MAT-563

5.25” EBX Socket 370 Tualatin Miniboard
with LVDS/TTL LCD / CRT SVGA, 32 MB VRAM
LAN, Audio, TV-out, 4 COM / 2 LPT, 16-bit GPIO
PC/104-plus and DiskOnChip Socket

MAT-563

User's Manual
Edition 1.0

Packing List

Hardware

MAT-563 Single Board Computer ..... X 1

Cable Kit

UltraATA/100 IDE Cable ..... X 1
44-pin IDE Cable ..... X 1
Floppy Cable ..... X 1
Quad COM Port DB9 Male Cable ..... X 1
Parallel Port DB25 Female Cable ..... X 2
Dual USB Port Cable ..... X 1
PS/2 Keyboard and Mouse Cable ..... X 1
VGA DB15 Female Cable ..... X 1
20-pin 16-bit GPIO Cable ..... X 1
Audio Line-in, Line-out, Mic-in Cable ..... X 1
LAN RJ45 Cable ..... X 1
AV and S-video TV-out Cable (Optional) ..... 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

The MAT-563 SBC (Single Board Computer) is an all-in-one industrial 5.25” drive-size EBX-compliant miniboard computer based on Intel socket 370 architecture, supports Intel Tualatin/Coppermine FC-PGA2, FC-PGA Pentium-III / Celeron and VIA C3 Samuel I/II, Ezra CPU up to 1.4 GHz at 66, 100, 133 MHz of FSB with PC100/133 SDRAM. Based on value VIA/S3 Twister-T PN133T chipset with VIA 8606T northbridge and 686B southbridge, the MAT-563 supports the Intel and VIA latest socket 370 based CPU, 512 MB PC133 SDRAM and VIA/S3 Savage4 3D SVGA core with BIOS selectable 8/16/32 MB video memory shard with system memory.

To be the requirement of multi-media computing platform, the MAT-563 also offers the LVDS/TTL TFT/DSTN LCD interface and optional AV and S-video TV-out at NTSC/PAL mode. The onboard Fast Ethernet, PC/104 and PC/104-plus, 4 COM / 2 LPT ports, 2 USB ports and 16-bit GPIO port also provides the interfaces for embedded peripherals for the POS/POI, Kiosk, ATM, Panel PC, industrial workstation, node terminal, transaction station and industrial embedded application.

With these features, MAT-563 should be the value, powerful and all-in-one integration solution including, but not limited to the following.

Value Advanced Computing Platform
Intel latest Tualatin Pentium-III / Celeron and VIA C3 CPU up to 1.4 GHz with 133 MHz FSB, 512 MB PC133 SDRAM of system memory for high-end industrial computing platform with high CPU and memory loading.

LVDS/TTL TFT/DSTN LCD Interface
VIA/S3 Twister-T integrated S3 Savage4 3D SVGA core, BIOS selectable 8/16/32 MB of video memory shared with system memory, and 2 x 18-bit LVDS / TTL TFT/DSTN LCD interface offers the value and performance solution for the LCD-based multi-media applications.
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Multiple I/O Port and Solid State Disk Interface
Onboard 4 COM, 2 parallel, 2 USB and 16-bit GPIO ports offer the interface for industrial embedded peripherals and application. The DiskOnChip socket and IDE-based DiskOnModule (DOM) interface provides the SSD (Solid State Disk) with flash disk for disk free and embedded OS based application.

1.2 Specification

General Specification

Form Factor	5.25” drive-size EBX compliant miniboard computer
CPU	Socket 370 Intel Pentium-III / Celeron, VIA C3 CPU Up to 1.4 GHz at 66/100/133 MHz of FSB Intel Tualatin / Coppermine FC-PGA2 / FC-PGA CPU and VIA C3 Samuel I/II, Ezra CPU
Chipset	VIA Twister-T PN133T with 8606T and 686B
DRAM	One 168-pin DIMM socket supports up to 512 MB PC100/133 SDRAM
BIOS	Phoenix-Award 2Mb PnP flash BIOS
Enhanced IDE	PCI enhanced IDE interface supports dual ports up to 4 ATAPI devices with UltraATA/100 supported One 40-pin IDE1 and one 44-pin IDE2 box header
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	6-level generates NMI or system reset programmable watchdog timer
Real Time Clock	VIA 686B built-in RTC with onboard lithium battery

Multi-I/O Port

Chipset	VIA 686B built-in super I/O controller Winbond W83977EF-AW for COM3/4 and LPT2 Ports
Serial Port	Three RS-232 serial port COM1/3/4 and one jumper selectable RS-232/422/485 serial port COM2. Both with 16C550 compatible UART and 16 bytes FIFO
Parallel Port	Two bi-direction parallel port with SPP/ECP/EPP mode
USB Port	Two USB ports with USB version 1.1 compliant
GPIO Port	One 16-bit programmable general purpose I/O port
Floppy Port	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 port

Solid State Disk Interface

Flash Type	M-systems DiskOnChip2000 Millennium flash disk
Package	Single chip flash disk in 32-pin DIP JEDEC
Capacity	8M to 1GBytes of flash memory for DiskOnChip
Data Reliability	ECC / EDC data protection
Memory Window	8 KBytes of memory window

Display Interface

Chipset	VIA/S3 Twister-T PN133T chipset built-in S3 Savage4 SVGA controller with 128-bit 3D/2D engine
Video Memory	BIOS selectable 8/16/32 MBytes of video memory shared with system memory
Display Type	CRT and LCD monitor LVDS/TTL TFT/DSTN Color LCD
Display Mode	VGA, SVGA, XGA, SXGA, UXGA Up to 1920 x 1440 of resolution for CRT monitor
LCD Interface	36-bit TFT/DSTN LCD interface with 256 gray shade Integrated 2-channel 110 MHz LVDS interface Support up to 1280 x 1024 of resolution
Connector	Onboard 16-pin header connector for CRT Onboard 50-pin header connector for TTL LCD Onboard 2 x 20-pin Hirose DF13-20DP-1.25V for LVDS

Ethernet Interface

Chipset	PCI RTL8100B Fast Ethernet controller
Type	10Base-T / 100Base-TX, auto-switching Fast Ethernet, full duplex, IEEE802.3U compliant
Connector	Onboard 10-pin header connector

Audio Interface

Chipset	VIA 686B built-in AC97 3D audio controller with codec
Interface	Line-in, line-out, Mic-in and CD-in
Connector	Onboard 10-pin header for line-in, line-out and Mic-in Onboard 4-pin header for CD-in

Expansive Interface

PCI Bus	One 32-bit/33 MHz PCI slot with 3 x bus master PCI via an additional riser card
PC/104-plus	One 120-pin 32-bit PCI-based PC/104-plus interface One 104-pin 8-/16-bit ISA-based PC/104 interface

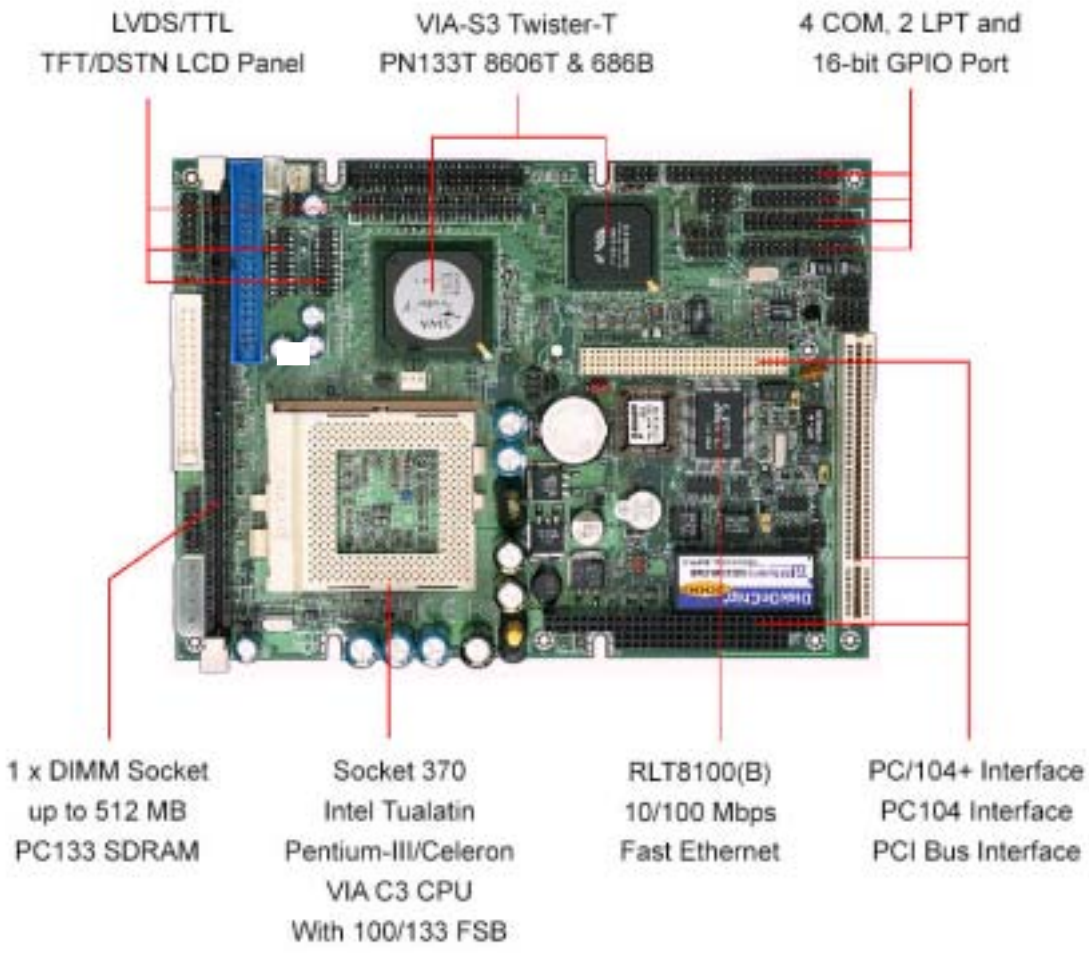
Power and Environment

Power Req.	+5V, +12V DC input +5V @ 4.2A typically with Intel Socket 370 FC-PGA Pentium-III 866 MHz CPU and 128 MB PC133 SDRAM
ATX Function	One 3-pin ATX interface with 5V standby
Dimension	146 x 203 mm or 5.75” x 8” (L x W), standard EBX size
Weight	0.30 Kg (Board only)
Temperature	Operating within 0 ~ 60°C (32 ~ 140°F) Storage within -20 ~ 85°C (-4 ~ 185°F)

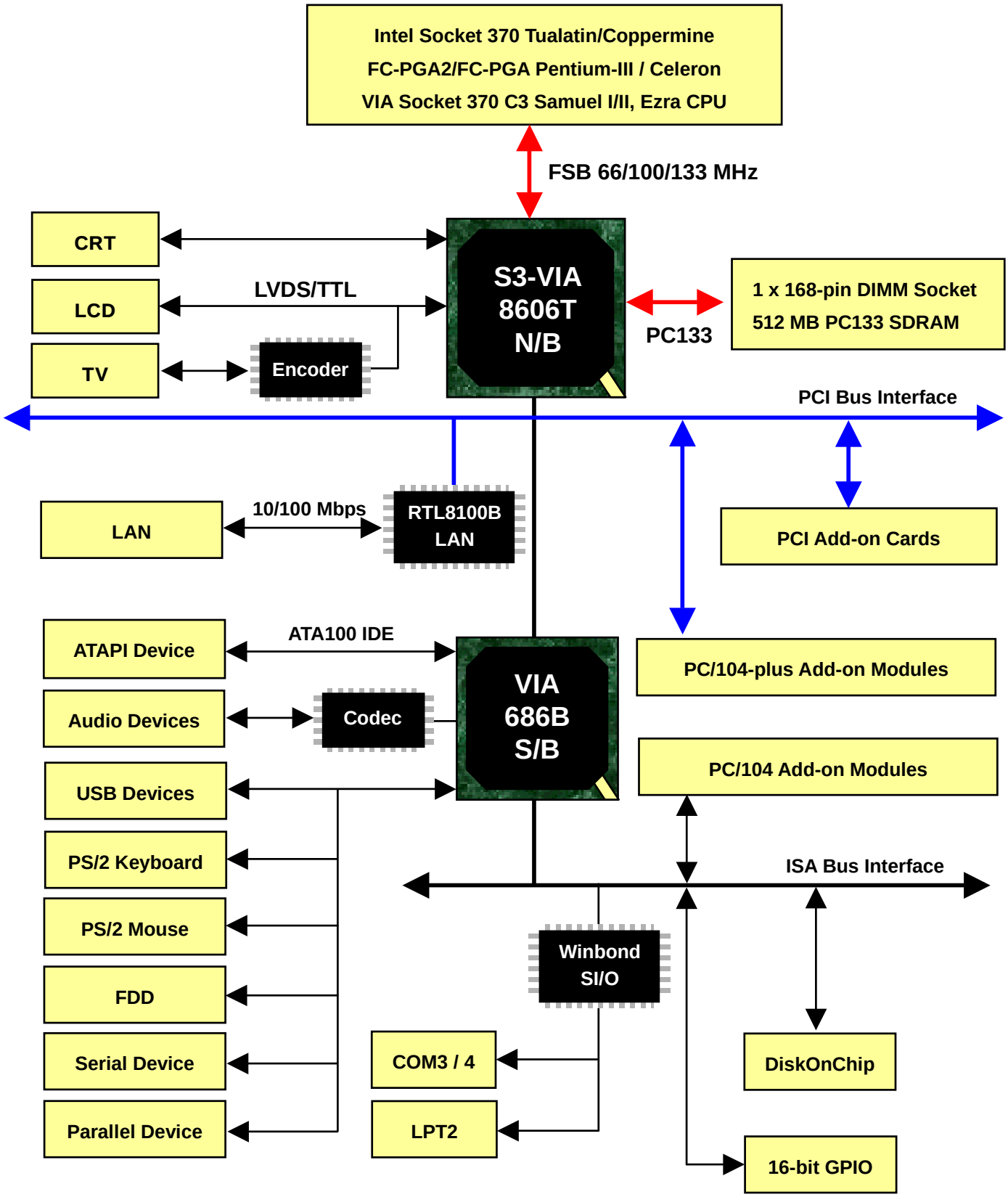
Ordering Code

MAT-563VXL	5.25" Drive-size Socket 370 Tualatin EBX Miniboard with **LVDS/TTL TFT/DSTN LCD** / CRT SVGA, Audio, LAN, PC/104-plus and 4 COM, 2 LPT, 16-bit GPIO and DiskOnChip Socket
MAT-563VTL	5.25" Drive-size Socket 370 Tualatin EBX Miniboard with CRT SVGA, **AV & S-Video TV-out**, Audio, LAN, PC/104-plus and 4 COM, 2 LPT, 16-bit GPIO and DiskOnChip Socket
OEM Version	Other Configuration based on MAT-563 with Optional / Removable Interface

1.3 Component Placement



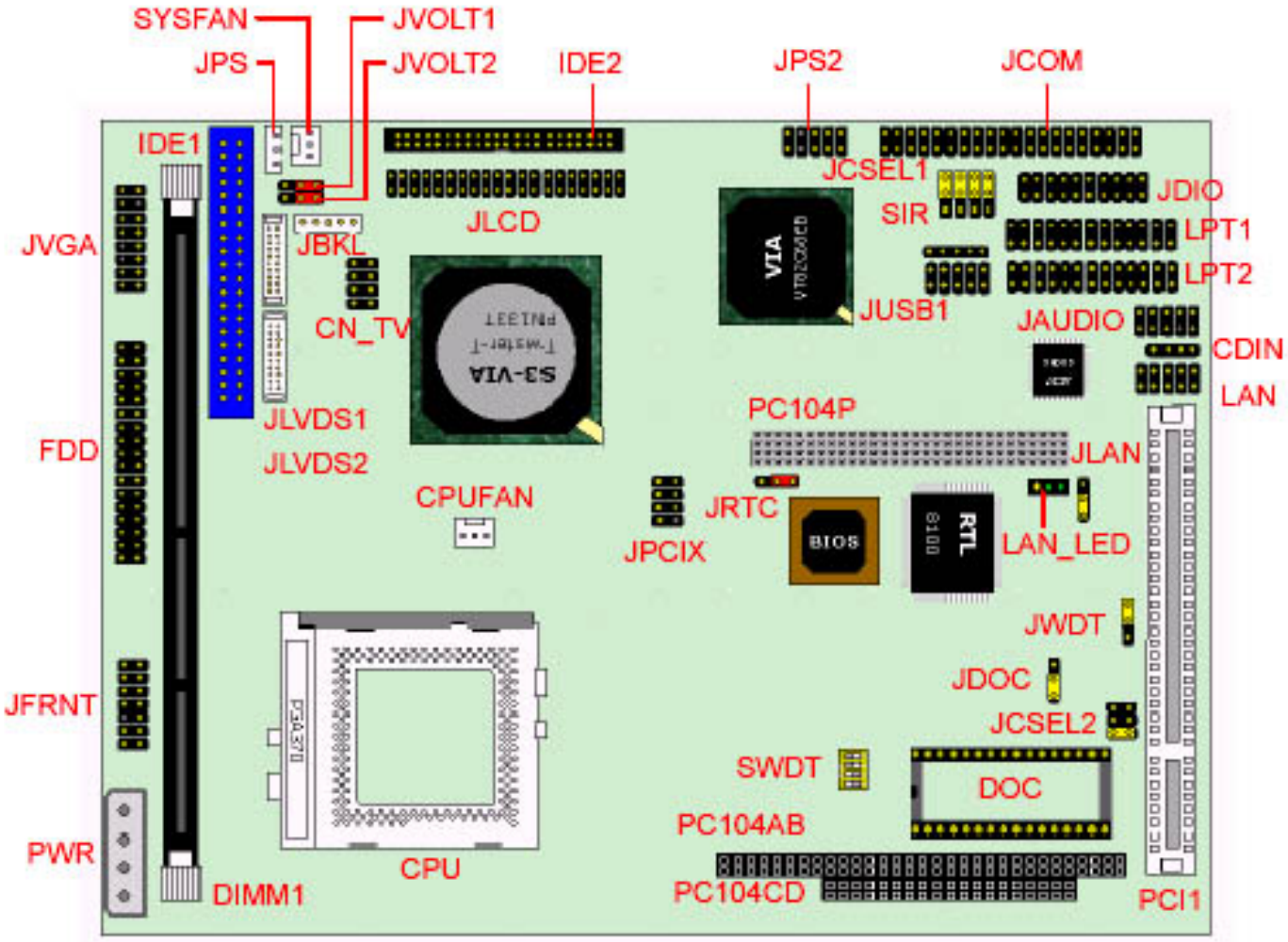
1.4 Block Diagram



Chapter 2. Hardware Setup

This chapter contains the information for the 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 of Jumper Hat

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

2.1.1 Jumper Reference

Jumper	Function	Section
JRTC	CMOS Setting	2.3
JWDT	Watchdog Timer Mode Setting	2.4
SWDT	Time Out Value of Watchdog Timer Setting	2.4
JDOC	DiskOnChip Address Setting	2.5.1
JVOLT1	Flat Panel's Voltage Setting	2.7.2
JVOLT2	Flat Panel's Power Setting	2.7.2
JLAN	LAN Enable/Disable Setting	2.8
JCSEL1	COM2 RS-232/422/485 Mode Setting	2.10.1
JCSEL2	COM2 RS-232/422/485 Mode Setting	2.10.1

2.1.2 Connector Reference

Connector	Function	Remark
CPU	CPU Socket PGA370	Standard
DIMM1	168-pin DIMM Socket	Standard
IDE1	40-pin Primary IDE Port	Standard
IDE2	44-pin Secondary IDE Port	Standard
FDD	34-pin Floppy Port	Standard
LPT1	26-pin Primary Parallel Port	Standard
LPT2	26-pin Secondary Parallel Port	Standard
JUSB1	10-pin 1st / 2nd USB Port	Standard
JCOM	40-pin COM1/2/3/4 RS232 Serial Port	Standard
JDIO	20-pin 16-bit GPIO Port	Standard
DOC	32-pin DiskOnChip Socket	Standard
JPS2	10-pin PS/2 Keyboard / Mouse Connector	Standard
SIR	5-pin SIR IrDA Port	Standard
PWR	4-pin AT Power Connector	Standard
JPS	3-pin ATX Signal Connector	Standard
JFRNT	14-pin Front Panel Connector	Standard
CPUFAN	3-pin CPU Fan Connector	Standard
SYSFAN	3-pin System Fan Connector	Standard
JVGA	16-pin Internal VGA Port	Standard
JAUDIO	10-pin Audio Port	Standard
CDIN	4-pin CD-in Interface	Standard
LAN	10-pin LAN Port Connector	Standard
JBKL	5-pin Backlight Inverter power connector	VXL Only
JLCD	50-pin TTL LCD Interface	VXL Only
JLVDS1, JLVDS2	20-pin LVDS LCD Interface	VXL Only
CN_TV	TV-out Interface	VTL Only
PCI1	32-bit PCI Slot	Standard
JPCIX	10-pin PCI Expansive Signal Header	Standard
PC104AB/CD	104-pin PC/104 Connector	Standard
PC104P	120-pin PC/104-plus Connector	Standard

2.2 CPU and DRAM Setting

The board is based on Intel socket 370 Pentium-III / Celeron architecture supports Intel FC-PGA and VIA C3 CPUs at 66/100/133 MHz of FSB. The FSB, ratio and voltage of CPU is default set by CPU without any additional jumper selection. The CPU should be installed into the CPU ZIF socket.

The board supports PC100/133 SDRAM up to 512 Mbytes of memory capacity on one 168-pin DIMM socket DIMM1.

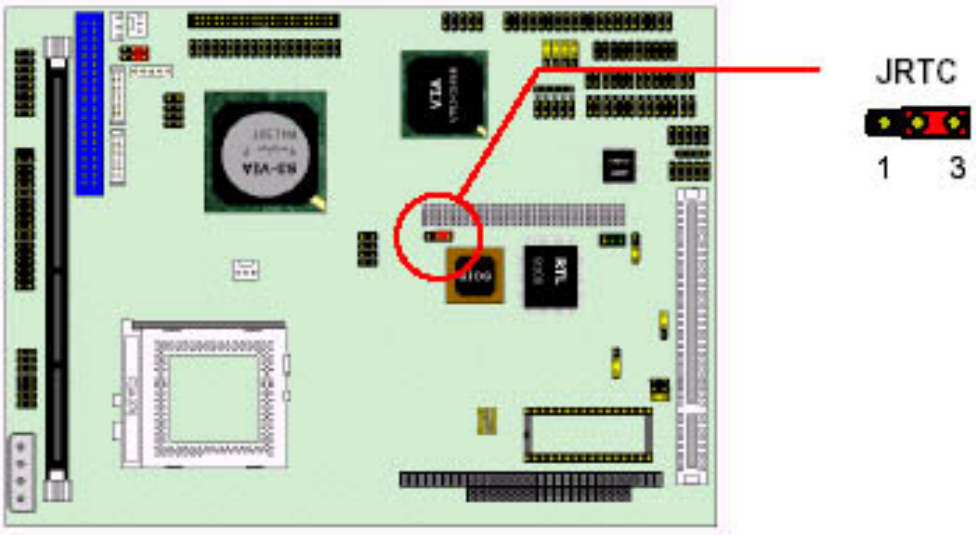
2.3 CMOS Setting

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



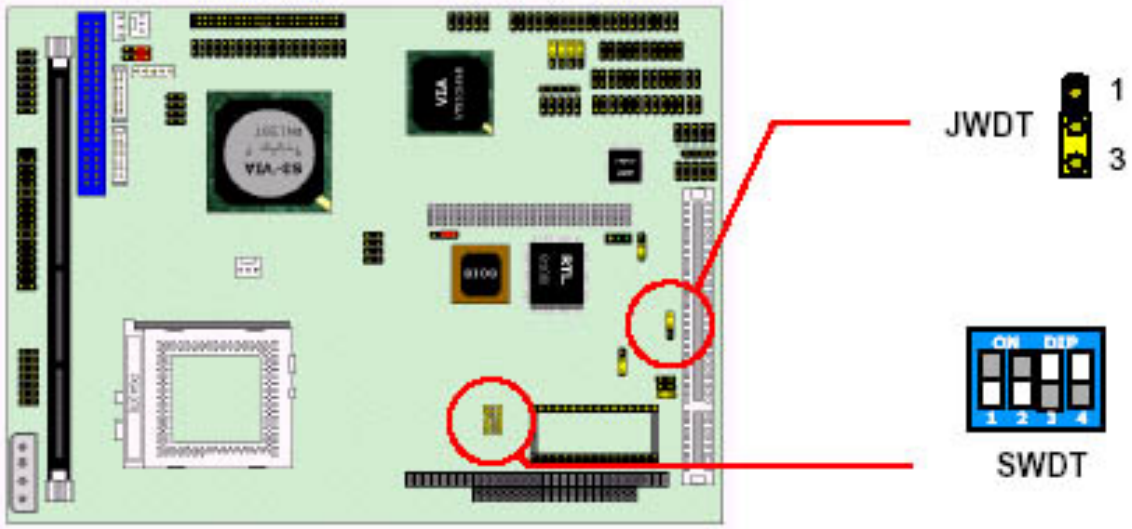
2.4 Watchdog Timer Setting

The watchdog timer makes the systems auto-reset while it stop to work for a period. The onboard watchdog timer can be set as system reset or active NMI mode by jumper JWDT; the timeout value can be set as 1, 2, 10, 20, 110, or 220 seconds by jumper SWDT.

Jumper: **JWDT**
Type: onboard 3-pin header

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

Default setting



Jumper: **SWDT**
Type: onboard 4-button / 2-level DIP switch

Timeout Value	SWDT	1	2	3	4
1 Second		OFF	OFF	ON	OFF
2 Seconds		OFF	OFF	ON	ON
10 Seconds		OFF	ON	OFF	OFF
20 Seconds		OFF	ON	OFF	ON
110 Seconds		ON	OFF	OFF	OFF
220 Seconds		ON	OFF	OFF	ON

Default setting

2.5 Embedded Flash Disk

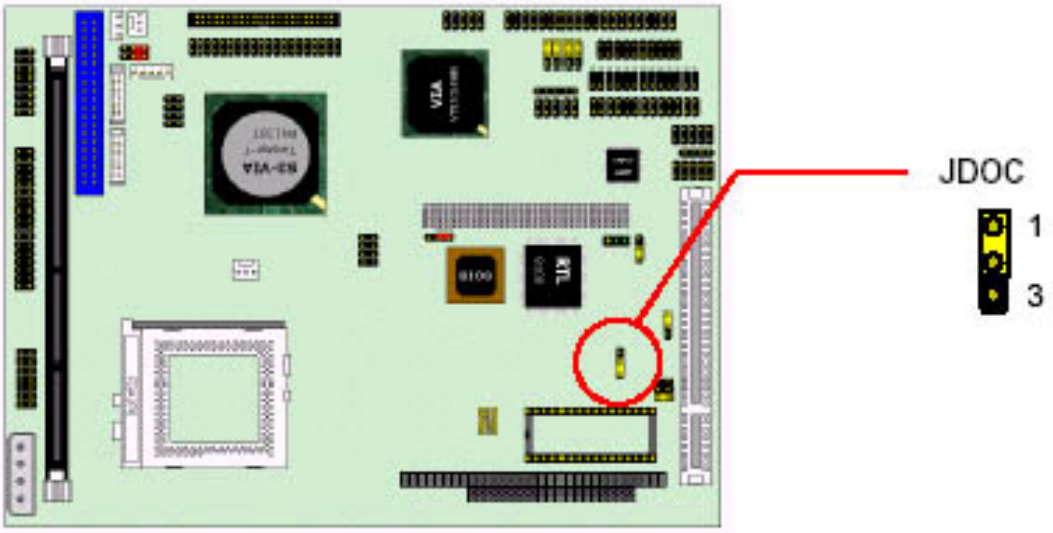
The board supports both of 32-pin DiskOnChip 2000 and DiskOnChip IDE Pro or DOM (DiskOnModule) embedded flash disk. The onboard 32-pin socket, DOC, supports DiskOnChip2000 single chip flash disk in 32-pin DIP JEDEC with jumper selectable address on jumper JDOC; onboard 40-pin IDE1 box header and 44-pin IDE2 header support DOM (DiskOnModule) or M-systems DiskOnChip IDE Pro flash disk.

2.5.1 DiskOnChip 2000 Address Setting

Jumper: JDOC
Type: onboard 4-pin header

JDOC	DiskOnChip Address
1-2	D000h
2-3	D800h

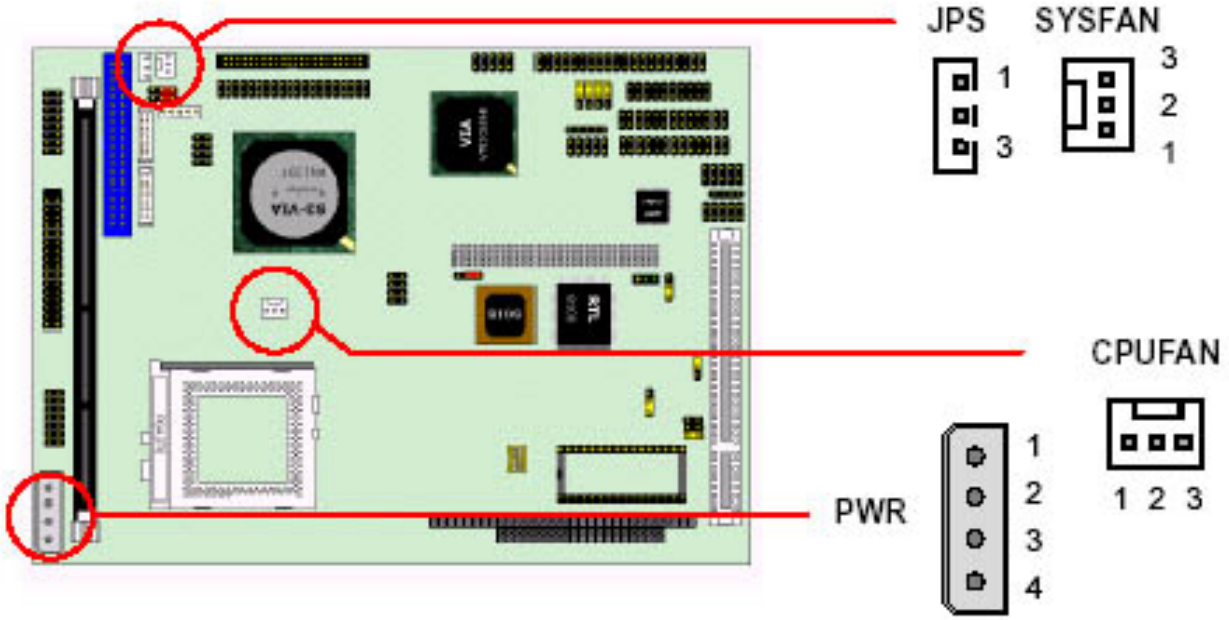
Default setting



2.5.2 DiskOnModule or DiskOnChip 2000 IDE Pro

The DiskOnModule or IDE Pro flash disk module can be used on normal IDE ports, 40-pin IDE1 with power cable and 44-pin IDE2 without cable.

2.6 Power and Fan Connector



Connector: **PWR**
Type: 4-pin AT power connector

Pin	Description	Cable Color Reference
1	+12V	Yellow
2	Ground	Black
3	Ground	Black
4	+5V	Red

Connector: **JPS**
Type: 3-pin ATX function connector

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

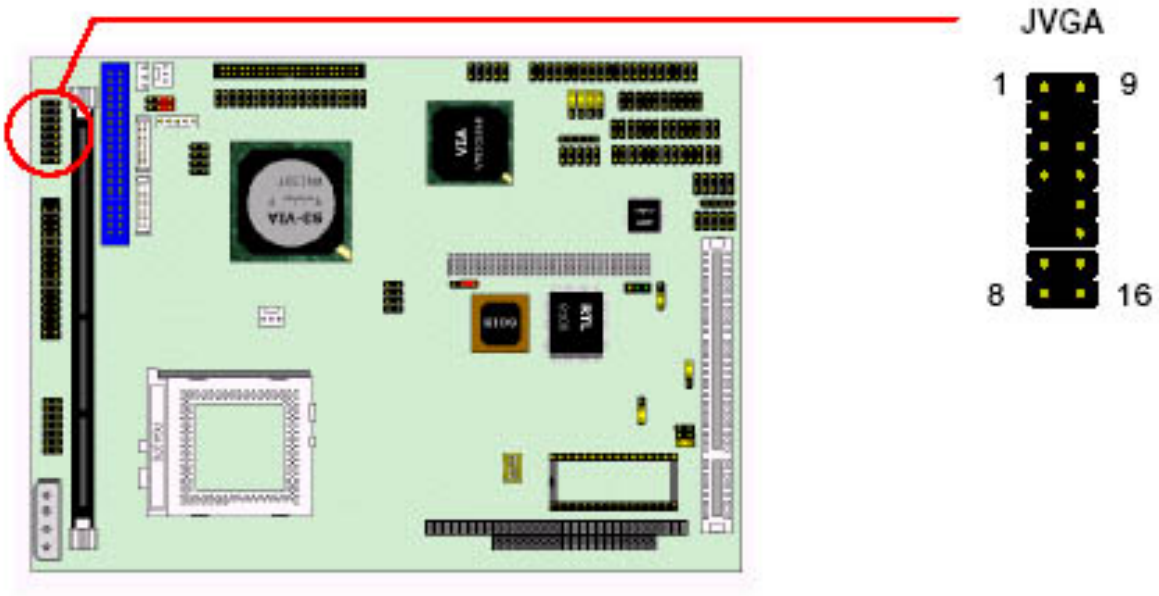
Connector: **CPUFAN**, **SYSFAN**
Type: 3-pin fan power wafer connector

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

2.7 VGA Interface

2.7.1 Standard Analog VGA Interface

The board is integrated with VIA/S3 Twister-T PN133T chipset built-in S3 Savage4 3D SVGA core with BIOS selectable 8/16/32 MBytes video memory shared with system memory.

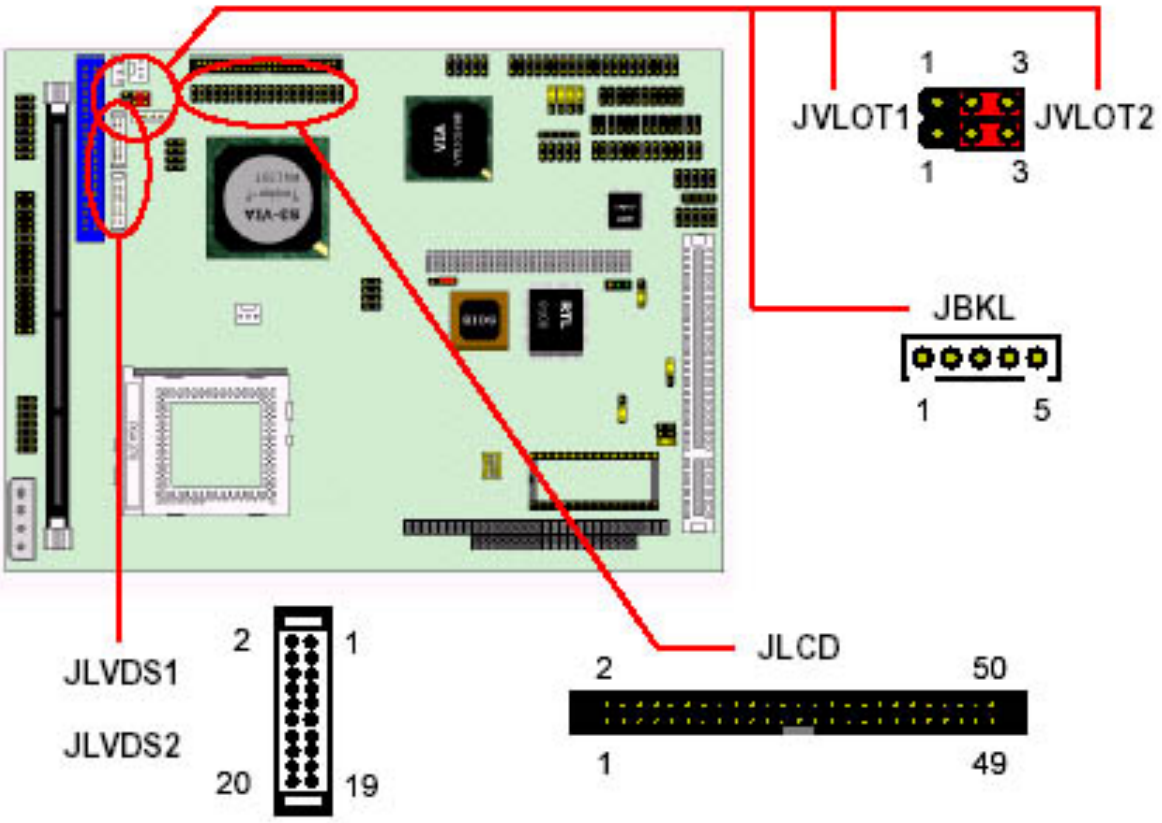


Connector: **JVGA**
Type: 16-pin (2 x 8) 2.54-pitch pin header

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

2.7.2 Digital VGA Interface (Optional)

The board provides an LCD Interface, VIA/S3 Twister-T PN133T 8606T chipset built-in dual channel 18-bit LVDS and TTL interface for TFT and DSTN LCD panel.



Jumper: JVOLT1
Type: onboard 3-pin header

JVOLT1	LCD Voltage Setting
1-2	+5V
2-3	+3.3V

Default setting

Jumper: JVOLT2
Type: onboard 3-pin header

JVOLT2	LCD Power Sequence Control
1-2	Power Input Directly
2-3	Power Sequence Control by Chipset

Default setting

TTL TFT/DSTN LCD Interface

Connector: **JLCD**
Type: onboard 50-pin (2 x 25) 2.0-pitch pin header

Pin	Signal	Pin	Signal
1	ENAVDD	2	ENAVEE
3	GND	4	GND
5	V_{CC} (LCD)	6	Vcc (LCD)
7	GND	8	GND
9	P0	10	P1
11	P2	12	P3
13	P4	14	P5
15	P6	16	P7
17	P8	18	P9
19	P10	20	P11
21	P12	22	P13
23	P14	24	P15
25	P16	26	P17
27	P18	28	P19
29	P20	30	P21
31	P22	32	P23
33	P24	34	P25
35	SHFCLK	36	FLM
37	M	38	LP
39	GND	40	ENABKL
41	P26	42	P27
43	P28	44	P29
45	P30	46	P31
47	P32	48	P33
49	P34	50	P35

LVDS TFT/DSTN LCD Interface

Connector: **JLVDS1, JLVDS2**
Type: onboard 20-pin Hirose DF13-20DP-1.25V

Pin	Signal	Pin	Signal
1	LCD_Vcc	2	+12V
3	GND	4	GND
5	TA-	6	TA+
7	GND	8	TB-
9	TB+	10	GND
11	TC-	12	TC+
13	GND	14	TCLK-
15	TCLK+	16	GND
17	TD-	18	TD+
19	ENABKL	20	GND

LCD Backlight Inverter Power Connector

Connector: **JBKL**
Type: 5-pin wafer connector

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

BIOS Configuration for Flat Panel

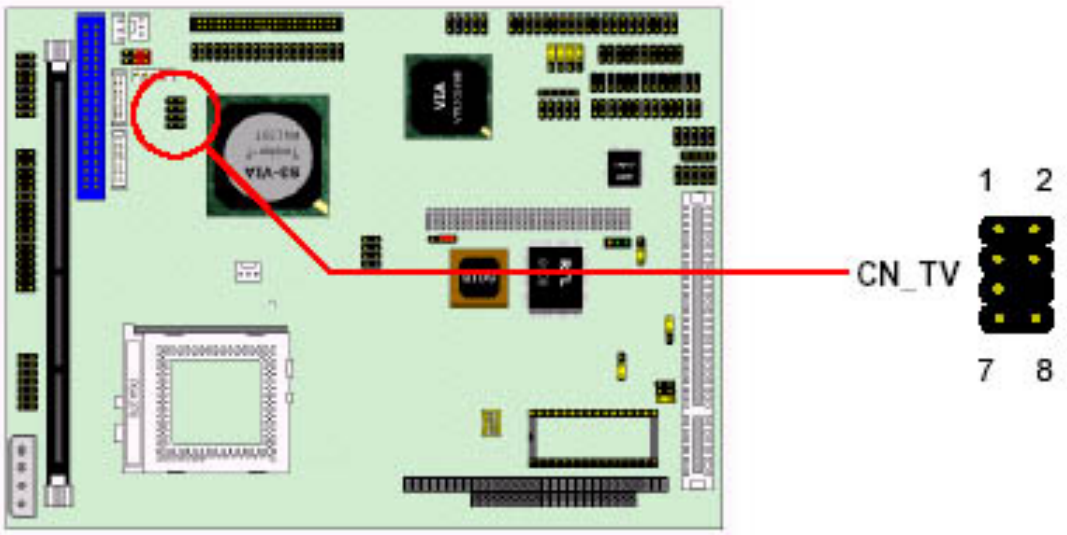
The selection of display type for flat panel depends on the LCD display you use. Please entry the “Advanced Chipset Features” screen on the main screen and find the item of “Panel Type”, and set it with the specification of the flat panel.

Panel Type	Support Display
00	640x480 TFT
01	800x600 TFT
02	1024x768TFT 2 pixel/clk at 32Mhz
03	1280x1024 TFT
04	640x480 DSTN
05	800x600 DSTN
06	1024x768 DSTN
07	1024x768 TFT 1 pixel/clk at 65Mhz
08	640x480 TFT
09	800x600 TFT
0A	1024x768 TFT
0B	1280x1024 TFT / pixel
0C	1400x1050 TFT
0D	800x600 DSTN
0E	1024x768 DSTN
0F	1280x1024 DSTN

Default setting

2.7.3 TV-out Interface (Optional)

The board provides the AV and S-video TV-out Interface at both of PAL and NTSC mode, with VIA/S3 Twister-T PN133T 8606 chipset built-in VGA interface and VIA 1621 TV-out encoder.

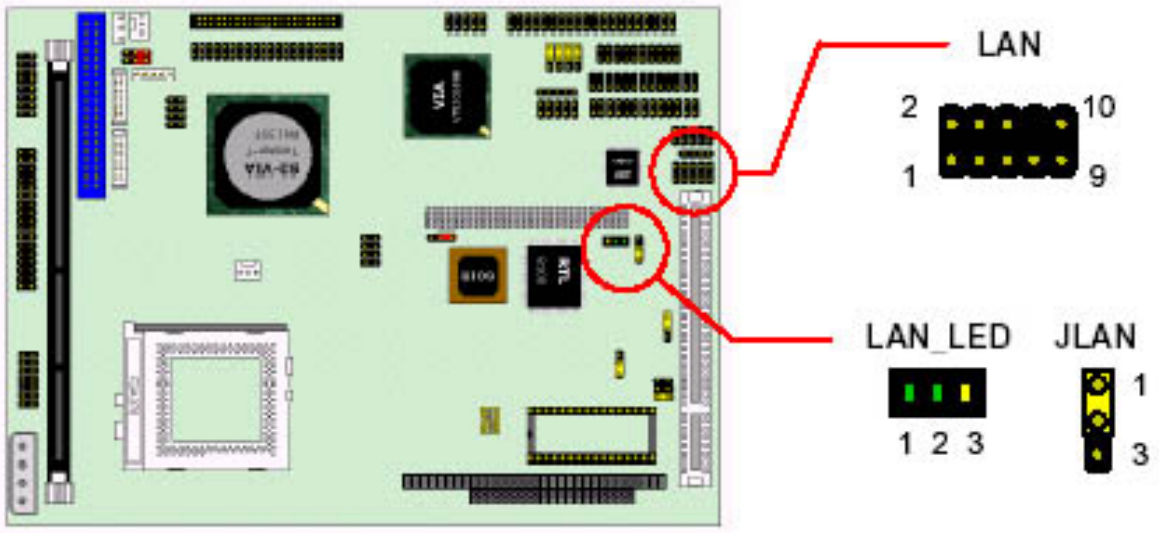


Connector: **CN_TV**
Type: onboard 8-pin (2 x 4) 2.54-pitch pin header

Pin	Description	Pin	Description
1	Ground	2	TVY
3	TVC	4	Ground
5	Ground	6	N/C
7	TVCVBS	8	Ground

2.8 Ethernet Interface

The board integrated with 10/100BASE-TX Fast Ethernet interface at the type of 10Base-T/100Base-TX auto-switching Fast Ethernet with full duplex and IEEE 802.3U compliant. The LAN controller, RTL8100B provides the powerful Fast Ethernet interface with embedded operating system (OS) supported, green function (power saving mode / wake-on-LAN) and advanced network management functions.



Jumper: **JLAN**
Type: onboard 3-pin header

JLAN	LAN Interface
1-2	Enable
2-3	Disable

Default setting

Connector: **LAN**
Type: 10-pin (2 x 5) 2.54-pitch header connector

Pin	Description	Pin	Description
1	TX+	2	TX-
3	RX+	4	N/C
5	N/C	6	RX-
7	N/C	8	N/C
9	Ground	10	Ground

LAN Indicator LED: **LAN_LED**
Type: 3-pin LED

Pin	1 (Green)	2 (Green)	3 (Yellow)
Description	10 Mbps Mode	100 Mbps Mode	Active Transfer

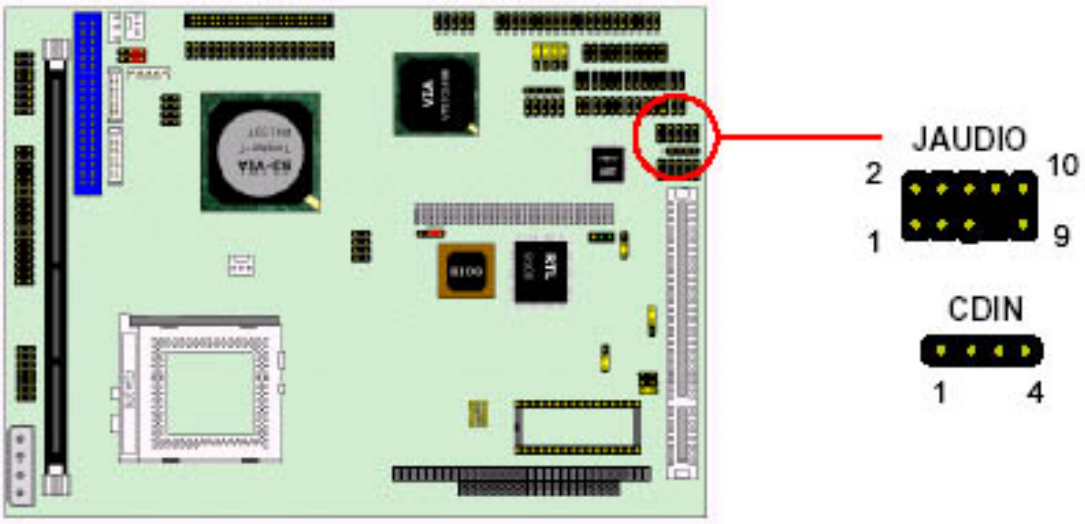
The onboard LAN LED can also be modified to pin header for external LAN indicator LED for OEM with the pin assignment as below.

Connector: **LAN_LED (Optional for OEM)**
Type: 6-pin (2 x 3) 2.54-pitch header connector

Pin	Description	Pin	Description
1	LED0	2	3VSB
3	LED1	4	3VSB
5	LED2	6	3VSB

2.9 Audio Interface

The board integrates with AC97 3D audio interface VIA 686B ALC201A code that provides line-in, line-out, Mic-in and CD-in interfaces for industrial applications with audio function.



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

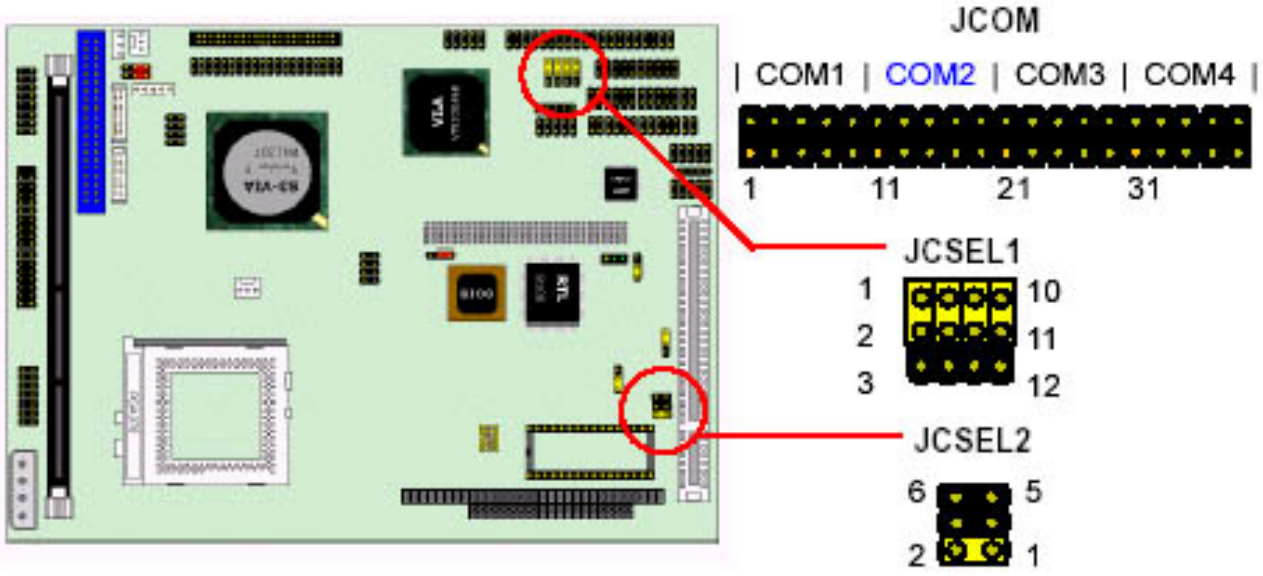
Connector: **CDIN** (CD Audio Input Interface)
Type: 4-pin (1 x 4) 2.54-pitch pin header

Pin	Description
1	CD – LEFT
2	Ground
3	Ground
4	CD – RIGHT

2.10 Multiple I/O Port Configuration

The onboard COM2 RS-422/485 mode setting is done by the jumper JCSEL1 and JCSEL2 and actives at connector JCOM.

2.10.1 COM2 RS-422/485 Mode Selection



Jumper: JCSEL2, JCSEL1 (COM2 RS-422/485 Mode Selection)
Type: onboard 6-, 12-pin header

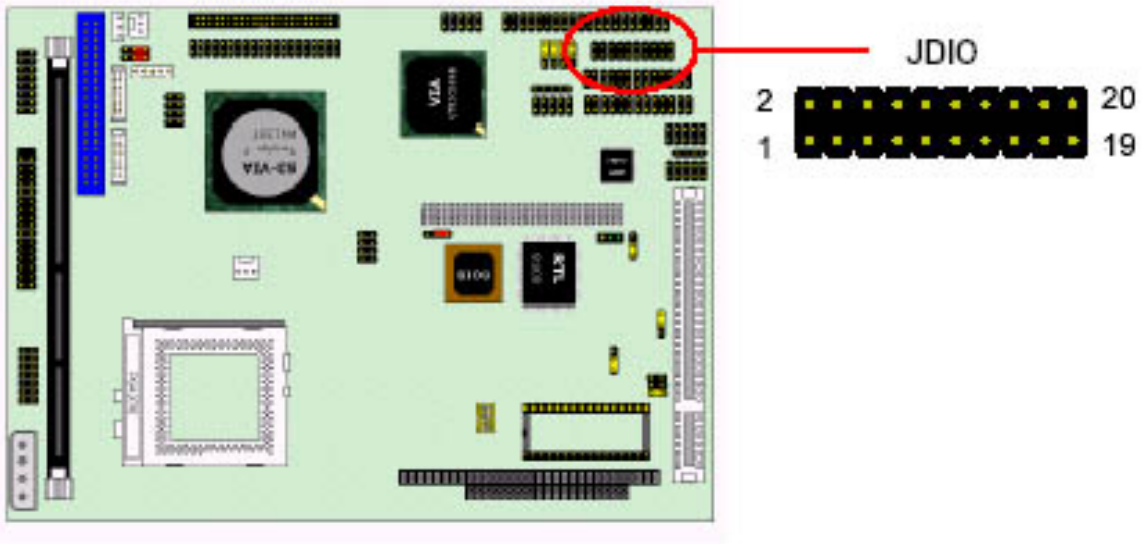
COM2 Mode	JCSEL2	JCSEL1
RS-232	1-2	1-2/4-5/7-8/10-11
RS-422	5-6	2-3/5-6/8-9/11-12
RS-485	3-4	2-3/5-6/8-9/11-12

Default setting

Connector: Pin11~20 on JCOM (COM2)
Type: 10-pin header

Pin	RS232	RS422	RS485	Pin	RS232	RS422	RS485
11	DCD	TX-	485-	12	RXD	TX+	485+
13	TXD	RX+	N/C	14	DTR	RX-	N/C
15	Ground	N/C	N/C	16	DSR	N/C	N/C
17	RTS	N/C	N/C	18	CTS	N/C	N/C
19	RI	N/C	N/C	20	N/C	N/C	N/C

2.10.2 16-bit General Purpose I/O Port



Connector: JDIO
Type: 20-pin (2 x 10) 2.54-pitch pin header

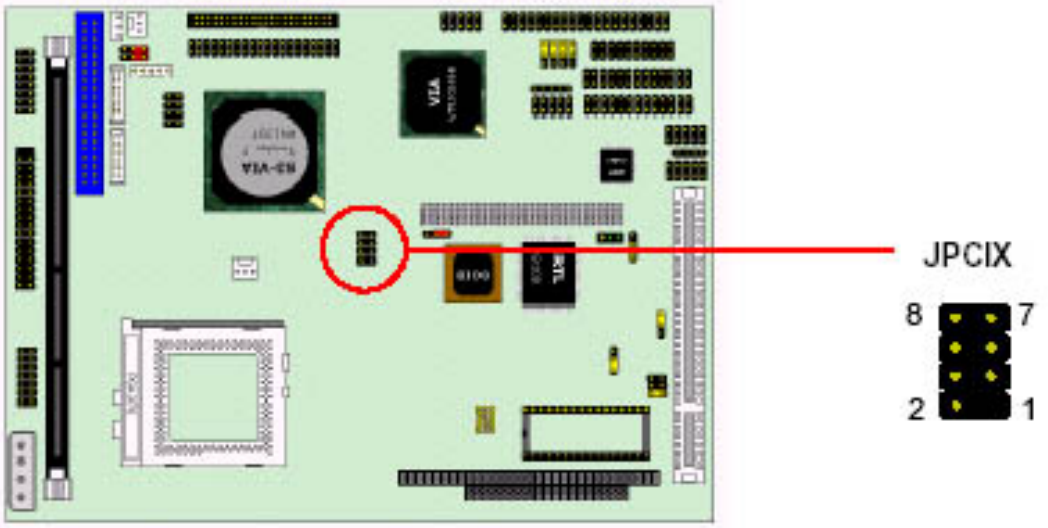
Pin	Description	Pin	Description
1	D/O-0	2	D/O-1
3	D/O-2	4	D/O-3
5	D/O-4	6	D/O-5
7	D/O-6	8	D/O-7
9	Ground	10	Ground
11	D/I-0	12	D/I-1
13	D/I-2	14	D/I-3
15	D/I-4	16	D/I-5
17	D/I-6	18	D/I-7
19	+5V	20	+12V

2.11 Expansive Bus Interface

The board offers PCI/ISA expansive bus interfaces including one PCI slot and one PC/104-plus connector.

2.11.1 PCI Bus Interface

The onboard expansive PCI bus interface offers 3 sets of bus master PCI signal to support up to 3 pieces of PCI-based add-on cards via an additional riser card.



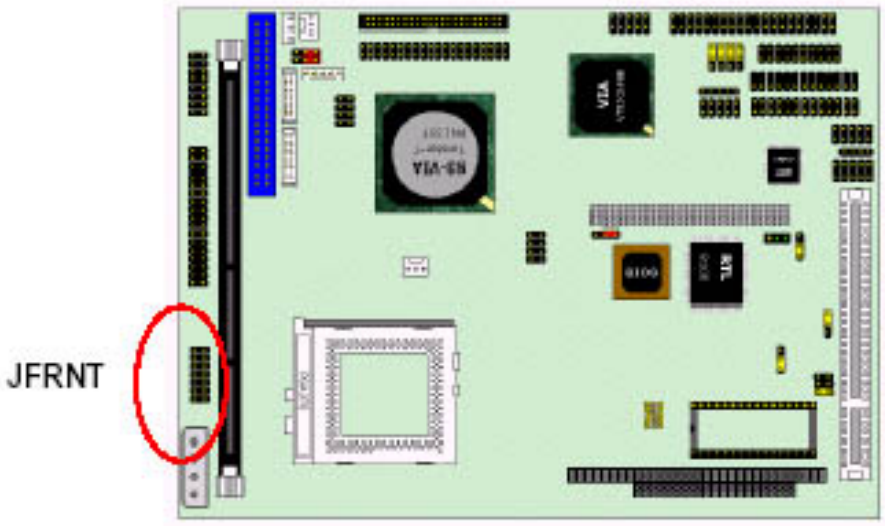
Connector: **JPCIX** (3 x Bus Master PCI Interfaces Supported)
Type: 8-pin (2 x 4) 2.54-pitch pin header

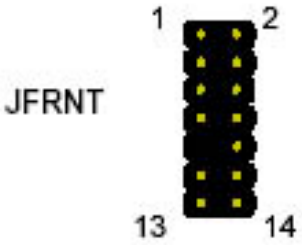
Pin	Description	Pin	Description
1	N/C	2	Ground
3	PCI Clock 1	4	PCI Clock 2
5	Request 1	6	Request 2
7	Grant 1	8	Grant 2

2.11.2 PC/104-plus Interface

The onboard PC/104-plus interface includes 32-bit PCI-based 120-pin PC/104-plus interface and 16-bit ISA-based PC/104 interface. There is one set of bus master PCI signal is supported on the onboard PC/104-plus interface. More information about PC/104-plus interface is available at: http://www.pc104.org/

2.12 Switches and Indicators





Connector: JFRNT

Type: onboard 14-pin (2 x 7) 2.54-pitch 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	

3.1 Advanced Chipset Feature

The display interface of the board can be setup in the BIOS with the selections including the video memory, display type and LCD type. In the section of “Advanced Chipset Features” on the main screen, there are three items of “Frame Buffer Size”, “Display Device” and “LCD Type” to set the capacity of video memory, display device and specification of the flat panel.

Figure 3.2 - Advanced Chipset Features Screen

Phoenix – Award BIOS CMOS Setup Utility
Advanced Chipset Features

DRAM Timing By SPD	[Enabled]	Item Help
X DRAM Clock	[Host CLK]	
X SDRAM Cycle Length	3	Menu Level ►
X Bank Interleave	[Disabled]	
Memory Hole	[Disabled]	
P2C/C2P Concurrency	[Enabled]	
System BIOS Cacheable	[Enabled]	
Video RAM Cacheable	[Enabled]	
Frame Buffer Size	**[16M]**	
AGP Aperture Size	[64M]	
AGP-4X Mode	[Enabled]	
AGP Driving Control	[Auto]	
AGP Driving Value	DA	
Display Device	**[CRT]**	
LCD Type	**07**	
OnChip USB	[Enabled]	
USB Keyboard Support	[Disabled]	
USB Mouse Support	[Disabled]	
OnChip Sound	[Auto]	
CPU to PCI Write Buffer	[Enabled]	
PCI Dynamic Bursting	[Enabled]	
PCI Master 0 WS Write	[Enabled]	
PCI Delay Transaction	[Disabled]	
PCI#2 Access #1 Retry	[Disabled]	
AGP Master 1 WS Write	[Disabled]	
AGP Master 1 WS Read	[Disabled]	

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

3.2 Frame Buffer Size

The item of “Frame Buffer size” offers the selection of the capacity of video memory shared with system memory including 2, 4, 8, 16, and 32 MBytes.

Selection	Frame Buffer Size
2M	2 MBytes of Video Memory
4M	4 MBytes of Video Memory
8M	8 MBytes of Video Memory
16M	16 MBytes of Video Memory
32M	32 MBytes of Video Memory

Default Setting

3.3 Display Device

The item of “Display Device” offers the selection of the display type. The selections include Auto, CRT, LCD, CRT+LCD, TV, CRT+TV. Please notice that the LCD and TV **CANNOT** be used at the same time.

Selection	Support Display Type
Auto	Auto Detect
CRT	CRT Display
LCD	LCD Panel
CRT+LCD	Both of CRT and LCD Panel
TV	TV
CRT+TV	TV and CRT Display

Default Setting

Please notice that if the systems are connecting with the KVM data switch, the selection of display device should be “CRT”, “CRT+LCD” or “CRT+TV” because the system will detect the display every time when you change the channel of the KVM data w\switch if it’s setting as “auto”.

3.4 LCD Type

The item of “LCD Type” offers the selection of the LCD type. Please check the LCD you want to use and select the right LCD type, saving and restart the computer.

LCD Type	Support Function
00	640x480 TFT
01	800x600 TFT
02	1024x768TFT 2pixel/clk at 32Mhz
03	1280x1024 TFT
04	640x480 DSTN
05	800x600 DSTN
06	1024x768 DSTN
07	1024x768 TFT 1pixel/clk at 65Mhz
08	640x480 TFT
09	800x600 TFT
0A	1024x768 TFT
0B	1280x1024 TFT
0C	1400x1050 TFT 2pixel/clk at 54Mhz
0D	800x600 DSTN
0E	1024x768 DSTN
0F	1280x1024 DSTN

Default Setting

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 Related Chipset INF Driver

The selection helps you to install the INF of related chipset 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.

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

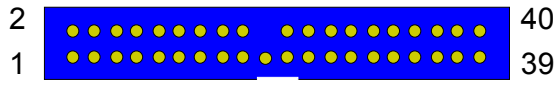
The selection helps you to find the drivers in this CD directly.

Notes (This page left blank intentionally)

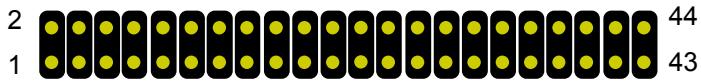
Appendix A. I/O Port Pin Assignment

A.1 IDE Port

Connector: **IDE1**
Type: 40-pin 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

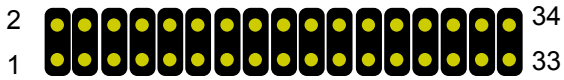


Connector: **IDE2**

Type: 44-pin (2 x 22) 2.0-pitch 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
21	REQ	22	Ground
23	IOW-/STOP	24	Ground
25	IOR-/HDMARDY	26	Ground
27	IORDY/DDMARDY	28	Ground
29	DACK-	30	Ground
31	IRQ	32	N/C
33	A1	34	SD
35	A0	36	A2
37	CS1	38	CS3
39	ASP1	40	Ground
41	Vcc	42	Vcc
43	Ground	44	Ground

A.2 Floppy Port

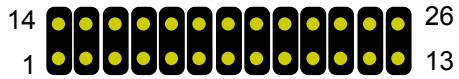


Connector: **FDD**

Type: 34-pin (2x 17) 2.54-pitch pin 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

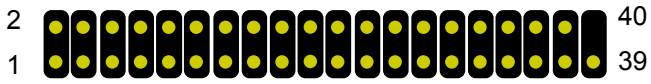


Connector: **LPT1**, **LPT2**
Type: 26-pin (2 x 13) 2.54-pitch pin header

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 RS-232 Serial Port

A.4.1 Onboard Quad-RS-232 Serial Port



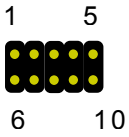
Connector: JCOM

Type: 40-pin (2 x 20) 2.54-pitch pin header

Pin	Description	Pin	Description
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	Ground	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	Ground
11	DCD2	12	RXD2
13	TXD2	14	DTR2
15	Ground	16	DSR2
17	RTS2	18	CTS2
19	RI2	20	Ground
21	DCD3	22	RXD3
23	TXD3	24	DTR3
25	Ground	26	DSR3
27	RTS3	28	CTS3
29	RI3	30	Ground
31	DCD4	32	RXD4
33	TXD4	34	DTR4
35	Ground	36	DSR4
37	RTS4	38	CTS4
39	RI4	40	N/C

A.5 USB Port

Connector: **JUSB1**
Type: 10-pin (2 x 5) 2.54-pitch pin header for dual USB Ports



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

A.6 IrDA Port

Connector: **SIR**
Type: 5-pin (1 x 5) 2.54-pitch pin header

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

A.7 PS/2 Keyboard and Mouse Port

Connector: **JPS2**
Type: 10-pin (2 x 5) 2.54-pitch pin header

Pin	Description	Pin	Description
1	Keyboard Data	2	Mouse Data
3	N/C	4	N/C
5	Ground	6	Ground
7	Ground	8	Ground
9	Keyboard Clock	10	Mouse Clock

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 “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.

Appendix C. System Resource

C.1 I/O Port Address Map

Address Range	Device
0060-0060	i8042prt
0064-0064	i8042prt
0170-0170	viadsk
01CE-01CF	VgaSave
01F0-01F7	viadsk
0278-027A	Parport
02E8-02EE	Serial
02F8-02FE	Serial
0376-0376	viadsk
0378-037A	Parport
03B0-03BB	VgaSave
03C0-03CF	S3Inc
03C0-03DF	VgaSave
03D4-03DB	S3Inc
03E8-03EE	Serial
03F0-03F5	Floppy
03F6-03F6	viadsk
03F7-03F7	Floppy
03F8-03FE	Serial
D000-D007	viadsk
D008-D00F	viadsk
DC00-DCFF	alcxnt
E000-E003	alcxnt

C.2 Memory Address Map

Range	Device
x00000000 - x0009FFFF	System board extension for PnP BIOS
x000A0000 - x000AFFFF	S3 Graphics Twister
x000B0000 - x000BFFFF	S3 Graphics Twister
x000F0000 - x000F3FFF	Motherboard resources
x000F4000 - x000F7FFF	Motherboard resources
x000F8000 - x000FBFFF	Motherboard resources
x000FC000 - x000FFFFF	Motherboard resources
x00100000 - x00FFFFFF	System board extension for PnP BIOS
xE0000000 - xE7FFFFFF	VIA CPU to AGP Controller
xE0000000 - xE7FFFFFF	S3 Graphics Twister
xE8000000 - xEBFFFFFF	VIA Standard CPU to PCI Bridge
xEC000000 - xEC07FFFF	S3 Graphics Twister
xEC000000 - xEC0FFFFF	VIA CPU to AGP Controller
xEC080000 - xEC08FFFF	S3 Graphics Twister
xEC100000 - xEC1001FF	Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet NIC
xEC101000 - xEC1011FF	Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet NIC
xFEE00000 - xFEE0FFFF	System board extension for PnP BIOS
xFFFE0000 - xFFFFFFFF	System board extension for PnP BIOS

C.3 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	Printer Port (LPT2)
6	Standard Floppy Disk Controller
7	Printer Port (LPT1)
8	System CMOS/real time clock
9	Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet NIC
9	Realtek RTL8139(A/B/C/8130) PCI Fast Ethernet NIC
9	Avance AC'97 Audio for VIA (R) Audio Controller
9	VIA Tech 3038 PCI to USB Universal Host Controller
9	VIA Tech 3038 PCI to USB Universal Host Controller
9	S3 Graphics Twister
9	IRQ Holder for PCI Steering
9	IRQ Holder for PCI Steering
9	IRQ Holder for PCI Steering
10	Communications Port (COM3)
11	Communications Port (COM4)
12	PS/2 Compatible Mouse Port
13	Numeric data processor
14	Primary IDE controller (dual fifo)
14	VIA Bus Master PCI IDE Controller
15	Secondary IDE controller (dual fifo)
15	VIA Bus Master PCI IDE Controller

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)