JUKI – 3711PT/3712T

Intel Tualatin, Celeron and Pentium® III, Celeron,

With Ethernet, VGA/LCD

Version 1.x

User Manual

Version 1.1

August 13, 2003

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1. Introduction

Thank you for choosing JUKI-3711PT/3712T Intel Tualatin, Celeron and Pentium® III, Celeron Single Board Computer. The JUKI-3711PT/3712T board is a PCISA/ISA form factor board, which comes equipped with high performance Intel Tualatin, Celeron and Pentium® III, Celeron Processor and advanced high performance multi-mode I/O, designed for the system manufacturers, integrators, or VARs that want to provide all the performance, reliability, and quality at a reasonable price.

In addition, the JUKI-3711PT/3712T provides C&T MI69K VGA chip that provides up to 1280x1024 in resolution.

An advanced high performance super south chip – VIA VT82C686B is used in the JUKI-3711PT/3712T board. Both on-chip UARTs are compatible with the NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture's.

JUKI-3711PT/3712T uses Intel 82559/Realtek 8100 Fast Ethernet Multifunction PCI Controller as LAN controller. The Intel 82559/Realtek 8100 is a fully integrated 10BASE-T/100BASE-TX LAN solution with high performance networking functions and low power features.

JUKI-3711PT/3712T employs the highly developed VIA Chipset, VT82C694T/VT82C686B.

1.1 Specifications :

CPU	• Intel Tualatin, Celeron • Pentium® III, Celeron
FSB	66/100/133MHz
Bus	• PCISA Bus, compatible to Jump PISA Ver. 1.07(JUKI-3711PT) • ISA Bus(JUKI-3712T)
DMA Channels	7
Interrupt Levels	15
Chipset	VIA VT82C694T/VT82C686B
RAM Memory	• Single 168-pin DIMM sockets support SDRAM module. • Maximum memory capacity support up to 512MB in total
Ultra ATA100 IDE Interface	Two PCI Enhance IDE hard drives. The south bridge supports Ultra ATA100 IDE interface.
Floppy Disk Drive Interface	Single 2.88 MB, 1.44MB, 1.2MB, 720KB, or 360KB floppy disk drive.
Two High Speed Serial Ports	NS16C550 compatible UARTs, with two RS232.
Bi-directional Parallel Port	compatible with ECP and EPP
Hardware Monitoring	VT82C686B to monitor power supply voltage and fan speed status.
IrDA Port	Support Serial Infrared(SIR) and Amplitude Shift Keyed IR(ASKIR) interface.

USB Port	Support two USB ports for future expansion. USB 1.1.
WatchDog Timer	Can be set by 1,2,3…255 seconds per period. Your program use IO address hex 843 and 443 to control the watch-dog and generate a system reset.
E^{2}Key Function	Nonvolatile memory for data backup and security.
VGA Controller	• C&T Mini 69000 VGA controller, 2M memory. • Screen Resolution supports up to 1280x1024 in 8-bit Color. • Supports CRT & LCD interface.
Intel 82559/ Realtel 8100 Fast Ethernet LAN PCI Controller	• IEEE 802.3u Auto-Negotiation support for 10BASE-T/100BASE-TX standard. • Fast back-to-back transmission support with minimum interframe spacing. • Connected to your LAN through RJ45 connector.
DiskOnChip^{TM} Flash Disk	Supports one 32-pin socket for DiskOnChip Flash Disk
Keyboard Connector	
Mouse	PS/2 Mouse Port on-board
Power Consumption	+5V/7.0A, +12V/0.5A(PIII 1G, 256MB)
Operating Temperature	0° ~ 60° C (CPU needs Cooler)

1.2 Package Contents

In addition to this *User's Manual*, the JUKI-3711PT/3712T package includes the following items:

- One JUKI-3711PT/3712T Intel Tualatin, Celeron, Pentium® III, Celeron Single Board Computer.

- One RS-232 Cable + Printer Cable

- One FDD Cable

- One IDE HDD DMA66 Cable

- One 6-pin Mini-Din to 6-pin Din Keyboard & PS2 Mouse Cable

- One CD-ROM Driver

If any of these items is missing or damaged, contact the dealer from whom you purchased the product. Save the shipping materials and carton in case you want to ship or store the product in the future.

2. Installation

This chapter describes how to install the JUKI-3711PT/3712T. At first, the layout of JUKI-3711PT/3712T is shown, and the unpacking information that you should be careful is described. The jumpers and switches setting for the JUKI-3711PT/3712T's configuration, such as CPU type selection, system clock setting, and watchdog timer, are also included.

2.1 JUKI-3711PT/3712T Layout

(Please refer to the next page.)

2.1 JUKI-3711PT's Layout

JUKI-3711P-T

JUKI-3711PT

42.46 24.08 24.70 23.19

16.71
25.50
20.24
73.58
184.99
144.60

21.01 85.70
122.40
6.53 49.28 62.38

CN4
CN7
CN8
CN11
JP4
JP3
CN12
CN16
CN17
CN1
JP1
CN2
CN6
CN10
JP2
CN9
CN13
CN15
CN5
CN14
CN3
CN18
FAN1
DIMM

11
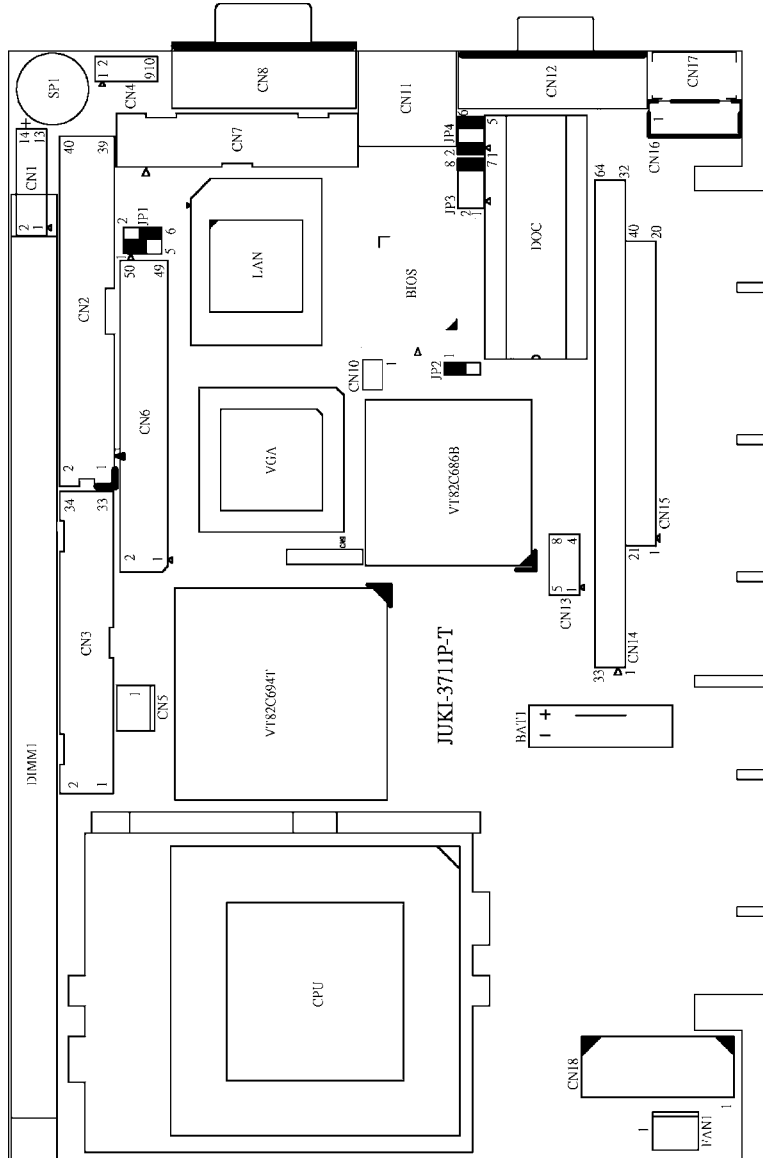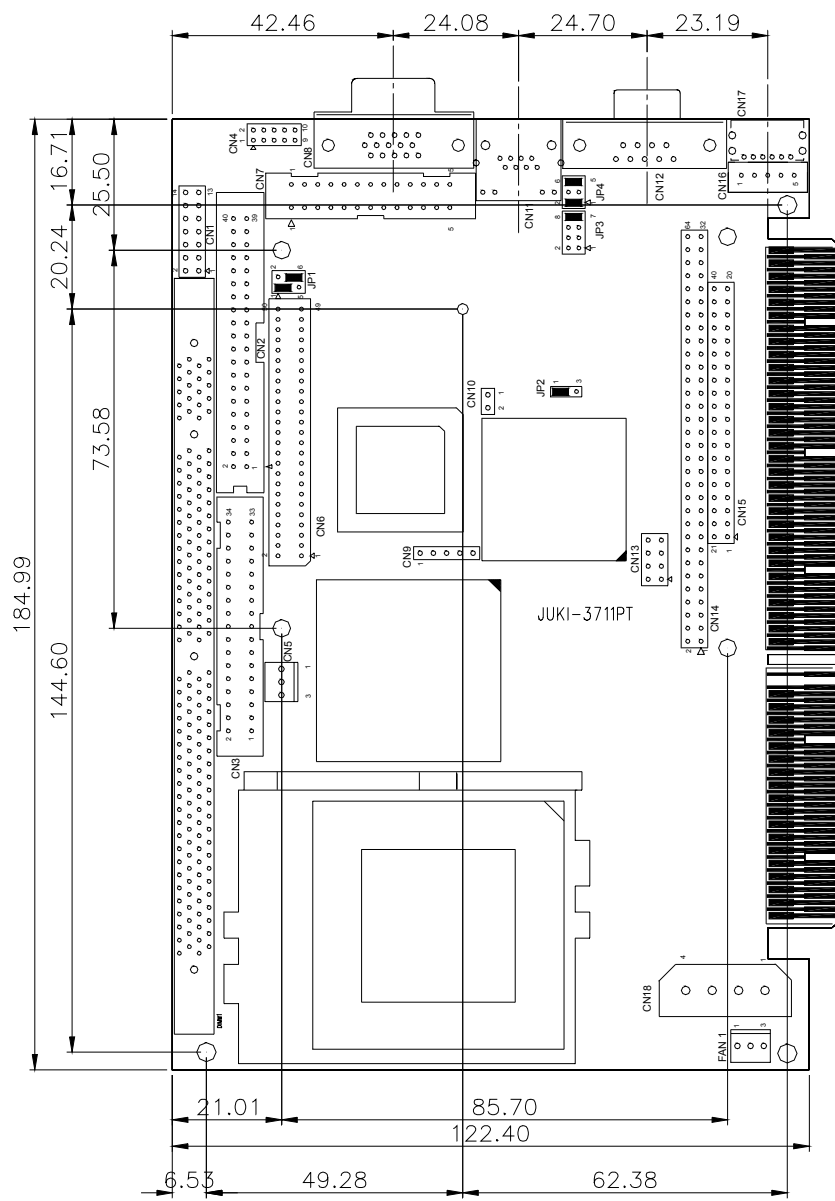
2.2 LCD Panel Shift Clock/Panel VCC Select

The function of this jumper is to configure LCD panel shift clock mode and Panel power voltage.

- **JP1 : LCD Panel Shift Clock**

JP1	DESCRIPTION
1-3	**Invert**
3-5	Normal

- **JP1 : Panel VCC**

JP1	DESCRIPTION
2-4	+5V
4-6	**+3.3**

2.3 Clear CMOS Setup

If you want to clear the CMOS Setup (for example forgot the password you should clear the setup and then set the password again.), you should close the JP2 about 3 seconds, then open again. Set back to normal operation mode.

- **JP2 : Clear CMOS Setup**

JP2	DESCRIPTION
1-2	**Keep CMOS Setup (Normal Operation)**
2-3	Clear CMOS Setup

2.4 DiskOnChip™ Flash Disk Memory Address Setting

The DiskOnChip™ Flash Disk Chip (DOC) is produced by M-Systems. Because the DOC is 100% compatible to hard disk and DOS Customer don't need any extra software utility. It is just "plug and play", easy and reliable. **The MD-2200-Xmb series DOC will share only 8KB memory address.**

• **JP3 & JP4: DiskOnChip Memory Address Setting**

ADDRESS	JP3				JP4		
	1-2	3-4	5-6	7-8	1-2	3-4	5-6
CC000	OPEN	OPEN	CLOSE	OPEN	OPEN	CLOSE	CLOSE
CE000	OPEN	OPEN	OPEN	CLOSE	OPEN	CLOSE	CLOSE
D0000	CLOSE	OPEN	OPEN	OPEN	CLOSE	OPEN	CLOSE
D2000	OPEN	CLOSE	OPEN	OPEN	CLOSE	OPEN	CLOSE
D4000	OPEN	OPEN	CLOSE	OPEN	CLOSE	OPEN	CLOSE
D6000	OPEN	OPEN	OPEN	CLOSE	CLOSE	OPEN	CLOSE
D8000	CLOSE	OPEN	OPEN	OPEN	OPEN	OPEN	CLOSE
DA000	OPEN	CLOSE	OPEN	OPEN	OPEN	OPEN	CLOSE
DC000	OPEN	OPEN	CLOSE	OPEN	OPEN	OPEN	CLOSE
DE000	OPEN	OPEN	OPEN	CLOSE	OPEN	OPEN	CLOSE

3. Connection

This chapter describes how to connect peripherals, switches and indicators to the JUKI-3711PT/3712T board.

3.1 Floppy Disk Drive Connector

JUKI-3711PT/3712T board equipped with a 34-pin daisy-chain driver connector cable.

● **CN3 : FDC CONNECTOR**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	GROUND	2	REDUCE WRITE
3	GROUND	4	N/C
5	GROUND	6	N/C
7	GROUND	8	INDEX#
9	GROUND	10	MOTOR ENABLE A#
11	GROUND	12	DRIVE SELECT B#
13	GROUND	14	DRIVE SELECT A#
15	GROUND	16	MOTOR ENABLE B#
17	GROUND	18	DIRECTION#
19	GROUND	20	STEP#
21	GROUND	22	WRITE DATA#
23	GROUND	24	WRITE GATE#
25	GROUND	26	TRACK 0#
27	GROUND	28	WRITE PROTECT#
29	GROUND	30	READ DATA#
31	GROUND	32	SIDE 1 SELECT#
33	GROUND	34	DISK CHANGE#

3.2 PCI IDE Disk Drive Connector

You can attach two IDE(Integrated Device Electronics) hard disk drives to the JUKI-3711P/3712 IDE controller. This connector supports ATA-66 hard disk ribbon cable.

● **CN2 : IDE Interface Connector**

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	N/C
21	IDE DREQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	IDE DRDYA	28	GROUND
29	IDE DACK	30	GROUND
31	INTERRUPT	32	N/C
33	SA1	34	CABLE_80P
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND

3.3 Parallel Port

This port is usually connected to a printer. The JUKI-3711PT/3712T includes an on-board parallel port, accessed through a 26-pin flat-cable to connector CN7.

● **CN7 : Parallel Port Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	STROBE#	14	AUTO FORM FEED #
2	DATA 0	15	ERROR#
3	DATA 1	16	INITIALIZE
4	DATA 2	17	PRINTER SELECT LN#
5	DATA 3	18	GROUND
6	DATA 4	19	GROUND
7	DATA 5	20	GROUND
8	DATA 6	21	GROUND
9	DATA 7	22	GROUND
10	ACKNOWLEDGE	23	GROUND
11	BUSY	24	GROUND
12	PAPER EMPTY	25	GROUND
13	PRINTER SELECT	26	NC

3.4 Serial Ports

The JUKI-3711PT/3712T offers two high speed NS16C550 compatible UARTs with Read/Receive 16 byte FIFO.

● **CN12 : COM1 (external DB-9 connector)**
● **CN4   : COM2**

CN12	CN4	DESCRIPTION
1	1	DATA CARRIER DETECT
2	3	RECEIVE DATA
3	5	TRANSMIT DATA
4	7	DATA TERMINAL READY
5	9	GROUND
6	2	DATA SET READY
7	4	REQUEST TO SEND
8	6	CLEAR TO SEND
9	8	RING INDICATOR
	10	N/C

3.5 Keyboard Connector

The JUKI-3711PT/3712T provides 6-pin Min-DIN Keyboard /mouse connector.

● **CN17 : 6-pin Mini-DIN Keyboard/Mouse Connector**

PIN NO.	DESCRIPTION
1	KEYBOARD DATA
2	MOUSE DATA
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	MOUSE CLOCK

● **CN16 : 5-pin External Keyboard Connector**

PIN NO.	DESCRIPTION
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	NC
4	GROUND
5	+5V

3.6 USB Port Connector

The JUKI-3711PT/3712T built-in two USB ports for the future new I/O bus expansion. It complies with USB 1.1.

● **CN13 : USB 0,1**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCC	5	GROUND
2	DATA-	6	DATA +
3	DATA+	7	DATA -
4	GROUND	8	VCC

3.7 External Switch, Indicator

There are several external switches and indicators for monitoring and controlling your CPU board. All the functions are in the CN1 connector.

● **CN1: Pin Assignment and Functions**

FUNCTION	PIN NO.	DESCRIPTION
SPEAKER	2	SPK SIGNAL
	4	N/C
	6	N/C
	8	VCC
RESET	10	POWER RESET
	12	GROUND
HDD LED	13	VCC
	14	LED
POWER LED	1	VCC
	3	N/C
	5	GROUND
NO FUNCTION	7	N/C
	9	GROUND
	11	GROUND

3.8 Fan Connector

The JUKI-3711PT/3712P provides CPU cooling fan connector, chassis fan connector. These connectors can supply 12V/500mA to the cooling fan. In the connector there have a "rotation" pin. The rotation pin is to get the fan's rotation signal to system. So the system BIOS could recognize the fan speed. Please note only specified fan offers the rotation signal.

● **FAN1 : CPU Fan Connector**

PIN NO.	DESCRIPTION
1	Ground
2	12V
3	Rotation Signal

3.9 LAN RJ45 Connector

JUKI-3711PT/3712T is equipped with a built-in 10/100Mbps Ethernet Controller. You can connect it to your LAN through RJ45 LAN connector. The pin assignments are as following:

● **CN11 : LAN RJ45 Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	TX+	5	N/C
2	TX-	6	RX-
3	RX+	7	N/C
4	N/C	8	N/C

3.10 VGA Connector

The pin assignments are as following.

● **CN8 : 15-pin Connector**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	RED	2	GREEN
3	BLUE	4	N/C
5	GROUND	6	GROUND
7	GROUND	8	GROUND
9	VCC	10	GROUND
11	N/C	12	DDC DAT
13	HSYNC	14	VSYNC
15	DDCCLK		

3.11 ATX Power Connector

The pin assignments are as following

- **CN5 : ATX Power Connector**

PIN NO.	DESCRIPTION
1	5VSB
2	PS_ON
3	GROUND

- **CN10 : ATX Power SW**

PIN NO.	DESCRIPTION
1	Power SW
2	GROUND

3.12 Power Connector

The pin assignments are as following

- **CN18 : Power Connector**

PIN NO.	DESCRIPTION
1	+12V
2	GROUND
3	GROUND
4	+5V

3.13 IrDA Infrared Interface Port

The JUKI-3711PT/3712T built-in an IrDA port which support Serial Infrared (SIR) or Amplitude Shift Keyed IR (ASKIR) interface. When use the IrDA port have to set SIR or ASKIR model in the BIOS's Peripheral Setup's COM2. Then the normal RS-232 COM2 will be disabled.

● **CN9: IrDA connector**

PIN NO.	DESCRIPTION
1	VCC
2	N/C
3	IRRX
4	GROUND
5	IR-TX

3.14 LCD Connector

JUKI-3711PT/3712T board equipped with a 50-pin connector.

● **CN6 : LCD CONNECTOR**

PIN NO.	DESCRIPTION	PIN NO.	DESCRIPTION
1	VCLK	2	P33
3	P34	4	P31
5	P35	6	P32
7	P30	8	P28
9	P29	10	P27
11	P25	12	P26
13	P24	14	P21
15	P23	16	P22
17	P16	18	P20
19	P17	20	P18
21	P19	22	P14
23	P13	24	P12
25	P15	26	P11
27	P7	28	P10
29	Panel-VCC	30	Panel-VCC
31	P9	32	P8
33	P4	34	P6
35	P3	36	P5
37	P2	38	P1
39	M	40	P0
41	Shift Clock	42	Enable Backlight

43	FPVDD	44	FLM
45	Enable VEE	46	LP
47	GND	48	GND
49	Inverter VCC	50	Inverter VCC

4. BIOS Setup

4.1 Introduction

This chapter discusses Award™ Setup program built into the ROM BIOS. The Setup program allows users to modify the basic system configuration. This special information is then stored in battery-backed CMOS RAM so that it retains the Setup information while the power is off.

4.2 Starting Setup

The BIOS is immediately activated when you turn on the computer. While the BIOS is in control, the Setup program can be activated in one of the following two ways:

1. By pressing <Del> immediately after switching the system on, or
2. by pressing the <Del> key when the following message appears briefly at the bottom of the screen during the POST (Power On Self-Test).

Press DEL to enter SETUP.

If the message disappears before you can respond to it and you still wish to enter Setup Menu, please restart the system by turning OFF the system momentarily then power ON again or by pressing the "RESET" button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct timing and the system does not boot, an error message will be displayed and you will prompted to...

PRESS F1 TO CONTINUE, DEL TO ENTER SETUP

4.3 Using Setup

In general, you use the arrow keys to highlight items, press <Enter> to select, use the PageUp and PageDown keys to change entries, press <F1> for help and press <Esc> to quit. The following table provides more detail about how to navigate in the Setup program using the keyboard.

Key	Function
Up Arrow	Move to the previous item
Down Arrow	Move to the next item
Left Arrow	Move to the item on the left (menu bar)
Right Arrow	Move to the item on the right (menu bar)
Esc	Main Menu: Quit without saving changes Submenus: Exit Current page to the next higher level menu
Move Enter	Move to the item you desired
PgUp key	Increase the numeric value or make changes
PgDn key	Decrease the numeric value or make changes
+ key	Increase the numeric value or make changes
- key	Decrease the numeric value or make changes
Esc key	Main Menu -- Quit and not save changes into CMOS Status Page Setup Menu and Option Page Setup Menu -- Exit current page and return to Main Menu
F1 key	General help on Setup navigation keys
F5 key	Load previous values from CMOS
F6 key	Load the fail-safe defaults from BIOS default table
F7 key	Load the optimized defaults
F10 key	Save all the CMOS changes and exit

4.4 Getting Help

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> or **F1** key again.

If, after making and saving system changes with Setup, you discover that your computer no longer able to boot, the Award BIOS supports an override to the CMOS settings which resets your system to its defaults.

The best advice is to alter only those settings that you are thoroughly clear about and understood. To this end, we strongly recommend that you avoid making any changes to the chipset defaults. These defaults have been carefully chosen by both Award and your systems manufacturer to provide the absolute maximum performance and reliability. Even a seemingly small change to the chipset setup has the potential for causing your system to use the override.

4.5 Main Menu

Once you enter the AwardBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu allows you to select from several setup functions and two exit choices. Use the arrow keys to select among the items and press <Enter> to accept and enter the sub-menu.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software

Standard CMOS Feature	Frequency/Voltage Control
Advanced BIOS Feature	Load Fail-Safe Defaults
Advanced Chipset Feature	Load Optimized Defaults
Integrated Peripherals	Set Supervisor Password
Power Management Setup	Set User Password
PnP/PCI Configurations	Save & Exit Setup
PC Health Status	Exit Without Saving
Esc : Quit	↑ ↓ ← → : Select Item
F10 : Save & Exit Setup	
Time, Date, Hard Disk Type….	

Note that a brief description of each highlighted selection appears at the bottom of the screen.

The main menu includes the following main setup categories. Please note that some systems may not include all these entries.

STANDARD CMOS FEATURES

Use this menu for basic system configuration. See Section 4.6 for the details.

ADVANCED BIOS FEATURES

Use this menu to set the Advanced Features available on your system. See Section 4.7 for the details.

ADVANCED CHIPSET FEATURES

Use this menu to change the values in the chipset registers and optimize your system's performance. See section 4.8 for the details.

INTEGRATED PERIPHERALS

Use this menu to specify your settings for integrated peripherals. See section 4.9 for the details.

POWER MANAGEMENT SETUP

Use this menu to specify your settings for power management. See section 4.10 for the details.

PNP / PCI CONFIGURATION

This entry appears if your system supports PnP / PCI. See section 4.11 for the details.

PC HEALTH STATUS

Use this menu to monitor your hardware. See section 4.12 for the details.

FREQUENCY/VOLTAGE CONTROL

Use this menu to specify your settings for frequency/voltage control. See section 4.13 for the details.

LOAD FAIL-SAFE DEFAULTS

Use this menu to load the BIOS default values for the minimal/stable performance for your system to operate. See section 4.14 for the details.

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. See section 4.14 for the details.

SUPERVISOR / USER PASSWORD

Use this menu to set User and Supervisor Passwords. See section 4.15 for the details.

SAVE & EXIT SETUP

Save CMOS value changes to CMOS and exit setup. See section 10 for the details.

EXIT WITHOUT SAVE

Abandon all CMOS value changes and exit setup. See section 10 for the details.

4.6 STANDARD CMOS SETUP

The items in Standard CMOS Setup Menu are divided into 10 categories. Each category includes no, one or more than one setup items. Use the arrow keys to highlight the item and then use the <PgUp> or <PgDn> keys to select the value you want in each item.

CMOS Setup Utility - Copyright (C) 1984-2000 Award Software
Standard CMOS Features

		Item Help
Date:	Mon, Jan 21 2002	
Time:	16 : 19 : 20	
		Menu Level
➢ IDE Primary Master	[2557 MB]	➢
➢ IDE Primary Slave	[None]	
		Change the day, month, year and century
Drive A	[1.44M, 3.5 in.]	
Drive B	[None]	
LCD&CRT	[Both]	
Panel Type	[640x480 18-TFT]	
Halt On	[All , But Keyboard]	
Based Memory	640K	
Extended Memory	64512K	
Total Memory	35536K	

↑↓←→Move   Enter: Select   +/-/PU/PD: Value F10:Save   ESC: Exit
F1:General Help
F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

Standard CMOS Setup Selections

Item	Options	Description
Date	MM DD YYYY	Set the system date.
Time	HH : MM : SS	Set the system time
IDE Primary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Primary Slave	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
Drive A Drive B	None 360K, 5.25 in 1.2M, 5.25 in 720K, 3.5 in 1.44M, 3.5 in 2.88M, 3.5 in	Select the type of floppy disk drive installed in your system
LCD & CRT	Both LCD CRT	Select the default display device
LCD TYPE	1024x768 DSTN 640x480 MONO 640x480 DSTN 800x600 DSTN 640x480 12-TFT 640x480 18-TFT 1024x768 36-TFT 800x600 TFT 1024x768 18-TFT 1024x768 24-TFT	Select the default LCD display Type
Halt On	All Errors No Errors All, but Keyboard All, but Diskette All, but Disk/Key	Select the situation in which you want the BIOS to stop the POST process and notify you

IDE Adapters

The IDE adapters control the hard disk drive. Use a separate sub menu to configure each hard disk drive.

Figure 2 shows the IDE primary master sub menu.

CMOS Setup Utility - Copyright (C) 1984-2001 Award Software

IDE Primary Master

IDE HDD Auto-Detection	Press Enter	Item Help
IDE Primary Master Access Mode	Auto 2557 MB Auto	Menu Level ➢➢
Cylinder Head Precomp Landing Zone Sector	4956 16 0 4955 63	To auto-detect the HDD's size, head... on this channel
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

Use the legend keys to navigate through this menu and exit to the main menu. Use Table 3 to configure the hard disk.

Item	Options	Description
IDE HDD Auto-detection	Press Enter	Press Enter to auto-detect the HDD on this channel. If detection is successful, it fills the remaining fields on this menu.

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IDE Primary Master	None Auto Manual	Selecting 'manual' lets you set the remaining fields on this screen. Selects the type of fixed disk. "User Type" will let you select the number of cylinders, heads, etc. Note: PRECOMP=65535 means NONE !
Capacity	Auto Display your disk drive size	Disk drive capacity (Approximated). Note that this size is usually slightly greater than the size of a formatted disk given by a disk checking program.
Access Mode	Normal LBA Large Auto	Choose the access mode for this hard disk
The following options are selectable only if the 'IDE Primary Master' item is set to 'Manual'		
Cylinder	Min = 0 Max = 65535	Set the number of cylinders for this hard disk.
Head	Min = 0 Max = 255	Set the number of read/write heads
Precomp	Min = 0 Max = 65535	**** **Warning**: Setting a value of 65535 means no hard disk
Landing zone	Min = 0 Max = 65535	****
Sector	Min = 0 Max = 255	Number of sectors per track

4.7 ADVANCED BIOS FEATURES

This section allows you to configure your system for basic operation. You can configure system's default speed, boot-up sequence, keyboard operation, shadowing and security.

CMOS Setup Utility – Copyright © 1984 – 2000 Award Software
Advanced BIOS Features

		Item Help
Virus Warning	Disabled	
CPU Internal Cache	Enabled	
External Cache	Enabled	
CPU L2 Cache ECC Checking	Enabled	Menu Level ➢
Process Number feature	Enabled	
Quick Power On Self Test	Enabled	Allows you to choose the
First Boot device	Floppy	VIRUS warning feature for IDE
Second Boot device	HDD-0	Hard Disk boot sector
Third Boot device	LS120	protection. If this function is
Boot other device	Enabled	enabled and someone attempt
Swap Floppy Drive	Disabled	to write data into this area,
Boot Up Floppy Seek	Enabled	BIOS will show a warning
Boot Up NumLock Status	On	message on screen and alarm
Gate A20 Option	Fast	beep
Typematic Rate Setting	Disabled	
Typematic Rate (Chars/Sec)	6	
Typematic Delay (Msec)	250	
Security Option	Setup	
Time Out(Sec.)For IDE Auto	2	
OS Select For DRAM > 64MB	Non-OS2	
Report NO FDD For Win 95	No	
Small Logo(EPA) Show	Disabled	

↑↓←→Move   Enter: Select   +/-/PU/PD: Value   F10:Save   ESC: Exit
F1:General Help
F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

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Virus Warning

Allows you to choose the VIRUS Warning feature for IDE Hard Disk boot sector protection. If this function is enabled and

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someone attempt to write data into this area, BIOS will show a warning message on screen and alarm beep.

Enabled	Activates automatically when the system boots up causing a warning message to appear when anything attempts to access the boot sector or hard disk partition table.
Disabled	No warning message will appear when anything attempts to access the boot sector or hard disk partition table.

CPU Internal Cache/External Cache

These two categories speed up memory access. However, it depends on CPU/chipset design.

Enabled	Enable cache
Disabled	Disable cache

CPU L2 Cache ECC Checking

This item allows you to enable/disable CPU L2 Cache ECC checking.

The Choice: Enabled, Disabled

Quick Power On Self Test

This category speeds up Power On Self Test (POST) after you power up the computer. If it is set to Enable, BIOS will shorten or skip some check items during POST.

Enabled	Enable quick POST
Disabled	Normal POST

Onboard Lan Boot ROM

This item allows you to enable/disable Onboard Lan Boot ROM.

The Choice: Enabled, Disabled

First/Second/Third Boot other Device

The BIOS attempts to load the operating system from the devices in the sequence selected in these sections.

The Choice: Floppy, LS/ZIP, HDD, SCSI, CDROM, Disabled

Swap Floppy Drive

If the system has two floppy drives, you can swap the logical drive name assignments.

The Choice: Enabled/Disabled

Boot Up Floppy Seek

Seeks disk drives during boot up. Disabling speeds boot up.

The Choice: Enabled/Disabled

Boot Up Numlock Status

Select power on state for NumLock.

The Choice: On/Off

Gate A20 Option

Select if chipset or keyboard controller should control GateA20.

Normal	A pin in the keyboard controller controls GateA20
Fast	Lets chipset control GateA20

Typematic Rate Setting

Key strokes repeat at a rate determined by the keyboard controller. When enabled, the typematic rate and typematic delay can be selected.

The Choice: Enabled/Disabled

Typematic Rate (Chars/Sec)

Sets the number of times a second to repeat a key stroke when you hold the key down.

The Choice: 6, 8, 10, 12, 15, 20, 24, 30

Typematic Delay (Msec)

Sets the delay time after the key is held down before it begins to repeat the keystroke.

The Choice: 250, 500, 750, 1000

Security Option

Select whether the password is required every time the system boots or only when you enter setup.

System	The system will not boot and access to Setup will be denied if the correct password is not entered at the prompt.
Setup	The system will boot, but access to Setup will be denied if the correct password is not entered at the prompt.

Note: To disable security, select PASSWORD SETTING at Main Menu and you will be prompted to enter password. Do not type anything, just press <Enter>. This action will disable security. Once the security is disabled, the system will boot and you can enter Setup Menu freely.

OS Select For DRAM > 64MB

Select the operating system that is running with greater than 64MB of RAM on the system.

The Choice: Non-OS2, OS2

Video BIOS Shadow

This item allows the video BIOS to be copied to system memory for faster performance.

The Choice : Enable, Disable

C8000-CBFFF Shadow / DC000-DFFFF Shadow

These categories determine whether option ROMs will be copied to RAM. An example of such option ROM would be support of on-board SCSI.

Enabled	Optional shadow is enabled
Disabled	Optional shadow is disabled

Small Logo(EPA) Show

This section allows you to enable/disable Small Logo(EPA) Show.

The Choice: Enabled, Disabled

4.8 ADVANCED CHIPSET FEATURES

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Advanced Chipset Features

		Item Help
DRAM Timing By SPD	Enabled	
DRAM Clock	Host CLK	Menu Level ➤
SDRAM Cycle Length	3	
Memory Hole	Disabled	
P2C/C2P Concurrency	Disabled	
System BIOS Cacheable	Disabled	
Video BIOS Cacheable	Disabled	
OnChip USB	Disabled	
USB Keyboard Support	Disabled	
USB Mouse Support	Disabled	
OnChip Sound	AUTO	
CPU to PCI Write Buffer	Enabled	
PCI Dynamic Bursting	Enabled	
PCI Master 0 WS Write	Enabled	
PCI Delay Transaction	Enabled	
PCI#2 Access #1 Retyr	Enabled	
Memory Parity/ECC check	Disabled	

↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit
F1:General Help

F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

This section allows you to configure the system based on the specific features of the installed chipset. This chipset manages bus speeds and access to system memory resources, such as DRAM and the external cache.   It also coordinates communications between the conventional ISA bus and the PCI bus. It must be stated that these items should never need to be altered. The default settings have been chosen because they provide the best operating conditions for your system.

DRAM Timing By SPD

This section allows you to select the values in this field, depending on whether the board has paged DRAMs or EDO (extended data output) DRAMs.

The Choice: Enabled, Disabled

DRAM Clock

This item allows you to control the DRAM speed.

The Choice: Host CLK, HCLK-33M, HCLK+33M

SDRAM Cycle Length

Select the number of SCLKs for an access cycle

The Choice: 2, 3.

DRAM Clock

Selecting HOST Clk is DRAM Clock equal CPU HOST Clock. If you choice HOST-33, DRAM Clock equal CPU Host Clock-33MHz.

The Choice: HOST Clk, HOST-33

Memory Hole

You can reserve this area of system memory for ISA adapter ROM. When this area is reserved, it cannot be cached. The user information of peripherals that need to use this area of system memory usually discusses their memory requirements.

The Choice: 15M-16M,Disabled

P2c/C2P Concurrency

This item allows you to enable/disable the PCI to CPU, CPU to PCI concurrency.

The Choice: Enabled, Disabled

System BIOS Cacheable

Selecting Enabled allows caching of the system BIOS ROM at F0000h-FFFFFh, resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The Choice: Enabled, Disabled

Video BIOS Cacheable

Select Enabled allows caching of the video BIOS , resulting in better system performance. However, if any program writes to this memory area, a system error may result.

The Choice: Enabled, Disabled

OnChip USB

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have USB peripherals.

The Choice: Enabled, Disabled

USB Keyboard Support

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB keyboard.

The Choice: Enabled, Disabled

USB Mouse Support

Select *Enabled* if your system contains a Universal Serial Bus (USB) controller and you have a USB Mouse.

The Choice: Enabled, Disabled

CPU to PCI Write Buffer

This item allows you to enable/disable the CPU to PCI Write Buffer .

The Choice: Enabled, Disabled

PCI Dynamic Bursting

When *Enabled,* every write transaction goes to the write buffer. Burstable transactions then burst on the PCI bus and nonburstable transactions don't.

The Choice: Enabled, Disabled

PCI Master 0 WS Write

When *Enabled,* writes to the PCI bus are executed with zero wait states.

The Choice: Enabled, Disabled

PCI Delay Transaction

This item allows you to enable/disable the PCI Delay Transaction.

The Choice: Enabled, Disabled

PCI#2 Access #1 Retyr

This item allows you to enable/disable the PCI#2 Access #1 Retyr.

The Choice: Enabled, Disabled

Memory Parity/ECC check

This item allows you to enable/disable the Memory Parity/ECC check.

The Choice: Enabled, Disabled

4.9 INTEGRATED PERIPHERALS

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Integrated Peripherals

		Item Help
OnChip IDE Channel0	[Enabled]	
IDE Prefetch Mode	[Enabled]	Menu Level ➢
Primary Master PIO	[Auto]	
Primary Slave PIO	[Auto]	If your IDE hard drive
Primary Master UDMA	[Auto]	supports block mode
Primary Slave UDMA	[Auto]	select Enabled for
Init Display First	[PCI Slot]	automatic detection of
Onboard VGA Device	[Enabled]	the optimal number of
Onboard Lan Device	[Enabled]	block read/write per
IDE HDD Block Mode	[Enabled]	sector the drive can
Onboard FDC Controller	[Enabled]	support
Onboard Serial Port 1	[Auto]	
Onboard Serial Port 2	[Auto]	
UART 2 Mode	[Standard]	
IR Function Duplex	[Normal]	
TX,RX inverting enable	[No, Yes]	
Onboard Parallel Port	[378/IRQ7]	
Onboard Parallel Mode	[Normal]	
ECP Mode Use DMA	[3]	
Parallel Port EPP Type	[EPP1.9]	

↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit
F1:General Help

F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

OnChip IDE Channel 0

The integrated peripheral controller contains an IDE interface with support for two IDE channels. Select *Enabled* to activate each channel separately.

The Choice: Enabled, Disabled.

IDE Prefetch Mode

The onboard IDE drive interfaces supports IDE prefetching for faster drive accesses. If you install a primary and/or secondary add-in IDE interface, set this field to *Disabled* if the interface does not support prefetching.

The Choice: Enabled, Disabled.

IDE Primary Master/Slave PIO

The two IDE PIO (Programmed Input/Output) fields let you set a PIO mode (0-4) for each of the two IDE devices that the onboard IDE interface supports. Modes 0 through 4 provide successively increased performance. In Auto mode, the system automatically determines the best mode for each device.

The Choice: Auto, Mode 0, Mode 1, Mode 2, Mode 3, Mode 4.

IDE Primary/Secondary Master/Slave UDMA

Ultra DMA/33/66 implementation is possible only if your IDE hard drive supports it and the operating environment includes a DMA driver (Windows 95 OSR2 or a third-party IDE bus master driver). If your hard drive and your system software both support Ultra DMA/33/66, select Auto to enable BIOS support.

The Choice: Auto, Disabled.

Init Display First

This item allows you to decide to active whether PCI Slot or on-chip VGA first

The choice: PCI Slot, Onboard , AGP

Onboard VGA Device

This item allows you to enable/disable the Onboard VGA Device.

The Choice: Enabled, Disabled.

Onboard Lan Device

This item allows you to enable/disable the Onboard Lan Device.

The Choice: Enabled, Disabled.

IDE HDD Block Mode

Block mode is also called block transfer, multiple commands, or multiple sector read/write. If your IDE hard drive supports block mode (most new drives do), select Enabled for automatic detection of the optimal number of block read/writes per sector the drive can support.

The Choice: Enabled, Disabled

Onboard FDC Controller

Select Enabled if your system has a floppy disk controller (FDC) installed on the system board and you wish to use it. If you install and-in FDC or the system has no floppy drive, select Disabled in this field.

The Choice: Enabled, Disabled.

Onboard Serial Port 1/Port 2

Select an address and corresponding interrupt for the first and second serial ports.

The Choice: 3F8/IRQ4, 2E8/IRQ3, 3E8/IRQ4, 2F8/IRQ3, Disabled, Auto.

UART 2 Mode

This item allows you to select which mode for the Onboard Serial Port 2.

The Choice: Standard, HPSIR, ASKIR.

IR Function Duplex

This item allows you to select the IR half/full duplex functions.

The Choice: Half, Full.

TX ,RX inverting enable

This item allow you to enable the TX, RX inverting which depends on different H/W requirement. This field is not recommended to change its default setting for avoiding any error in your system

The Choice: No, No/ No, Yes(Default)/ Yes, No/ Yes, Yes.

Onboard Parallel Port

Select an address and corresponding interrupt for the parallel port.

The Choice: 3BC/IRQ7, 378/IRQ7, 278/IRQ5, Disabled.

Onboaed Parallel Mode

Select parallel port Mode.

The Choice: SPP, EPP, ECP, ECP+EPP.

ECP Mode Use DMA

Select a ECP mode used DMA channel.

The Choice: 1, 3.

Parallel Port EPP Type

Select a EPP mode.

The Choice: EPP1.7, EPP1.9.

4.10 POWER MANAGEMENT SETUP

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

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Power Management Setup

		Item Help
ACPI function	[Disabled]	
➤ Power Management	[Press Enter]	
PM Control by APM	[Yes]	Menu Level ➤
Video Off Option	[Suspend -> Off]	
Video Off Method	[V/H	
MODEM Use IRQ	SYNC+Blank]	
Soft-Off by PWRBTN	[3]	
State After Power	[Instant-Off]	
Failure	[Auto]	
➤ Wake Up Events	[Press Enter]	

↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help

F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

The Power Management Setup allows you to configure you system to most effectively save energy while operating in a manner consistent with your own style of computer use.

ACPI Function

This item allows you to enable/disable the Advanced Configuration and Power Management (ACPI).

The Choice: Enabled, Disabled.

POWER MANAGEMENT

This category allows you to select the type (or degree) of power saving and is directly related to the following modes:

1. **HDD Power Down :** When enabled and after the set time of system inactivity, the hard disk drive will be powered down while all other devices remain active.
2. **Doze Mode:** When enabled and after the set time of system inactivity, the CPU clock will run at slower speed while all other devices still operate at full speed.
3. **Suspend Mode:** When enabled and after the set time of system inactivity, all devices except the CPU will be shut off.

There are four selections for Power Management, three of which have fixed mode settings.

Disable (default)	No power management. Disables all four modes
Min. Power Saving	Minimum power management. Doze Mode = 1 hr. Standby Mode = 1 hr., Suspend Mode = 1 hr., and HDD Power Down = 15 min.
Max. Power Saving	Maximum power management -- **ONLY AVAILABLE FOR SL CPU's**. Doze Mode = 1 min., Standby Mode = 1 min., Suspend Mode = 1 min., and HDD Power Down = 1 min.
User Defined	Allows you to set each mode individually. When not disabled, each of the ranges are from 1 min. to 1 hr. except for HDD Power Down which ranges from 1 min. to 15 min. and disable.

PM Control by APM

When enabled, an Advanced Power Management device will be activated to enhance the Max. Power Saving mode and stop the CPU internal clock. If Advance Power Management (APM) is installed on your system, selecting Yes gives better power savings.

If the Max. Power Saving is not enabled, this will be preset to *No*.

The Choice: Yes, No

Video Off Option

When enabled, this feature allows the VGA adapter to operate in a power saving mode.

Always On	Monitor will remain on during power saving modes.
Suspend --> Off	Monitor blanked when the systems enters the Suspend mode.
All Modes --> Off	Monitor blanked when the system enters any power saving mode.

Video Off Method

This determines the manner in which the monitor is blanked.

V/H SYNC+Blank	This selection will cause the system to turn off the vertical and horizontal synchronization ports and write blanks to the video buffer.
Blank Screen	This option only writes blanks to the video buffer.
DPMS Support	Select this option if your monitor supports the Display Power Management Signaling (DPMS) standard of the Video Electronics Standards to select video power management values.

MODEM Use IRQ

This determines the IRQ in which the MODEM can use.

The Choice: 3, 4, 5, 7, 9, 10, 11, NA

Soft-Off by PWRBTN

Pressing the power button for more than 4 seconds forces the system to enter the Soft-Off state when the system has "hung."

The Choice: Delay 4 Sec, Instant-Off

State After Power Failure

State after power is re-applied

The Choice: Auto, On, Off

Wake Up Event

Wake Up events are I/O events whose occurrence can prevent the system from entering a power saving mode or can awaken the system from such a mode. In effect, the system remains alert for anything which occurs to a device which is configured as *On*, even when the system is in a power down mode.

VGA

When *On,* you can set the VGA awakens the system.

LPT & COM

When *On of* LPT & COM, any activity from one of the listed system peripheral devices or IRQs wakes up the system.

HDD & FDD

When *On of HDD* & FDD, any activity from one of the listed system peripheral devices wakes up the system.

PCI Master

When *On of PCI Master*, any activity from one of the listed system peripheral devices wakes up the system.

Modem Ring Resume

An input signal on the serial Ring Indicator (RI) line (in other words, an incoming call on the modem) and LAN WOL awakens the system from a soft off state.

RTC Alarm Resume

When *Enabled,* your can set the date and time at which the RTC (real-time clock) alarm awakens the system from Suspend mode.

The following is a list of IRQ's, Interrupt ReQuests, which can be exempted much as the COM ports and LPT ports above can. When an I/O device wants to gain the attention of the operating system, it signals this by causing an IRQ to occur. When the operating system is ready to respond to the request, it interrupts itself and performs the service.

When set *On*, activity will neither prevent the system from going into a power management mode nor awaken it.

- **Primary INTR**
- **IRQ3 (COM 2)**
- **IRQ4 (COM 1)**
- **IRQ5 (LPT 2)**
- **IRQ6 (Floppy Disk)**
- **IRQ7 (LPT 1)**
- **IRQ8 (RTC Alarm)**
- **IRQ9 (IRQ2 Redir)**
- **IRQ10 (Reserved)**
- **IRQ11 (Reserved)**
- **IRQ12 (PS / 2 Mouse)**
- **IRQ13 (Coprocessor)**
- **IRQ14 (Hard Disk)**
- **IRQ15 (Reserved)**.

4.11 PNP/PCI CONFIGURATIONS

This section describes configuring the PCI bus system. PCI, or Personal Computer Interconnect, is a system which allows I/O devices to operate at speeds nearing the speed the CPU itself uses when communicating with its own special components. This section covers some very technical items and it is strongly recommended that only experienced users should make any changes to the default settings.

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PnP/PCI Configurations

		Item Help
PnP OS Installed	[No]	-------------------
Reset Configuration Data	[Disabled]	Menu Level ➢
Resources Controlled By	[Auto(ESCD)]	
x IRQ Resources	[Press Enter]	Default is
x DMA Resources	[Press Enter]	Disabled. Select
		Enabled to reset
PCI/VGA Palette Snoop	[Disabled]	Extended System
Assign IRQ For VGA	[Enabled]	Configuration
Assign IRQ For USB	[Enabled]	Data(ESCD) when
		you exit Setup if
		you have installed
		a new add-on and
		the system
		reconfiguration
		has caused such a
		serious conflict
		that the OS
		cannot boot
↑↓←→Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit F1:General Help		
F5:Previous Values F6:Fail-safe defaults F7:Optimized Defaults		

PNP OS Installed

This item allows you to determine install PnP OS or not.

The Choice: Yes, No

Reset Configuration Data

Normally, you leave this field Disabled. Select Enabled to reset Extended System Configuration Data (ESCD) when you exit Setup if you have installed a new add-on and the system reconfiguration has caused such a serious conflict that the operating system can not boot.

The Choice: Enabled, Disabled

IRQ Resources

When resources are controlled manually, assign each system interrupt a type, depending on the type of device using the interrupt.

IRQ3/4/5/7/9/10/11/12/14/15 assigned to

This item allows you to determine the IRQ assigned to the ISA bus and is not available to any PCI slot. Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The Choice: Legacy ISA and PCI/ISA PnP

DMA Resource

When resources are controlled manually, assign each system DMA channel a type, depending on the type of device using the DM channel.

DMA 0/1/3/5/6/7 assigned to

Legacy ISA for devices compliant with the original PC AT bus specification, PCI/ISA PnP for devices compliant with the Plug and Play standard whether designed for PCI or ISA bus architecture.

The Choice: Legacy ISA, PCI/ISA PnP

PCI/VGA Palette Snoop

Leave this field at *Disabled*.

The Choice: Enabled, Disabled

Assign IRQ For VGA

Enable/Disable to assign IRQ for VGA

The Choice: Enabled, Disabled

Assign IRQ For USB

Enable/Disable to assign IRQ for USB

The Choice: Enabled, Disabled

4.12 PC HEALTH STATUS

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PC Health Status

		Item Help
Current CPU Temp.	40℃	-------------------------
Current System Temp.	32℃	
Current CPU FAN Speed	5336RPM	Menu Level ➢
Vcore	1.78V	
2.5V	2.57V	
3.3V	3.32V	
5V	5.01V	
12V	12.35V	

↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit
F1:General Help

F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

4.13 FREQUENCY/VOLTAGE CONTROL

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Frequency/Voltage Control

		Item Help
Spread Spectrum	Disabled	--------------------------------
CPU Clock	Default	Menu Level ➢

↑↓←→ Move Enter: Select +/-/PU/PD: Value F10:Save ESC: Exit
F1:General Help

F5:Previous Values   F6:Fail-safe defaults   F7:Optimized Defaults

Spread Spectrum

This item allows you to enable/disable the spread spectrum modulate.

The Choice: Enabled, Disabled

CPU Clock

This item allows you to select CPU HOST frequency.

The Choice: 100~166MHz

4.14 DEFAULTS MENU

Selecting "Defaults" from the main menu shows you two options which are described below

- **LOAD Fail-Safe DEFAULTS**
  When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

  LOAD BIOS DEFAULTS (Y/N) ? N

  Pressing 'Y' loads the BIOS default values for the most stable, minimal-performance system operations.

- **LOAD Optimized DEFAULTS**
  When you press <Enter> on this item you get a confirmation dialog box with a message similar to:

  LOAD SETUP DEFAULTS (Y/N) ? N

  Pressing 'Y' loads the default values that are factory settings for optimal performance system operations.

4.15 SUPERVISOR/USER PASSWORD SETTING

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

Supervisor Password : for entering and changing the settings of the system.

User Password   :   for just entering the system but does not have the privilege to change any settings of the system.

If this function is enabled, the following message will appear to guide the user to create a password.

- **ENTER 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. The user will be asked to confirm the password. Type the password again and press <Enter>. The user may also press <Esc> to abort the selection and not enter a password.

   To disable a password, just press <Enter> when the user 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 the user can enter Setup freely.

- **PASSWORD DISABLED:**
   When a password has been enabled, the user will be prompted to enter it every time the user try to enter Setup. This prevents an unauthorized person from changing any part of the user's system configuration.

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

The user determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to password will be required both at boot and at entry to Setup. If set to "Setup", prompting only occurs when trying to enter Setup.

4.16 Exit Selecting

Save & Exit Setup

Pressing <Enter> on this item asks for confirmation:

Save to CMOS and EXIT (Y/N)? Y

Pressing "Y" stores the selections made in the menus in CMOS – a special section of memory that stays on after you turn your system off. The next time you boot your computer, the BIOS configures your system according to the Setup selections stored in CMOS. After saving the values the system is restarted again.

Exit Without Saving

Pressing <Enter> on this item asks for confirmation:

Quit without saving (Y/N)? Y

This allows you to exit Setup without storing in CMOS any change. The previous selections remain in effect. This exits the Setup utility and restarts your computer.

Appendix A. Watch-Dog Timer

The WatchDog Timer is a device to ensure that standalone systems can always recover from abnormal conditions that cause the system to crash. These conditions may result from an external EMI or a software bug. When the system stops working, hardware on the board will perform hardware reset (cold boot) to bring the system back to a known state.
Three I/O ports control the operation of WatchDog Timer.

443 (hex)	Write	Set WatchDog Time period
443 (hex)	Read	Enable the refresh the WatchDog Timer.
043/843 (hex)	Read	Disable the WatchDog Timer.

Prior to enable the WatchDog Timer, user has to set the time-out period. The resolution of the timer is 1 second and the range of the timer is from 1 sec to 255 sec. You need to send the time-out value to the I/O port – 443H, and then enable it by reading data from the same I/O port – 443H. This will activate the timer that will eventually time out and reset the CPU board. To ensure that this reset condition won't occur, the WatchDog Timer must be periodically refreshed by reading the same I/O port 443H. This must be done within the time-out period that is set by the software, please refer to the example program. Finally, we have to disable the WatchDog timer by reading the I/O port -- 843H or 043H. Otherwise the system could reset unconditionally.

A tolerance of at least 5% must be maintained to avoid unknown routines in the operating system (DOS), such as disk I/O that can be very time-consuming. Therefore if the time-out period has been set to 10 seconds, the I/O port 443H must be read within 7 seconds.

Example assembly program:

```
TIMER_PORT   =  443H
TIMER_START  =  443H
TIMER_STOP   =  843H
```

;;Initial Timer Counter

```
MOV DX, TIMER_PORT
MOV AL, 8    ;;8 seconds
OUT DX, AL
MOV DX, TIMER_START
IN AL, DX.    ;;Start counter


W_LOOP:
MOV DX, TIMER_STOP
IN AL, DX
MOV DX, TIMER_START
IN AL, DX        ;;Restart counter
```

;;Add Your Appliaction Here

```
CMP EXIT_AP, 0
JNE W_LOOP
MOV DX, TIMER_STOP
IN AL, DX
```

;;Exit AP

Appendix B. E^2 Key™ Function

The JUKI-3711PT/3712T provides an outstanding E^{2}KEY™ function for system integrator. Based on the E^{2}KEY™, you can free to store the ID Code, Password or Critical Data in the 1Kbit EEPROM. Because the EEPROM is nonvolatile memory, you don't have to worry for losing very important data.

Basically the E^{2}KEY™ is based on a 1Kbit EEPROM which is configured to 64 words(from 0 to 63). You could access (read or write) each word at any time.

When you start to use the E^{2}KEY™ you should have the utility in the package. The software utility will include four files as follows,

   README.DOC
   E2KEY.OBJ
   EKEYDEMO.C
   EKEYDEMO.EXE.

The E2KEY.OBJ provides two library functions for user to integrate their application with E^{2}KEY™ function. These library **(read_e2key and write_e2key)** are written and compiled in C language. Please check the following statement, then you will know how to implement it easily.

unsigned int read_e2key(unsigned int address)
/* This function will return the E^{2}KEY™'s data at address. The address range is from 0 to 63. Return data is one word,16 bits

---

*/**void write_e2key(unsigned int address,unsigned data)**

/* This function will write the given data to E^{2}KEY™ at certain address. The address range is from 0 to 63. The data value is from 0 to 0xffff. */

To easily start to use the function, please refer to the included EKEYDEMO.C code at first.

Appendix C. Address Mapping

IO Address Map

I/O address Range	Description
000-01F	DMA Controller #1
020-021	Interrupt Controller #1, Master
040-05F	System timer
060-06F	Standard 101/102 Keyboard Controller
070-07F	Real time Clock, NMI Mask
080-09F	DMA Page Register
0A0-0BF	Interrupt Controller #2
0C0-0DF	DMA Controller #2
0F0	Clear Math Coprocessor Busy
0F1	Reset Math Coprocessor
0F2	Core logic programming configuration
0F8-0FF	Math Coprocessor
1F0-1F7	Fixed Disk
2F8-2FF	Serial Port 2
300-31F	Prototype Card
360-36F	Reserved
378-37F	Parallel Printer Port 1 (LPT1)
3B0-3BF	Monochrome Display
3C0-3CF	Color/Graphics Monitor Adapter
3D0-3DF	Color/Graphics Monitor Adapter
3F0-3F7	Diskette Controller
3F8-3FF	Serial Port 1
443	Start Watch Dog
843	Stop Watch Dog

1st MB Memory Address Map

Memory address	Description
00000-9FFFF	System memory
A0000-BFFFF	VGA buffer
C0000-C97FF	VGA BIOS
F0000-FFFFF	System BIOS
100000-	Extend BIOS

*Default setting

IRQ Mapping Table

IRQ0	System Timer	IRQ8	RTC clock
IRQ1	Keyboard	IRQ9	Available
IRQ2	Cascade to IRQ Controller	IRQ10	Available
IRQ3	COM2	IRQ11	Available
IRQ4	COM1	IRQ12	PS2 mouse
IRQ5	Available	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

DMA Channel Assignments

Channel	Function
0	Available
1	Available
2	Floppy disk (8-bit transfer)
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Appendix D. ATX Power Supply

The following notes show how to connect ATX Power Supply to the backplanes and / or the ISBC card.

A. For backplanes with ATX Connector

1. Please, disconnect the AC cord of the Power Supply from the AC source to prevent sudden electric surge to the board.
2. Please, check the type of your CPU board. All CPU board listed on the next page support ATX power supply but has two types of power switch connection:

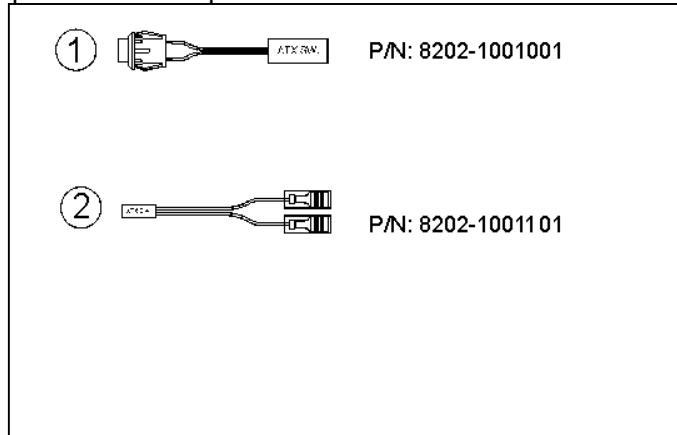● **JUKI-3711PT/3712T(through Power Button & GND):**
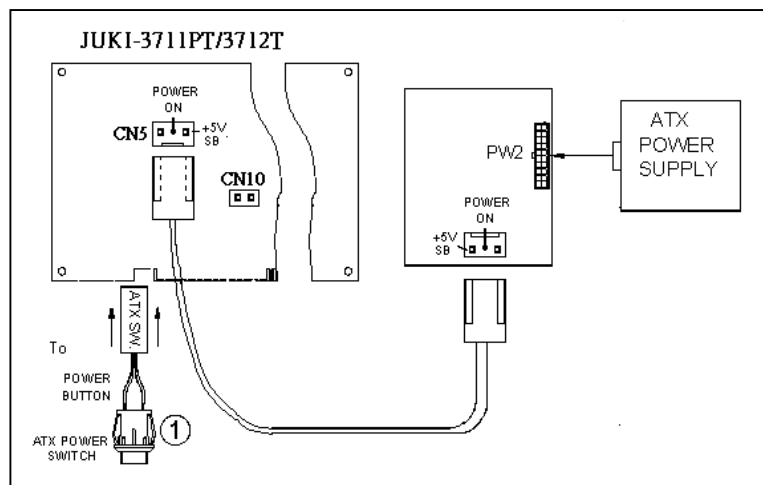
Connect the ATX power button switch to the CN10 (power button). And connect the power cable from Backplane to CN5 of CPU card.

If you want to turn ON the system, just press the button once.
And if you want to turn off the power supply, please press the ATX power switch button for about 4 seconds.

B. For the backplanes with ATX power supply connector

For some SBC without ATX power ON/OFF function, then you can control the ATX power supply through backplane's PS ON connector. Refer to the figure below: for the backplanes with ATX connector, the connection can be made simply as following:

1. Connect the ON/OFF (ordinary one) switch to Pin 2 (PS ON) and Pin 3 (GND) of connector CN2
2. You may now turn the power ON/OFF by pressing the power switch
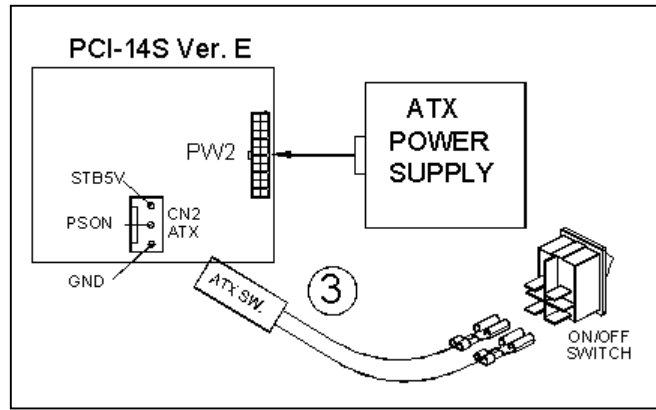
Appendix E.
How to use Wake-Up Function

The JUKI-3711PT/3712T provides two kind of Wake up Function. This page describes how to use Modem Wake-Up and LAN Wake-Up function.
Wake-Up function is working while you use ATX power supply,

Wake –Up On Modem(Ring) :
You must set the option **Modem Ring Resume** of CMOS SETUP to be enabled. The ATX power supply will be switched on when there is a ring signal detected on pin "RI" of serial port.

Wake-Up On LAN:
When your computer is in power-down status, you can see LAN Link/Active LED is flashing. This status indicates that the LAN chip has entered standby mode and waits for Wake-Up signal. You can use other computers to wake up your computer by sending ID to it.

<u>ID</u>: ID is the address of your system LAN. Every LAN chip has a factory-set ID, which you can find it from network information in WINDOWS.

    ID's format is xxxxxxxxxxxx
    Example ID: 009027388320