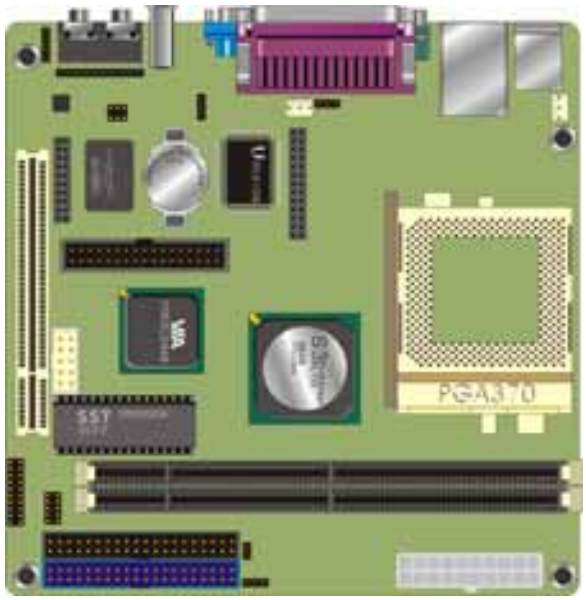
LV-602

Mini-ITX Motherboard

User's Manual 1.1
2005/3/18



Copyright

Disclaimer

The company shall not be liable for any incidental or consequential damages resulting from the performance or use of this product.
The company does not issue a warranty of any kind, express or implied, including without limitation implied warranties of merchantability or fitness for a particular purpose.
The company has the right to revise the manual or include changes in the specifications of the product described within it at any time without notice and without obligation to notify any person of such revision or changes.

Trademark

All trademarks are the property of their respective holders.

Any questions please visit our website at http://www.commell.com.tw

Packing List:

Please check the package before you starting setup the system

Hardware:

LV-602 series motherboard x 1

Cable Kit:

40-pin ATA100 IDE Flat Cable	X 1
34-pin Floppy Cable	X 1
Dual-USB Port Cable	X 1
DB9 COM Port Cable	X 1
Audio Cable.....	X 1
I/O Shield.....	X 1

Printed Matter and Software

Quick Installation Guide.....	X 1
Driver CD.....	X 1

The actual package contents may be different as list.

Index

Chapter 1 <Introduction>

1.1 <Product Overview>

LV-602 is an all-in-one industrial compact Pentium III level motherboard based on Mini-ITX form factor at 170 x 170 mm of dimension. Based on VIA Apollo PL133 Chipset, **LV-602** offers the compact, embedded, value and high performance solution with Intel Pentium III CPU, 133MHz of FSB, 1GBytes PC133 SDRAM, VIA S3 integrated VGA, REALTEK PRO/100+ LAN, USB 1.1, IEEE 1394, AC'97 3D audio and TV-out interfaces.

Compact Mini-ITX Form Factor @ 170 x 170 mm

LV-602 is based on the ultra compact Mini-ITX form factor at only 170 x 170 mm of dimension, meets the demand of compact and powerful computing platform. With this feature, **LV-602** should be the ideal solution for the high-end, Pentium III level book-size, slim type and other embedded PC systems.

Economical Pentium III Computing Platform

With Intel Socket 370 Pentium III / Celeron CPU at 133/100 MHz FSB and 1GBytes PC133 SDRAM of system memory, **LV-602** offers the high-end industrial computing platform with low cost Intel integrated solutions.

High Cost/Price rate Multi-media Solution

The VIA S3 integrated VGA, AC'97 3D audio and optional TV-out make **LV-602** be the high performance but low cost multi-media AV platform. With this feature,

LV-602 should be the ideal solution for VoD (Video on Demand), DVR (Digital Video Recorder), digital video broadcasting (DVB), streaming, surveillance, compression (MPEG), interaction server, POS, Kiosk, ATM, Panel PC, transaction workstation and terminal applications.

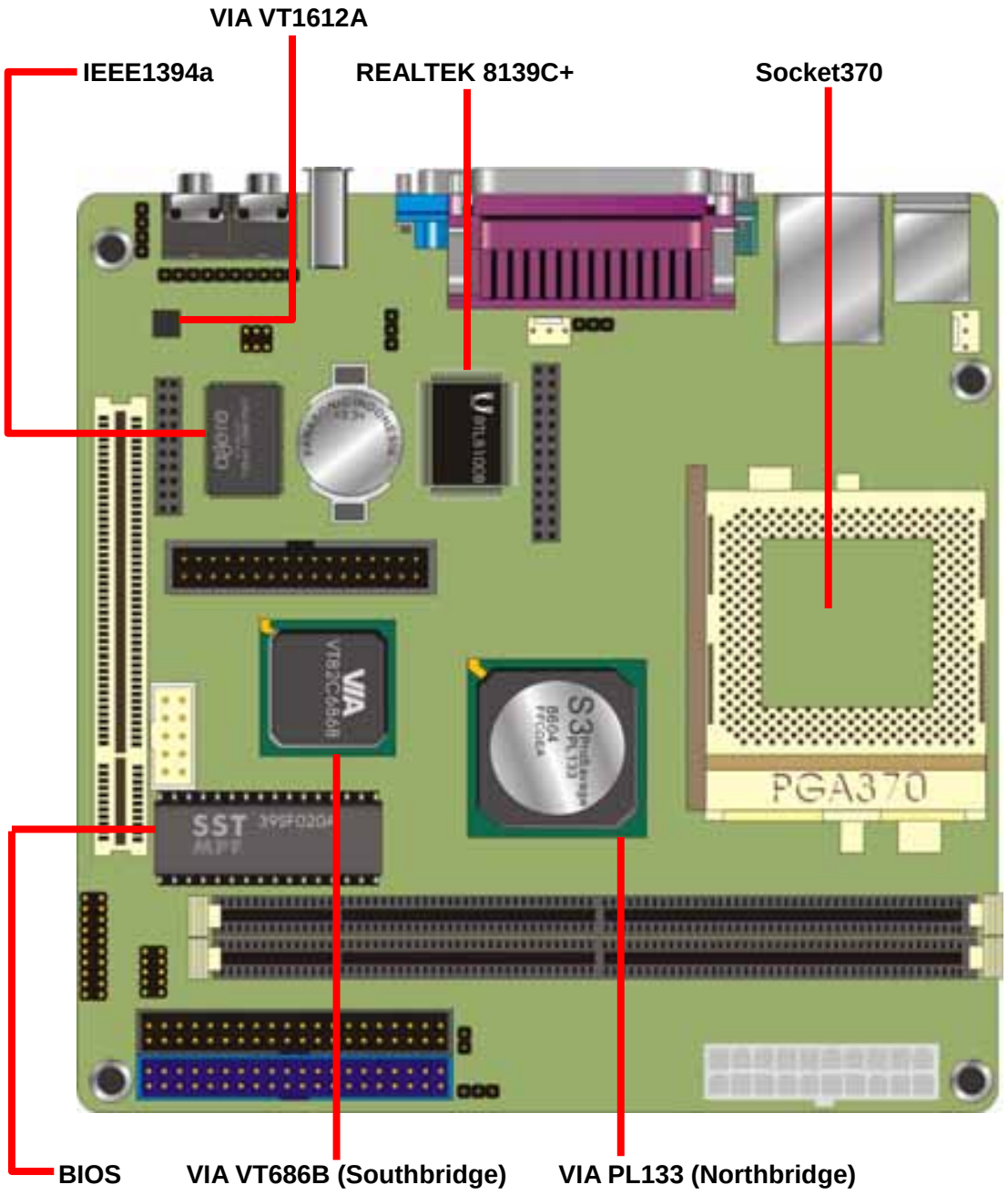
1.2 <Specification>

General Specification	
Form Factor	Mini-ITX motherboard
CPU	**Intel Pentium III / Celeron / VIA C3 processors** **Package:** FC-PGA370 **FSB:** 100/133MHz
Memory	2 x 168-pin PC133 DIMM up to 1GB Unbufferred, none-ECC memory supported only
Chipset	VIA Apollo PL133 with VT8604 and VT82C686B
BIOS	Phoenix-Award v6.00PG 2Mb PnP flash BIOS
Green Function	Power saving mode includes doze, standby and suspend modes. ACPI version 1.0 and APM version 1.2 compliant
Real Time Clock	VIA 686B built-in RTC with lithium battery
Enhanced IDE	UltraDMA100 IDE interface supports up to 4 ATAPI devices Two 40-pin IDE ports onboard
Multi-I/O Port	
Chipset	VIA 686B chipset built-in super I/O controller
Serial Port	One internal and one external RS232 serial ports with 16C550 compatible UART and 16 bytes FIFO
USB Port	Four USB 1.1 ports with 12Mbps of data transfer rate Two external and two internal USB ports
Parallel Port	One external bi-direction parallel port with SPP/ECP/EPP mode
Floppy Port	One FDD port supports up to two FDD
IrDA Port	One IrDA compliant Infrared interface supports SIR
K/B & Mouse	External PS/2 keyboard and mouse ports on rear I/O panel
Hardware Monitor	Fan speed, CPU temperature and voltage monitoring
VGA Display Interface	
Chipset	VIA Apollo PL133 built-in S3 ProSavage Graphic
Memory	BIOS selectable 8/16/32MB shard with system memory
Display Type	CRT, LCD monitor with analog display
Connector	External DB15 female connector on rear I/O panel
TV-out (Optional)	
Controller	CHRONTEL 7011A-T TV-out encoder
TV Format	NTSC and PAL
Output Interface	S-Video and RCA output on add-on card
LAN	
Controller	REALTEK RT8139+ 10/100Mps Ethernet Controller
Type	10Base-T / 100Base-TX, auto-switching Fast Ethernet Full duplex, IEEE802.3U compliant
Output Interface	External RJ45 connector with LED on rear I/O panel

Audio	
Codec	VIA VT1612A
Output Interface	Line-in, line-out, MIC-in and CD-in
Connectors	Onboard 5-pin header for line-out, 5-pin for line-in and MIC-in, 4-pin header for CD-in External Line-out and MIC-in jack
IEEE1394	
Controller	AGERE FW323 PCI IEEE1394 controller
Output Interface	IEEE1394 with 100/200/400 Mbps of data transfer bandwidth
Connectors	External IEEE1394 connector on rear I/O panel
Power and Environment	
Power Requirement	20-pin ATX power connector
Dimension	170mm x 170mm
Temperature	Operating within 0 ~ 60°C (32 ~ 140°F) Storage within -20 ~ 85°C (-4 ~ 185°F)
Ordering Code	
LV-602B	Mini-ITX Socket 370 Pentium III processor Motherboard with VIA S3 VGA, LAN, AC'97 Audio, USB 1.1, IEEE1394 Interface
LV-602B/T	Same as above but with TV-out module

For further product information please visit the website at http://www.commell.com.tw

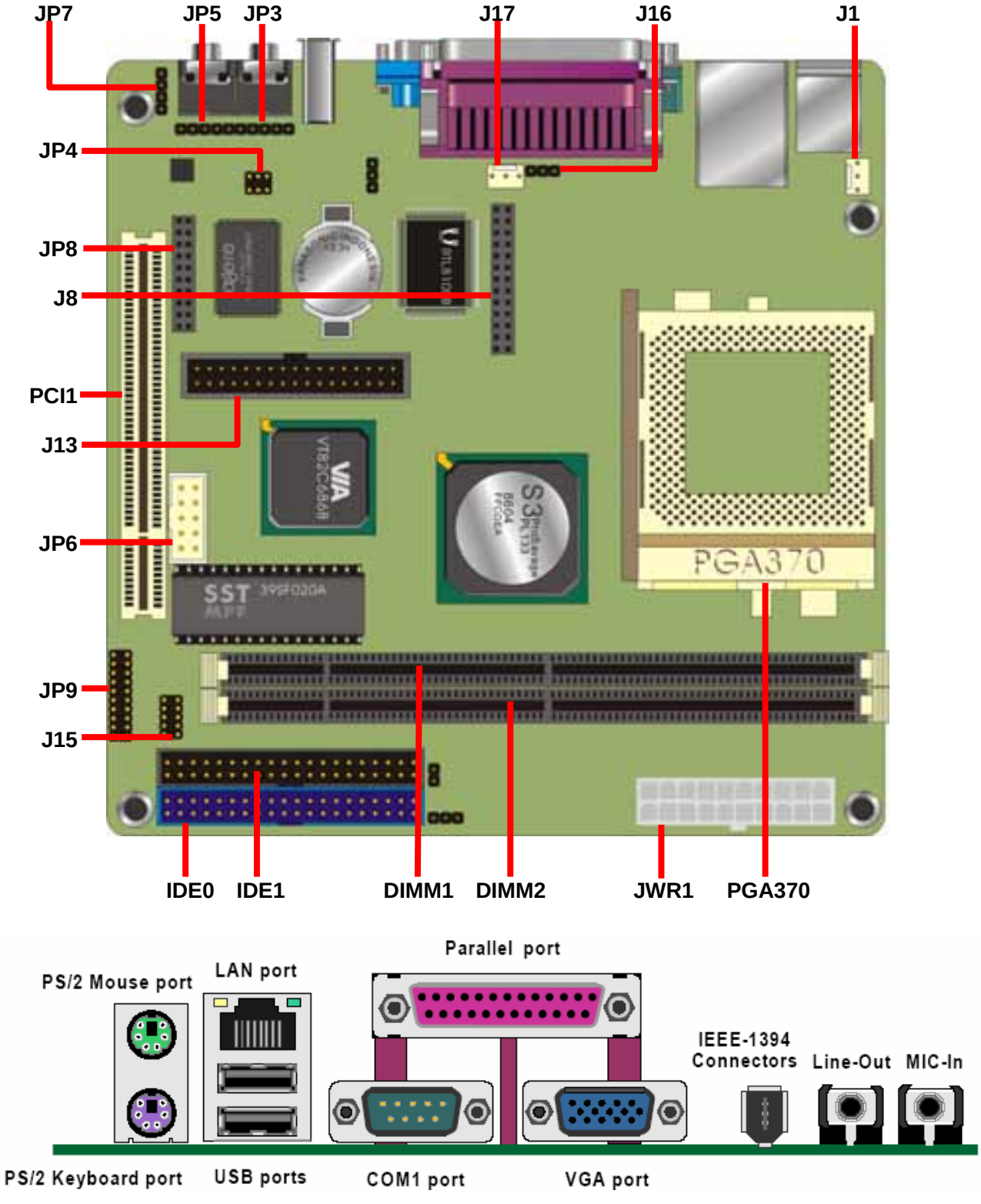
1.3 <Component Placement>



Chapter 2 <Hardware Setup>

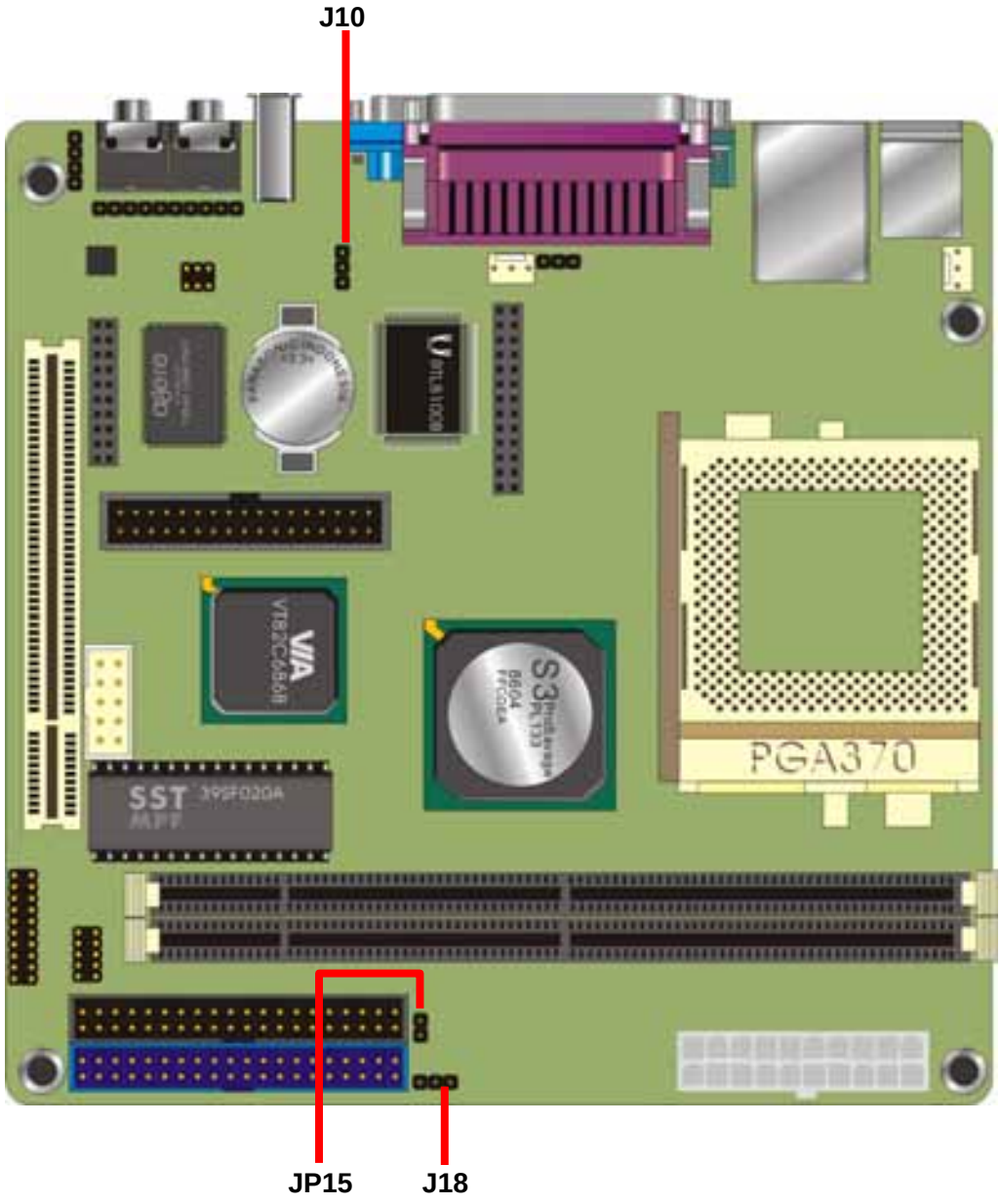
This chapter contains the information for installation of hardware. The install procedure includes jumper settings, CPU and memory installation, fan, I/O and panel connections.

2.1 <Connector Location>



2.2 <Jumper Reference>

Jumper	Function
J10	CMOS Operating/Clear Setting
JP15	IDE1 Pin-20 voltage setting
J18	CPU FSB setting

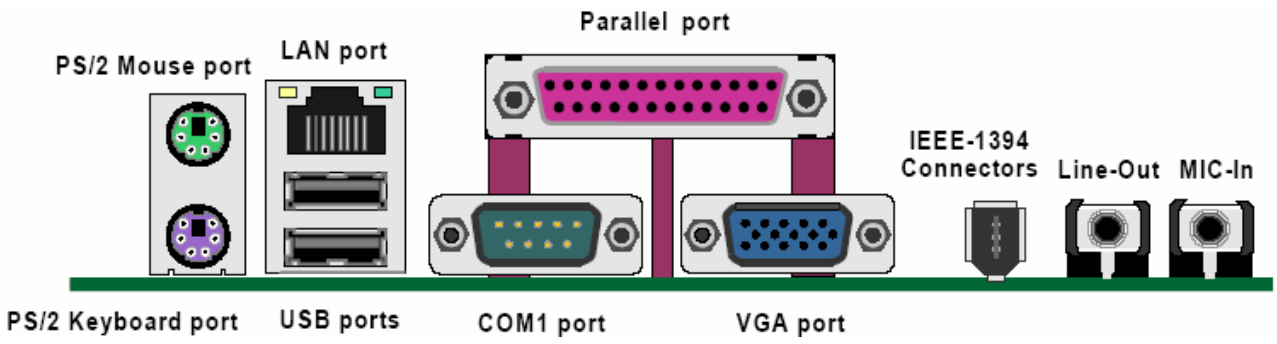


2.3 <Connector Reference>

2.3.1 <Internal Connector>

Connector	Function	Remark
PGA370	PGA370 CPU socket	Standard
JWR1	ATX power connector	Standard
DIMM1~2	DIMM module sockets	Standard
PCI1	PCI connector	Standard
IDE0	IDE connector	Standard
IDE1	IDE connector	Standard
J13	Floppy drive connector	Standard
J8	DIGITAL VIDEO output port	Standard
JP8	AMR connector	Standard
JP6	Serial COM2 port	Standard
JP9	Front Panel connector	Standard
J15	Front USB ports connector	Standard
JP4	1394 port	Standard
J16	LAN LED connector	Standard
J1	FAN1: FAN connector	Standard
J17	FAN2: FAN connector	Standard
JP3/JP5/JP7	AUDIO connector	Standard

2.3.2 <External Connector>



2.4 <CPU and Memory Setup>

2.4.1 <CPU Setup>

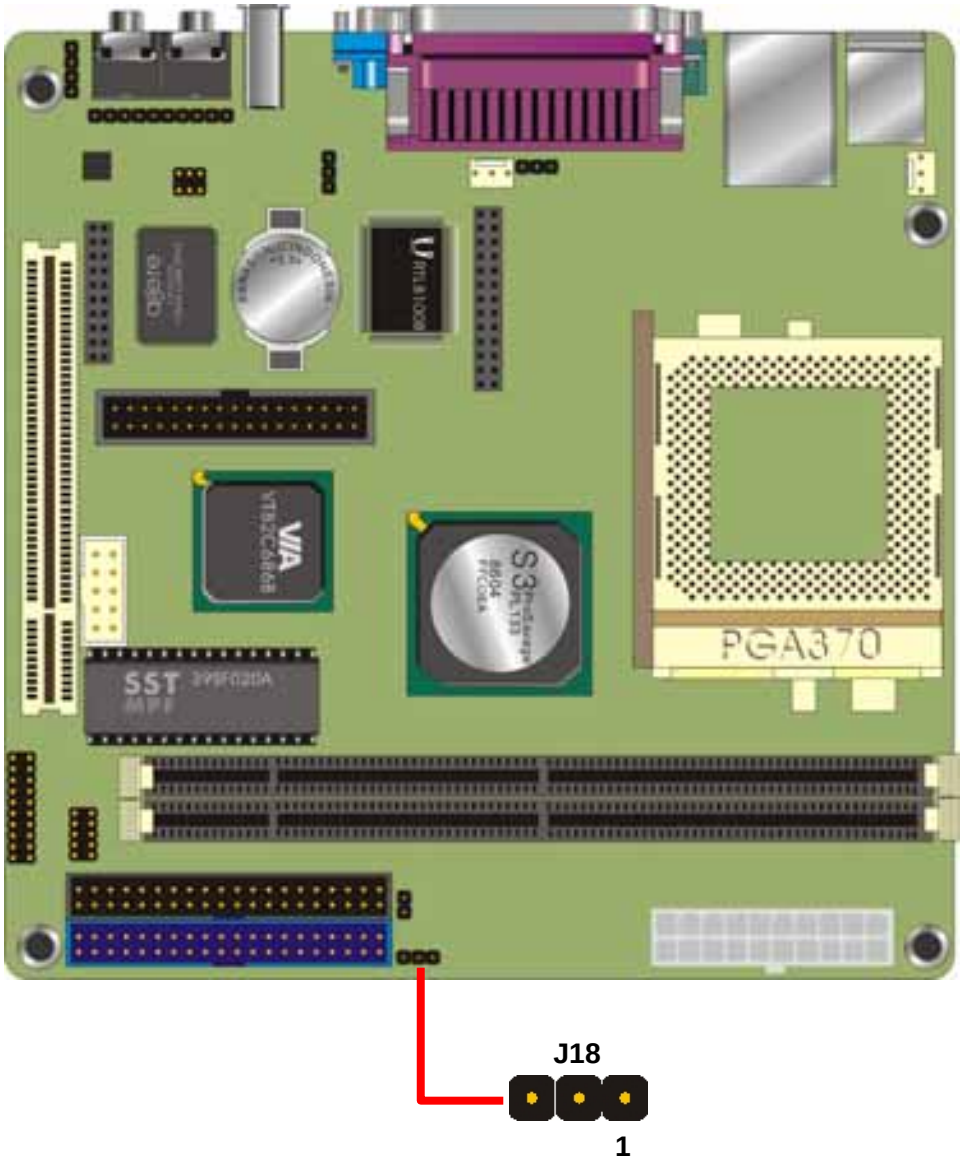
The board supports Intel Pentium III / Celeron and VIA C3 processors, and supports 66/100/133MHz of front side bus. The jumper **J18** can let you configure the font side bus as 100MHz or 133MHz.

Jumper: J18

Type: Onboard 3-pin jumper

J18	Mode
1-2	FSB 133MHz
2-3	FSB 66/100MHz

Default setting

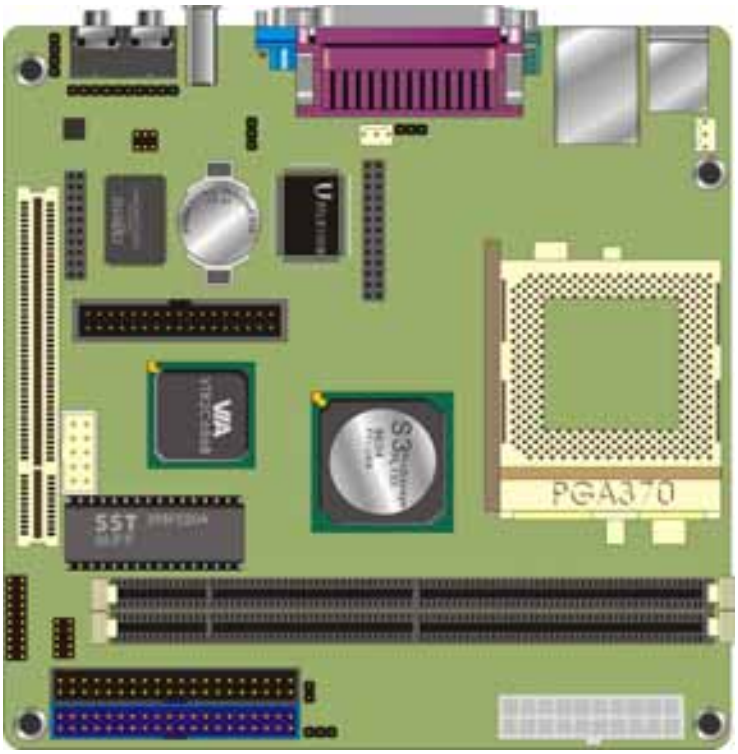


2.4.2 <Memory Setup>

The board supports two 168-pin SDRAM up to 1GB as following table:

DRAM TYPE	SDRAM (Synchronous DRAM)	
Module Size	Single Sided Asymmetric 1Mx64, 4Mx64, 8Mx64, 16Mx64	
	Double-Sided Asymmetric 2Mx64, 4Mx64, 8Mx64, 16Mx64, 32Mx64	
Requirements	**EDO** **Extended Data Output**	**SDRAM** **Synchronous DRAM**
	DRAM Speed *60 ns or faster* *RAS Access Time* *60 ns or faster* *CAS Access Time* *20 ns or faster*	*DIMM module* *3.3V unbuffered* *Speed Grade* *66.6 MHz or faster* *CAS latency* *3 or faster*

Bank 0 (DIMM1)	8/16/32/64/128/256/512 MB
Bank 1 (DIMM2)	8/16/32/64/128/256/512 MB
Total System Memory	8 MB ~ 1024 MB



DIMM1
DIMM2

2.5 <CMOS Setup>

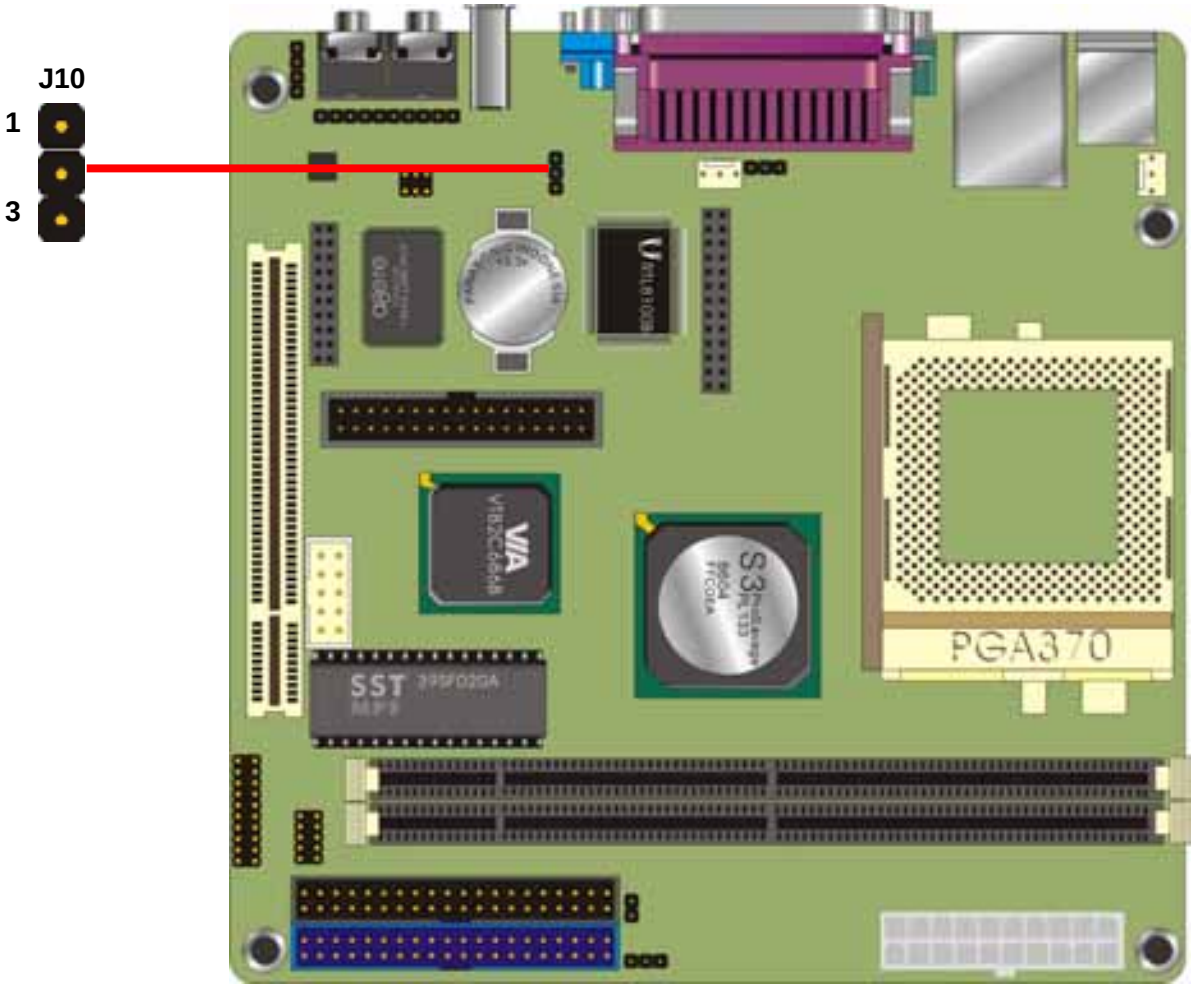
The board's data of CMOS can be setting in BIOS. If the board refuses to boot due to inappropriate CMOS settings, here is how to proceed to clear (reset) the CMOS to its default values.

Jumper: J10

Type: Onboard 3-pin jumper

J10	Mode
1-2	Clear CMOS
2-3	Normal Operation

Default setting



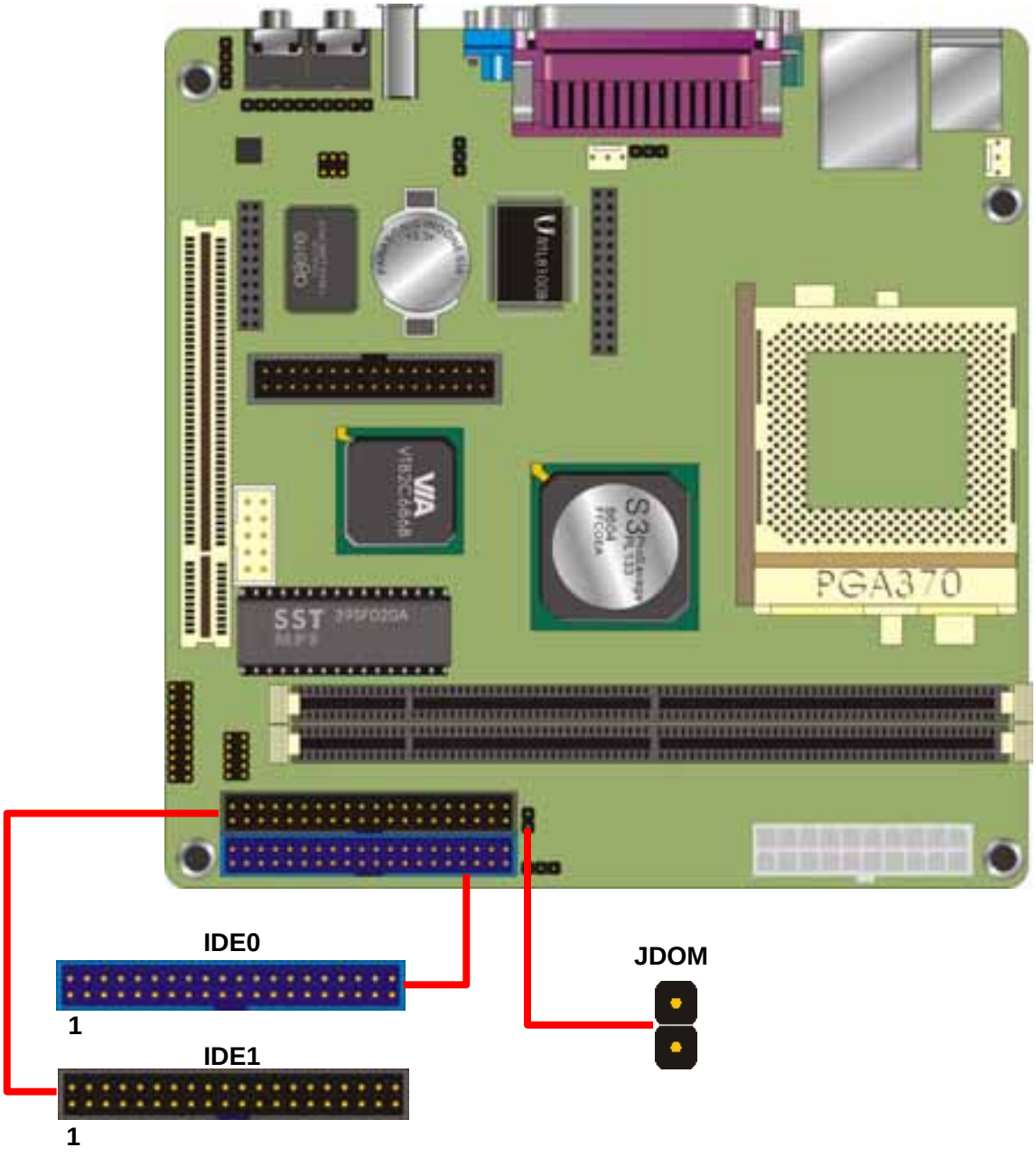
2.6 <IDE Interface>

The board provides UltraDMA100 IDE interface to support up to 4 ATAPI devices. The jumper JP15 can enable IDE1 to support 5V power on 20th pin.

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

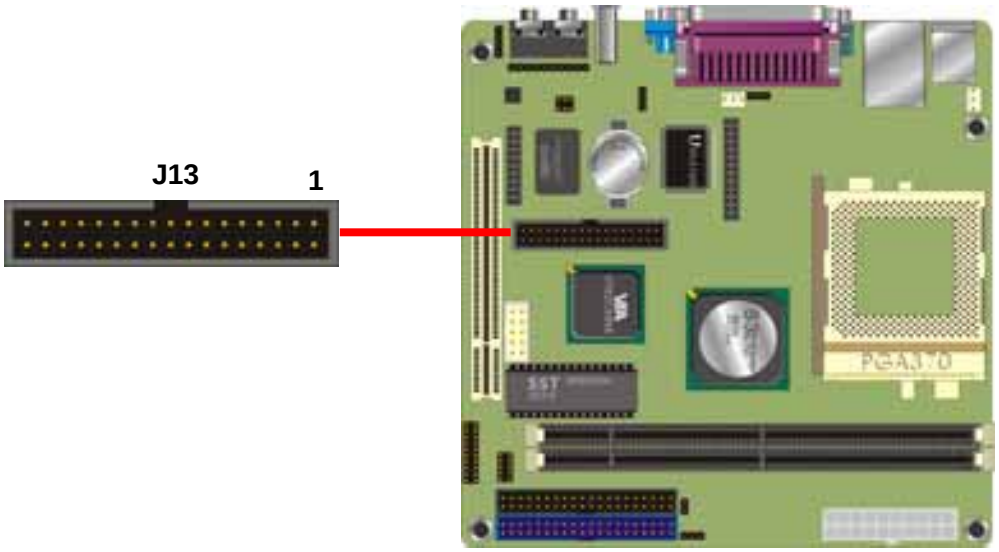
JDOM	Mode
ON	IDE1 pin-20 5V power supply enable
OFF	No 5V power supply on IDE1 pin-20

Default setting



2.7 <Floppy Port>

The board provides one floppy connector to support up to 2 floppy drives.

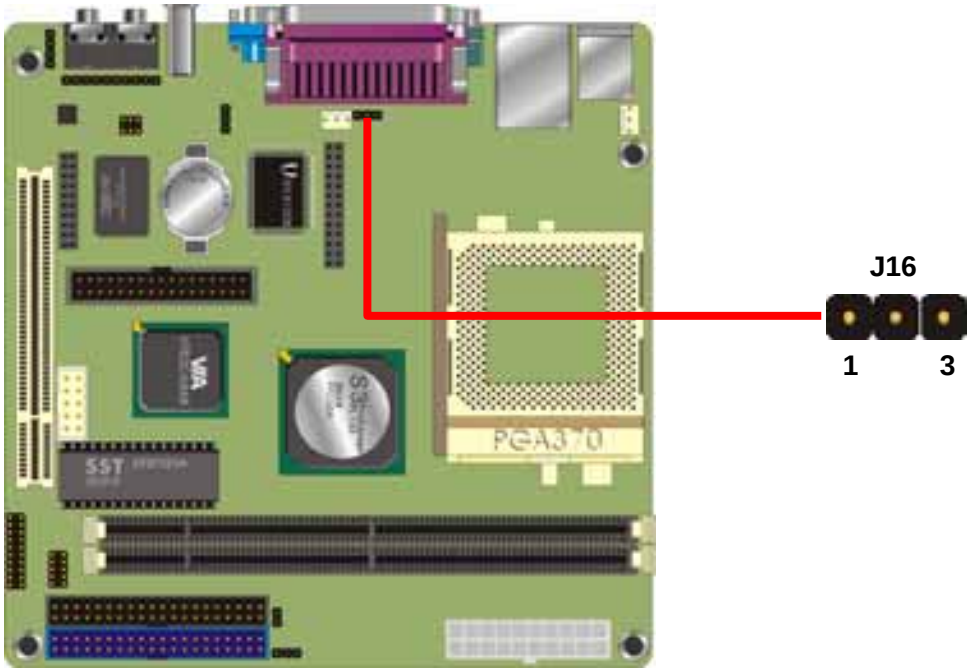


2.8 <LAN Port>

The board provides one PCI based Ethernet Controller with REAKTEK 8139C+, support 10/100Mbps of transfer rate and compliance with IEEE802.3. The connector **J16** provides external LAN LED for front panel.

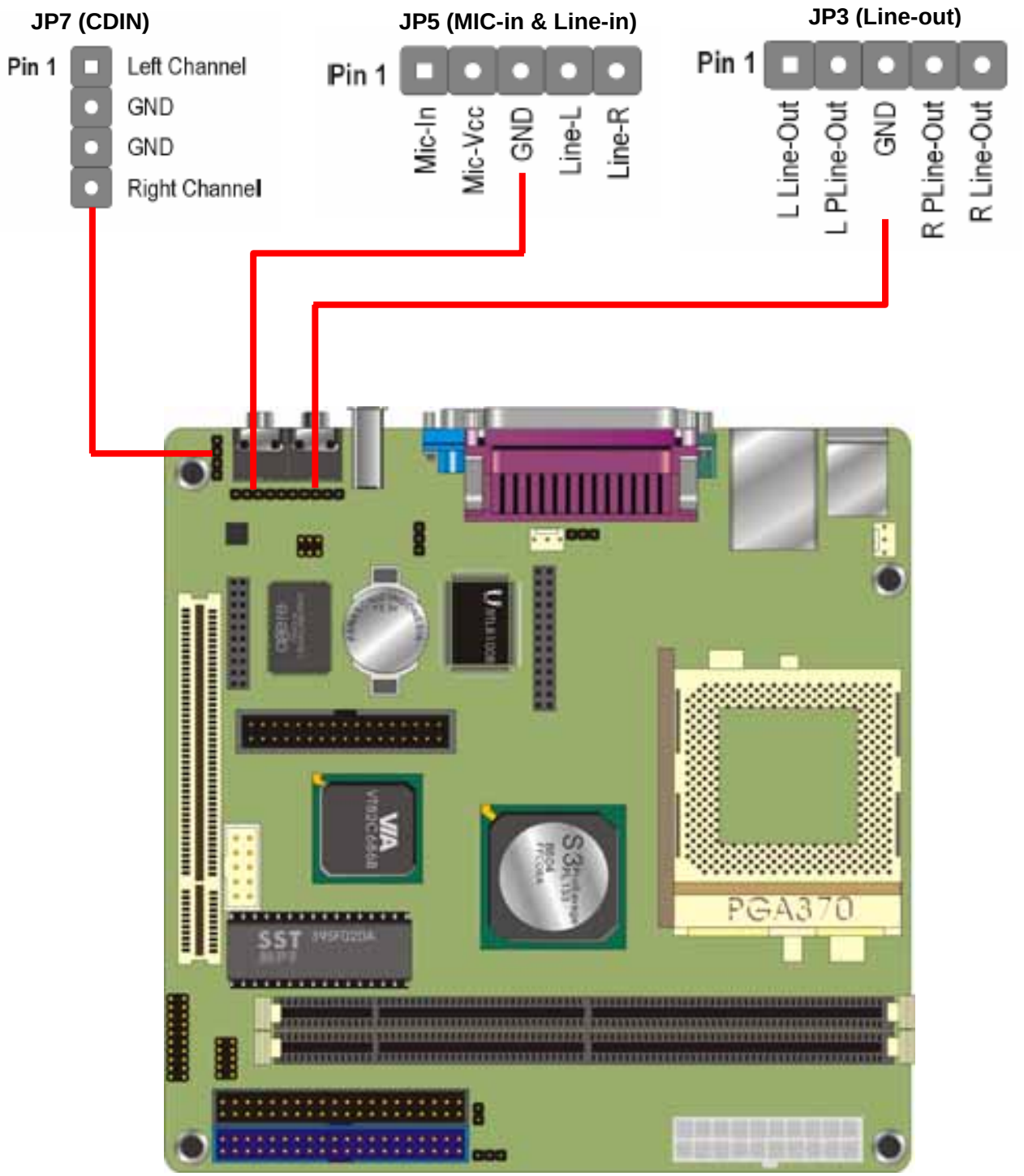
Connector: **J16**
Type: onboard 3-pin header (pitch = 2.54mm)

Pin	1	2	3
Description	LINK	VLED	ACTIVE



2.9 <Audio >

The board provides onboard AC97 audio with VIA VT1612A for stereo sound, with Line-in, Line-out and MIC-in interfaces.



2.10 <USB and IEEE1394 Interface>

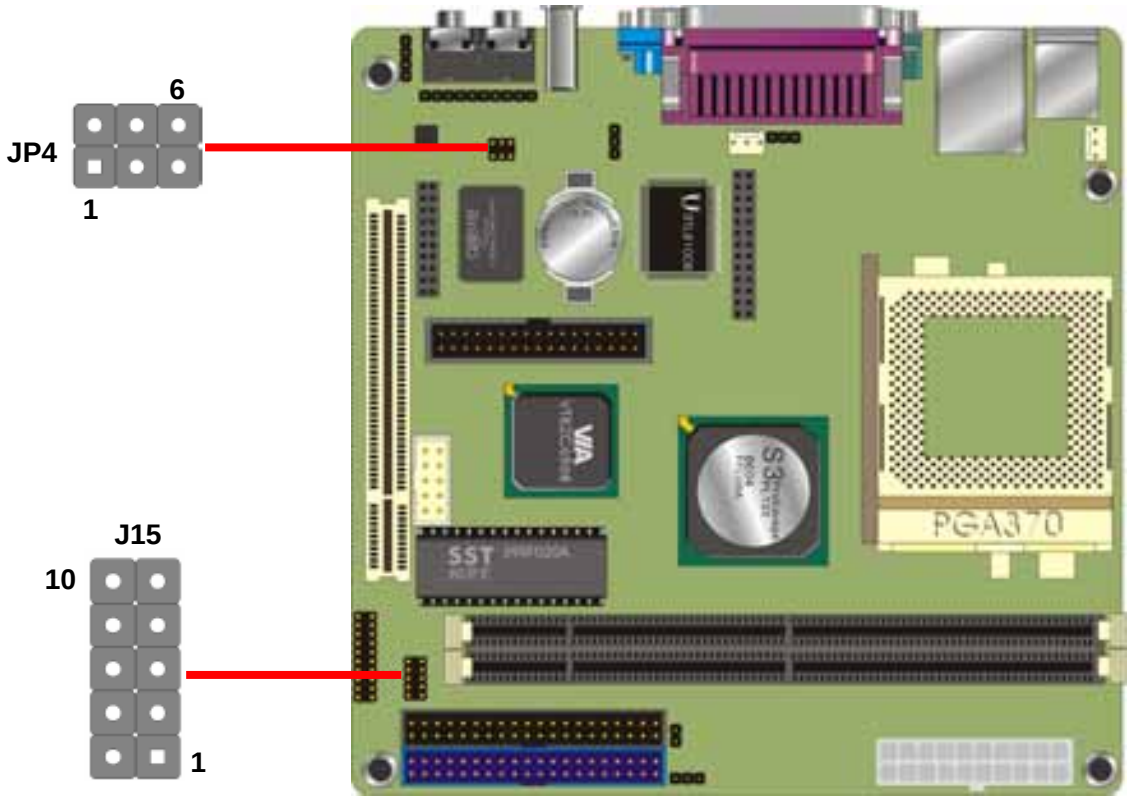
The board integrates onboard USB1.1 interface with VIA VT686B, and it also provides IEEE1394a interface with AGERE FW323-05.

Connector: **J15**
Type: 10-pin (5 x 2) header for USB3/4 Ports (pitch = 2.54mm)

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

Connector**: JP4**
Type: 6-pin header for IEEE1394 port (pitch = 2.54mm)

Pin	Description	Pin	Description
1	A1+	2	A1-
3	B1+	4	B1-
5	GND	6	+12V

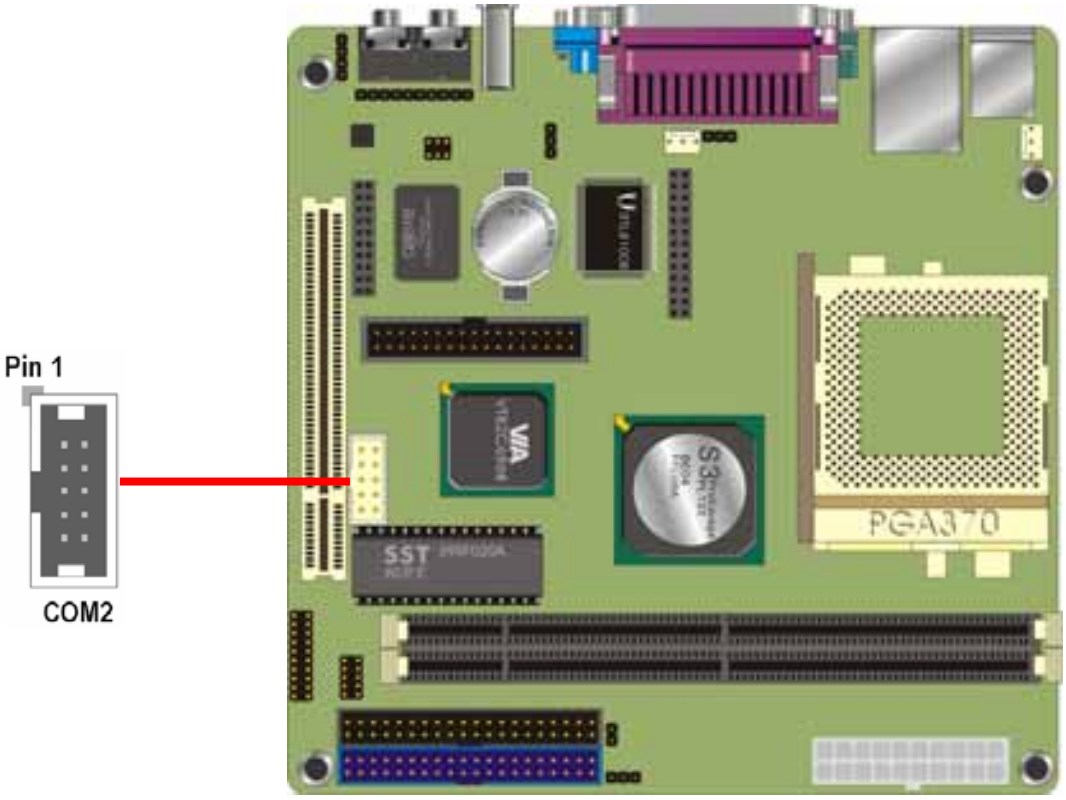


2.11 <Serial Port>

The board provides two RS232 serial ports with one external DB9 connector and one onboard 10-pin header.

Connector: **JP6**
Type: 10-pin (5 x 2) header for COM2 (pitch = 2.54mm)

Pin	Description	Pin	Description
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	VCC



2.12 <AMR and DVO Interface>

The AMR headers Supports the Audio and modem function. The board also provides one 26-pin header enable you to connect a Digital Video Output device on the digital video port.

Connector: **JP8**

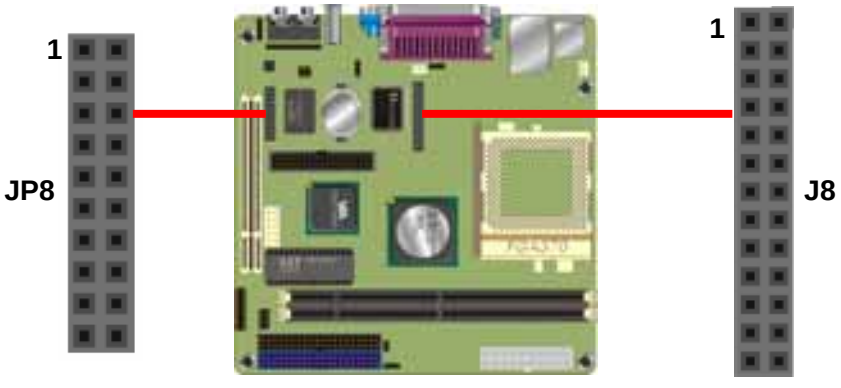
Type: 20-pin (10 x 2) female header for AMR

Pin	Description	Pin	Description
1	VCC	2	VCC3
3	AC_BITCLK	4	AC_SDATAIN1
5	AC_SDATAIN0	6	AC_SDATAOUT
7	AC_SYNC	8	AC_RST
9	N/C	10	N/C
11	GND	12	GND
13	GND	14	GND
15	-12V	16	+12V
17	PHONES	18	3VSB
19	SPPK	20	3VSB

Connector: **J8**

Type: 26-pin (13 x 2) female header for DVO interface

Pin	Description	Pin	Description
1	GND	2	VCC
3	VCC3	4	GND
5	PCIRST	6	VDUAL
7	PCLK/TVCLKR	8	PDEN/TVCLK
9	SPD1	10	SPCLK1
11	PVS/TVVS	12	PHS/TVHS
13	GOP0	14	FTD11/TVBLAN
15	PDET/TVD11	16	FTD10/TVD10
17	FTD9/TVD9	18	FTD8/TVD8
19	FTD7/TVD7	20	FTD6/TVD6
21	FTD5/TVD5	22	FTD4/TVD4
23	FTD3/TVD3	24	FTD2/TVD2
25	FTD1/TVD1	26	FTD0/TVD0

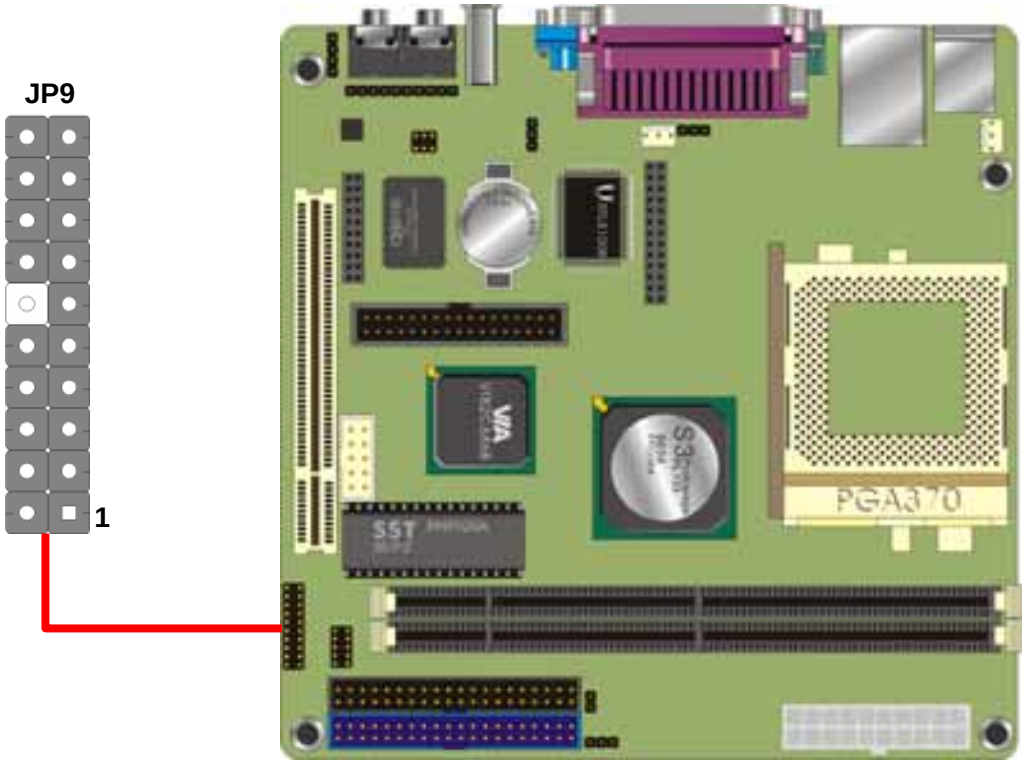


2.13 <Switch and Indicator>

The **JP9** provides front control panel of the board, such as power button, reset and beeper, etc. Please check well before you connecting the cables on the chassis.

Connector: **JP9**
Type: onboard 14-pin (2 x 7) 2.54-pitch header

Speaker	+5V	1	2	GND	Power Button
	GND	3	4	PWBT	
	N/C	5	6	LED cathode	Green LED
	SPK	7	8	LED anode	
	N/C	9	10	GND	Sleep Button
IrDA	RX	11	12	SLP	
	TX	13	14	LED cathode	HDD LED
Power LED	LED cathode	15	16	LED anode	
	N/C	17	18	GND	Reset Button
	LED anode	19	20	RESET	



Chapter 3 <BIOS Setup>

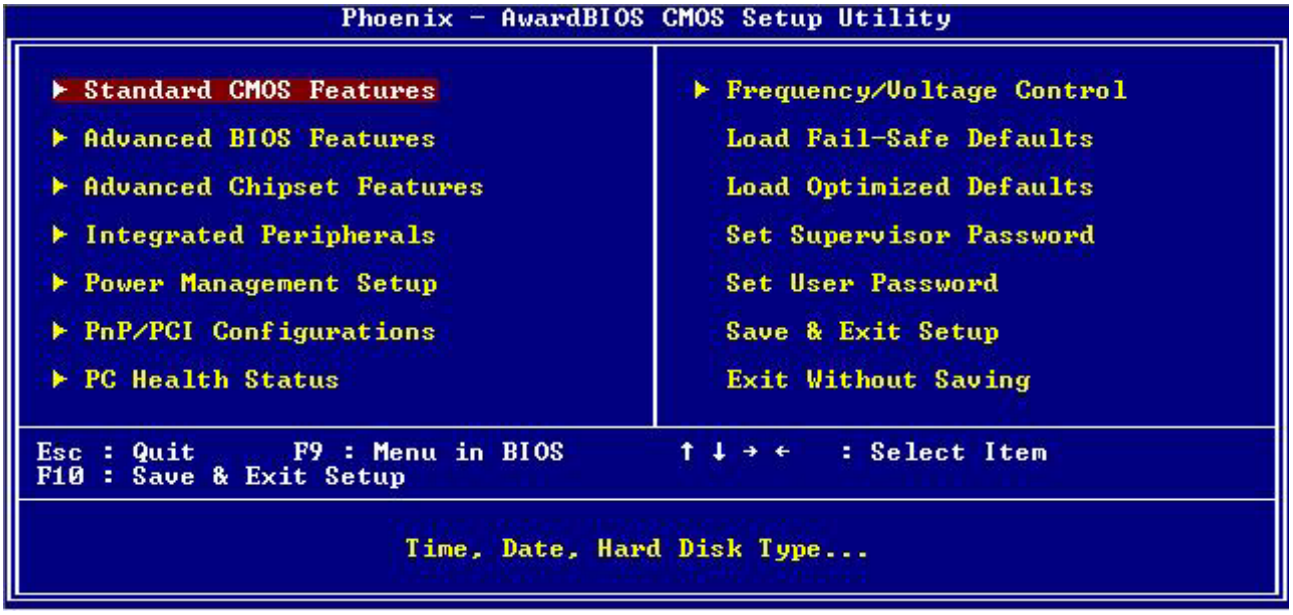
The motherboard uses the Award BIOS for the system configuration. The Award BIOS in the single board computer is a customized version of the industrial standard BIOS for IBM PC AT-compatible computers. It supports Intel x86 and compatible CPU architecture based processors and computers. The BIOS provides 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 4-1. You can use arrow keys to select your function, press ＜Enter＞ key to accept the selection and enter the sub-menu.

Figure 4-1 CMOS Setup Utility Main Screen



Chapter 4 <Flash BIOS>

4.1 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
http://www.commell.com.tw/support/support.htm

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.

4.2 Flash Method

1. Please make a bootable floppy disk.
2. Get the last .bin files you want to update and copy it into the disk.
3. Copy awardflash.exe to the disk.
4. Power on the system and flash the BIOS. (Example: C:/ awardflash XXX.bin)
5. Re-star the system.

Any question about the BIOS re-flash please contact your distributors or visit the web-site at below:

http://www.commell.com.tw/support/support.htm

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 pro ducts, projects and business.

Taiwan Commate Computer Inc.

Address	8F, No. 94, Sec. 1, Shin Tai Wu Rd., Shi Chih Taipei Hsien, Taiwan
TEL	+886-2-26963909
FAX	+886-2-26963911
Website	http://www.commell.com.tw
E-Mail	info@commell.com.tw (General Information) tech@commell.com.tw (Technical Support)

Commell is our trademark of industrial PC division

COMMELL
Stage For Your Success