FEMALE**



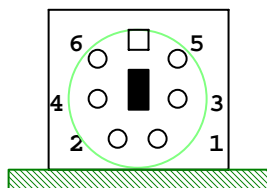
C. Connector pin definition

Pin	Definition	Pin	Definition
1	RED	2	GREEN
3	BLUE	4	NC
5	GND	6	GND
7	GND	8	GND
9	KEY	10	GND
11	NC	12	ID1
13	HSYNC	14	VSYNC
15	ID3		

## 18. Key board connector (KB\_MSA1)

A. Connector size: Mini din 6 pins

B. Connector location



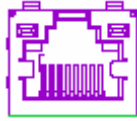
C. Connector pin definition

Pin	Definition	Pin	Definition
1	KBDAT	2	MSDAT
3	GND	4	+5V
5	KBCLK	6	MSCLK



**19. LAN connector (LAN1/2)**

- A. Connector size: RJ-45
- B. Connector location:

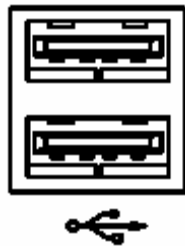


**C. LAN Connector pin definition:**

Pin	Definition	Pin	Definition
1	TX+	2	TX-
3	RX+	4	LAN1
5	LAN1	6	RX-
7	LAN2	8	LAN2
9	LAN Speed LED	10	Vcc3
11	LAN Link LED	12	LAN ACT LED#

**20. USB connector (USB1/2)**

- A. Connector size : USB PORT
- B. Connector location:



**C. Connector pin definition**

Pin	Definition	Pin	Definition
1	USB POWER +5V	2	USB PORT * D-
3	USB PORT * D+	4	GROUND POWER
5	USB POWER +5V +	6	USB PORT * D-
7	USB PORT * D+	8	GROUND POWER

**21. POWER ON & IDE Active & LAN/link/ Active & Alarm & Status LED connector (LED1/2/3/4)**

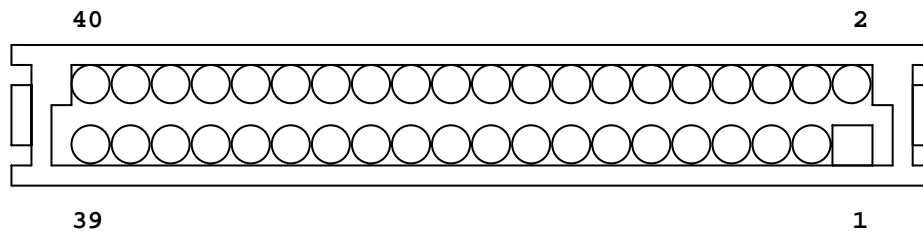
- A. Connector size: 2 X 2 = 4PIN (2.54mm Pitch)
- B. Connector location



## 22. CN1 (MINI PCI Slot): Standard MINI PCI slot

Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
1	TIP(NC)	63	+3.3V	2	RING(NC)	64	Frame#
3	8PMJ-3(NC)	65	CLKRUN(NC)	4	8PMJ-1(NC)	66	Target Ready#
5	8PMJ-6(NC)	67	System Error#	6	8PMJ-2(NC)	68	Stop#
7	8PMJ-7(NC)	69	Ground	8	8PMJ-4(NC)	70	+3.3V
9	8PMJ-8(NC)	71	PERR	10	8PMJ-5(NC)	72	Device Select#
11	LED1-GRNP(NC)	73	CMD/Byte Enable1	12	LED2-YELP(NC)	74	Ground
13	LED1-GRNN(NC)	75	AD14	14	LED1-YELP(NC)	76	AD15
15	CHSGND(NC)	77	Ground	16	Reserved	78	AD13
17	Interrupt B#	79	AD12	18	+5V	80	AD11
19	+3.3V	81	AD10	20	Interrupt A#	82	Ground
21	Reserved	83	Ground	22	Reserved	84	AD9
23	Ground	85	AD8	24	3V3_SB	86	CMD/Byte Enable0
25	Clock	87	AD7	26	Reset#	88	+3.3V
27	Ground	89	+3.3V	28	+3.3V	90	AD6
29	Request#	91	AD5	30	GNT#	92	AD4
31	+3.3V	93	Reserved	32	Ground	94	AD2
33	AD31	95	AD3	34	PME#	96	AD0
35	AD29	97	+5V	36	Reserved	98	Reserved-wip4
37	Ground	99	AD1	38	AD30	100	Reserved-wip4
39	AD27	101	Ground	40	+3.3V	102	Ground
41	AD25	103	AC-SYNC(NC)	42	AD28	104	M66EN
43	Reserved	105	AC-SDATA-IN(NC)	44	AD26	106	AC-SDATA-OUT(NC)
45	CMD/Byte enable3#	107	AC-BIT-CLK(NC)	46	AD24	108	AC-CODEC-ID0#(NC)
47	AD23	109	AC-CODEC-ID1#(NC)	48	ID Select	110	AC-RESET#(NC)
49	Ground	111	MOD-AUDIO-OUT(NC)	50	Ground	112	Reserved
51	AD21	113	Audio Ground	52	AD22	114	Ground
53	AD19	115	SYS-AUDIO-OUT(NC)	54	AD20	116	SYS-AUDIO-IN(NC)
55	Ground	117	SYS-AUDIO-OUT-GND(NC)	56	Parity	118	SYS-AUDIO-IN-GND
57	AD17	119	Audio Ground	58	AD18	120	Audio Ground
59	CMD/Byte Enable2	121	Reserved(NC)	60	AD16	122	MPCIACT#
61	Initiator Ready#	123	VCC5VA	62	Ground	124	3V3_SB

## 23. CN4 – SINGLE 24 BIT TTL PENAL CONNECTOR. DF13 MALE CONNECTOR



PIN 1: +5V POWER  
 PIN 3: GROUND POWER  
 PIN 5: +3.3V POWER  
 PIN 7: ENABLE BACKLIGHT  
 PIN 9: FLAT PANEL DATA OUT 0  
 PIN 11: FLAT PANEL DATA OUT 2  
 PIN 13: FLAT PANEL DATA OUT 4  
 PIN 15: FLAT PANEL DATA OUT 6  
 PIN 17: FLAT PANEL DATA OUT 8  
 PIN 19: FLAT PANEL DATA OUT 10  
 PIN 21: FLAT PANEL DATA OUT 12  
 PIN 23: FLAT PANEL DATA OUT 14  
 PIN 25: FLAT PANEL DATA OUT 16  
 PIN 27: FLAT PANEL DATA OUT 18  
 PIN 29: FLAT PANEL DATA OUT 20  
 PIN 31: FLAT PANEL DATA OUT 22  
 PIN 33: GROUND POWER  
 PIN 35: FLAT PANEL CLOCK  
 PIN 37: FLAT PANEL DATA ENABLE

PIN 2: +5V POWER  
 PIN 4: GROUND POWER  
 PIN 6: +3.3V POWER  
 PIN 8: GROUND POWER  
 PIN 10: FLAT PANEL DATA OUT 1  
 PIN 12: FLAT PANEL DATA OUT 3  
 PIN 14: FLAT PANEL DATA OUT 5  
 PIN 16: FLAT PANEL DATA OUT 7  
 PIN 18: FLAT PANEL DATA OUT 9  
 PIN 20: FLAT PANEL DATA OUT 11  
 PIN 22: FLAT PANEL DATA OUT 13  
 PIN 24: FLAT PANEL DATA OUT 15  
 PIN 26: FLAT PANEL DATA OUT 17  
 PIN 28: FLAT PANEL DATA OUT 19  
 PIN 30: FLAT PANEL DATA OUT 21  
 PIN 32: FLAT PANEL DATA OUT 23  
 PIN 34: GROUND POWER  
 PIN 36: FLAT PANEL VERTICAL SYNC  
 PIN 38: FLAT PANEL HORIZONTAL

SYNC

PIN 39: +12V POWER

PIN 40: ENABLE VEE

### FPD RGB MAPPING

	18 BIT	24 BIT		18 BIT	24 BIT
PIN	R G B	R G B	PIN	R G B	R G B
FPD0		B0	FPD12	G4	G4
FPD1		B1	FPD13	G5	G5
FPD2	B2	B2	FPD14	G6	G6
FPD3	B3	B3	FPD15	G7	G7
FPD4	B4	B4	FPD16		R0
FPD5	B5	B5	FPD17		R1

FPD6	B6	B6	FPD18	R2	R2
FPD7	B7	B7	FPD19	R3	R3
FPD8		G0	FPD20	R4	R4
FPD9		G1	FPD21	R5	R5
FPD10	G2	G2	FPD22	R6	R6
FPD11	G3	G3	FPD23	R7	R7

Marked “\*” was the default setting.

#### 24. CMOS Status Select: (JP13)

Pin No.	Status	Function Description
1-2	Short*	Normal Operation
2-3	Short	Clear CMOS Data

## **Chapter 3**

### **Expansion**

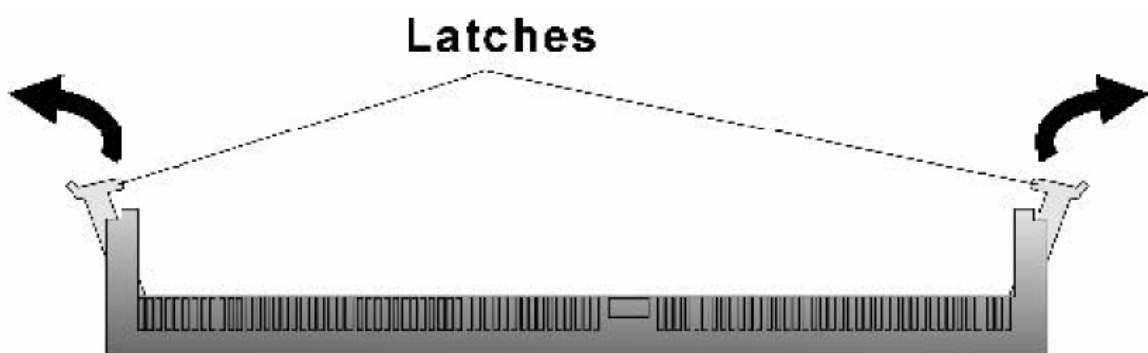
## 3.1 System Memory

EBC 420 incorporates One 184 pin DIMM sockets, up to 1GB Non-Registered Non-ECC DDR SDRAM with 64-bit 400 MHz bus speed.

## 3.2 Installing DIMM

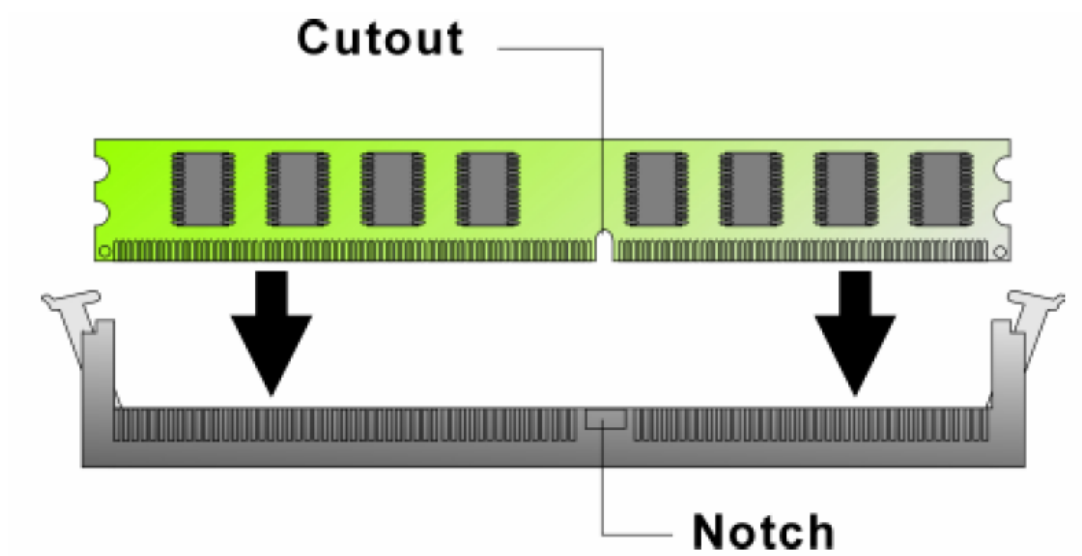
### To install DIMM

1. Make sure the two handles of the DIMM sockets are in the “open” position, i.e. the handles stay outward.



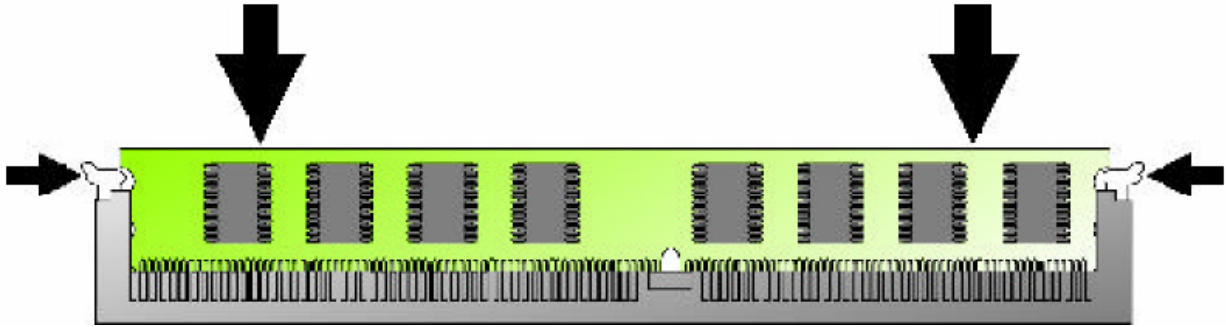
**Figure3-1: How to Install DIMM (1)**

2. Slowly slide the DIMM modules along the plastic guides in the both ends of the socket.



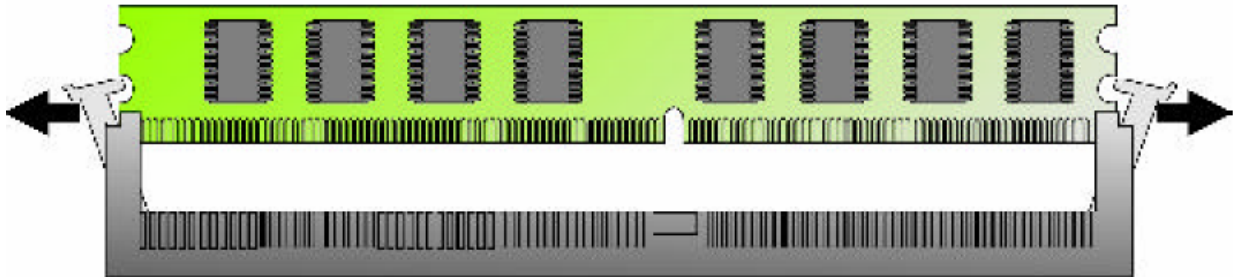
**Figure 3-2: How to Install DIMM (2)**

3. Then press the DIMM module down right into the socket, until a click is heard. That means the two handles automatically locked the memory modules into the right position of the DIMM socket.



**Figure 3-3: How to Install DIMM (3)**

4. To take away the memory module, just push the both handles outward, the memory module will be ejected by the mechanism in the socket.

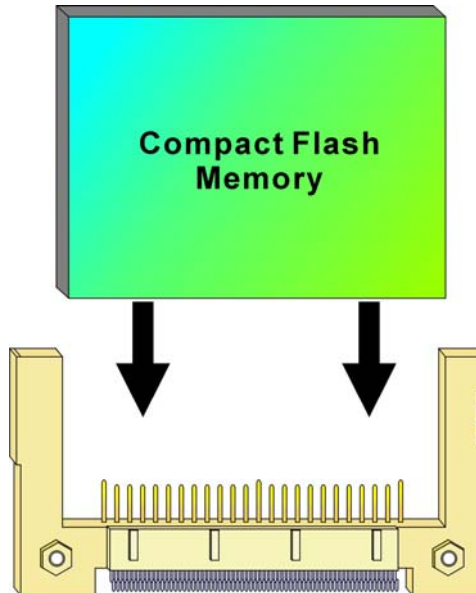


**Figure 3-4: How to Install DIMM (4)**



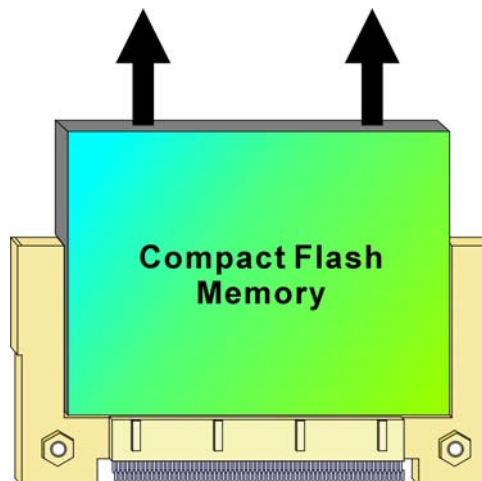
### 3.3 Installing Compact Flash

1. To install a Compact Flash memory card into EBC 420, align the notches on the card with the Compact Flash socket in the EBC 420. Then firmly insert the card into the socket until it is completely seated.



**Figure 3-5: How to Install Compact Flash Memory (1)**

2. To remove the Compact Flash memory card from EBC 420, pull out the memory card from the Compact Flash socket.



**Figure 3-6: How to Uninstall Compact Flash Memory (2)**

