User's Manual

3301790

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.

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 3301790, 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.

Table of Content

Chapter 1
General Information

1.1 Main Feature

Support Intel Celeron M 600MHz processor with 512K L2 cache and 400MHz FSB
Support Intel® Pentium® M processor or Intel® Celeron® M processor in 478-pin, Micro-FCPGA package (mPGA479M Socket)

- Intel® 82852GM and Intel® ICH-4 chipsets
- Onboard 256 MB Non-ECC DDR 200/266/333/400 SDRAM
- Realtek® RTL8110SB Gigabit Ethernet Controller x 1 supporting one GbE LAN port
- DB-15 VGA Connector
- Support IDE HDD
- CompactFlash Socket
- USB 2.0 Port x 6, COM x 1

1.2 Specifications

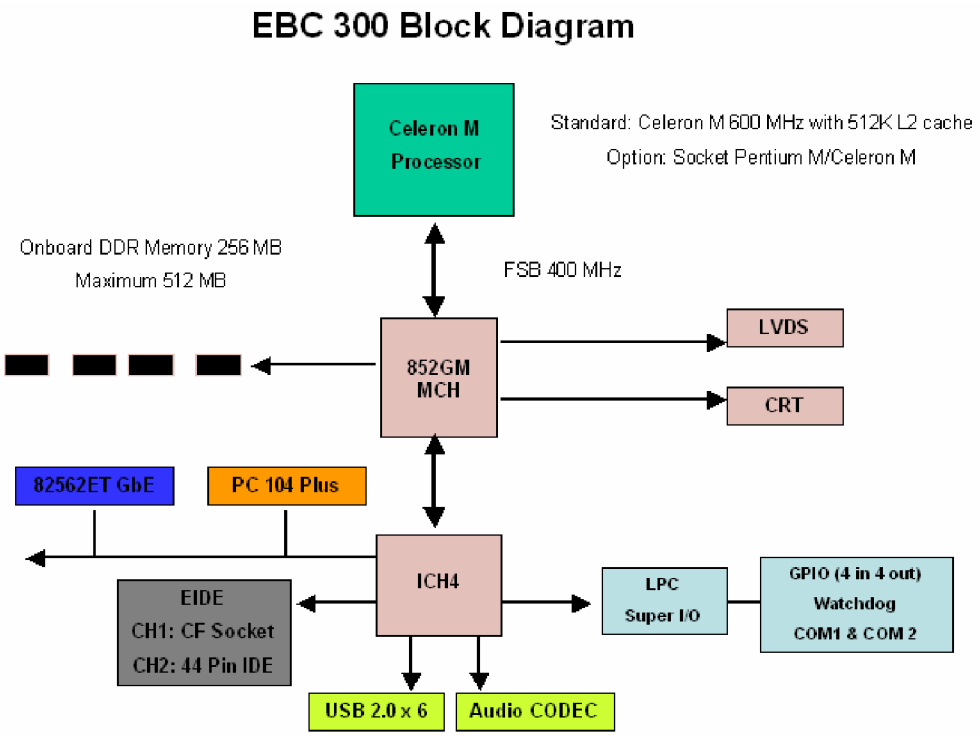
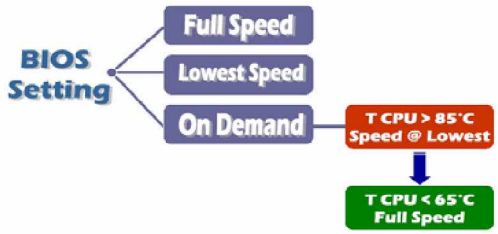


Figure 1.1: Block Diagram of 3301790

System Architecture	- 3.5” Embedded SBC
CPU Support	- Standard: Support Intel Celeron M 600MHz processor with 512K L2 cache and 400MHz FSB - Optional: Support Intel® Pentium® M processor or Intel® Celeron® M processor in 478-pin, Micro-FCPGA package (mPGA479M Socket)
Memory	- Onboard 256 MB Non-ECC DDR SDRAM - 200/2666/333/400
BIOS	- Award system BIOS - ACPI: Only support Software Shutdown by 5Vsb Provided (S0 /S5 only) - Advanced Power Management support - 4M bits flash ROM Support Pentium M Speed Step 
Chipset	- Intel® 82852GM - ICH-4
LAN	- Realtek® RTL8110SB Gigabit Ethernet Controller x 1 supporting one GbE LAN port
Display	- Intel® 852GM integrated graphics solution w/ Intel® Extreme Graphics 2 technology - Up to 64 MB of dynamic video memory allocation - 350-MHz integrated 24-bit RAMDAC that can drive a standard progressive scan analog monitor with pixel resolution up to 1600x1200 at 85 Hz, 2048x536@75Hz - DB15 CRT VGA Connector x 1 - CRT: Wide Screen Resolution support 848x480 and 1366x768 only - LVDS: LFP (local flat panel) LVDS interface/Single- or dual-pixel LVDS panel support up to UXGA panel resolution (1600x1200)/DF13-20DP, 20-pin connector x 1 for LVDS panel output - Wide Screen Resolution support 848x480 and 1366x768 only
IDE	- HDD: Support IDE with 44 pin connector × 1 (Primary)

Audio	- Internal CompactFlash socketx1 Support One Type II CompactFlash Card (Secondary) - On Board Power LED and HDD Active LED Pin Header - REALTEK ALC655-LF AC97 CODEC - Microphone in, Speaker out (external)
I/O Interface	- SIO× 1, with 1x16C550 UARTs, One DB9 Connector - USB2.0 connector x 6 (two direct output, 4 from Jst Box Header) - HDD: Support IDE with 44 pin connector × 1 (Secondary) - Internal CompactFlash socket x 1 Support One Type II CompactFlash Card (Primary) - On Board 2 pin header for Reset switch - 8 GPIO lines via header (GPI 0~3 and GPO0~3) - TTL Level (0/5V) - On Board HDD Active LED Pin Header - Reserved 3 PIN FAN Connectors x 1 (for CPU) - On board 3 pin header for I2C, one pin for GND - PC/104 Plus Connector x 1
Expansion Slot	- PC/104 Plus Connector x 4 (PCI Only)
I/O on Bracket	- VGA - RJ-45 - Mic-In - Speaker Out - COM - USB x 2
System Management	- Derived from Super IO to support system Voltage, fan speed, temperature monitoring - Watchdog Timer: Watchdog timeout can be programmable by Software from 1 second to 64 Sec. (Tolerance 10% under room temperature 25°C)
Real Time Clock	- On chip RTC with battery back up - External Li-ion Battery x 1 (Socket type field replaceable) - The Battery Socket should be Flat direction. Tolerance less 2 sec (24 hours) under 25 ℃ environment
Dimensions	- 146mm(L) x 105mm(W)
Power Supply	- AT Mode: +5V Power in, No Power On push Button, Software Shutdown function and LAN remote wake up; BIOS and H/W is default to AT Mode - ATX Mode: +5V / +12V /-12V / -5V / 5Vsb Power In When Change to ATX Mode, the BIOS default setting is as follow: POWER -SUPPLY TYPE Î [ATX] AUTO PWR-FAILURE RESUME Î [ON]

Environments	- Board-level operating temperatures: -20°C to 60°C - Storage temperatures: -20°C to 80°C - Relative humidity: 10% to 90% (Non-condensing)
Certification	- CE - FCC Class A

Ordering Information

3301790A

NEW 3.5” Low Power Embedded Board with Celeron M 600MHZ 512KB L2 on Board with VGA/ LVDS/Audio/COM/ USB2.0 / Gigabit LAN

3301790B

NEW 3.5” Low Power Embedded Board with Pentium M / Celeron M CPU Socket with VGA/ LVDS/Audio/COM/ USB2.0 / Gigabit LAN

1.3 Power Consumption Measurement

Power Requirement:

System Configuration	OS: WinXP / Memory: 256MB / Storage: 40GBTest Program : K Power + Burning Test			
Voltage	**+5V** **(A)**	**+12V** **(A)**	**+5Vsb** **(A)**	**-12V** **(A)**
Theoretical Current: R&D Design Max. Power Loading	14.6A	1.176A	0.3A	0.235A
Heavy : Maximum HD/CPU and Memory Loading	7A	0.05A (AT) 0.05A (ATX)	0.20 (ATX)	For PC/104
Normal: (without K power test) 25% HD / 70% CPU and 50% Memory Load	3.14A (AT) 3.13A (ATX)	0.05A (AT) 0.05A (ATX)	0.20A (ATX)	N/A
Idle: OS in idle state	2.96A (AT) 2.94A (ATX)	0.05A (AT) 0.05A (ATX)	0.19A (ATX)	N/A

Note: -12V is reserved for PCI-104 expansion requirement, the table only show the R&D design max. power support

1.4 Board Layout

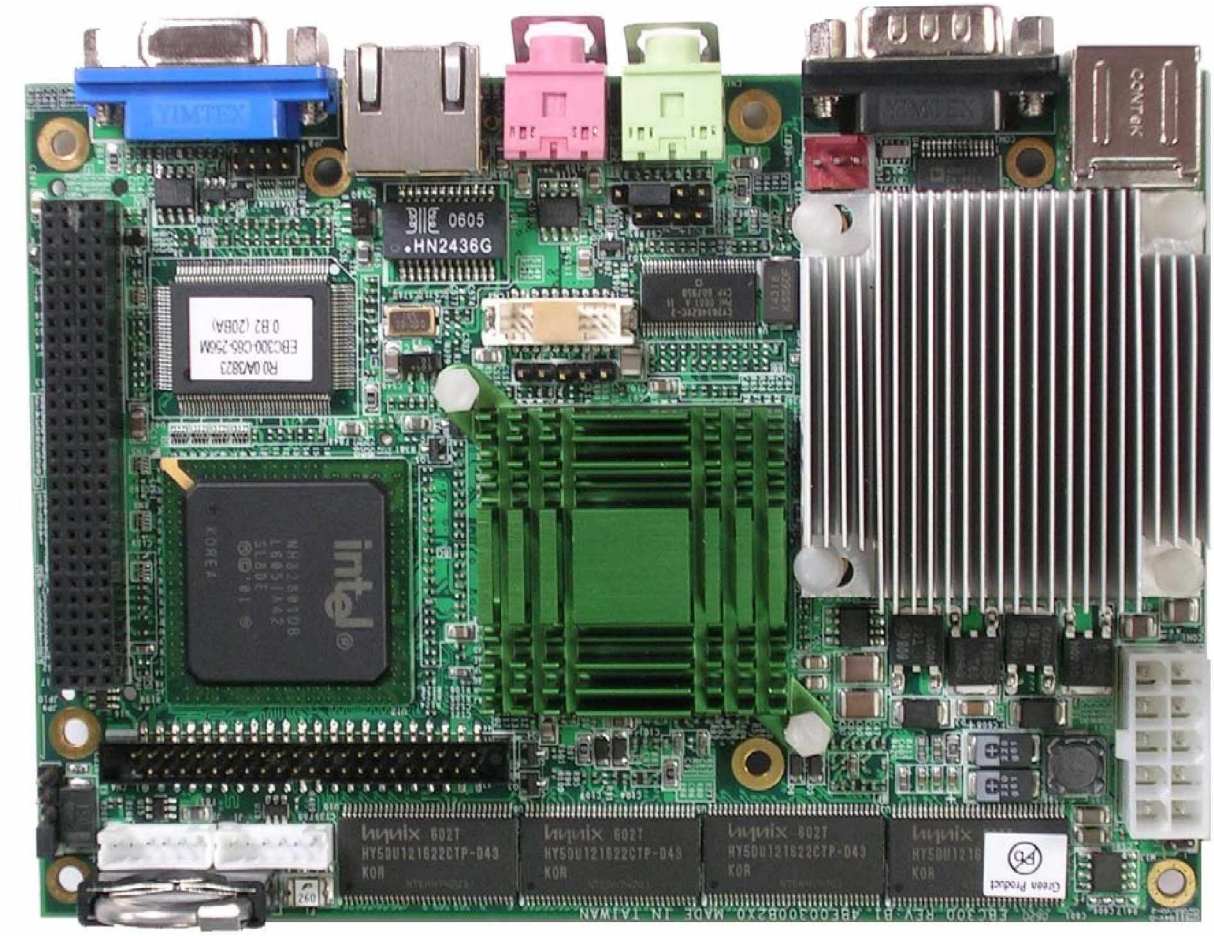


Figure 1.2: Overview of 3301790

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 3301790 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 3301790 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

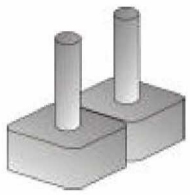
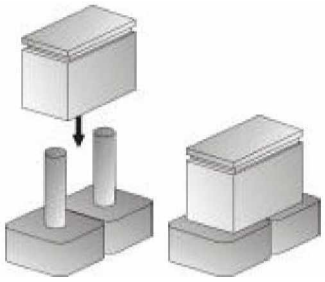
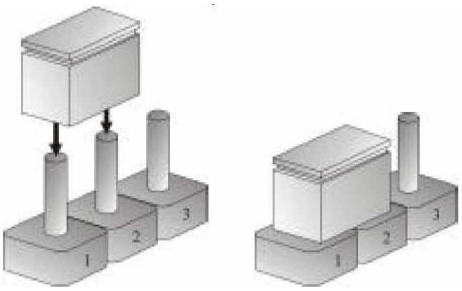
<table>
<tr><td rowspan="2">The illustrations on the right show a 2-pin jumper. When the jumper cap is placed on both pins, the jumper is SHORT. If you remove the jumper cap, or place the jumper cap on just one pin, the jumper is OPEN.</td><td>  </td><td>  </td></tr>
<tr><td>Open (Off)</td><td>Short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

Table 2-1: Setting Jumpers

2.4 Location of Jumpers

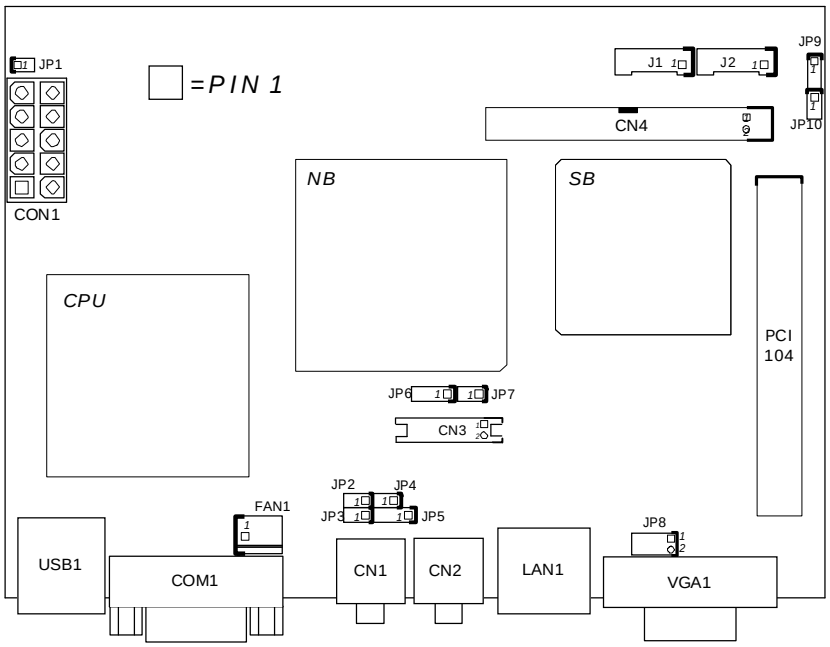


Figure 2-1: Jumper Location

2.5 Functions of Jumpers and Connectors

- **J1: 1x6 2.0mm JST Connector for USB Port 2-3**

Pin No	Definition
1	VCC5
2	D2-
3	D2+
4	D3-
5	D3+
6	GND

- **J2: 1x6 2.0mm JST Connector for USB Port 4-5**

Pin No	Definition
1	VCC5
2	D4-
3	D4+
4	D5-
5	D5+
6	GND

- **JP1: 1x2 2.0mm Pin Header for AT mode**

Pin No	Definition
1	PSON#
2	GND

- **JP2: 1x2 2.54mm Pin Header for IDE LED**

Pin No	Definition
1	VCC3
2	IDE_LED#

- **JP3: 1x2 2.54mm Pin Header for Power LED**

Pin No	Definition
1	VCC5
2	GND

- **JP4: 1x2 2.54mm Pin Header for Power Button**

Pin No	Definition
1	PWRBNT#
2	GND

- **JP5: 1x3 2.54mm Pin Header for LVDS Power Select**

Pin No	Definition
1, 2 Short	+5V
*2, 3 Short	+3.3V

*** = Default**

- **JP6: 1x3 2.54mm Pin Header for I2C Function**

Pin No	Definition
1	SMB_CLK_EXT
2	SMB_DATA_EXT
3	GND

- **JP7: 1x2 2.54mm Pin Header for Thermal Detect**

Pin No	Definition
1	TEMPIN1
2	GND

z **JP8: 2x4 2.0mm Pin Header for GPIO Function**

Pin No.	Description	Pin No.	Description
1	D_IN1	2	D_OUT1
3	D_IN2	4	D_OUT2
5	D_IN3	6	D_OUT3
7	D_IN4	8	D_OUT4

z **JP9 : 1x3 2.0mm Pin Header for On Board RTC**

Pin No	Definition
*1, 2 Short by wire-wrap	Operation Mode
2, 3 Short by wire-wrap	Clear CMOS

*** = Default**

z **JP10: 1x2 2.0mm Pin Header for Hardware Reset**

Pin No	Definition
1	HW_RST#
2	GND

z **CN1: Ear Phone for Audio Line Out**

Pin No	Definition
1	Audio GND
2	Line Out Right
3	JD1
4	Audio GND
5	Line Out Left

z **CN2: Ear Phone for Audio MIC In**

Pin No	Definition
1	Audio GND
2	MIC2
3	JD0
4	Audio GND
5	MIC1

z **CN3: 2x10 Panel Connector for LVDS interface (18bit)**

Pin No.	Description	Pin No.	Description
1	LVDS_DDCPCLK	2	LVDS_DDCPDATA
3	PANEL1_VDD	4	LVDS_YAP0
5	LVDS_YAP3	6	LVDS_YAM0
7	LVDS_YAM3	8	PANEL1_VDD
9	GND	10	LVDS_YAP1
11	LVDS_CLKAP	12	LVDS_YAM1
13	LVDS_CLKAM	14	GND
15	GND	16	PANEL1_BACKLIGHT
17	LVDS_YAP2	18	PANEL1_BACKLIGHT
19	LVDS_YAM2	20	GND

z **CN4: 2x22 2.0mm Box Header for IDE Device**

Pin No	Definition	Pin No	Definition
1	RESET#	2	GND
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	GND	20	NC
21	DDRQ0	22	GND
23	IOW#	24	GND
25	IOR#	26	GND
27	IORDY#	28	GND
29	DDACK0	30	GND
31	IRQ14	32	NC
33	DA1	34	P66DET
35	DA0	36	DA2
37	HDCS1#	38	HDCS3#
39	HDACT#	40	GND
41	VCC5	42	VCC5
43	GND	44	NC

z **COM1: SIO Connector Serial Port 1**

Pin No.	Description	Pin No.	Description
1	SP_DCD2	2	SP_RXD2
3	SP_TXD2	4	SP_DTR2
5	GND	6	SP_DSR2
7	SP_RTS2	8	SP_CTS2
9	SP_RI2	10	NC

z **IDE1: Compact Flash Socket For CF Device**

Pin No	Definition	Pin No	Definition
1	GND	2	D3
3	D4	4	D5
5	D6	6	D7
7	CS0#	8	GND
9	GND	10	GND
11	GND	12	GND
13	VCC5	14	GND
15	GND	16	GND
17	GND	18	DA2
19	DA1	20	DA0
21	D0	22	D1
23	D2	24	NC
25	CD2#	26	CD1#
27	D11	28	D12
29	D13	30	D14
31	D15	32	CS1#
33	NC	34	IOR#
35	IOW#	36	VCC5
37	IRQ15	38	VCC5
39	CSEL#	40	NC
41	PCIRST#	42	IORDY
43	DREQ	44	DACK#
45	DASP#	46	66DET
47	D8	48	D9
49	D10	50	GND

z **USB1: USB Connector for USB Port 0-1**

Pin No	Definition	Pin No	Definition
1	VCC5	5	VCC5
2	D0-	6	D1-
3	D0+	7	D1+
4	GND	8	GND

z **VGA1: DB-15 Connector for CRT Interface**

Definition	Pin No			Definition
		6		ANA-GND
RED	1		11	NC
		7		ANA-GND
GREEN	2		12	DDCDAT
		8		ANA-GND
BLUE	3		13	HSYNC
		9		VCC
NC	4		14	VSYNC
		10		DIG-GND
DIG-GND	5		15	DDCCLK

z **CON1: ATX Power Connector**

Pin No	Definition	Pin No	Definition
1	PS_ON#	6	+5VSB
2	GND	7	VCC5
3	GND	8	VCC5
4	+12V	9	-12V
5	NC	10	GND

z **FAN1: 1x3 2.54mm JST Connector for FAN**

Pin No	Definition
1	GND
2	FAN_VCC
3	FAN_TAC

z LAN1: RJ45 Connector for LAN Interface

Pin No	Definition	Pin No	Definition
1	TXD0P	2	TXD0N
3	TXD1P	4	TXD2P
5	TXD2N	6	TXD1N
7	TXD3P	8	TXD3N
9	LAN_SorL_LED	10	+3.3VSBY
11	LAN_LINK_LED	12	LAN_ACT_LED
13	LGND	14	LGND

Chapter 3
Expansion

3.1 System Memory

< 3301790 incorporates onboard 256 MB Non-ECC DDR SDRAM supporting frequencies from 200/266/333 up to 400.

3.2 Installing Compact Flash

1. To install a Compact Flash memory card into 3301790, align the notches on the card with the Compact Flash socket in the 3301790. Then firmly insert the card into the socket until it is completely seated.

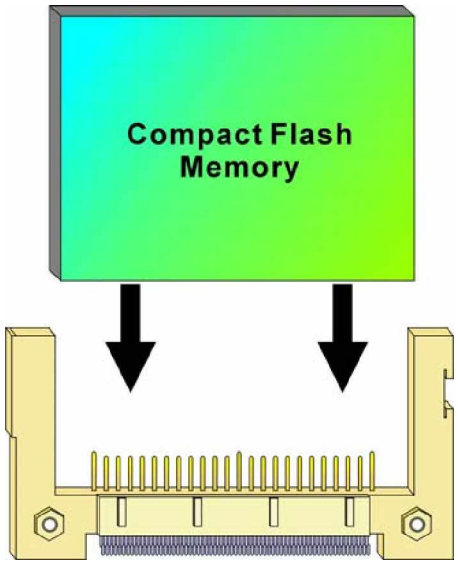


Figure 3-1: How to Install Compact Flash Memory (1)

2. To remove the Compact Flash memory card from 3301790, pull out the memory card from the Compact Flash socket.

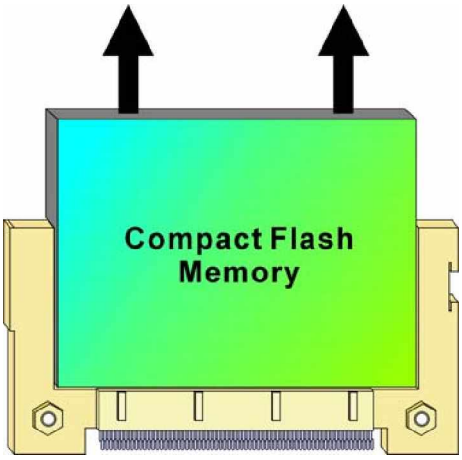


Figure 3-2: How to Uninstall Compact Flash Memory (2)

Any advice or comments about our products and service, or anything we can help you with please don't hesitate to contact with us. We will do our best to support you for your products, projects and business.

Global American Inc.

Address:	17 Hampshire Drive Hudson, NH 03051
TEL:	Toll Free (U.S. Only) 800-833-8999 (603)886-3900
FAX:	(603)886-4545
Website:	http://www.globalamericaninc.com
E-Mail:	salesinfo@globalamericaninc.com