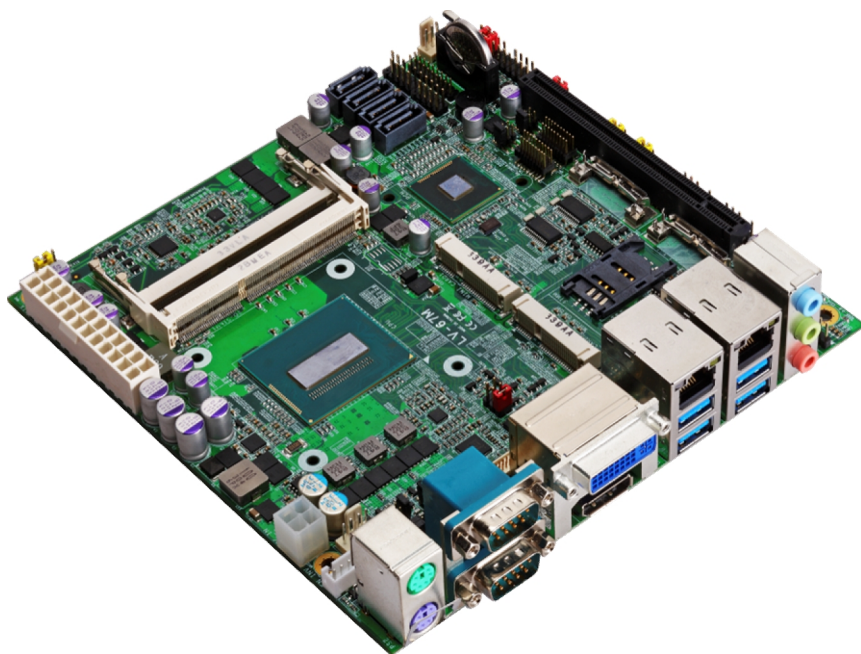


LV-67M

Mini-ITX Motherboard

User's Manual

Edition 1.9
2017/07/18



Copyright

Copyright 2013, all rights reserved. This document is copyrighted and all rights are reserved. The information in this document is subject to change without prior notice to make improvements to the products.

This document contains proprietary information and protected by copyright. No part of this document may be reproduced, copied, or translated in any form or any means without prior written permission of the manufacturer.

All trademarks and/or registered trademarks contains in this document are property of their respective owners.

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 content before you starting using the board.



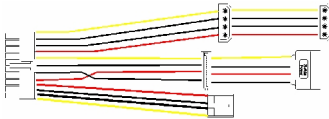
1 x LV-67M Mini-ITX Motherboard
(include Cooler Fan)



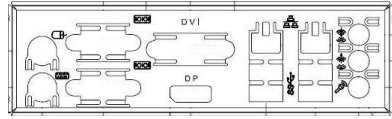
2 x SATA Cable
(OALSATA3-L / 1040529)



1 x DC Power Cable
(OALDC-A / 1040433)

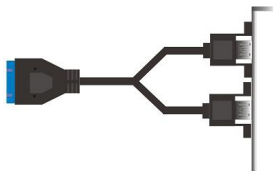


1 x Power Cable
(OALATX-P3S2 / 1040058)

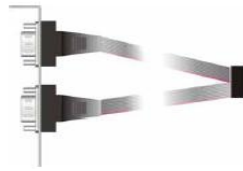


1 x I/O Shield
(OPLATE-MCDLA / 1270055)

Optional:



USB3.0 Cable
(OALUSB3 / 1040531)



Dual COM PORT Cable
(OALES-BKU2 / 1040087)



USB2.0 Cable
(OALUSBA-1 / 1040172)



VGA Cable x 1
(OALVGA-S / 1040568)

Index

Chapter 1 <Introduction>	4
1.1 <Product Overview>	4
1.2 <Product Specification>	5
1.3 <Mechanical Drawing>	6
1.4 <Block Diagram>	7
Chapter 2 <Hardware setup>	8
2.1 <Connector Location and Reference>	8
2.1.1 <Internal connectors list>	9
2.1.2 <External connectors list>	9
2.2 <Jumper Location and Reference>	10
2.2.1 <Jumper list>	10
2.3 <Installing the Memory>	11
2.4 <Clear CMOS and Power on type selection>	12
2.5 <I/O interface>	13
2.5.1 <Serial ATA interface>	13
2.5.2 <Ethernet interface>	15
2.5.3 <Display interface>	15
2.5.4 <Audio interface>	18
2.5.5 <USB interface>	19
2.5.6 <Serial Port interface>	21
2.5.7 <Expansion slot>	24
2.5.8 <Front panel switch and indicator>	26
2.5.9 <GPIO and Other interface>	27
2.6 <Power supply>	29
2.6.1 <Power input>	29
2.6.2 <Power output>	30
Appendix A <Flash BIOS>	31
Appendix B <LCD Panel Type select>	32
Appendix C <Programmable GPIO >	33
Appendix D <Programmable Watch Dog Timer>	34
Appendix E < LAN LED Port >	35
Contact information	36

Chapter 1 <Introduction>

1.1 <Product Overview>

LV-67M is Mini-ITX Motherboard which supports 5th/4th Generation Intel® Core™ i7, i5, i3, Celeron Mobile Processor and features Intel DH82QM87 chipset, integrated HD Graphics, DDR3L memory, Realtek High Definition Audio, Intel Gigabit LAN, Serial ATA with AHCI and RAID function for a system.

Intel Broadwell/ Haswell Processor

The 5th/4th Generation Intel® Core™ mobile processor family is the next generation of 64-bit, multi-core mobile processor built on 14/22- nanometer process technology. Based on a new micro-architecture.

Intel Lynx Point chipset

The DH82QM87 chipset provides better CPU, graphics, media performance, flexibility and more enhanced security that is suitable for a variety of intelligent systems the ideal choice.

All in One multimedia solution

Based on Intel DH82QM87 chipset, the board provides high performance onboard graphics, 24-bit dual channel LVDS interface, DisplayPort, DVI-I, and High Definition Audio, to meet the very requirement of the multimedia application.

Flexible Expansion Interface

The board provides one PCIe X16 slot, two Mini PCIe slot with one SIM slot.

1.2 <Product Specification>

System

Processor	5 th /4 th Gen Intel® Core™ i7, i5, i3, Celeron Mobile Processor FCBGA1364 package
Chipset	Intel® DH82QM87 PCH
Memory	2 x DDR3L SO-DIMM 1333/1600 MHz up to 16GB Support Non-ECC, unbuffered memory only
Watchdog Timer	Generates a system reset with internal timer for 1min/s ~ 255min/s
Real Time Clock	Chipset integrated RTC with onboard lithium battery
Expansion	1 x PCIe x16, 2 x Mini PCIe (one support mSATA), 1 x SIM slot Note that mSATA Only Support SATA3

Graphics

Chipset	Intel® Gen 8/7.5 integrated HD Graphics
Display Interface	1 x VGA, 1 x DVI-I, 1 x DisplayPort, 1 x LVDS

LAN

Chip	1 x Intel® I210-AT Gigabit LAN 1 x Intel® I217-LM Gigabit LAN (Support iAMT9.0)
------	--

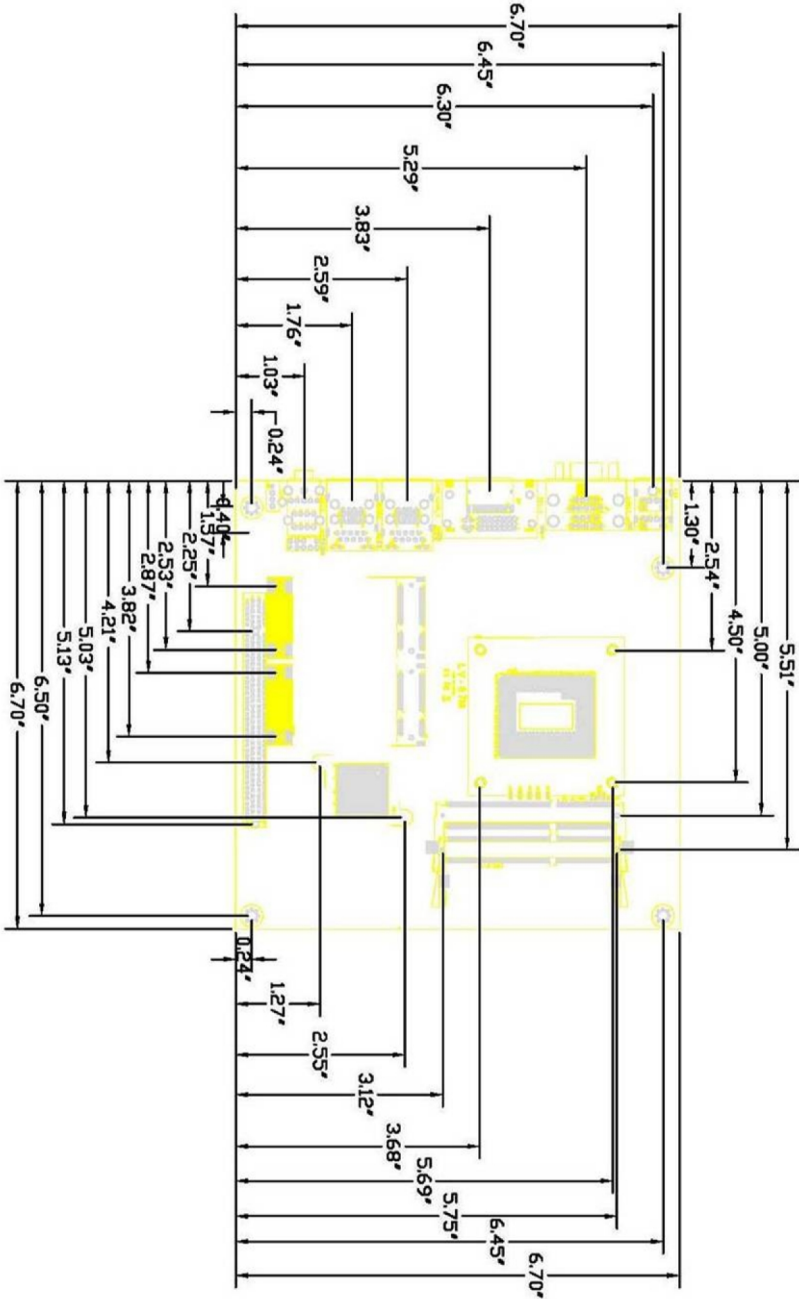
I/O

Serial ATA	4 x SATA3 support RAID0, 1, 5, 10 and IRST Note that Hard Disk Only Support SATA3
Audio	Realtek ALC888 HD Audio
Digital I/O	Programmable 8-bit GPIO with 12 pin-header
Internal I/O	4 x SATA3, 4 x RS232, 4 x USB2.0, 2 x USB3.0, 1 x VGA, 1 x LVDS, 1 x LCD inverter, 1 x LPC, 1 x SMBUS, 1 x DIO, 1 x Front panel Audio, 1 x CDIN, 1 x IrDA
Rear I/O	1 x PS/2, 1 x RS232/422/485, 1 x RS232, 1 x DVI-I, 1 x DisplayPort, 4 x USB3.0, 2 x LAN, 1 x Audio

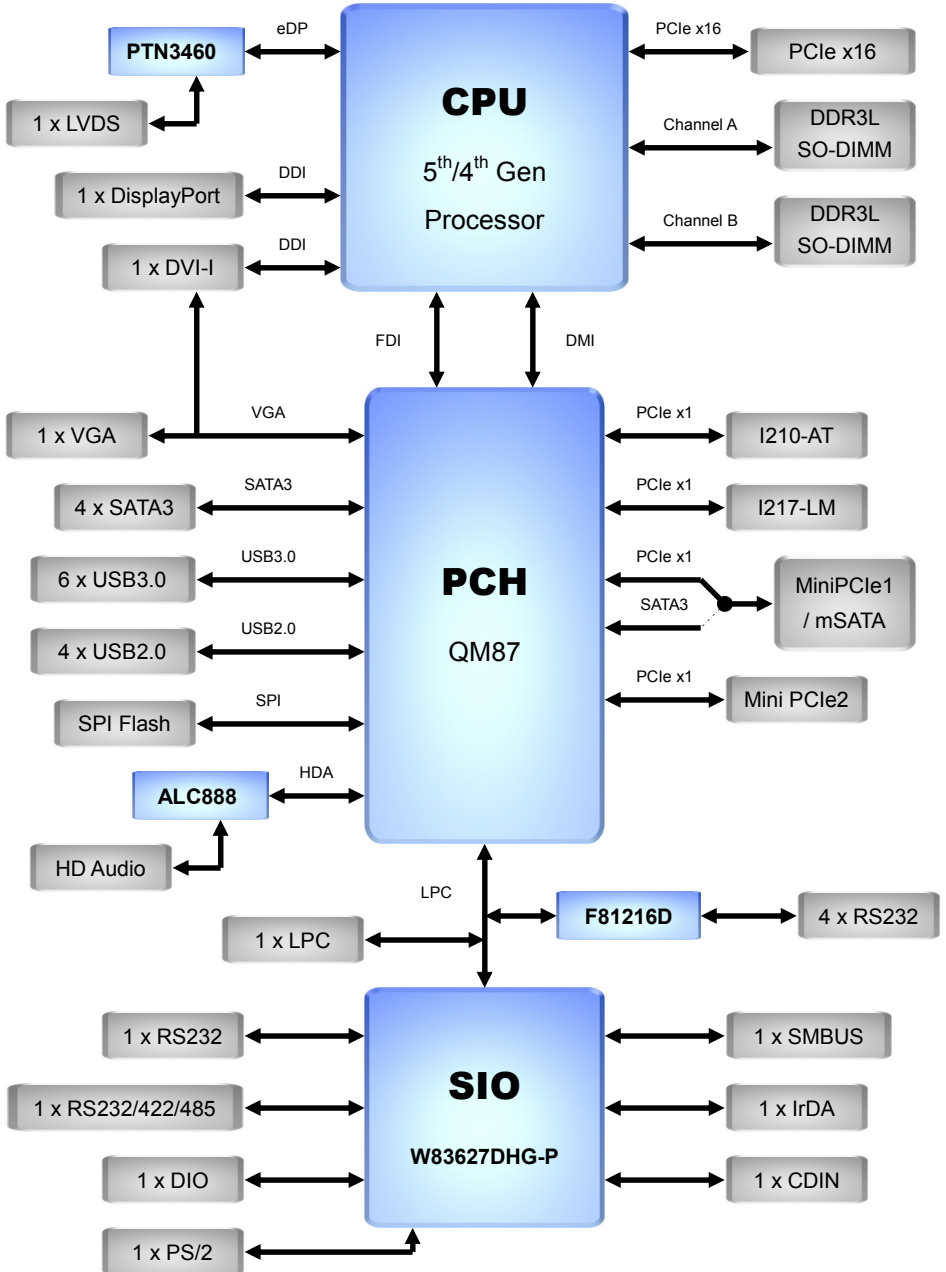
Mechanical & Environmental

Power Requirement	ATX or DC Input 9~24V Note that do not use at the same time
Size & Thickness	170mm x 170mm (L x W), 1.6mm
Temperature	Operating within 0°C~60°C (32°F~140°F) Storage within -20°C~80°C (-4°F~176°F)
Relative Humidity	10%~90%, non-condensing

1.3 <Mechanical Drawing>

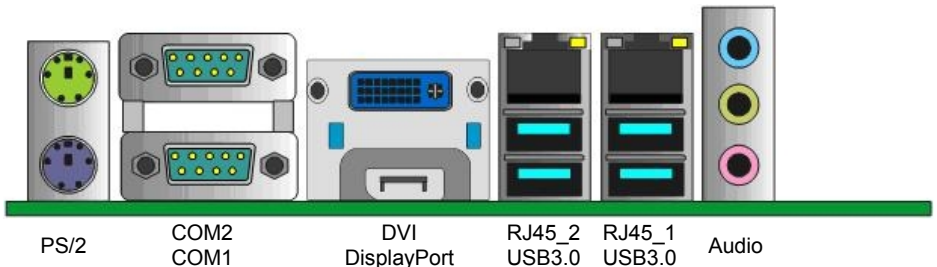
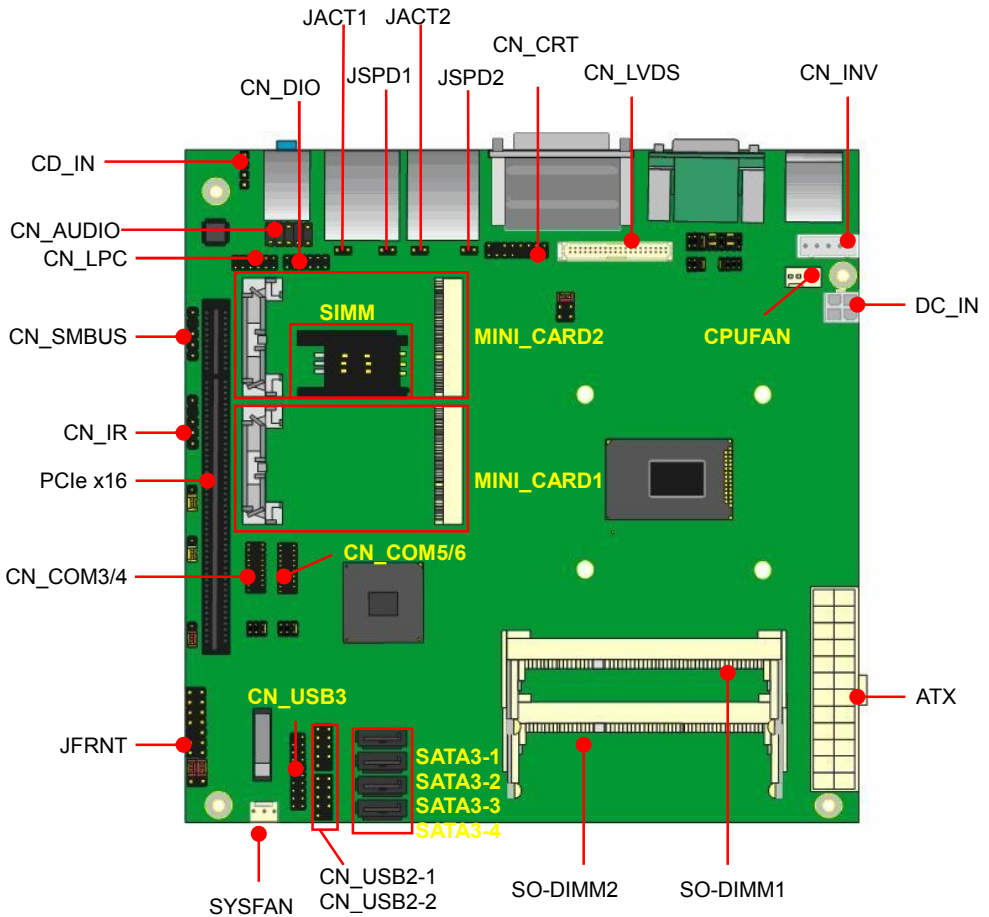


1.4 <Block Diagram>



Chapter 2 <Hardware setup>

2.1 <Connector Location and Reference>



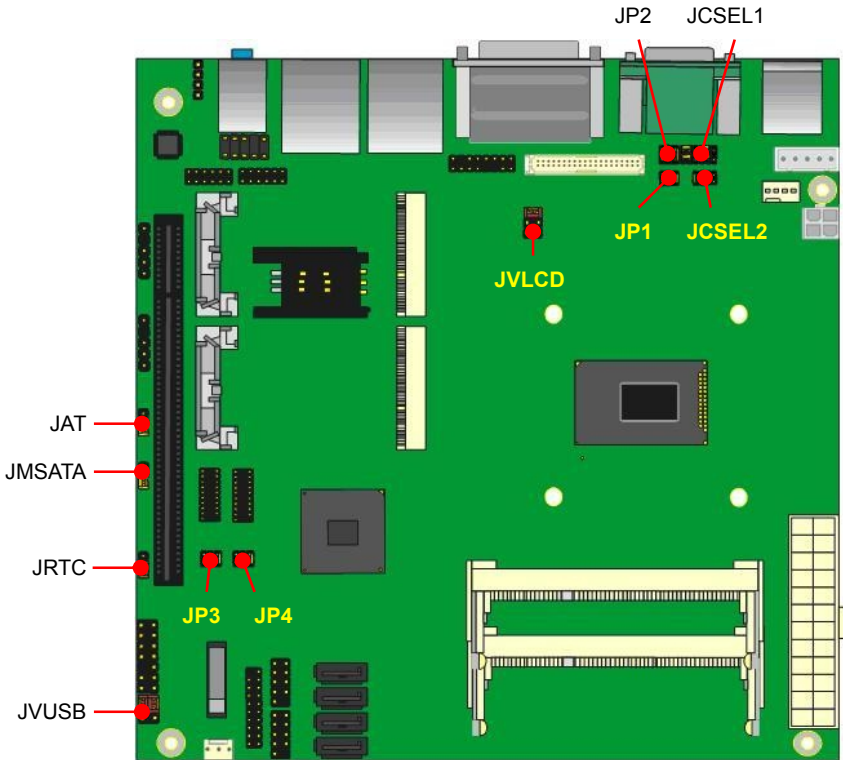
2.1.1 <Internal connectors list>

Connector	Function
SO-DIMM1/2	204-pin DDR3 SO-DIMM slot
SATA3-1/2/3/4	7-pin Serial ATA3 connector
CN_AUDIO	5 x 2-pin audio pin header
CN_DIO	6 x 2-pin GPIO pin header
CN_LPC	6 x 2-pin LPC pin header
CN_CRT	8 x 2-pin CRT pin header
CN_LVDS	20 x 2-pin LVDS connector
CN_INV	5 x 1-pin LCD inverter pin header
CN_SMBUS	5 x 1-pin SMBUS pin header
CN_IR	5 x 1-pin IR pin header
CN_COM3/4	10 x 2-pin RS232 pin header
CN_COM5/6	10 x 2-pin RS232 pin header
CN_USB2-1/2	5 x 2-pin USB2.0 pin header
CN_USB3	10 x 2-pin USB3.0 pin header
CD_IN	5 x 1-pin CD-ROM audio input pin header
CPUFAN	4-pin CPU smart fan connector
SYSFAN	3-pin system fan connector
JFRNT	7 x 2-pin front panel switch/indicator pin header
MINI_CARD1/2	52-pin mini PCIe card slot
SIMM	6-pin SIM card slot
PCIe x16	164-pin support PCIe x16 slot
DC_IN	ATX12V connector support DC 9~24V input
ATX	20+4-pin main power connector

2.1.2 <External connectors list>

Connector	Function
PS/2	PS/2 female connector for keyboard and mouse
COM1/2	DB9 male connector
DVI	DVI-I dual link connector
DisplayPort	DisplayPort connector
USB_RJ45_1/2	2 x USB3.0 and 1 x RJ45 connector
AUDIO	Audio jack support Line-in, Line-out, Mic-in

2.2 <Jumper Location and Reference>



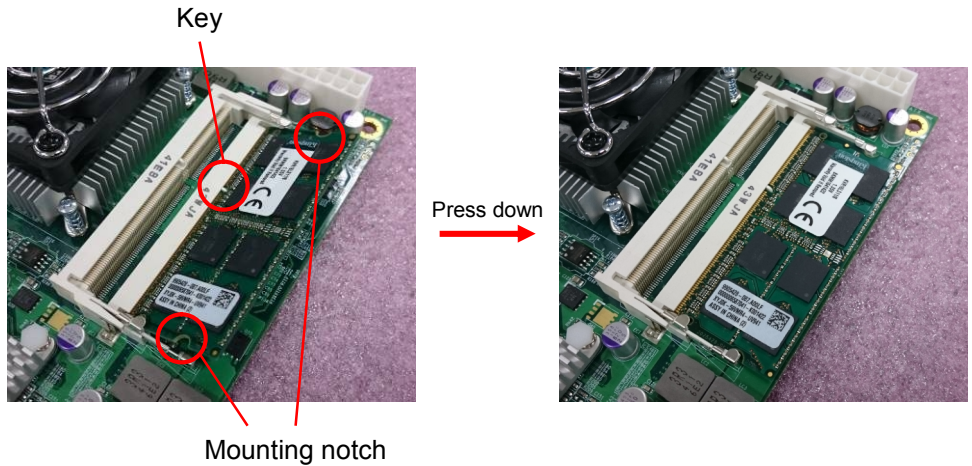
2.2.1 <Jumper list>

Jumper	Function
JAT	Power mode select
JRTC	CMOS Normal/Clear Setting
JVUSB	USB 5V/5VSB Setting
JVLCD	Panel Voltage Setting
JMSATA	MiniCard1 mSATA Setting
JCSEL1	COM2 RS-232, RS422, RS485 setting or IrDA setting
JCSEL2	COM2 RS-232, RS422, RS485 setting or IrDA setting
JP1	Com1 Voltage Setting (For Pin 9)
JP2	Com2 Voltage Setting (For Pin 9)
JP3	Com3 Voltage Setting (For Pin 9)
JP4	Com4 Voltage Setting (For Pin 9)

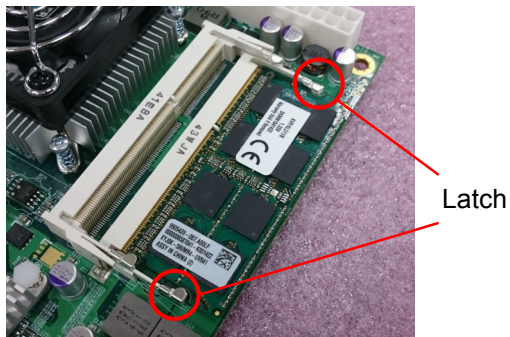
2.3 <Installing the Memory>

In the process, the board must be powered off.

1. Put the memory tilt into the slot. Note the Memory notch key aligned slot key.
2. Then press down till lock into the mounting notch.



3. To remove the memory, push outward on both sides of the latch.



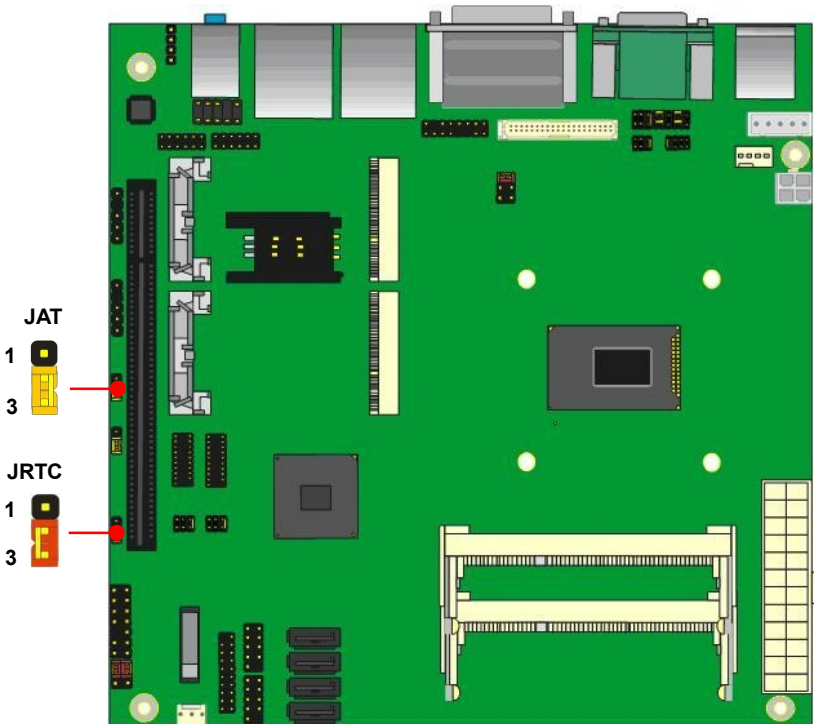
2.4 <Clear CMOS and Power on type selection>

JRTC: Clear CMOS data jumper

Jumper settings	Function
1-2	Clear CMOS
2-3	Normal (Default)

JAT: AT/ATX mode select jumper

Jumper settings	Function
1-2	AT mode
2-3	ATX mode (Default)



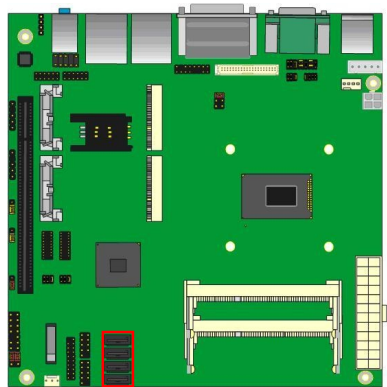
2.5 <I/O interface>

2.5.1 <Serial ATA interface>

SATA3-1/2/3/4: SATA 7-pin connector

Pin	Signal
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

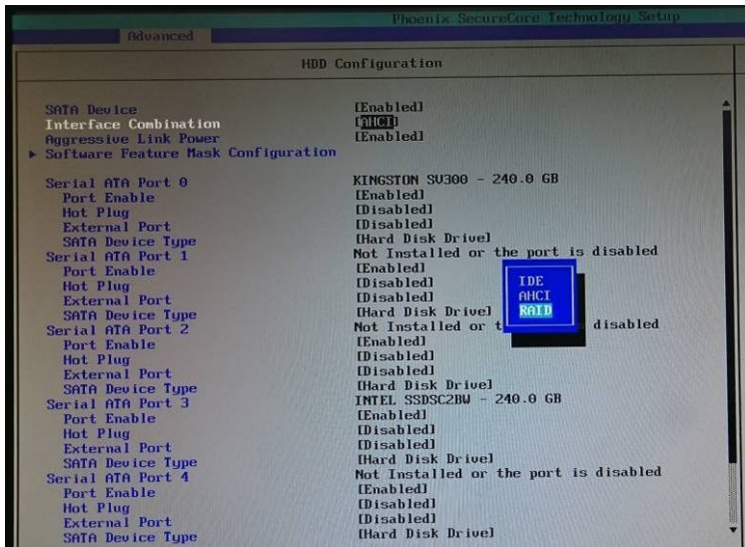
Support RAID0, 1, 5, 10.



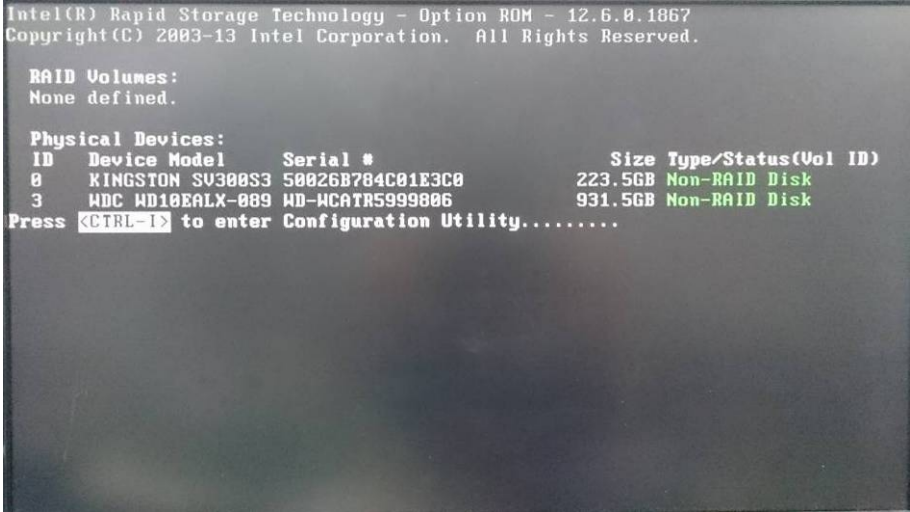
SATA3-1
SATA3-2
SATA3-3
SATA3-4

When use RAID function, it need to enter the BIOS set RAID mode first.

[Advanced] > [HDD Configuration] > [Interface Combination] > [RAID]

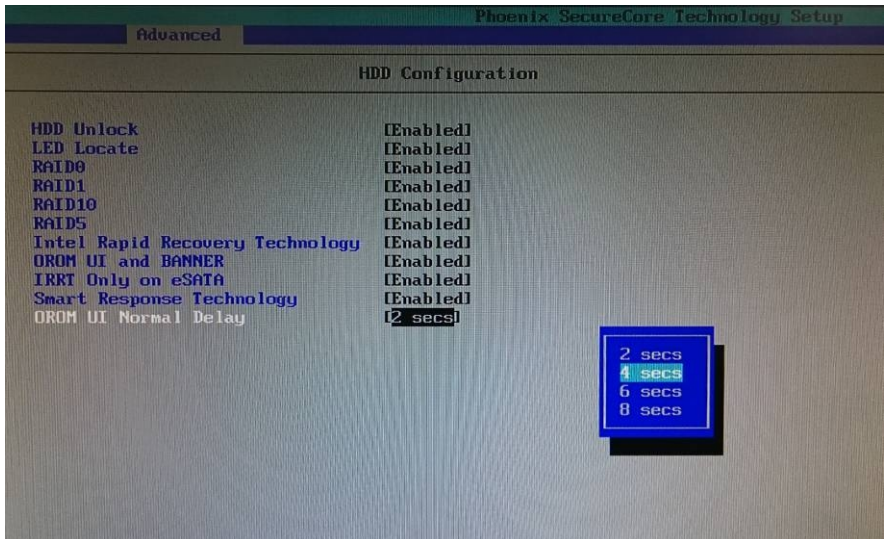


At boot time, press <CTRL + I> to enter the RAID configuration menu.



If this screen stop time is too short, it can be set in the BIOS.

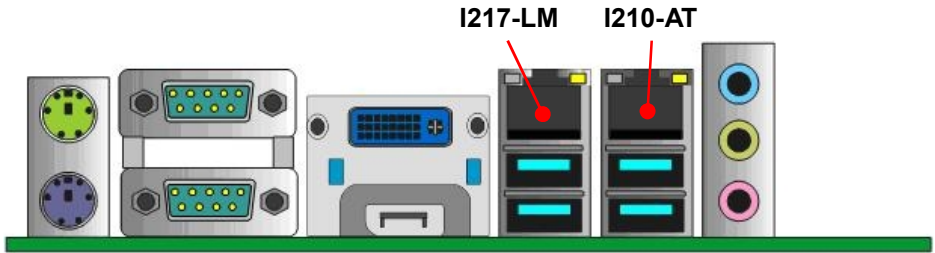
[HDD Configuration] > [Software Feature Mask Configuration] > [OROM UI Normal Delay] (Need to set RAID mode first)



2.5.2 <Ethernet interface>

The board Integrated I210-AT and I217-LM Gigabit Ethernet which supports WOL on rear I/O. The I217-LM support Intel® AMT 9.0 feature, if want to use, need to enable in the BIOS.

(Note that your CPU must support vPro technology, ex: [i7-4700EQ](#))

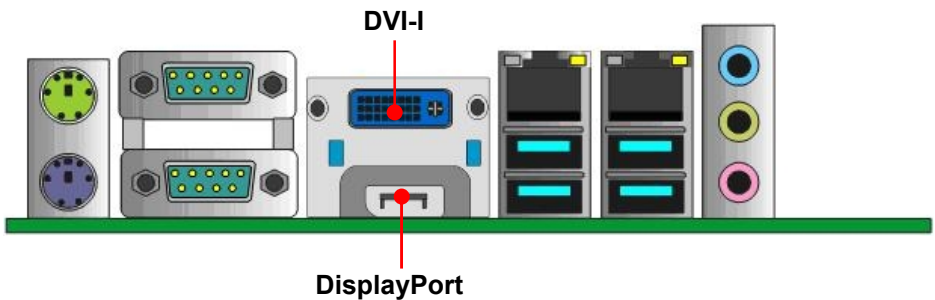


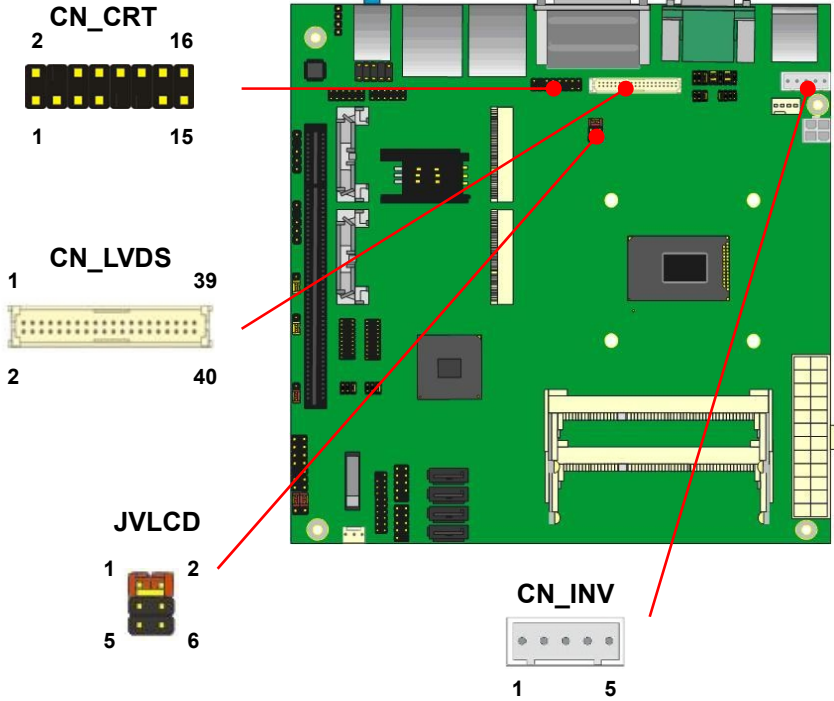
2.5.3 <Display interface>

Based on the 5th/4th Gen CPU with built-in HD Graphics, the DVI-I resolution up to **1920x1200 @ 60Hz** and DisplayPort up to **3840x2160 @ 60Hz** on rear I/O.

About the internal Display, the VGA resolution up to **1920x1200 @ 60Hz** and LVDS (PTN3460) up to **1920x1200 @ 60Hz** support 24-bit color depth and dual channel.

The built-in HD Graphics support triple display function with clone mode and extended mode.





CN_CRT: VGA 16-pin header (Pitch 2.00mm)

Pin	Signal	Pin	Signal
1	RED	2	GREEN
3	BLUE	4	Key
5	DETECT	6	GND
7	GND	8	GND
9	Key	10	DETECT
11	Key	12	SDA
13	HSYNC	14	VSYNC
15	SCL	16	NC

Note that pin 5, 10 active low.

CN_LVDS: LVDS 40-pin connector (Model: HIROSE DF13-40DP-1.25V compatible)

Pin	Signal	Pin	Signal
2	Set by JVLCD	1	Set by JVLCD
4	GND	3	GND
6	A_LVDS_0-	5	B_LVDS_0-
8	A_LVDS_0+	7	B_LVDS_0+
10	GND	9	GND
12	A_LVDS_1-	11	B_LVDS_1-
14	A_LVDS_1+	13	B_LVDS_1+
16	GND	15	GND
18	A_LVDS_2-	17	B_LVDS_2-
20	A_LVDS_2+	19	B_LVDS_2+
22	GND	21	GND
24	A_LVDS_CLK-	23	B_LVDS_3-
26	A_LVDS_CLK+	25	B_LVDS_3+
28	GND	27	GND
30	A_LVDS_3-	29	B_LVDS_CLK-
32	A_LVDS_3+	31	B_LVDS_CLK+
34	GND	33	GND
36	LVDS_DDCSCL	35	NC
38	LVDS_DDCSDA	37	NC
40	NC	39	NC

CN_INV: LVDS 5-pin Backlight power header

Pin	Signal
1	12V
2	Backlight Control
3	GND
4	GND
5	Enable Backlight

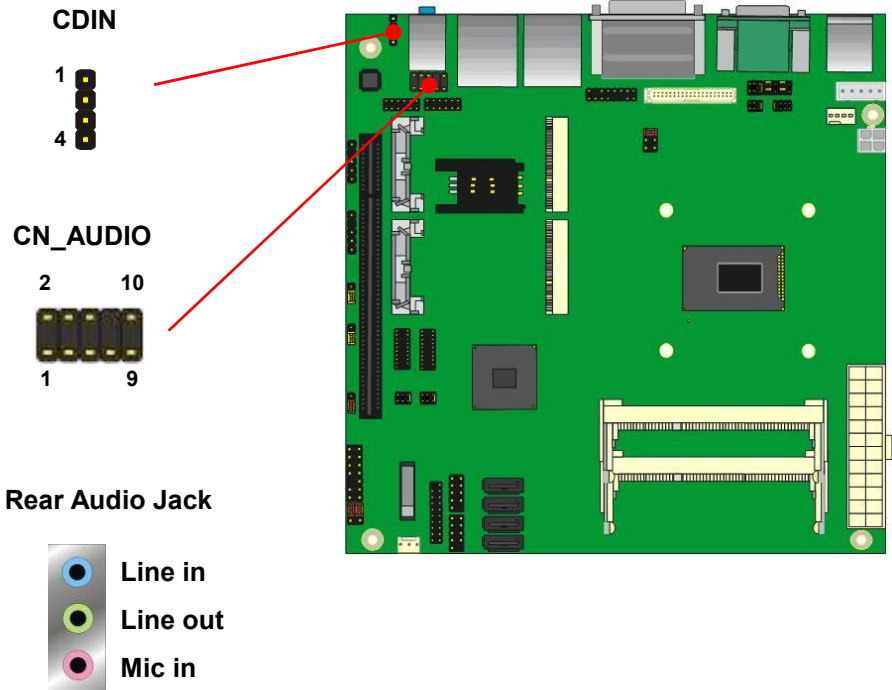
JVLCD: LVDS panel power select jumper

Jumper settings	Function
1-2	3.3V (Default)
3-4	5V
5-6	12V

Effective patterns of connection: 1-2 / 3-4 / 5-6

Other may cause damage

2.5.4 <Audio interface>



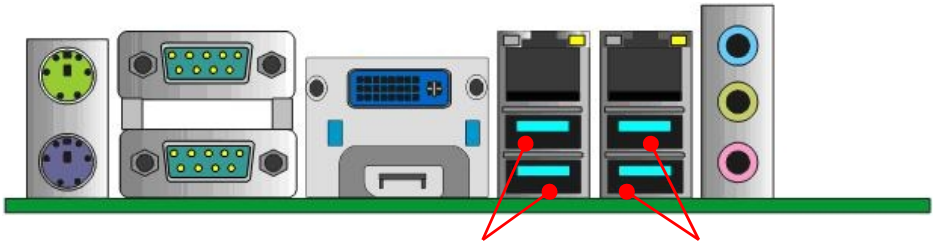
CDIN: CD-ROM audio input 4-pin header (Pitch 2.54mm)

Pin	Signal
1	CD_L
2	GND
3	GND
4	CD_R

CN_AUDIO: Front panel audio 10-pin header (Pitch 2.54mm)

Pin	Signal	Pin	Signal
1	MIC_L	2	GND
3	MIC_R	4	NC
5	FP_OUT_R	6	MIC_DETECT
7	SENSE	8	Key
9	FP_OUT_L	10	FP_OUT_DETECT

2.5.5 <USB interface>

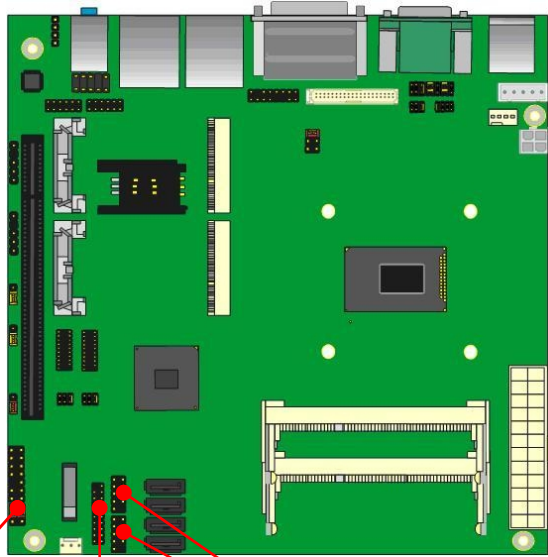


USB3.0-2

Type: 5V/5VSB

USB3.0-1

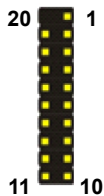
Type: 5VSB



JVUSB

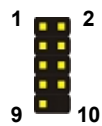


CN_USB3



Type: USB3.0, 5V/5VSB

CN_USB2-1/2



Type: USB2.0, 5VSB

CN_USB3: Front panel USB3.0 20-pin header (Pitch 2.00mm)

Pin	Signal	Pin	Signal
20	Key	1	Set by JVUSB
19	Set by JVUSB	2	SSRX0-
18	SSRX1-	3	SSRX0+
17	SSRX1+	4	GND
16	GND	5	SSTX0-
15	SSTX1-	6	SSTX0+
14	SSTX1+	7	GND
13	GND	8	DATA0-
12	DATA1-	9	DATA0+
11	DATA1+	10	NC

CN_USB2-1/2: Front panel USB2.0 10-pin header (Pitch 2.54mm)

Pin	Signal	Pin	Signal
1	VCC (5VSB)	2	VCC (5VSB)
3	DATA0-	4	DATA1-
5	DATA0+	6	DATA1+
7	GND	8	GND
9	GND	10	Key

JVUSB: USB power type select jumper (Only for USB3.0-2 & CN_USB3)

Jumper settings	Function
1-3 & 2-4	5VSB (Default)
3-5 & 4-6	5V

Effective patterns of connection: 1-3 & 2-4 / 3-5 & 4-6

Other may cause damage

2.5.6 <Serial Port interface>



COM1

COM2

Type: RS232/422/485

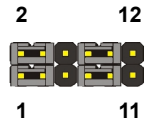
JP1



JP2



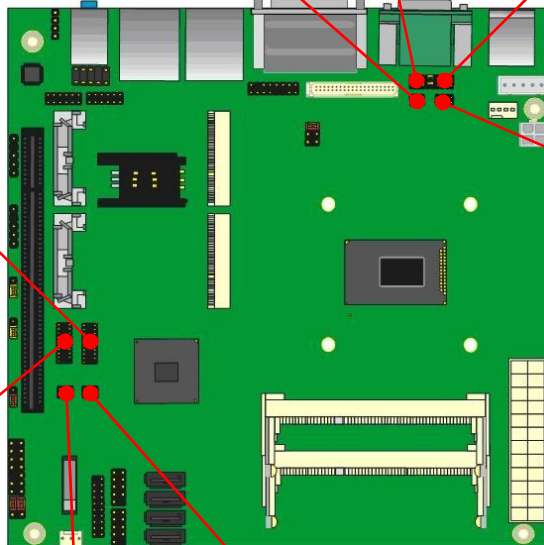
JCSEL1



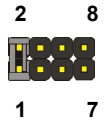
COM5/6



COM3/4



JCSEL2



JP3



JP4



COM1: RS232 DB9 connector

Pin	Signal	Pin	Signal
1	DCD	2	RXD
3	TXD	4	DTR
5	GND	6	DSR
7	RTS	8	CTS
9	Set by JP1		

COM2: RS232/422/485 DB9 connector

Pin	Signal	Pin	Signal
1	DCD/ 422TX-/ 485-	2	RXD/ 422TX+/ 485+
3	TXD/ 422RX+	4	DTR/ 422RX-
5	GND	6	DSR
7	RTS	8	CTS
9	Set by JP2		

Use JCSEL1 and JCSEL2 to select communication mode

COM3/4: COM 20-pin header (Pitch 2.54 x 1.27mm)

Pin	Signal	Pin	Signal	
1	DCD1	2	RXD1	
3	TXD1	4	DTR1	
5	GND	6	DSR1	
7	RTS1	8	CTS1	
9	COM3 Set by JP3		10	NC
11	DCD2	12	RXD2	
13	TXD2	14	DTR2	
15	GND	16	DSR2	
17	RTS2	18	CTS2	
19	COM4 Set by JP4		20	Key

COM5/6: COM 20-pin header (Pitch 2.54 x 1.27mm)

Pin	Signal	Pin	Signal
1	DCD1	2	RXD1
3	TXD1	4	DTR1
5	GND	6	DSR1
7	RTS1	8	CTS1
9	RI1	10	NC
11	DCD2	12	RXD2
13	TXD2	14	DTR2
15	GND	16	DSR2
17	RTS2	18	CTS2
19	RI2	20	Key

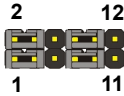

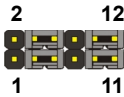

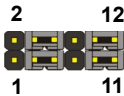

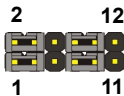

JP1, JP2, JP3, JP4: COM1, COM2, COM3, COM4 pin-9 setting

Jumper settings	Function
1-2	5V
3-4	12V
5-6	RI (Default)

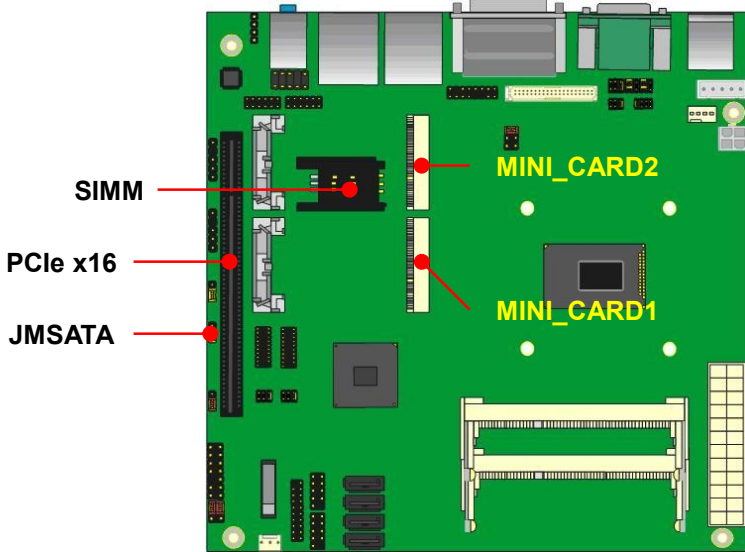
Effective patterns of connection: 1-2 / 3-4 / 5-6

Other may cause damage

JCSEL1, JCSEL2: For configure COM2 communication mode

Function	JCSEL1	JCSEL2
RS232		
RS485		
RS422		
IrDA		

2.5.7 <Expansion slot>



<MiniPCIe>

MINI_CARD1 and MINI_CARD2 have do some special design to compatible our mini-PCIe card. (ex: MPX-574D2, MPX-210D2 etc)

MINI_CARD1 support mSATA set by JMSATA, and MINI_CARD2 support SIM card to use 3G module.

JMSATA: Setting MINI_CARD1 to support PCIe/mSATA

Jumper settings	Function
1-2	Support mSATA
2-3	Normal operation (Default)

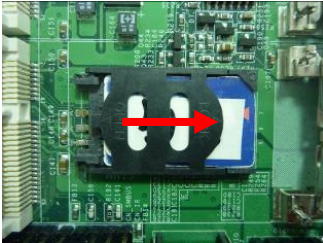
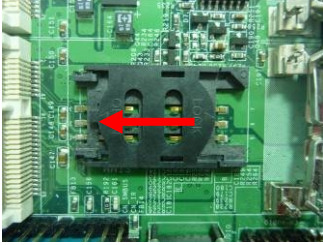
<PCIe x16>

Support PCIe 3.0 specification

<SIM>

This is for 3G miniPCle card which doesn't have SIM slot.

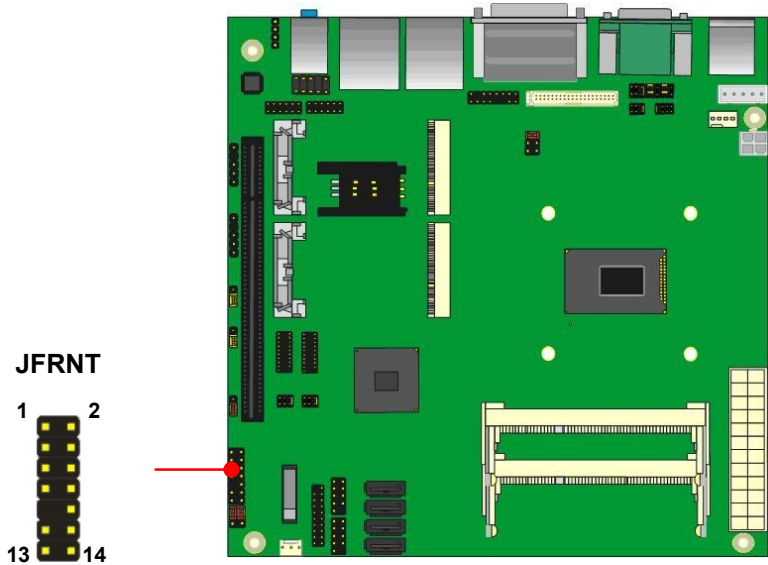
Slide the direction of the arrow
open the cover.



Then press down and slide the
direction of the arrow close the
cover.

Insert the SIM card and make
sure the direction is correct

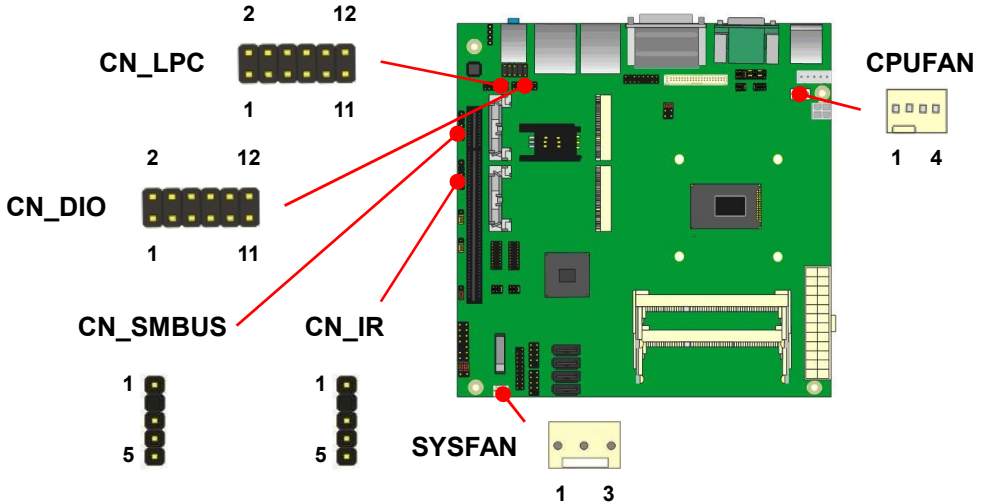
2.5.8 <Front panel switch and indicator>



JFRNT: Front panel switch and indicator 14-pin header (Pitch 2.54mm)

Pin	Signal	Pin	Signal
1	HDD_LED+	2	Power_LED+
3	HDD_LED-	4	NC
5	Reset+	6	Power_LED-
7	Reset-	8	Speaker+
9	Key	10	NC
11	Power_ON+	12	NC
13	Power_ON-	14	Speaker-

2.5.9 <GPIO and Other interface>



When using GPIO function, please note:

As Output: **Open-drain**, most applications **need use an external pull up resistor**. (If not may cause damage)

As Input: **TTL-level**.

GPIO DC characteristics

Parameter	SYM	MIN	TYP	MAX	UNIT	Conditions
Input Low Voltage	V_{IL}			0.8	V	
Input High Voltage	V_{IH}	2.0			V	
Output Low Voltage	V_{OL}			0.4	V	$I_{OL} = 12\text{mA}$
Input High Leakage	I_{LIH}			+10	μA	$V_{IN} = 3.3\text{V}$
Input Low Leakage	I_{LIL}			-10	μA	$V_{IN} = 0\text{V}$

CN_DIO: GPIO 12-pin header (Pitch 2.00mm)

Pin	Signal	Pin	Signal
1	GND	2	GND
3	GPIO0	4	GPIO4
5	GPIO1	6	GPIO5
7	GPIO2	8	GPIO6
9	GPIO3	10	GPIO7
11	5V	12	12V

CN_LPC: LPC 12-pin header (Pitch 2.00mm)

Pin	Signal	Pin	Signal
1	CLK	2	RST
3	-LFRAME	4	LAD3
5	LAD2	6	LAD1
7	LAD0	8	3.3V
9	SERIRQ	10	GND
11	3.3VSB	12	NC

CN_LPC support TPM module.

CN_SMBUS: SMBus 5-pin header (Pitch 2.54mm)

Pin	Signal
1	VCC (5V)
2	Key
3	SMBDAT
4	SMBCLK
5	GND

CN_IR: IrDA 5-pin header (Pitch 2.54mm)

Pin	Signal
1	VCC (5V)
2	Key
3	IRRX
4	IRDY
5	GND

CPUFAN: CPU cooler Smart fan 4-pin header

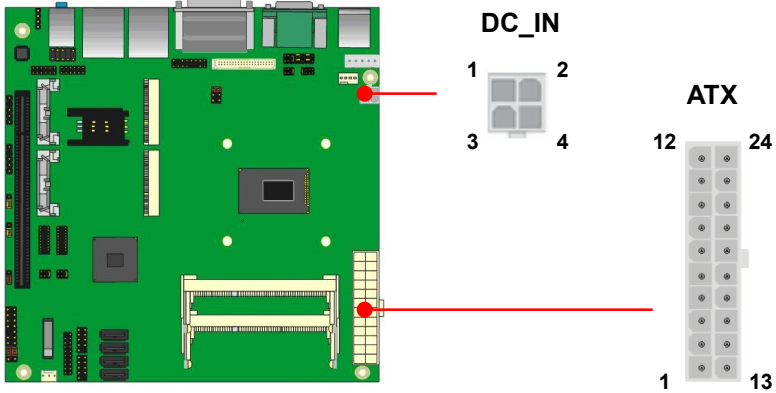
Pin	1	2	3	4
Signal	GND	12V	Sensor	Control

SYSFAN: System cooler fan 3-pin header

Pin	1	2	3
Signal	GND	12V	Sensor

2.6 <Power supply>

2.6.1 <Power input>



The DC_IN support 9~24V wide voltage input.

Note that the DC_IN and ATX do not use at the same time, it will certainly cause damage.

DC_IN: ATX12V 4-pin connector

Pin	Signal	Pin	Signal
1	GND	2	GND
3	9~24V	4	9~24V

ATX: main power 24-pin connector (As input)

Pin	Signal	Pin	Signal
1	3.3V	13	3.3V
2	3.3V	14	NC
3	GND	15	GND
4	5V	16	-PSON
5	GND	17	GND
6	5V	18	GND
7	GND	19	GND
8	Power_OK	20	NC
9	5VSB	21	5V
10	12V	22	5V
11	12V	23	5V
12	3.3V	24	GND

2.6.2 <Power output>

It is supply to the HDD, CD-ROM or other device.

If using DC_IN as input, that ATX will as output.

ATX: main power 24-pin connector (As output)

Pin	Signal	Pin	Signal
1	3.3V	13	3.3V
2	3.3V	14	
3	GND	15	GND
4	5V	16	
5	GND	17	GND
6	5V	18	GND
7	GND	19	GND
8		20	
9		21	5V
10	12V	22	5V
11	12V	23	5V
12	3.3V	24	GND

Note that Maximum output power: 12V/2A, 5V/3A, 3.3V/3A

Appendix A <Flash BIOS>

A.1 <Flash tool>

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

<http://www.commell.com.tw/Download/BIOS/FPT9.rar>

The tool's file name is "fpt.exe", it's the utility that can write the data into the BIOS flash chip and update the BIOS.

A.2 <Flash BIOS process>

1. Please make a bootable UFD which can boot into DOS environment.
2. Unzip the flash tool and copy it into bootable UFD.
3. Add a bin file to the same folder..
4. Power on the system and flash the BIOS under the DOS environment.

(Command: fpt -savemac -f xxx.bin)

5. Restart the system.

Appendix B <LCD Panel Type select>

According to your panel, it needs to select the correct resolution in the BIOS. If there is no fit for your panel type, please provide feedback for us to make an OEM model.

BIOS panel type selection form (BIOS Version:1.0)			
Single / Dual channel		Single / Dual channel	
NO.	Type	NO.	Type
1	640 x 480	9	1680 x 1050
2	800 x 600	10	1920 x 1200
3	1024 x 768	11	1440 x 900
4	1280 x 1024	12	1024 x 768
5	1400 x 1050 Reduced Blanking	13	1280 x 1024
6	1400 x 1050 non-Reduced Blanking	14	1280 x 800
7	1600 x 1200	15	1920 x 1080
8	1366 x 768	16	2048 x 1536

BIOS panel type selection form (BIOS Version:2.0)			
Single / Dual channel		Single / Dual channel	
NO.	Type	NO.	Type
1	640 x 480	9	1680 x 1050
2	800 x 600	10	1920 x 1200
3	1024 x 768	11	1440 x 900
4	1280 x 1024	12	1600 x 900
5	1400 x 1050 Reduced Blanking	13	800 x 480
6	1400 x 1050 non-Reduced Blanking	14	1280 x 800
7	1600 x 1200	15	1920 x 1080
8	1366 x 768	16	OEM Keep

Appendix C <Programmable GPIO >

The GPIO' can be programmed with the MS-DOS debug program using simple IN/OUT commands.

The DC characteristics please refer to GPIO paragraph (Page25).

GPIO	0	1	2	3	4	5	6	7
bit	0	1	2	3	4	5	6	7

-o 2E 87 ;enter configuration

-o 2E 87

-o 2E 07

-o 2F 09 ;select Logical Device

-o 2E 30

-o 2F 02 ;activate GPIO function (The board use GPIO3)

-o 2E F0

-o 2F XX ;set "01" GPIO as input, set "00" GPIO as output

-o 2E F1

-o 2F XX ;if set GPIO as output, this register's value can be set "00~ FF"

Optional

-o 2E F2

-o 2F XX ;set "01", the respective bit are inverted (Both input and output)

;set "00", the respective bit are normal

For further information, please refer to Winbond W83627DHG-P datasheet.

Appendix D <Programmable Watch Dog Timer>

Timeout value range

1 to 255

Minute and Second

Program sample

Watchdog timer setup as system reset with 5 second of timeout

```
-o 2E 87      ;enter configuration
-o 2E 87
-o 2E 07
-o 2F 08      ;select Logical Device
-o 2E 30
-o 2F 01      ; activate WDTO# function
-o 2E F5
-o 2F 00      ;set "00" is second mode, set "04" is minute mode
-o 2E F6
-o 2F 05      ;00h: Timeout Disable
                ;01h: Timeout occurs after 1 minute only
                ;02h: Timeout occurs after 2 second/minute
                ;03h: Timeout occurs after 3 second/minute
                ;
                ;FFh: Timeout occurs after 255 second/minute
                (The deviation is approx 1 second.)
```

For further information, please refer to Winbond W83627DHG-P datasheet

Appendix E < LAN LED Port >

Connector: **JSPD1/2**

Type: 2-pin header for LAN Speed LED connector

When Lan speed 10/100Mbps

Pin	Description
1	LED-
2	LED+

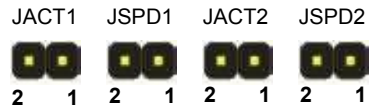
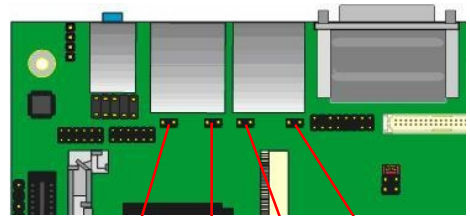
When Lan speed 1Gbps

Pin	Description
1	LED+
2	LED-

Connector: **JATC1/2**

Type: 2-pin header for LAN Activity LED connector

Pin	Description
1	LED-
2	LED+



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.

Taiwan Commate computer Inc.

Address	19F., NO.94, Sec. 1, Xintai 5 th Rd., Xizhi Dist., New Taipei City 22102, Taiwan.
TEL	+886-2-26963909
FAX	+886-2-26963911
Website	www.commell.com.tw
E-mail	info@commell.com.tw (General information) tech@commell.com.tw (Technical Support)

Commell is a brand name of Taiwan Commate computer Inc.