

**JUKI-EDEN/C3 Processor
with Ethernet, USB 2.0, Audio
Embedded Board
PCB Version 1.0**

**Manual Version 1.0
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1. Introduction

Thank you for choosing JUKI-EDEN/C3 board. It is a low power consumption and high performance VIA EDEN processor designed for the system manufacturers, integrators, or VARs that want to provide quality and reliable performance at a reasonable price.

JUKI-EDEN/C3 has a built-in ProSavage4 AGP4X VGA controller. It is a 2D/3D graphics controller which provides resolution of up to 1920 x 1440, and supports both CRT and LCD simultaneously. The VGA controller can share 8~32 MB frame buffer of system memory.

For application that needs high speed serial transmission, JUKI-EDEN/C3 provides both USB 1.1 and USB 2.0 for your choice. The high speed USB 2.0 host controller implements an ECHI interface that provides 480Mb/s bandwidth.

Both on-chip UARTs are compatible with NS16C550. The parallel port and IDE interface are compatible with IBM PC/AT architecture.

JUKI-EDEN/C3 is built-in with 10/100 Fast Ethernet LAN. It is a fully integrated 10BASE-T/100BASE-TX LAN controller. The board uses the advanced VIA VT8606/VT82C686B chipsets which is a 100% software compatible chipset with PCI 2.2 standard.

Note: All shaded rows in tables of this manual are the default settings for JUKI-EDEN/C3.

1.1 Specifications

CPU	Supports EDEN & C3 Series CPU. Supports 133 MHz FSB.
Bus interface	PCI/ISA bus
Bus speed	ISA: 8 MHz, PCI: 33 MHz
DMA channels	7
Interrupt levels	15
Chipset	VT8606
Real-time clock/calendar	VT82C686B
Main memory	One 144-pin DIMM socket supports 133 Mhz SDRAM. The maximum memory is up to 512 MB.
Ultra DMA 100 IDE interface	Up to four PCI Enhanced IDE hard drives are supported. The Ultra DMA 100 IDE can handle data transfer up to 100MB/s. Compatible with existing ATA IDE specifications. No need to do any changes for users' current accessories.
Floppy disk drive interface	Supports up to two floppy disk drives, 5.25" (360 KB and 1.2 MB) and/or 3.5" (720 KB, 1.44 MB, and 2.88 MB)
Serial ports	Four RS-232 ports with 16C550 UART (or compatible) with 16-byte FIFO buffer. Support up to 115.2 Kbps. Can be individually configured to COM1, COM2, COM3, COM4 or disabled.
Bi-directional parallel port	Configurable to LPT1 or disabled. Supports EPP/ECP/SPP
Hardware monitor	Built-in to monitor power supply voltage and fan speed status
IrDA port	Supports Serial Infrared (SIR) and Amplitude Shift Keyed IR (ASKIR) interface
USB 2.0/1.1 port	Support 3 USB 2.0 and 2 USB 1.1 ports for future expansion
Watchdog timer	Software Programmable, reset generated when Watchdog timer is time-out. You can use I/O Port hex 043 (843) & 443 to control the Watchdog.
VGA controller	Built-in ProSavage4 AGP4X 256-bit 2D/3D graphics engine. 8~32 MB share memory. Screen resolution: up to 1920 x 1440.

Ethernet	Fast Ethernet controllers, IEEE 802.3u Auto-Negotiation supports 10BASE-T/100BASE-TX standard. The RJ45 connectors are located on the mounting bracket for easy connection.
Keyboard and PS/2 mouse connector	A 6-pin mini DIN connector is located on the mounting bracket for easy connection to a keyboard or PS/2 mouse. For alternative application, a keyboard and a PS/2 mouse pin header connectors are also available on board.
Audio	AC'97 Audio CODEC
Compactflash	It can be used with a passive adapter (True IDE Mode) in a Type I/II Socket.
Expansion bus	PC/104 compatible
Power consumption	(VIA EDEN 400Mhz, PC133 SDRAM) +5V @3.6A, +12V @500mA Recommended: 350-watt power supply or higher
Operating temperature	0 ~ 60

1.2 Package Contents

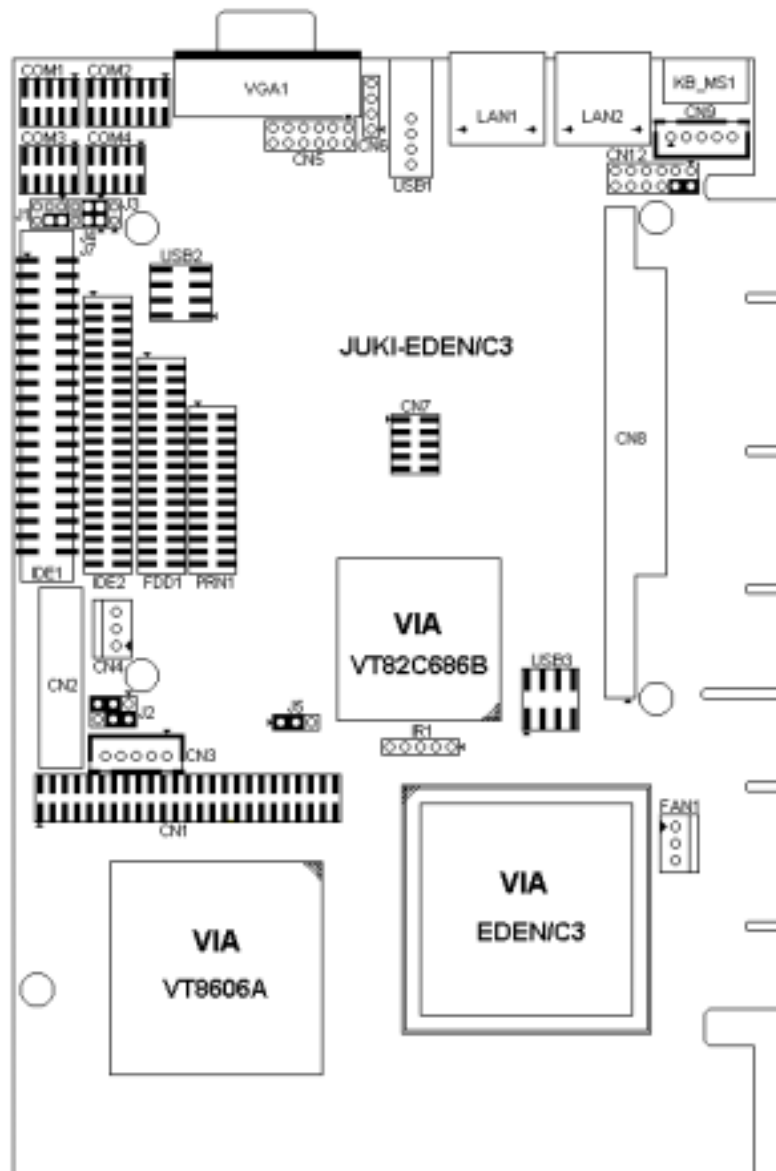
JUKI-EDEN/C3 package includes the following items:

- JUKI-EDEN/C3 main board x 1
- Parallel port + COM port cable x 1
- FDD cable x 1
- ATA IDE cable x 2
- Audio + COM port cable x 1
- Keyboard and mouse Y-Adapter cable x 1
- Driver-CD x 1
- User manual x 1

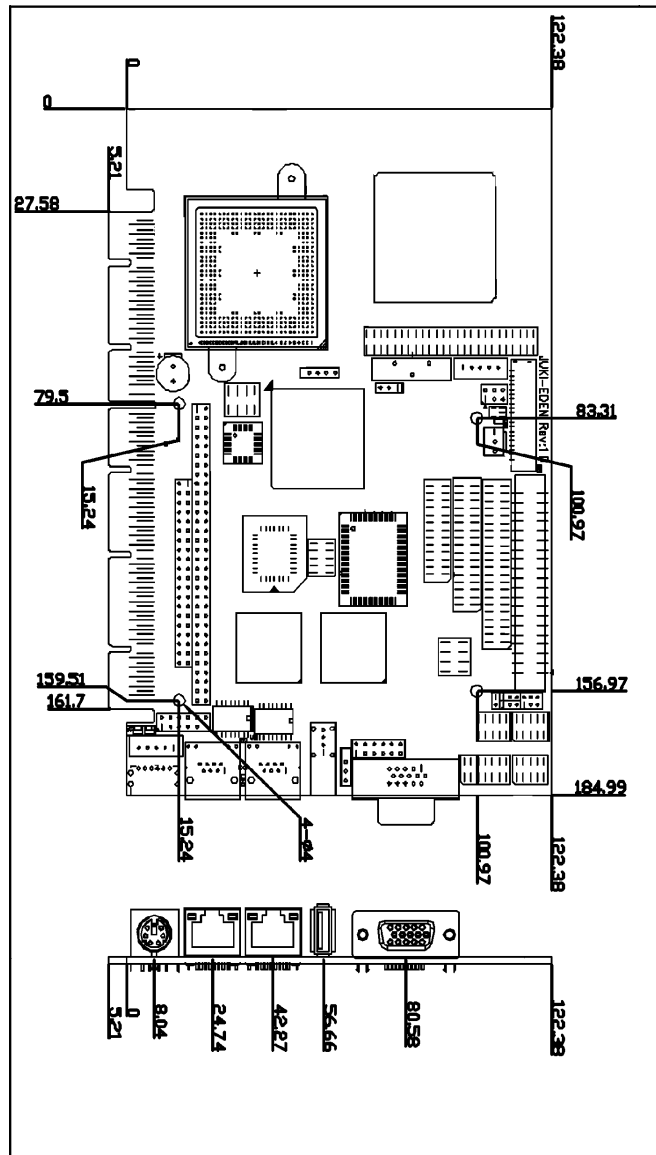
If any of these items is missing or damaged, contact the dealer from whom you purchased this product. Save the shipping materials and carton in case you want to ship or store the product in the future.

2. Installation

2.1 JUKI-EDEN/C3 Layout



2.2 JUKI-EDEN/C3 Dimensions



(Unit: mm)

2.3 Unpacking Precautions

Some components on JUKI-EDEN/C3 are very sensitive to static electric charges and can be damaged by a sudden rush of power. To protect it from unintended damage, be sure to follow these precautions:

- Ground yourself to remove any static charge before touching JUKI-EDEN/C3. You can do it by using a wrist strap connected to the ground or by frequently touching any conducting materials connected to the ground.
- Handle your JUKI-EDEN/C3 by its edges. Do not touch IC chips, leads or circuitry.
- Do not plug any connector or jumper when the power is on.

2.4 Clear CMOS Setup

To clear the CMOS Setup, close the J5 (2-3) for about 3 seconds, and then open it. The system will resume to normal operation mode.

- **J5: Clear CMOS Setup**

J5	Description
1-2	Keep CMOS Setup (Normal Operation)
Short 2-3	Clear CMOS Setup

2.5 Buzzer Function Setting

- **CN12 (2-4): Enabled/Disabled Onboard Buzzer Function**

2 – 4	Description
SHORT	Enabled
OPEN	Disabled

2.6 COM2 RS-232 /422/485 Mode Setting

- **J4: COM2-RS232 or RS422/485 Mode Setting**

J4	Description
1-2 Short	RS232
2-3 Short	RS422/485

- **J7: COM2-RS422 or RS485 Mode Setting**

J7	Description
1-2 Short	RS422*
2-3 Short	RS485

Note: If RS422/485 is in use, the RS232 mode on the main board will be disabled.

2.7 TFT LCD Setting

- **J2: TFT LCD type (5V / 3V & FPCLK / #FPCLK) Setting**

J2	Description
2 – 4	3V TFT LCD
3 – 5	FPCLK
4 – 6	5V TFT LCD
1 – 3	#FPCLK

2.8 COM2 RI Function Setting

- **J1: RI Function Setting**

Short 2 – 4 pin, normal RS232 RI Function

Short 4 – 6, 1 – 3 pin, RI is 5V output

Short 4 – 6, 3 – 5 pin, RI is 12V output

J1	Description
2 – 4	Normal RI Function
1 – 3 4 – 6	RI is 5-Voltage output
3 – 5 4 – 6	RI is 12-Voltage output

2.9 Compact Flash Master/Slave Function Setting

- **J3: Compact Flash Master/Slave Function Setting**

Short 1 - 2 pin, Compact Flash is Master

J3	Description
Close	Master
Open	Slave

3. Connection

This chapter describes how to connect peripherals, switches and indicators to the JUKI-EDEN/C3 board.

3.1 Audio Connectors

The onboard AC'97 CODEC supports several audio functions. The audio connectors are described below.

- **CN5: Audio Connector**
(Speaker-out, Line-out, Line-in, MIC-in)

PIN	Description	PIN	Description
1	NC	2	NC
3	GROUND	4	GROUND
5	Line Out (Left)	6	Line Out (Right)
7	Line In (Left)	8	Line In (Right)
9	GROUND	10	GROUND
11	MIC In	12	GROUND

- **CN6: Audio CD-in Connector**

PIN	Description
1	CD SIGNAL (LEFT)
2	GROUND
3	GROUND
4	CD SIGNAL (RIGHT)

3.2 PCI E-IDE Disk Drive Connector

You can attach up to four IDE (Integrated Device Electronics) devices.

IDE1: Primary IDE Connector (40-pin, 2.54 mm)

IDE2: Secondary IDE Connector (44-pin, 2.0 mm)

- **IDE1 & IDE2: IDE Interface Connector**

PIN	Description	PIN	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	DRQ	22	GROUND
23	IOW#	24	GROUND
25	IOR#	26	GROUND
27	CHRDY	28	REV. PULL LOW
29	DACK	30	GROUND-DEFAULT
31	INTERRUPT	32	N/C
33	SA1	34	N/C
35	SA0	36	SA2
37	HDC CS0#	38	HDC CS1#
39	HDD ACTIVE#	40	GROUND
41	+5V (IDE2)	42	+5V (IDE2)
43	GND (IDE2)	44	N/C (IDE2)

3.3 Parallel Port

JUKI-EDEN/C3 includes an on-board parallel port, accessed via a 26-pin flat-cable.

- **PRN1: Parallel Port Connector**

PIN	Description	PIN	Description
1	STROBE#	2	DATA 0
3	DATA 1	4	DATA 2
5	DATA 3	6	DATA 4
7	DATA 5	8	DATA 6
9	DATA 7	10	ACKNOWLEDGE
11	BUSY	12	PAPER EMPTY
13	PRINTER SELECT	14	AUTO FORM FEED #
15	ERROR#	16	INITIALIZE
17	PRINTER SELECT LN#	18	GROUND
19	GROUND	20	GROUND
21	GROUND	22	GROUND
23	GROUND	24	GROUND
25	GROUND	26	NC

3.4 LVDS LCD Inverter Connector

JUKI-EDEN/C3 is equipped with LVDS controllers, which can be connected to the LVDS LCD Inverter via CN3 connector. The pin assignments are as follows:

- **CN3: LVDS Panel Inverter Connector**

PIN	Description
1	NC
2	GROUND
3	+12V
4	GROUND
5	ENVEE

3.5 USB Port Connectors

JUKI-EDEN/C3 is equipped with two USB 2.0 ports with high bandwidth (480 Mbps) and is backward compatible with USB 1.1.

- **USB 1: USB 2.0 Connector (2 ports each)**

PIN	Description	PIN	Description
1	VCC	3	DATA0+
2	DATA0-	4	GROUND

- **USB 2: USB 2.0 Connector (2 ports each)**

PIN	Description	PIN	Description
1	VCC	5	VCC
2	DATA0-	6	DATA1-
3	DATA0+	7	DATA1+
4	GROUND	8	GROUND

JUKI-EDEN/C3 is also equipped with two USB 1.1 ports.

- **USB 3: USB 1.1 Connector (2 ports)**

PIN	Description	PIN	Description
1	VCC	5	VCC
2	DATA0-	6	DATA1-
3	DATA0+	7	DATA1+
4	GROUND	8	GROUND

3.6 Serial Port

JUKI-EDEN/C3 offers four high-speed NS16C550 compatible UARTs with 16-byte Read/Receive FIFO serial ports.

- **COM1, COM3, COM4: Serial Port Connector**

PIN	Description
1	DATA CARRIER DETECT (DCD)
2	RECEIVE DATA (RXD)
3	TRANSMIT DATA (TXD)
4	DATA TERMINAL READY (DTR)
5	GROUND (GND)
6	DATA SET READY (DSR)
7	REQUEST TO SEND (RTS)
8	CLEAR TO SEND (CTS)
9	RING INDICATOR (RI)

- **COM2: Serial Port Connector (14-pin Header)**

PIN	Description	PIN	Description
1	(DCD)	8	(DSR)
2	(RXD)	9	(RTS)
3	(TXD)	10	(CTS)
4	(DTR)	11	(RI)
5	RROUND	12	NC
6	TX2+	13	TX2-
7	RX2+	14	RX2-

Note: To use RS485, connect to TX2- and TX2+. To use RS422, connect to TX2-, TX2+, RX2+, and RX2-.

3.7 Keyboard/Mouse Connector

JUKI-EDEN/C3 has a 6-pin DIN keyboard/mouse connector and a 5-pin keyboard connector.

- **KB_MS1: Mini DIN Keyboard/Mouse Connector**

PIN	Description
1	KEYBOARD DATA
2	MOUSE DATA
3	GROUND
4	+5V
5	KEYBOARD CLOCK
6	MOUSE CLOCK

- **CN9: 5-pin Keyboard Connector**

PIN	Description
1	KEYBOARD CLOCK
2	KEYBOARD DATA
3	NC
4	GROUND
5	+5V

3.8 IrDA Infrared Interface Port

JUKI-EDEN/C3 comes with an integrated IrDA port which supports either a Serial Infrared (SIR) or an Amplitude Shift Keyed IR (ASKIR) interface.

- **IR1: IrDA Connector**

PIN	Description
1	VCC
2	NC
3	IR-RX
4	Ground
5	IR-TX

3.9 Fan Connector

JUKI-EDEN/C3 has a CPU cooling fan connector, which can supply 12V/500mA to the fan. There is a "rotation" pin in the fan connector, which transfers the fan's rotation signal to the system BIOS in order to recognize the fan speed. Note that only specific fans offer a rotation signal.

- **FAN1: CPU Fan Connector**

PIN	Description
1	Rotation Signal
2	+12V
3	Ground

3.10 VGA Connector

- **VGA1: 15-pin VGA Connector**

PIN	Description	PIN	Description
1	RED	2	GREEN
3	BLUE	4	NC
5	GROUND	6	GROUND
7	GROUND	8	GROUND
9	NC	10	GROUND
11	NC	12	DDCDAT
13	HSYNC	14	VSYNC
15	DDCCLK		

3.11 Digital I/O Connector

The digital IO port of JUKI-EDEN/C3 is 5V CMOS level. Internal pull-up exists on the output.

- **CN7: 10-pin Digital I/O Connector**

PIN	Description	PIN	Description
1	GROUND	2	+5V
3	INPUT1	4	OUTPUT1
5	INPUT2	6	OUTPUT2
7	INPUT3	8	OUTPUT3
9	INPUT4	10	OUTPUT4

3.12 External Switches and Indicators

There are several external switches and indicators for monitoring and controlling your CPU board. All functions are in the CN12 connector.

- **CN12: Pin Assignment and Functions**

FUNCTION	PIN	Description	
SPEAKER	2	SPK SIGNAL	Jump for Buzzer
	4	Buzzer-	
	6	NC	
	8	VCC	
RESET	10	RESET	
	12	GROUND	
HDD LED	9	IDE_LED+	
	11	IDE_LED-	
POWER LED	1	LED+	
	3	LED- (GROUND)	
POWER BUTTON	5	GROUND	
	7	PSON	

3.13 PS-ON Connector

This connector is used to control the ATX power supply.

- **CN4: PS-ON Connector (refer to Appendix F for details)**

PIN	Description
1	+5V Standby
2	PS-ON
3	Ground

3.14 LAN Connector

JUKI-EDEN/C3 is equipped with 10/100Mbps Ethernet controllers, which are connected to the LAN via an RJ45 connector. The pin assignments are as follows:

- **LAN1, LAN2: RJ45 Connectors (10/100M)**

PIN	Description	PIN	Description
1	TX+	7	N/C
2	TX-	8	N/C
3	RX+	9	Speed +
4	N/C	10	Speed -
5	N/C	11	Active/LINK +
6	RX-	12	Active/LINK -

3.15 TFT LCD Connector

JUKI-EDEN/C3 is equipped with TFT LCD controller, which can be connected to the LCD via CN1 connector. The pin assignments are as follows:

- **CN1: TFT LCD Connector**

PIN	Description	PIN	Description
1	N/C	2	FP33
3	FP34	4	FP31
5	FP35	6	FP32
7	FP30	8	FP28
9	FP29	10	FP27
11	FP25	12	FP26
13	FP24	14	FP21
15	FP23	16	FP22
17	FP16	18	FP20
19	FP17	20	FP18
21	FP19	22	FP14
23	FP13	24	FP12
25	FP15	26	FP11
27	FP7	28	FP10
29	+LCD	30	+LCD
31	FP9	32	FP8
33	FP4	34	FP6
35	FP3	36	FP5
37	FP2	38	FP1
39	FPDEN	40	FP0
41	FPCLK	42	VEEON
43	ENVDD	44	FPVS
45	ENVEE	46	FPHS
47	GND	48	GND
49	+12V	50	+12V

3.16 LVDS LCD Connector

JUKI-EDEN/C3 supports 1- or 2-channel (18- or 36-bit) LVDS panel, which can be connected to CN2. The pin assignments are as follows:

- **CN2: LVDS LCD Connector**

PIN	Description	PIN	Description
1	1 st LVDS clock output +	2	1 st LVDS clock output -
3	1 st LVDS data2 output +	4	1 st LVDS data2 output -
5	1 st LVDS data1 output +	6	1 st LVDS data1 output -
7	1 st LVDS data0 output +	8	1 st LVDS data0 output -
9	2 nd LVDS clock output +	10	2 nd LVDS clock output -
11	2 nd LVDS data2 output +	12	2 nd LVDS data2 output -
13	2 nd LVDS data1 output +	14	2 nd LVDS data1 output -
15	2 nd LVDS data0 output +	16	2 nd LVDS data0 output -
17	GROUND	18	GROUND
19	+LCD (+3V or +5V)	20	+LCD (+3V or +5V)

Please refer to Appendix E for LVDS signal mapping.

3.17 PC/104 Connector

- CN8: PC/104 Connector (104-pin ISA bus)

PIN	Description	PIN	Description
A1	IOCHK-	B1	GND
A2	SD7	B2	RSTDRV
A3	SD6	B3	+5V
A4	SD5	B4	IRQ9
A5	SD4	B5	NC
A6	SD3	B6	DREQ2
A7	SD2	B7	NC
A8	SD1	B8	ZWS-
A9	SD0	B9	+12V
A10	IOCHRDY	B10	GND
A11	AEN	B11	SMEMW-
A12	SA19	B12	SMEMR-
A13	SA18	B13	IOW-
A14	SA17	B14	IOR-
A15	SA16	B15	DACK3-
A16	SA15	B16	DREQ3
A17	SA14	B17	DACK1-
A18	SA13	B18	DREQ1
A19	SA12	B19	REFRESH-
A20	SA11	B20	ISACLK
A21	SA10	B21	IRQ7
A22	SA9	B22	IRQ6
A23	SA8	B23	IRQ5
A24	SA7	B24	IRQ4
A25	SA6	B25	IRQ3
A26	SA5	B26	DACK2-
A27	SA4	B27	TC
A28	SA3	B28	BALE
A29	SA2	B29	+5V
A30	SA1	B30	ISA_OSC
A31	SA0	B31	GND
A32	GND	B32	GND
C1	GND	D1	GND
C2	SBHE-	D2	MCS16-
C3	SA23	D3	IOCS16-
C4	SA22	D4	IRQ10
C5	SA21	D5	IRQ11
C6	SA20	D6	IRQ12
C7	SA19	D7	IRQ15
C8	SA18	D8	IRQ14
C9	SA17	D9	DACK0-
C10	MEMR-	D10	DREQ0
C11	MEMW-	D11	DACK5-
C12	SD8	D12	DRREQ5
C13	SD9	D13	DACK6-
C14	SD10	D14	DREQ6
C15	SD11	D15	DACK7-
C16	SD12	D16	DREQ7
C17	SD13	D17	+5V
C18	SD14	D18	MASTER-
C19	SD15	D19	GND
C20	NC	D20	GND

3.18 Floppy Connector

JUKI-EDEN/C3 board is equipped with a 34-pin daisy-chain driver connector cable.

- **FDD1: Floppy Connector**

PIN	Description	PIN	Description
1	GROUND	2	RWC0-
3	GROUND	4	NC
5	GROUND	6	RWC1-
7	GROUND	8	INDEX-
9	GROUND	10	MO-A
11	GROUND	12	DS-B
13	GROUND	14	DS-A
15	GROUND	16	MO-B
17	GROUND	18	DIR-
19	GROUND	20	STEP-
21	GROUND	22	WD-
23	GROUND	24	WGATE-
25	GROUND	26	TRK0-
27	GROUND	28	WP-
29	GROUND	30	RDATA-
31	GROUND	32	HEAD-
33	GROUND	34	DSKCHG-

3.19 Compact Flash Storage Card Socket

JUKI-EDEN/C3 configures Compact Flash Storage Card in IDE Mode. This type II Socket is compatible with IBM Micro Drive.

- **CF1: Compact Flash Storage Card Socket Pin Assignment**

PIN	Description	PIN	Description
1	3.18 Floppy Connector 32	26	PULL DOWN
2	D3	27	D11
3	D4	28	D12
4	D5	29	D13
5	D6	30	D14
6	D7	31	D15
7	CS1#	32	CS3#
8	N/C	33	N/C
9	GROUND	34	IOR#
10	N/C	35	IOW#
11	N/C	36	+5V
12	N/C	37	IRQ15
13	VCC	38	VCC
14	N/C	39	MASTER/SLAVE
15	N/C	40	N/C
16	N/C	41	RESET#
17	N/C	42	IORDY
18	A2	43	N/C
19	A1	44	+5V
20	A0	45	ACTIVE#
21	D0	46	PDIAG#
22	D1	47	D8
23	D2	48	D9
24	N/C	49	D10
25	PULL DOWN	50	GROUND

4. AMI BIOS Setup

4.1 Introduction

AMI Setup program enables users to modify the basic system configuration. This special information is then stored in battery-backed RAM so that it retains the Setup information when the power is turned off.

4.2 Starting Setup

AMI BIOS will be activated immediately when you first power on the computer. BIOS reads the system information contained in CMOS and begins the process of checking out the system and configuring it. When the process is completed, BIOS will seek an operating system on one of the disks and then launch and turn control over to the operating system.

When BIOS is in control, the Setup program can be activated in one of two ways:

1. By pressing immediately after switching the system on, or
2. By pressing when the following message appears briefly at the bottom of the screen during the POST.

Press DEL to enter SETUP

If the message disappears before you respond and you still wish to enter Setup, restart the system to try again by turning it OFF. Then turn ON the system or press the "RESET" button on the system case. You may also restart the system by simultaneously pressing <Ctrl>, <Alt>, and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to:

PRESS F2 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 details about how to navigate in the Setup program using the keyboard.

Up arrow	Move to the previous item
Down arrow	Move to the next item
Left arrow	Move to the item on the left
Right arrow	Move to the item on the right
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
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
F1 key	General help, only for Status Page Setup Menu and Option Page Setup Menu
F2 /F3 key	Change color from total 16 colors. F2 to select color forward, (Shift) F2 to select color backward
F4 key	Reserved
F5 key	Reserved
F6 key	Reserved
F7 key	Reserved
F8 key	Reserved
F9 key	Reserved
F10 key	Save all CMOS changes, only for Main Menu

4.4 Getting Help

Press F1, a help window will pop and describe the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc> or the F1 key again.

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

It is strongly recommended that you should avoid making any changes to the chipset defaults. Otherwise, it may cause system malfunction.

4.5 Main Menu

When you enter AMIBIOS™ CMOS Setup Utility, the Main Menu will appear on the screen. The Main Menu enables you to select 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.



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

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

Standard CMOS Setup

Use this menu for basic system configuration.

Advanced CMOS Setup

Use this menu to set the advanced features available on your system.

Advanced Chipset Setup

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

Power Management Setup

When Disabled, SMI will not be initialized. Complete power management functionality will be removed until this option is set to Enabled.

PCI / Plug and Play Setup

This entry appears if your system supports PnP / PCI.

Peripheral Setup

Use this menu to specify your settings for integrated peripherals.

Hardware Monitor Setup

Use this menu to monitor your hardware.

Auto-detect Hard Disks

Use this menu to specify your settings for hard disks control.

Change Supervisor Password

Use this menu to set User and Supervisor Passwords.

Auto Configuration with Optimal Settings

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

Auto Configuration with Fail-Safe Settings

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

Save Settings and Exit

Save CMOS value changes to CMOS and exit setup.

Exit Without Saving

Abandon all CMOS value changes and exit setup.

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.

AMIBIOS SETUP - STANDARD CMOS SETUP									
(C)2001 American Megatrends, Inc. All Rights Reserved									
Date (mm/dd/yyyy):	Mon	May	05, 2003	Base Memory:	0 KB				
Time (hh/mm/ss) :	09:54:58	Ext'd Memory:	0 MB						
Floppy Drive A:	1.44 MB		3%						
Floppy Drive B:	Not Installed								
	Type	Size	Cyl'n	Head	WPCOM	Sec	LBA Mode	Blk Mode	PIO 32Bit Mode
Pri Master:	Auto								On
Pri Slave :	Auto								On
Sec Master:	Auto								On
Sec Slave :	Auto								On
Boot Sector Virus Protection	Disabled								
Month:	Jan - Dec			ESC:Exit	11:Sel				
Day:	01 - 31			PgUp/PgDn:	Modify				
Year:	1980 - 2099			F1:Help	F2/F3:Color				

Main Menu 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
IDE Secondary Master	Options are in its sub menu (described in Table 3)	Press <Enter> to enter the sub menu of detailed options
IDE Secondary Master	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 360 K, 5.25 in 1.2 M, 5.25 in 720 K, 3.5 in 1.44 M, 3.5 in 2.88 M, 3.5 in	Select the type of floppy disk drive installed in your system
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
Base Memory	N/A	Displays the amount of conventional memory detected during boot up
Extended Memory	N/A	Displays the amount of extended memory detected during boot up

4.7 Advanced CMOS Setup

This section enables you to configure your system for basic operation. You have the opportunity to select the system's default speed, boot-up sequence, keyboard operation, shadowing and security.



Quick Boot

When Quick Boot is set to Enabled, DRAM testing function will be disabled.

1st /2nd /3rd Boot Device

This option sets the type of device for the first boot drives that the AMIBIOS attempts to boot from after AMIBIOS POST completes. The settings are Disabled, IDE-0, IDE-1, IDE-2, IDE-3, Floppy, ARMD-FDD, ARMD-HDD, CDROM, or SCSI.

Try Other Boot Devices

Set this option to Yes to instruct AMIBIOS to attempt to boot from any other drive in the system if it cannot find a boot drive among the drives specified in the 1st Boot Device, 2nd Boot Device, 3rd Boot Device, 4th Boot Device options. The settings are Yes or No.

Floppy Access Control

This option specifies the read/write access that is set when booting from a floppy drive. The settings are Read/Write or Read-Only.

Hard Disk Access Control

This option specifies the read/write access that is set when booting from a hard disk drive. The settings are Read/Write or Read-Only.

S.M.A.R.T. for Hard Disks

Self-Monitoring, Analysis and Reporting Technology. This option can help BIOS to warn the user of the possible device failure and give user a chance to back up the device before actual failure happens. The settings are Enabled or Disabled.

Boot Up Num-Lock

When On, this option turns off Num Lock when the system is powered on so the end user can use the arrow keys on both the numeric keypad and the keyboard.

Floppy Drive Swap

Set this option to Enabled to permit drives A: and B: to be swapped. The settings are Enabled or Disabled.

Floppy Drive Seek

Set this option to Enabled to specify that floppy drives A: will perform a Seek operation at system boot. The settings are Enabled or Disabled.

PS/2 Mouse Support

When this option is enabled, BIOS support a PS/2- type mouse.

System Keyboard

This option does not specify if a keyboard is attached to the computer. It specifies if error messages will be displayed if a keyboard is not attached. This option enables you to configure workstation without a keyboard. The settings are Absent, or Present.

Primary Display

Select this option to configure the type of monitor attached to the computer. The settings are Monochrome, Color 40x25, Color 80x25, VGA/PGA/EGA, or Not Install.

Password Check

This option enables password check every time the system boots or the end user runs Setup. If "Always" is chosen, a user password prompt will appear every time the computer is turned on. If "Setup" is chosen, the password prompt will appear if BIOS is executed.

Boot To OS/2

Set this option to Enabled when running OS/2 operating system and using more than 64 MB system memory on the motherboard. The settings are YES or NO.

Wait For 'F1' If Error

If this option is enabled, AMIBIOS will wait for the end user to press <F1> before continuing. If this option is disabled, AMIBIOS continues the boot process without waiting for <F1> to be pressed. The settings are Enabled or Disabled.

Hit 'DEL' Message Display

Disabling this option prevents "Hit if you want to run Setup" from appearing when the system boots. The settings are Enabled or Disabled.

Internal Cache

The option enabled or disabled the internal cache memory in the processor.

External Cache

The option enables secondary cache memory.

System BIOS Cacheable

When this option is set to Enabled, the System ROM area from F0000-FFFFF is copied (shadowed) to RAM for faster execution.

C000, 32k Shadow

When this option is set to Enabled, the Video ROM area from C0000-C7FFF is copied (shadowed) to RAM for faster execution.

Enabled: The contents of the video ROM area from C0000h - C7FFFh are copied (shadowed) from ROM to RAM for faster execution.

Cached: The contents of the video ROM area from C0000h - C7FFFh are copied from ROM to RAM and can be written to or read from cache memory.

Disabled: The contents of the video ROM are not copied to RAM.

C800, 16k Shadow

These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enabled, Disabled, or Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

CC00, 16k Shadow

These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enabled, Disabled, or Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

D000, 16k Shadow

These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enabled, Disabled, or Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

D400, 16k Shadow

These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enabled, Disabled, or Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

D800, 16k Shadow

These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enabled, Disabled, or Cached. The ROM area that is not used by ISA adapter cards will be allocated to PCI adapter cards.

DC00, 16k Shadow

These options enable shadowing of the contents of the ROM area named in the option title. The settings are Enabled, Disabled, or Cached. ISA adapter cards will be allocated to PCI adapter cards.

4.8 Advanced Chipset Setup



This section enables you to configure the system based on the specific features of the installed chipset. The 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. Do not change the default settings or it may cause system malfunction.

DRAM Frequency

This setting is decided by Memory frequency.

SDRAM CAS# Latency

This setting is decided by Memory CAS latency.

AGP Aperture Size

Select the size of AGP aperture. The aperture is a portion of the PCI Memory address space. Host cycles that hit the aperture range are forwarded to the AGP without any translation.

USB Controller

Select Enabled if your system contains a USB controller and you have USB Peripherals.

USB Device Legacy support

Enable or Disable for USB device legacy support.

4.9 Power Management Setup



ACPI Aware O/S

This feature is switch of ACPI function. Configuration options: Yes or No.

ACPI Standby State

To choose STR (S3) or POS (S1) function. Configuration options: [S3/STR] or [S1/POS]

Power Management/APM

When Disabled, SMI will not be initialized, and complete power management functionality will be removed until this option is set to Enabled.

Video Power Down Mode

Video power down when system in Suspend mode.
Video power down when system in Standby mode.

Hard Disk Power Down Mode

Hard Disk power down when system in Suspend mode.
Hard Disk power down when system in Standby mode.

Suspend Time Out

If no activity occurs during this time period, the BIOS will place the system into suspending low power state. The "Standby Time Out" period must expire first (if enabled) before this time out period begins.

IRQ3, 4, 5, 7, 9, 10, 11, 13, 14, 15

As Individual IRQ Wake Up Events.

Power Button Function

On/Off allows the system to switch off immediately the power button is pressed. Suspend allows the system to suspend immediately the power button is pressed.

Resume on Ring/LAN

Allows the system to wake up in response to a Ring Indicator signal from external modem. Wake up on LAN gives you the ability to remotely boot a PC from across a network even if it has been powered down.

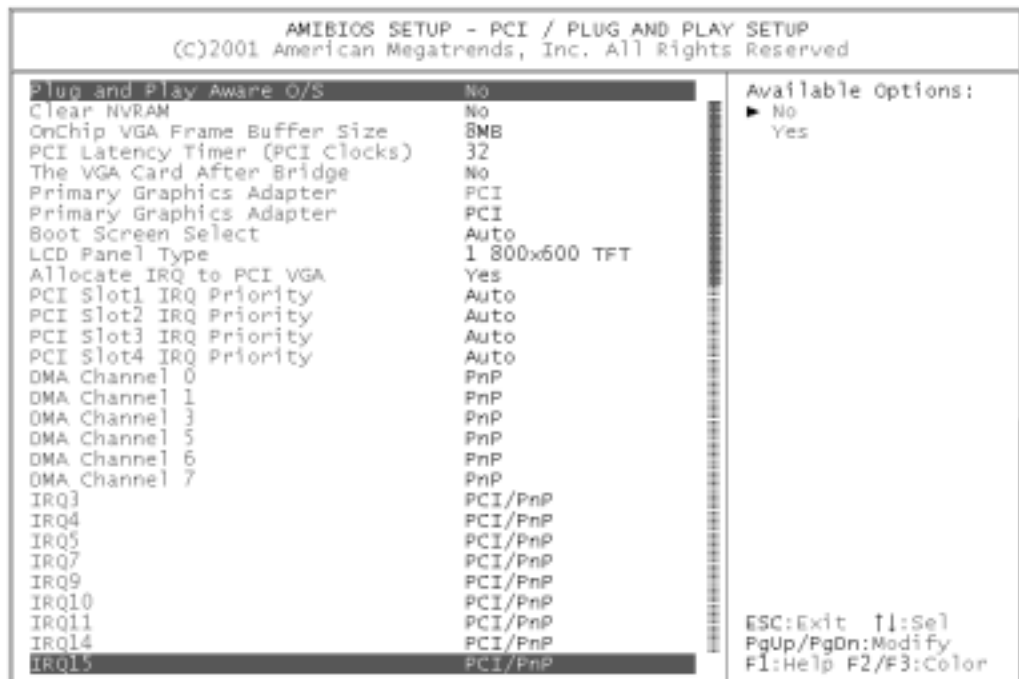
Resume On RTC Alarm

When this option is set enabled, system will wake up from soft off mode according to the time you set.

Power Type Select

To select Power Type for AT or ATX.

4.10 PCI / Plug and Play Setup



Plug and Play Aware O/S

If enables, BIOS will configure only PnP ISA boot devices (i.e. all PnP ISA cards which has boot flag set). And PnP aware OS will configure all other devices. If disabled, BIOS will configure all devices.

Clear NVRAM

When this option is set to Yes, system can clear NVRAM automatically. The settings are Yes or No.

On Chip VGA Frame Buffer Size

To select frame buffer size (2~32MB) for VGA.

PCI Latency Timer (PCI Clocks)

This option specifies the latency timing (in PCI clocks) for PCI devices installed in the PCI expansion slots. The settings are 32, 64, 96, 128, 160, 192, 224, or 248.

Boot Screen Select

To select Boot Screen from CRT or LCD. Select CRT+LCD is Boot from CRT and LCD.

LCD Panel Type

To select LCD Panel type.

Allocate IRQ to PCI VGA

Set this option to Yes to allocate an IRQ to the VGA device on the PCI bus. The settings are Yes or No.

PCI Slot1 / Slot2 / Slot3 / Slot4 IRQ Priority

To specify the IRQ priority for PCI device installed in the PCI expansion slot. The settings are Auto, (IRQ) 3, 4, 5, 7, 9, 10, and 11, in priority orders.

DMA Channel 0, 1, 3, 5, 6, 7

To specify the bus type used by each DMA channel. The settings are PnP or ISA/EISA.

IRQ 3, 4, 5, 7, 9, 10, 11,14,15

To specify the bus that the specified IRQ line is used on. This option enables you to reserve IRQs for legacy ISA adapter cards. It determines if AMIBIOS should remove an IRQ from the pool of available IRQs passed to devices that are configurable by the system BIOS. The available IRQ pool is determined by reading the ESCD NVRAM. If more IRQs must be removed from the pool, the end user can use the option to reserve the IRQ by assigning an ISA/EISA setting to it. Onboard I/O is configured by AMIBIOS. All IRQs used by onboard I/O are configured as PCI/PnP.

4.11 Peripheral Setup

Peripheral Setup enables you to configure your system to most energy saving mode when operating in a manner consistent with your own style of computer use.

AMIBIOS SETUP - PERIPHERAL SETUP (C)2001 American Megatrends, Inc. All Rights Reserved		
OnBoard FDC	Enabled	Available Options: Disabled ▶ Enabled
OnBoard Serial Port1	3F8/COM1	
OnBoard Serial Port2	2F8/COM2	
Serial Port2 Mode	Normal	
Duplex Mode	N/A	
OnBoard Parallel Port	378	
Parallel Port Mode	Normal	
EPP Version	N/A	
Parallel Port DMA Channel	N/A	
Parallel Port IRQ	7	
OnBoard Serial Port3	3E8/COM3	
Serial Port3 IRQ	11	
OnBoard Serial Port4	2E8/COM4	
Serial Port4 IRQ	10	
OnBoard IDE	Both	
OnBoard AC'97 Audio	Enabled	
		ESC:Exit F1:Sel PgUp/PgDn:Modify F1:Help F2/F3:Color

Onboard Serial Port 1/Port 2/Port 3/Port4

This option specifies the base I/O port address of serial port 1. The settings are Auto (AMIBIOS automatically determines the correct base I/O port address), Disabled, 3F8h, 2F8h, 2E8h, or 3E8h.

Serial Port4 Mode

This option specifies the IR active pulse or inverting clock of serial port B.

IR Pin Select

The SIN/SOUT pin of Serial Port 3 function or IRRX/IRTX pin if IR function in normal condition.

Onboard Parallel Port

This option specifies the base I/O port address of parallel port on the motherboard. The settings are Disabled, 378h, 278h, or 3BCh.

Parallel Port Mode

This option specifies the parallel port mode. The settings are Normal, Bi-Dir, EPP, and ECP.

Normal: The normal parallel port mode is used.

Bi-Dir: Use this setting to support bi-directional transfers on the parallel port.

EPP: The parallel port can be used with devices that adhere to the Enhanced Parallel Port (EPP) specification. EPP uses the existing parallel port signals to provide asymmetric bi-directional data transfer driven by the host device.

ECP: The parallel port can be used with devices that adhere to the Extended Capabilities Port (ECP) specification. ECP uses the DMA protocol to achieve data transfer rates up to 2.5 Megabits per second. ECP provides symmetric bi-directional communication.

EPP Version

EPP data or address read cycle 1.9 or 1.7

Parallel Port DMA Channel

This option is only available if the setting for the Parallel Port Mode option is ECP. It sets the DMA channel used by the parallel port. The settings are DMA Channel 0, 1, or 3.

Parallel Port IRQ

This option specifies the IRQ used by the parallel port. The settings are Auto, (IRQ) 5, (IRQ) 7.

On Board IDE

This option is select IDE Function Enable or Disable.

On Board AC'97 Audio

Enable or Disable AC'97 Audio Function.

4.12 Hardware Monitor Setup

The hardware monitor setup page is shown below:

AMIBIOS SETUP - HARDWARE MONITOR SETUP	
(C)2001 American Megatrends, Inc. All Rights Reserved	
== System Hardware Monitor ==	
TSENS1 Temperature	39°C/102°F
TSENS2 Temperature	42°C/107°F
CPU Fan Speed	0 PRM
Vcore	1.112 V
+ 2.500v	2.550 V
+ 3.300v	3.323 V
+ 5.000v	4.847 V
ESC:Exit ↑↓:Sel PgUp/PgDn:Modify F1:Help F2/F3:Color	

4.13 Change Supervisor Password

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



Supervisor password:

You can enter and change the options of the setup menus with supervisor password.

User password:

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

ENTER PASSWORD:

Type the password of up to eight characters in length, and press <Enter>. Previous password will be cleared from CMOS memory. Confirm the new password and press <Enter>. To quit, press <Esc>.

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

PASSWORD DISABLED:

When a password is enabled, you will be prompted to enter it every time you try to enter Setup. This prevents an unauthorized person from changing any part of your system configuration. You can also require the BIOS to request a password every time your system is rebooted. This would prevent unauthorized use of your computer. You determine when the password is required within the BIOS Features Setup Menu and its Security option (see Section 3). If the Security option is set to "Always", a password will be required both at boot and at entry to Setup. If set to "Setup", prompting will only occur when trying to enter Setup.

Appendix A: Watchdog Timer

The Watchdog Timer is a device to ensure that standalone systems can always recover from abnormal conditions that system 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 Watchdog Timer
043/843 (hex)	Read	Disable Watchdog Timer

Prior to enable Watchdog Timer, users have to set the time-out period. The resolution of the timer is 1 second and the range of the timer is from 1 second to 255 seconds. 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, 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). For example, 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 APPLICATION HERE

CMP EXIT_AP, 0

JNE W_LOOP

MOV DX, TIMER_STOP

IN AL, DX

;;EXIT AP

Appendix B: I/O Address Map

- **I/O Address Map**

I/O Address Map	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 Controller
080-0BF	DMA Page Register
0A0-0BF	Interrupt Controller # 2
0C0-0DF	DMA Controller # 2
0F0-0F0	Clear Math Coprocessor Busy
0F1-0F1	Reset Math Coprocessor
0F8-0FF	Math Coprocessor
170-1F7	BUS Master PCI IDE Controller
278-27F	Parallel Printer Port 2
2E8-2EF	Serial Port 4
2F8-2FF	Serial Port 2
376-376	BUS Master PCI IDE Controller
378-37F	Parallel Printer Port 1
3B0-3DF	AGP Graphic Adapter
3E8-3EF	Serial Port 3
3F0-3F7	Floppy Disk Controller
3F8-3FF	Serial Port 1
443	Watchdog timer enable
480-48F	PCI BUS
843/043	Watchdog timer disable

- **1st MB Memory Address Map**

Memory address	Description
00000-9FFFF	SYSTEM MEMORY
A0000-BFFFF	VGA BUFFER
C0000-CFFFF	VGA BIOS
E0000-FFFFFF	SYSTEM BIOS
100000	EXTEND MEMORY

- **IRQ Mapping Chart**

IRQ0	System Timer	IRQ8	RTC CMOS clock
IRQ1	Keyboard	IRQ9	ACPI STEERING
IRQ2	IRQ Controller	IRQ10	COM4
IRQ3	COM2	IRQ11	COM3
IRQ4	COM1	IRQ12	PS/2 mouse
IRQ5	USB	IRQ13	FPU
IRQ6	FDC	IRQ14	Primary IDE
IRQ7	Printer	IRQ15	Secondary IDE

- **DMA Channel Assignment**

Channel	Function
0	Available
1	Available
2	Floppy disk
3	Available
4	Cascade for DMA controller 1
5	Available
6	Available
7	Available

Appendix C: How to Use Wake-up Function

JUKI-EDEN/C3 provides two kinds of Wake-up function. This page describes how to use Modem Wake-Up and LAN Wake-Up functions. Wake-Up function only works with ATX power supply.

Wake-Up On Modem (Ring):

You must set the option **Wake-Up On LAN/Ring** of CMOS SETUP to be enabled. 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, LAN Link/Active LED will flash. This indicates that the LAN chip has entered standby mode and is waiting for Wake-Up signal. You can use other computers to wake up yours by sending ID to it.

ID: ID is the MAC 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

Appendix D: Digital I/O

One of digital circuit's characteristics is its fast response to high or low signal. This kind of response is highly needed for harsh and critical industrial operating environment. Therefore, JUKI-EDEN/C3 is designed with 4-bit digital inputs and 4-bit digital outputs.

There are two kinds of signals (Input and Output) used by the Digital I/O function. These signals are used to control external devices that need On/Off circuit or TTL devices. When one of the signals has been selected, users can read or write data to the system through the Digital I/O function.

A BIOS function call (INT 15H) is used to control the Watchdog Timer:

INT 15H:

AH – 6FH
<u>Sub-function:</u> AL – 8: Set the Digital port as INPUT AL : Digital I/O input value

Example program:

```
MOV AX, 6F08H ;setting the Digital port is input
INT 15H ;
```

AL low byte = value

AH – 6FH
<u>Sub-function:</u> AL – 9: Set the Digital port as OUTPUT BL : Digital I/O output value

Example program:

```
MOV AX, 6F09H ;setting the Digital port is output
MOV BL, 09H ;Digital value is 09H
INT 15H ;
```

Digital Output is 1001b

Appendix E: Signal Mapping of LVDS

- **18-bit LVDS Mapping Table**

(R0)	1 st LVDS (data0 output -) (data0 output +)	(B2)	1 st LVDS (data2 output -) (data2 output +)
(R1)		(B3)	
(R2)		(B4)	
(R3)		(B5)	
(R4)		HSYNC	
(R5)		VSYNC	
(G0)		DE	
(G1)	1 st LVDS (data1 output -) (data1 output +)	DCLK	1 st LVDS (clock output -) (clock output +)
(G2)			
(G3)			
(G4)			
(G5)			
(B0)			
(B1)			

- **36-bit LVDS Mapping Table**

(RA0)	1 st LVDS (data0 output -) (data0 output +)	(BA2)	1 st LVDS (data2 output -) (data2 output +)
(RA1)		(BA3)	
(RA2)		(BA4)	
(RA3)		(BA5)	
(RA4)		HSYNC	
(RA5)		VSYNC	
(GA0)		DE	
(GA1)	1 st LVDS (data1 output -) (data1 output +)	DCLKA	1 st LVDS (clock output -) (clock output +)
(GA2)			
(GA3)			
(GA4)			
(GA5)			
(BA0)			
(BA1)			

(RB0)	2 nd LVDS (data0 output -) (data0 output +)	(BB2)	2 nd LVDS (data2 output -) (data2 output +)
(RB1)		(BB3)	
(RB2)		(BB4)	
(RB3)		(BB5)	
(RB4)		NC	
(RB5)		NC	
(GB0)		NC	
(GB1)	2 nd LVDS (data1 output -) (data1 output +)	DCLKB	2 nd LVDS (clock output -) (clock output +)
(GB2)			
(GB3)			
(GB4)			
(GB5)			
(BB0)			
(BB1)			

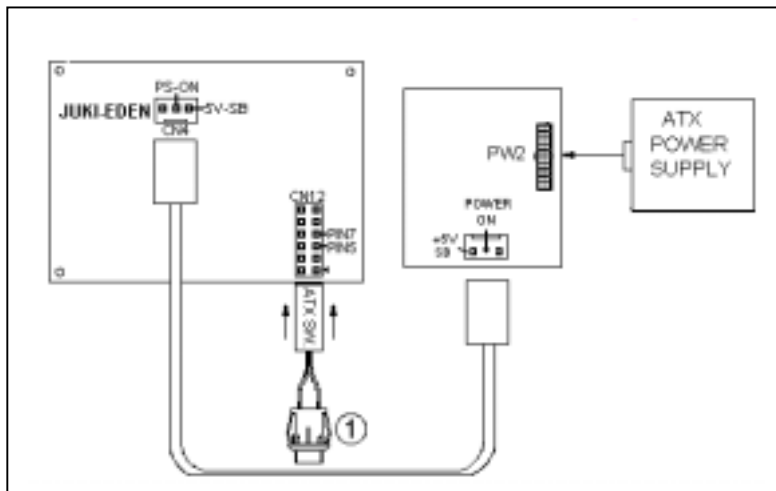
Appendix F: ATX Power Supply

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

For backplanes with ATX Connector

1. Disconnect AC cord of the Power Supply from AC source to prevent sudden electric surge to the board.
2. Check the type of your CPU board. The CPU board supports ATX power supply but has two types of power switch connection.

JUKI-EDEN/C3 (through Power Button & GND):



Connect the ATX power button switch to the CN12 (power button). And connect the power cable from Backplane to CN4 of CPU card.

To turn on the system, press the button once. To turn off the power supply, press the ATX power switch button for about 4 seconds.