PCI-749D

User Manual

V1.1

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PCI-749D

User's Manual
Version 1.1

Copyright notice

Packing List

Hardware

CPU Card (Single Board Computer) .....X 1

Cable Kit

IDE Flat Cable .....X 1
FDD Cable.....X 1
DB9 COM and DB25 LPT Cable (for VL version) .....X 1
Dual DB9 COM Cable (for VL2 version).....X 1
DB25 LPT Cable (for VL2 version).....X 1
Dual USB Cable .....X 2
PS/2 Keyboard and Mouse Cable .....X 1
UltraATA/100 IDE Cable.....X 1
ATX Cable (3 to 4-pin).....X 1
Audio Cable .....X 1

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Chapter 1. Introduction

1.1 Product Overview

The SBC (Single Board Computer) is an all-in-one industrial full-size PICMG (PCI/ISA)-bus CPU card based on Intel mPGA478 Pentium 4 architecture. With Intel Brookdale-G chipset, PCI-749D offers the value solution with Intel NetBurst micro-architecture, 533/400 MHz of FSB, 2 GB PC1600/2100 DDR SDRAM, Intel Brookdale-G GMCH built-in advanced 3D SVGA, and dual Intel PRO/100+ LAN and USB 2.0 high speed I/O interfaces.

Based on Intel's long term supply chipset, PCI-749D should be the ideal solution for long life industrial applied computing platform with high computing capacity and cost effect. The onboard dual Intel PRO/100+ LAN, CompactFlash SSD (Solid State Disk), and ISA 64mA high drive capacity also make PCI-749D be the value Pentium 4 DDR platform for:

Value Industrial Computing Platform: Intel mPGA478 Pentium 4 / Celeron CPU with 533/400 MHz FSB and 2 GB PC1600/2100 DDR SDRAM of system memory, PCI-749D offer the high-end industrial computing platform with low cost Intel integrated solution. The long term support, onboard SSD, dual Intel LAN and ISA 64mA high drive capacity also make PCI-749D be the ideal solution for industrial server and workstation, CTI (Computer Telephony Integration), VoIP (Voice over IP), and other high-end applications.

Low Cost Multi-media Solution: Intel Brookdale-G chipset built-in advanced 3D VGA controller offers the value integration solution for low cost multi-media computing platform. Such as VoD (video on demand), DVR (Digital Video Recorder), digital video broadcasting (DVB), streaming, surveillance, compression (MPEG), interaction server, workstation and terminal appliances.

Redundant Network Reliability: dual Intel PRO/100+ 10/100 Mbps Fast Ethernet interfaces for high reliability of redundant LAN, or external / internal dual direction networking applications.

High Speed USB 2.0 Interface: Intel ICH4 built-in USB 2.0 controller let PCI-749D offer the high speed USB 2.0 interface with 480 Mbps of data transfer rate. It makes PCI-749D be the platform to link with high-end USB

2.0 devices including digital camera, USB hard disk, and other USB 2.0 based peripherals.

1.2 Specification

General Specification	
Form Factor	Full-size PICMG-bus CPU Card / Slot PC PICMG version 1.0 (Rev. 2.0).
CPU	Intel mPGA478 Pentium 4, Celeron @ 533/400 MHz FSB Support Northwood / Willamette Pentium 4 / Celeron
Memory	2 GB DDR200/266 (PC1600/2100 DDR) SDRAM on 2 x 184-pin DIMM sockets. (No ECC/register DIMM support)
Chipset	Intel 82845G GMCH and 82801DB ICH4
BIOS	Phoenix-Award 2Mb PnP flash BIOS
Green Function	Power saving mode supported in BIOS with DOZE, STANDBY and SUSPEND modes. ACPI version 1.0 and APM version 1.2 compliant
Watchdog Timer	Generates NMI or system reset programmable watchdog timer with 1 ~ 255 sec. / min. of time out value
Real Time Clock	Intel ICH4 built-in RTC with lithium battery
Enhanced IDE	PCI enhanced IDE interface supports dual ports up to 4 ATAPI devices with UltraATA/100 supported
ISA High Drive	ISA 64mA high Drive capacity with TI 245 buffer on address and data bus

Multi-I/O Ports	
Chipset	Intel 82801DB ICH4 and Winbond W83627HF-AW LPC super-I/O controller
Serial Port	Two RS-232 serial ports. Both with 16C550 compatible UART and 16 bytes FIFO
USB Port	Four USB 2.0 ports with 480 Mbps of data transfer rate
Parallel Port	One bi-direction parallel port with SPP/ECP/EPP mode
FDD	One FDD port supports up to two FDD
IrDA Port	One IrDA compliant Infrared interface supports SIR
K/B & Mouse	PS/2 keyboard and mouse ports, AT keyboard port

Solid State Disk Interface	
Flash Type	Onboard CompactFlash Type-II socket
Mode	Bootable, primary master IDE channel
Package	CompactFlash card (CFC) or IBM MicroDrive
Capacity	Up to 1 GB

VGA Display Interface	
Chipset	Intel 845G GMCH built-in 256-bit 3D VGA controller
Video Memory	Auto detect dynamic video memory up to 64 MB
Display Type	CRT, LCD monitor and analog display
Connector	External DB15 female connector on bracket for CRT Internal 16-pin header for analog VGA display

Ethernet Interface	
Chipset	Dual Intel PRO/100+ LAN interface Primary LAN (LAN1): Intel ICH4 and Intel 82562ET Optional secondary LAN (LAN2): Intel 82559ER
Type	10Base-T / 100Base-TX, auto-switching Fast Ethernet Full duplex, IEEE802.3U compliant
Connector	External (dual) RJ45 with LED on bracket

Audio Interface	
Chipset	Intel ICH4 built-in AC97 3D audio controller with codec
Interface	Line-in, line-out, CD-in, Mic-in
Connector	10-pin header for line-in, line-out and Mic-in 4-pin header for CD-in

Power and Environment

Power Req.	+5V, +12V, -12V DC input from PICMG backplane Additional +12V on 4-pin connector for Pentium 4 PSU
ATX Function	3-pin ATX interface with 5V standby and power-on
Dimension	338 (L) x 122 (H) mm, standard PICMG form factor
Temperature	Operating within 0 ~ 60°C (32 ~ 140°F) Storage within -20 ~ 85°C (-4 ~ 185°F)
Humidity:	5% ~ 95% non-condensing

Ordering Code

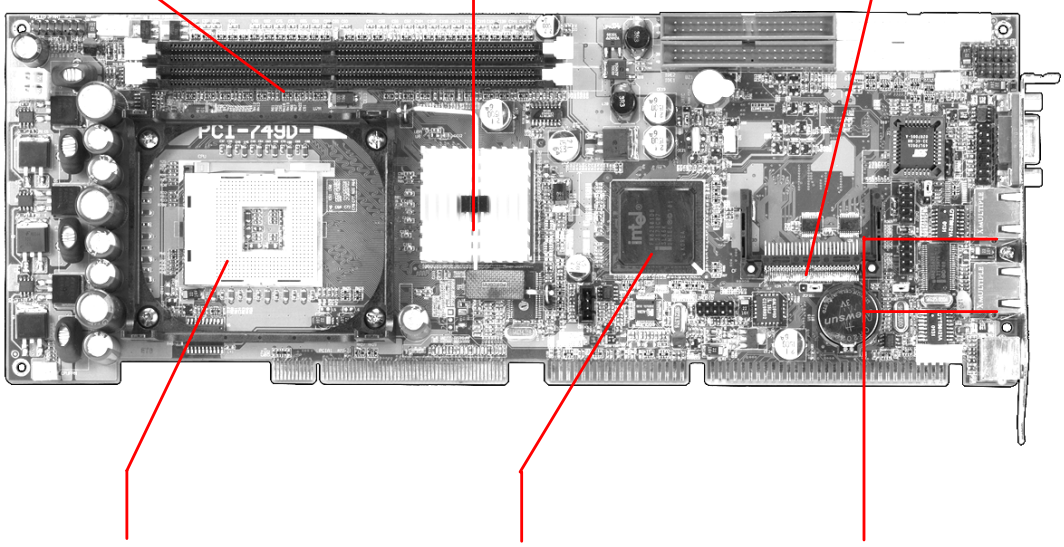
PCI-749D-VL2	Full-size PICMG mPGA478 DDR CPU Card with 533/400 MHz FSB, Intel VGA, Dual LAN, Audio, USB 2.0, CF Interfaces and ISA 64mA High Drive Capacity

1.3 Component Placement

System Memory
2 x 184-pin DIMM Socket
2 GB DDR SDRAM

Intel 845G GMCH
Built-in Extreme
256-bit 3D VGA

CompactFlash Socket
Support CFC and
IBM MicroDrive



mPGA478 CPU Socket
Intel Pentium 4 / Celeron
533/400 MHz FSB

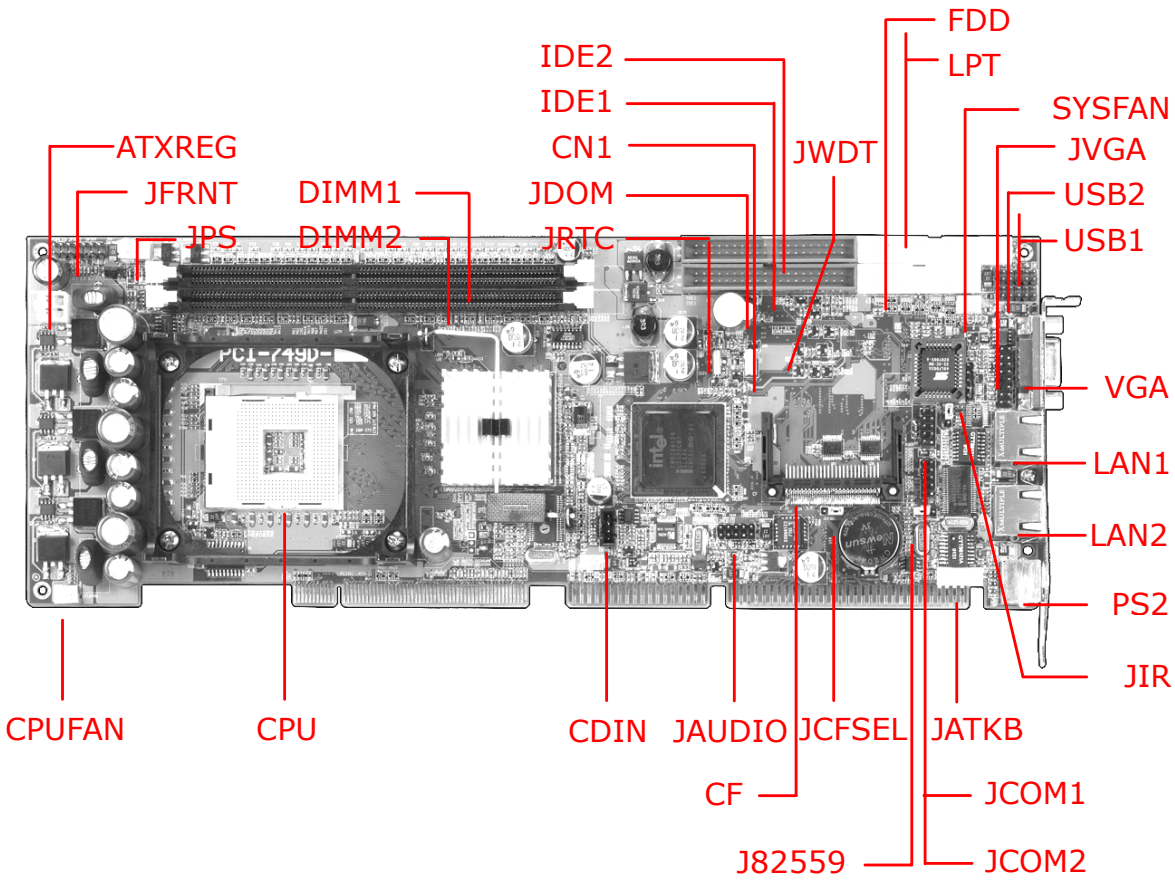
Intel 82801DB ICH4
Built-in USB 2.0 Port
AC97 3D Audio

Dual Intel PRO/100+ LAN
Intel ICH4 + 82562ET
and Intel 82559ER

Chapter 2. Hardware Setup

This chapter contains the information for installation of hardware. The install procedure includes jumper settings, CPU and memory installation, fan, I/O and panel connections.

2.1 Jumper and Connector Location



Color Definition of Jumper Hat

- Red : Power or Important Setting
- Yellow : Function Enable / Disable Setting
- Green : CPU Speed Setting (Not Available)

2.1.1 Jumpers Reference

Jumper	Function	Section
JRTC	COMS Operate / Clear Setting	2.3
JWDT	Watchdog Timer NMI / Reset Setting	2.4
JCFSEL	CompactFlash Mode Setting	2.5
JDOM	DiskOnModule SSD Power Setting	2.5
J82559	Secondary LAN Enable/Disable Setting	2.8

2.1.2 Connectors Reference

Internal Onboard Connector

Connector	Function	Remark
CPU	MicroPGA478 478 CPU Socket	Standard
DIMM1/2	184-pin DIMM Socket	Standard
IDE1/2	40-pin Primary / Secondary IDE Port	Standard
FDD	34-pin FDD Port	Standard
LPT	26-pin Parallel Port	Standard
JCOM1/2	10-pin COM1/2 Serial Port	Standard
USB1/2	10-pin 1st / 2nd (3rd / 4th) USB Port	Standard
JIR	5-pin SIR IrDA Port	Standard
CF	CompactFlash Socket	Standard
JATKB	5-pin AT Keyboard Connector	Standard
ATXREG	4-pin Additional +12V Power Connector	Standard
JPS	3-pin ATX Signal Connector	Standard
JFRNT	14-pin Switch and Indicator Connector	Standard
CPUFAN	3-pin +12V CPU Fan Connector	Standard
SYSFAN	3-pin +12V System Fan Connector	Standard
JVGA	16-pin Internal VGA Port	Standard
JAUDIO	10-pin Audio Port	Standard
CDIN	4-pin CD-in Interface	Standard
CN1	3-pin Wake-On-LAN Interface	Standard

External Connector on Bracket

Connector	Function	Remark
VGA	DB15 Female VGA Connector	Standard
LAN1	RJ45 LAN1 Connector	Standard
LAN2	RJ45 LAN2 Connector	VL2 only
COM1	DB9 Male COM1 Connector	VL only
PS2	6-pin MiniDIN PS/2 Keyboard & Mouse	Standard

2.2 CPU and DRAM Setting

The board is based on Intel Socket 478 architecture, supports Intel mPGA478 Pentium 4 / Celeron CPU at 533/400 MHz FSB. The board is based on Intel 845G GMCH, supports 533 and 400 MHz FSB of Intel 0.13 micron Northwood and 0.18 micron Willamette CPU.

System memory of this board supports up to 2 GB DDR200/266 (PC1600/2100) SDRAM on 2 184-pin DIMM sockets. Please notices that Intel 845G GMCH doesn't support ECC and register DIMM.

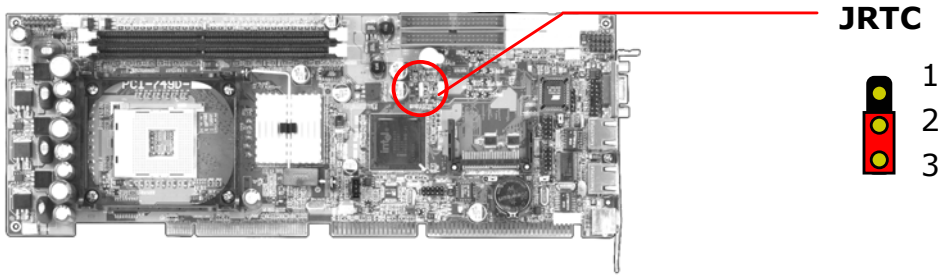
2.3 CMOS Setting

The board's data of CMOS can be setting in BIOS. If the board refuses to boot due to inappropriate CMOS settings, here is how to proceed to clear (reset) the CMOS to its default values.

Jumper: JRTC
Type: onboard 3-pin header

JRTC	Mode
1-2	Clear CMOS
2-3	Normal Operation

Default setting



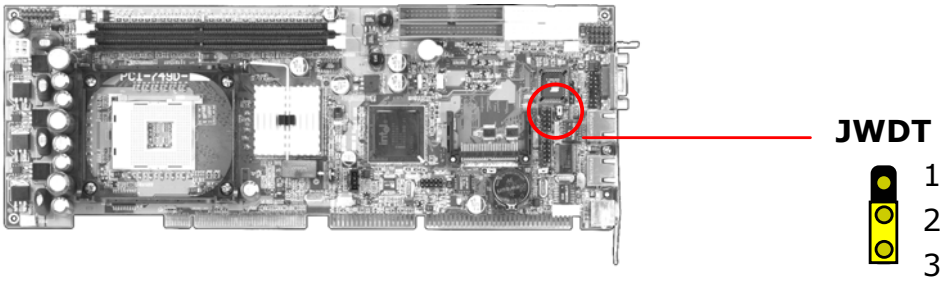
2.4 Watchdog Timer Setting

The watchdog timer makes the systems auto-reset while it stop to work for a period. The onboard watchdog timer can be setup as system reset or active NMI mode by jumper JWDT.

Jumper: JWDT
Type: onboard 3-pin header

JWDT	Watchdog Timer
1-2	Active NMI
2-3	Reset

Default setting



Program Sample

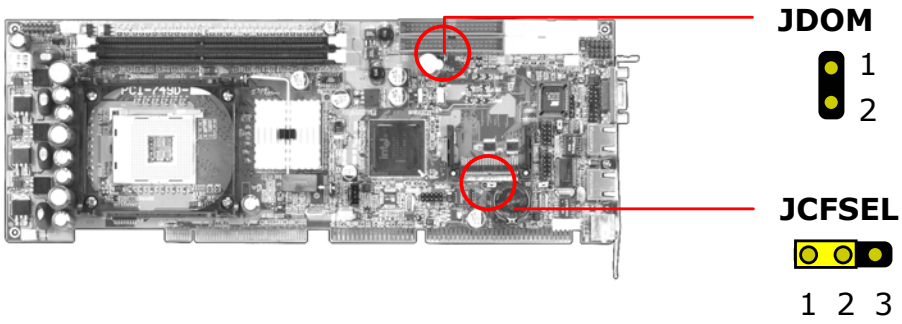
Watchdog timer setup as system reset with 5 second of timeout

2E, 87	
2E, 87	
2E, 07	
2F, 08	Logical Device 8
2E, 30	Activate
2F, 01	
2E, F5	Set as Second*
2F, 00	
2E, F6	Set as 5
2F, 05	

* Minute: bit 3 = 0; Second: bit 3 = 1

2.5 Embedded Solid State Disk

The board supports both of IDE-based CompactFlash and M-systems DiskOnChip IDE Pro and DiskOnModule (DOM) embedded flash disk. The onboard CompactFlash type-II socket supports CompactFlash card (CFC) and IBM MicroDrive flash disk on primary IDE channel with jumper selectable master / slave mode. The onboard secondary IDE port with 40-pin IDE2 box header supports normal DOM (DiskOnModule) or M-systems DiskOnChip IDE Pro flash disk with jumper selectable +5V Vcc power for cable free applications on jumper JDOM.



CompactFlash Mode Setting

Jumper: JCFSEL
Type: onboard 3-pin header

JCFSEL	CompactFlash Mode
1-2	Master
2-3	Slave

Default setting

Boot from CompactFlash Setting

The board is bootable from the CompactFlash. The hardware setting of booting from CompactFlash is as below.

1. Setting JCFSEL as 2-3 closed, to let the CompactFlash be the primary master IDE mode.
2. Setting the first boot device as HDD-0 on the BIOS (Advanced BIOS Feature Setup)

DOM or DiskOnChip 2000 IDE Pro Power Setting

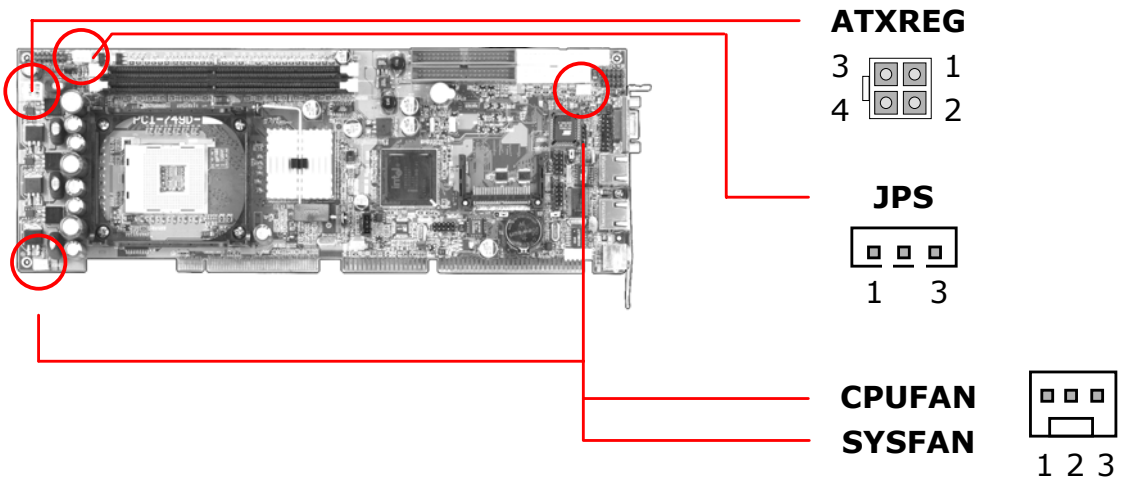
Jumper: JDOM

Type: onboard 2-pin header

JDOM	+5V on Pin-20 of IDE2
OFF	Disable
ON	Enable

Default setting

2.6 Power and Fan Connector



Connector: ATXREG
Type: 4-pin Standard Pentium 4 Additional +12V Power Connector

Pin	Description	Pin	Description
1	Ground	2	Ground
3	+12V	4	+12V

Connector: JPS
Type: 3-pin ATX Function Connector

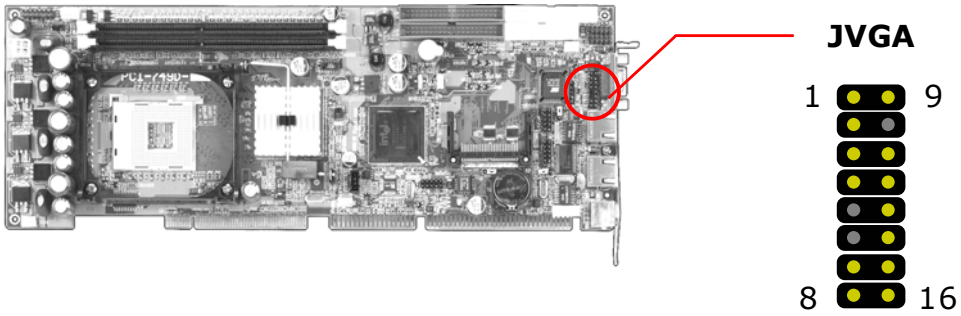
Pin	Description	Pin	Description	Pin	Description
1	5V Standby	2	Ground	3	Power On

Connector: CPUFAN, SYSFAN
Type: 3-pin Fan Power Wafer Connector

Pin	Description	Pin	Description	Pin	Description
1	Ground	2	+12V	3	Fan Control

2.7 VGA Interface

The board is integrated with Intel 845G GMCH chipset's built-in extreme VGA controller with 256-bit 3D engine and dynamic video memory up to 64 MB shared with system memory. The CRT / analog VGA interface includes one external DB15 female connector on bracket and one internal 16-pin header on board.



Connector: JVGA
Type: 16-pin header

Pin	Description	Pin	Description
1	Red	9	Green
2	Blue	10	N/C
3	Ground	11	Ground
4	Ground	12	Ground
5	N/C	13	Ground
6	N/C	14	Data
7	HSYNC	15	VSYNC
8	Clock	16	N/C

2.8 Ethernet Interface

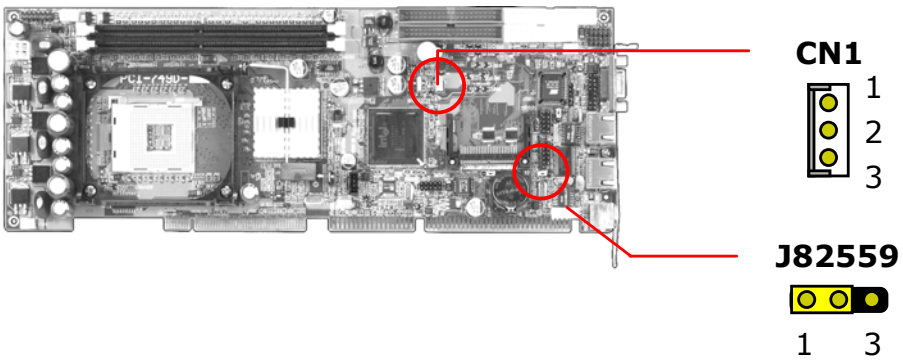
The board integrated with dual Intel PRO/100+ Fast Ethernet interfaces at the type of 10Base-T/100Base-TX auto-switching Fast Ethernet with full duplex and IEEE 802.3U compliant. Both of them connect via RJ45 connectors on bracket. The LAN2 can enable or disable by jumper J82559.

The primary LAN interface is controlled by Intel ICH4 with Intel 82562ET and setting as LAN1. It provides the same performance as Intel 82559 LAN with the same driver. The OPTIONAL secondary LAN interface is controlled by Intel 82559ER chipset and setting as LAN2.

Jumper: J82559
Type: onboard 3-pin header

J82559	LAN2 Enable / Disable Setting
1-2	Enable
2-3	Disable

Default setting

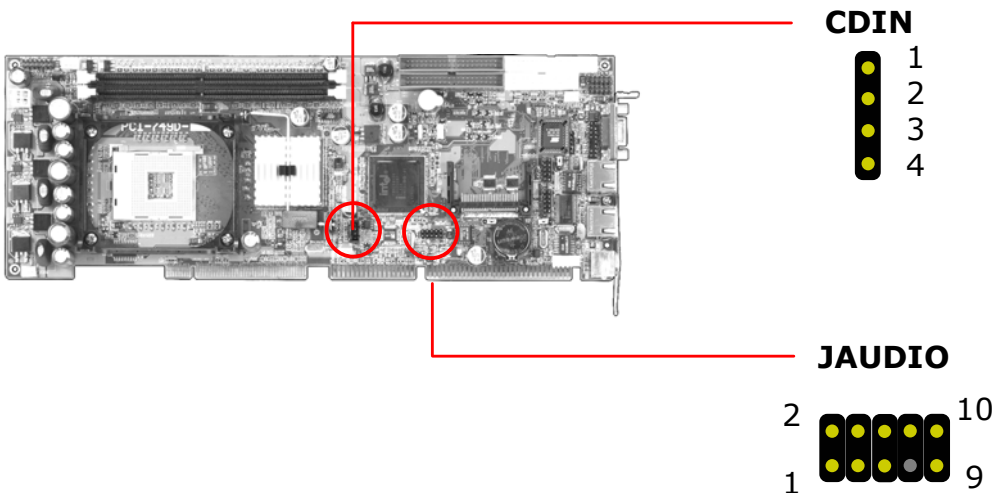


Connector: CN1
Type: onboard 3-pin header Wake-On-LAN connector

Pin	1	2	3
Description	WOL-Ctrl	Ground	+5V Standby

2.9 Audio Interface

The board integrates with AC97 3D audio interface by Intel ICH4 and codec, provides line-in, line-out, Mic-in and CD-in interfaces for industrial applications with audio function.



Connector: JAUDIO
Type: 10-pin header

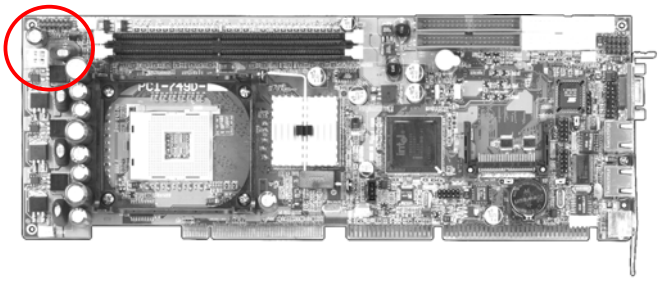
Pin	Description	Pin	Description
1	Line – Right	2	Ground
3	Line – Left	4	MIC
5	MIC	6	Ground
7	N/C	8	Line Out – Left
9	Line Out – Right	10	Ground

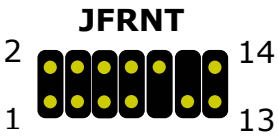
Connector: CDIN
Type: 4-pin header

Pin	Description
1	CD – Left
2	Ground
3	Ground
4	CD – Right

2.10 Switch and Indicator

JFRNT





Connector: JFRNT
Type: onboard 14-pin header

Function	Signal	PIN		Signal	Function
IDE LED	Vcc (+)	1	2	(+) Vcc	**Power LED**
	Active	3	4	N/C	
Reset	Reset	5	6	GND	
	GND	7	8	Vcc	**Speaker**
	N/C	9	10	N/C	
Power Button	PWRBT	11	12	N/C	
	GND	13	14	SPKIN	

Chapter 3. BIOS Setup

The single board computer uses the Award BIOS for the system configuration. The Award BIOS in the single board computer is a customized version of the industrial standard BIOS for IBM PC AT-compatible computers. It supports Intel x86 and compatible CPU architecture based processors and computers. The BIOS provides critical low-level support for the system central processing, memory and I/O sub-systems.

The BIOS setup program of the single board computer let the customers modify the basic configuration setting. The settings are stored in a dedicated battery-backed memory, NVRAM, retains the information when the power is turned off. If the battery runs out of the power, then the settings of BIOS will come back to the default setting. The BIOS section of the manual is subject to change without notice and is provided here for reference purpose only. The settings and configurations of the BIOS are current at the time of print, and therefore they may not be exactly the same as that displayed on your screen.

To activate CMOS Setup program, press ＜DEL＞ key immediately after you turn on the system. The following message "Press DEL to enter SETUP" should appear in the lower left hand corner of your screen. When you enter the CMOS Setup Utility, the Main Menu will be displayed as **Figure 3-1**. You can use arrow keys to select your function, press ＜Enter＞ key to accept the selection and enter the sub-menu.

Figure 3-1. CMOS Setup Utility Main Screen

Phoenix – Award BIOS CMOS Setup Utility

>Standard CMOS Features	>Frequency/Voltage Control
>Advanced BIOS Features	Load Fail-Safe Defaults
>Advanced Chipset Features	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	

Notes (This page left blank intentionally)

Chapter 4. Driver Installation

The driver CD offers auto-run menu. It will detect and select the type of single board computer and helps you install the drivers automatically.

Install Board's Software

The selection helps you install the drivers of chipset. It will detect your version of OS automatically.

Install Ultra ATA IDE Driver

The selection helps you to install the driver of IDE interface.

Install VGA Driver

The selection helps you to install the driver of onboard VGA interface.

Install LAN Driver

The selection helps you to install the driver of onboard LAN interface.

Install Audio Driver

The selection helps you to install the driver of onboard audio interface.

Install USB 2.0 Driver

The selection helps you to install the driver of onboard USB 2.0 interface.

Link to < *Website* > Homepage

The selection helps you to link to the website to find the updated technical documents and download directly.

Browse this CD

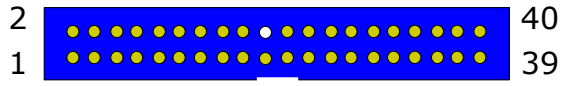
The selection helps you to find the drivers in this CD directly.

Notes (This page left blank intentionally)

Appendix. A I/O Port Pin Assignment

A.1 IDE Port

Connector: **IDE1, IDE2**
Type: 40-pin (2 x 20) box header

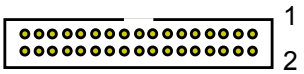


Pin	Description	Pin	Description
1	Reset	2	Ground
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	Ground	20	N/C (Vcc)
21	REQ	22	Ground
23	IOW-/STOP	24	Ground
25	IOR-/HDMARDY	26	Ground
27	IORDY/DDMARDY	28	IDESEL
29	DACK-	30	Ground
31	IRQ	32	N/C
33	A1	34	CBLID
35	A0	36	A2
37	CS0 (MASTER CS)	38	CS1 (SLAVE CS)
39	LED ACT-	40	Ground

The pin-20 is N/C on IDE1 and is jumper selectable N/C or +5V on IDE2.

A.2 FDD Port

Connector: **FDD**
Type: 34-pin (2 x 17) header

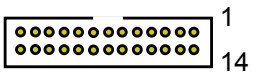


Pin	Description	Pin	Description
1	Ground	2	DRIVE DENSITY SELECT 0
3	Ground	4	DRIVE DENSITY SELECT 1
5	Ground	6	N/C
7	Ground	8	INDEX-
9	Ground	10	MOTOR ENABLE A-
11	Ground	12	DRIVER SELECT B-
13	Ground	14	DRIVER SELECT A-
15	Ground	16	MOTOR ENABLE B-
17	Ground	18	DIRECTION-
19	Ground	20	STEP-
21	Ground	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	HEAD SELECT-
33	Ground	34	DISK CHANGE-

A.3 Parallel Port

Connector: LPT

Type: 26-pin box header



Pin	Description	Pin	Description
1	STROBE-	14	AUTO FEED-
2	D0	15	ERROR-
3	D1	16	INITIALIZE-
4	D2	17	SELECT INPUT-
5	D3	18	Ground
6	D4	19	Ground
7	D5	20	Ground
8	D6	21	Ground
9	D7	22	Ground
10	ACKNOWLEDGE-	23	Ground
11	BUSY	24	Ground
12	PAPER EMPTY	25	Ground
13	SELECT+	26	N/C

A.4 Serial Port

A.4.1 Onboard RS-232C Serial Port

Connector: JCOM1, JCOM2

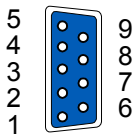
Type: 10-pin header

Pin	Description	Pin	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	Ground	6	DSR
7	RTS	8	CTS
9	RI	10	N/C

A.4.2 On Bracket RS-232C Serial Port

Connector: COM1 (VL only)

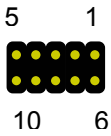
Type: 9-pin D-sub male connector on bracket



Pin	Description	Pin	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	Ground	6	DSR
7	RTS	8	CTS
9	RI		

A.5 USB Port

Connector: **USB1**, **USB2**
Type: 10-pin (2 x 5) header for dual USB Ports



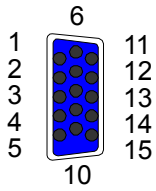
Pin	Description	Pin	Description
1	Vcc	6	Vcc
2	Data0-	7	Data1-
3	Data0+	8	Data2+
4	Ground	9	Ground
5	Ground	10	Ground

A.6 IrDA Port

Connector: **JIR**
Type: 5-pin (1 x 5) header for SIR Port

Pin	Description
1	Vcc
2	N/C
3	IRRX
4	Ground
5	IRTX

A.7 VGA Port

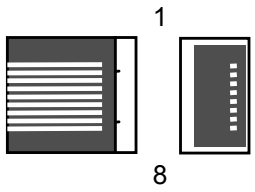


Connector: VGA

Type: 15-pin D-sub female connector on bracket

Pin	Description	Pin	Description	Pin	Description
1	RED	6	Ground	11	N/C
2	GREEN	7	Ground	12	VDDAT
3	BLUE	8	Ground	13	HSYNC
4	N/C	9	Vcc	14	VSYNC
5	Ground	10	Ground	15	VDCLK

A.8 LAN Port

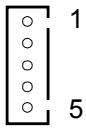


Connector: LAN1, LAN2

Type: RJ45 connector on bracket

Pin	1	2	3	4	5	6	7	8
Description	TX+	TX-	RX+	N/C	N/C	RX-	N/C	N/C

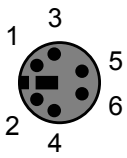
A.9 AT Keyboard Port



Connector: JATKB
Type: 5-pin box header

Pin	1	2	3	4	5
Description	CLK	DATA	N/C	Ground	Vcc

A.10 PS/2 Keyboard and Mouse Port



Connector: PS2
Type: 6-pin MiniDIN connector on bracket

Pin	1	2	3	4	5	6
Description	KBD	MSD	Ground	N/C	KBC	MSC

Note: The PS/2 connector supports standard PS/2 keyboard directly or both PS/2 keyboard and mouse through the PS/2 Y-type cable. The cable is the standard on packing list.

Note(This page left blank intentionally)

pendix B. Flash the BIOS

B.1 BIOS Auto Flash Tool

The board is based on Award BIOS and can be updated easily by the BIOS auto flash tool. You can download the tool online at the address below:

http://www.award.com

File name of the tool is "awdflash.exe", it's the utility that can write the data into the BIOS flash ship and update the BIOS.

B.2 Flash Method

1. Get the ".bin" file including the image of new BIOS you want to update.
2. Power on the system and flash the BIOS.
3. Re-star the system.

Any question about the BIOS re-flash please contact your distributors or visit the website of the original manufacturer.

Notes(This page left blank intentionally)

Appendix C. System Resources

C.1 I/O Port Address Map

Address Range	Device
0060-0060	i8042prt
0064-0064	i8042prt
0170-0177	atapi
01CE-01CF	VgaSave
01F0-01F7	atapi
02F8-02FE	Serial
0376-0376	atapi
0378-037A	Parport
0380-038B	VgaSave
03C0-03DF	VgaSave
03F0-03F5	Floppy
03F6-03F6	atapi
03F7-03F7	Floppy
03F8-03FE	Serial
C000-C03F	E100B
C400-C41D	E100E
E000-E0EF	alcxnt
E400-E43F	alcxnt

C.2 Memory Address Map

Device	Physical Address Length
x00000000 - x0009FFFF	System board extension for PnP BIOS
x000A0000 - x000AFFFF	Intel(R) 82845G Graphics Controller
x000B0000 - x000BFFFF	Intel(R) 82845G Graphics Controller
x000C0000 - x000CADFF	Intel(R) 82845G Graphics Controller
x000CAE00 - x000CBFFF	Motherboard resources
x000F0000 - x000F3FFF	Motherboard resources
x000F4000 - x000F7FFF	Motherboard resources
x000F8000 - x000FFFFF	Motherboard resources
x00100000 - x00FFFFFF	System board extension for PnP BIOS
xE0000000 - xE7FFFFFF	Intel(R) 82845G Graphics Controller
xE8000000 - xEBFFFFFF	Intel(R) 82845G Processor to I/O Controller 2560
xEC000000 - xEC1FFFFF	Intel(R) 82801DB PCI Bridge - 244E
xEC100000 - xEC11FFFF	Intel(R) GD82559ER PCI Adapter
xEC120000 - xEC120FFF	Intel(R) PRO/100 VE Network Connection
xEC121000 - xEC121FFF	Intel(R) GD82559ER PCI Adapter
xEC200000 - xEC27FFFF	Intel(R) 82845G Graphics Controller
xEC280000 - xEC2803FF	Intel (R) USB Enhanced Host Controller (ICH4)
xEC281000 - xEC2811FF	Avance AC97 Audio
xEC282000 - xEC2820FF	Avance AC97 Audio
xFEC00000 - xFEC0FFFF	System board extension for PnP BIOS
xFEE00000 - xFEE0FFFF	System board extension for PnP BIOS
xFFB00000 - xFFB7FFFF	System board extension for PnP BIOS
xFFB80000 - xFFBFFFFF	Intel(r) 82802 Firmware Hub Device
xFFF00000 - xFFFFFFFF	System board extension for PnP BIOS

C.3 System IRQ and DMA Resource

C.3.1 IRQ

IRQ Number	Device
0	System timer
1	Standard 101/102-Key or Microsoft Natural Keyboard
2	Programmable interrupt controller
3	Communications Port (COM2)
4	Communications Port (COM1)
5	Intel(R) 82801DB/DBM USB Universal Host Controller - 24C2
5	IRQ Holder for PCI Steering
5	Intel(R) 82845G/GL Graphics Controller
6	Standard Floppy Disk Controller
7	Printer Port (LPT1)
8	System CMOS/real time clock
9	Intel (R) USB Enhanced Host Controller (ICH4)
9	IRQ Holder for PCI Steering
10	Avance AC97 Audio
10	Intel(R) 82801DB/DBM SMBus Controller - 24C3
10	Intel(R) GD82559ER PCI Adapter
10	Intel(R) 82801DB/DBM USB Universal Host Controller - 24C4
10	IRQ Holder for PCI Steering
11	Intel(R) PRO/100 VE Network Connection
11	Intel(R) 82801DB/DBM USB Universal Host Controller - 24C7
11	IRQ Holder for PCI Steering
12	PS/2 Compatible Mouse Port
13	Numeric data processor
14	Primary IDE controller (dual fifo)
14	Intel(R) 82801DB Ultra ATA Storage Controller - 24CB
15	Secondary IDE controller (dual fifo)
15	Intel(R) 82801DB Ultra ATA Storage Controller - 24CB

C.3.2 DMA

Channel	Device
0	(free)
1	(free)
2	Standard Floppy Disk Controller
3	(free)
4	Direct Memory Access Controller
5	(free)
6	(free)
7	(free)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