



CPU Board

EBC 569 Series User's Manual

Chapter 1 Introduction and Specifications

5.25" Pentium®III Level New Embedded Engine Is Ideal For New Generation of POS Kiosk

EBC 569,a new Pentium®III-based embedded CPU board, and claimed that it is a powerful engine for the new generation of multimedia, networked, and panel-based POS (Point Of Sales) machines.



:EBC 569

This kind of POS, kiosks, or even game machines will deliver vivid audio/video streams, quick responses, and real-time updates to and from local or remote servers.

For high sales seasons, definitely need the best POS machines to attract more customers and process more transactions with the same or even lower investment. The **EBC 569**, with the powerful on board, surface-mounted Pentium III compatible CPU, the richest built-in features, and various conventional specs like SIO x4, PC 104, etc. all included, it will boost the POS kiosk and game machines to new heights.

The **EBC 569** specifications are as follows:

CPU: C3 EBGA CPU, up to 800MHz, 133MHz FSB or VIA Eden series ultra low power CPU without fan support

Memory: 512 MB SDRAM (max.), DIMMx1, PC 133 spec.

Chipset: VIA 8606 (Twister T)

VGA: S3 Savage4 on Die, 4X AGP, 2D/3D support, 32 MB shared Frame Buffer, TTL/ LVDS interface to Panels

Audio: AC 97 compliant

LAN: 10/ 100 Base T Ethernet port x2

// I/O: SIO x4, PIO x1, USB x2, FDD, IDE, i K

Bus: PC 104 x1, PCI slot x1

Form Factor: 5.25" Drive foot print, 203mm x 143mm

The computing power, the audio/video capabilities, and the connectivity have become a basic requirement for the new generation of POS machines, which means a Pentium III class of CPU is a must for the computing functions. The trend of feeding video streams through the network to the POS/POI (Point of Information) machines is now growing very fast. The 3D graphics, or even videos are very popular on game machines. The DVD quality, or more specifically the MPEG II decoding capability, given that it has already become a standard in the consumer world, is also a growing trend. People just can't live without it! The traditional embedded solutions offered to answer these growing needs just seem a little bit awkward.

People use the discrete chips for the solutions; the Intel Pentium III CPU, with the additional VGA chip supporting panels that have higher performance (which is still not enough), they are either too expensive or far below the performance required. However, with NEXCOM's EBC 569, we use the low power yet high performance C3 CPU with the same process as the Tualatin CPU (.13u), and up to 800 MHz (1GHz in the near future), plus the chip set built with the H/W core from S3 Savage4 4X AGP video controller, 3D capability, and 32 MB shared frame buffer. This is the new generation, highly integrated, and cost effective computing platform for the embedded world. It just fits perfectly! With the CPU performance growing steadily on the same design, it's a platform that promises a long term superiority.

For applications that prefer low power to high performance, the **EBC 569** will be able to use the ultra low power series of Eden CPUs starting from 400 MHz up to 667 MHz in the near future; and for the 400 MHz version specifically, there is no need of a cooling fan on the CPU, the only requirement is for the whole chassis solution can provide the air flow to remove the heat.

Specification:

- 5.25" small form factor with Dimensions: 203mm(L)? 143mm(W)
- PCB: 6 Layer with double side

EX On Board CPU

- Onboard VIA C3 Processor EBGA Package with 128KB Level 1 and 64KB Level 2 Cache
- 800MHZ CPU on board, and feature VIA C3 series CPU with EBGA Package
- EE CPU FSB 100/133MHZ
- CPU FANIess feature By VIA Eden Series Ultra Low Power CPU and Chassis air flow.

Main Memory

One 168-pin DIMM. Support Max memory size to 512MB

BIOS

- **Award System BIOS**
- Advanced Power Management support
- Optional ACPI Support
- 4M bits flash ROM

∠∠ Chip Set

- VIA 8606 (Twister T) 100 /133 MHz North Bridge
- VIA VT82C686B PSIPC PCI SUPER-I/O INTEGRATED PERIPHERAL CONTROLLER
- PCI V2.2 complied

MM On Board LAN

- Realtek RTL 8139C Ethernet Controller x 2
- Single Chip 10 /100 Base TX support, full duplex
- **Boot From LAN function**
- Drivers support:

 DOS/Windows, Windows 95/98/2000, Windows NT, Netware, SCO Open Server 5.0, Linux 7.2 or later, FreeBSD
- RJ45 with LED connector ? 2

⊠ On Board Audio

- VT82C686A and AC97 ver. 2.0 compliant interface, Multi-stream Direct Sound and Direct Sound 3D acceleration
- Audio interface:
 CD audio in , Line in (Internal),
 Microphone in, Speaker out (with Amplifier)

ME On Board VGA (Hardware Disable is needed)

VIA 8606 Integrated Savage4 2D/3D/Video Accelerator

- 8 / 16 / 32 MB frame buffer using system memory
- ∠
 ✓ Full internal AGP 4x performance
- MM Next generation, 128-bit 2D graphics engine
- ∠
 ∠
 ∠

 Migh quality DVD video playback
- ZZ 2D/3D resolutions up to 1920x1440
- ∠ 3D Rendering Features

EXECUTE Extensive LCD Support

- 36-bit DSTN/TFT flat panel interface with 256 gray shade support

- Drivers support: Windows 95/98/2000, Windows NT4.0, Win XP, Linux.
- zz 15Pin D-Sub VGA Output,
- **LVDS** Interface Connector x 1
- TTL LCD Interface Connector x 1

- VIA 686B South Bridge Integrated UltraDMA-33/66/100 master mode EIDE controller
- Support UltraDMA-33/66/100 IDE with 40 pin connector ? 1
- Internal Compact Flash socket x 1

∠∠ On Board Bus Expansion

- One 32 bit/33MHZ PCI Slot support PCI Expansion.
- « PC 104
- **NEXCOM Proprietary PCI Interface**

≥ On Chip and On Board I/O

- SIO? 4, with 4x16C550 UARTs, 40 pin 2.0 header with housing ? 1; one for RS422/485
- PIO? 1, bi-directional, EPP/ECP support, 26 pin connector ?1
- Floppy Disk controller: 34 pin connector ?1
- 6 pin mini DIN connector ?1, for PS/2 keyboard/mouse
- On board USB port ? 2
- **Digital I/O: 8 x TTL DIO**
- On board 3 pin header for I²C, one pin for GND
- On board 5 pin header for IrDA Tx Rx
- On Board 2 pin header for Reset SW
- On Board 4 pin header for power SW (ATX Mode)
- Power Header x 1 for LCD Panel Backlight
- COM reserved the RING pin to power Touch Screen LCD (jumper select 5 or 12V or ring),
- 3 pin Power Connector for CPU FAN or Chassis FAN
- 2 Pin IDE Active LED Header

- On chip RTC with battery back up
- External Li Battery x 1

Watchdog timeout can be programmable by Software from 0.5 second to 64 Sec.

System Monitor

- Derived from Super IO to support system monitor.
- 5 voltage (For +3.3V, +5V, +12V, Vcore and +2.5V)
- One Fan speed
- zz Two temperature
- Drivers support: Windows 95/98, Windows NT4.0/2000

ME Power Source & Power Requirements

EX 6 PIN Power Input Connector

PIN Define	Voltage	Power Requirement
PIN 1	+5V	
PIN 2	+5V	6A(typical)
PIN 3	GND	
PIN 4	GND	
PIN 5	GND	
PIN 6	+12V	1A(Typical)

- 3.3V is converted from +5V.
- Accessory Power Converter Cable:
 - 1. Two 4P to 6P (For AT Power Supply)
 - 2. ATX Power Connector to 6P+ 2 Pin Power SW (For ATX Power Supply)
 - 3. Optional Power Module (EBK DC512)to support DC power (16Vdc ~ 24Vdc input)

Ex Environments

- Operating temperatures : 0?C to 60?C
- Storage temperatures: -20% to 80%
- Relative humidity: 10% to 90% (Non-condensing)

EX Certification

- ∠∠ CE approval
- **EXE** FCC Class A

Module Available

Model Name Description

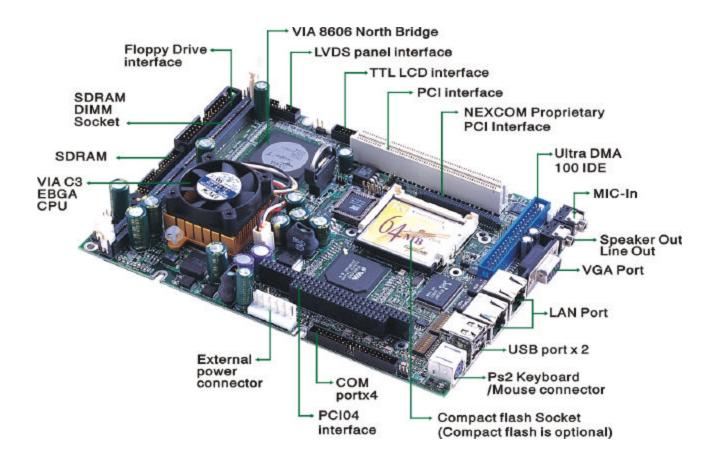
EBC 569

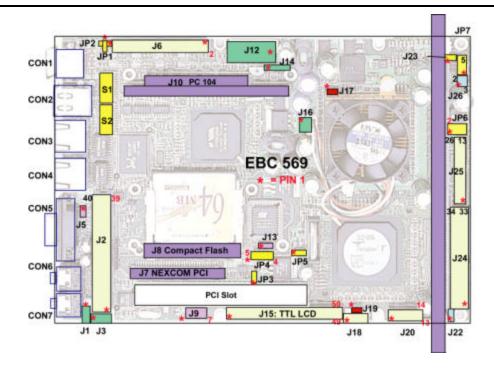
5.25" Low Power Embedded Board with on board $800+MHZ\ CPU$

EBC 569LP

5.25" Ultra Low Power Embedded Board with on board 400MHZ CPU

Chapter 2 Switches and Connectors





Bracket Connector

CON1 (PS/2 Keyboard/Mouse Connector): PC99 complied purple PS/2 connector (4NBMF00605).

Pin No.	Description	Pin No.	Description
1	Keyboard Data	2	Mouse Data
3	Chassis Ground	4	+5V
5	Keyboard Clock	6	Mouse Clock
7	Chassis Ground	8	Chassis Ground
9	Chassis Ground		

CON2 (USB Connector): Use PC99 complied USB dual high connector (4NBUF00202).

Pin No.	Description	Pin No.	Description
1	+5V	2	USB1 Minus
3	USB1 Plus	4	EMI Ground
5	+5V	6	USB2 Minus
7	USB2 Plus	8	EMI Ground

CON3 (LAN2 RJ45 Connector): Use RJ45 connector with two LED (4NBPD04503).

Pin No.	Description	Pin No.	Description
1	LAN2 TX+	2	LAN2 TX-
3	LAN2 RX+	4	PD to TERMPLANE
5	PD to TERMPLANE	6	LAN2 RX-
7	PD to TERMPLANE	8	PD to TERMPLANE
9	LAN Speed# (10/100)	10	LED Power (VCC3)
11	LAN TX/RX	12	LED Power (VCC3)
13	Chassis Ground	14	Chassis Ground

^{*} PD Mean Pull-Down.

Æ	CON4 (L	_AN1	RJ45	Connector):	Use RJ45	connector	with	two	LED	(4NBPD04503)).
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Pin No.	Description	Pin No.	Description
1	LAN1 TX+	2	LAN1 TX-
3	LAN1 RX+	4	PD to TERMPLANE
5	PD to TERMPLANE	6	LAN1 RX-
7	PD to TERMPLANE	8	PD to TERMPLANE
9	LAN Speed# (10/100)	10	LED Power (VCC3)
11	LAN TX/RX	12	LED Power (VCC3)
13	Chassis Ground	14	Chassis Ground

^{*} PD Mean Pull-Down.

CON5 (VGA Connector): standard 5.08mm DB-15 female connector x 1 (4NBDF01503).

Pin No.	Description	Pin No.	Description
1	Red	2	Green
3	Blue	4	N/A
5	Ground	6	Chassis Ground
7	Chassis Ground	8	Chassis Ground
9	+5V	10	Ground
11	Pull-up	12	DDC Data
13	Horizontal Sync.	14	Vertical Sync.
15	DDC Clock	16	Chassis Ground
17	Chassis Ground		

CON6 (Line Output Connector): Use external Phone Jack connector (4NBPF00501).

Pin No.	Description	Pin No.	Description
1	Ground	2	Left Sound Channel
3	Right Sound Channel	4	NC
5	NC		

CON7 (Microphone Input Connector): Use external Phone Jack connector (4NBPF00501).

Pin No.	Description	Pin No.	Description
1	Ground	2	Left Sound Channel
3	Right Sound Channel	4	Ground
5	Ground		

J1 (Line Input Connector): Use 2.0 mm 180-degree 1X4 JST connectors (4NCJM00402).

Pin No.	Description	Pin No.	Description
1	Left Sound Channel	2	Ground
3	Ground	4	Right Sound Channel

J2 (Primary IDE Channel Connector): Use PC99 blue 2X20 2.54mm BOXHEADER (4NCBM04006).

Pin No.	Description	Pin No.	Description
1	Reset #	2	Ground
3	Data 7	4	Data 8
5	Data 6	6	Data 9
7	Data 5	8	Data 10
9	Data 4	10	Data 11
11	Data 3	12	Data 12
13	Data 2	14	Data 13
15	Data 1	16	Data 14
17	Data 0	18	Data 15
19	Ground	20	NC
21	DMA REQ	22	Ground
23	IOW#	24	Ground
25	IOR#	26	Ground
27	IOCHRDY	28	Pull Down
29	DMA ACK#	30	Ground
31	Interrupt 14	32	NC
33	Disk Address 1	34	DMA66 Detect
35	Disk Address 0	36	Disk Address 2
37	HDC CS100	38	HDC CS300
39	HDD Active Led	40	Ground

J3 (CD Input Connector): Use 2.0 mm 180-degree 1X4 JST connectors (4NCJM00402).

Pin No.	Description	Pin No.	Description
1	Left Sound Channel	2	Ground
3	Ground	4	Right Sound Channel

J5 (IDE Active LED Connector): 1X2 2.54mm pin header (4NCIM00201).

Pin No.	Description	Pin No.	Description
1	Pull up to +5V	2	Active signal

J6 (Serial Port Connector): Use 2.0mm 2X20 box header (4NCBM04008).

Pin No.	Description	Pin No.	Description
1	Data Carrier Detect A	2	Data set Ready A
3	Receive Data A	4	Request to Send A
5	Transmit Data A	6	Clear to Send A
7	Data Terminal Ready A	8	Ring Indicator A
9	Chassis Ground	10	
11	Data Carrier Detect B (RS422/485 TX-)	12	Data set Ready B (RS422 RTS-)
13	Receive Data B (RS422/485 TX+)	14	Request to Send B (RS422 RTS+)
15	Transmit Data B (RS422 RX+)	16	Clear to Send B (RS422 CTS+)
17	Data Terminal Ready B (RS422 RX-)	18	Ring Indicator B (RS422 CTS-)
19	Chassis Ground	20	
21	Data Carrier Detect C	22	Data set Ready C
23	Receive Data C	24	Request to Send C
25	Transmit Data C	26	Clear to Send C
27	Data Terminal Ready C	28	Ring Indicator C
29	Chassis Ground	30	
31	Data Carrier Detect D	32	Data set Ready D
33	Receive Data D	34	Request to Send D
35	Transmit Data D	36	Clear to Send D
37	Data Terminal Ready D	38	Ring Indicator D (Or +12V, +5V)
39	Chassis Ground	40	

J7 (NEXCOM Proprietary PCI Interface Connector): 2X34 1.27mm female connector (4NCDF06801).

Pin No.	Description	Pin No.	Description
1	+5V	2	AD0
3	AD1	4	AD2
5	AD3	6	AD4
7	AD5	8	AD6
9	AD7	10	Ground
11	+5V	12	AD8
13	AD9	14	AD10
15	AD11	16	AD12
17	AD13	18	AD14
19	AD15	20	Ground
21	+5V	22	AD16
23	AD17	24	AD18
25	AD19	26	AD20
27	AD21	28	AD22
29	AD23	30	Ground
31	+5V	32	AD24
33	AD25	34	AD26
35	AD27	36	AD28
37	AD29	38	AD30
39	AD31	40	Ground
41	+5V	42	C/BEO#
43	C/BE1#	44	C/BE2#
45	C/BE3#	46	PAR
47	FRAME#	48	TRDY#
49	IRDY#	50	Ground
51	+5V	52	STOP#
53	DEVSEL#	54	PERR#
55	SERR#	56	First REQ#
57	First GNT#	58	NC
59	NC	60	NC
61	Second PCI Clock	62	First PCI Clock
63	PCI Reset#	64	LOCK#
65	INTA#	66	INTB#
67	INTC#	68	INTD#

J8 (Compact Flash Connector): Use high 2.0 mm connector (4SIPLC5001).

Pin No.	Description	Pin No.	Description
1	Ground	2	Data 3
3	Data 4	4	Data 5
5	Data 6	6	Data 7
7	HDC CS100	8	Ground
9	Ground	10	Ground
11	Ground	12	Ground
13	+5V	14	Ground
15	Ground	16	Ground
17	Ground	18	Disk Address 2
19	Disk Address 1	20	Disk Address 0
21	Data 0	22	Data 1

23	Data 2	24	IOCS16# (NC)
25	CF_CD2# (Pull-down)	26	CF_CD1# (Pull-down)
27	Data 11	28	Data 12
29	Data 13	30	Data 14
31	Data 15	32	HDC CS300
33	CF_VS1# (NC)	34	IOR
35	IOW	36	CF_WE# (+5V)
37	Interrupt 15	38	+5V
39	CF_CSEL# (Master or Slave)	40	CF_VS2# (NC)
41	Reset #	42	IOCHRDY
43	DMA REQ / DACK (NC)	44	DMA ACK# /CF_REG# (+5V)
45	HDD Active Led	46	DMA66 Detect / CF_PDIAG#
47	Data 8	48	Data 9
49	Data 10	50	Ground

J9 (Digital I/O Connector): Use 2X4 2.54mm pin header (4NCIM2X401).

Pin No.	Description	Pin No.	Description
1	Digital input 1	2	Digital output 1
3	Digital input 2	4	Digital output 2
5	Digital input 3	6	Digital output 3
7	Digital input 4	8	Digital output 4

J10 (PC104 Connector): Use one 2.54mm 2X20 female connector (4NCDF04001) and one 2.54mm 2X32 female connector (4NCDF06401).

2X32 female connector:

Pin No.	Description	Pin No.	Description
1(B1)	Ground	2(A1)	I/O channel check#
3(B2)	RESET	4(A2)	Data7
5(B3)	+5V	6(A3)	Data6
7(B4)	IRQ9	8(A4)	Data5
9(B5)	-5V	10(A5)	Data4
11(B6)	DMA request 2	12(A6)	Data3
13(B7)	-12V	14(A7)	Data2
15(B8)	Zero wait state	16(A8)	Data1
17(B9)	+12V	18(A9)	Data0
19(B10)	Ground	20(A10)	I/O channel ready
21(B11)	S memory write	22(A11)	Address enable
23(B12)	S memory read	24(A12)	Address19
25(B13)	I/O write	26(A13)	Address18
27(B14)	I/O read	28(A14)	Address17
29(B15)	DMA acknowledge 3#	30(A15)	Address16
31(B16)	DMA request 3	32(A16)	Address15
33(B17)	DMA acknowledge 1#	34(A17)	Address14
35(B18)	DMA request 1	36(A18)	Address13
37(B19)	Refresh#	38(A19)	Address12
39(B20)	System clock	40(A20)	Address11
41(B21)	IRQ7	42(A21)	Address10
43(B22)	IRQ6	44(A22)	Address9
45(B23)	IRQ5	46(A23)	Address8
47(B24)	IRQ4	48(A24)	Address7
49(B25)	IRQ3	50(A25)	Address6
51(B26)	DMA acknowledge 2#	52(A26)	Address5
53(B27)	Terminal count	54(A27)	Address4
55(B28)	Bus address latch enable	56(A28)	Address3
57(B29)	+5V	58(A29)	Address2
59(B30)	Oscillator (14.318MHz)	60(A30)	Address1
61(B31)	Ground	62(A31)	Address0
63(B32)	Ground	64(A32)	Ground

2X20 female connector:

Pin No.	Description	Pin No.	Description
1(D0)	Ground	2(CO)	Byte high enable#
3(D1)	Memory chip select 16#	4(C1)	Address23
5(D2)	I/O chip select 16#	6(C2)	Address22
7(D3)	IRQ10	8(C3)	Address21
9(D4)	IRQ11	10(C4)	Address20
11(D5)	IRQ12	12(C5)	Address19
13(D6)	IRQ15	14(C6)	Address18
15(D7)	IRQ14	16(C7)	Address17
17(D8)	DMA acknowledge 0#	18(C8)	Memory read#
19(D9)	DMA request 0	20(C9)	Memory write#
21(D10)	DMA acknowledge 5#	22(C10)	Data8
23(D11)	DMA request 5	24(C11)	Data9
25(D12)	DMA acknowledge 6#	26(C12)	Data10
27(D13)	DMA request 6	28(C13)	Data11
29(D14)	DMA acknowledge 7#	30(C14)	Data12
31(D15)	DMA request 7	32(C15)	Data13
33(D16)	+5V	34(C16)	Data14
35(D17)	Master#	36(C17)	Data15
37(D18)	Ground	38(C18)	Ground
39(D19)	Ground	40(C19)	Ground

J11 (32 Bits PCI Slot): Standard 32bits PCI slot (4SIPCISL02).

Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
A1	Test Reset#	A32	AD16	B1	-12V (NC)	B32	AD17
A2	+12V	A33	+3.3V	B2	Test Clock	B33	CMD/Byte
							Enable2#
A3	Test Mode	A34	Frame#	ВЗ	Ground	B34	Ground
A4	Test Input	A35	Ground	B4	Test Output	B35	Initiator Ready#
A 5	+5V	A36	Target Ready#	B5	+5V	B36	+3.3V
A6	Interrupt A#	A37	Ground	В6	+5V	B37	Device Select#
A7	Interrupt C#	A38	Stop#	B7	Interrupt B#	B38	Ground
A8	+5V	A39	+3.3V	B8	Interrupt D#	B39	Lock#
A9	Reserved	A40	Snoop Done	В9	Present1#	B40	Parity Error#
A10	+5V	A41	Snoop Backoff#	B10	Secondary REQ#	B41	+3.3V
A11	Reserved	A42	Ground	B11	Present2#	B42	System Error#
A12	Ground	A43	Parity	B12	Ground	B43	+3.3V
A13	Ground	A44	AD15	B13	Ground	B44	CMD/Byte
							Enable1#
A14	Secondary GNT#	A45	+3.3V	B14	Secondary Clock	B45	AD14
A15	Reset#	A46	AD13	B15	Ground	B46	Ground
A16	+5V	A47	AD11		Clock		AD12
A17	Grant (GNT#)	A48	Ground	B17	Ground		AD10
A18	Ground	A49	AD9	B18	Request#	B49	Ground
A19	PME#	A50	Keyway	B19		B50	Keyway
A20	AD30	A51	Keyway	B20	AD31		Keyway
A21	+3.3V	A52	CMD/Byte Enable0#	B21	AD29		AD8
A22	AD28	A53	+3.3V	B22	Ground	B53	AD7
A23	AD26	A54	AD6		AD27		+3.3V
A24	Ground	A55	AD4		AD25		AD5
A25	AD24	A56	Ground	B25	+3.3V	B56	
A26	ID Select	A57	AD2	B26	CMD/Byte Enable3#		Ground
A27	+3.3V	A58	AD0	B27	AD23	B58	AD1
A28	AD22	A59	+5V		Ground		+5V
A29	AD20	A60	Request	B29	AD21		Acknowledge
			64Bits#				64Bits#
A30	Ground	A61	+5V	B30	AD19	B61	+5V
A31	AD18	A62	+5V	B31	+3.3V	B62	

J12 (DC Adapter Board Power Input Connector): Use 1X6 3.96mm power connector (4NCPM00605).

Pin No.	Description	Pin No.	Description
1	+5V	2	+5V
3	Ground	4	Ground
5	Ground	6	+12V

J13 (SMbus External Connector): Use 1X3 2.54mm pin header (4NCIM00301).

Pin No.	Description	Pin No.	Description
1	Data	2	Clock
3	Ground		

J14 (IrDA Connector): Use 1X5 2.54mm pin header (4NCIM00501).

Pin No.	Description	Pin No.	Description
1	+5V	2	No Connect
3	Data Receive	4	Ground
5	Data Transmit		

J16 (CPU FAN Connector): Use 1X3 2.54mm standard FAN connector (4NCJM00304).

Pin No.	Description	Pin No.	Description
1	Ground	2	+12V
3	FAN speed sense		

Chapter 1 J18 (CCFL Connector): Use 1X5 2.0mm JST connector (4NCJM00506).

Pin No.	Description	Pin No.	Description
1	+12V	2	Ground
3	Back light enable	4	Panel back light VR (1KO)
5	+5V		

Chapter 2 J15 (TTL Panel Connector): Use 2X25 2.0mm BOXHEADER (4NCBM05002 or 4NCBM05003).

Pin No.	in No. Description		Description	
1	Black Light Control	2	VEE (+12V With Control)	
3	Horizontal Sync.	4	Data Enable	
5	First Panel Clock	6	Vertical Sync.	
7	Data25	8	Panel Power (5V or 3.3V)	
9	Data24	10	Data31	
11	Data28	12	Data26	
13	Data32	14	Data30	
15	Data13	16	Data34	
17	Data12	18	Data19	
19	Data16	20	Panel Power (5V or 3.3V)	
21	Data20	22	Data14	
23	Ground	24	Data18	
25	Data1	26	Data22	
27	27 Data0		Data7	
29 Data4 30		30	VEE Enable	
31	Data8	32		
33	Ground	34	Data6	
35	Data3	36	Data10	
37	Data9	38	Data5	
39	No Connect	40	Ground	
41	Data15	42	Data11	
43			Data17	
45	Data27	46	Data23	
47	Data33	48	Data29	
49	Ground	50	Data35	

J20 (LVDS Panel Connector): Use 2X7 2.0mm BOXHEADER (4NCBM01403).

Pin No.	Description	Pin No.	Description	
1	Panel Power (5V or 3.3V)	2	Data 1-	
3	Data 0- 4 Data 1+			
5	Data 0+	6	Ground	
7	Ground	8	Data 2-	
9	Clock +	10	Data 2+	
11	Clock -	12	Panel Power (5V or 3.3V)	
13	Ground	14	Ground	

J21 (DIMM Connector): Use 180degree socket (4SRDI16802 or 4SRDI16803).

Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
1	Ground	2	DATAO	85	Ground	86	DATA32
3	DATA1	4	DATA2	87	DATA33	88	DATA34
5	DATA3	6	VDD	89	DATA35	90	VDD
7	DATA4	8	DATA5	91	DATA36	92	DATA37
9	DATA6	10	DATA7	93	DATA38	94	DATA39
11	DATA8	12	Ground	95	DATA40	96	Ground
13	DATA9	14	DATA10	97	DATA41	98	DATA42
15	DATA11	16	DATA12	99	DATA43	100	DATA44
17	DATA13	18	VDD	101	DATA45	102	VDD
19	DATA14	20	DATA15	103	DATA46	104	DATA47
21	ECCO/NC	22	ECC1/NC	105	ECC4/NC	106	ECC5/NC
23	Ground	24	ECC8/NC	107	Ground	108	ECC12/NC
25	ECC9/NC	26	VDD	109	ECC13/NC	110	VDD
27	Write Enable#	28	DQ Mask0	111	Col. Add.	112	DQ Mask4
					Strobe#		
29	DQ Mask1	30	Chip Sel.0#	113	DQ Mask5	114	Chip Sel.1#
31	NU/OE0#	32	Ground	115	Row Add.	116	Ground
					Strobe#		
33	Address0	34	Address2	117	Address1	118	Address3
35	Address4	36	Address6	119	Address5	120	Address7
37	Address8	38	Address10/AP	121	Address9	122	Bank Sel.A0
39	Bank Sel.A1	40	VDD	123	Address11	124	VDD
41	VDD	42	Clock 0	125	Clock 1	126	Address12
43	Ground	44	NU/OE2#	127	Ground	128	CLK Enable0
45	Chip Sel.2#	46	DQ Mask2	129	Chip Sel.3#	130	DQ Mask6
47	DQ Mask3	48	NU/Write	131	DQ Mask7	132	Address13
			Enable2#				
49	VDD	50	ECC10/NC	133	VDD	134	ECC14/NC
51	ECC11/NC	52	ECC2/NC	135	ECC15/NC	136	ECC6/NC
53	ECC3/NC	54	Ground	137	ECC7/NC	138	Ground
55	DATA16	56	DATA17	139	DATA48	140	DATA49
57	DATA18	58	DATA19	141	DATA50	142	DATA51
59	VDD	60	DATA20	143	VDD	144	DATA52
61	NC	62	VREF/NC	145	NC	146	VREF/NC
63	CLK Enable1	64	Ground	147	NC/REG En.	148	Ground
65	DATA21	66	DATA22	149	DATA53	150	DATA54
67	DATA23	68	Ground	151	DATA55	152	Ground
69	DATA24	70	DATA25	153	DATA56	154	DATA57
71	DATA26	72	DATA27	155	DATA58	156	DATA59
73	VDD	74	DATA28	157	VDD	158	DATA60
75	DATA29	76	DATA30	159	DATA61	160	DATA62
77	DATA31	78	Ground	161	DATA63	162	Ground
79	Clock 2	80	NC	163	Clock 3	164	NC
81	NC	82	I ² C Data	165	I ² C Add. 0	166	I ² C Add. 1
83	I ² C Clock	84	VDD	167	I ² C Add. 2	168	VDD

J22 (Reset Connector): Use 1X2 2.54mm pin header (4NCIM00201).

Pin No.	Description	Pin No.	Description
1	Reset	2	Ground

J23 (Power LED Connector): Use 1X2 2.54mm pin header (4NCIM00201).

	Pin No.	Description	Pin No.	Description
ľ	1	Pull-Up to +5V	2	Ground

J24 (Floppy Connector): Use 2X17 2.54mm box header (4NCBM02601).

Pin No.	Description	Pin No.	Description
1	Ground	2	Drive Density Select 0
3	Ground	4	NC
5	Ground	6	Drive Density Select 1
7	Ground	8	Index Pulse Input
9	Ground	10	Motor On 0
11	Ground	12	Drive Select 1
13	Ground	14	Drive Select 0
15	Ground	16	Motor On 1
17	Ground	18	Step Direction
19	Ground	20	Step Pulse
21	21 Ground		Write Disk Data
23	Ground	24	Write Gate
25	Ground	26	Track 0
27	Ground	28	Write Protected
29	NC	30	Read Disk Data
31 Ground		32	Head Select
33	NC (Automatic Media Sense)	34	Disk Change

J25 (Parallel Port Connector): Use 2.0mm 2X13 box header (4NCBM02602).

Pin No.	Description	Pin No.	Description
1	Strobe#	2	Data 0
3	Data 1	4	Data 2
5	Data 3	6	Data 4
7	Data 5	8	Data 6
9	Data 7	10	Acknowledge
11	Busy	12	Paper Empty
13	Printer Select		Auto Form Feed#
15	Error#		Initialize
17	Printer Select IN#	18	Chassis Ground
19	Chassis Ground	20	Chassis Ground
21	Chassis Ground	22	Chassis Ground
23	Chassis Ground	24	Chassis Ground
25	Chassis Ground	26	N/A

Pin No.	Description	Pin No.	Description
1	Power On (From ATX power)	2	Ground
3	Power On (To power button with	4	Ground

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	IOCK)	

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Jumper Setting

Marked "*" was the default setting.

JP1 & JP2 (Fourth Serial Port RI# Pin Function Selection):

Pin No.	Status	Function Description
JP1 (1-2)	Short *	RI#
JP2 (1-2)	Short	Select +5V
JP2 (2-3)	Short	Select +12V

Pin No.	Status	Function Description			
1-2	Short	+5V Input			
2-3	Short *	+3.3 Input			

JP4 (Host And PCI Frequency Select):

Frequency	1-5	2-6	3-7	4-8
133 / 33.3 MHz*	Open	Open	Open	Open
100 / 33.43 MHz	Open	Open	Open	Short
66.8 / 33.4 MHz	Open	Open	Short	Short

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

Chapter 3 JP6 (Panel Type Select):

Chapter 4 JP7 (CPU Ratio Select):

Ratio	1-6	2-7	3-8	4-9	5-10
Katio	(Ratio0)	(Ratio1)	(Ratio2)	(Ratio3)	(Ratio4)
3.0X	Short	Short	Short	Short	Open
3.5X	Short	Short	Open	Short	Open
4.0X	Short	Short	Short	Open	Short
4.5X	Short	Short	Open	Open	Short
5.0X	Short	Open	Short	Short	Short
5.5X	Short	Short	Open	Short	Short
6.0X*	Short	Open	Short	Open	Open
6.5X	Short	Open	Open	Open	Open
7.0X	Short	Open	Short	Short	Open
7.5X	Short	Open	Open	Short	Open
8.0X	Short	Open	Short	Open	Short
8.5X	Short	Open	Open	Open	Short
9.0X	Short	Short	Short	Short	Short
9.5X	Short	Short	Open	Open	Open
10.0X	Short	Short	Short	Open	Open
10.5X	Open	Short	Open	Open	Open
11.0X	Open	Short	Short	Short	Open
11.5X	Open	Short	Open	Short	Open
12.0X	Open	Short	Short	Open	Short
12.5X	Open	Short	Open	Open	Short
13.0X	Open	Open	Short	Short	Short
13.5X	Open	Short	Open	Short	Short
14.0X	Open	Open	Short	Open	Open
14.5X	Open	Open	Open	Open	Open
15.0X	Open	Open	Short	Short	Open
15.5X	Open	Open	Open	Open	Short
16.0X	Open	Open	Short	Open	Short

Chapter 5 S1 & S2 (Serial Port 2 RS232/422/485 Select):

Mode	S1-1	S1-2	S1-3	S1-4	S1-5	S1-6	S1-7	S1-8	S1-9	S1-10
RS232*	Off	On	Off	Off	Off	On	Off	On	Off	On
RS422	On	Off								
RS485	On	Off	Off	On	On	Off	On	Off	On	Off

Mode	S2-1	S2-2	S2-3	S2-4	S2-5	S2-6	S2-7	S2-8	S2-9	S2-10
RS232*	Off	On								
RS422	On	Off								
RS485	On	Off								

Chapter 3 AWARD BIOS Setup

Award's BIOS ROM has a built-in Setup program that allows users to modify the basic system configuration. This type of information is stored in battery-backed RAM (CMOS RAM) so that it retains the Setup information when the power is turned off.

The Chapter shows the currently BIOS setup picture is for reference only, which may change by the BIOS modification in the future. Any Major updated items or re-version, user can download from NEXCOM web site http://www.nexcom.com.tw or any unclear message, can contact NEXCOM Customer Service people for help http://www.nexcom.com.tw/contact/contact.htm

Entering Setup

Power on the computer and press **** immediately will allow you to enter Setup. The other way to enter Setup is to power on the computer, when the below message appears briefly at the bottom of the screen during the POST (Power On Self Test), press **** key

TO ENTER SETUP BEFORE BOOT PRESS KEY

Setting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the bottom of the screen.

Sub-Menu

If you find a right pointer symbol appears to the left of certain fields (as shown in the right view), that means a sub-menu containing additional options for the field can be launched from this field.

- ► IDE Primary Master
- ► IDE Primary Slave
- ► IDE Secondary Master
- ► IDE Secondary Slave

To enter the sub-menu, highlight the field and press <Enter>. Then you can use control keys to move between and change the settings of the sub-menu.

To return to the main menu, press <Esc> to trace back.

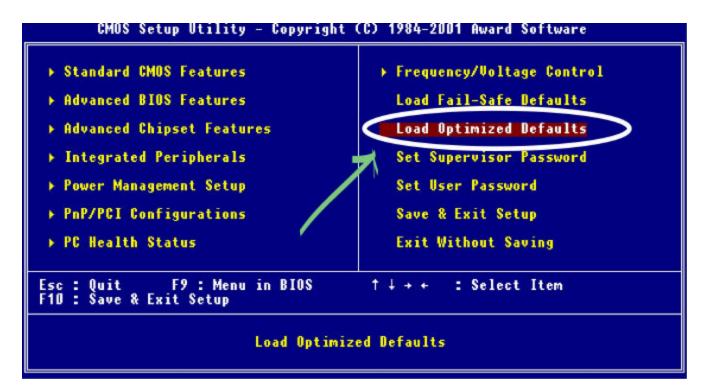
Status Page Setup Menu/Option Page Setup Menu

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

EXThe Main Menu

Once you enter Award BIOS CMOS Setup Utility, the Main Menu (Figure 1) will appear on the screen. The Main Menu allows you to select from ten setup functions and two exit choices. Use arrow keys to select among the items and press **<Enter>** to accept or enter the sub-menu.

It is recommended to load the Defaults for "Optimized" or "Fail-Safe".



Standard CMOS Features

Use this menu for basic system configuration.

Advanced BIOS Features

Use this menu to set the Advanced Features available on your system.

Advanced Chipset Features

Use this menu to change the values in the chipset registers and optimize your system's performance.

Integrated Peripherals

Use this menu to specify your settings for integrated peripherals.

Power Management setup

Use this menu to specify your settings for power management

PNP/PCI Configuration

This entry appears if your system supports PnP / PCI.

PC health Status

Display CPU/System Temperature, Fan speed.

Load Fail-Safe Defaults

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate.

Load Optimized Defaults

Use this menu to load the BIOS default values that are factory settings for optimal performance system operations. While Award has designed the custom BIOS to maximize performance, the factory has the right to change these defaults to meet their needs.

Set Supervisor Password

Enter and change the options of the setup menus. If password error or disable, some read only INFO will be displayed on the menu.

Set User Password

Change, set, or disable password of user while posting. Switched by Security Option Item in Advanced BIOS Features Function.

Save & Exit Setup

Save CMOS value changes to CMOS and exit setup.

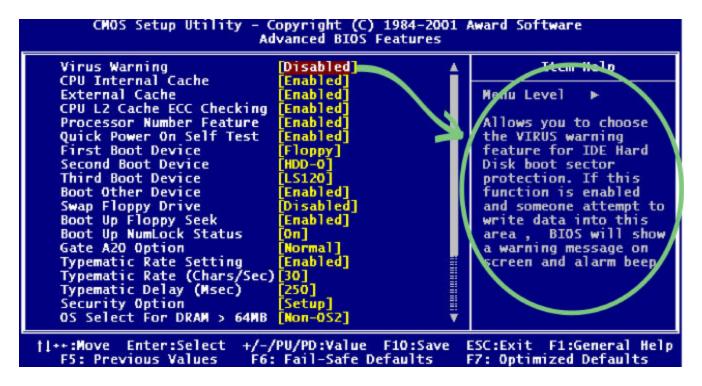
Exit Without Saving

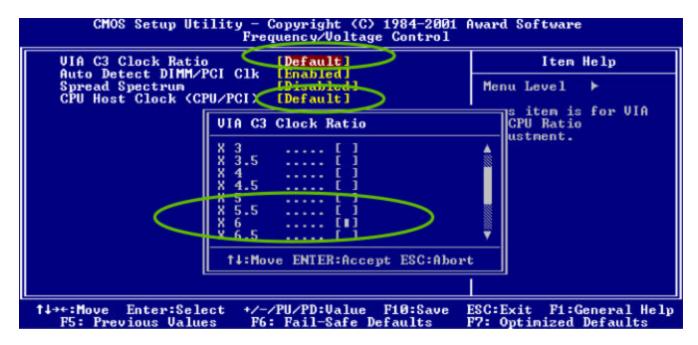
Abandon all CMOS value changes and exit setup.

MEBIOS Setup Function Description

The New BIOS setup give users a more friendly information, which include all function descriptions of BIOS setup program into the BIOS Flash ROM. When you select one function of BIOS setup program, the function description will appeared at the right side of screen. Hence, user doesn't need read this manual while changing the BIOS setting.

For some critical setting or normal setting, which have no description on the Item Help windows, user can check our Customer Service Department for detail information.





It is highly recommended to use the Default Setting for the CPU Clock Ratio and Host Clock. If the wrong setting for the on board CPU cause the system can't boot up, please Clear CMOS by hardware Jumper to restore factory default value.

Supervisor/User Password Setting

You can set either supervisor or user password, or both of then. The differences between are:

Supervisor password

Can enter and change the options of the setup menus.

User password

Just can only enter but do not have the right to change the options of the setup menus. When you select this function, the following message will appear at the center of the screen to assist you in creating a password.

EXENTER PASSWORD:

Type the password, up to eight characters in length, and press <Enter>. The password typed now will clear any previously entered password from CMOS memory. You will be asked to confirm the password. Type the password again and press <Enter>. You may also press <Esc> to abort the selection and not enter a password.

To disable a password, just press <Enter> when you are prompted to enter the password. A message will confirm the password will be disabled. Once the password is disabled, the system will boot and you can enter Setup freely.

MEPASSWORD DISABLED

When a password has been enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration.

Additionally, when a password is enabled, you can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer.

You determine when the password is required within the BIOS Features Setup Menu and its Security option. If the Security option is set to "System", the password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

ExPower-On Boot

After you have made all the changes to CMOS values and the system cannot boot with the CMOS values selected in Setup, restart the system by turning it OFF then ON or Pressing the "RESET" button on the system case. You may also restart by simultaneously press **<Ctrl>**, **<Alt>**, and **<Delete>** keys.

Upon restart the system, immediately press <Insert> to load BIOS default CMOS value for boot up.

Appendix 1

Watch Dog Timer

Watch Dog Timer Working Procedure

The Watch Dog Timer (WDT) is the special hardware device. The WDT function is to monitor the computer system whether work normally, otherwise, it will have some measures to fix up the system.

It contains a receivable SQW signal from RTC, and could set time and can clear the counter function. When time is up, WDT can send Reset or NMI signal.

Operator has to write a value into WDT Configuration Register (Write the control value to the Configuration Port), and clear WDT counter (read the Configuration Port).

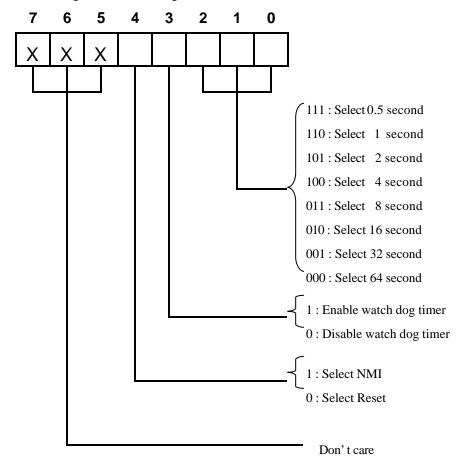
Watch Dog Timer character and function

WDT Configuration port	F2	Default at F2
Watch Dog Timer	Disabled	Default at disabled
	Enabled	2. Enabled for user's programming
WDT Time out active for	Reset	Default at Reset
	NMI	
WDT Active Time	0.5 sec	Default at 64 sec
	1 sec	
	2 sec	
	4 sec	
	8 sec	
	16 sec	
	32 sec	
	64 sec	

Watch Dog Timer Control Register

The Watch Dog Timer Control Register is to control the WDT working mode. You can write the value to WDT Configuration Port.

The following is the Control Register bit definition.



Watch Dog Timer Programming Procedure

? Power on or reset the system

The initial value of WDT Control Register (D4 \sim D0) is zero, when power is on or reset the system. The following means the initial value of WDT (00000000b) :

Bit	Value	Mean
4	0	Select Reset
3	0	Disable watch dog timer
2, 1, 0	000	Select 64 second

? Initialize the SQW of RTC (set SQW output period=0.5 second)

To initialize the SQW of RTC processor is to set the SQW signal which is output period=0.5 second. It offers the basic frequency of the WDT counter.

The following is an example of **initializing the SQW signal program** in Intel 8086 assembly language.

; (Gene	erate SQW = 0	.5 Sec.)	
Mov	dx, 70h		
	Mov	ax, 0Ah	
	Out	dx, al	; Out port $70h = 0Ah$
	Mov	dx, 71h	
	Mov	ax, 2Fh	
	Out	dx, al	; Out port $71h = 2Fh$
	; (enable the	e SQW output)	
Mov	dx, 70h		
	Mov	ax, 0Bh	
	Out	dx, al	; Out port $70h = 0Bh$
	Mov	dx, 71h	
	Mov	ax, 0Ah	
	Out	dx, al	; Out port $71h = 0Ah$

Clear the WDT

Repeatedly read WDT Configuration Port and the interval cannot be longer than the preset time, otherwise, the WDT will generate NMI or Reset signal for the system.

The following is an example of **clear the WDT program** in Intel 8086 assembly language.

```
; ( Clear the WDT)

Mov dx, F2h ;Setting the WDT configuration port

In al, dx
```

Note: Before running WDT, you must clear the WDT. It means to make sure the initial value is zero before enabling the WDT.

? WDT Control Register (Write to WDT configuration port)

You can set the WDT Control Register to control the WDT working mode.

The initial value of the WDT Control Register is as the following.

```
; (Setting the WDT Control Register as AL)

Mov al, 0h; Setting initial value = 0 for the WDT Control Register
```

You must plan the option of following:

1. Select NMI or Reset: decide D4 value in F2.

```
i.e. Setting D4 = 0, then it select Reset

AND al, 11101111b; Select Reset
```

i.e. Setting D4 = 1, then it select NMI

```
OR al, 00010000b ; Select NMI
```

2. Select the time-out intervals of WDT (decide the values of D2, D1, D0 in F2)

Example: $D2\sim D0 = 0$, the time-out interval will be 64 sec.

```
AND al, 11111000b; Setting the time-out interval as 64 sec.
```

3. Enable or Disable the WDT (decide D3 value in F2)

```
i.e. D3=0, Disable the WDT
```

```
AND al, 11110111b; Disable the WDT
```

i.e. D3=1, Enable the WDT

After finishing the above setting, you must be output for the Control Register's value to the WDT Configuration Port. Then WDT will start according to the above setting.

```
MOV dx, F2h ; Setting WDT Configuration Port
OUT dx, al ; Output the Control Register
Value
```

Configuration Port for clearing WDT before the time out.

[?] You should build in a mechanism in the program to continue to read the WDT