
FS-977

User's Manual Edition 1.2

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Packing List

Hardware

FS-977 Single Board Computer X 1

Cable Kit

34-pin FDD Cable X 1

40-pin IDE Flat Cable (UltraDMA/33) X 1

1 x COM / 1 x LPT Port DB9 / DB25 Cable (VL only)..... X 1

2 x COM Port DB9 Cable (VL2 only)..... X 1

1 x LPT Port DB25 Cable (VL2 only) X 1

Dual-USB Port Cable with Bracket..... X 2

PS/2 Keyboard and Mouse Cable X 1

40-pin UltraATA/100 IDE Cable X 1

Audio Cable X 1

3-pin to 4-pin ATX cable..... X 1

Printed Matter and Software

User's Manual X 1

Driver CD X 1

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Chapter 1. Introduction

1.1 Product Overview

FS-977 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, **FS-977** offers the value solution with Intel NetBurst micro-architecture, 533/400 MHz of FSB, 2 GB DDR200/266/333 DDR SDRAM, support [Hyper-Threading Technology](#) (Pentium 4 processor at 3.06 GHz or higher), 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, **FS-977** 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, M-systems DiskOnChip SSD (Solid State Disk), and ISA 64mA high drive capacity also make **FS-977** 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 DDR200/266/333 SDRAM of system memory, **FS-977** offers the high-end industrial computing platform with low cost Intel integrated solution. Onboard Intel GV chipset support [Hyper-Threading Technology](#) give PCs a turbo-charge, delivering the power users and PCs need to multi-task and increase productivity. The long term support, onboard SSD, dual Intel LAN and ISA 64mA high drive capacity also make **FS-977** 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.

Hi-Speed USB 2.0 Interface: Intel ICH4 built-in USB 2.0 controller let **FS-977** offer the high speed USB 2.0 interface with 480 Mbps of data transfer rate. It makes **FS-977** 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), PCI version 2.0 compliant
CPU	Intel mPGA478 Pentium 4, Celeron @ 533/400 MHz FSB Support Intel Hyper-Threading Technology Support Northwood / Willamette Pentium 4 / Celeron CPU
Memory	2 GBytes DDR200/266/333 SDRAM on 2 x 184-pin DIMM sockets. (No ECC/register DIMM support)
Chipset	Intel 82845GV 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 watchdog timer with 1 to 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 Port

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
Floppy	One floppy 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	M-systems DiskOnChip 2000, DiskOnChip Millennium, IDE Pro and DiskOnModule (DOM) solid state flash disk
Package	32-pin DIP JEDEC (DiskOnChip) 40-pin IDE port (IDE Pro, DiskOnModule)
Capacity	576 MB of DiskOnChip and 512 MB of DiskOnModule

VGA Display Interface

Chipset	Intel 845GV GMCH built-in 256-bit 3D VGA controller
Video Memory	Auto detect dynamic video memory up to 64 MBytes
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-out
Connector	10-pin header for line-in, line-out and Mic-out 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
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ATX Function	3-pin ATX interface with 5V standby and power-on
---------------------	--

Dimension	338 (L) x 122 (H) mm, standard PICMG form factor
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Temperature	Operating within 0 ~ 60°C (32 ~ 140°F) Storage within -20 ~ 85°C (-4 ~ 185°F)
--------------------	--

EMI	CE/FCC class A certified
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Ordering Code

FS-977VL	Full-size PICMG mPGA478 DDR CPU Card Based on Intel 845GV and ICH4, with 533/400 MHz FSB, Intel VGA, Single Intel PRO/100+ LAN, Audio, Hi-Speed USB 2.0, DOC Interfaces and ISA 64mA High Drive Capacity
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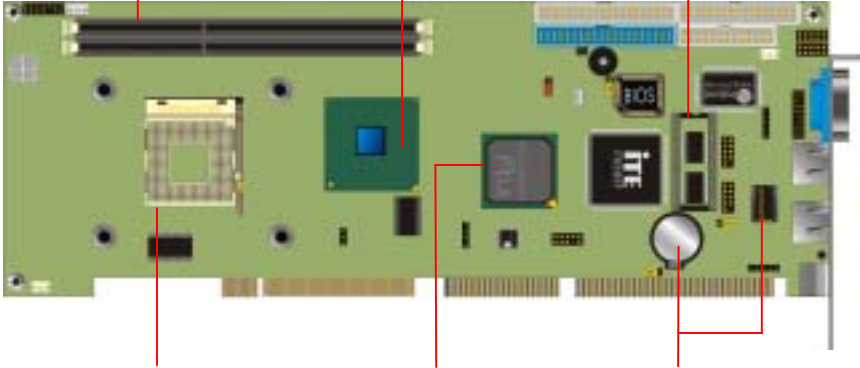
FS-977VL2	Full-size PICMG mPGA478 DDR CPU Card Based on Intel 845GV and ICH4, with 533/400 MHz FSB, Intel VGA, Dual Intel PRO/100+ LAN, Audio, Hi-Speed USB 2.0, DOC Interfaces and ISA 64mA High Drive Capacity
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1.3 Component Placement

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

Intel 845GV GMCH
Built-in Intel Extreme
Graphics VGA Core

DiskOnChip
Socket



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 with 82562ET
and Intel 82559ER

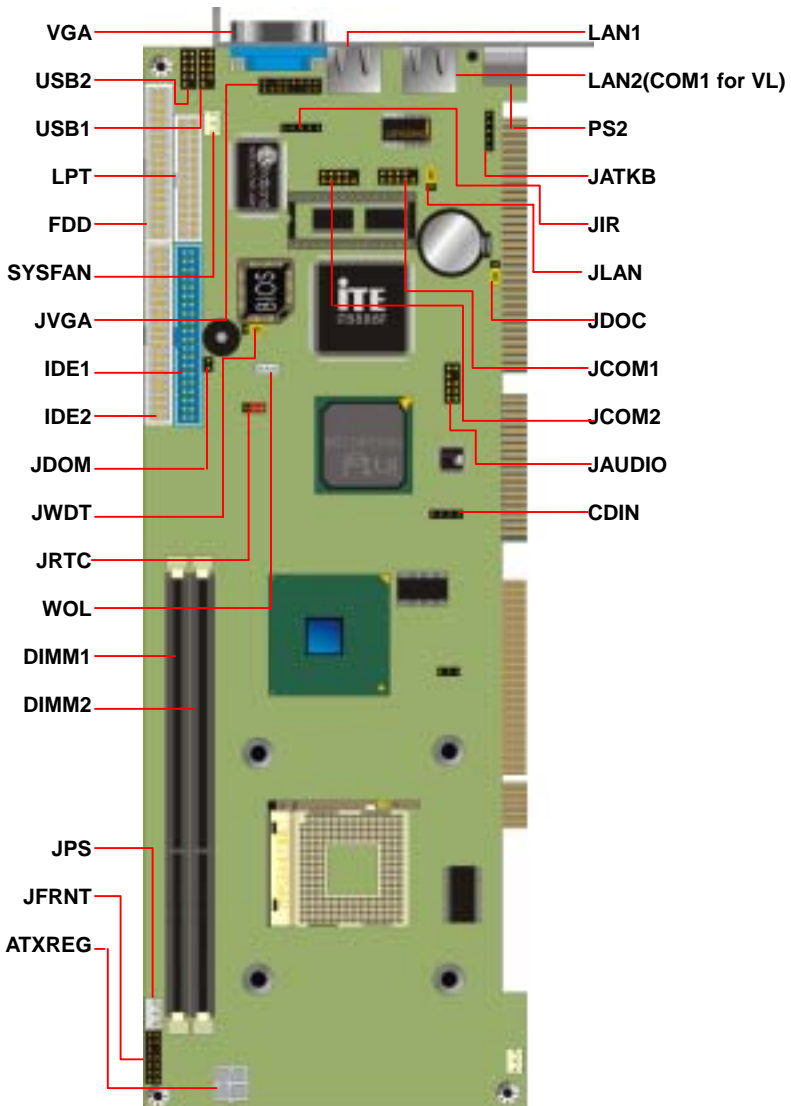
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Chapter 2. Hardware Setup

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



2.1.1 Jumpers Reference

Jumper	Function	Section
JRTC	COMS Operate / Clear Setting	2.3
JWDT	Watchdog Timer NMI / Reset Setting	2.4
JDOC	DiskOnChip SSD Address Setting	2.5
JDOM	DiskOnModule SSD Power Setting	2.5
JLAN	Secondary LAN Enable/Disable Setting	2.8

2.1.2 Connectors Reference

Internal Onboard Connector

Connector	Function
CPU	MicroPGA478 478 CPU Socket
DIMM1/2	184-pin DIMM Socket
IDE1/2	40-pin Primary / Secondary IDE Port
FDD	34-pin FDD Port
LPT	26-pin Parallel Port
JCOM1/2	10-pin COM1/2 Serial Port
USB1/2	10-pin 1st / 2nd (3rd / 4th) USB Port
JIR	5-pin SIR IrDA Port
DOC	32-pin DIP DiskOnChip Socket
JATKB	5-pin AT Keyboard Connector
ATXREG	4-pin Additional +12V Power Connector
JPS	3-pin ATX Signal Connector
JFRNT	14-pin Switch and Indicator Connector
CPUFAN	3-pin +12V CPU Fan Connector
SYSFAN	3-pin +12V System Fan Connector
JVGA	16-pin Internal VGA Port
JAUDIO	10-pin Audio Port
CDIN	4-pin CD-in Interface
WOL	3-pin Wake-On-LAN Interface

External Connector on Bracket

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

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 **FS-977** is based on Intel 845GV GMCH, supports 533 and 400 MHz FSB.

System memory of this board supports up to 2 GB DDR200/266/333 SDRAM on 2 184-pin DIMM sockets. Please notices that Intel 845GV GMCH doesn't support ECC and register DIMM.

2.3 CMOS Setting

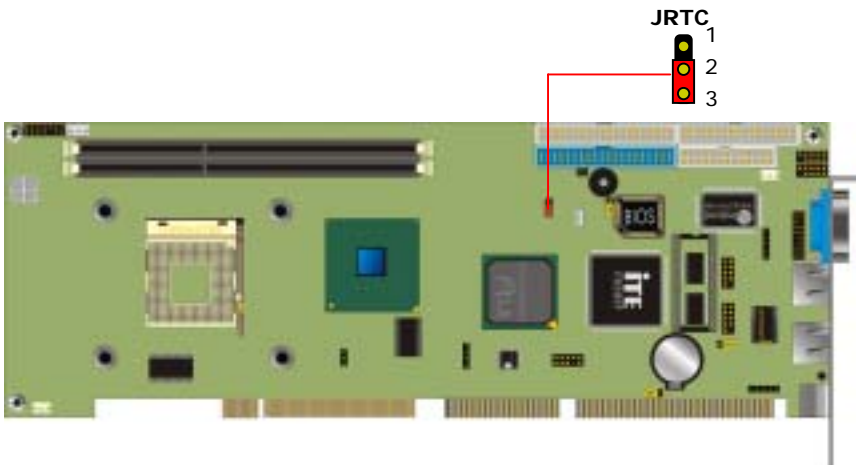
The board's data of CMOS can be setting in BIOS. If the board refuses to boot due to inappropriate CMOS settings, here is how to proceed to clear (reset) the CMOS to its default values.

Jumper: JRTC

Type: onboard 3-pin header

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

Default setting



2.4 Watchdog Timer Setting

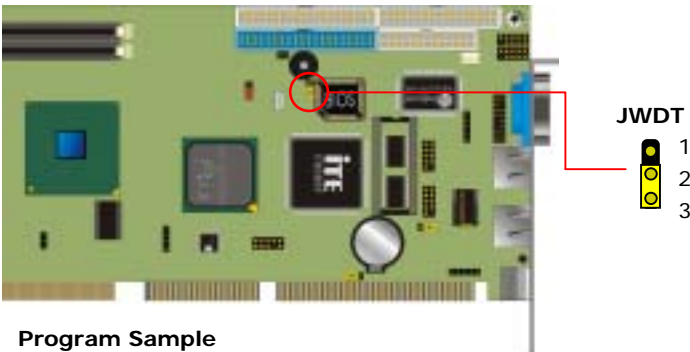
The watchdog timer makes the systems auto-reset while it stop to work for a period. The onboard watchdog timer can be setup as system reset or active NMI mode by jumper JWDT.

Jumper: JWDT

Type: onboard 3-pin header

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

Default setting



Program Sample

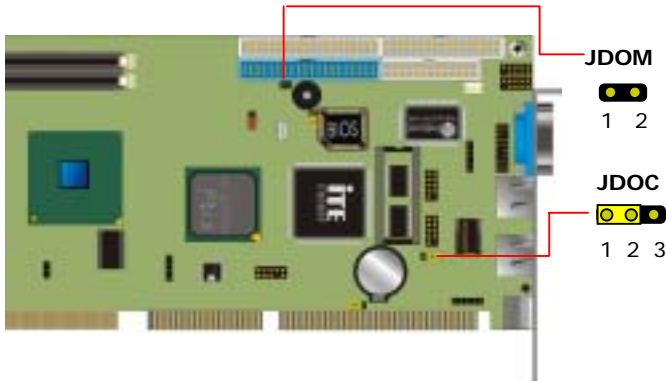
Watchdog timer setup as system reset with 5 second of timeout

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 32-pin M-systems DiskOnChip 2000 and IDE-based DiskOnChip IDE Pro and DiskOnModule (DOM) embedded flash disk. The onboard 32-pin socket, DOC, supports DiskOnChip 2000 single chip flash disk in 32-pin DIP JEDEC with jumper selectable address on jumper JDOC; onboard 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.



DiskOnChip 2000 Address Setting

Jumper: JDOC

Type: onboard 3-pin header

JDOC	DiskOnChip Address
1-2	D000h
2-3	D800h

Default setting

DOM or DiskOnChip 2000 IDE Pro Power Setting

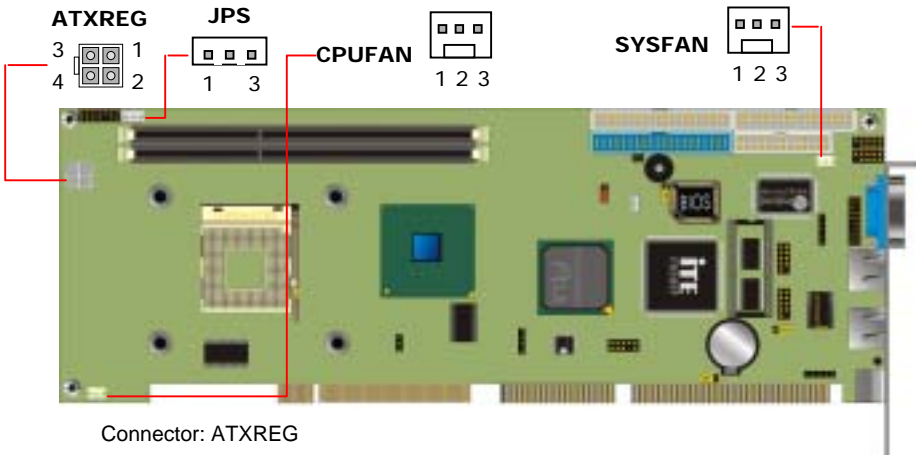
Jumper: JDOM

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

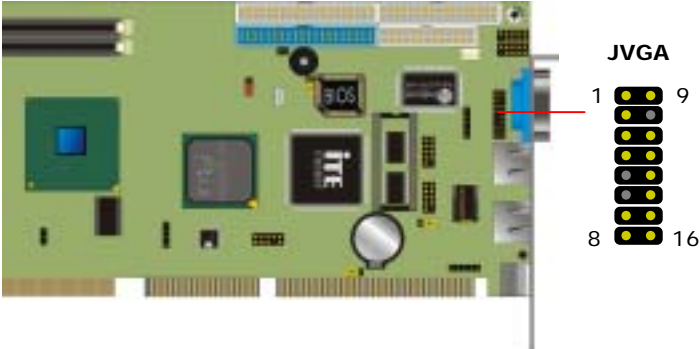
Connector: CPUFAN, SYSFAN

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 845GV GMCH built-in Intel Extreme Graphics with 266 MHz VGA core and Intel Dynamic Video Memory up to 64 MBytes 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 JLAN.

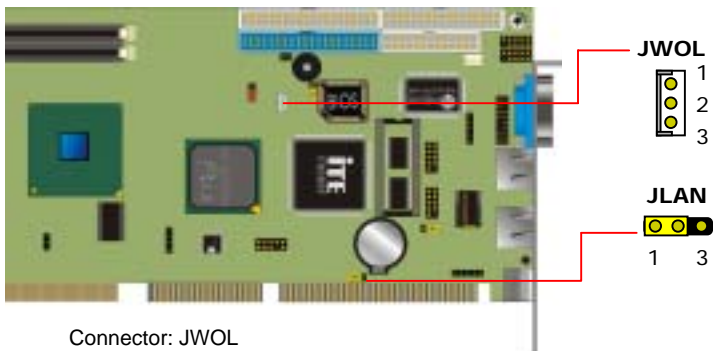
The primary LAN interface is controlled by Intel ICH4 with Intel 82562ET and setting as LAN1. It provides the same performance as Intel 82559 LAN with the same driver. The secondary LAN interface is controlled by Intel 82559ER chipset and setting as LAN2.

Jumper: JLAN

Type: onboard 3-pin header

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

Default setting



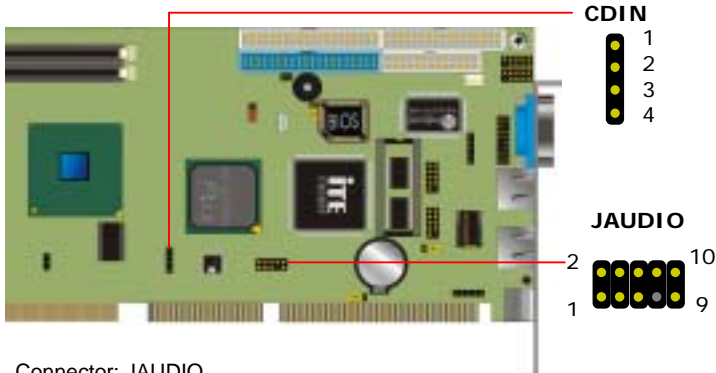
Connector: JWOL

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

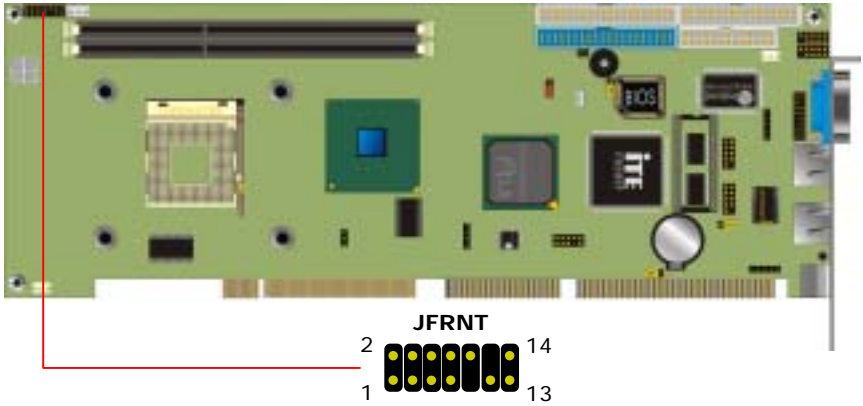
Pin	Description	Pin	Description
1	Line – Right	2	Ground
3	Line – Left	4	MIC
5	MIC	6	Ground
7	N/C	8	Line Out – Left
9	Line Out – Right	10	Ground

Connector: CDIN








Type: 4-pin header

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

2.10 Switch and Indicator



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	
	N/C	9		10	N/C	Speaker
Power	PWRBT	11		12	N/C	
Button	GND	13		14	SPKIN	

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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 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 >Advanced BIOS Features >Advanced Chipset Features >Integrated Peripherals >Power Management Setup >PnP / PCI Configurations >PC Health Status	>Frequency/Voltage Control Load Fail-Safe Defaults Load Optimized Defaults Set Supervisor Password Set User Password Save & Exit Setup Exit Without Saving
Esc : Quit F10 : Save & Exit Setup	↑ ↓ → ← : Select Item

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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 Hi-Speed USB 2.0 Driver

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

Link to < Website > Homepage

The selection help 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.

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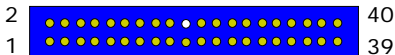
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Appendix. A I/O Port Pin Assignment

A.1 IDE Port

Connector: **IDE1, IDE2**

Type: 40-pin (2 x 20) box header

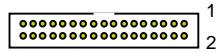


Pin	Description	Pin	Description
1	Reset	2	Ground
3	D7	4	D8
5	D6	6	D9
7	D5	8	D10
9	D4	10	D11
11	D3	12	D12
13	D2	14	D13
15	D1	16	D14
17	D0	18	D15
19	Ground	20	N/C (Vcc)
21	REQ	22	Ground
23	IOW-/STOP	24	Ground
25	IOR-/HDMARDY	26	Ground
27	IRDY/DDMARDY	28	IDESEL
29	DACK-	30	Ground
31	IRQ	32	N/C
33	A1	34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

A.2 Floppy Port

Connector: **FDD**

Type: 34-pin (2 x 17) header

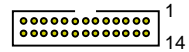


Pin	Description	Pin	Description
1	Ground	2	DRIVE DENSITY SELECT 0
3	Ground	4	DRIVE DENSITY SELECT 1
5	Ground	6	N/C
7	Ground	8	INDEX-
9	Ground	10	MOTOR ENABLE A-
11	Ground	12	DRIVER SELECT B-
13	Ground	14	DRIVER SELECT A-
15	Ground	16	MOTOR ENABLE B-
17	Ground	18	DIRECTION-
19	Ground	20	STEP-
21	Ground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

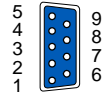


Pin	Description	Pin	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	Ground	6	DSR
7	RTS	8	CTS
9	RI	10	N/C

A.4.2 On Bracket RS-232C Serial Port

Connector: COM1 (FS-977VL only)

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

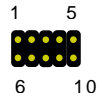


Pin	Description	Pin	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	Ground	6	DSR
7	RTS	8	CTS
9	RI		

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

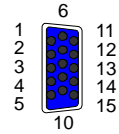


Pin	Description
1	Vcc
2	N/C
3	IRRX
4	Ground
5	IRTX

A.7 VGA Port

Connector: VGA

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

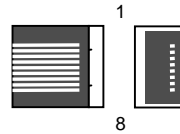


Pin	Description	Pin	Description	Pin	Description
1	RED	6	Ground	11	N/C
2	GREEN	7	Ground	12	VDDAT
3	BLUE	8	Ground	13	HSYNC
4	N/C	9	Vcc	14	VSYNC
5	Ground	10	Ground	15	VDCLK

A.8 LAN Port

Connector: LAN1, LAN2(FS-977VL2 only)

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

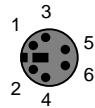


Pin	1	2	3	4	5
Description	CLK	DATA	N/C	Ground	Vcc

A.10 PS/2 Keyboard and Mouse Port

Connector: PS2

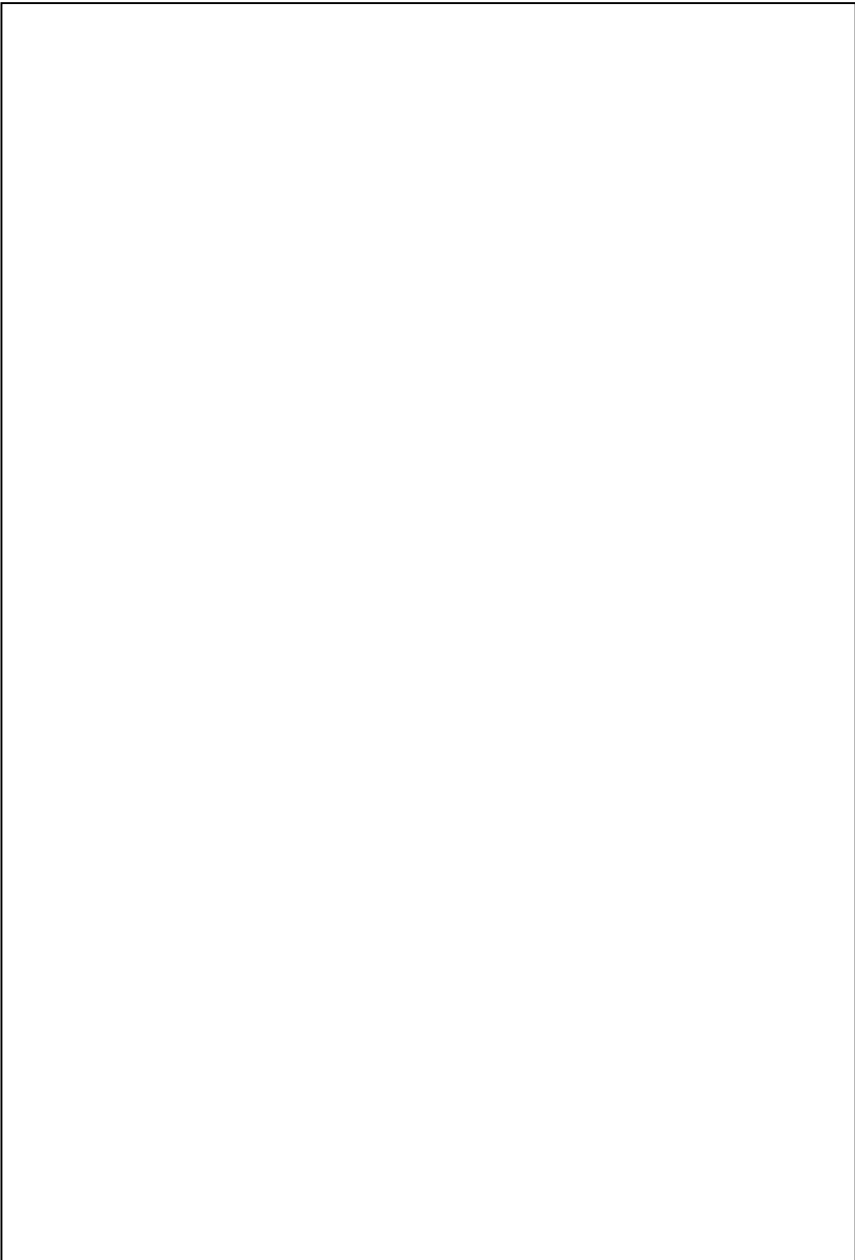
Type: 6-pin MiniDIN connector on bracket



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.

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Appendix 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 "awdf flash.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-start the system.

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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/GL Graphics Controller
x000B0000 - x000BFFFF	Intel(R) 82845G/GL Graphics Controller
x000C0000 - x000CADFF	Intel(R) 82845G/GL 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 - xE7FFFFFFF	Intel(R) 82845G/GL Graphics Controller
xE8000000 - xEBFFFFFFF	Intel(R) 82845G/GL 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/GL 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 - xFFBFFFFFF	Intel(r) 82802 Firmware Hub Device
xFFFF0000 - xFFFFFFFFF	System board extension for PnP BIOS

C.3 System IRQ and DMA Resource

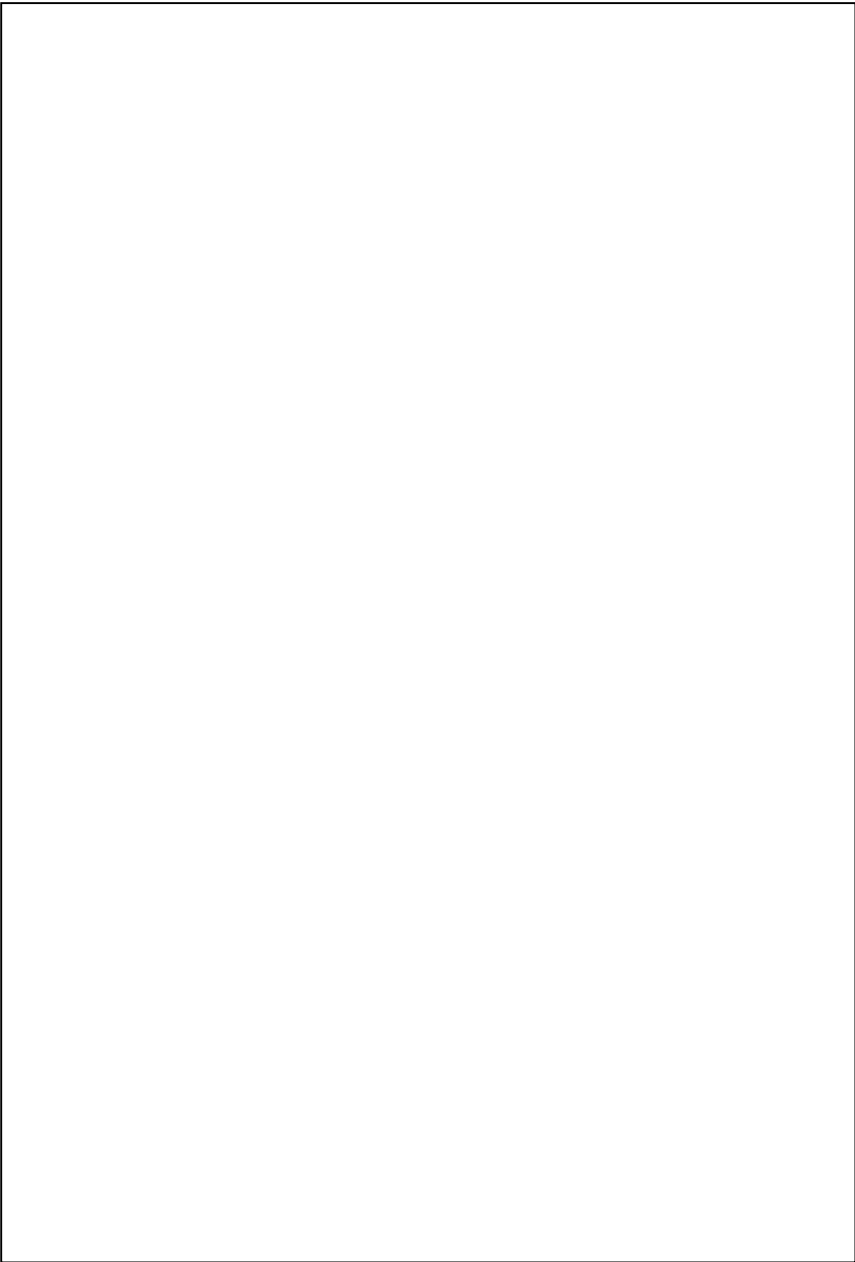
C.3.1 IRQ

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)

Notes (This page left blank intentionally)



Contact Information

Any advice or comment about our products and service, or anything we can help you please don't hesitate to contact with us. We will do our best to support you for your products, projects and business.

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