

LI1S Series
User's Manual

NO. G03-LI1S-F

Revision: 2.0

Release date: November 18, 2022

Trademark:

* Specifications and Information contained in this documentation are furnished for information use only, and are subject to change at any time without notice, and should not be construed as a commitment by manufacturer.

Environmental Protection Announcement

Do not dispose this electronic device into the trash while discarding. To minimize pollution and ensure environment protection of mother earth, please recycle.



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Environmental Safety Instruction

- Avoid the dusty, humidity and temperature extremes. Do not place the product in any area where it may become wet.
- 0 to 40 centigrade is the suitable temperature. (The temperature comes from the request of the chassis and thermal solution)
- Generally speaking, dramatic changes in temperature may lead to contact malfunction and crackles due to constant thermal expansion and contraction from the welding spots' that connect components and PCB. Computer should go through an adaptive phase before it boots when it is moved from a cold environment to a warmer one to avoid condensation phenomenon. These water drops attached on PCB or the surface of the components can bring about phenomena as minor as computer instability resulted from corrosion and oxidation from components and PCB or as major as short circuit that can burn the components. Suggest starting the computer until the temperature goes up.
- The increasing temperature of the capacitor may decrease the life of computer. Using the close case may decrease the life of other device because the higher temperature in the inner of the case.
- Attention to the heat sink when you over-clocking. The higher temperature may decrease the life of the device and burned the capacitor.

USER'S NOTICE

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Manual Revision Information

Reversion	Revision History	Date
2.0	Second Edition	November 18, 2022

Item Checklist

- Motherboard
- Cable(s)
- I/O Back panel shield

Chapter 1

Introduction of the Motherboard

1-1 Feature of Motherboard

- Onboard Intel® Gemini Lake J4125 2.0GHz Quad Core MCP processor
- Support 1* DDR4 2400MHz SO-DIMM up to 8GB
- Integrated with 2/1* Realtek RTL8119I Gigabit Ethernet LAN chip (*Optional*)
- Support 2* USB 3.0 & 5* USB2.0 data transport demand
- Support 1* SATAIII (6Gb/s) Device & 1* M.2 M-key Device
- Support 1* HDMI port & 1* VGA (*Optional*)
- Support 1* eDP1 & 1* LVDS1 (*Optional*)
- Support 1* eDP2
- Support 2* RS232/485 COM port & 4* RS232 COM port
- Onboard 1* M.2 E-key support WIFI/BT Module
- Support Smart FAN function
- Support ACPI S3 Function
- Support Watchdog Timer Technology

1-2 Specification

Spec	Description
Design	<ul style="list-style-type: none"> ● Mini-ITX form factor 4 layers; PCB size: 17.0x17.0cm
Embedded CPU	<ul style="list-style-type: none"> ● Integrated Intel® Gemini Lake series CPU * For detailed CPU support information please visit our website
Memory Slot	<ul style="list-style-type: none"> ● 1* DDR4 SO-DIMM slot support 1* DDR4 2400MHz up to 8GB
Expansion Slot	<ul style="list-style-type: none"> ● 1* M.2 E-key 2230 slot supports WIFI/BT Module (M2E1)
Storage	<ul style="list-style-type: none"> ● 1* SATA III 6G/s connector ● 1* M.2 M-key 2242/2280 slot supports SATA or NVMe/ PCIe x2 interface (M2M1)
LAN Chip	<ul style="list-style-type: none"> ● Integrated with 2* Realtek RTL8119I Gigabit Ethernet LAN chip (Optional for LI1S-5L & LI1S-5LV series) ● Integrated with 1* Realtek RTL8119I Gigabit Ethernet LAN chip (Optional for LI1S-50 & LI1S-50V series) ● Support Fast Ethernet LAN function of providing 10/100/1000 Mbps Ethernet data transfer rate
BIOS	<ul style="list-style-type: none"> ● AMI 128M Flash ROM
Rear I/O	<ul style="list-style-type: none"> ● 1* 12V DC-in power jack ● 1* RS232 Serial Port(COM1) ● 1* HDMI1.4(Max Resolution:3840*2160@24Hz,Co-lay VGA) (Optional for LI1S-5L & LI1S-50 series) ● 2* USB 3.0 ports ● 2* USB2.0 & 2* RJ-45 LAN Ports (Optional for LI1S-5L & LI1S-5LV series) ● 2* USB2.0 & 1* RJ-45 LAN Port (Optional for LI1S-50 & LI1S-50V series) ● 1* Audio Line-out & 1* MIC-in

Internal I/O	<ul style="list-style-type: none">● 1* 4-pin internal 12V DC-in power connector● 1* SATA power-out connector● 1* Front panel hearer● 1* Front audio header● 1* 3W Speaker header● 1* 9-Pin USB 2.0 headers● 1* 4-Pin USB 2.0/1.1 wafer for 1* USB 2.0/1.1 port● 1* SMBUS header● 1* GPIO header● 5* Serial port header (COM2/3 support RS232/485; COM4/5/6 support RS232)● 1* eDP2 connector● 1* LVDS1 connector (co-lay eDP1)● 1* Inverter connector● 1* VGA Header (<i>Optional for LI1S-5LV & LI1S-50V series</i>)● 1* eDP1 connector (co-lay LVDS1)
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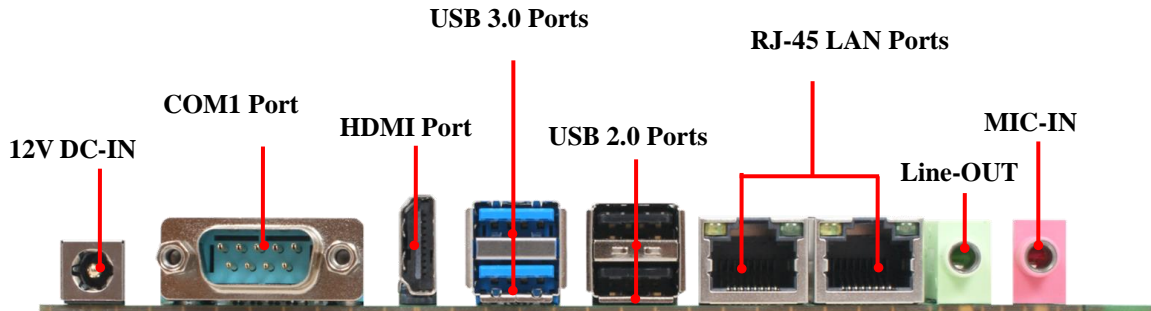
Model specification main differences :

Differences	LI1S-5L	LI1S-5LV	LI1S-50	LI1S-50V
HDMI Port	Yes	N/A	Yes	N/A
VGA Header	N/A	Yes	N/A	Yes
LAN Chip	2* Realtek RTL8119I	2* Realtek RTL8119I	1* Realtek RTL8119I	1* Realtek RTL8119I

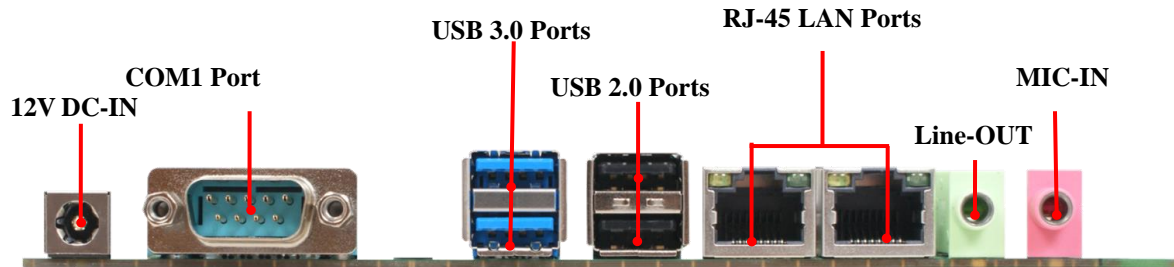
1-3 Layout Diagram

Rear IO Diagram

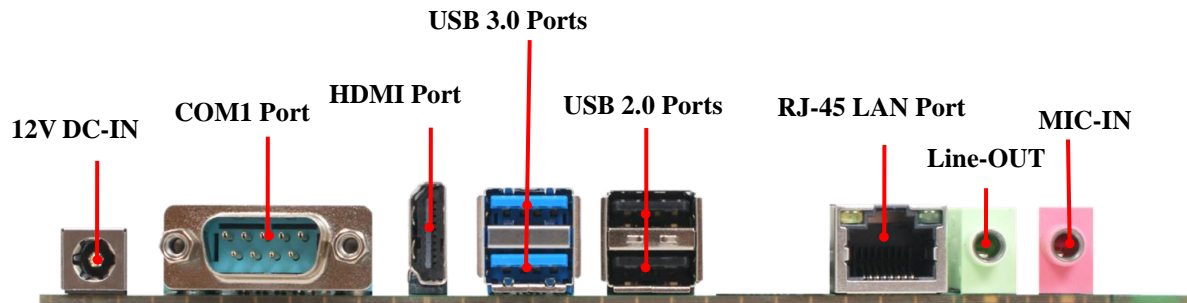
LI1S-5L Series:



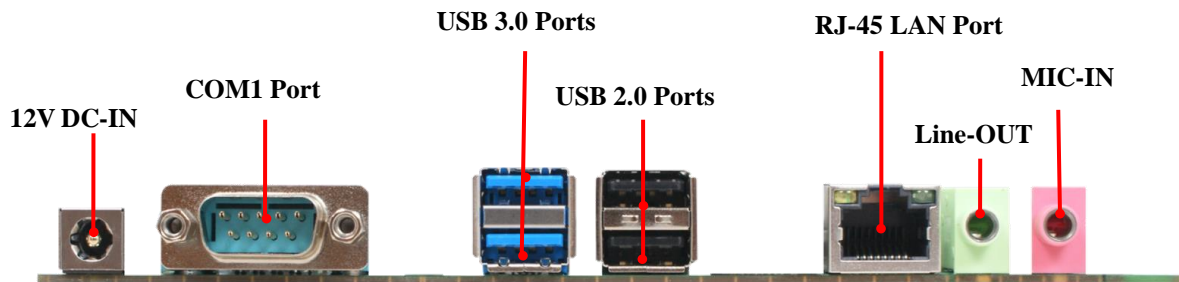
LI1S-5LV Series:



LI1S-50 Series:

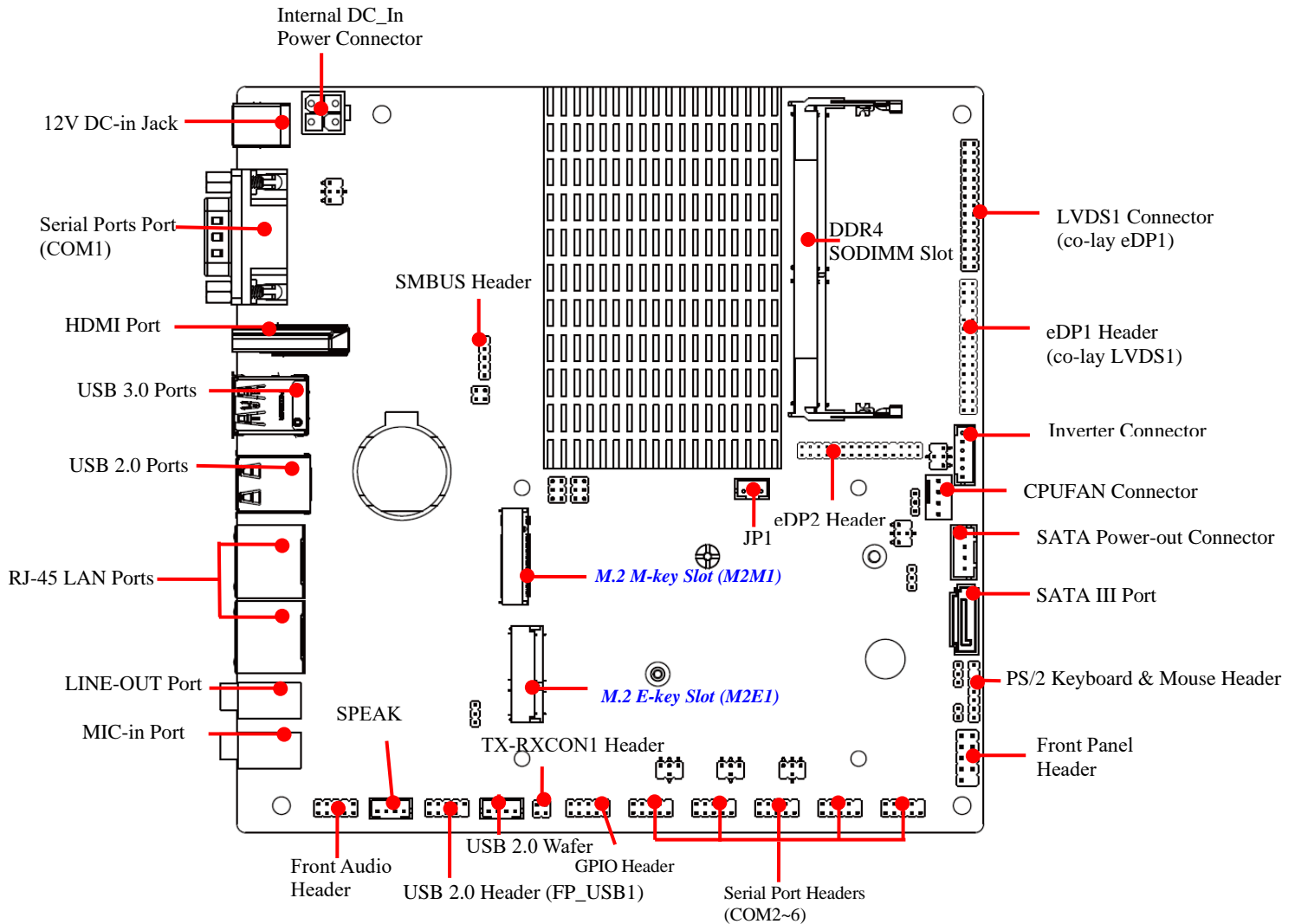


LI1S-50V Series:

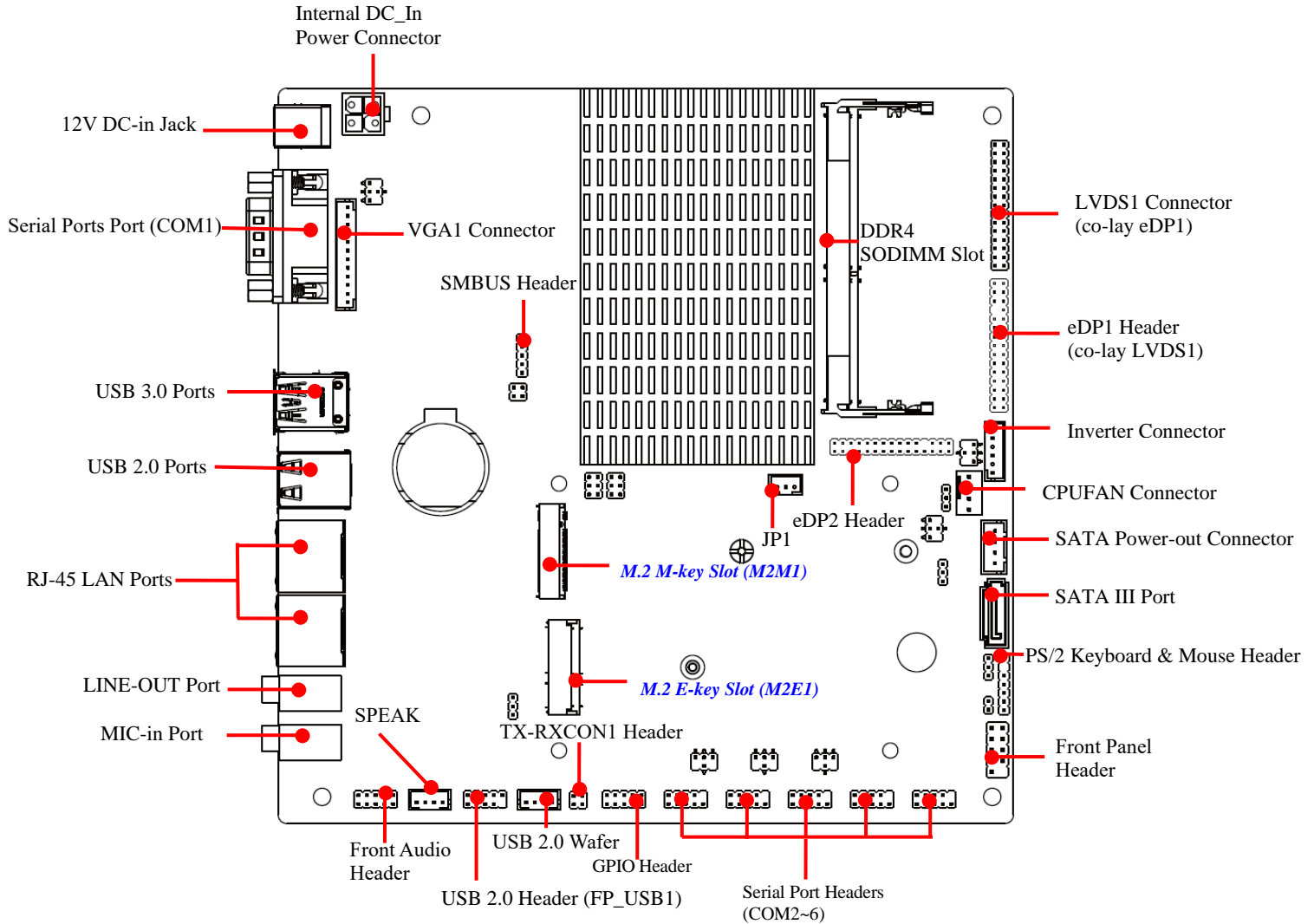


Motherboard Internal Diagram-Front

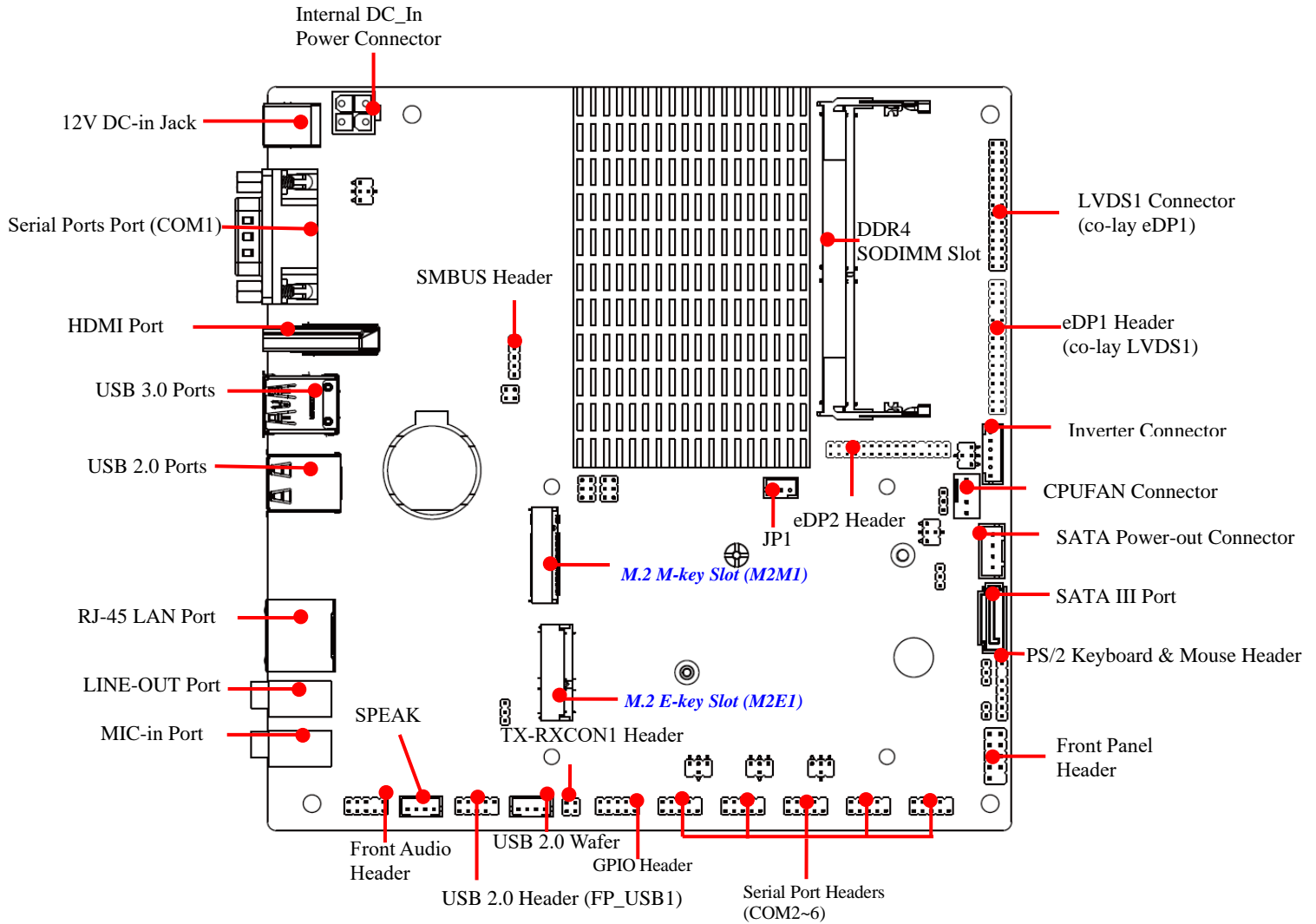
LI1S-5L Series:



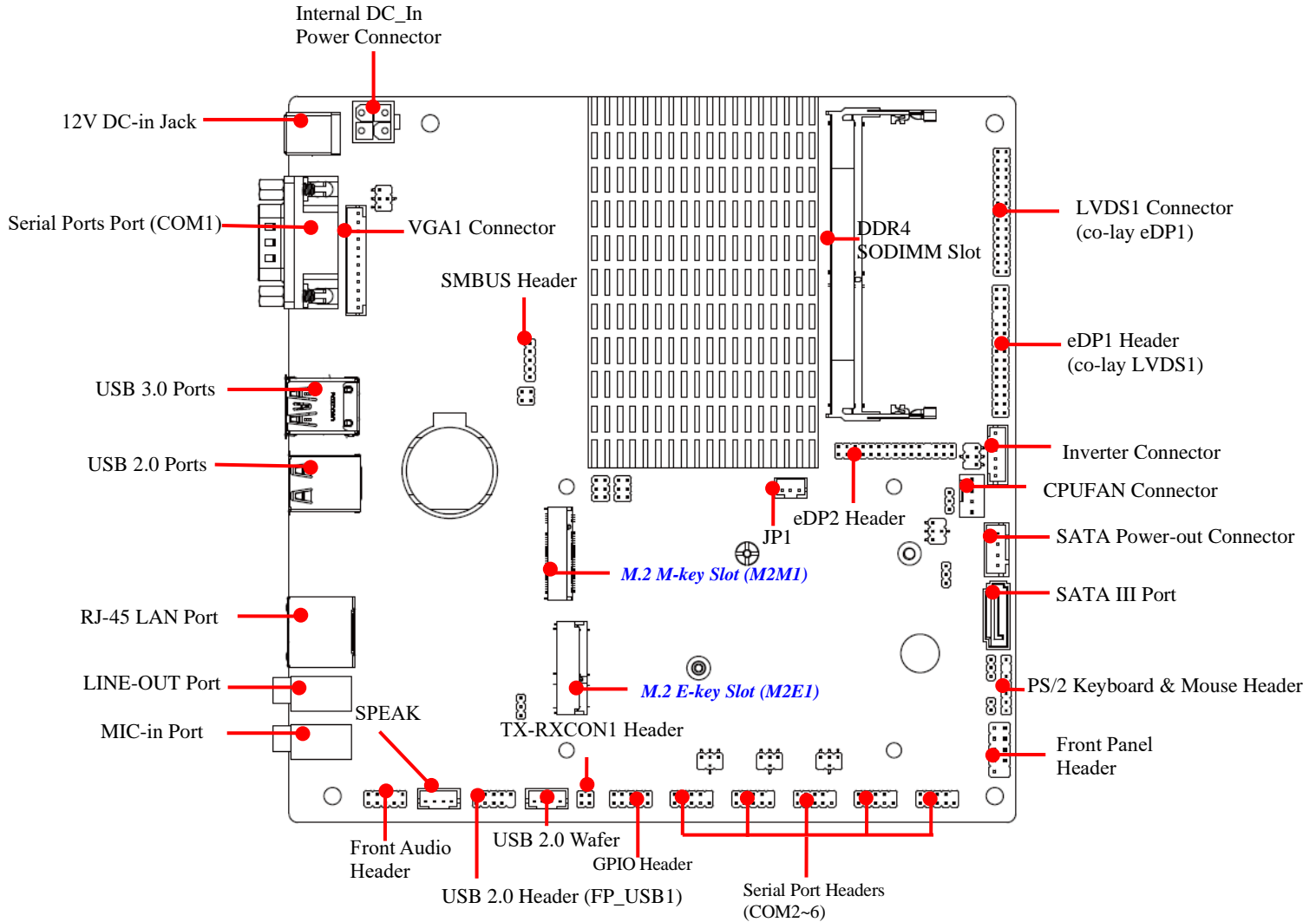
LI1S-5LV Series:



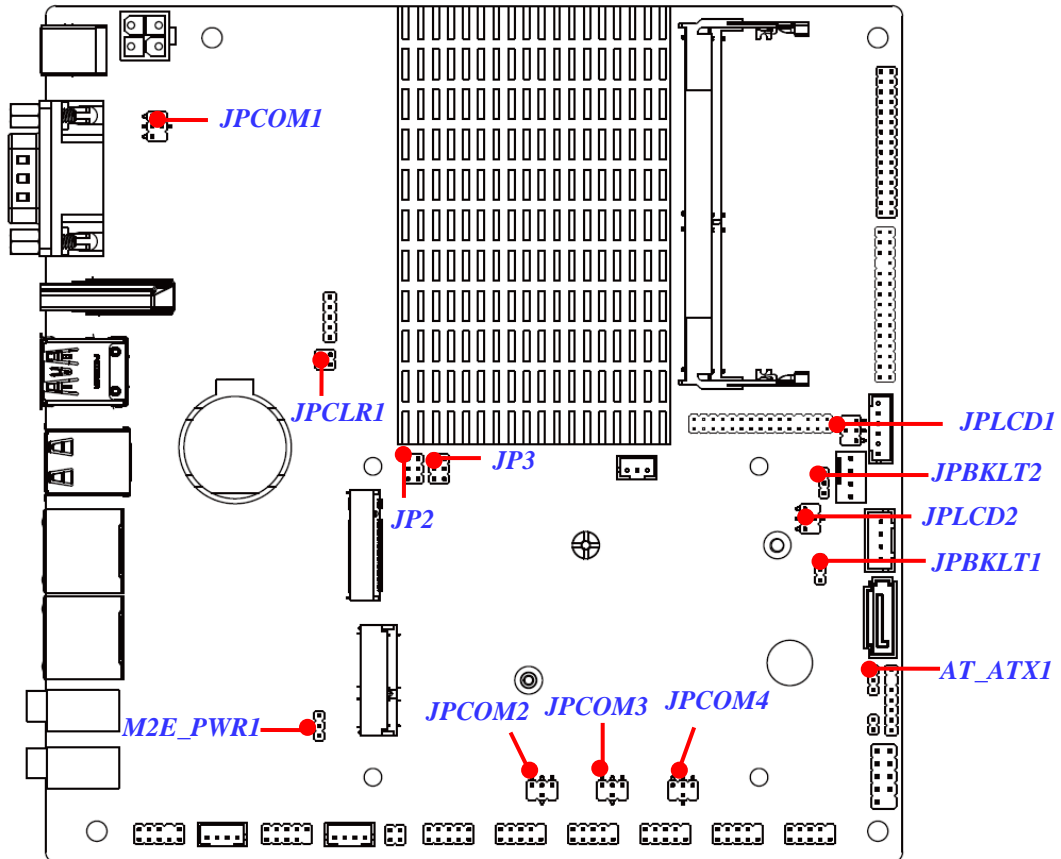
LI1S-50 Series:



LI1S-50V Series:



Motherboard Jumper Position



***Note:** The above photos are using the LI1S-5L board as an example

***Note:** The diagrams used for illustration in this manual are from model LI1S-5L, unless otherwise stated

Jumper

Jumper	Name	Description
JP2 & JP3	M2M1 Connector Function Select	6-pin Block (2.0 pitch)
JPCOM1	COM1 Port Pin9 Function Select	4-pin Block (2.0 pitch)
JPCOM2	COM2 Header Pin9 Function Select	4-pin Block (2.0 pitch)
JPCOM3	COM3 Header Pin9 Function Select	4-pin Block (2.0 pitch)
JPCOM4	COM4 Header Pin9 Function Select	4-pin Block (2.0 pitch)
JPLCD1	LVDS1/eDP1 LCD Panel VCC Select	4-pin Block (2.0 pitch)
JPLCD2	eDP2 LCD Panel VCC Select	4-pin Block (2.0 pitch)
JPBKLT1	LVDS1/eDP1 LCD BACKLIGHT VCC Select	3-pin Block (2.0 pitch)
JPBKLT2	eDP2 LCD BACKLIGHT VCC Select	3-pin Block (2.0 pitch)
JPCLR1	PIN (1-2) = Clear CMOS PIN (3-4) = TXE Override	4-pin Block (2.0 pitch)
M2E_PWR1	M.2 E-key Power Select	3-pin Block (2.0 pitch)
AT_ATX1	AT/ATX Mode Select	3-pin Block (2.0 pitch)

Connectors

Connector	Name
DCIN1	12V DC-in Power Jack
ATX12V1	4-Pin 12V Power Connector
USB1	USB 3.0 Port Connector X2
USB2	USB 2.0 Port Connector X2
USB3	USB 2.0 Wafer
LAN1 (<i>Optional</i>)	RJ-45 LAN Connector
LAN2	RJ-45 LAN Connector
LINE-OUT	Line-out Connector
MIC	MIC Connector
SPEAK_CON1	3W Amplifier Connector
SATA1	SATAIII Connector

SATAPWR1	SATA Power out Connector
CPU FAN	CPU FAN Connector
JP1	Inverter Light Control Wafer (Factory Option)
HDMI1 (Optional)	HDMI Port Connector

***Note:** LAN1 is only optional for LI1S-50 & LI1S-50V series;

***Note:** HDMI1 is only optional for LI1S-5L & LI1S-50 series;

Headers

Header & Wafers	Name	Description
FP_JW1	Front Panel Header (PWR LED/ HD LED/Power Button /Reset)	9-pin Block (2.54 pitch)
FP_AUDIO1	Front Panel Audio Header	9-pin Block (2.0 pitch)
FP_USB1	USB 2.0 Port Header	9-pin Block (2.0 pitch)
SMBUS1	SMBUS Header	5-pin Block (2.0 pitch)
GPIO	GPIO Header	10-pin Block (2.0 pitch)
COM2/3/4/5/6	Serial Port Header	9-pin Block (2.0 pitch)
TX-RXCON1	Front Panel COM2&COM3 RS485	4-pin Block (2.0 pitch)
INVERTER1	Inverter Wafer	6-pin Block (2.0 pitch)
LVDS1 (Optional)	LVDS1 Header (co-lay eDP1)	30-pin Block (2.0 pitch)
eDP1 (Optional)	eDP1 Header (co-lay LVDS1)	29-pin Block (2.0 pitch)
eDP2	eDP2 Header	29-pin Block (2.0 pitch)
PS2KBMS	PS2 keyboard & Mouse Header	6-pin Block(2.0 pitch)
VGA1	VGA Header	12-pin Block(2.54pitch)

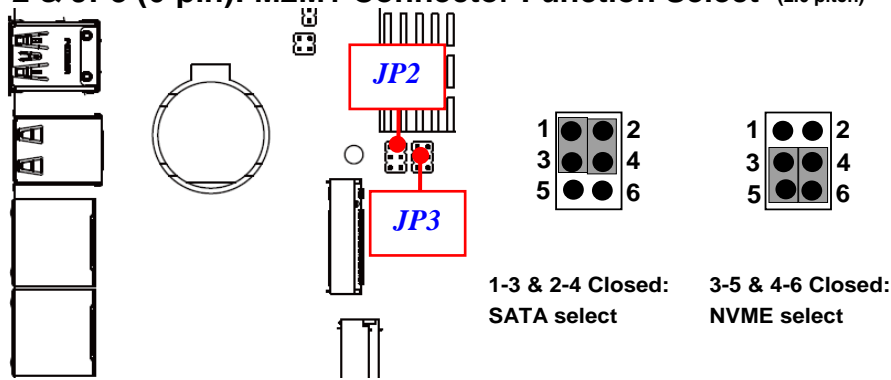
***Note:** VGA1 is only optional for LI1S-5LV & LI1S-50V series;

Chapter 2

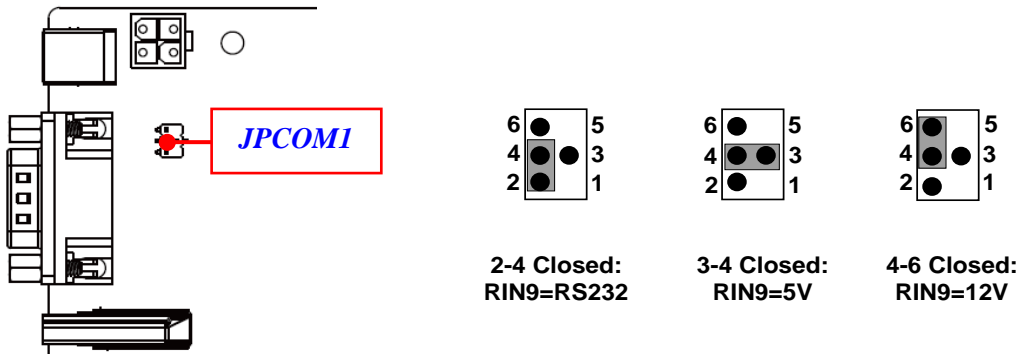
Hardware Installation

2-1 Jumper Setting

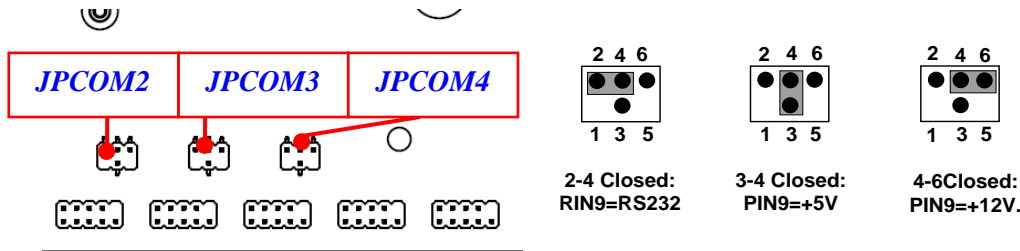
(1) JP2 & JP3 (6-pin): M2M1 Connector Function Select (2.0 pitch)



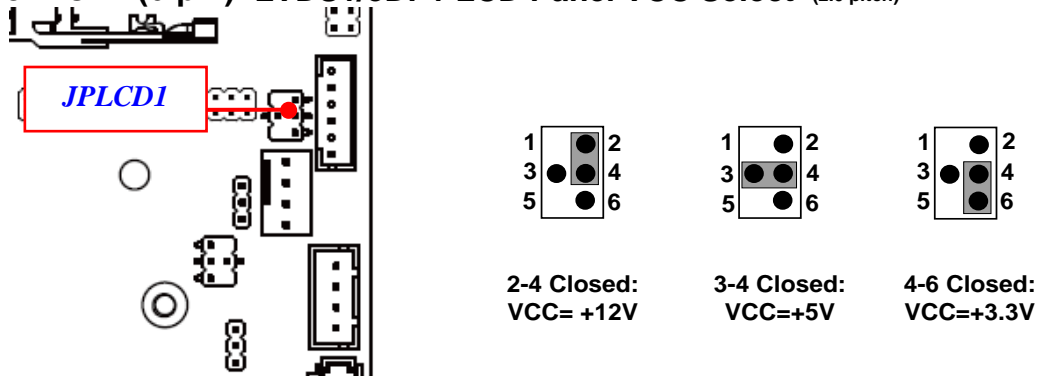
(2) JPCOM1 (4-pin): COM1 Port Pin9 Function Select (2.0 pitch)



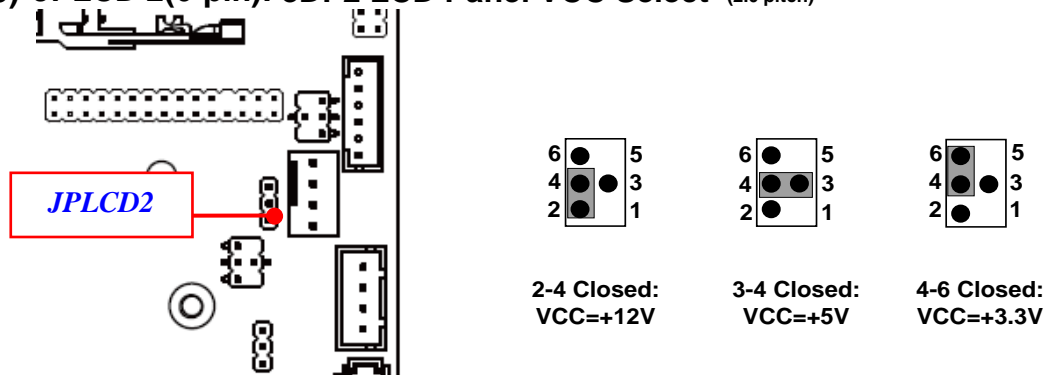
(3) JPCOM2/3/4 (4-pin): COM2/3/4 Header Pin9 Function Select (2.0 pitch)



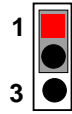
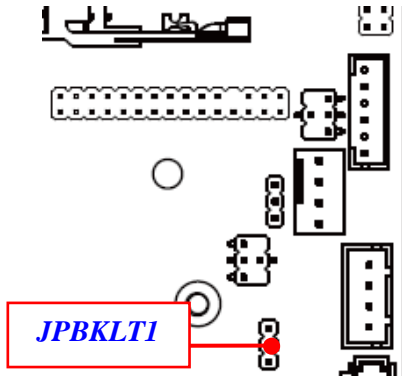
(4) JPLCD1 (6-pin): LVDS1/eDP1 LCD Panel VCC Select (2.0 pitch)



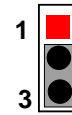
(5) JPLCD2 (6-pin): eDP2 LCD Panel VCC Select (2.0 pitch)



(6) JPBKLT1 (3-pin): LVDS1/eDP1 LCD BACKLIGHT VCC Select (2.0 pitch)

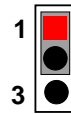
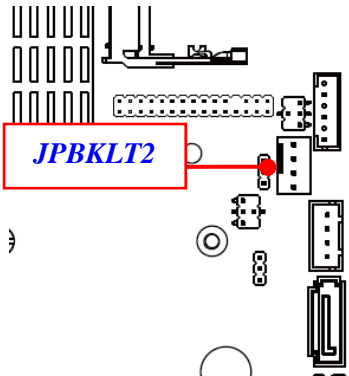


1-2 Closed: VCC=+5V

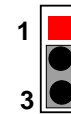


2-3 Closed: VCC=12V

(7) JPBKLT2 (3-pin): eDP2 LCD BACKLIGHT VCC Select (2.0 pitch)

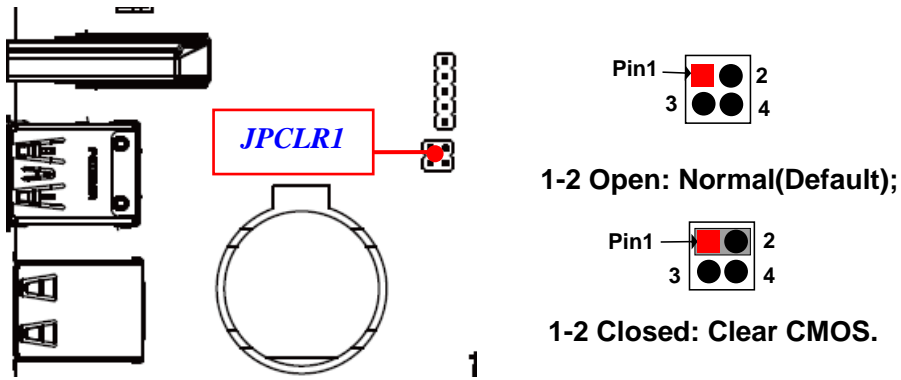


1-2 Closed: VCC=+5V

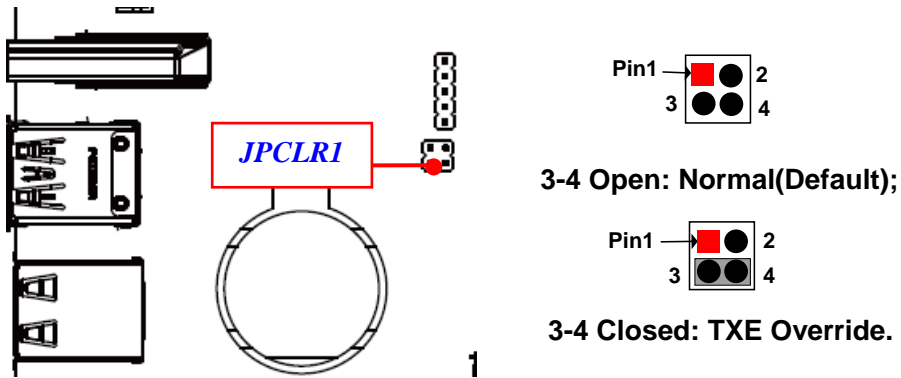


2-3 Closed: VCC=12V

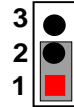
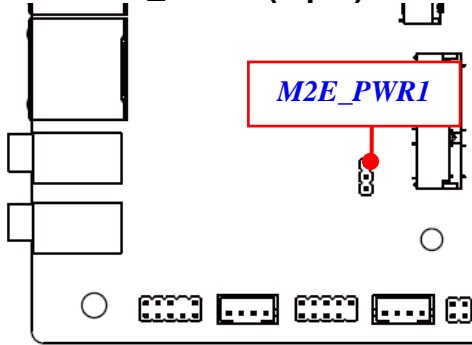
(8) Pin (1-2) of JPCLR1 (4-pin): Clear CMOS (2.0 pitch)



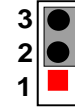
(9) Pin (3-4) of JPCLR1 (4-pin): TXE Override (2.0 pitch)



(10) **M2E_PWR1 (3-pin): M.2 E-key Power Select** (2.0 pitch)

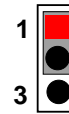
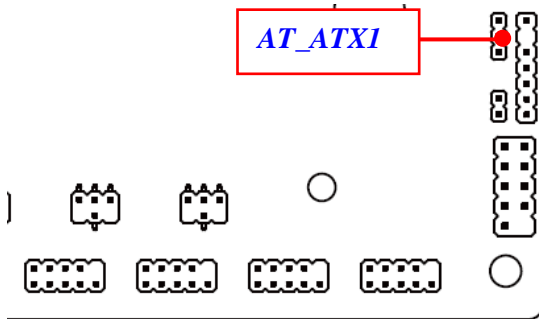


1-2 Closed:
VCC= VCC3

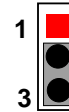


2-3 Closed:
VCC= 3VSB

(11) **AT_ATX1 (3-pin): AT/ATX Mode Select** (2.0 pitch)



1-2 Closed: ATX Mode(Default);



2-3 Closed: AT Mode









***ATX Mode Selected:** Press power button to power on after power input ready;
AT Mode Selected: Directly power on as power input ready

2-2 Connectors and Headers

2-2-1 Connectors

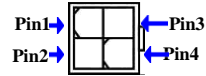
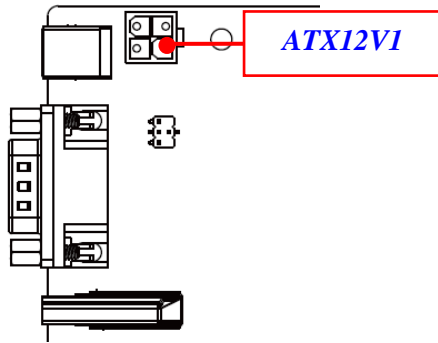
(1) Rear Panel Connectors

** Refer to Page-3 Rear IO Diagram.*

Icon	Name	Function
	12V DC-in Power Jack	For user to connect compatible power adapter to provide power supply for the system.
	COM Port	Mainly for user to connect external MODEM or other devices that supports serial communications Interface.
	RJ-45 LAN Port	This connector is standard RJ-45 LAN jack for Network connection.
	HDMI Port	To connect display device that support HDMI specification.
	USB 3.0 Ports	To connect USB keyboard, mouse or other devices compatible with USB specification. USB 3.1 ports supports up to 5Gbps data transfer rate.
	USB 2.0 Ports	To connect USB keyboard, mouse or other devices compatible with USB specification.
	Line-Out Connector	For user to connect external speaker, earphones, etc to transfer system audio output.
	Mic-in Connector	For user to connect external microphone, etc to transfer external microphone into system.

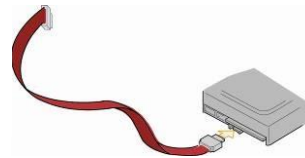
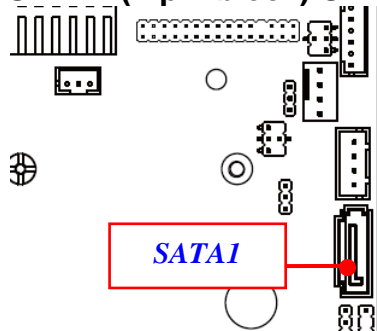
***Note:** HDMI Port is only optional for LI1S-5L & LI1S-50 series;

(2) ATX12V1 (4-pin block): ATX12V Type Power Connector



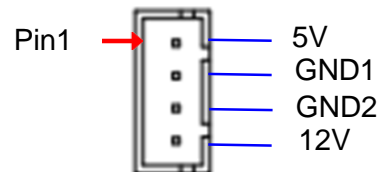
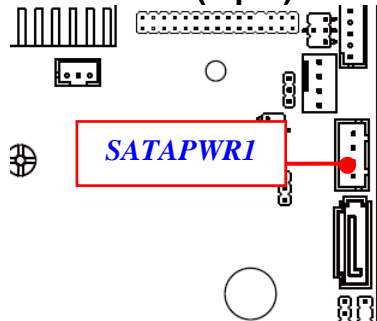
Pin No.	Definition
1	GND
2	GND
3	+12V
4	+12V

(3) SATA1 (7-pin block):SATAIII Port connector

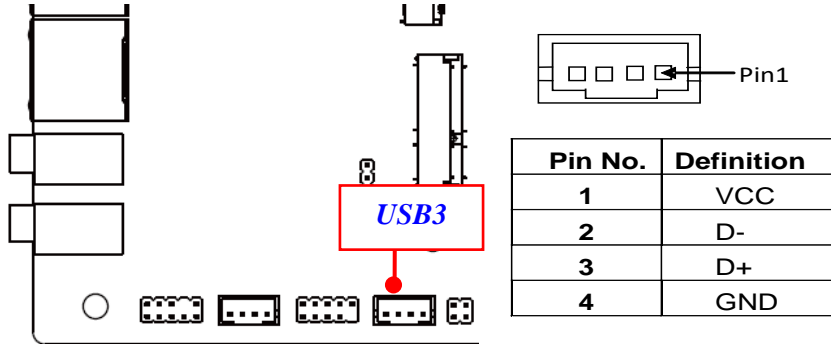


Pin No.	Definition
1	GND
2	TXP
3	TXN
4	GND
5	RXN
6	RXP
7	GND

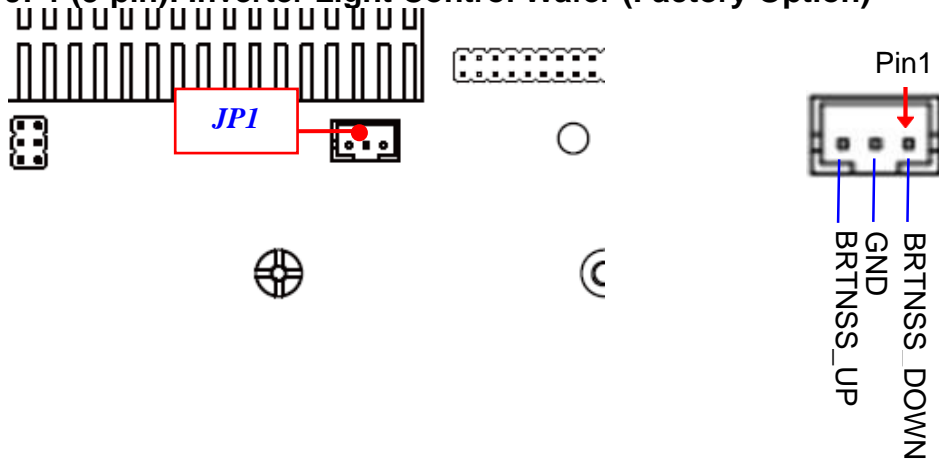
(4) SATAPWR1 (4-pin): SATA HDD Power-Out Connector



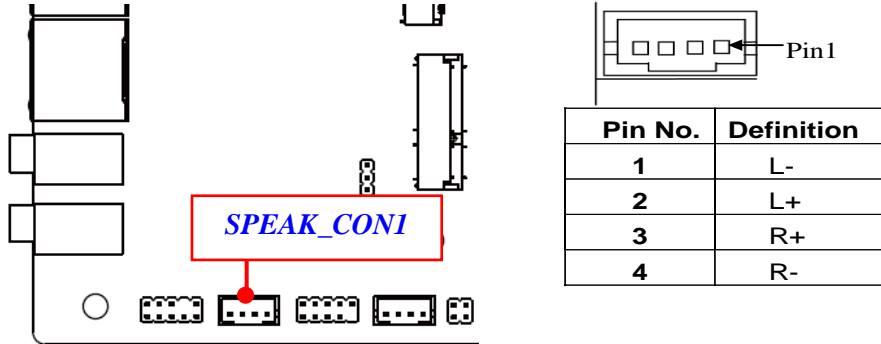
(5) USB3 (4-pin): USB 2.0 Connector



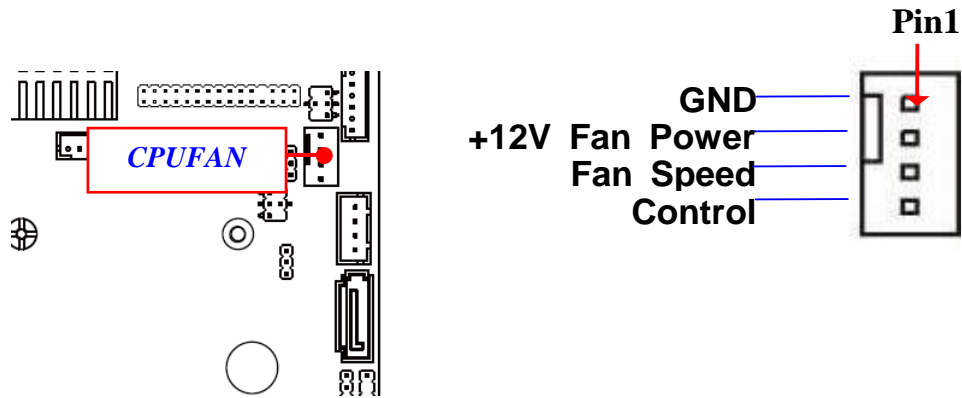
(6) JP1 (3-pin): Inverter Light Control Wafer (Factory Option)



(7) SPEAK_CON1 (4-pin): 3W Amplifier Connector

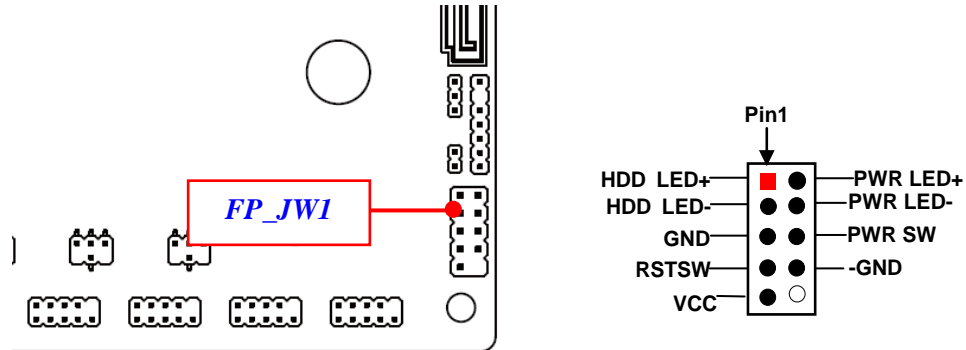


(8) CPUFAN (4-pin): Fan Connector

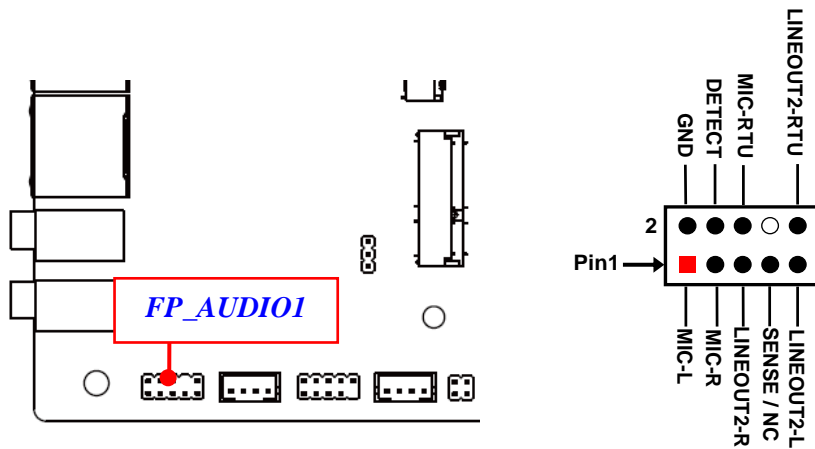


2-2-2 Headers

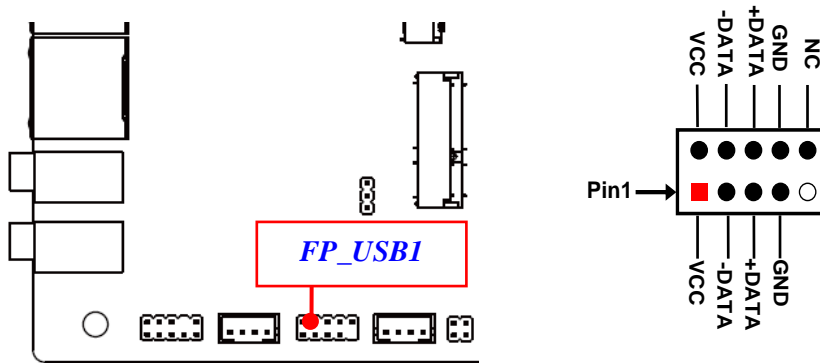
(1) FP_JW1 (9-pin): Front Panel Header (2.54 pitch)



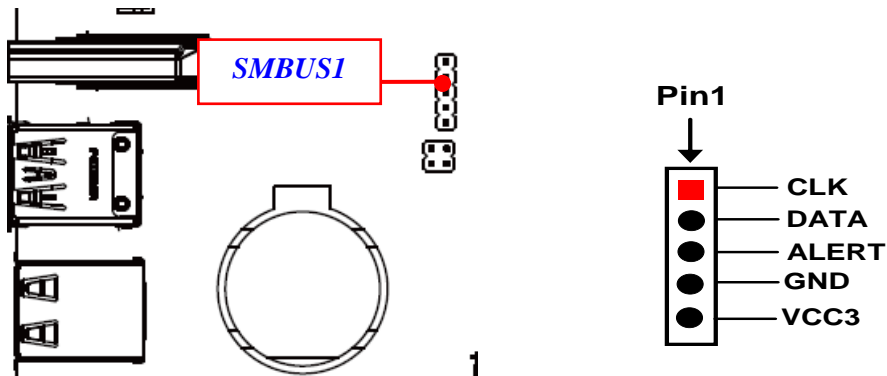
(2) FP_AUDIO1 (9-pin): Line-Out, MIC-In Header (2.0 pitch)



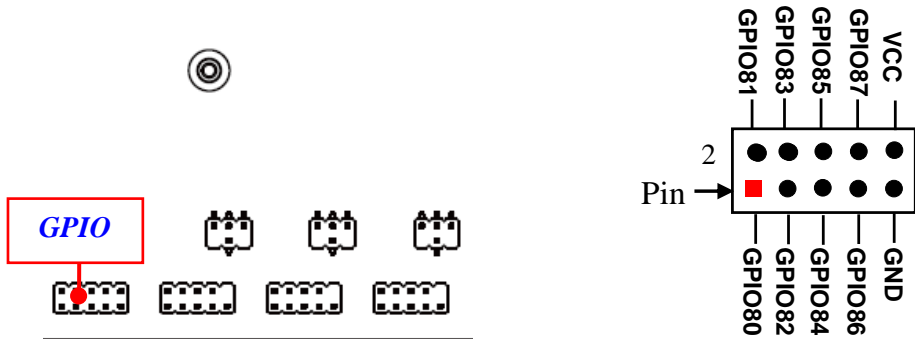
(3) FP_USB1 (9-pin): USB 2.0 Port Headers (2.0 pitch)



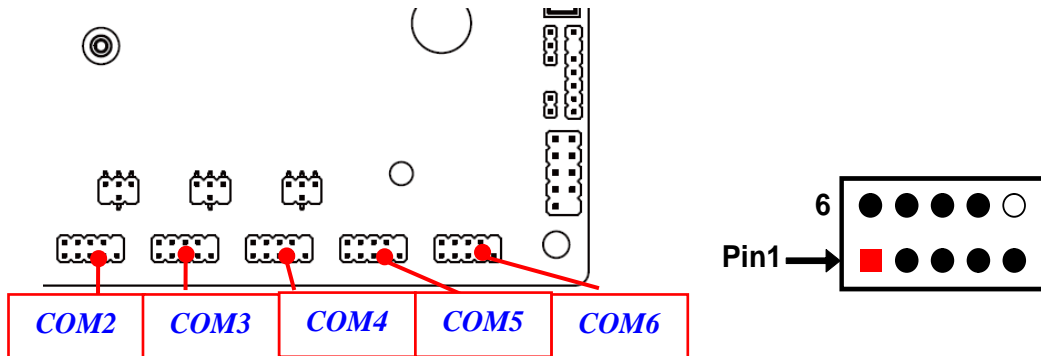
(4) SMBUS1 (5-Pin): SMBUS Header (2.0 pitch)



(5) GPIO(10-pin): GPIO Header (2.0 pitch)

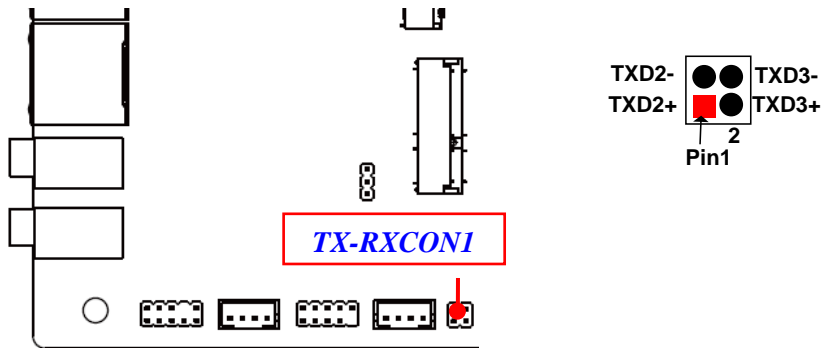


(6) COM2/COM3/COM4/COM5/COM6 (9-pin): Serial Port Header (2.0 pitch)



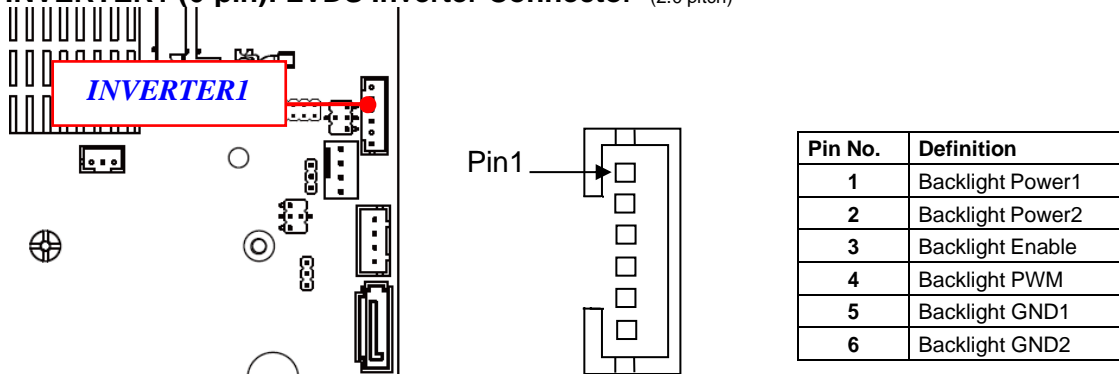
Pin NO.	Pin 6	Pin 7	Pin 8	Pin 9	
RS232	DSR	RTS	CTS	RI	
Pin NO.	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5
RS232	DCD	RXD	TXD	DTR	GND

(7) TX-RXCON1 (4-pin): COM2&COM3 RS485 (2.0 pitch)

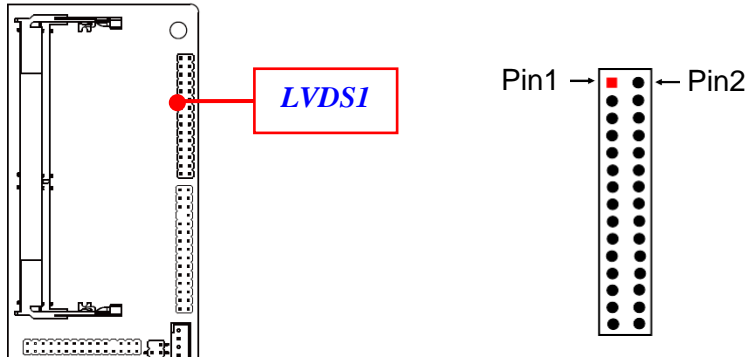


***Note:** In the case that COM2&COM3 header supports RS422, RS485 function, besides connecting compatible COM cable for RS422 or RS 485 function, user also needs to go to BIOS to set corresponding 'Transmission Mode Select' for COM2&COM3 (refer to Page-37).

(8) INVERTER1 (6-pin): LVDS Inverter Connector (2.0 pitch)

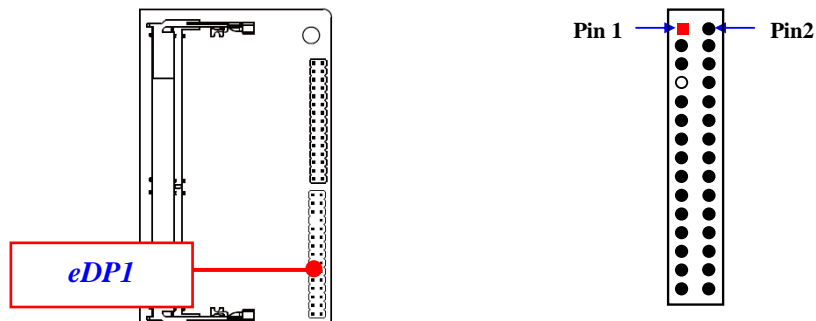


(9) LVDS1 (30-pin): 24-bit Dual Channel LVDS Header (2.0 pitch)



Pin Define	Pin NO.	Pin NO.	Pin Define
LCD_VCC	Pin 1	Pin 2	LCD_VCC
LCD_VCC	Pin 3	Pin 4	GND
GND	Pin 5	Pin 6	GND
LVDSA_DATAN0	Pin 7	Pin 8	LVDSA_DATAP0
LVDSA_DATAN1	Pin 9	Pin 10	LVDSA_DATAP1
LVDSA_DATAN2	Pin 11	Pin 12	LVDSA_DATAP2
GND	Pin 13	Pin 14	GND
LVDS_CLKAN	Pin 15	Pin 16	LVDS_CLKAP
LVDSA_DATAN3	Pin 17	Pin 18	LVDSA_DATAP3
LVDSB_DATAN0	Pin 19	Pin 20	LVDSB_DATAP0
LVDSB_DATAN1	Pin 21	Pin 22	LVDSB_DATAP1
LVDSB_DATAN2	Pin 23	Pin 24	LVDSB_DATAP2
GND	Pin 25	Pin 26	GND
LVDS_CLKBN	Pin 27	Pin 28	LVDS_CLKBP
LVDSB_DATAN3	Pin 29	Pin 30	LVDSB_DATAP3

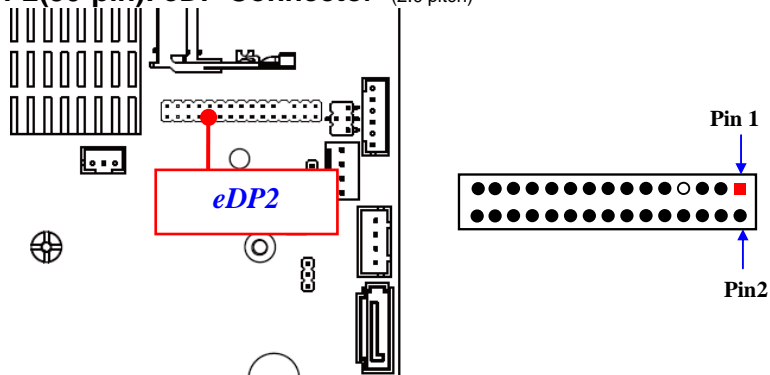
(10) eDP1 (30-pin): eDP Connector (2.0 pitch)



Pin Define	Pin No.	Pin No.	Pin Define
BKLT1_PW	Pin 1	Pin 2	BKLT1_PW
BKLT1_PW	Pin 3	Pin 4	GND
GND	Pin 5	Pin 6	NC
N/A	Pin 7	Pin 8	EDP1_SCL
EDP1_VCC	Pin 9	Pin 10	EDP1_SDA
EDP1_VCC	Pin 11	Pin 12	EDP1_BKLT_CTL
GND	Pin 13	Pin 14	GND
L_BKLT_EN	Pin 15	Pin 16	EDP1_AUXP_C
EDP1_HPD	Pin 17	Pin 18	EDP1_AUXN_C
GND	Pin 19	Pin 20	GND
EDP1_LANE+3	Pin 21	Pin 22	EDP1_LANE-3
DP1_LANE+2	Pin 23	Pin 24	EDP1_LANE-2
GND	Pin 25	Pin 26	GND
EDP1_LANE+1	Pin 27	Pin 28	EDP1_LANE-1
EDP1_LANE+0	Pin 29	Pin 30	EDP1_LANE-0

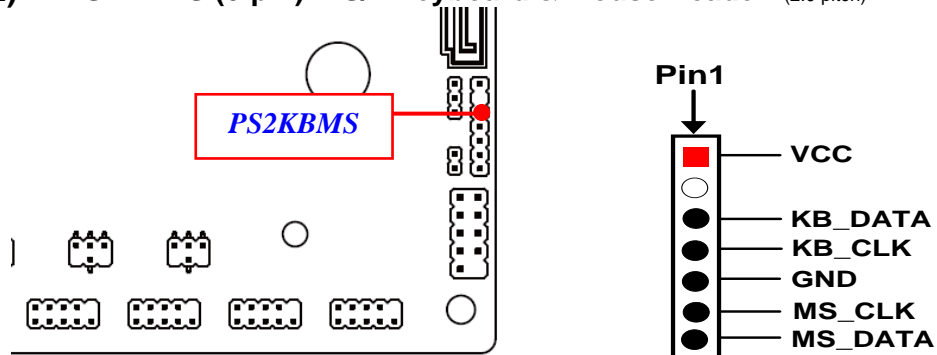
***Note:** User can choose between LVDS1 and EDP1 display options, but only one of them can function at the same time. Before connecting compatible cable to corresponding header/wafer, user should go to BIOS settings and set it as [LVDS] or [EDP] based on actual configuration.

(11) eDP2(30-pin): eDP Connector (2.0 pitch)

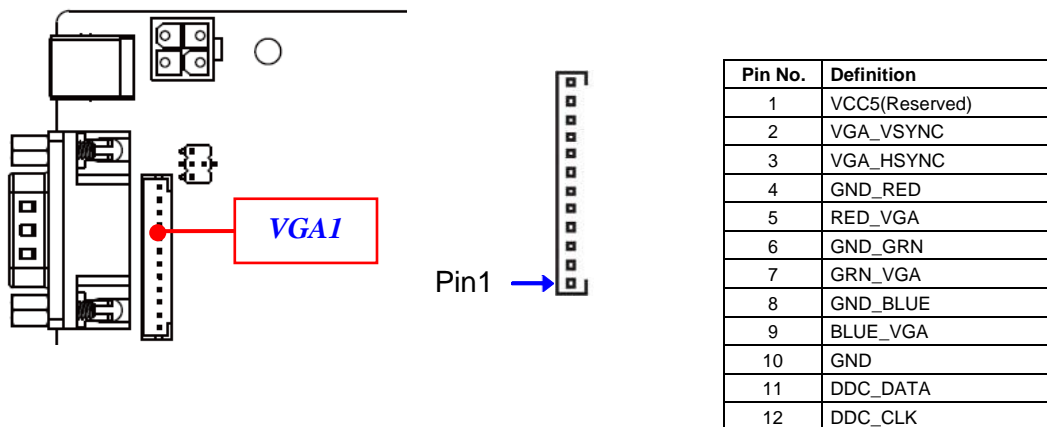


Pin Define	Pin No.	Pin No.	Pin Define
BKLT2_PW	Pin 1	Pin 2	BKLT2_PW
BKLT2_PW	Pin 3	Pin 4	GND
GND	Pin 5	Pin 6	NC
N/A	Pin 7	Pin 8	EDP2_SCL
EDP2_VCC	Pin 9	Pin 10	EDP2_SDA
EDP2_VCC	Pin 11	Pin 12	EDP2_BKLT_CTL
GND	Pin 13	Pin 14	GND
L_BKLT_EN	Pin 15	Pin 16	EDP2_AUXP_C
EDP2_HPD	Pin 17	Pin 18	EDP2_AUXN_C
GND	Pin 19	Pin 20	GND
EDP2_LANE+3	Pin 21	Pin 22	EDP2_LANE-3
DP2_LANE+2	Pin 23	Pin 24	EDP2_LANE-2
GND	Pin 25	Pin 26	GND
EDP2_LANE+1	Pin 27	Pin 28	EDP2_LANE-1
EDP2_LANE+0	Pin 29	Pin 30	EDP2_LANE-0

(12) PS2KBMS (6-pin): PS/2 Keyboard & Mouse Header (2.0 pitch)



(13) VGA1 (12-pin): VGA Header (2.54 pitch)



***Note:** VGA1 Header is only optional for LI1S-5LV & LI1S-50V series;

Chapter 3

Introducing BIOS

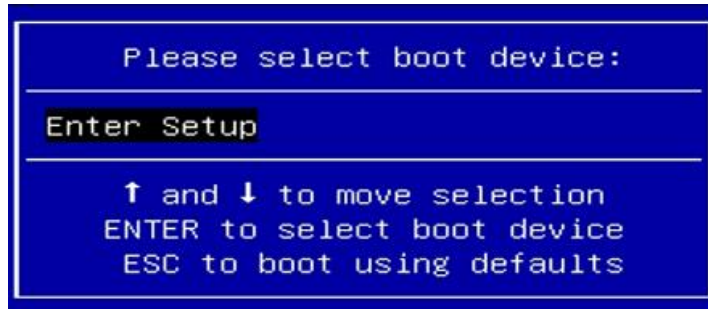
Notice! The BIOS options in this manual are for reference only. Different configurations may lead to difference in BIOS screen and BIOS screens in manuals are usually the first BIOS version when the board is released and may be different from your purchased motherboard. Users are welcome to download the latest BIOS version from our official website.

The BIOS is a program located on a Flash Memory on the motherboard. This program is a bridge between motherboard and operating system. When you start the computer, the BIOS program will gain control. The BIOS first operates an auto-diagnostic test called POST (power on self test) for all the necessary hardware, it detects the entire hardware device and configures the parameters of the hardware synchronization. Only when these tasks are completed done it gives up control of the computer to operating system (OS). Since the BIOS is the only channel for hardware and software to communicate, it is the key factor for system stability, and in ensuring that your system performance as its best.

3-1 Entering Setup

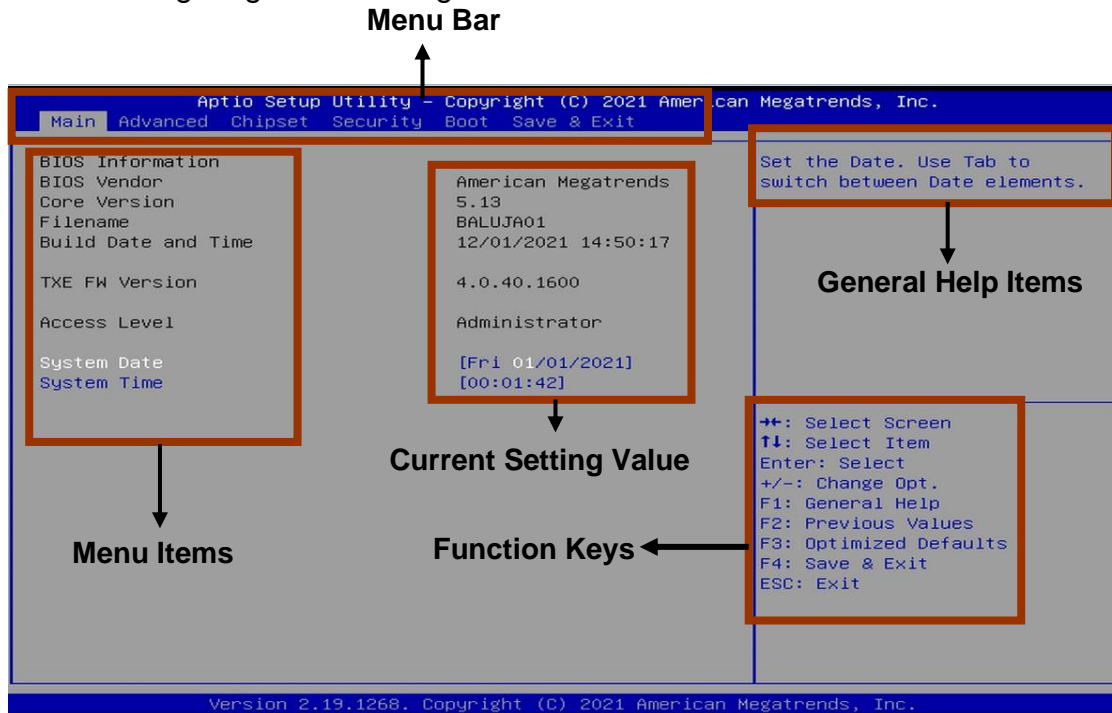
Power on the computer and by pressing immediately allows you to enter Setup. If the message disappears before your respond and you still wish to enter Setup, restart the system to try again by turning it OFF then ON or pressing the “RESET” button on the system case. You may also restart by simultaneously pressing <Ctrl>, <Alt> and <Delete> keys. If you do not press the keys at the correct time and the system does not boot, an error message will be displayed and you will again be asked to

Press **** to enter Setup; press **< F7>** to enter pop-up Boot menu.



3-2 BIOS Menu Screen

The following diagram show a general BIOS menu screen:



3-3 Function Keys

In the above BIOS Setup main menu of, you can see several options. We will explain these options step by step in the following pages of this chapter, but let us first see a short description of the function keys you may use here:

- Press (left, right) to select screen;
- Press (up, down) to choose, in the main menu, the option you want to confirm or to modify.
- Press <Enter> to select.
- Press <+>/<-> keys when you want to modify the BIOS parameters for the active option.
- [F1]: General help.
- [F2]: Previous values.
- [F3]: Optimized defaults.
- [F4]: Save & Exit.
- Press <Esc> to exit from BIOS Setup.

3-4 Getting Help

Main Menu

The on-line description of the highlighted setup function is displayed at the top right corner the screen.

Status Page Setup Menu/Option Page Setup Menu

Press F1 to pop up a small help window that describes the appropriate keys to use and the possible selections for the highlighted item. To exit the Help Window, press <Esc>.

3-5 Menu Bars

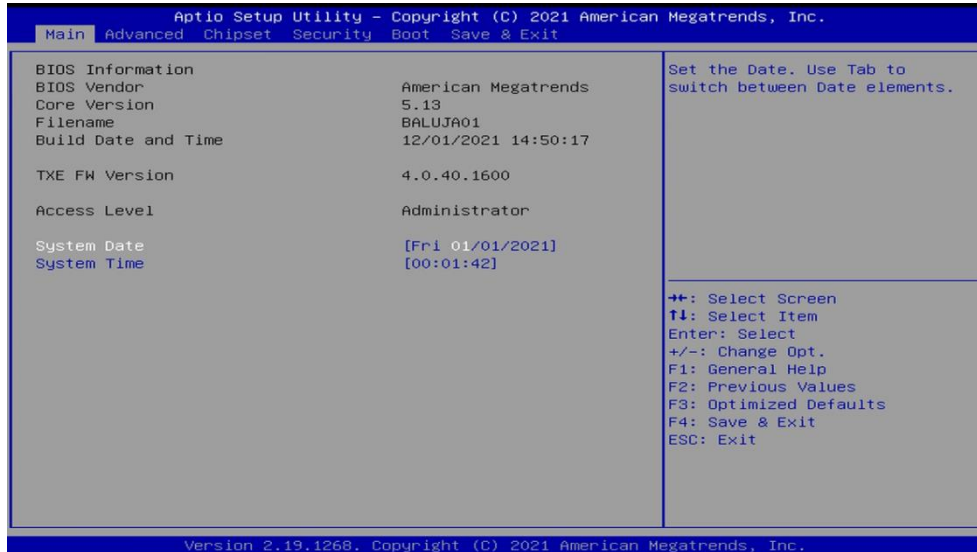
There are six menu bars on top of BIOS screen:

Main	To change system basic configuration
Advanced	To change system advanced configuration
Chipset	To change chipset configuration
Security	Password settings
Boot	To change boot settings
Save & Exit	Save setting, loading and exit options.

User can press the right or left arrow key on the keyboard to switch from menu bar. The selected one is highlighted.

3-6 Main Menu

Main menu screen includes some basic system information. Highlight the item and then use the <+> or <-> and numerical keyboard keys to select the value you want in each item.



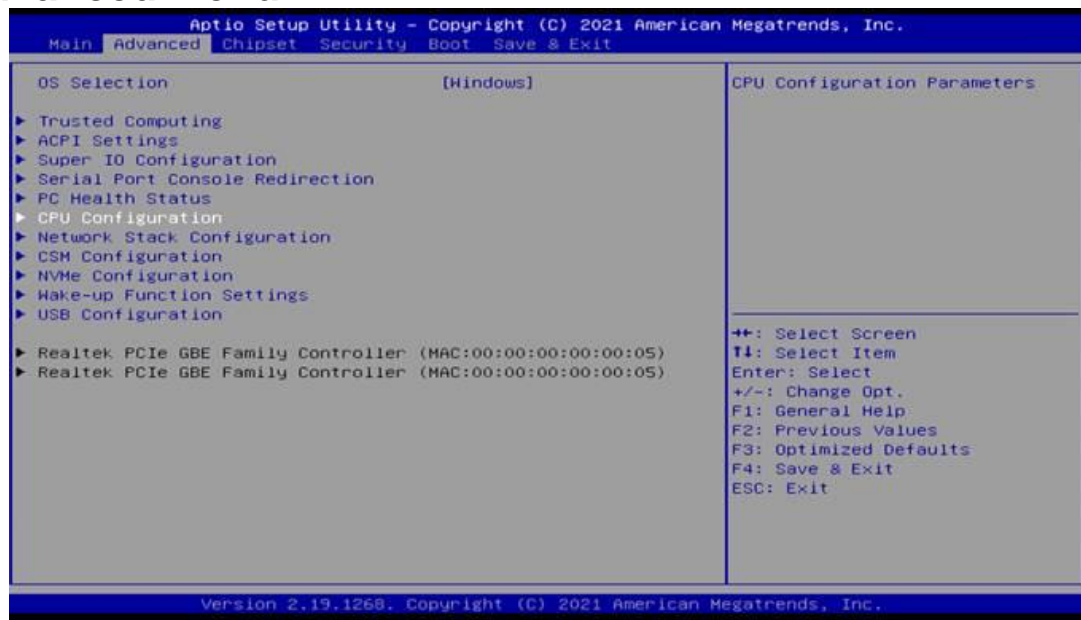
System Date

Set the date. Please use [Tab] to switch between data elements.

System Time

Set the time. Please use [Tab] to switch between time elements

3-7 Advanced Menu



OS Selction

The optional settings:[Windows];[Intel Linux];[MSDOS]

**Note:*User need to go to this item to select the OS mode before installing Corresponding OS driver,otherwise problems will occur when installing the driver

▶ **Trusted Computing**

Press [Enter] to enable or disable Security Device Support.

TPM 2.0 Device Found

Security Device Support

Use this item to enable or disable BIOS support for security device. O.S. will not show Security Device. TCG EFI protocol and INT1A interface will not be available.

The optional settings are: [Disabled]; [Enabled].

When set as [Enabled], user can make further settings in the following items:

SHA-1 PCR Bank

Use this item to Enable or Disable SHA-1 PCR Bank. Auto means enabled.
The optional settings are: [Disabled]; [Enabled].

SHA256 PCR Bank

Use this item to enable or disable SHA256 PCR Bank.
The optional settings are: [Disabled];[Enabled].

Pending Operation

Use this item to set an operation for the Security Device.

**Note: Your Computer will reboot during restart in order to change State of Security Device.*

The optional settings are: [None]; [TPM Clear].

▶ **ACPI Settings**

Press [Enter] to make settings for the following sub-items:

ACPI Sleep State

Use this item to select the highest ACPI sleep state the system will enter when the suspend button is pressed.

The optional settings are: [Suspend Disabled]; [S3 (Suspend to RAM)].

▶ **Super I/O Configuration**

Press [Enter] to make settings for the following sub-items:

Super IO Configuration

Serial Port 1 Configuration

Press [Enter] to make settings for the following items:

Serial Port

Use this item to enable or disable Serial Port (COM).

The optional settings are: [Disabled]; [Enabled].

When set as **[Enabled]**, user can make further settings in the following items:

Device Settings

Change Settings

Use this item to select an optimal setting for Super IO Device.

The optional settings are:

[Auto];

[IO=3F8h; IRQ=4;];

[IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12].

Serial Port 2 Configuration

Press [Enter] to make settings for the following items:

Serial Port

Use this item to enable or disable Serial Port (COM).

The optional settings are: [Disabled]; [Enabled].

When set as **[Enabled]**, user can make further settings in the following items:

Device Settings

Change Settings

Use this item to select an optimal setting for Super IO Device.

The optional settings are:

[Auto];

[IO=2F8h; IRQ=3;];

[IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12].

Transmission Mode Select

The optional settings: [RS232]; [RS485]

Serial Port 3 Configuration

Press [Enter] to make settings for the following items:

Serial Port

Use this item to enable or disable Serial Port (COM).

The optional settings are: [Disabled]; [Enabled].

When set as **[Enabled]**, user can make further settings in the following items:

Device Settings

Change Settings

Use this item to select an optimal setting for Super IO Device.

The optional settings are:

[Auto];

[IO=3F8h; IRQ=7;];

[IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2E0h;IRQ=3,4,5,6,7,9,10,11,12].

Transmission Mode Select

The optional settings: [RS232]; [RS485]

Serial Port 4 Configuration

Press [Enter] to make settings for the following items:

Use this item to enable or disable Serial Port (COM).

The optional settings are: [Disabled]; [Enabled].

When set as **[Enabled]**, user can make further settings in the following items:

Serial Port

Use this item to enable or disable Serial Port (COM).

The optional settings are: [Disabled]; [Enabled].

When set as **[Enabled]**, user can make further settings in the following items:

Device Settings

Change Settings

Use this item to select an optimal setting for Super IO Device.

The optional settings are:

[Auto];

[IO=2E8h; IRQ=7;];

[IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2F8h;IRQ=3,4,5,6,7,9,10,11,12];

[IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12];
[IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12];
[IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12].

Serial Port 5 Configuration

Press [Enter] to make settings for the following items:

Serial Port

Use this item to enable or disable Serial Port (COM).

The optional settings are: [Disabled]; [Enabled].

When set as **[Enabled]**, user can make further settings in the following items:

Device Settings

Change Settings

Use this item to select an optimal setting for Super IO Device.

The optional settings are:

[Auto];

[IO=2F0h; IRQ=10;];

[IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12].

Serial Port 6 Configuration

Press [Enter] to make settings for the following items:

Serial Port

Use this item to enable or disable Serial Port (COM).

The optional settings are: [Disabled]; [Enabled].

When set as **[Enabled]**, user can make further settings in the following items:

Device Settings

Change Settings

Use this item to select an optimal setting for Super IO Device.

The optional settings are:

[Auto];

[IO=2E0h; IRQ=10;];

[IO=3F8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2F8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=3E8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2E8h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2F0h; IRQ=3,4,5,6,7,9,10,11,12];

[IO=2E0h; IRQ=3,4,5,6,7,9,10,11,12].

ERP Support

Use this item to set Energy-Related Products function.

The optional settings are: [Disabled]; [Enabled].

This item should be set as [**Disabled**] if you wish to have all active wake-up functions.

Case Open Detect

Use this item to detect Case has already open or not. Show message in POST.

The optional settings are: [Disabled]; [Enabled].

When set as [**Enabled**], system will detect if pin 1-2 of jumper COPEN1 has been short or not (refer to **Page 16**);if pin 1-2 of jumper COPEN1 *is short, system will show Case Open Message during POST*

WatchDog Reset Timer

Use this item to enable or disable WDT reset function.

The optional settings: [Disabled]; [Enabled].

When set as [**Enabled**], the following sub-items shall appear:

WatchDog Wake-up Timer

This item support WDT wake-up while '**ERP Support**' is set as [Auto].

The optional settings: [Disabled]; [Enabled].

When set as [**Enabled**], the following sub-items shall appear:

ATX Power Emulate AT Power

This item support Emulate AT power function, MB power On/Off control by power

supply. Use needs to select 'AT or ATX Mode' on MB jumper at first (*refer to Page 17 AT_ATX1 Pin 1&2 jumper setting for ATX Mode & Pin 2&3 jumper setting for ATMode Select*).

▶ **Serial Port Console Redirection**

Press [Enter] to make settings for the following sub-items:

COM1

Console Redirection

Use this item to enable or disable COM1 Console Redirection.

The optional settings are: [Disabled]; [Enabled].

When set as **[Enabled]**, user can make further settings in the '**Console Redirection Settings**' screen:

Console Redirection Settings

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

COM1

Console Redirection Settings

Terminal Type

The optional settings: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].

[ANSI]: Extended ASCII char set;

[VT100]: ASCII char set;

[VT100+]: Extends VT100 to support color, function keys, etc.;

[VT-UTF8]: Uses UTF8 encoding to map Unicode chars onto 1 or more bytes.

Bits per second

Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

The optional settings: [9600]; [19200]; [38400]; [57600]; [115200].

Data Bits

The optional settings: [7]; [8].

Parity

A parity bit can be sent with the data bits to detect some transmission errors.

The optional settings: [None]; [Even]; [Odd]; [Mark]; [Space].

[Even]: parity bit is 0 if the num of 1's in the data bits is even;

[Odd]: parity bit is 0 if num of 1's in the data bits is odd;

[Mark]: parity bit is always 1;

[Space]: parity bit is always 0;

[Mark] and **[Space]:** parity do not allow for error detection.

Stop Bits

Stop bits indicate the end of a serial data packet. (A start bit indicates the beginning). The standard setting is 1 stop bit. Communication with slow devices may require more than 1 stop bit.

The optional settings: [1]; [2].

Flow Control

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a "stop" signal can be sent to stop the data flow. Once the buffers are empty, a "start" signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

The optional settings: [None]; [Hardware RTS/CTS].

VT-UTF8 Combo Key Support

Use this item to enable VT-UTF8 Combination Key Support for ANSI/VT100 terminals.

The optional settings: [Disabled]; [Enabled].

Recorder Mode

With this mode enable only text will be sent. This is to capture Terminal data.

The optional settings: [Disabled]; [Enabled].

Resolution 100x31

Use this item to enable or disable extended terminal resolution.

The optional settings: [Disabled]; [Enabled].

Putty KeyPad

Use this item to select FunctionKey and KeyPad on Putty.

The optional settings: [VT100]; [Intel LINUX]; [XTERMR6]; [SCO]; [ESCN]; [VT400].

Legacy Console Redirection Settings

Legacy Serial Redirection Port

Select COM1 port to display redirection of Legacy OPROM Messages

The optional settings:[COM1]

Legacy OS Redirection Resolution

On Legacy OS, The Number of Rows and Columns supported redirection
The optional settings are: [80x24]; [80x25].

Redirection After BIOS Resolution

When Bootloader is selected, then Legacy Console Redirection is disabled before Booting to legacy OS. When Always Enable is selected, then Legacy Console Redirection is enabled for legacy OS. Default setting for this option is set to Always Enable

Console Redirection

The optional settings: [Disabled]; [Enabled]. When set as [Enabled], the following sub-items shall appear:

▶ **Console Redirection Settings**

The settings specify how the host computer and the remote computer (which the user is using) will exchange data. Both computers should have the same or compatible settings.

Press [Enter] to make settings for the following items:

Out-of-Band Mgmt Port

The optional setting is: [COM1].

Terminal Type

The optional settings: [VT100]; [VT100+]; [VT-UTF8]; [ANSI].

[VT-UTF8] is the preferred terminal type for out-of-band management. The next best choice is [VT100+] and then [VT100]. See above, in Console Redirection Settings page, for more help with Terminal Type/Emulation.

Bits per second

Use this item to select serial port transmission speed. The speed must be matched on the other side. Long or noisy lines may require lower speeds.

The optional settings: [9600]; [19200]; [57600]; [115200].

Flow Control

Flow control can prevent data loss from buffer overflow. When sending data, if the receiving buffers are full, a “stop” signal can be sent to stop the data flow. Once the buffers are empty, a “start” signal can be sent to re-start the flow. Hardware flow control uses two wires to send start/stop signals.

The optional settings: [None]; [Hardware RTS/CTS]; [Software Xon/Xoff].

Data Bits

The default setting is: [8].

**This item may or may not show up, depending on different configuration.*

Parity

The default setting is: [None].

**This item may or may not show up, depending on different configuration.*

Stop Bits

The default setting is: [1].

**This item may or may not show up, depending on different configuration.*

▶ **PC Health Status**

Press [Enter] to view current hardware health status,

▶ **CPU Configuration**

Press [Enter] to view current CPU configuration and make settings for the following sub-items:

VT-d

Use this item to enable or disable CPU VT-d.

The optional settings: [Enabled]; [Disabled].

EIST

Use this item to enable or disable Intel SpeedStep.

The optional settings: [Disabled]; [Enabled]

Turbo Mode

Use this item to enable Turbo Mode

The optional settings: [Disabled]; [Enabled].

C-States

Use this item to enable or disable C-State.

The optional settings: [Disabled]; [Enabled].

Enhanced C-states

Use this item to enable or disable C1E. When enabled, CPU will switch to minimum speed when all cores enter C-state.

The optional settings: [Disabled]; [Enabled].

Max Package C State

Use this item to Controls the Max Package C State that the processor will support
The optional settings: [PC1]; [CO]

Max Core C State

This option controls the max Core C State that cores will support.

The optional settings: [Fused Value]; [Core C10]; [Core C9] [Core C8];
[Core C 7];[Core C 6]; [Core C1]; [Unlimited].

▶ **Network Stack Configuration**

Press [Enter] to go to '**Network Stack**' screen to make further settings.

Network Stack

The optional settings are: [Enabled]; [Disabled].

When set as [Enabled], the following sub-items shall appear:

Ipv4 PXE Support

The optional settings are: [Disabled]; [Enabled].

Use this item to enable Ipv4 PXE Boot Support. When set as [Disabled], Ipv4 bootoption will not be created.

Ipv6 PXE Support

The optional settings are: [Disabled]; [Enabled].

Use this item to enable Ipv6 PXE Boot Support. When set as [Disabled], Ipv6 boot option will not be created.

PXE Boot Wait Time

Use this item to set wait time to press [ESC] key to abort the PXE boot.

Media Detect Count

Use this item to set number of times presence of media will be checked.

The optional settings range is from [1] to [50].

▶ **CSM Configuration**

Enable or Disable, Option ROM exection settings,ETC.

Press [Enter] to make settings for the following sub-items:

Boot option filter

This item controls Legacy/UEFI ROMs priority.

The optional settings are: [UEFI and Legacy]; [Legacy only]; [UEFI only].

Network

This item controls the execution of UEFI and Legacy PXE OpROM.
The optional settings are: [Do not launch]; [UEFI]; [Legacy].

Storage

This item controls the execution of UEFI and Legacy Storage OpROM.
The optional settings are: [Do not launch]; [UEFI]; [Legacy].

Other PCI devices

This item determines OpROM execution policy for devices other than Network, storage or video.
The optional settings are: [Do not launch]; [UEFI]; [Legacy].

▶ NVMe Configuration

Press [Enter] to view current NVMe Configuration.

**Note: options only when NVMe device is available*

▶ Wake-up Function Settings

Press [Enter] to make settings for the following sub-items:

Wake-up System with Fixed Time

Use this item to enable or disable system wake on alarm event.

The optional settings: [Disabled]; [Enabled].

When set as [Enabled], the following items shall appear

When set as [Enabled], the following items shall appear:

Wake-up Hour

Use this item to select 0-23. For example enter 3 for 3am and 15 for 3pm.

Wake-up Minute

Use this item to select 0-59.

Wake-up Second

Use this item to select 0-59.

**Note: This function is supported when 'ERP Support' is set as [Disabled].*

Wake-up System with Dynamic Time

Use this item to enable or disable system wake on alarm event.

System will wake on the current time + Increase minutes.

The optional settings: [Disabled]; [Enabled].

When set as [Enabled], system will wake on the current time + increasedminute(s).

R_USB Power Gating S4-S5

USB Wake-up is affected by ERP function in S4. Please disable ERP before activating this function in S4

The optional settings: [Disabled]; [Enabled].

▶ **USB Configuration**

Press [Enter] to make settings for the following sub-items:

Legacy USB Support

Use this item to enables Legacy USB support. AUTO option disables legacy support if no USB devices are connected DISABLE option will keep USB devices available only for EFI applications

The optional settings are: [Enabled]; [Disabled]; [Auto].

[Enabled]: To enable legacy USB support.

[Disabled]: To keep USB devices available only for EFI specification,

[Auto]: To disable legacy support if no USB devices are connected.

XHCI Hand-off

This is a workaround for OSES without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.

The optional settings are: [Enabled]; [Disabled].

USB Mass Storage Driver Support

Use this item to enable or disable USB Mass Storage Driver

Support. The optional settings are: [Disabled]; [Enabled].

USB Hardware Delays and Time-outs

USB Transfer time-out

Use this item to set the time-out value for control, bulk, and interrupt transfers.

The optional settings are: [1 sec]; [5 sec]; [10 sec]; [20 sec].

Device reset time-out

Use this item to set USB mass storage device start unit command time-out.
The optional settings are: [10 sec]; [20 sec]; [30 sec]; [40 sec].

Device power-up delay

Use this item to set maximum time the device will take before it properly reports itself to the host controller. 'Auto' uses default value: for a root port it is 100 ms, for a hub port the delay is taken from hub descriptor.

The optional settings are: [Auto]; [Manual].

Select **[Manual]** you can set value for the following sub-item: '**Device power-up delay in seconds**', the delay range in from 1 to 40 seconds, in one second increments.

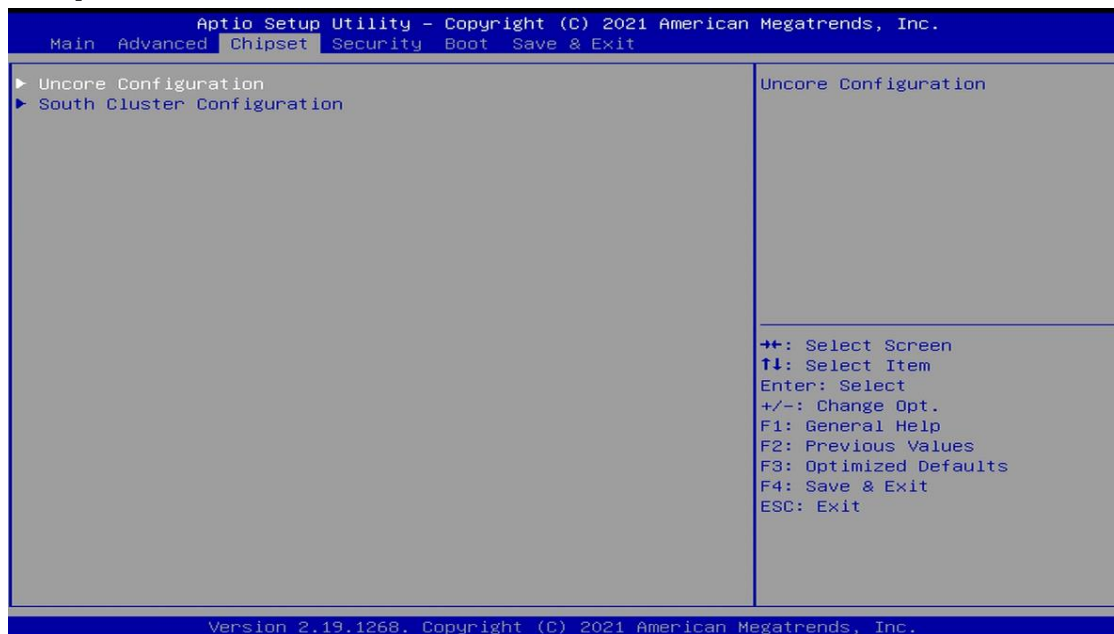
▶ **Realtek PCIe GBE Family Controller(MAC:XX:XX:XX:XX:XX:XX)**

RealtekPCIe GBE Family Controller(MAC:XX:XX:XX:XX:XX:XX)

These items show current network brief information.

**Note: The secondary Realtek PCIe GBE Family Controller shows up based on actual configuration of the actual product.*

3-8 Chipset Menu



▶ **Uncore Configuration**

Press [Enter] to make settings for the following sub-items:

GTT Size

The optional settings are: [2MB]; [4MB]; [8MB].

DVMT Pre-Allocated

Use this item to select DVMT 5.0 pre-allocated (fixed) graphics memory size used by the internal graphics device.

The optional settings are: [64M]; [96M]; [128M]; [160M]; [192M]; [224M]; [256M]; [288M]; [320M]; [352M]; [384M]; [416M]; [448M]; [480M]; [512M].

DVMT Total Gfx Mem

Use this item to select DVMT 5.0 total graphics memory size used by the internal graphics device.

The optional settings are: [128M]; [256M]; [MAX].

Active LFP

The optional settings are: [Disabled]; [Enabled].

** When set as [LVDS], user can make further setting in the following subitems:*

LCD Panel Type

Use this item to select LCD panel used by Internal Graphics Device by selecting the appropriate setup item.

The optional settings are: [800x480 1-ch 18-bit]; [800x600 1-ch 18-bit]; [800x600 1-ch 24-bit]; [1024x600 1-ch 18-bit]; [1024x768 1-ch 18-bit]; [1024x768 1-ch 24-bit]; [1280x768 1-ch 24-bit]; [1280x800 1-ch 18-bit]; [1280x800 1-ch 24-bit]; [1366x768 1-ch 18-bit]; [1366x768 1-ch 24-bit]; [1440x900 2-ch 18-bit]; [1440x900 2-ch 24-bit]; [1280x1024 2-ch 24-bit]; [1680x1050 2-ch 24-bit]; [1920x1080 2-ch 24-bit].

GMCH BLC Control

Use this item to select back light control settings.

The optional settings are: [PWM-Inverted]; [PWM-Normal].

Memory Information

The working memory information will be on display.

▶ South Cluster Configuration

Press [Enter] to make settings for the following sub-items:

SATA Controller

Use this item to enable or disable the Chipset SATA Controller. The Chipset SATA controller supports the 2 blank internal SATA ports (up to 3Gb/s supported per port).

The optional settings are: [Enabled]; [Disabled].

When set as **[Enabled]**, user can make further settings in the following sub-items:

SATA Mode Selection

Use this item to determine how SATA controller(s) operate.

The default setting is: [AHCI].

SATA Port

SATA Port

Use this item to enable or disable SATA port.

The optional settings: [Disabled]; [Enabled].

M.2

M.2

Use this item to enable or disable SATA port.

The optional settings: [Disabled]; [Enabled].

HD-Audio Support

Use this item to enable or disable HD-Audio Support. The optional settings are: [Disabled]; [Enabled].

CNVi Mode

This option configures Connectivity.

The optional settings: [Disabled]; [Auto].

[Auto] means that if Discrete solution is discovered it will be enabled by default.

Otherwise Integrated solution (CNVi) will be enabled;

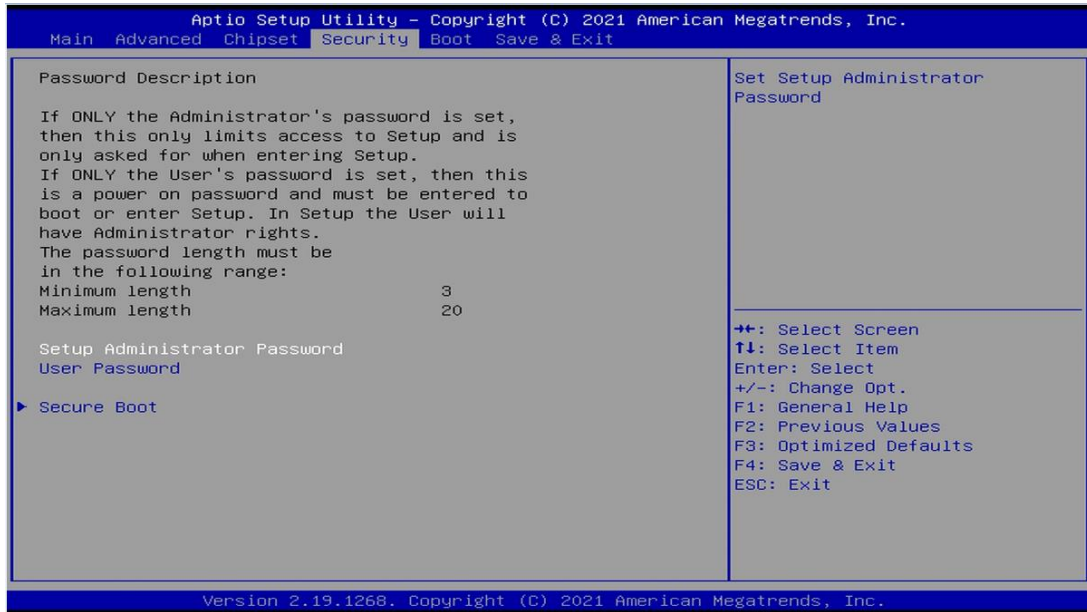
[Disabled] disables Integrated Solution.

System State after Power Failure

Use this item to specify what state to go to when power re-applied after a power failure

The optional settings are: [Always On]; [Always Off]; [Former State]

3-9 Security Menu



Security menu allow users to change administrator password and user password settings.

Setup Administrator Password

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.

User Password

If there is no password present on system, please press [Enter] to create new administrator password. If password is present on system, please press [Enter] to verify old password then to clear/change password. Press again to confirm the new administrator password.

▶ **Secure Boot**

Press [Enter] to make customized secure settings:

Secure Boot Mode

The optional settings are: [Standard]; [Custom].

Set UEFI Secure Boot Mode to Standard mode or Custom mode. This change is effective after save. After reset, this mode will return to Standard mode.

**When set as [Custom], user can make further settings in 'Key Management'.*

▶ **Key Management**

This item enables expert users to modify Secure Boot Policy variables without full authentication, which includes the following items:

Vendor Keys

Factory Key Provision

This item is for user to install factory default Secure Boot keys after the platform reset and while the System is in Setup mode.

The optional settings: [Disabled]; [Enabled].

Restore Factory Keys

Use this item to force system into User Mode. Install factory default Secure Bootkey databases.

Reset To Setup Mode

This item Delete all Secure Boot key databases form NVRAM

Export Secure Boot variables

This item Copy NVRAM content of Secure Boot variables to files in a root folder on a file system device

Enroll Efi Image

This item allows the image to run in Secure Boot mode.

Enroll SHA256 Hash certificate of a PE image into Authorized Signature Database(db).

Device Guard Ready

Remove 'UEFI CA' from DB

This item Device Guard ready system must not list 'Microsoft UEFI CA' Certificate in Authorized Signature database(db)

Restore DB defaults

Use this item to restore DB variable to factory defaults.

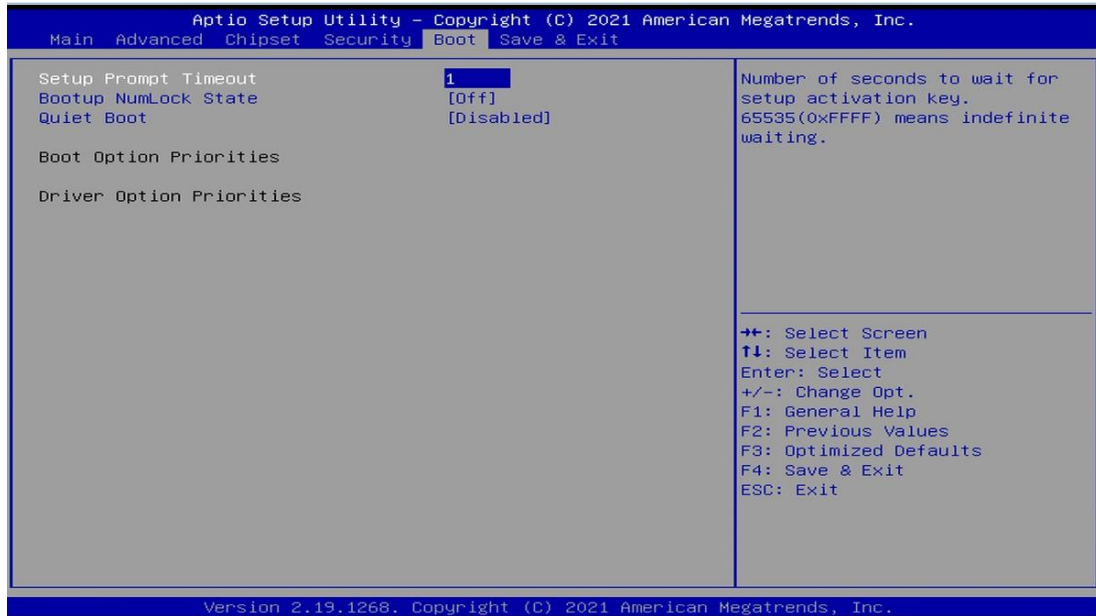
Secure Boot variable/Size/Keys/Key Source

Platform Key(PK)/Key Exchange Keys/Authorized Signatures/Forbidden Signatures/ Authorized TimeStamps/OsRecovery Signatures

Use this item to enroll Factory Defaults or load certificates from a file:

1. Public Key Certificate:
 - a) EFI_SIGNATURE_LIST
 - b) EFI_CERT_X509 (DER)
 - c) EFI_CERT_RSA2048 (bin)
 - d) EFI_CERT_SHAXXX
2. Authenticated UEFI Variable
3. EFI PE/COFF Image (SHA256) Key
Source: Factory, External, Mixed.

3-10 Boot Menu



▶ **Setup Prompt Timeout**

Use this item to set number of seconds to wait for setup activation key. 65535 (0xFFFF) means indefinite waiting.

Bootup NumLock State

Use this item to select keyboard NumLock state. The optional settings: [On];[Off].

Quiet Boot

Use this item to enable or disable Quiet Boot option. The optional settings: [Disabled]; [Enabled].

3-11 Save & Exit Menu



Save Options:

Save Changes and Reset

This item allows user to reset the system after saving the changes.

Discard Changes and Reset

This item allows user to reset the system without saving any changes.

Default Options:

Restore Defaults

Use this item to restore /load default values for all the setup options.

Save as User Defaults

Use this item to save the changes done so far as user defaults.

Restore User Defaults

Use this item to restore defaults to all the setup options.

Boot Override

UEFI: Built-in EFI Shell

Press this item to select the device as boot disk after save configuration and reset