VIA Embedded

user manual

EPIA-P820

Pico-ITX Mainboard

Revision 1.07
107-06212012-1150

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Battery Recycling and Disposal

Only use the appropriate battery specified for this product.
Do not re-use, recharge, or reheat an old battery.
Do not attempt to force open the battery.
Do not discard used batteries with regular trash.
Discard used batteries according to local regulations.

Regulatory Compliance

FCC-A Radio Frequency Interference Statement

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 personal expense.

Notice 1

The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Notice 2

Shielded interface cables and A.C. power cord, if any, must be used in order to comply with the emission limits.

Tested To Comply
With FCC Standards
FOR HOME OR OFFICE USE

KC Korean Certificate Statement

KCC-REM-VNT-EPIA-P820 (B)
VIA Technologies, Inc.
EPIA-P820
2009/12
Made in China

B 급 기기
(가정용 방송통신기자재)

이 기기는 가정용 (B 급) 전자파적합기기로서 주로 가정에서 사용하는 것을 목적으로 하며 , 모든 지역에서 사용할 수 있습니다 .

Class B Equipment
(For Home Use
Broadcasting & Communication
Equipment)

This electromagnetic wave equipment is suitable for home use (Class B) and may be used mainly at home and in other areas.

Safety Precautions

Do's

- Always read the safety instructions carefully.
- Keep this User's Manual for future reference.
- All cautions and warnings on the equipment should be noted.
- Keep this equipment away from humidity.
- Lay this equipment on a reliable flat surface before setting it up.
- Make sure the voltage of the power source and adjust properly 110/220V before connecting the equipment to the power inlet.
- Place the power cord in such a way that people cannot step on it.
- Always unplug the power cord before inserting any add-on card or module.
- If any of the following situations arises, get the equipment checked by authorized service personnel:
    - The power cord or plug is damaged.
    - Liquid has penetrated into the equipment.
    - The equipment has been exposed to moisture.
    - The equipment has not worked well or you cannot get it work according to User's Manual.
    - The equipment has dropped and damaged.
    - The equipment has obvious sign of breakage.

Don'ts

- Do not leave this equipment in an environment unconditioned or in a storage temperature above 70°C (158°F). The equipment may be damaged.
- Do not leave this equipment in direct sunlight.
- Never pour any liquid into the opening. Liquid can cause damage or electrical shock.
- Do not place anything over the power cord.
- Do not cover the ventilation holes. The openings on the enclosure protect the equipment from overheating

Box Contents

- ☐ 1 x EPIA-P820 Pico-ITX mainboard
- ☐ 1 x P820-A I/O module board
- ☐ 1 x SATA cable
- ☐ 1 x SATA power cable
- ☐ 1 x DC-In cable

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1

Product Overview

The VIA EPIA-P820 is an ultra-compact and highly integrated Pico-ITX mainboard and the smallest stand-alone form-factor available today. Through a high level of integration, the Pico-ITX form factor is 75% smaller than the existing Mini-ITX form factor. The mainboard enables the creation of an exciting new generation of small, ergonomic, innovative and affordable embedded systems.

The VIA EPIA-P820 Pico-ITX mainboard is rich in I/O integration and comes with an integrated VIA Nano 1.2 GHz NanoBGA2 processor, boasting of ultra-low power consumption and cool operation.

Key Components

VIA Nano 1.2 GHz NanoBGA2 Processor

The VIA Nano is a 64-bit superscalar processor in x86 platform using a 65 nanometer process technology. It delivers an energy-efficient, powerful performance, with cool and quiet operation all within an ultra compact NanoBGA2 package measuring 21mm x 21mm. Perfectly fit for embedded system applications such as industrial PCs, test machines, measuring equipment, digital signage, medical PCs, monitoring systems, gaming machines, in-vehicle entertainment, and etc. The VIA Nano also boasts of immersive multimedia performance, connectivity and computing applications. When combined with the most recent VIA VX855 Media System Processor (MSP), which have been designed as companion sets for the latest VIA processors, system developers can utilize an impressive range of features for a wide range of desktop and embedded applications.

VIA VX855 Media System Processor

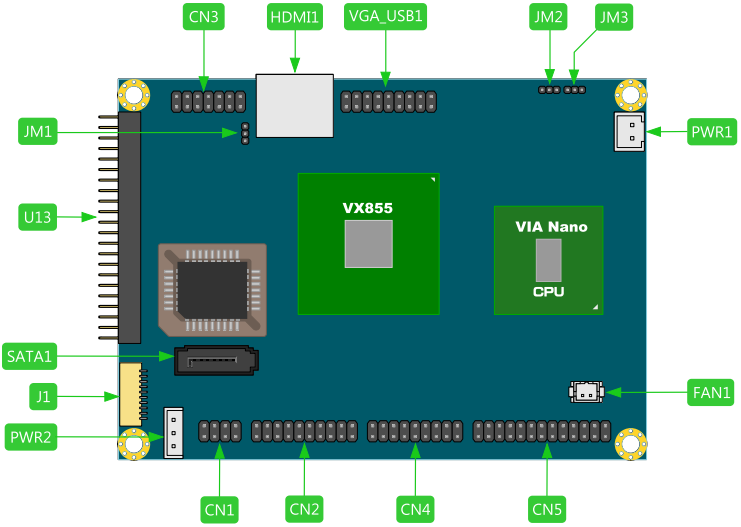
The VIA VX855 MSP integrates a premium graphics engine, an HD audio controller, a DDR2 memory controller, an 800MHz FSB processor interface, and extensive I/O capabilities support in a single chip design. Complementing the power-efficient VIA Nano 1.2 GHz NanoBGA2 processor, the VX855 is based on a highly sophisticated power efficient architecture that enables such rich integration into a compact package with a maximum power envelope of just 2.3 W.

MAINBOARD SPECIFICATIONS

CPU	VIA Nano 1.2 GHz NanoBGA2 processor • 800 MHz Front Side Bus
Chipset	VIA VX855 All-in-One System Processor
Graphics	Integrated VIA Chrome9™ HCM DX9 with MPEG-2 Accelerators
System Memory	One DDR2 800/667 SODIMM slot (up to 2 GB)
Onboard Storage	One SATA 3Gb/s connector One UltraDMA 133/100/66/33 44-pin IDE connector
Audio	VIA VT1708S High Definition Audio Codec
LAN	One VIA VT6122 Gigabit Ethernet controller
Onboard I/O Connectors	One Audio pin connector for Line-out, Line-in and Mic-in One Single-channel LVDS connector (5V/3V) One LPC pin connector One SMBus pin connector One DIO pin connector(4 GPI & 4 GPO) Two UART port One SYS fan connector One PS2 mouse/keyboard pin header One USB pin header for 4 additional USB 2.0 ports One LAN pin header One Front panel pin header One Backlight control pin header One SATA power connector One +12V DC-in power pin connector
I/O Ports	One HDMI® port One VGA port One GigaLAN port Two USB ports
System Monitoring and Management	Wake-On-LAN and Keyboard Power-on Watch Dog Timer System power management, AC power failure
BIOS	AMI BIOS with 4Mbit SPI flash memory
Operating System	Windows XP / Windows CE / Windows XPe / Linux
Operating Environment	Temperature: 0°C up to 60°C Humidity: 0% ~ 95% (relative humidity; non-condensing)
Compliance	CE/FCC/BSMI/RoHS
Dimensions	135 mm(w) x 45 mm(H) x 131 mm (D)
Form Factor	Pico-ITX 10 cm x 7.2 cm

EPIA-P820 LAYOUT

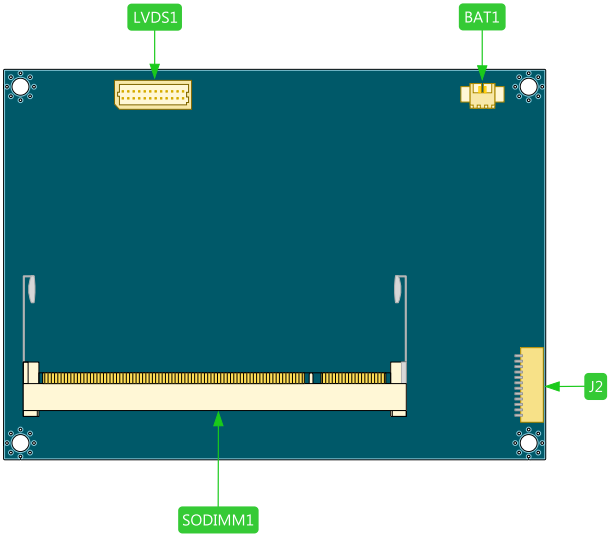
Top Side



Symbol	Description	Symbol	Description
CN1	Front Audio pin header	PWR1	DC-In power connector
CN2	USB and USB Device port pin header	PWR2	SATA Power connector
CN3	LAN Ethernet pin header	FAN1	System Fan connector
CN4	Front Panel and PS/2 KBMS pin header	VGA_USB1	VGA and USB pin header
CN5	LPC, SMBus and Digital I/O pin header	IDE1	IDE pin header
JM1	Clear CMOS jumper	HDMI1	HDMI® port
JM2	Panel Power Selector	SATA1	SATA port
JM3	Panel Backlight Power Selector	J1	UART port 2

Note:
USB Device port is a reserved feature, contact sales for specific support.

Bottom Side

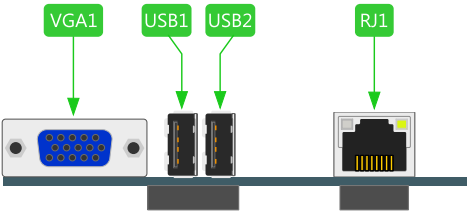


Symbol	Description	Symbol	Description
BAT1	CMOS Battery connector	SODIMM1	DDR2 SODIMM slot
LVDS1	1-CH LVDS Panel connector	J2	UART port 1

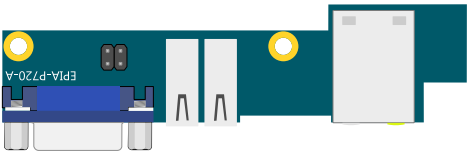
P820-A I/O Module Layout

The VIA EPIA-P820 Pico-ITX mainboard is bundled with an I/O board (P820-A) to support connections to LAN, VGA and USB.

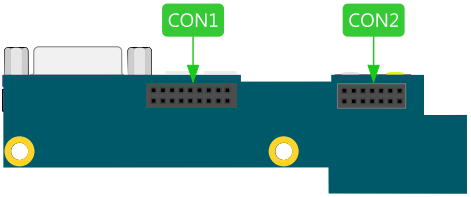
Front View



Top View



Bottom View



Symbol	Description
VGA1	VGA port
USB1	USB 2.0 port 1
USB2	USB 2.0 port 2
RJ1	RJ-45 LAN port
CON1	VGA & USB board-to-board connector
CON2	LAN board-to-board connector

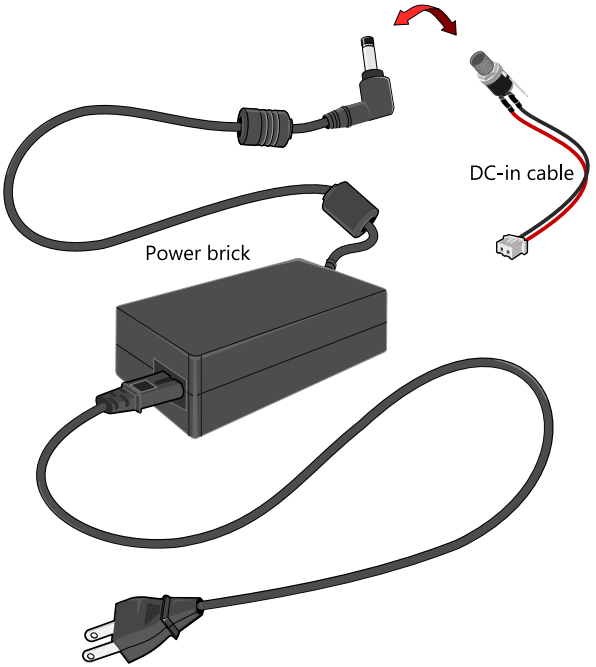
Development Kit Accessories

DC-In Cable

The DC-In power cable provides a means to connect to the power brick.

Power Brick

The power brick provides a regulated 12V/5A output to power up the EPIA-P820 mainboard.



Note:
The Power brick is not included in the package of EPIA-P820 and this item should be purchased separately.

2

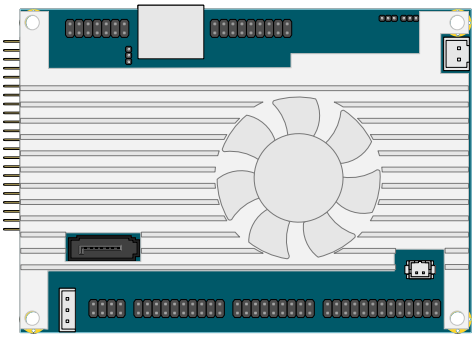
Onboard Connectors, Slots and Pin Headers

This chapter provides you with information about hardware installation procedures. It is recommended to use a grounded wrist strap before handling computer components. Electrostatic discharge (ESD) can damage some components.

TOP SIDE CONNECTORS

VIA Nano 1.2 GHz processor with Heatsink

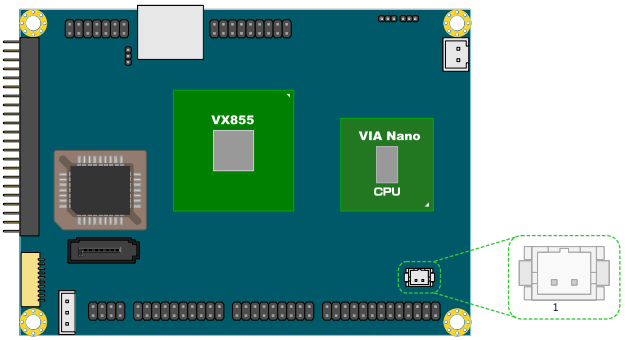
The VIA EPIA-P820 Pico-ITX mainboard is packaged with a standard VIA Nano 1.2 GHz NanoBGA2 processor.



System Fan connector: FAN1

FAN1 runs on +5V and maintains system cooling. When connecting the cable to the connector, always be aware that the red wire (positive wire) should be connected to the +5V pin. The black wire is the ground wire and should always be connected to GND.

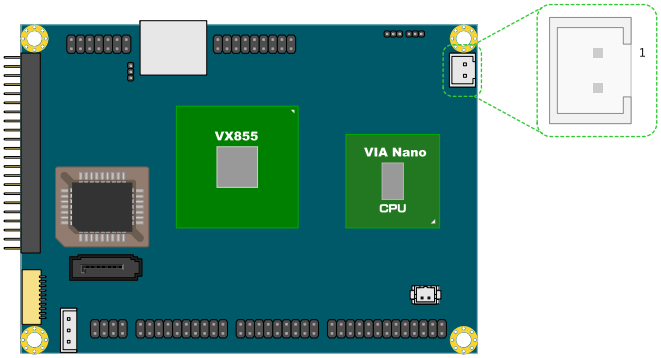
Pin	Signal
1	+5V
2	GND



DC-In Power connector: PWR1

EPIA-P820 has an onboard DC-In 2-pin power connector to connect the DC-In power cable.

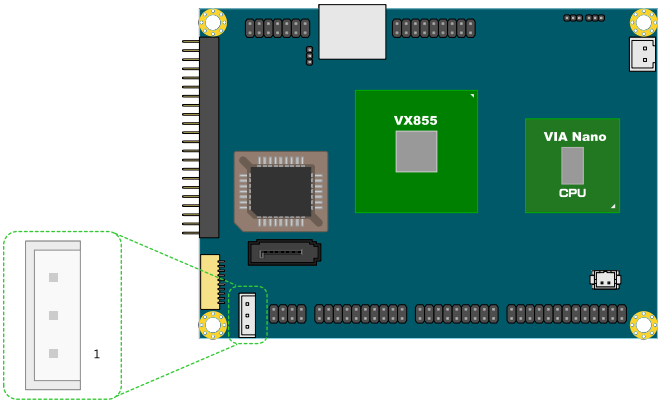
Pin	Signal
1	DC_In (+12V)
2	GND



Serial ATA Power connector: PWR2

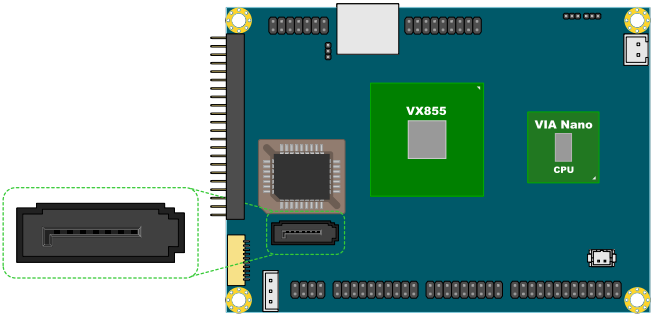
The mainboard supports a 3-pin SATA power connector for SATA power cable. Plug the SATA power cable into the SATA power connector. Make sure the power plug is inserted in the proper orientation and pins are aligned.

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



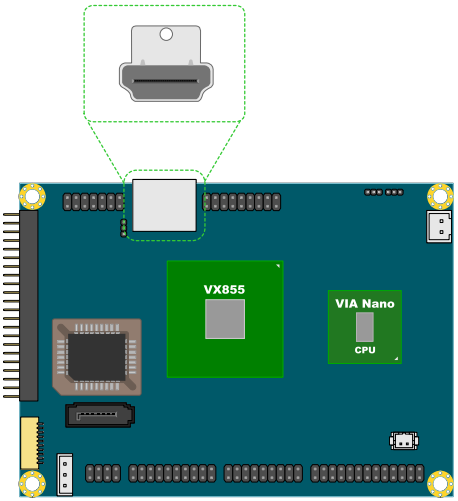
Serial ATA connector: SATA1

The current SATA interface allows a data transfer rate of up to 300 MB/s — approximately 225% faster than Ultra DMA parallel ATA.



HDMI® port connector: HDMI1

The mainboard has a High Definition Multimedia Interface port for connecting to high definition video and digital audio. The HDMI® port allows you to connect digital video devices which utilize a high definition video signal. The HDMI® port is HDCP 1.2 compatible.

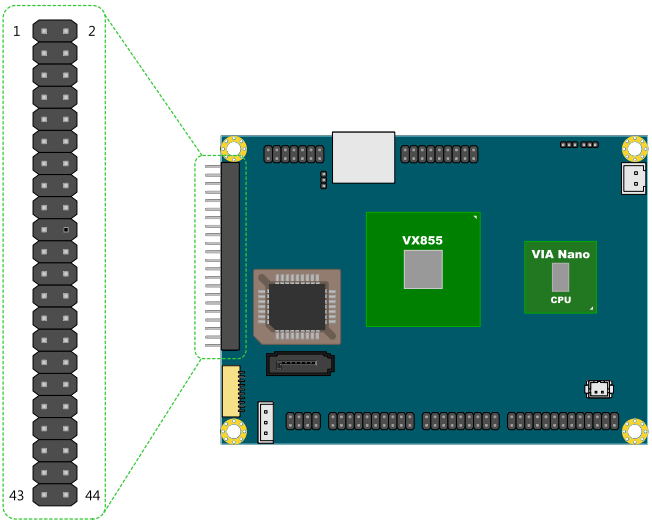


Note:
CEC feature is not supported.

IDE pin header: IDE1

The mainboard has an Ultra DMA 133/100 controller. You can connect up to two IDE devices in any combination.

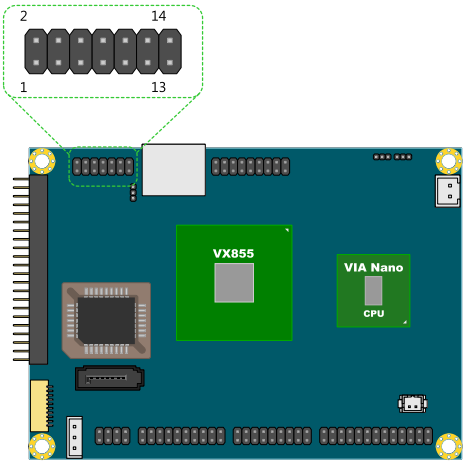
Pin	Signal	Pin	Signal
1	-IDERST	2	GND
3	PDD7	4	PDD8
5	PDD6	6	PDD9
7	PDD5	8	PDD10
9	PDD4	10	PDD11
11	PDD3	12	PDD12
13	PDD0	14	PDD13
15	PDD1	16	PDD14
17	PDD2	18	PDD15
19	GND	20	KEY
21	PDDREQ	22	GND
23	PDDIOW	24	GND
25	PDDIOR	26	GND
27	PIORDY	28	GND
29	PDDACK	30	GND
31	-IRQ14	32	NC
33	PDA1	34	PDIAG
35	PDA0	36	PDA2
37	PDCS1	38	PDCS3
39	-HD_LED1	40	GND
41	+5V	42	+5V
43	GND	44	NC



Ethernet LAN pin header: CN3

The Ethernet LAN pin header is for connecting to the P820-A I/O module.

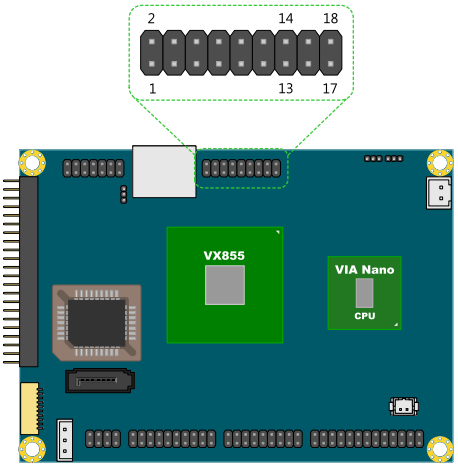
Pin	Signal	Pin	Signal
1	A3V3GL(+3.3V)	2	+3.3VSUS
3	TXNC	4	TXND
5	TXPC	6	TXPD
7	TXNA	8	TXNB
9	TXPA	10	TXPB
11	GND	12	LED1
13	LED2	14	LINK ACT



VGA and USB pin header: VGA_USB1

The VGA and USB pin header is for connecting to the P820-A I/O module.

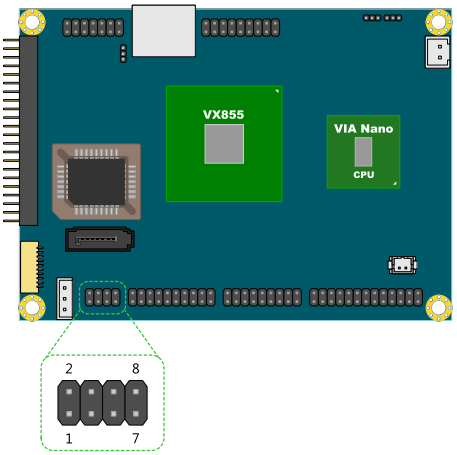
Pin	Signal	Pin	Signal
1	VGA_RED	2	+5V
3	VGA_GREEN	4	GND
5	VGA_BLUE	6	DDC_DATA
7	GND	8	DDC_CLK
9	+5VUSB_P	10	VGA_VS
11	VGA_HS	12	GND
13	+5VSUS	14	GND
15	USBHP0-	16	USBHP1-/USBDP_D-
17	USBHP0+	18	USBHP1+/USBDP_D+



Front Audio pin header: CN1

This pin header allows you to connect a front audio to the mainboard.

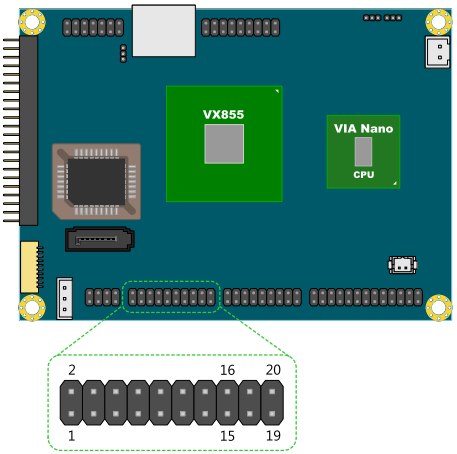
Pin	Signal	Pin	Signal
1	LINE IN_R	2	AUD_GND
3	LINE IN_L	4	MIC IN_L
5	LINE OUT_R	6	MIC IN_R
7	LINE OUT_L	8	JACK SENSE



USB pin header: CN2

This 20-pin USB pin header allows you to connect up to four USB2.0 ports.

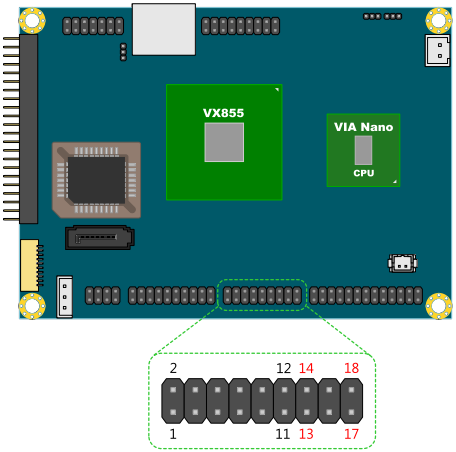
Pin	Signal	Pin	Signal
1	GND	2	GND
3	GND	4	GND
5	USB VD2+	6	USB VD3+
7	USB VD2-	8	USB VD3-
9	+5VSUS	10	+5VSUS
11	USB VD5-	12	USB VD4-
13	USB VD5+	14	USB VD4+
15	reserved	16	reserved
17	reserved	18	reserved
19	reserved	20	reserved



Front Panel and PS/2 KBMS pin header: CN4

This single pin header allows you to connect the power switch, reset switch, power LED, HDD LED, case speaker and two PS/2 ports.

Pin	Signal	Pin	Signal
1	+PWR_LED	2	+HD_LED
3	+5VSUS (for LED use)	4	-HD_LED
5	GND	6	PW_SW
7	SPEAK_BZ	8	GND
9	GND	10	RST_SW
11	-PWR_LED	12	GND
13	+5VSUS	14	GND
15	KB_CLK	16	KB_DT
17	MS_CLK	18	MS_DT

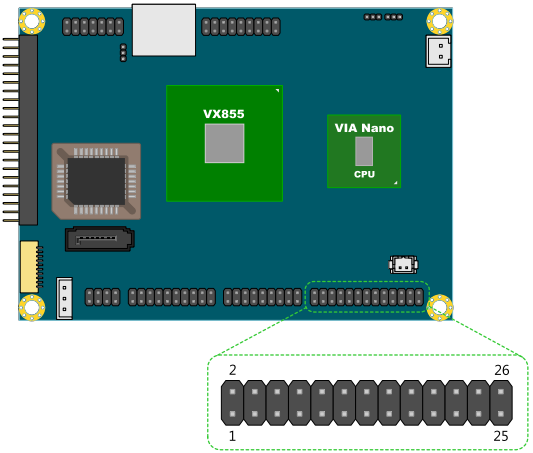


Note:
Pins 1 to 12 are for Front Panel and pin 13 to 18 use for PS/2 KBMS.

LPC, SMBus and Digital I/O pin header: CN5

This single pin header allows the connection of LPC, SMBus devices and the Digital Input and Output.

Pin	Signal	Pin	Signal
1	GND	2	LAD3
3	SIOOSC	4	LAD2
5	LPCCLK	6	LAD1
7	-LDRQ1	8	-LFRAME
9	SERIRQ	10	LAD0
11	-SIOSMI/-PME	12	-PCIRST1
13	SMB_CLK	14	SMB_DAT
15	+5V	16	+3.3V
17	GPO5/CSTATE1	18	GPI8/-RING
19	GPO6/-C4PSTOP	20	GPI9/-THRM
21	GPIO0/SMBDT2	22	GPI5/-EXTSMI
23	GPIO1/SMBCK2	24	GPI4/-BATLOW
25	GND	26	GND

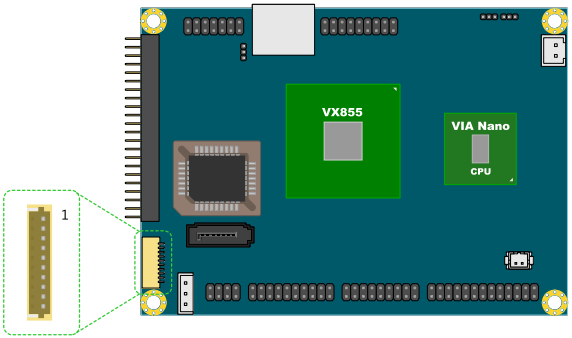


(Pin 11) Default: -SIOSMI

UART port 2: J1

UART offers TTL level serial signal for the user to easily convert to support RS232/RS422/RS485.

Pin	UART Signal
1	+5V
2	SIN_1
3	SOUT_1
4	DCD_1
5	RI_1
6	GND
7	DTR_1
8	CTS_1
9	RTS_1
10	DSR_1



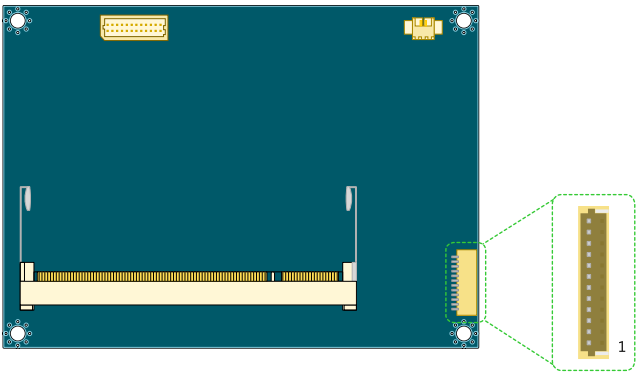
(Pin 1) Default: 5V

BOTTOM SIDE CONNECTOR

UART port 1: J2

UART offers TTL level serial signal for the user to easily convert to support RS232/RS422/RS485.

Pin	UART Signal
1	GND
2	-LPCRST
3	-
4	CTS_0
5	RTS_0
6	DSR_0
7	DTR_0
8	SIN_0
9	SOUT_0
10	DCD_0
11	RI_0
12	+3.3V

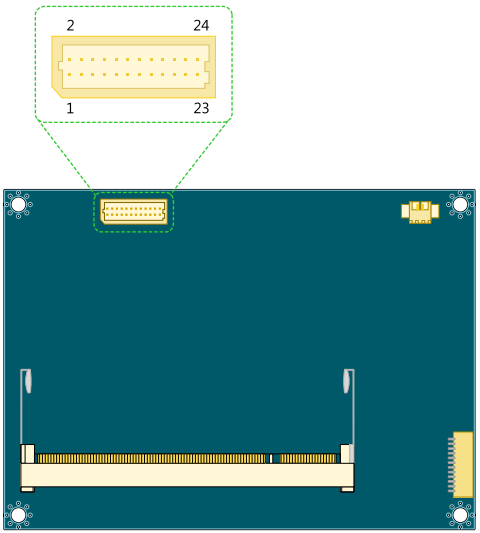


(Pin 12) Default: 3.3V

LVDS Panel connector: LVDS1

The single-channel LVDS connector allows you to connect the panel's LVDS cable directly to support LVDS panel.

Pin	Signal	Pin	Signal
1	LVDSD0-	2	LVDSD1-
3	LVDSD0+	4	LVDSD1+
5	GND	6	GND
7	Panel_VDD	8	LVDSD2-
9	Panel_VDD	10	LVDSD2+
11	LCD1_DATA	12	GND
13	LCD1_CLK	14	LVDSCLK+
15	GND	16	LVDSCLK-
17	Back Light_VDD	18	GND
19	Back Light_VDD	20	LVDSD3-
21	BL_ENABLE	22	LVDSD3+
23	DIMMING	24	GND



Note:
Contact local distributor and FAE for special Video BIOS for 24bit LCD panel support.

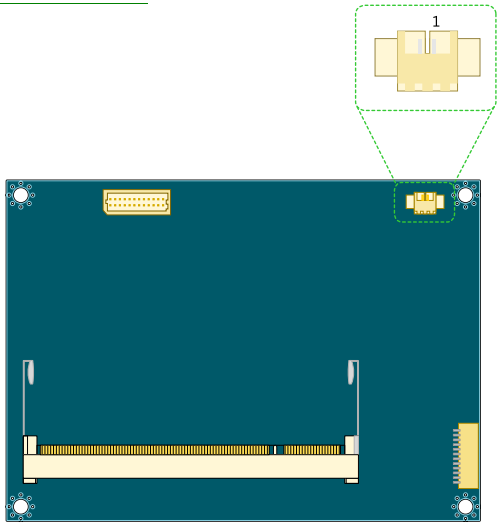
(Pin 23) DIMMING: LVDS Backlight Brightness Voltage Control, 0V ~ 3.3V

Level 0: 0%
Level 1: 25%
Level 2: 50%
Level 3: 75%
Level 4: 100%

External Battery: BAT1

The mainboard comes with external CMOS battery connector. This 2-pin connector used to connect the external cable battery for CMOS.

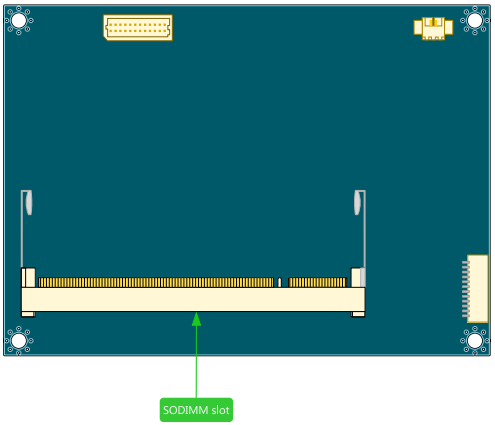
Pin	Signal
1	+3.3VBAT
2	GND



Memory Module Installation

Memory Slot: SODIMM1

The VIA EPIA-P820 Pico-ITX mainboard has one 200-SODIMM slot for DDR2 667/533 SDRAM memory modules and supports memory sizes up to 2 GB.



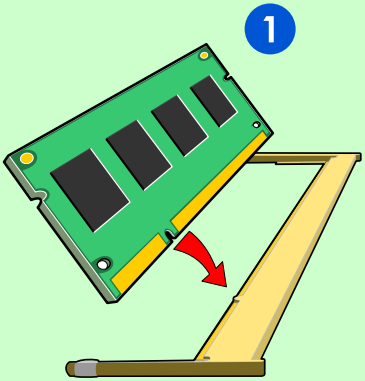
Available DDR2 SDRAM Configuration

Refer to the table below for available DDR2 SDRAM configurations on the mainboard.

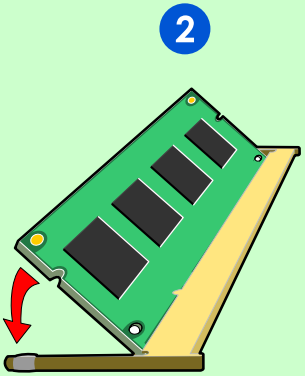
Slot	Module Size	Total
SODIMM	64 MB, 128 MB, 256 MB, 512 MB, 1 GB, 2 GB	64 MB - 2 GB
Maximum supported system memory		2 GB

Installing the memory

Step 1
Locate the SODIMM slot in the mainboard and align the notch on the SODIMM with the memory slot.



Step 2
Insert the SODIMM module at a 45 degree angle. Then push the SODIMM down until it snaps into the locking mechanism.



Pin Header and Connector Vendor Lists

Items	Function	Pin	Pitch	Vendor	P/N
CN1	Front Audio	8 Pin	2.0mm	Neltron	2208SM-08G-BK-CP
CN2	USB	20 Pin	2.0mm	Neltron	2208SM-20G-BK-CP
CN3	Ethernet LAN	14 Pin	2.0mm	Neltron	2208SM-14G-BK-CP
CN4	Front Panel and PS/2 KBMS	18 Pin	2.0mm	Neltron	2208SM-18G-BK-CP
CN5	LPC, SMBus and Digital I/O	26 Pin	2.0mm	Neltron	2208SM-26G-BK-CP
J1	UART	10 Pin	1.0mm	Neltron	1600R-10-SM-TR
J2	UART	12 Pin	1.0mm	Neltron	1600R-12-SM-TR
VGA_ USB1	VGA and USB	18 pin	2.0mm	Neltron	2208SM-18G-BK-CP
LVDS1	LVDS Panel	24 Pin	1.0mm	ACES	87216-2416-06
PWR1	DC-In Power	2 Pin	2.5mm	Neltron	2317SJ-02-F4
PWR2	SATA Power	3 Pin	2.5mm	Neltron	2317SEH-03
FAN1	System Fan	3 Pin	1.25mm	Neltron	1251S-02-SM1-TR

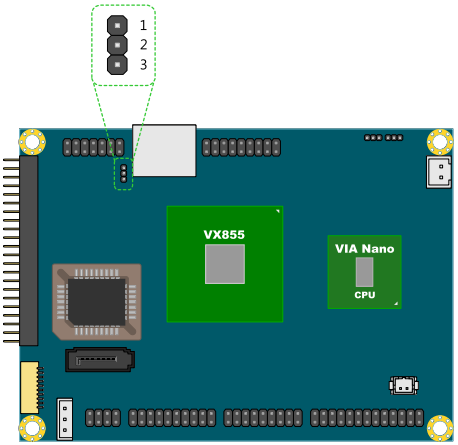
3

Onboard Jumpers

Clear CMOS jumper: JM1

The onboard CMOS RAM stores system configuration data and has an onboard battery power supply. To reset the CMOS settings, set the jumper on pins 2 and 3 while the system is off. Return the jumper to pins 1 and 2 afterwards. Setting the jumper while the system is on will damage the mainboard. The default setting is on pins 1 and 2.

Setting	1	2	3
Normal Operation (default)	ON	ON	OFF
Clear CMOS setting	OFF	ON	ON

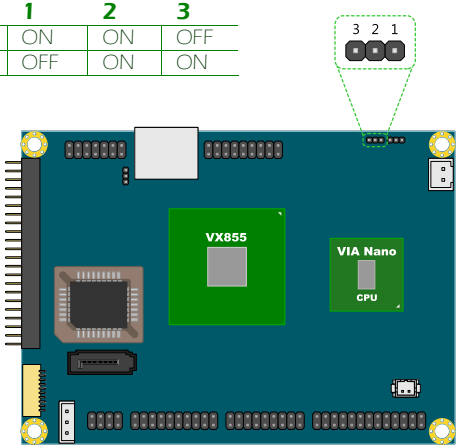


Caution:
Except when clearing the RTC RAM, never remove the cap from the CLEAR_CMOS jumper default position. Removing the cap will cause system boot failure. Avoid clearing the CMOS while the system is on; it will damage the mainboard.

LCD Panel Power Selector: JM2

This jumper determines the input voltage for the LCD connector.

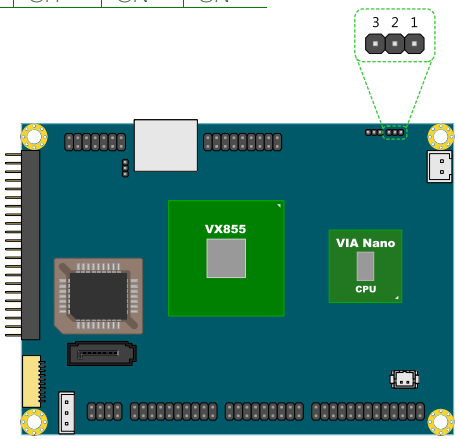
Setting	1	2	3
+5V	ON	ON	OFF
+3.3V (default)	OFF	ON	ON



LCD Backlight Power Selector: JM3

This jumper determines the input voltage for the LCD backlight inverter.

Setting	1	2	3
+12V	ON	ON	OFF
+5V (default)	OFF	ON	ON



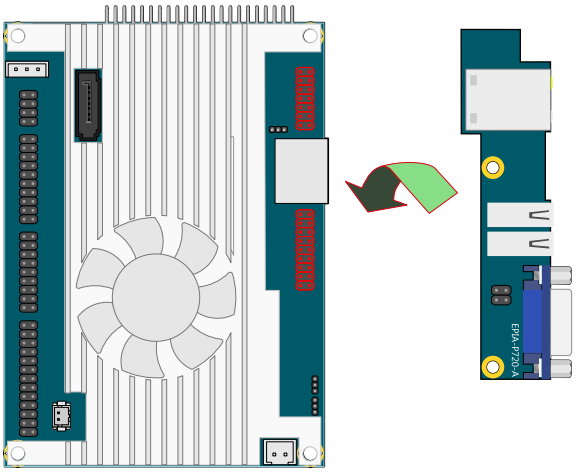
4

P820-A I/O Module Installation

P820-A Installation Procedure

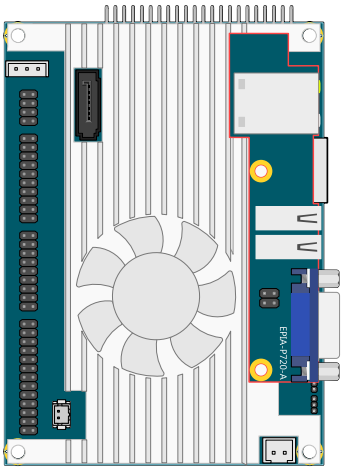
Step 1

Align and mount the P820-A board.



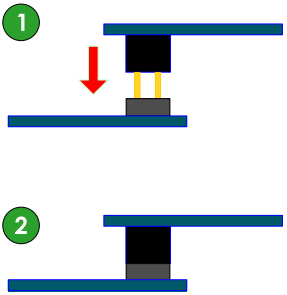
Step 2

Align the CON1 (VGA & USB board-to-board connector) and CON2 (LAN board-to-board connector) of P820-A I/O module board with the CN3 and VGA_USB1 pin headers to the top side of EPIA-P820 mainboard respectively.



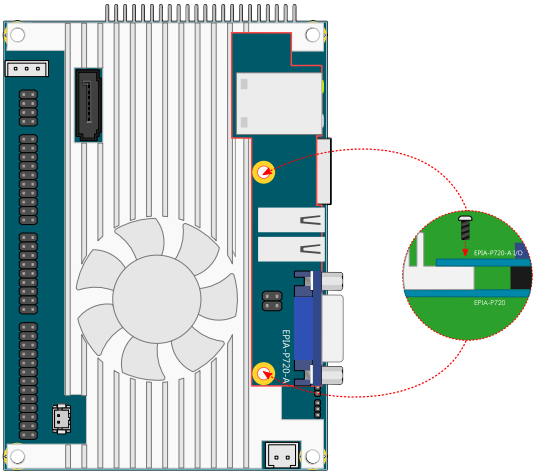
Step 3

Then gently press down until the pins on the EPIA-P820 mainboard have been fully inserted into the CON1 and CON2 connectors of the P820-A I/O module board.



Step 4

Secure the EPIA-P820-A I/O module with two screws.



5

BIOS Setup

This chapter gives a detailed explanation of the BIOS setup functions.

Entering the BIOS Setup Menu

Power on the computer and press <Delete> during the beginning of the boot sequence to enter the BIOS setup menu. If you missed the BIOS setup entry point, restart the system and try again.

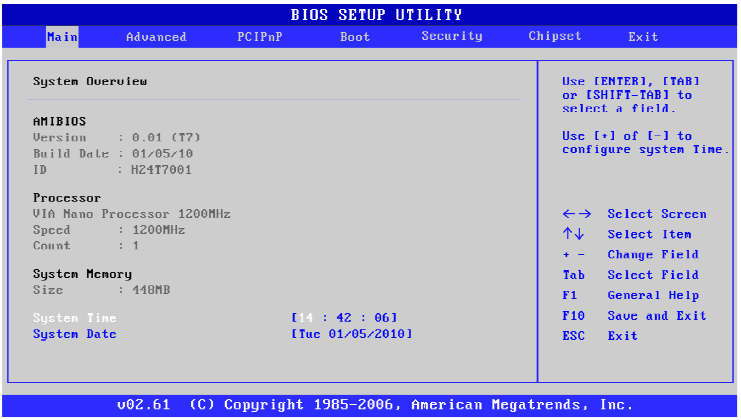
Control Keys

Keys	Description
Up	Move to the previous item
Down	Move to the next item
Left	Move to the previous tab
Right	Move to the next tab
Enter	Select the item
Esc	Jumps to the Exit menu or returns to the main menu from a submenu
+ (number pad)	Increase the numeric value
- (number pad)	Decrease the numeric value
F1	General help, only for Status Page Setup Menu and Option Page Setup Menu
F7	Discard Changes
F9	Load Optimized defaults
F10	Save all the changes and exit

GETTING HELP

The BIOS setup program provides a "General Help" screen. You can display this screen from any menu/sub-menu by pressing <F1>. The help screen displays the keys for using and navigating the BIOS setup. Press <Esc> to exit the help screen.

MAIN MENU



AMIBIOS

BIOS version number and related information.

Processor

CPU information.

System Memory

Memory size.

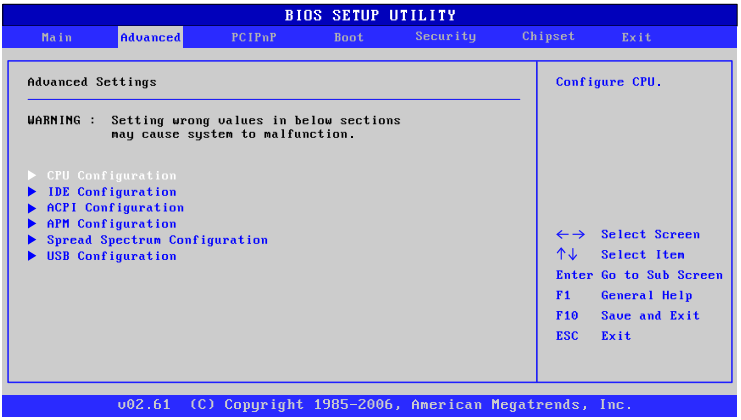
System Time

Use the key "+" or "-" to configure system time. The time format is [Hour : Minute : Second].

System Date

Use the key "+" or "-" to configure system Date. The date format is [Day, Month, Date, Year].

ADVANCED SETTINGS



CPU Configuration

IDE Configuration

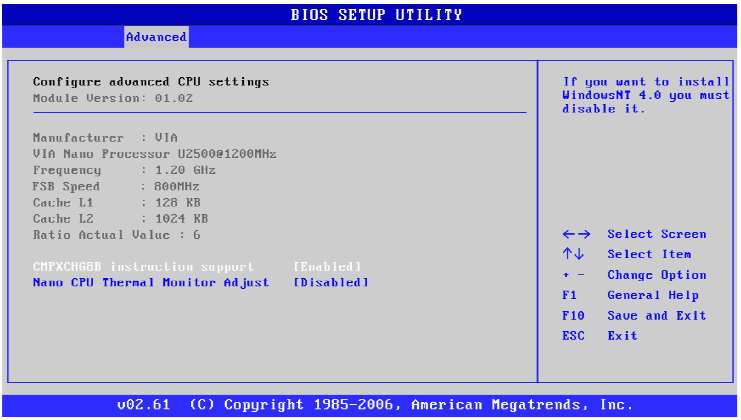
ACPI Configuration

APM Configuration

Spread Spectrum Configuration

USB Configuration

CPU CONFIGURATION



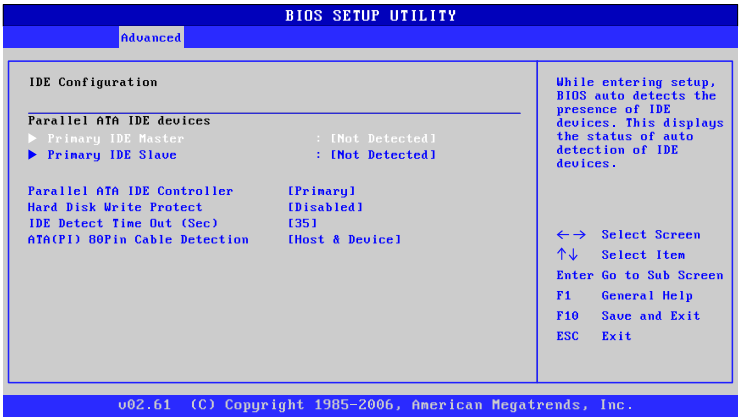
CMPXCHG8B instruction support

Settings: [Enabled, Disabled]

Nano CPU Thermal Monitor Adjust

Settings: [Disabled, Thermal Monitor 1, Thermal Monitor 2, Thermal Monitor 3]

IDE CONFIGURATION



Parallel ATA IDE Controller

Settings: [Disabled, Primary]

Hard Disk Write Protect

Settings: [Disabled, Enabled]

IDE Detect Time Out (Sec)

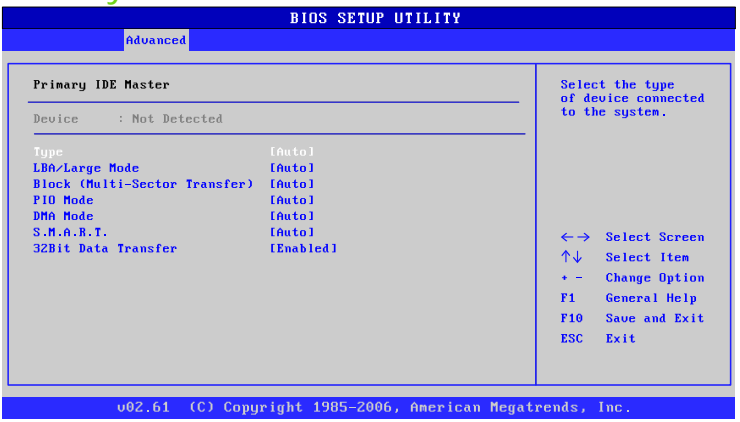
Settings: [0, 5, 10, 15, 20, 25, 30, 35]

ATA(PI) 80Pin Cable Detection

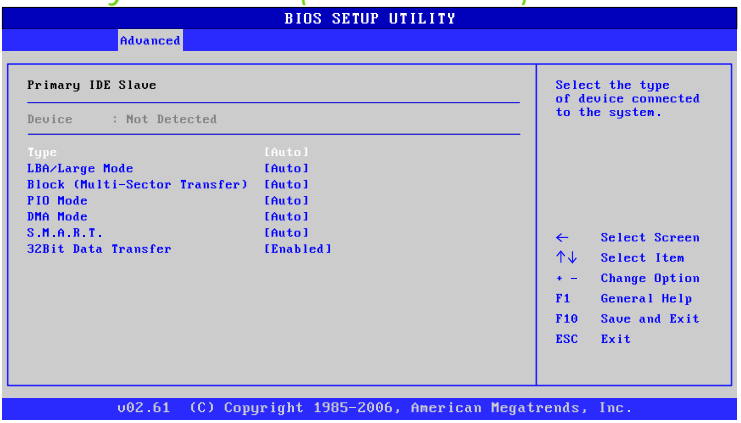
Settings: [Host & Device, Host, Device]

IDE DRIVES

Primary IDE Master



Primary IDE Slave (SATA Device)



Type

Settings: [Not Installed, Auto, CD/DVD, ARMD]

LBA/Large Mode

Settings: [Disabled, Auto]

Block (Multi-Sector Transfer)

Settings: [Disabled, Auto]

PIO Mode

Settings: [Auto, 0, 1, 2, 3, 4]

DMA Mode

Settings: [Auto]

S.M.A.R.T.

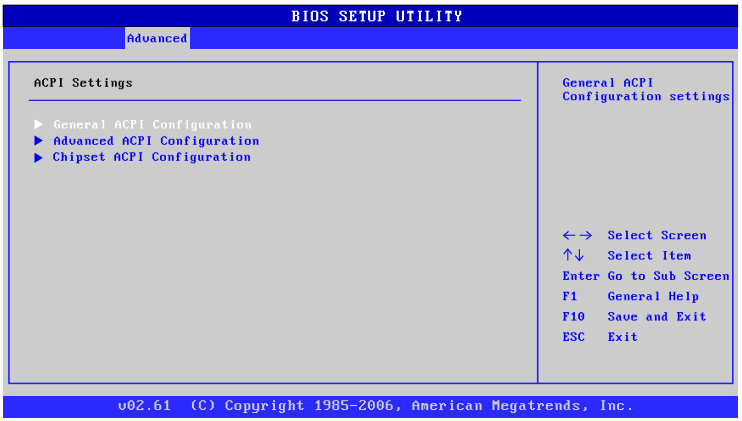
Self Monitoring Analysis and Reporting Technology, a monitoring system for hard disks.

Settings: [Auto, Disabled, Enabled]

32Bit Data Transfer

Settings: [Enabled, Disabled]

ACPI SETTINGS



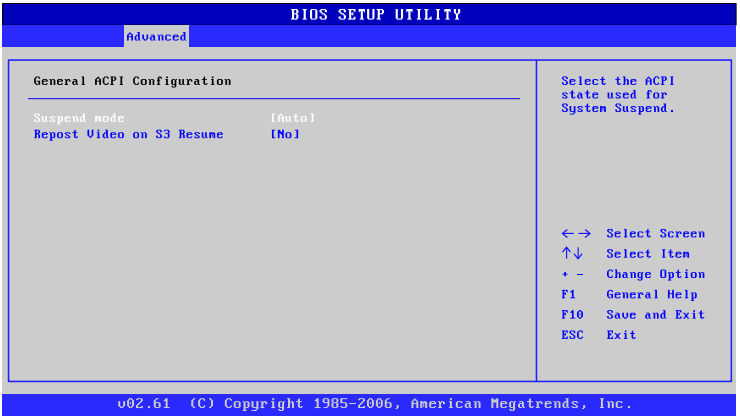
General ACPI Configuration

This menu contains ACPI (Advanced Configuration and Power Management Interface) options.

Advanced ACPI Configuration

Chipset ACPI Configuration

GENERAL ACPI CONFIGURATION



Suspend Mode

Select the ACPI state used for system suspend.

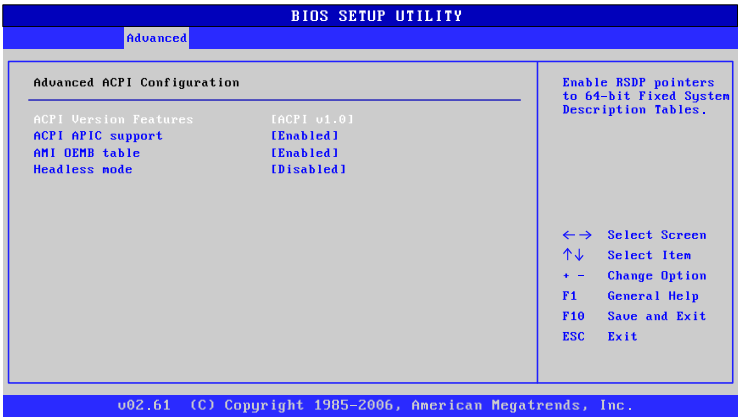
Settings	Description
S1(POS)	S1/Power On Suspend (POS) is a low power state. In this state, no system context (CPU or chipset) is lost and hardware maintains all system contexts
S3(STR)	S3/Suspend To RAM (STR) is a power-down state. In this state, power is supplied only to essential components such as main memory and wakeup-capable devices. The system context is saved to main memory, and context is restored from the memory when a "wakeup" event occurs.
Auto	Depends on the OS to select the state.

Repost Video on S3 Resume

To determine whether to invoke VGA BIOS post on S3/STR resume or not.

Settings: [No, Yes]

ADVANCED ACPI CONFIGURATION



ACPI Version Features

To enable RSDP pointers to 64-bit Fixed System Description Tables.

Settings: [ACPI v1.0, ACPI v2.0, ACPI v3.0]

ACPI APIC Support

To include ACPI APIC table pointer to RSDT pointer list.

Settings: [Enabled, Disabled]

AMI OEMB Table

To include OEMB table pointer to R(X)SDT pointer lists.

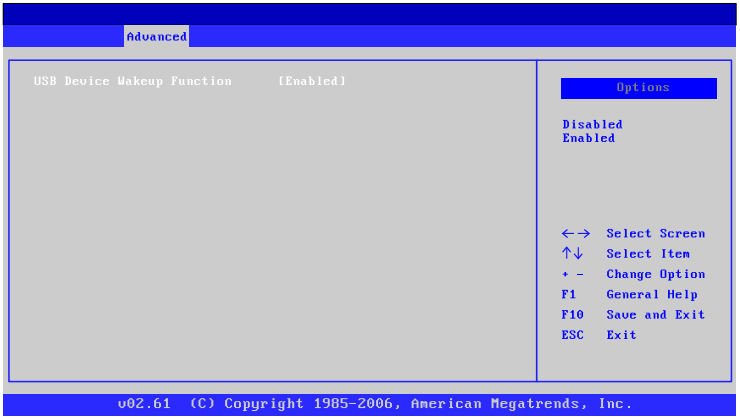
Settings: [Disabled, Enabled]

Headless Mode

To enable or disable headless operation mode through ACPI.

Settings: [Disabled, Enabled]

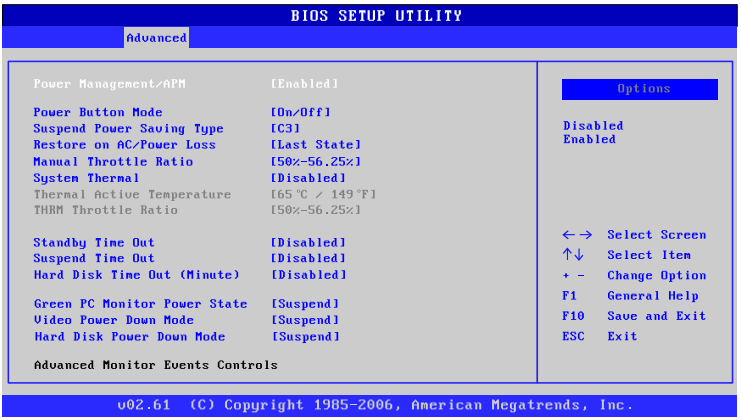
CHIPSET ACPI CONFIGURATION



USB Device Wakeup Function

Settings: [Disabled, Enabled]

APM CONFIGURATION



Power Management / APM

Settings: [Disabled, Enabled]

Power Button Mode

Settings: [On/Off, Standby, Suspend]

Suspend Power Saving Type

Settings: [C3, S1]

Restore on AC / Power Loss

The field defines how the system will respond after an AC power loss during system operation.

Settings	Description
Power Off	Keeps the system in an off state until the power button is pressed.
Power On	Restarts the system when the power is back
Last State	Save in last state

Manual Throttle Ratio

Settings: [0%-6.25%, 6.25%-12.5%, 18.75%-25%, 31.25%-37.5%, 37.5%-43.75%, 43.75%-50%, 50%-56.25%, 56.25%-62.5%, 62.5%-68.75%, 68.75%-75%, 75%-87.5%, 75%-81.25%, 81.25%-87.5%, 87.5%-93.75%, 93.75%-100%]

System Thermal
Settings: [Disabled, Enabled]

Standby Time Out
Settings: [Disabled, 1/2/4/8/10/20/30/40/50/60 minutes]

Suspend Time Out
Settings: [Disabled, 1/2/4/8/10/20/30/40/50/60 minutes]

Hard Disk Time Out (Minute)
Settings: [Disabled, 1/2/3/4/5/6/7/8/9/10/11/12/13/14/15 minutes]

Green PC Monitor Power State
Settings: [Standby, Suspend, Off]

Video Power Down Mode
Settings: [Disabled, Standby, Suspend]

Hard Disk Power Down Mode
Settings: [Disabled, Standby, Suspend]

Display Activity
Settings: [Ignore, Monitor]

Monitor IRQ3~15
Enables or disables the monitoring of the specified IRQ line.
Settings: [Ignore, Monitor]

Note:
IRQ (Interrupt Request) lines are system resources allocated to I/O devices. When an I/O device needs to gain attention of the operating system, it signals this by causing an IRQ to occur. After receiving the signal, when the operating system is ready, the system will interrupt itself and perform the service required by the IO device.

Resume on Ring
Settings: [Disabled, Enabled]

Resume on PME#
Settings: [Disabled, Enabled]

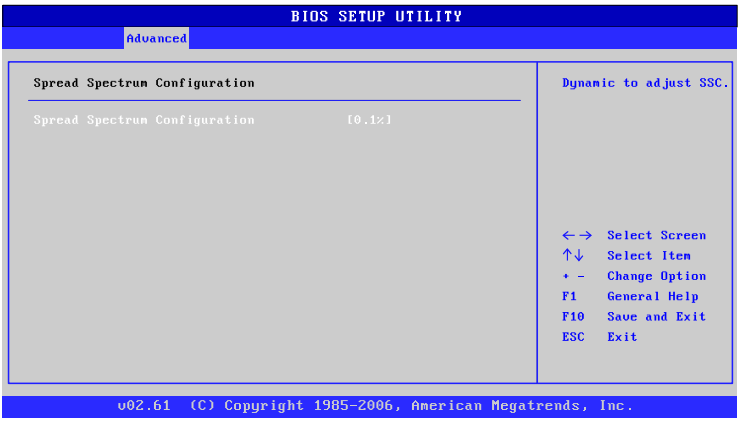
Resume On PS/2 KBC
Settings: [Disabled, S3, S3/S4/S5]

Wake-up Key
Settings: [Any Key, Specific Key]

Resume on PS/2 Mouse
Enable any mouse activity to restore the system from the power saving mode to an active state.
Settings: [Disabled, S3, S3/S4/S5]

Resume on RTC Alarm
Set a scheduled time and/or date to automatically power on the system.
Settings: [Disabled, Enabled]

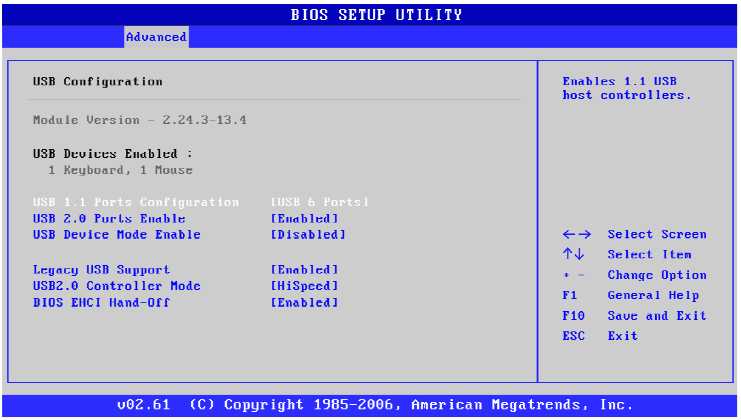
SPREAD SPECTRUM CONFIGURATION



Spread Spectrum Configuration

Settings: [Disabled, 0.1%, 0.2%, 0.3%, 0.4%, 0.5%, 0.6%, 0.7%, 0.8%, 0.9%]

USB CONFIGURATION



USB 1.1 Ports Configuration

To enable USB 1.1 host controllers.
Settings: [Disabled, USB 2 ports, USB 4 ports, USB 6 ports]

USB 2.0 Ports Enable

To enable USB 2.0 host controllers.
Settings: [Disabled, Enabled]

USB Device Mode Enable

Settings: [Enabled, Disabled]

Legacy USB Support

To enable support for legacy USB.
Settings: [Disabled, Enabled, Auto]

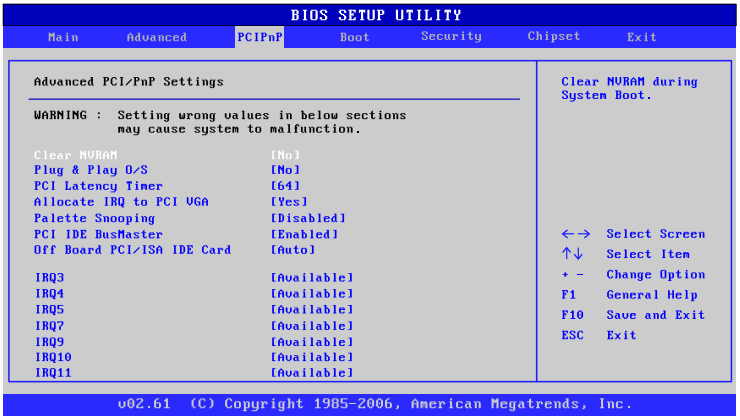
USB 2.0 Controller Mode

To configure the USB 2.0 controller in HiSpeed (480Mbps) or FullSpeed (12Mbps).
Settings: [FullSpeed, HiSpeed]

BIOS EHCI Hand-Off

Settings: [Disabled, Enabled]

ADVANCED PCI/PNP SETTINGS



Note:
This section covers some very technical items and it is strongly recommended to leave the default settings as it is unless you are an experienced user.

Clear NVRAM

To clear NVRAM during system boot.
Settings: [No, Yes]

Plug & Play O/S

Settings: [No, Yes]

PCI Latency Timer

Value in units of PCI clocks for PCI device latency timer register.
Settings: [32, 64, 96, 128, 160, 192, 224, 248]

Allocate IRQ to PCI VGA

Settings: [Yes, No]

Palette Snooping

Settings: [Disabled, Enabled]

PCI IDE BusMaster

Settings: [Disabled, Enabled]

Off Board PCI/ISA IDE Card

Settings: [Auto, PCI Slot1, PCI Slot2, PCI Slot3, PCI Slot4, PCI Slot5, PCI Slot6]

IRQ3~15

Settings: [Available, Reserved]

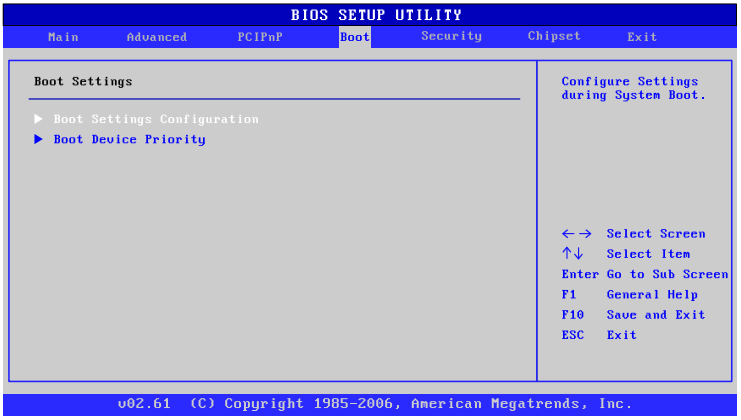
DMA Channel 0~7

Settings: [Available, Reserved]

Reserved Memory Size

To decide the size of memory block to reserve for legacy ISA devices.
Settings: [Disabled, 16k, 32k, 64k]

BOOT SETTINGS



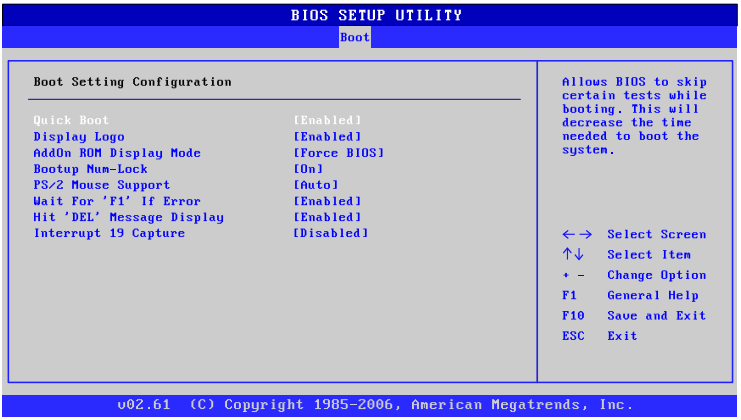
Boot Settings Configuration

Configuration settings during system boot.

Boot Device Priority

Specifies the boot device priority sequence.

BOOT SETTINGS CONFIGURATION



Quick Boot

Settings: [Disabled, Enabled]

Display Logo

Settings: [Disabled, Enabled]

AddOn ROM Display Mode

Settings: [Force BIOS, Keep Current]

Bootup Num-Lock

To select power-on state for Num-Lock.

Settings: [Off, On]

PS/2 Mouse Support

Settings: [Disabled, Enabled, Auto]

Wait For 'F1' If Error

Settings: [Disabled, Enabled]

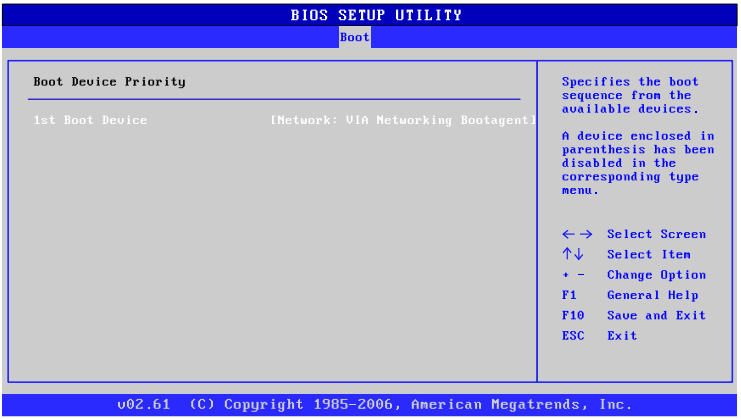
Hit 'DEL' Message Display

Settings: [Disabled, Enabled]

Interrupt 19 Capture

Settings: [Disabled, Enabled]

Boot Device Priority

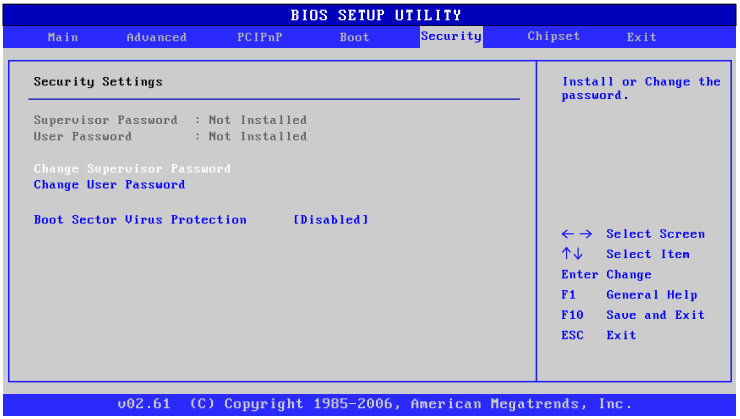


1st Boot Device

To specifies the boot sequence from the available devices. The available boot devices are detected dynamically according to real situation and variable options will be provided.

Settings: [Network: VIA Networking Bootagent, Disabled]

SECURITY SETTINGS



Change Supervisor Password

This option is for setting a password for entering BIOS Setup. When a password has been set, a password prompt will be displayed whenever BIOS Setup is run. This prevents an unauthorized person from changing any part of your system configuration.

When a supervisor password is used, the BIOS Setup program can be accessed and the BIOS settings can be changed.

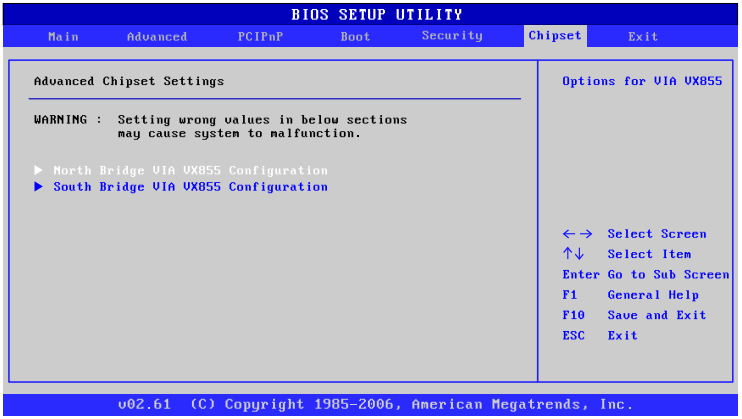
Change User Password

When a user password is used, the BIOS Setup program can be accessed but the BIOS settings cannot be changed.

Boot Sector Virus Protection

Settings: [Disabled, Enabled]

ADVANCED CHIPSET SETTINGS

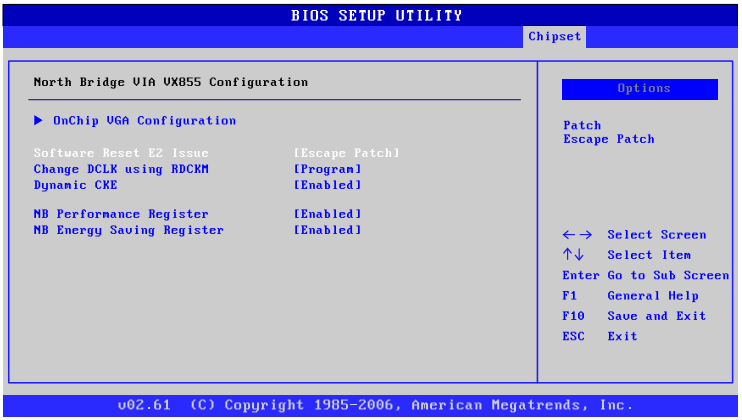


Caution:
The Advanced Chipset Features menu is used for optimizing the chipset functions. Do not change these settings unless you are familiar with the chipset.

North Bridge VIA VX855 Configuration

South Bridge VIA VX855 Configuration

North Bridge VIA VX855 Configuration



Software Reset E2 Issue

Settings: [Patch, Escape Patch]

Change DCLK using RDCKM

Settings: [Program, Escape Program]

Dynamic CKE

Settings: [Disabled, Enabled]

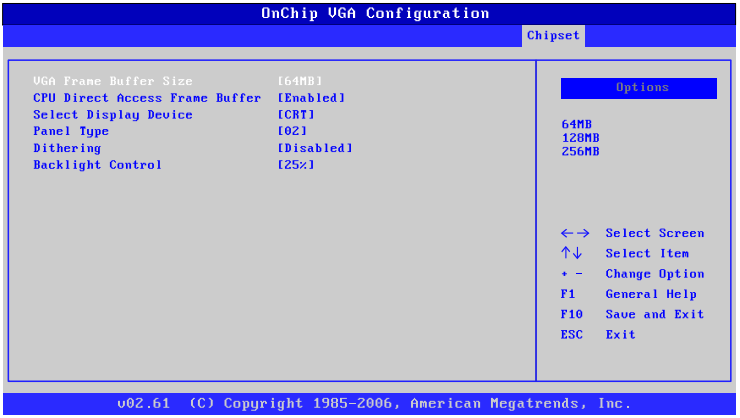
NB Performance Register

Settings: [Disabled, Enabled]

NB Energy Saving Register

Settings: [Disabled, Enabled]

OnChip VGA Configuration



VGA Frame Buffer Size

Settings: [64MB, 128MB, 256MB]

CPU Direct Access Frame Buffer

Settings: [Disabled, Enabled]

Select Display Device

Settings: [CRT, LCD, HDMI, CRT+LCD, CRT+HDMI]

Panel Type

Settings: [02]

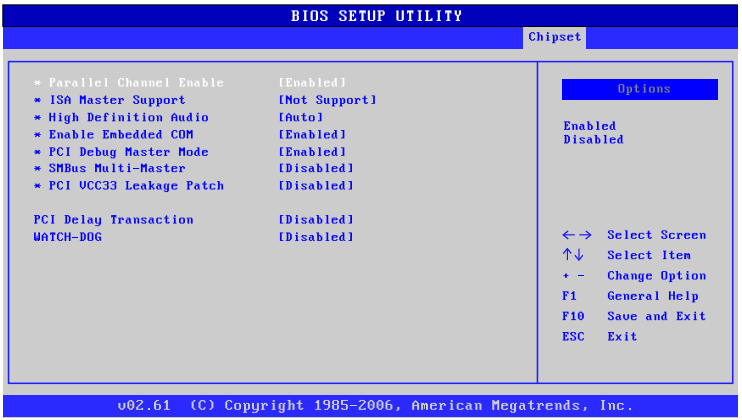
Dithering

Settings: [Disabled, Enabled]

Backlight Control

Settings: [0%, 25%, 50%, 75%, 100%]

South Bridge VIA VX855 Configuration



Parallel Channel Enable

Settings: [Enabled, Disabled]

ISA Master Support

Settings: [Support, Not Support]

High Definition Audio

Settings: [Disabled, Auto]

Enable Embedded COM

Settings: [Disabled, Enabled]

PCI Debug Master Mode

Settings: [Disabled, Enabled]

SMBus Multi-Master

Settings: [Disabled, Enabled]

PCI VCC33 Leakage Patch

Settings: [Disabled, Enabled]

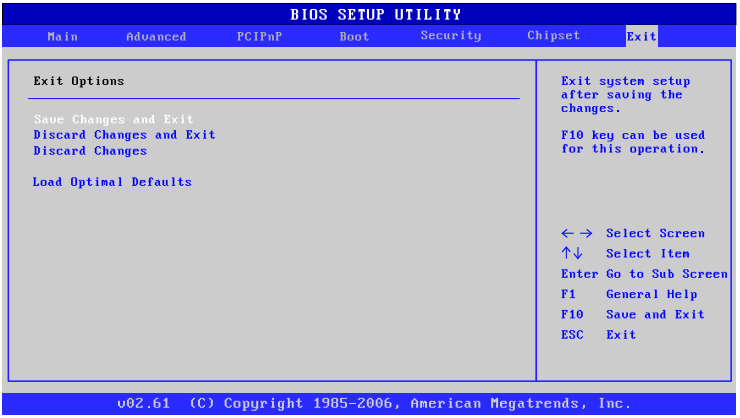
PCI Delay Transaction

Settings: [Disabled, Enabled]

WATCH-DOG

Settings: [Disabled, Enabled]

EXIT OPTIONS



Save Changes and Exit

Exit system setup after saving the changes, or press "F10".

Discard Changes and Exit

Exit system setup without saving any changes, or press "Esc".

Discard Changes

Discard changes which have been done so far to any of the setup questions, or press "F7".

Load Optimal Defaults

Load optimal default values for all the setup items, or press "F9". The default optimized values are set by the mainboard manufacturer to provide a stable system with optimized performance.

6

Driver Installation

Microsoft Driver Support

The VIA EPIA-P820 mainboard is compatible with Microsoft operating systems. The latest Windows drivers can be downloaded from the VEPD website at www.viaembedded.com.

For embedded operating systems, the related drivers can be found in the VIA Embedded website at www.viaembedded.com.

Linux Driver Support

The VIA EPIA- P820 mainboard is highly compatible with many Linux distributions.

Support and drivers are provided through various methods including:

1. Drivers provided by VIA
2. Using a driver built into a distribution package
3. Visiting www.viaembedded.com for the latest updated drivers
4. Installing a third party driver (such as the ALSA driver from the Advanced Linux Sound Architecture project for integrated audio)

For OEM clients and system integrators developing a product for long term production, other code and resources may also be made available. Contact VEPD to submit a request.