

TriGem 440EX Micro ATX Motherboard (Como3)

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I. Introduction

1. Generation Description

The *Como3* Micro ATX motherboard delivers the excellent functionality, the cost effective performance. This board is designed to support Intel Pentium II processor with MMX media enhancement technology, and to provide the high performance, component level interconnect targeted 3D graphical display application (A.G.P) and Intel's OPSD manageability for the office environment. Special controller is built in the board to support ACPI function fully, however it will be the optional feature according to the market segment.

- ❑ Small PCB size in the Micro ATX form factor
 - 243mm * 223mm * 1.6t (4 Layers)
 - Cost-effective PCB size
- ❑ Intel Celeron processor 266/300MHz
 - Single Edge Contact Cartridge design not include a dedicated L2 cache
 - Slot 1 connector
- ❑ 2 DIMM banks for EDO/SDRAM module
 - 3.3V EDO/SDRAM supported (168pin unbuffered DIMM)
 - Supports up to 256MB (128MB * 2 banks)
- ❑ High performance targeted 3D graphical display.
 - Built-in AGP graphic controller (ATI RAGE IIC)
 - SGRAM 2Mbyte Video Memory on Board(32bit operation)
- ❑ Intel 440EX core and FDC37M602 Super I/O controller
 - High performance core chip with two BGA package
- ❑ Built-in high performance 3D ISA audio CODEC
 - Built-in ISA audio CODEC (CS4235B)
- ❑ Support Intel's OPSD manageability level-3
 - Remote wake up solution : LAN(option) and Modem
 - FAN control logic : CPU Fan, system Fan(option)
 - System chassis intrusion(option)
 - System voltage and temperature management(option)

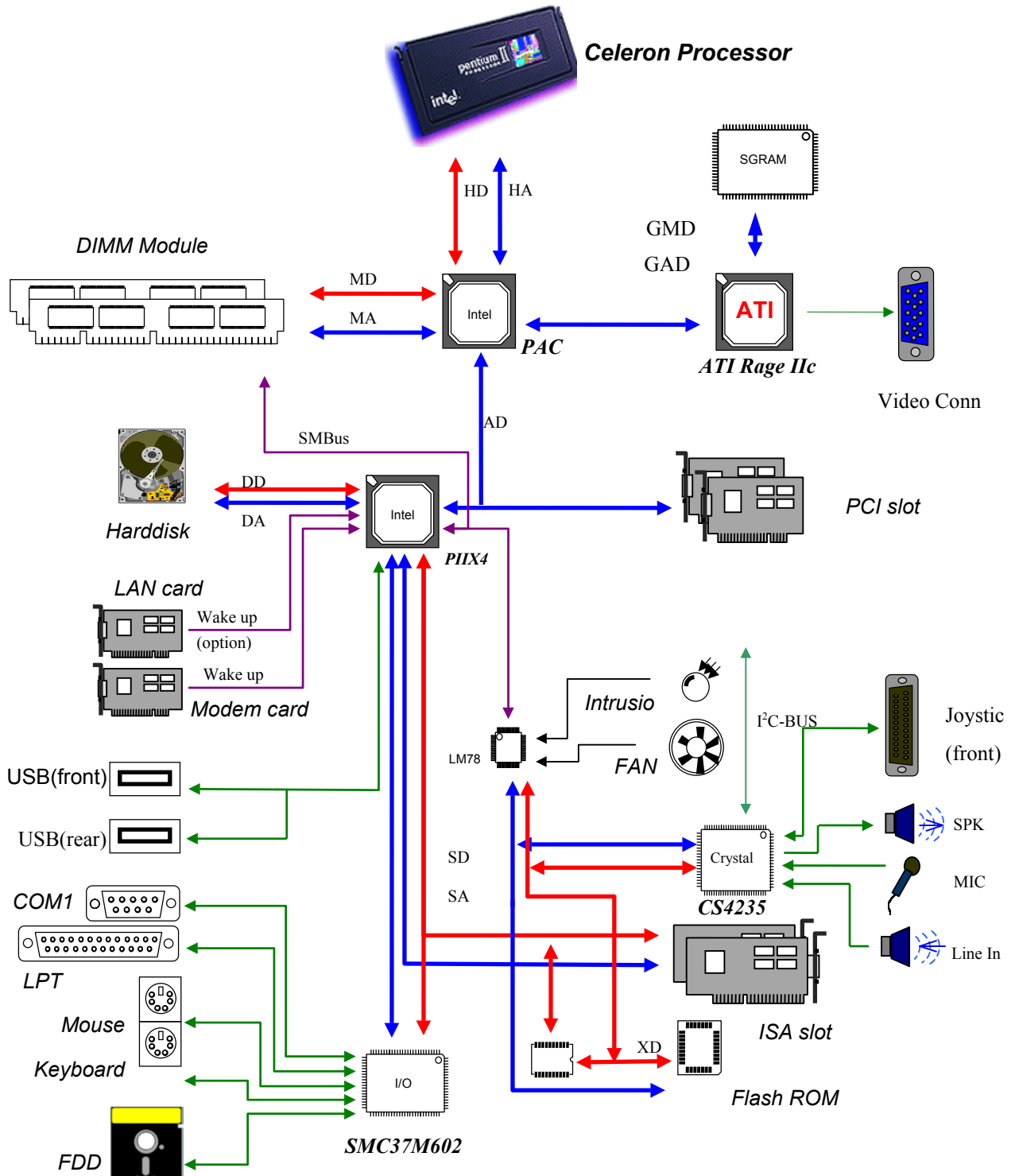
☞ Management Levels

Level-1	ECC on memory, DMTF compliant software
Level-2	Alert generation in system temperature, voltage, FAN speed, chassis intrusion
Level-3	Remote wake up over LAN, service boot
Level-4	Resume to task, improved power management, OS independent management FAN off

- ❑ 2 ISA, 2 PCI slots and 1 shared slot
 - Master operating function on all PCI slot
- ❑ Variable I/O interface
 - Two USB port (One in front panel, the other in rear port) : Keyboard, Mouse, CCD Camera
 - Two PS/2 port : Keyboard, Mouse
 - Two Serial port : COM1 port and optional COM2 port by Header Connector
 - One Parallel port : DB25, LPT1
 - One Audio/Joystick port : 1 Speaker, 1MIC_IN, 1 LINE_IN, 1 MIDI/Joystick port(front panel)
 - One FDD connector : 34-pin, boxing type

- Two E-IDE connector : 40-pin, boxing type, primary and secondary interface
- One power connector : 20-pin, standard ATX power connector module
- One power connector : 6-pin, 1394 power connector(option)
- One AMC connector : 38-pin, ATI AMC interface

2. Function Block Diagram



II. System Overview

1. Major Unit

Core Chipsets	Vendor	Functional description	Package	Remarks
82443EX	Intel	PCIset AGP controller	BGA-492pin	SL2SA
82371EB PIIX4E	Intel	PCI to ISA /IDE Xcelerator	BGA-324pin	SL2MY
FDC37M602	ITE	Super I/O Chipset	PQFP-100pin	A
ICS9148-08	ICS	System Clock Chip	SSOP-48pin	
SC1164	SEMTECH	DC to DC Converter	SOP-24pin	
CS4235	Crystal	ISA Sound Controller	QFP-100pin	JQ(Rev.C)
3D RAGE IIC	ATI	AGP Graphic Controller	BGA-256pin	215R2BUA21
LM79CCVF	NSC	Management Extension Hardware	PQFP-44pin	J

☞ For more information, refer to the data sheet.

2. Upgradeability

This section describes the major specification of user upgradeable part. CPU, Memory, and Extension slot will provide the user to leverage the overall performance by adding or changing these part with other higher.

- ☐ CPU : CELERON processor-266/300MHz
- ☐ Memory : EDO, SDRAM (2 Banks, 16MB - 256MB)
- ☐ Expansion slot : 2 master PCI, 2 ISA, and 1 shared slot

2-1 Processor

This motherboard supports a single Celeron processor. The processor's VID pin automatically program the voltage regulator on the motherboard to the required processor voltage. The motherboard supports processors that run internally at 266/300MHz.

- ☐ Packing
 - Single Edge Contact (S.E.C.) cartridge - processor core, second level cache, thermal plate..
 - Retention mechanism attached to the motherboard.

2-2. Memory

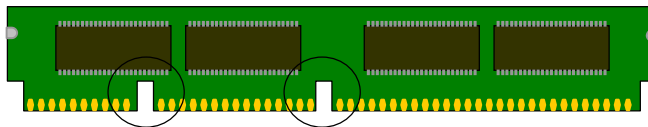
The memory controller, Intel 440EX support EDO module, and SDRAM module, up to two banks, however EDO and SDRAM module will be available with 168-pin unbuffered DIMM module and 3.3V version. The BIOS automatically detects memory type, size, and speed.

The motherboard supports the following memory features.

- 168-pin DIMMs with gold-plated contacts
- 66MHz SDRAM only
- Non-ECC(64-bit) memory
- 3.3 V Memory only
- Single- or double-sided DIMMs in the following sizes

DIMM Size	Non-ECC Configuration
8 MB	1 Mbit * 64
16 MB	2 Mbit * 64
32 MB	4 Mbit * 64
64 MB	8 Mbit * 64
128 MB	16 Mbit * 64

☞ 168-pin DIMM module Notch Key Definitions



DRAM key position (buffered or unbuffered) Voltage key position (3.3V or 5V)

☞ To function properly, SDRAM DIMMs must meet the Intel 4-clock, 66MHz unbuffered SDRAM specification for either 64-bit SDRAM.

2-3. Expansion Slot

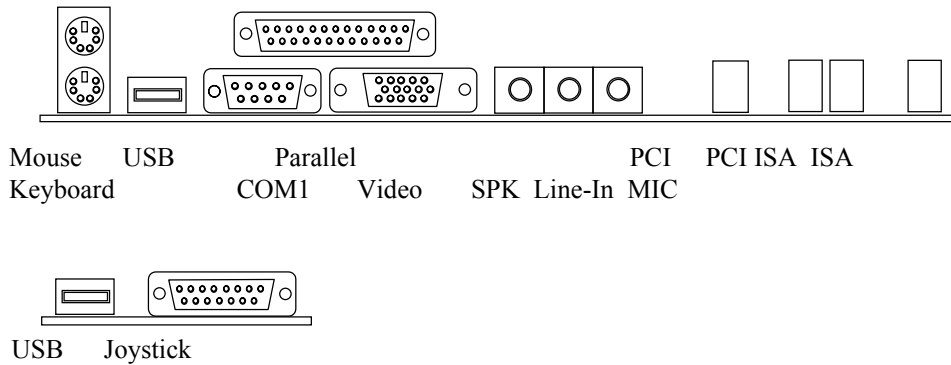
This Micro ATX has two ISA expansion slots and two PCI expansion slot, but total three add-on cards could be available together due to one shared slot. Also all PCI slot can support the master device on it with PnP function.

Interrupt and IDSEL assignment of PCI slots

PCI slot	IDSEL	Interrupt mapping				Remarks
		INTA	INTB	INTC	INTD	
CN12 (PCI-1)	AD30	A	B	C	D	
CN13 (PCI-2)	AD29	B	C	D	A	

2-4. I/O Interface

This Micro ATX motherboard has one serial port, one parallel port, two PS/2 port for keyboard and mouse, and two USB port, Audio & MIDI/Joystick to upgrade the external peripheral devices, such as mouse, modem, printer, scanner, etc.



2-5. Manufacturing Options.

This Micro ATX motherboard has the several manufacturing options according to the type of the motherboard. The following features are implemented based on the customer requirement.

- Hardware monitoring function : LM78/79 functionality
- FAN control function : MIC29204 functionality
- Power Supply FAN control : 6pin connector or 3pin connector

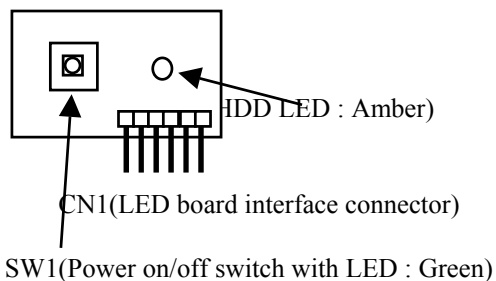
3. LED

3-1. Power LED

Normal State	Green
Suspend State	Green LED is blinking
Off State	LED is off

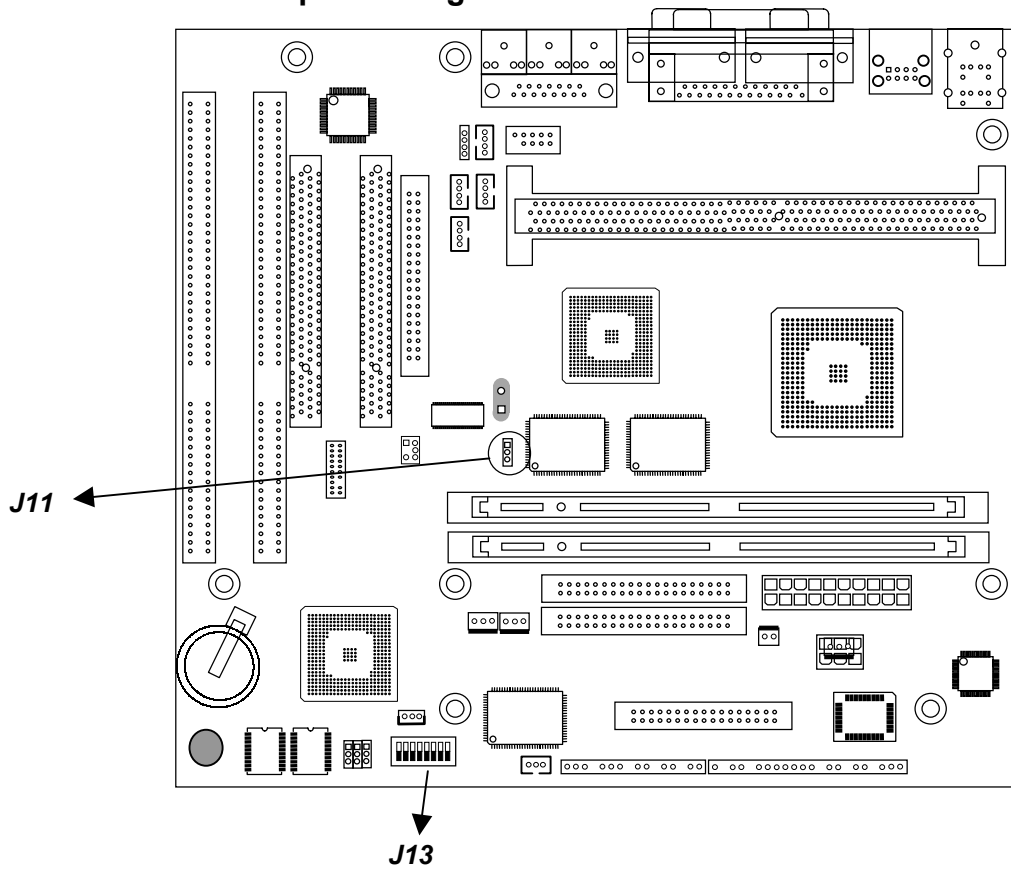
3-2. HDD LED

Amber colored LED is on whenever HDD is being accessed



III. Jumper and Connector Descriptions

1. Motherboard Jumper Setting



1-1. Selection for Processor CPU Clock (J13)

CPU Clock	J13-1	J13-2	J13-3	J13-4
233MHz	ON	OFF	OFF	ON
266MHz	OFF	ON	ON	ON
*300MHz	OFF	ON	OFF	ON
333MHz	OFF	OFF	ON	ON

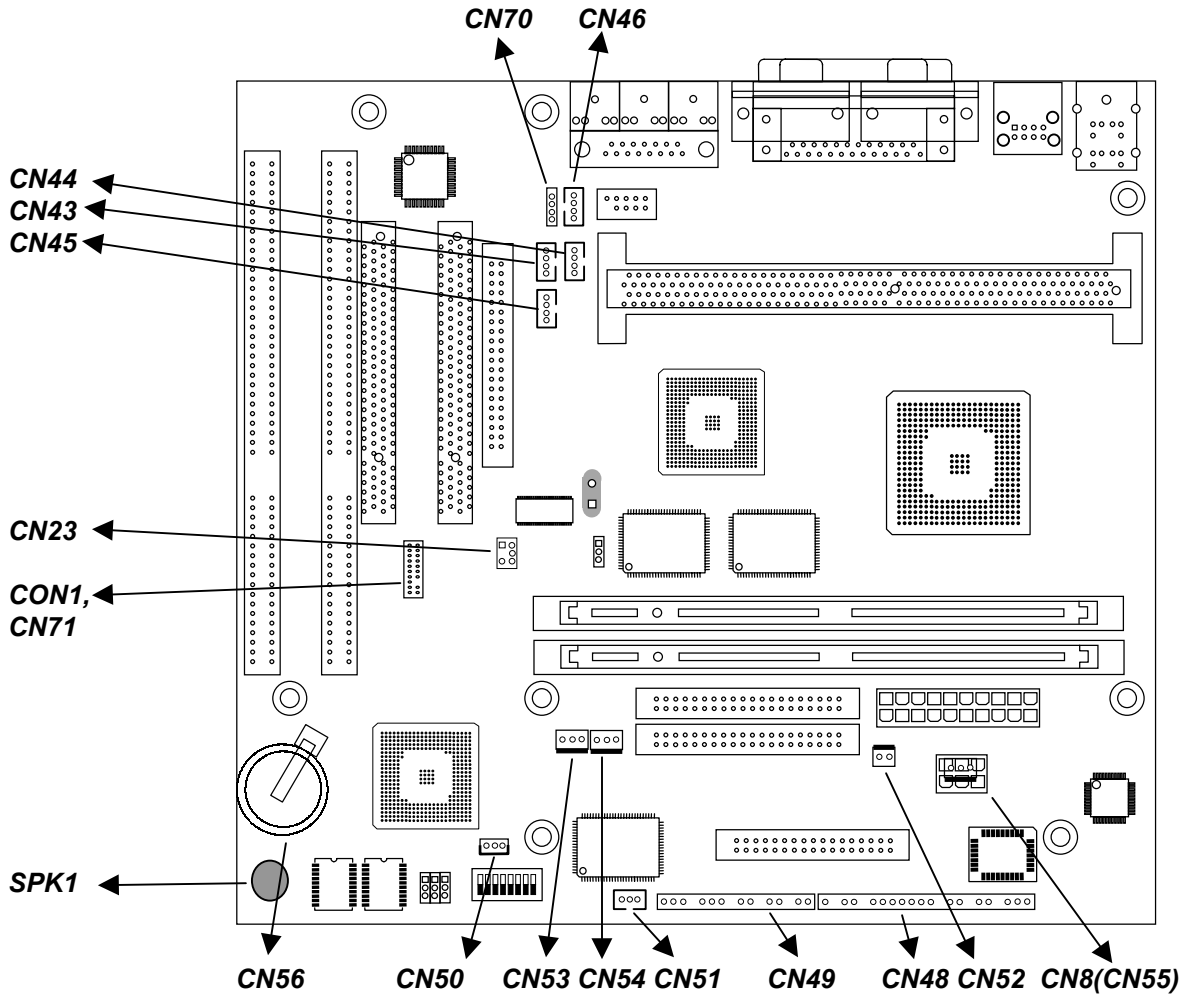
1-2. Other function control

Switch	Functionality	ON	OFF
J13-5	CMOS RAM	Clear CMOS RAM	*Normal
J13-6	Password	Disable	*Enable
J13-7	CMOS Setup	Disable	*Enable
J13-8	FDD Write Protect	Write Protect	*Normal

Jumper	Set to 1-2	Set to 2-3
J11	Disable built-in AGP	*Enable built-in AGP

* : Default Setting

2. Motherboard Header Connector



2-1. System FAN Connector(CN53:option)

Pin Number	Signal Name
1	Ground
2	FANCNTL
3	FANSEN1

2-2. CPU FAN Connector(CN54)

Pin Number	Signal Name
1	Ground
2	FANCNTL
3	FANSEN2

2-3. LAN Wake-up Connector(CN50:option)

Pin Number	Signal Name
1	+5VSB
2	Ground
3	LAN WAKE

2-4. Modem Ring Wake-up Connector(CN51)

Pin Number	Signal Name
1	#RING_A or #RING_B
2	Ground
3	+5VSB

2-5. CD-ROM Sound Connector(CN43, CN44)

Pin Number	Signal Name(ATAPI,CN43)	Signal Name(Mitsumi,CN44)
1	CD IN LEFT	CD IN GND
2	CD IN GND	CD IN RIGHT
3	CD IN GND	CD IN GND
4	CD IN RIGHT	CD IN LEFT

2-6. Modem Sound Connector(CN46,CN70)

Pin Number	Signal Name(CN46)	Signal Name(CN70)
1	MIC_MONO	MONO IN
2	GND	GND
3	MONO_OUT	GND
4	GND	MIC_MONO
5	MONO IN	

2-7. Video Sound Connector(CN45)

Pin Number	Signal Name(ATAPI,CN43)
1	TV_IN_LEFT
2	GND
3	GND
4	TV_IN_RIGHT

2-8 Chassis Open Detection Connector (CN52)

Pin Number	Signal Name
1	GND
2	CH_IN

2-9. PC_PCI Header Connector(CN23)

Pin Number	Signal Name
1	-PCGNTA
2	GND
3	N.C
4	-PCREQA
5	GND
6	SER_IRQ

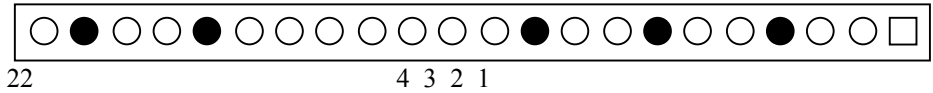
2-10. Speaker (SPK1)

Pin Number	Signal Name
1	VCC
2	SPKR

2-11. BATTERY (CN56)

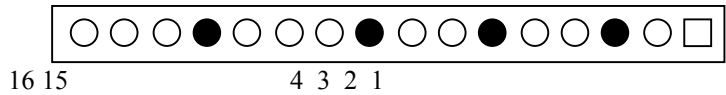
Pin Number	Signal Name
1	Battery VCC
2	GND

2-12. Front Internal Connector(CN48)



Function	Pin NO.	Signal Name	Function	Pin NO.	Signal Name
Power LED	1	VCC	IrDA Header	11	IRRX
	2	-STPCLK		12	GND
	3	GND		13	IRTX
	4	N.C		14	VCC
HDD LED	5	VCC		15	IR_SEL
	6	-IDEACT		16	N.C
	7	N.C		17	GND
DC_SW	8	-SOFT_SW		18	N.C
	9	GND	Speaker	19	VCC
	10	N.C		20	GND
				21	N.C
				22	SPKR

2.13 Front Internal Connector(CN49)

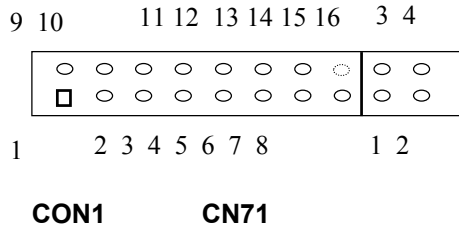


Function	Pin No.	Signal Name	Function	Pin No.	Signal Name
KEYLOCK	1	N.C	LANLED	9	N.C
	2	GND		10	N.C
	3	N.C		11	N.C
RESET S/W	4	-FP_RST		12	N.C
	5	GND	13	N.C	
	6	N.C	SM_BUS	14	N.C
SLEEP	7	-EXTSMI		15	N.C
	8	GND		16	N.C

2.14 Power FAN Connector (CN8 or CN55)

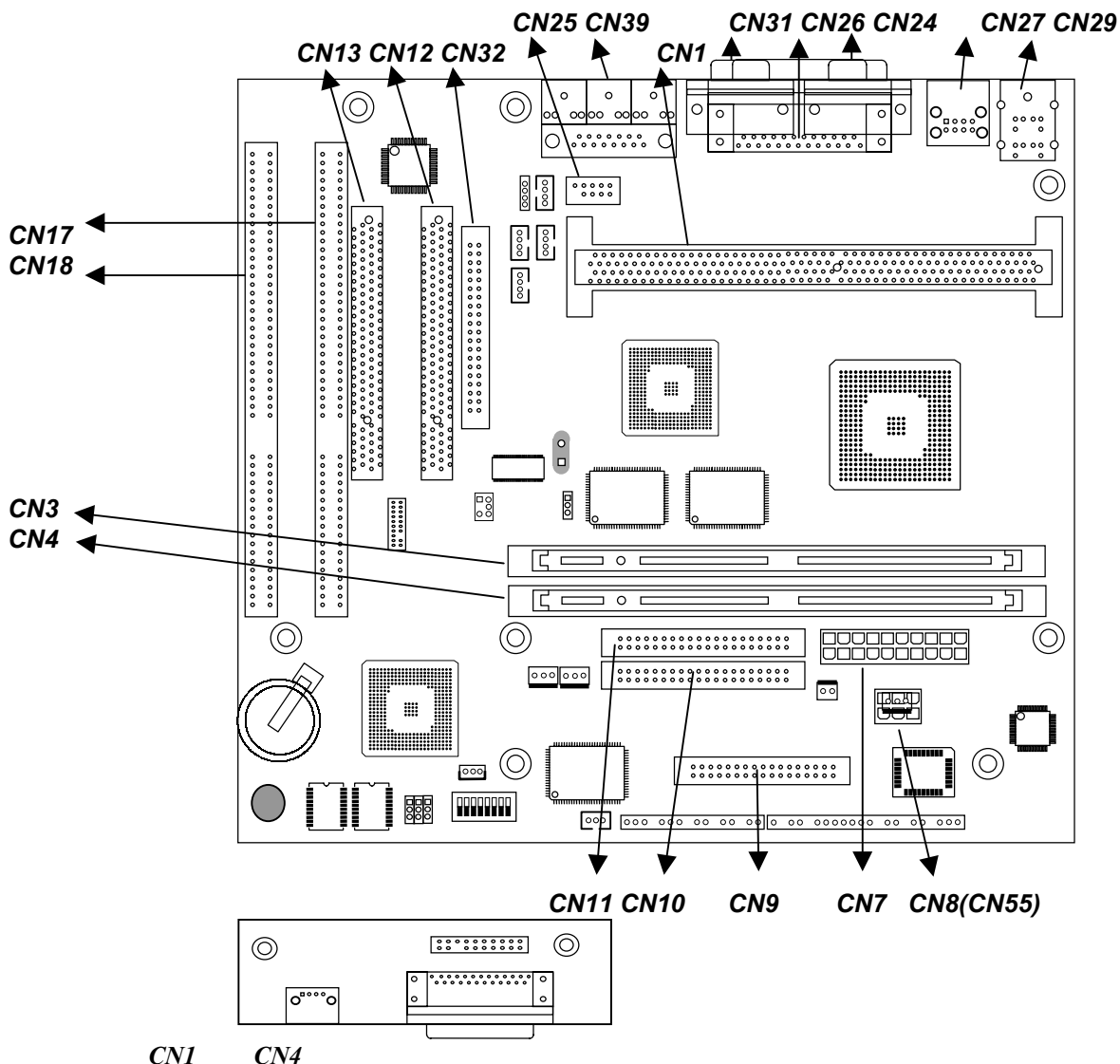
Pin Number	Signal Name	
	CN8	CN55
1	N.C	GND
2	FAN_CNTR	FAN_CNTR
3	N.C	N.C
4	N.C	
5	N.C	
6	N.C	

2-15. Joystick, USB Header Connector(CON1, CN71)



Pin Number	Signal Name
1	VCC
2	JAB1
3	JACX
4	GND
5	GND
6	JACY
7	JAB2
8	VCC
9	VCC
10	-JBB1
11	-JBCX
12	MIDI_TXD
13	-JBCY
14	-JBB2
15	MIDI_RXD
16	Key pin(nc)
1	GND
2	Data -
3	Data +
4	VCC

3. Internal I/O Connector



3-1 Mother Board I/O Connector

Location	Name	Location	Name
CN1	Slot1 Connector	CN17	ISA SLOT 1
CN3	DIMM0	CN18	ISA SLOT 2
CN4	DIMM1	CN24	COM1 Port
CN7	Micro ATX Power Conn.	CN25	COM2 Header(option)
CN8(CN55)	1394 Power Connector(option)	CN26	Parallel Port
CN9	FDD Connector	CN27	USB Port
CN10	Primary IDE Connector	CN29	PS2 KBD, Mouse
CN11	Secondary IDE Connector	CN31	VGA Port
CN12	PCI SLOT 1	CN32	AMC Connector
CN13	PCI SLOT 2	CN39	Audio Connector MIDI/Joystick(option)

3-2 Dot Board I/O Connector

Location	Name	Location	Name
CN1	USB single Connector	CN4	Joystick/MIDI Connector