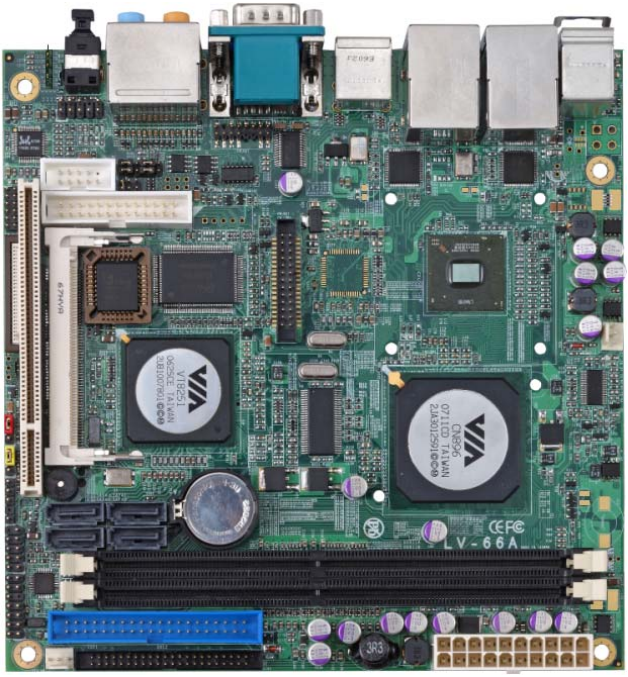
LV-66A

Mini-ITX Motherboard

User's Manual

Edition 1.02

2009/02/17



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Packing List

Please check the package before you starting setup the system

Hardware:

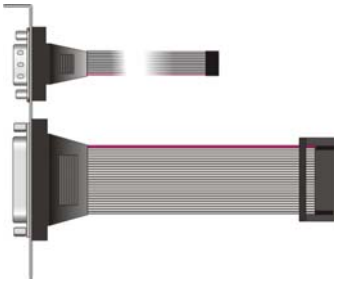
LV-66A series motherboard x 1

Cable Kit:

44-pin ATA33 IDE Cable x 1

40-pin ATA100 IDE Cable x 1

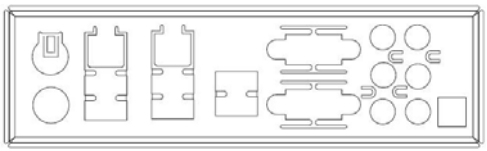
26-pin Slim Type Floppy Cable x 1



Printer Port Cable & COM Port Cable x 1

DVI module with DVI Cable x 1
(LV-66AD series only)

SATA Cable x 2



I/O Shield x 1

Printed Matters:

Driver CD x 1 (Including User's Manual)

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Chapter 1 <Introduction>

1.1 <Product Overview>

LV-66A is the Mini-ITX motherboard based on VIA chipset. It integrates VIA embedded chipset for CN896 with VT8251, two DDR2 400/533/667 SDRAM 64-bit single channel, and serial ATA II supporting 1.5 Gbit/s and 3 Gbit/s transfer rate with RAID 0/1/0+1/5 and JBOD array Technology supported to provide the economical embedded platform.

VIA CN896 & VT8251 Chipset

The board comes with the VIA embedded chipset of CN896, supports two DDR2 400/533/667 SDRAM, Chrome9™ HC Integrated Graphics with 2D / 3D / Video Controllers, The VT8251 provides the board to support Ultra V-Link interface with 1 GB/sec maximum bandwidth, four serial ATA II ports with RAID array function, 8 x USB2.0 ports and 7.1 channels HD audio.

Multimedia solution

Based on VIA CN896 chipset, the board provides single/dual 18/24-bit LVDS or DVI interface, which supports dual independent display with CRT.

Onboard HD codec provides the high quality of sound including 7.1-channel stereo DACs.

Two LAN Interface

LV-66A also comes with two Giga LAN interface, support boot-on-LAN and wake-on-LAN function.

High Speed Hot-plug Interface

Based on VIA VT8251 the board provides 8 USB2.0 interfaces with up to 480Mbps of transferring rate.

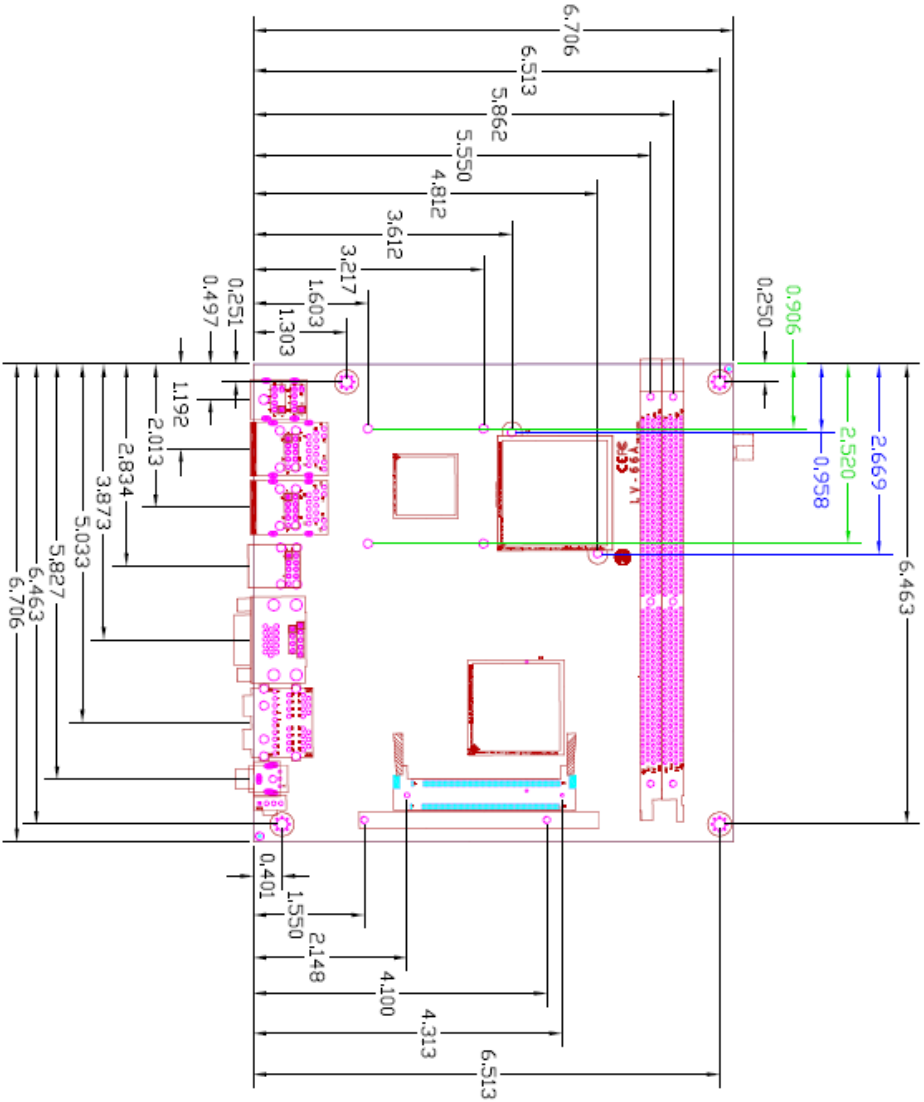
1.2 <Product Specification>

General Specification	
Form Factor	Mini-ITX motherboard
CPU	VIA C7 1.5GHz processor L1/L2 Cache: 64 KB/128KB Front side bus: 400MHz
Memory	2 x 240-pin DDR2 400/533/667 SDRAM up to 4GB Advanced 64-bit single channel, Unbufferred, non-ECC memory supported only
Chipset	VIA CN896 and VT8251
BIOS	Phoenix-Award v6.00PG 4Mb PnP flash BIOS
Green Function	Power saving mode includes doze, standby and suspend modes. ACPI version 1.0 and APM version 1.2 compliant
Watchdog Timer	System reset programmable watchdog timer with 1 ~ 255 sec./min. of timeout value
Real Time Clock	VIA VT8251 built-in RTC with lithium battery
Enhanced IDE	Enhanced IDE interface supports dual channels and up to 4 ATAPI devices One 40-pin and one 44-pin IDE port onboard
Solid State Disk	One Compact Flash Type II (Optional)
Serial ATA	VIA VT8251 integrates 4 Serial ATA II interface supporting 1.5 Gbit/s and 3 Gbit/s transfer rate RAID 0/1/0+1/5 and JBOD array Technology supported
Multi-I/O Port	
Chipset	VIA VT8251 with Winbond W83697HG controller
Serial Port	One RS-232 external & one internal RS-232/ RS-422/ RS-485 serial ports
USB Port	Six external & two internal Hi-Speed USB 2.0 ports with 480Mbps of transfer rate
Parallel Port	One 26-pin internal parallel port
Floppy Port	One slim type Floppy port
K/B & Mouse	PS/2 keyboard and mouse
GPIO	One 12-pin Digital I/O connector with 8-bit programmable I/O interface
Hardware Monitor	Fan speed, CPU temperature and voltage monitoring
VGA Display Interface	
Chipset	VIA CN896 Integrated Chrome9™ HC IGP & Video Controller
Core Frequency	250MHz
Memory	BIOS selectable 64/128/256MB shard with system memory
Display Type	CRT, LCD monitor with analog display onboard 18/24-bit single/dual LVDS or DVI

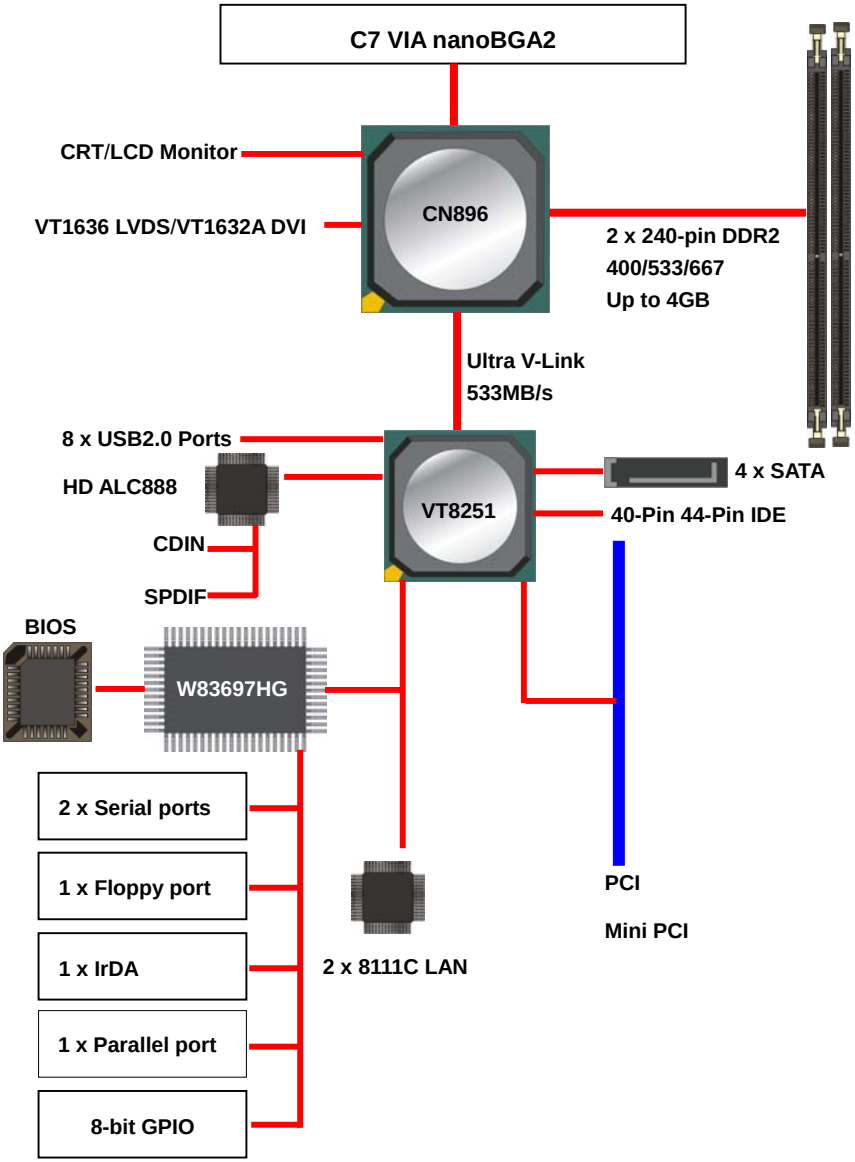
Connector	External DB15 female VGA connector on rear I/O panel Onboard 40-Pin LVDS connector(LV-66AX series only) Onboard 26-Pin DVI connector(LV-66AD series only)
Ethernet Interface	
Chipset	REALTEK RTL8111C
Type	Integrated 10/100/1000 transceiver auto-switching Fast Ethernet Full Duplex flow control (IEEE 802.3x), Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab
Connector	Two External RJ45 connectors with LED on rear I/O panel
Audio Interface	
Chipset	REALTEK ALC888
Interface	7.1 channel surround audio with Line-out and MIC-in
Connector	Onboard audio connector with pin header and phone jack Onboard CD-IN connector
Expansive Interface	
PCI	1 x PCI slot supports up to two PCI devices through riser card
Mini PCI	1 x Mini PCI socket support Mini PCI type II
Power and Environment	
Power Requirement	Standard 20-Pin ATX power supply 12V DC Input (Optional)
Dimension	170 (L) x 170 (H) mm
Temperature	Operating within 0 ~ 60℃ (32 ~ 140℉) Storage within -20 ~ 85℃ (-4 ~ 185℉)
Ordering Code	
LV-66A	VIA C7 1.5G with Onboard VGA, AUDIO, **1XGiga LAN**, USB2.0, COM, FDD, LPT, GPIO, Mini PCI, SATA and SPDIF
LV-66AD	VIA C7 1.5G with Onboard VGA, AUDIO, 2X Giga LAN, USB2.0, COM, FDD, LPT, GPIO, Mini PCI, SATA, SPDIF and **DVI**
LV-66AX	VIA C7 1.5G with Onboard VGA, AUDIO, 2X Giga LAN, USB2.0, COM, FDD, LPT, GPIO, Mini PCI, SATA, SPDIF and **LVDS**

The specifications may be different as the actual production.
For further product information please visit the website at http://www.commell.com.tw

1.3 <Mechanical Drawing>

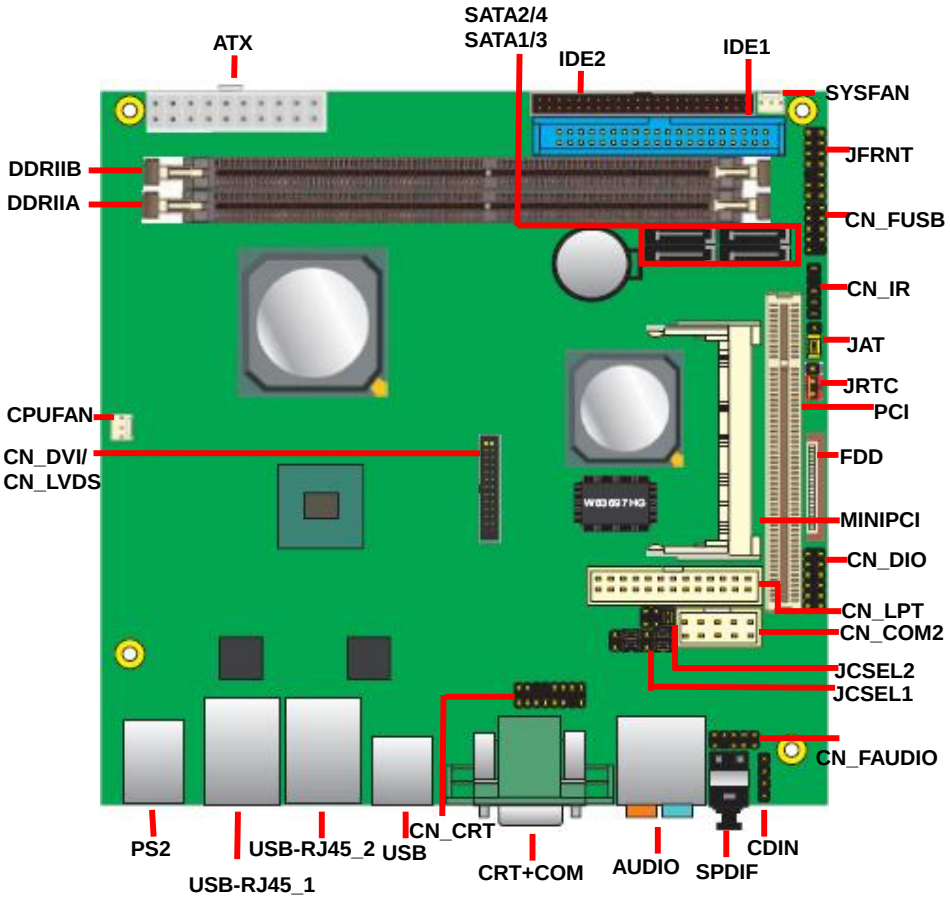


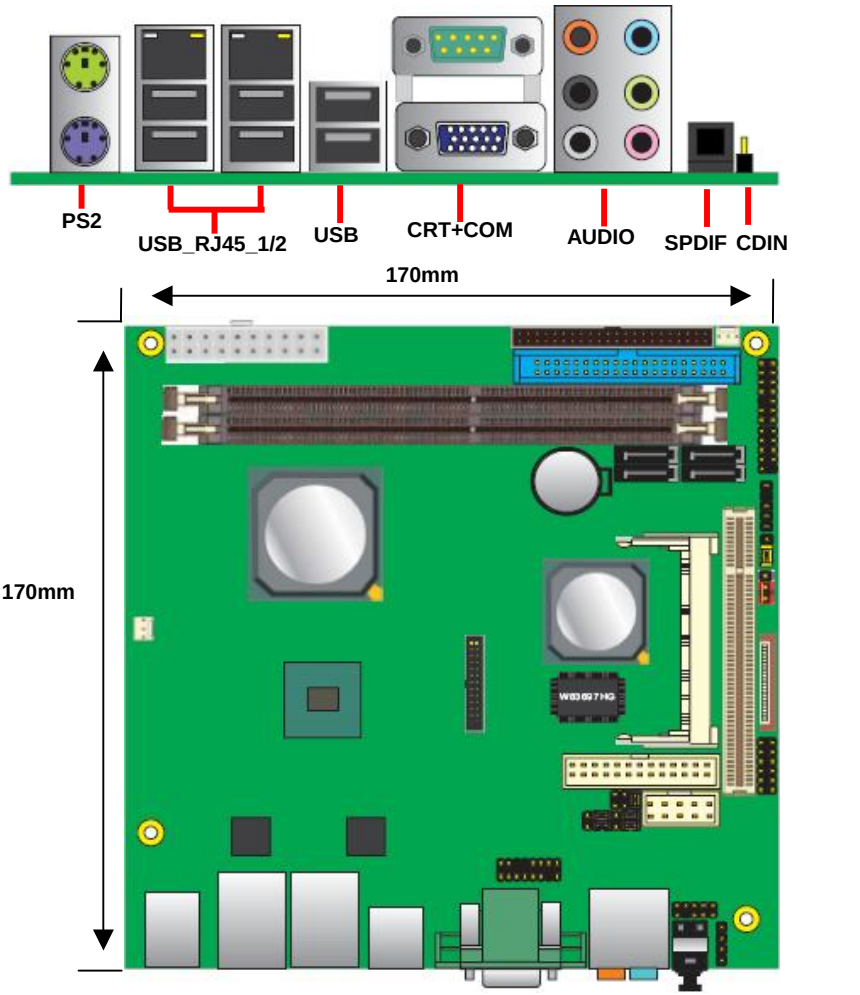
1.4 <Block Diagram>

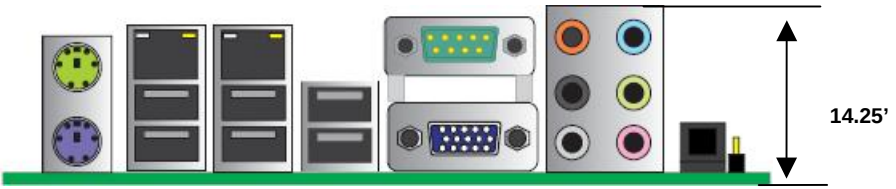


Chapter 2 <Hardware Setup>

2.1 <Connector Location>

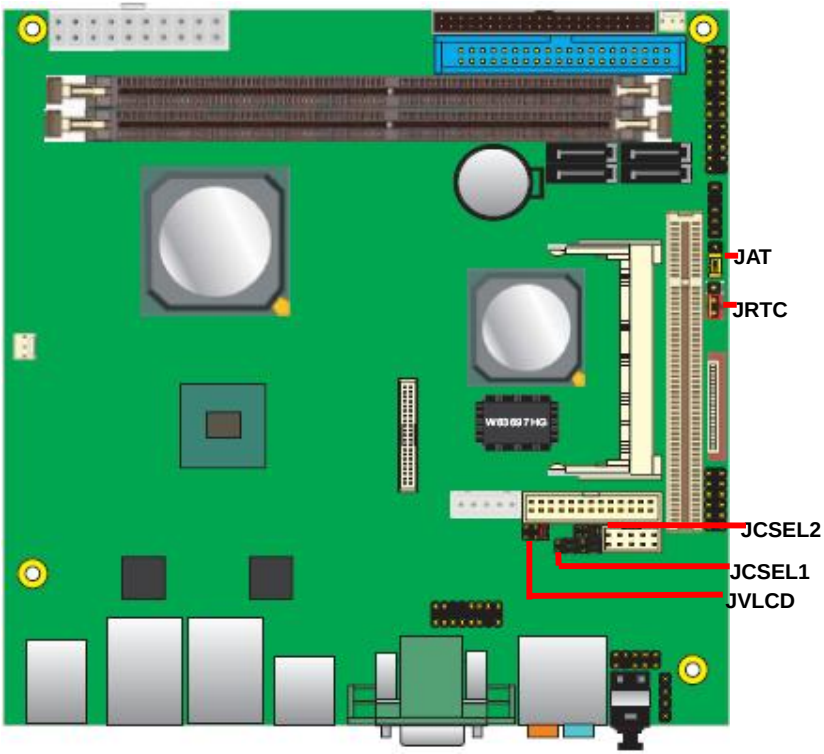



PS2
USB_RJ45_1/2
USB
CRT+COM
AUDIO
SPDIF
CDIN
170mm
170mm


14.25'

2.2 <Jumper Reference>

Jumper	Function
JRTC	CMOS Operating/Clear Setting
JVLCD	LCD Panel Voltage Setting (LV-66AX series only)
JAT	AT/ATX mode setting
JCSEL1/2	CN_COM2 RS232/422/485 mode setting



2.3 <Connector Reference>

2.3.1 <Internal Connector>

Connector	Function	Remark
DDRIIA&DDRIIB	240-pin DDR2 SDRAM DIMM	Standard
IDE1	40-pin primary IDE connector	Standard
IDE2	44-pin secondary IDE connector	Slim
FDD	26-pin slim type floppy connector	Slim
SATA1/2/3/4	7-pin Serial ATA connector	Standard
CN_FAUDIO	5 x 2-pin audio connector	Standard
CDIN	4-pin CD-ROM audio input connector	Standard
CN_DIO	6 x 2-pin digital I/O connector	Standard
CN_FUSB	5 x 2-pin USB connector	Standard
CPUFAN	3-pin CPU cooler fan connector	Standard
SYSFAN	3-pin system cooler fan connector	Standard
CN_COM2	5 x 2-pin RS232 serial port	Standard
CN_LVDS	20 x 2-pin LVDS LCD interface(LV-66AX series only)	Standard
CN_INV	5-pin LCD inverter connector (LV-66AX series only)	Standard
JVLCD	3 x 2-pin LCD connector(LV-66AX series only)	Standard
PCI	Slim 32bit PCI slot	Slim
MINIPCI	Mini-PCI socket	Standard
CN_LPT	13 x 2-pin printer connector	Standard
CN_DVI	26-Pin connector(LV-66AD series only)	Standard
JFRNT	14-pin switch/indicator connector	Standard
CN_IR	5 x 1-pin IR connector	Standard

2.3.2 <External Connector>

Connector	Function	Remark
CRT+COM	DB15 VGA connector+ DB9 Serial port connector	Standard
USB_RJ45_1&2	6 x USB and 2 x RJ45 LAN connector	Standard
PS/2	PS/2 keyboard and mouse connector	Standard
AUDIO	7.1 channel surround audio	Standard
SPDIF	SPDIF connector	Standard

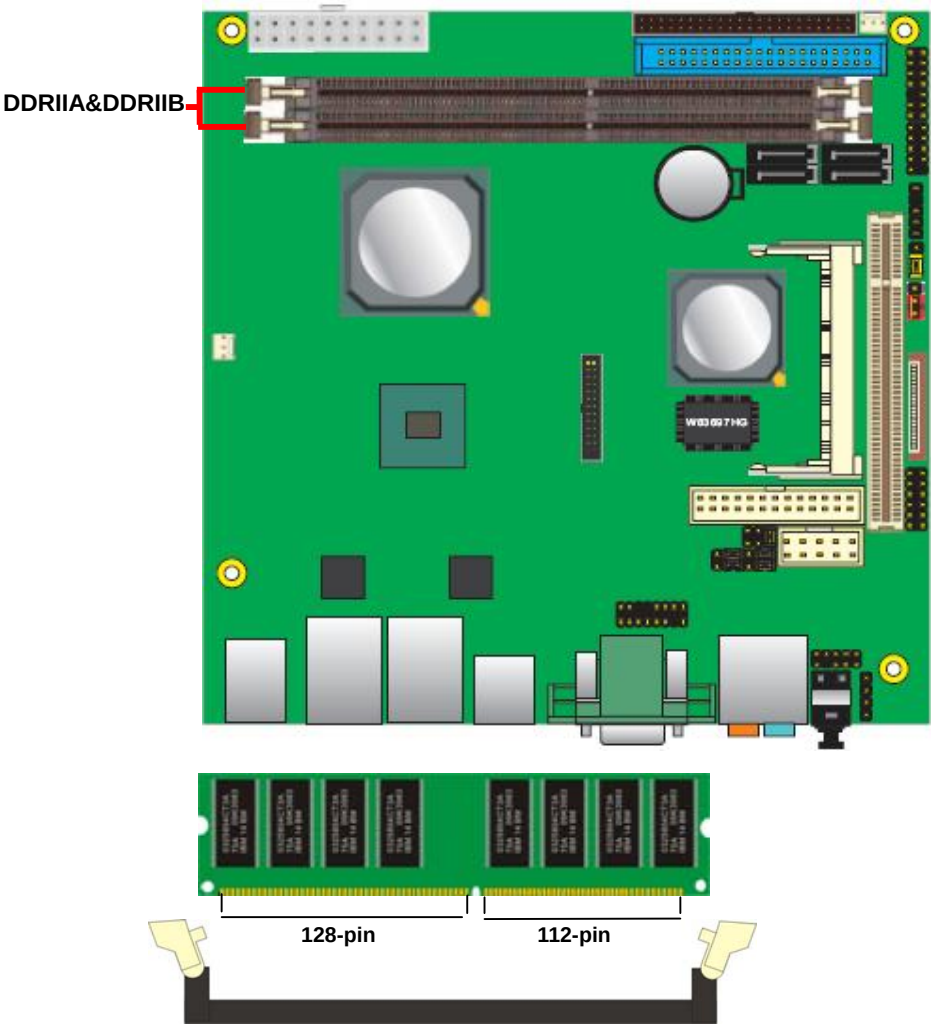
2.4 <CPU and Memory Setup>

2.4.1<CPU>

The board supports VIA C7 processor, default ratio is C7 1.5G 12W with cooler.

2.4.2 <Memory>

The board supports two 240-pin DDR2 400/533/667 SDRAM and up to 4GB Advanced 64-bit single channel, of capacity, only non-ECC, unbuffered memory is supported.



Please check the pin number to match the socket side well before installing memory module.

2.5 <CMOS & AT/ATX 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: JRTC

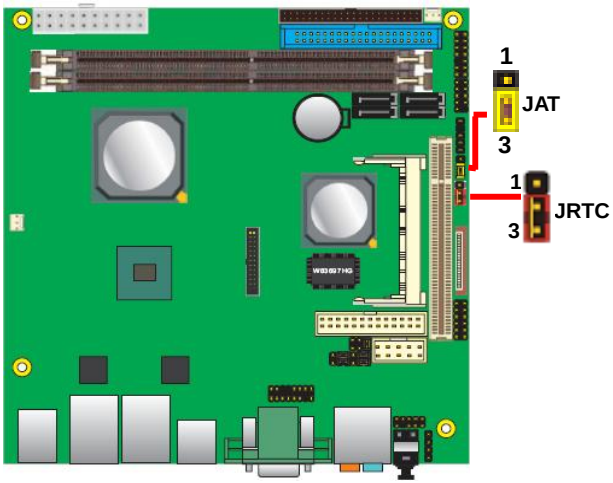
Type: Onboard 3-pin jumper

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

Jumper: JAT

Type: Onboard 3-pin jumper

JAT	Mode
1-2	AT mode
2-3	ATX mode
Default setting	



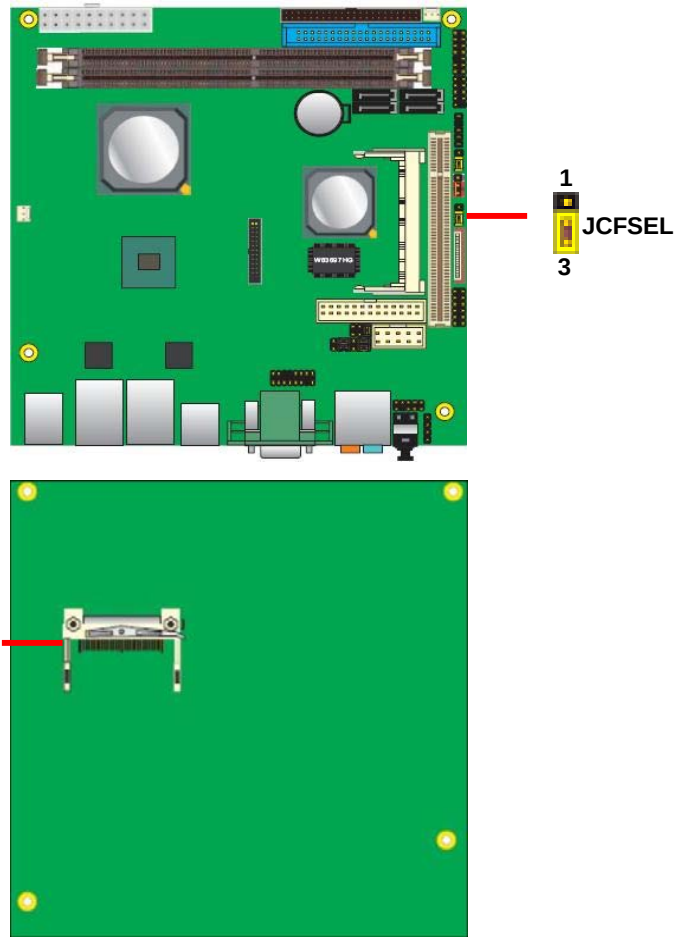
2.6 <Solid State Disk Interface>

The board has one Compact Flash Type II socket on the solder side, with jumper JCFSEL for CF master/slave mode selection. **(Optional)**

Jumper: JCFSEL

Type: Onboard 3-pin jumper

JCFSEL	Mode
1-2	Master mode
2-3	Slave mode
Default setting	

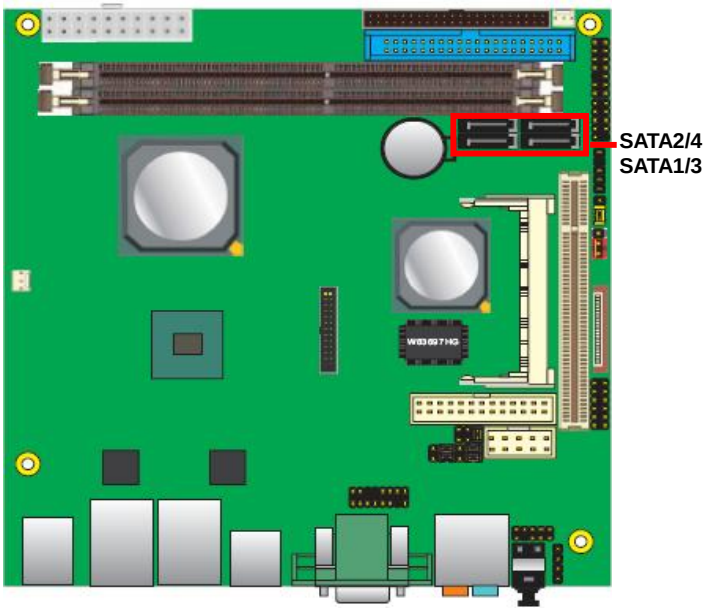


2.7 <Serial ATA Interface>

Based on VIA VT8251 Southbridge, the board supports four Serial ATA interfaces with RAID array function. The following is the list of the specification of the Serial ATA.

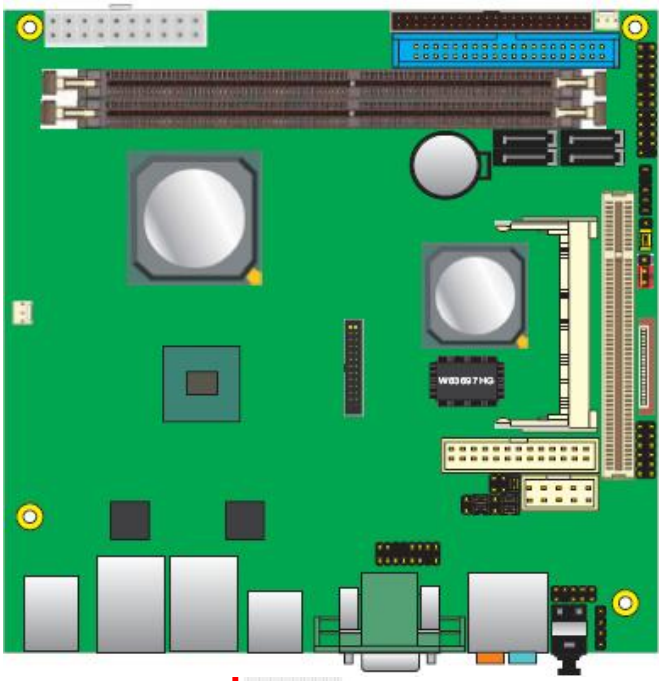
1. Complies with Serial ATA Specification Revision 1.0
2. Complies with Serial ATA II Specification.
3. Supports up to 4 S-ATA devices: 4 SATA II AHCI Bus Masters or 2 SATA I Bus Masters.
4. Integrated S-ATA PHY supporting 1.5 Gbit/s and 3 Gbit/s transfer rate.
5. Supports up to 32 entries command queue for each device.
6. Supports port multiplier.
7. Supports multiple RAID configurations - including RAID Level 0, RAID Level 1, RAID Level 0+1, RAID Level 5 and JBOD.

For more information please visit VIA website (http://www.via.com.tw/en/index.jsp)

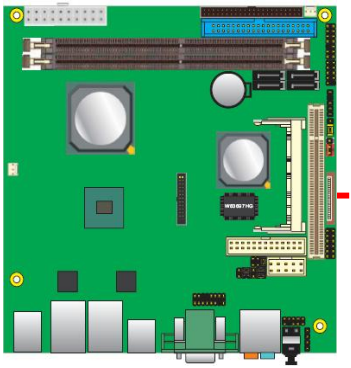


2.8 <Floppy Port>

The board provides a slim type floppy port; please use the 26-pin ribbon cable in the package to connect the floppy device.



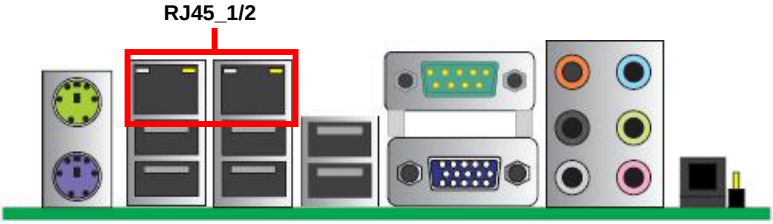
4. Lift up this plastic bar
5. Slot the cable in (Blue paste for outside)
6. Press back the plastic bar



1. Lift up the brown plastic bar
2. Slot the cable in (Blue paste for brown bar side)
3. Press back the plastic bar

2.9 <LAN Interface>

The board provides two REALTEK RTL8111C GigaLAN interfaces and compliant. Standard Integrated 10/100/1000 transceiver, auto-switching Fast Ethernet, Full Duplex flow control (IEEE 802.3x), Fully compliant with IEEE 802.3, IEEE 802.3u, IEEE 802.3ab.

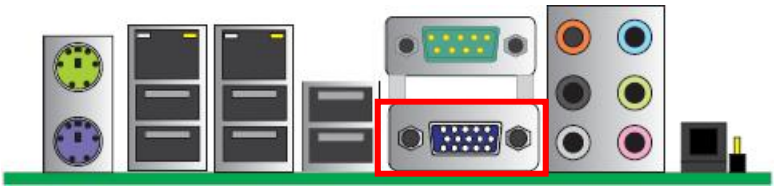


2.10 <Onboard Display Interface>

Based on VIA CN896, the board supports Chrome9™ HC Integrated Graphics with 2D / 3D / Video Controllers, with BIOS selectable 64/128/256MB shared with system memory for frame buffer.

2.10.1 <Analog VGA Interface>

The board provided a DB15 VGA connector on the rear I/O panel.

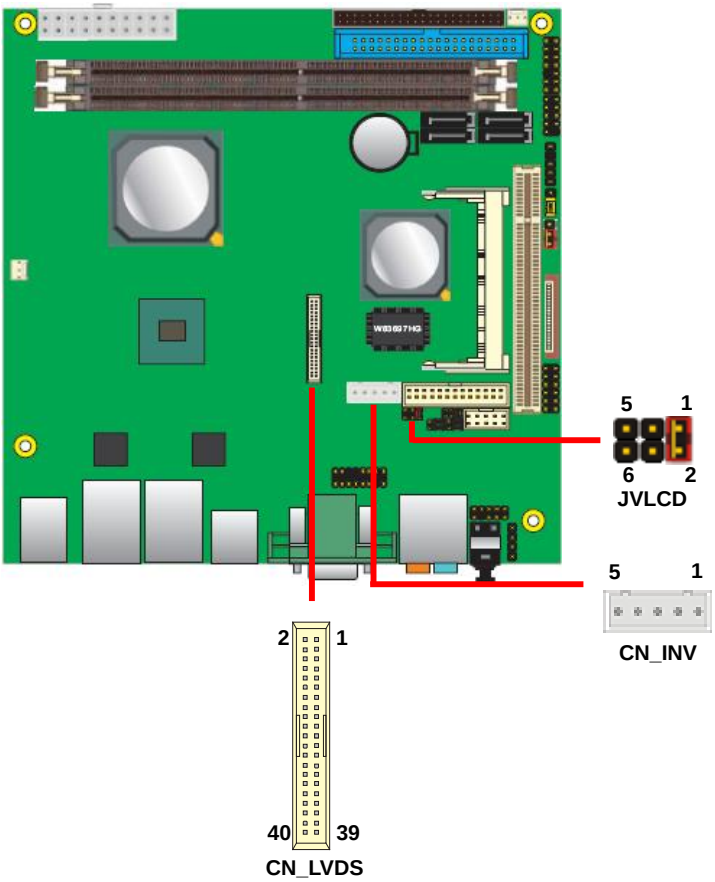


VGA

2.10.2 <Digital Display>

2.10.2.1 <LVDS Display>

The board provides one 40-pin LVDS connector for single/dual 18/24-bit channel panels, supports up to 1920 x 1200 of resolution, with one LCD backlight inverter connector and one jumper for panel voltage setting **(LV-66AX series only)**



Connector: **CN_INV**
Type: 5-pin LVDS Power Header
Connector model: **JST B5B-XH-A**

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

Connector: **JVLCD**
Type: 6-pin Power select Header

Pin	Description
1-2	LCDVCC (+3.3V)
3-4	LCDVCC (+5V)
5-6	LCDVCC (+12V)

Default setting: 1-2

Connector: **CN_LVDS**
Type: onboard 40-pin connector for LVDS connector
Connector model: **HIROSE DF13-40DP-1.25V**

Pin	Signal	Pin	Signal
2	LCDVCC	1	LCDVCC
4	GND	3	GND
6	ATX0-	5	BTX0-
8	ATX0+	7	BTX0+
10	GND	9	GND
12	ATX1-	11	BTX1-
14	ATX1+	13	BTX1+
16	GND	15	GND
18	ATX2-	17	BTX2-
20	ATX2+	19	BTX2+
22	GND	21	GND
24	ACLK-	23	BTX3-
26	ACLK+	25	BTX3+
28	GND	27	GND
30	ATX3-	29	BCLK-
32	ATX3+	31	BCLK+
34	GND	33	GND
36	N/C	35	N/C
38	N/C	37	N/C
40	N/C	39	N/C

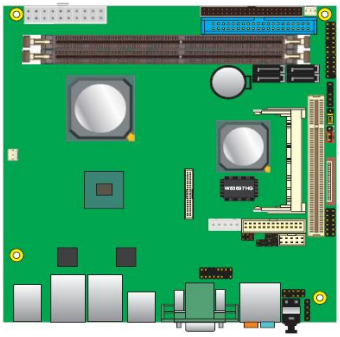
To setup the LCD, you need the component below:

1. A panel with LVDS interfaces.
2. An inverter for panel's backlight power.
3. A LCD cable and an inverter cable.

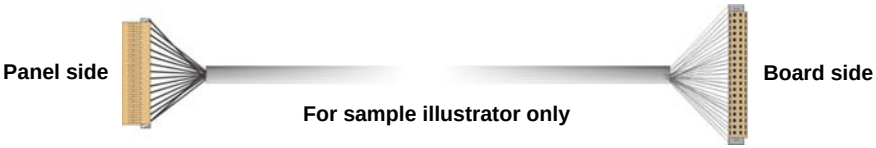
For the cables, please follow the pin assignment of the connector to make a cable, because every panel has its own pin assignment, so we do not provide a standard cable; please find a local cable manufacture to make cables.

LCD Installation Guide:

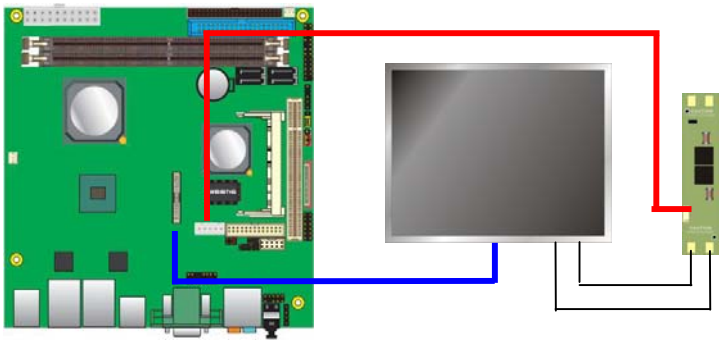
1. Preparing the **LV-66AX**, **LCD panel** and the **backlight inverter**.



2. Please check the datasheet of the panel to see the voltage of the panel, and set the jumper **JVLCD** to +12v +5V or +3.3V.
3. You would need a LVDS type cable.



4. To connect all of the devices well.



After setup the devices well, you need to select the LCD panel type in the BIOS.

The panel type mapping is list below:

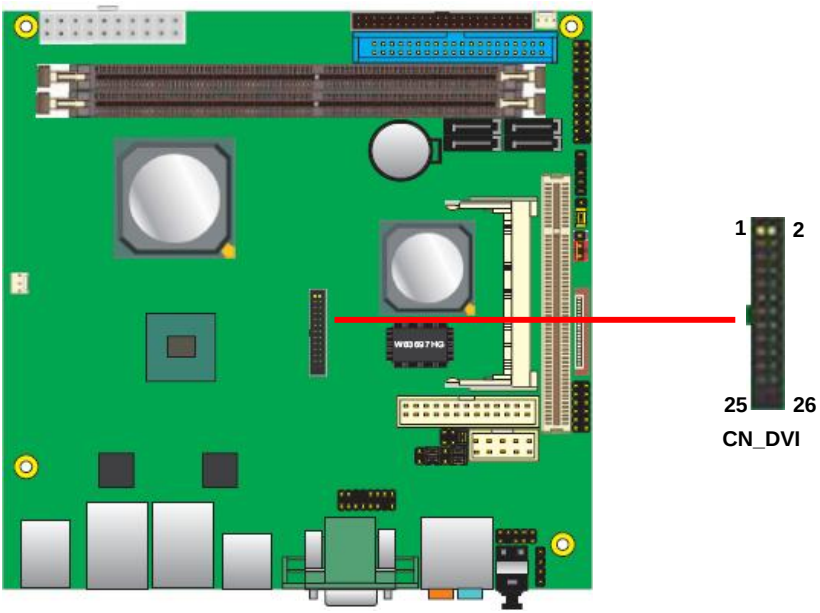
LV-66AX BIOS panel type selection form			
VGA ROM VERSION:			
NO.	Resolution	Color	Channel
0	640x480	18	1
1	800x600	18	1
2	1024x768	18	1
3	1280x768	18	2
4	1280x1024	24	2
5	1400x1050	24	2
6	1440x900	24	2
7	1280x800	18	1
8	800x480	18	1
9	1024x600	18	1
A	1366x768	24	2
B	1600x1200	24	2
C	1680x1050	24	2
D	1920x1200	24	2
E	640x240	18	1
F	480x640	18	1

2.10.2.2 <DVI Display>

The board provides one 26-pin DVI connector, supports up to 1600 x 1200 of resolution. **(LV-66AD series only)**

Connector: **CN_DVI**
Type: onboard 26-pin connector for DVI connector
Type: onboard 2 x 13-pin box header, pitch=2.0mm

Pin	Signal	Pin	Signal
1	D1TX1+	2	D1TX1-
3	GND	4	GND
5	D1TXC+	6	D1TXC-
7	GND	8	+5V
9	N/C	10	N/C
11	D1TX2+	12	D1TX2-
13	GND	14	GND
15	D1TX0+	16	D1TX0-
17	N/C	18	HPD1
19	DVP_DAT	20	DVP_CLK
21	GND	22	N/C
23	N/C	24	N/C
25	N/C	26	N/C



2.11 <Onboard Audio Interface>

The board provides Realteck ALC888 7.1-channel HD audio interface.

Connector: CN_FAUDIO

Type: 10-pin (2 x 5) header (pitch = 2.54mm)

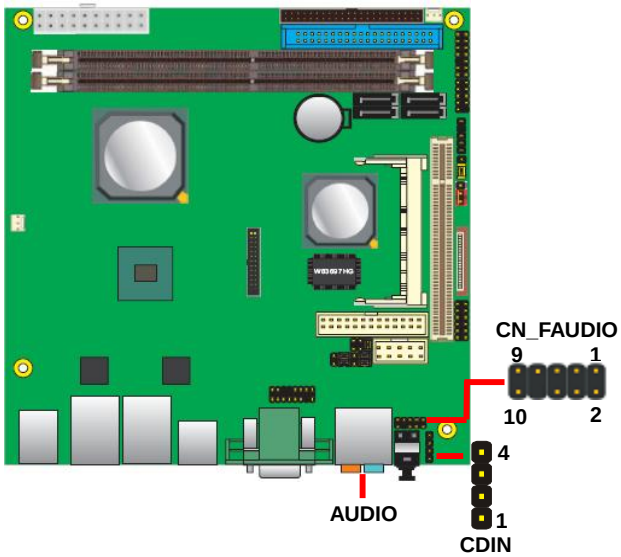
Pin	Description	Pin	Description
1	MIC2_L	2	Ground
3	MIC2_R	4	AVCC (3.3V)
5	FP_OUT_R	6	MIC2_JD
7	SENSE	8	N/C
9	FP_OUT_L	10	LINE2_JD

Connector: CDIN

Type: 4-pin header (pitch = 2.54mm)

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

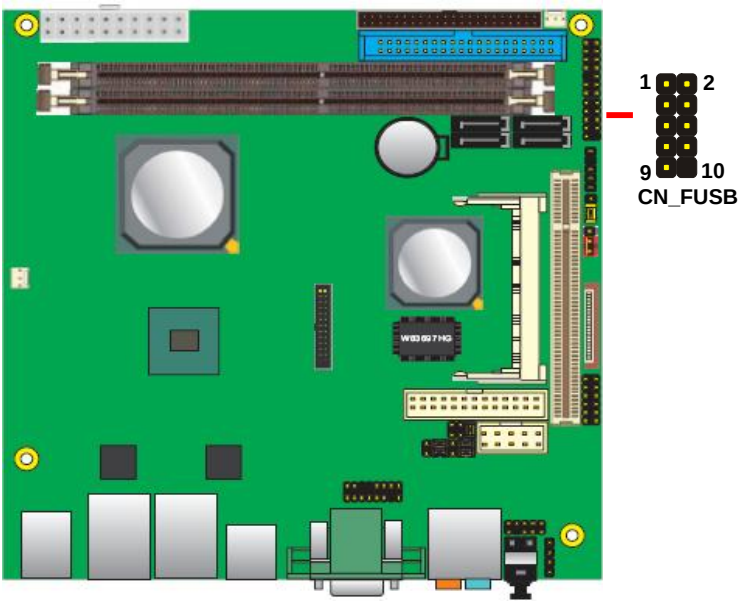
.

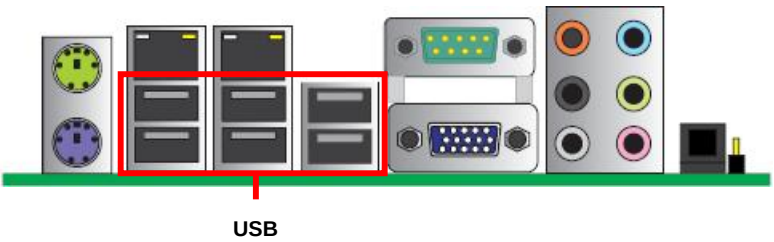


2.12 <USB2.0 Interface>

Based on VIA VT8251, the board provides eight USB2.0 ports. The USB2.0 interface provides up to 480Mbps of transferring rate.

Interface	USB2.0
Controller	VIA VT8251
Transfer Rate	Up to 480Mb/s
Output Current	500mA





Connector: **CN_FUSB**

Type: 10-pin (5 x 2) header, pitch=2.54mm

Pin	Description	Pin	Description
1	VCC (5V)	2	VCC (5V)
3	Data0-	4	Data1-
5	Data0+	6	Data1+
7	Ground	8	Ground
9	Ground	10	N/C

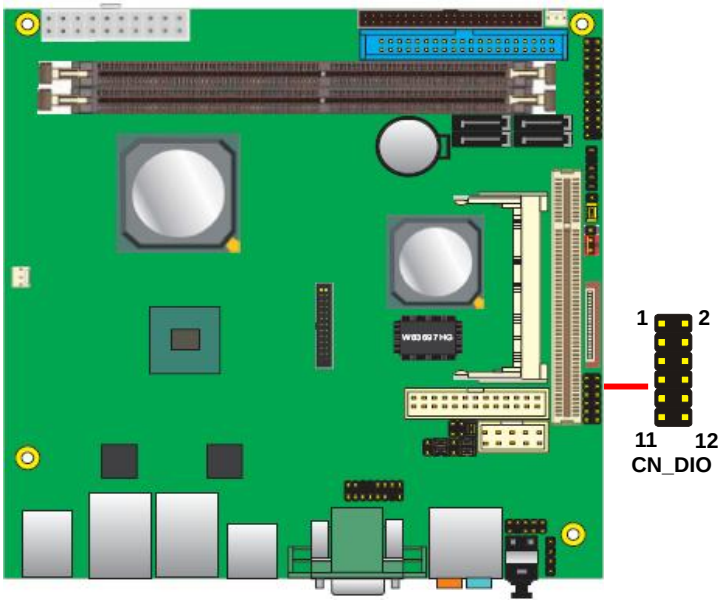
PS: The USB2.0 will be only active when you connecting with the USB2.0 devices, if you insert an USB1.1 device, the port will be changed to USB1.1 protocol automatically. The transferring rate of USB2.0 as 480Mbps is depending on device capacity exact transferring rate may not be up to 480Mbps.

2.13 <GPIO Interface>

The board provides a programmable 8-bit digital I/O interface; you can use this general purpose I/O port for system control like POS or KIOSK.

Connector: **CN_DIO**
Type: onboard 2 x 6-pin header, pitch=2.0mm

Pin	Description	Pin	Description
1	Ground	2	Ground
3	GP0	4	GP4
5	GP1	6	GP5
7	GP2	8	GP6
9	GP3	10	GP7
11	+5V	12	+12V



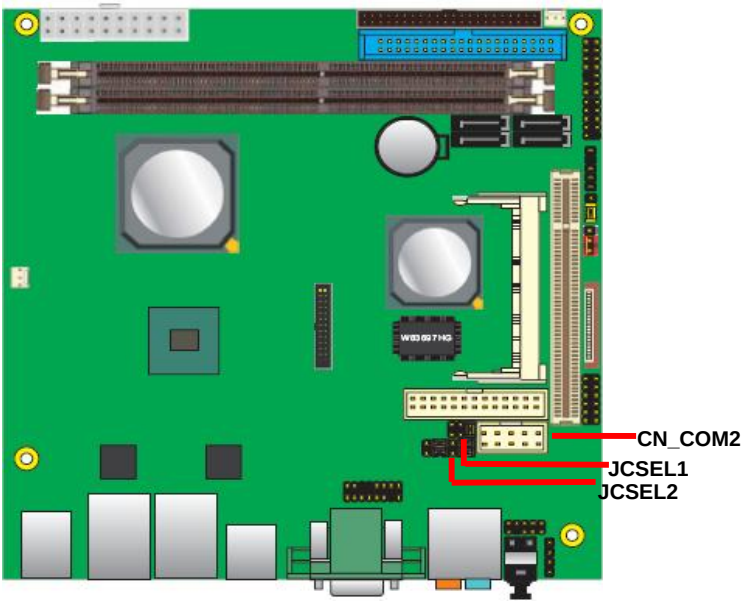
2.14 <Serial Port Jumper Setting >

The board provides three RS232 serial ports, with jumper selectable RS422/485 for CN_COM2.

Connector: **CN_COM2**
Type: 10-pin (5 x 2) header, pitch=2.54mm

Pin	Description	Pin	Description
1	DCD/422TX-/485-	2	RXD/422TX+/485+
3	TXD/422RX+	4	DTR/422RX-
5	GND	6	DSR
7	RTS	8	CTS
9	RI	10	N/C

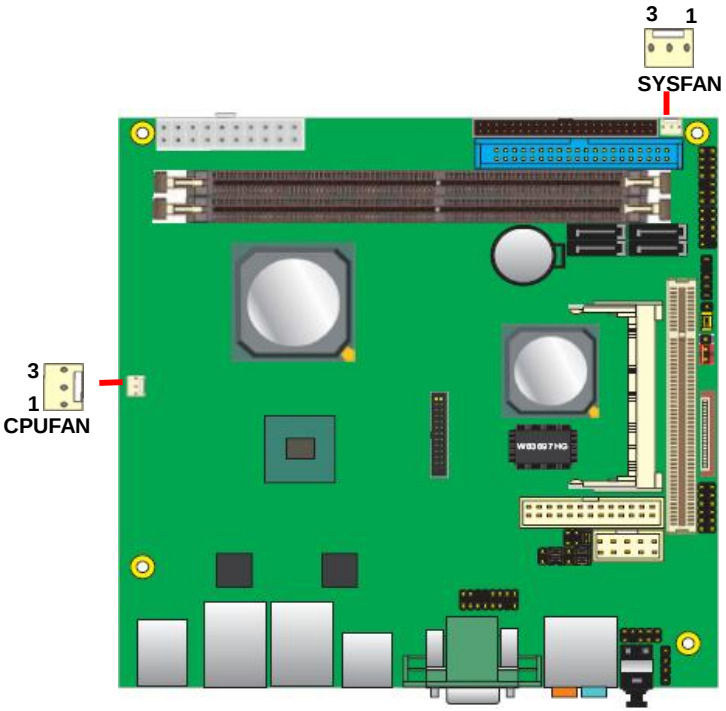
	JCSEL1	JCSEL2
RS-232		
RS-485		
RS-422		


CN_COM2
JCSEL1
JCSEL2

2.15 <Fan Connector>

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

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



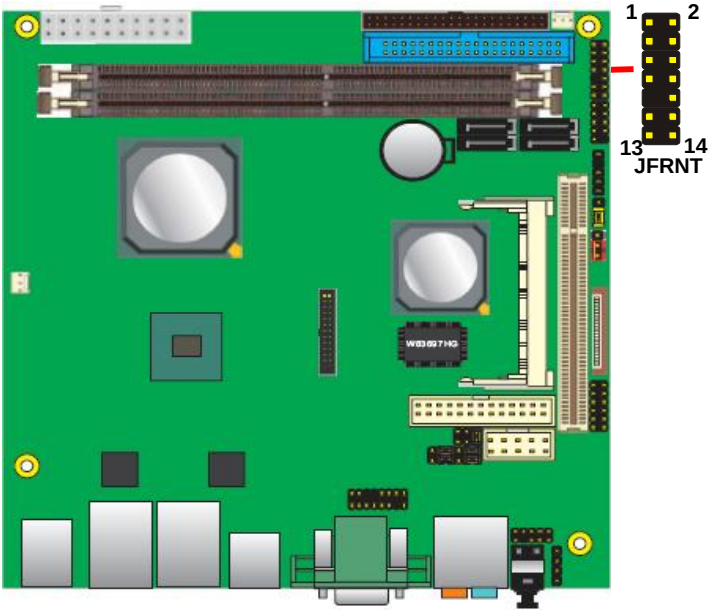
2.16 <Indicator and Switch>

The **JFRNT** 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: **JFRNT**

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

Function	Signal	PIN		Signal	Function
IDE LED	HDLED+	1	2	PWRLED+	**Power LED**
	HDLED-	3	4	N/C	
Reset	Reset+	5	6	PWRLED-	
	Reset-	7	8	SPK+	**Speaker**
N/C		9	10	N/C	
Power Button	PWRBT+	11	12	N/C	
	PWRBT-	13	14	SPK-	



2.17 <Power Supply>

The board requires onboard 4-pin DC-input connector voltage is 12V, or onboard 20-pin ATX2.0, for the input current, please take a reference of the power consumption report on.

2.17.1 <DC_IN Input>

Connector: **DC_IN**
Type: 4-pin DC power connector **(Optional)**

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

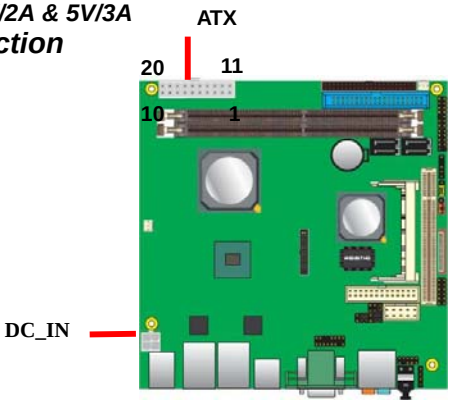
Attention: When DC-IN had power supplied, the ATX become output !

Avoid DC-IN and ATX power supply input at the same time !

Connector: **ATX** *(When DC-IN be used)*
Type: 20-pin ATX connector for +5V/+12V **Output**

PIN assignment			
1	*	11	*
2	*	12	*
3	*	13	*
4	5V	14	*
5	GND	15	*
6	*	16	GND
7	GND	17	GND
8	*	18	*
9	*	19	*
10	12V	20	5V

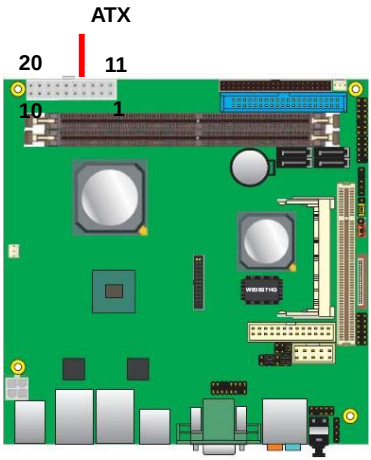
Note: Maximum output voltage: ***12V/2A & 5V/3A***
" * " Mean don't connection



2.17.2 <ATX Input>

Connector: **ATX** *(It also can become Output)*
Type: 20-pin ATX power connector

PIN assignment			
1	3.3V	11	3.3V
2	3.3V	12	-12V
3	GND	13	GND
4	5V	14	-PSON
5	GND	15	GND
6	5V	16	GND
7	GND	17	GND
8	PW_OK	18	-5V
9	5V_SB	19	5V
10	12V	20	5V



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Chapter 3 <System Configuration>

3.1 <SATA RAID Configuration>

The board supports four Serial ATA ports onboard, and supports RAID 0, 1, 0+1, 5 and JBOD disk array, the RAID 0, 1, 0+1, 5 and JBOD are specified below:

RAID 0 (Stripping): Stripe Array is also called RAID 0, it implements a striped disk array and the data is broken down into blocks in which each block is written to a separate disk drive. I/O performance is greatly improved by spreading the I/O load across many channels and drives. Best performance is achieved when data is striped across multiple channels with only one drive per channel.

RAID 0 is not a "True" RAID because it is NOT fault-tolerant. The failure of just one drive will result in all data in an array being lost. It should never be used in mission critical environments.

RAID 1 (Mirroring): Mirror Array is also called RAID 1; it provides 100% data redundancy. No rebuild is necessary in case of a disk failure, simply copy data from the remaining healthy disk to the replacement disk.

You can specify a disk as the auto-selected replacement disk for a Mirror Array; this replacement disk is called Spare Disk.

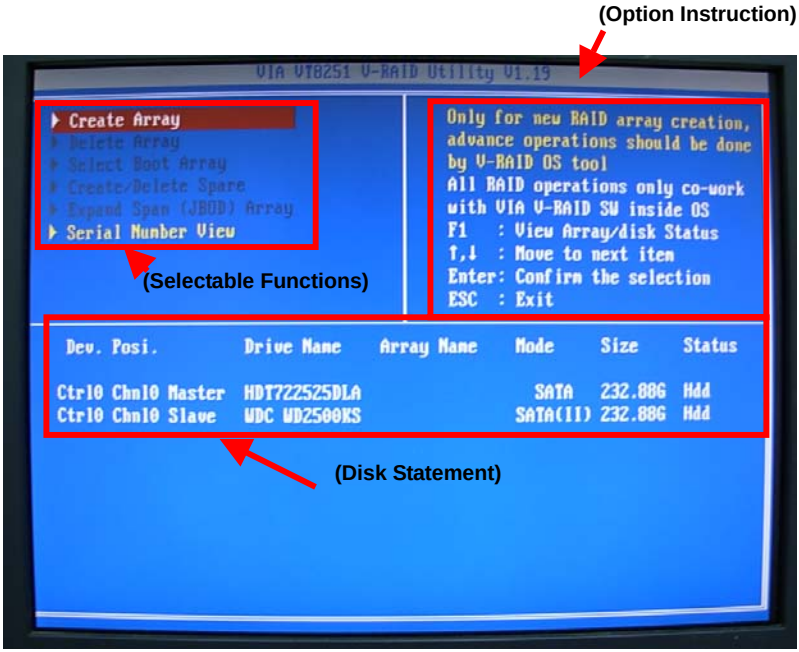
To add/remove Spare Disk for a Mirror Array, please refer to Add/Remove Spare. You can also select an ordinary disk to replace the failed disk in a Mirror Array, instead of using a Spare Disk for auto-replacement.

RAID 0+1: RAID 0+1 is implemented as a mirrored array whose segments are RAID 0 arrays. It has the advantages both provided by RAID 0 (high I/O performance) and RAID 1 (fault tolerance).

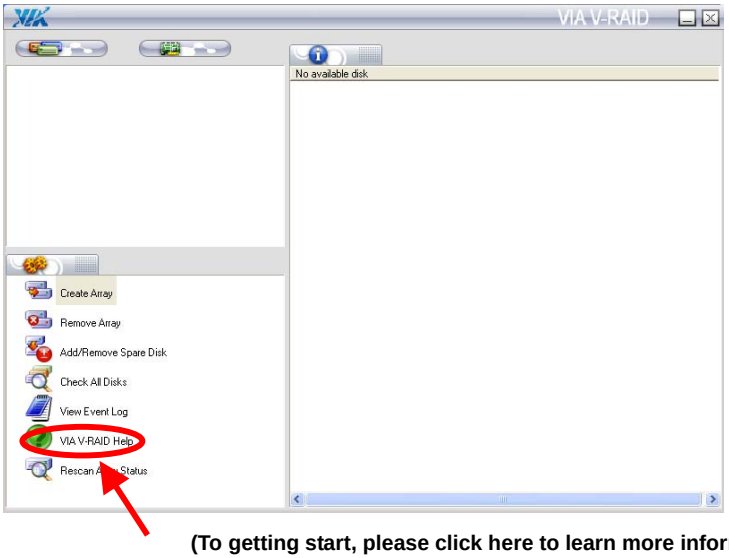
At least four disks are needed to create a RAID 0+1 disk array.

RAID5 (Parity RAID): RAID5 Array uses block-level striping with parity data distributed across all member disks. It requires a minimum of 3 disks to implement. It has highest read data transaction rate and medium write data transaction rate. When one of the disks in RAID5 failed, the data in RAID5 can also be accessed, and the broken RAID5 disk array can be repaired with a new disk.

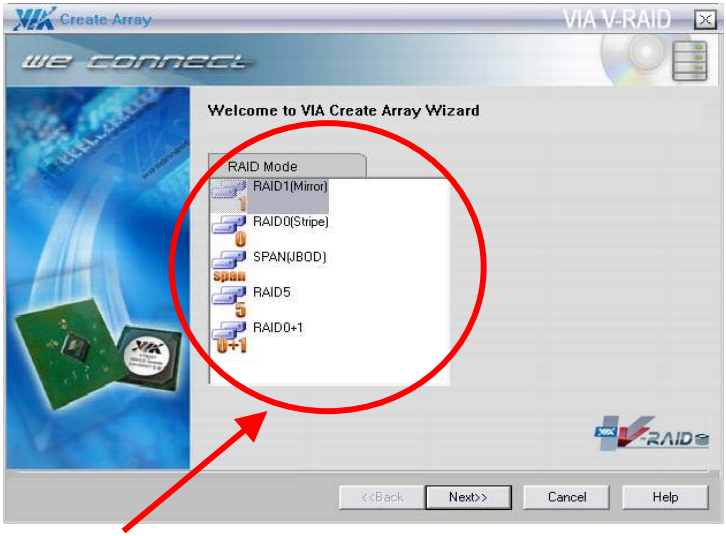
JBOD (Span): Span Array is also called JBOD (Just a Bunch Of Disks), which uses a bunch of disks as a larger disk. Span provides no fault tolerance and no I/O performance enhancement, it's just a measure to enlarge disk capacity.



You also can edit disk array under OS, please install the VIA RAID Utility in the driver CD.



(To getting start, please click here to learn more information)

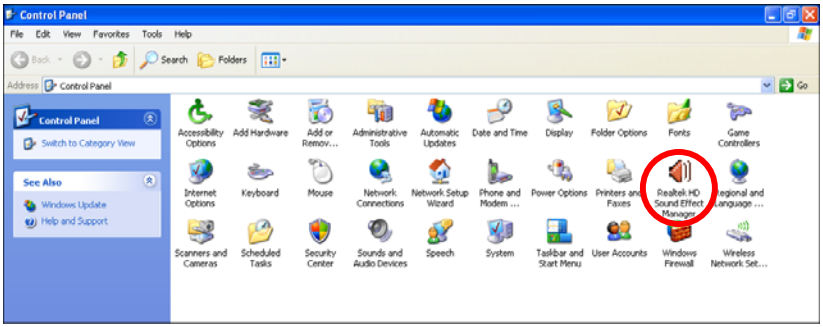


The RAID Mode block will list all available RAID type according to the number of available free-disk. You may select one type by clicking corresponding item.

3.2 <Audio Configuration>

The board provides 7.1 channel HD audio interface with driver installed, please install the Realtek ALC888 HD audio driver in the CD before getting start to enjoy the 7.1 channel sound system.

1. Install REALTEK HD Audio driver.



2. Lunch the control panel and Sound Effect Manager.

3. Select Speaker Configuration

4. Select the sound mode to meet your speaker system.

3.3 <Display Configuration>

The board provides onboard analog VGA interface, and optional digital display interface with LVDS or DVI, please install the VIA video driver before enjoy the vivid display.

Based on the VIA CN896 with Chrome9™ HC Integrated Graphics, the board provides dual display function for clone or extended desktop modes with secondary display device attached.

After installing video driver, please launch the desktop display properties.

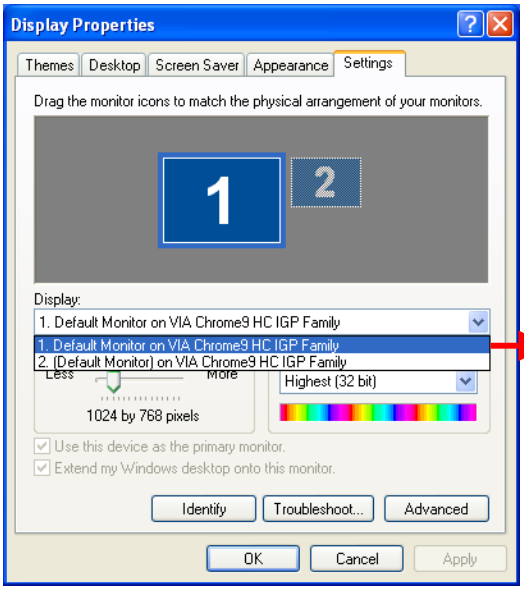
For secondary display device, you have two options selectable.

or more display properties setting, please click "Advanced" button.

Please select S3Display for advanced device setting.

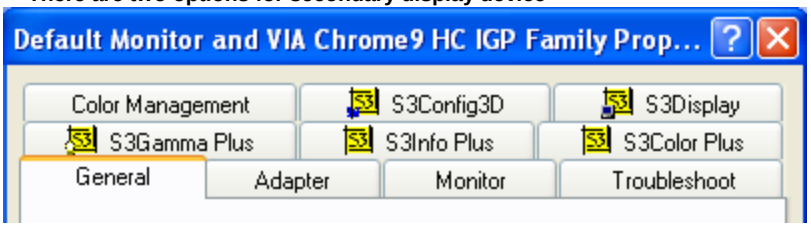
When you set dual display clone mode, you'll see the same screen display on two devices.

When you set the dual display for extended desktop mode, you can have the independent desktop on the second device.



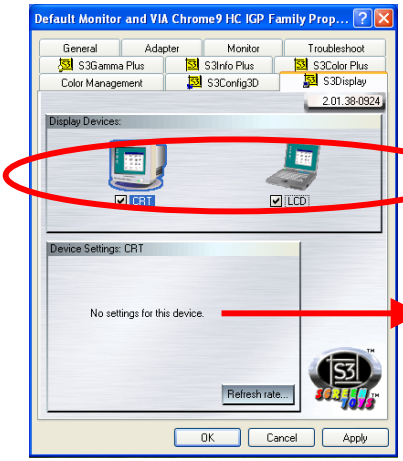
Two controllers for each display device

There are two options for secondary display device



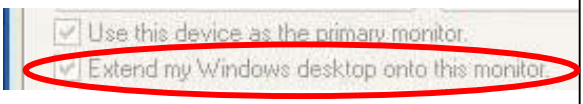
For more display properties setting, please click "Advanced" button.

Please select S3Display for advanced device setting.



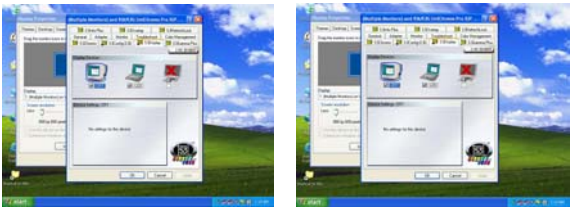
Connected Devices
Click check box to enable/disable device

Specified display setup if available

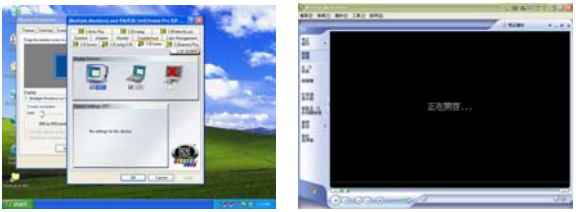


Set dual display clone mode and extended desktop mode

When you set dual display clone mode, you'll see the same screen display on two devices.



When you set the dual display for extended desktop mode, you can have the independent desktop on the second device.



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Chapter 4 <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

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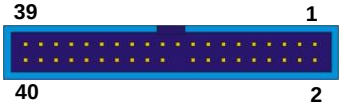
Appendix A <I/O Port Pin Assignment>

A.1 <IDE Port>

Connector: **IDE1**

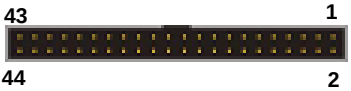
Type: 40-pin (20 x 2) box header



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	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 (22 x 2) 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	+5V	42	+5V
43	Ground	44	Ground

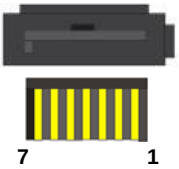
A.2 <Floppy Port>

Connector: **FDD**

Type: 26-pin connector

Pin	Description	Pin	Description
1	+5V	2	INDEX
3	+5V	4	DRV0
5	+5V	6	DSKCHG
7	DRV1	8	N/C
9	MTR1	10	MTR0
11	RPM	12	DIR
13	N/C	14	STEP
15	Ground	16	WRITE DATA
17	Ground	18	WRITE GATE
19	N/C	20	TRACK 0
21	N/C	22	WRPTR
23	Ground	24	RDATA-
25	Ground	26	SEL

A.3 <Serial ATA Port>

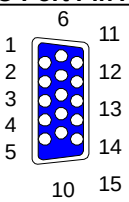


Connector: **SATA1/2/3/4**

Type: 7-pin wafer connector

1	2	3	4	5	6	7
GND	RSATA_TXP1	RSATA_TXN1	GND	RSATA_RXN1	RSATA_RXP1	GND

A.4 < CRT Port >

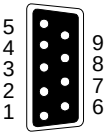


Connector: **VGA**

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

Pin	Description	Pin	Description	Pin	Description
1	RED	6	Ground	11	N/C
2	GREEN	7	Ground	12	5VCDA
3	BLUE	8	Ground	13	HSYNC
4	N/C	9	LVGA5V	14	VSYNC
5	Ground	10	Ground	15	5VCLK

A.5 <Serial Port>



Connector: **COM**

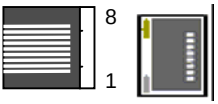
Type: 9-pin D-sub male connector on rear panel

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

A.6 <LAN Port>

Connector: **RJ45_1/2**

Type: RJ45 connector with LED on rear panel



Pin	1	2	3	4	5	6	7	8
Description	TRD0+	TRD0-	TRD1+	TRD2+	TRD2-	TRD1-	TRD3+	TRD3-

Appendix B <Flash 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.tw/
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.

B.2 Flash Method

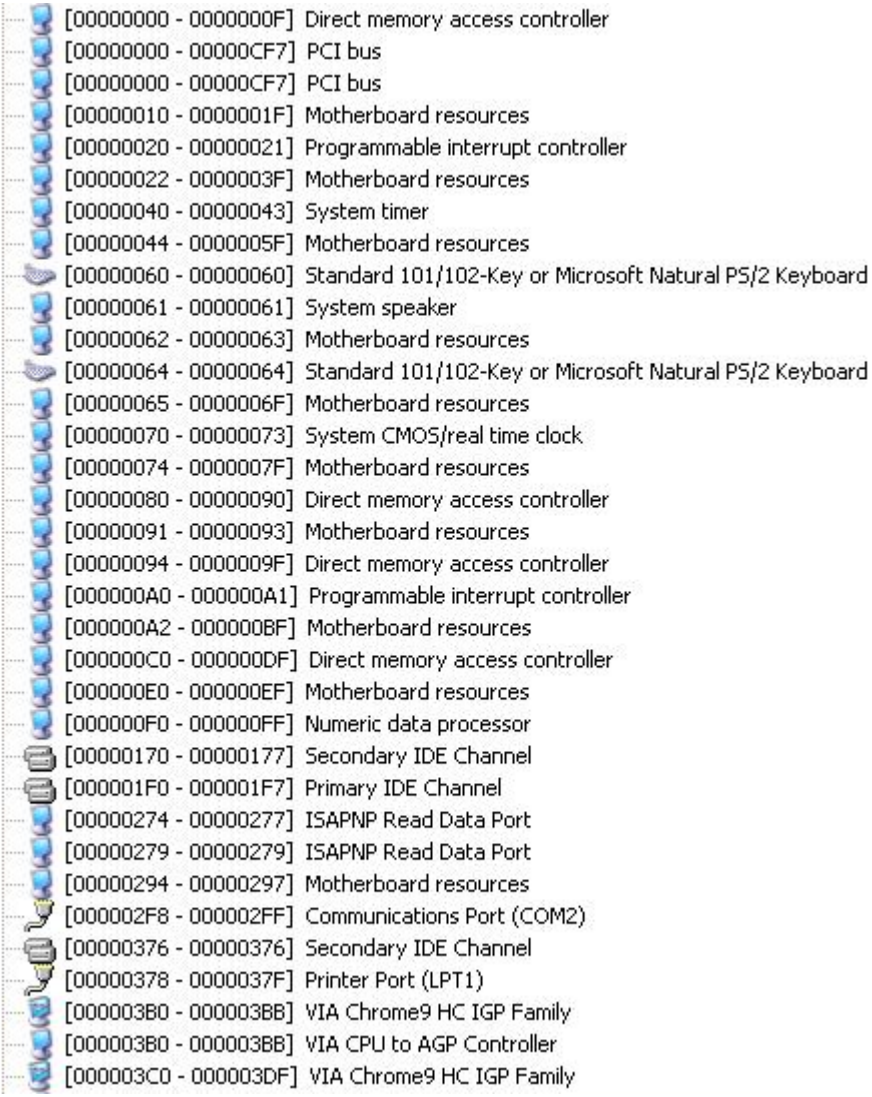
1. Please make a bootable floppy disk.
2. Get the last .bin files you want to update and copy it into the disk.
3. Copy awardflash.exe to the disk.
4. Power on the system and flash the BIOS. (Example: C:/ awdflash XXX.bin)
5. Re-star the system.

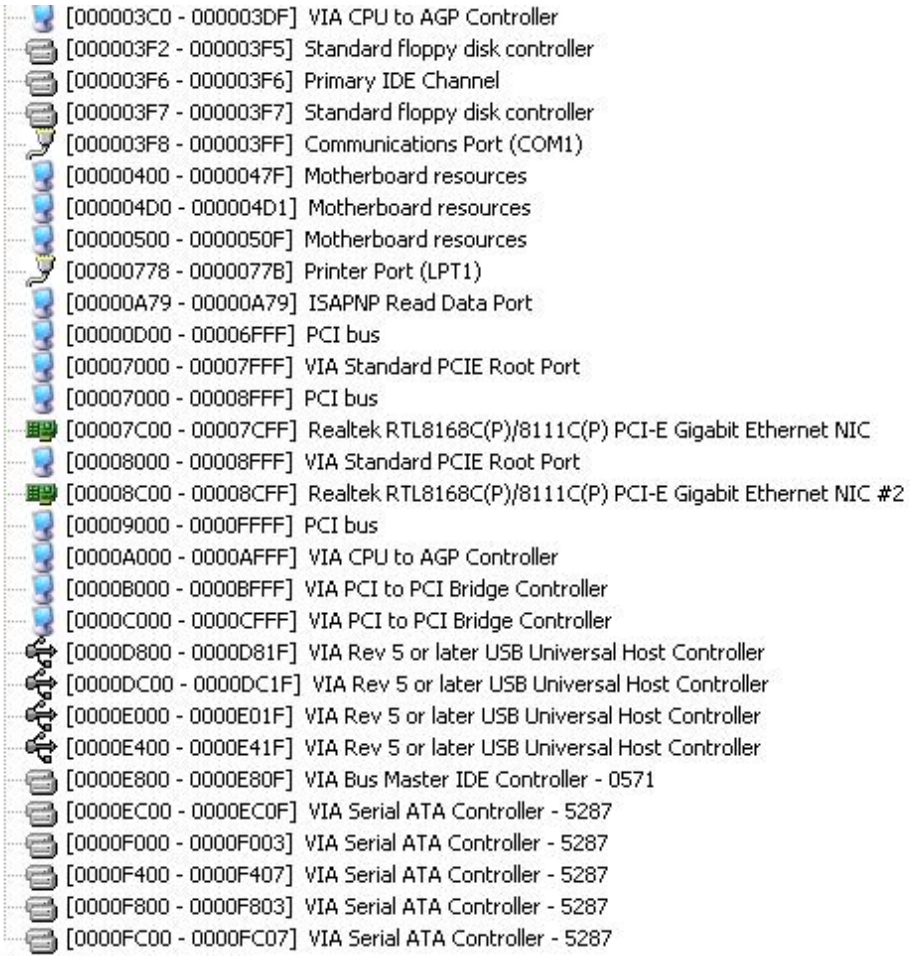
Any question about the BIOS re-flash please contact your distributors or visit the web-site at below:

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

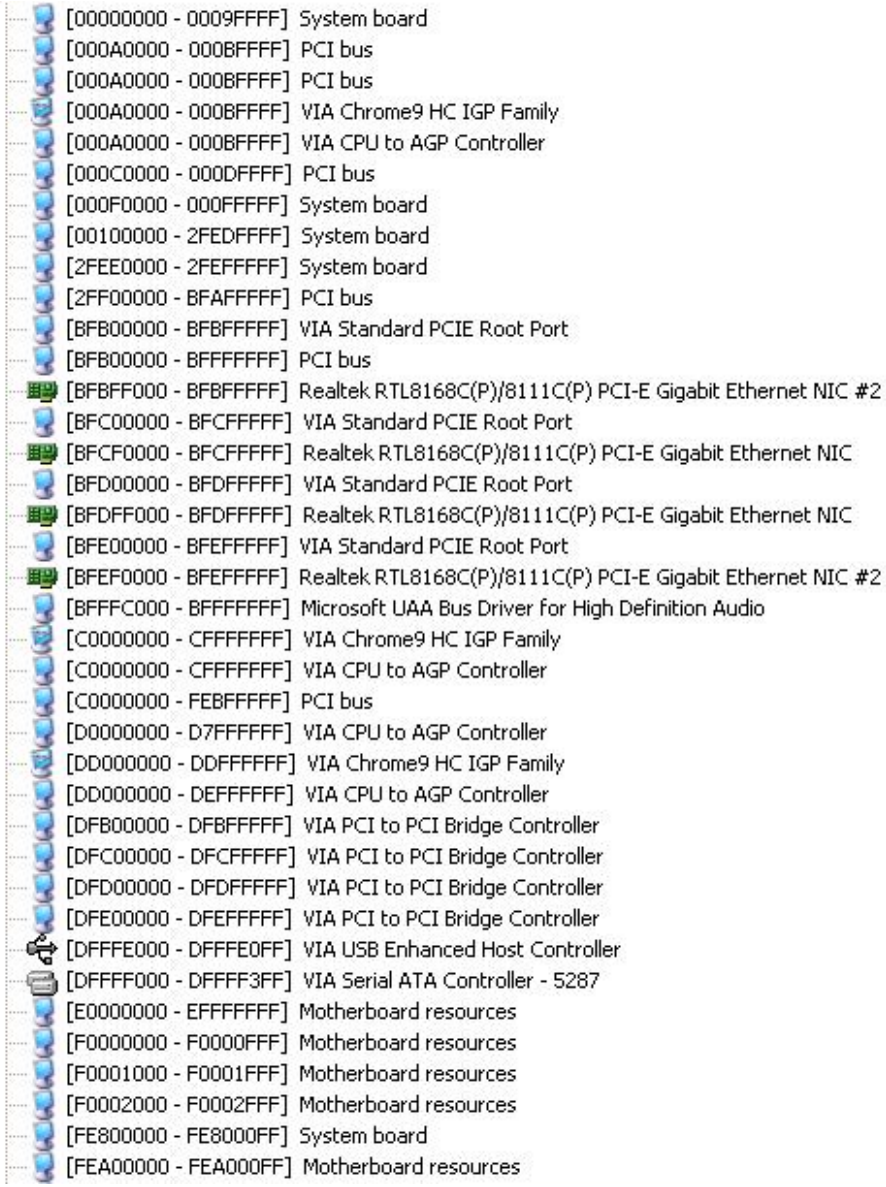
Appendix C <System Resources>

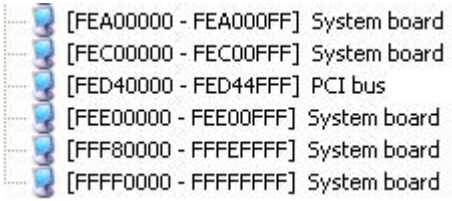
C1.<I/O Port Address Map>




[000003C0 - 000003DF] VIA CPU to AGP Controller
[000003F2 - 000003F5] Standard floppy disk controller
[000003F6 - 000003F6] Primary IDE Channel
[000003F7 - 000003F7] Standard floppy disk controller
[000003F8 - 000003FF] Communications Port (COM1)
[00000400 - 0000047F] Motherboard resources
[000004D0 - 000004D1] Motherboard resources
[00000500 - 0000050F] Motherboard resources
[00000778 - 0000077B] Printer Port (LPT1)
[00000A79 - 00000A79] ISAPNP Read Data Port
[00000D00 - 00006FFF] PCI bus
[00007000 - 00007FFF] VIA Standard PCIE Root Port
[00007000 - 00008FFF] PCI bus
[00007C00 - 00007CFF] Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC
[00008000 - 00008FFF] VIA Standard PCIE Root Port
[00008C00 - 00008CFF] Realtek RTL8168C(P)/8111C(P) PCI-E Gigabit Ethernet NIC #2
[00009000 - 0000FFFF] PCI bus
[0000A000 - 0000AFFF] VIA CPU to AGP Controller
[0000B000 - 0000BFFF] VIA PCI to PCI Bridge Controller
[0000C000 - 0000CFFF] VIA PCI to PCI Bridge Controller
[0000D800 - 0000D81F] VIA Rev 5 or later USB Universal Host Controller
[0000DC00 - 0000DC1F] VIA Rev 5 or later USB Universal Host Controller
[0000E000 - 0000E01F] VIA Rev 5 or later USB Universal Host Controller
[0000E400 - 0000E41F] VIA Rev 5 or later USB Universal Host Controller
[0000E800 - 0000E80F] VIA Bus Master IDE Controller - 0571
[0000EC00 - 0000EC0F] VIA Serial ATA Controller - 5287
[0000F000 - 0000F003] VIA Serial ATA Controller - 5287
[0000F400 - 0000F407] VIA Serial ATA Controller - 5287
[0000F800 - 0000F803] VIA Serial ATA Controller - 5287
[0000FC00 - 0000FC07] VIA Serial ATA Controller - 5287

C2.<Memory Address Map>




[FEA00000 - FEA000FF] System board
[FEC00000 - FEC00FFF] System board
[FED40000 - FED44FFF] PCI bus
[FEE00000 - FEE00FFF] System board
[FFF80000 - FFFEFFFF] System board
[FFFF0000 - FFFFFFFF] System board

C3.<System IRQ Resources>

Appendix D <Programming GPIO's>

The GPIO can be programmed with the MSDOS debug program using simple
IN/OUT commands. The following lines show an example how to do this.

GPIO0...GPIO7 bit0……bit7

```
-o 2E 87
-o 2E 87          ;enter configuration
-o 2E 07
-o 2F 07          ;select logic device 7
-o 2E 29
-o 2F D4          ;General Purpose I/O Port 1 (pin121~128 select function)
-o 2E 30
-o 2F 01          ;undate Activate GPIO'Svu04
-o 2E F0
-o 2F xx          ;set GPIO as input/output; set '1' for input,'0'for output
-o 2E F1
-o 2F xx          ;if set GPIO's as output, in this register its value can be set
```

Optional :

```
-o 2E F2
-o 2F xx          ;Data inversion register ; '1' inverts the current value of the
                    bits ,'0' leaves them as they are
```

For further information, please refer to Winbond W83697HG

datasheet.

Appendix E <Watch Dog timer Setting >

The watchdog timer makes the system auto-reset while it stops to work for a period. The integrated watchdog timer can be setup as system reset mode by program.

Timeout Value Range

- 1 to 255
- Second or Minute

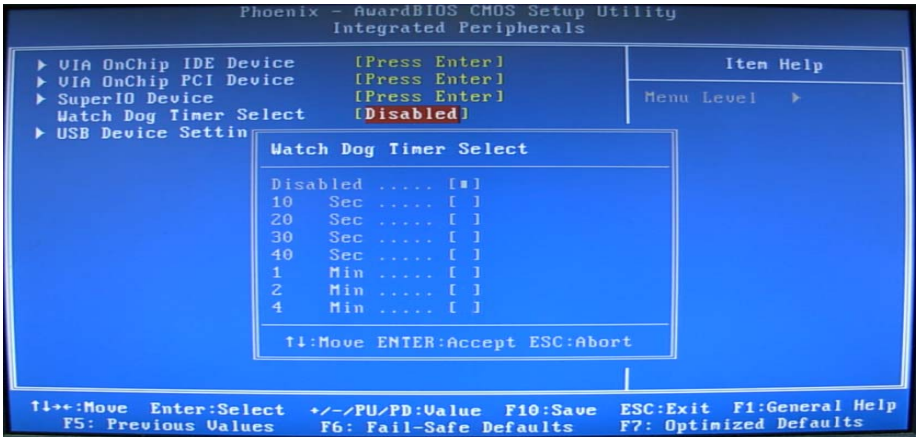
Program Sample

Watchdog timer setup as system reset with 5 second of timeout

2E, 87	
2E, 87	enter configuration
2E, 07	
2F, 08	Logical Device 8
2E, 29	
2F, 20	Set WDTO
2E, 30	
2F, 01	Activate
2E, F3	
2F, 00	Set as Second*
2E, F4	
2F, 05	Set as 5

* Minute: bit 2 = 1; Second: bit 2 = 0

You can select Timer setting in the BIOS, after setting the time options, the system will reset according to the period of your selection.



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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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