IPPC1203-RE
IPPC1503-RE
IPPC1703-RE
IPPC1903-RE

Expandable Panel PC

User's Manual

Version 1.1
(December 2020)

Copyright

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Compliance

CE

This product may cause radio interference in which case users may be required to take adequate measures.

FC

This product has been tested and found to comply with the limits for a Class B device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with manufacturer's instructions, may cause harmful interference to radio communications.

Operation is subject to the following two conditions:

- This product may not cause harmful interference
- This product must accept any interference received including interference that may cause undesired operation.

However, there is no guarantee that interference will not occur in a particular installation. If this equipment causes harmful interference to radio or television reception which can be determined by turning the equipment off and on, you may correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment to an outlet on a circuit different from that to which the receiver is connected.
- Consult the distributor or an experienced radio/TV technician for help.

WEEE

This product must not be disposed of as normal household waste, in accordance with the EU directive of for waste electrical and electronic equipment (WEEE - 2012/19/EU). Instead, it should be disposed of by returning it to a municipal recycling collection point. Check local regulations for disposal of electronic products.

iBASE

Green IBASE

This product complies with the current RoHS restrictions that prohibit the use of the following substances in concentrations exceeding 0.1% by weight (1000 ppm) except for cadmium, limited to 0.01% by weight (100 ppm).

- Lead (Pb)
- Mercury (Hg)
- Cadmium (Cd)
- Hexavalent chromium (Cr6+)
- Polybrominated biphenyls (PBB)
- Polybrominated diphenyl ether (PBDE)

Important Safety Information

Carefully read the precautions before using the device.

Environmental conditions:

- Put the device horizontally on a stable and solid surface during installation in case the device may fall, causing serious damage.
- Leave plenty of space around the device for ventilation.
- Use this product in environments with ambient temperatures between 0˚C and 40˚C.
- DO NOT LEAVE THIS DEVICE IN AN ENVIRONMENT WHERE THE STORAGE TEMPERATURE MAY BE BELOW -20° C OR ABOVE 60° C.To prevent from damages, the device must be used in a controlled environment.
- Keep the device away from humidity to avoid fog or condensation from accumulating on the inner surface of the panel.

Care for your IBASE products:

- Before cleaning the device, turn it off and unplug all cables in case a small amount of electrical current may still flow.
- Use neutral cleaning agents or diluted alcohol to clean the device chassis with a cloth. Then wipe the chassis with a dry cloth.
- Use a computer vacuum cleaner to remove dust to prevent the air vent or slots from getting clogged.

WARNING

Attention during use:

- Do not use this product near water.
- Do not spill water or any other liquids on your device.
- Do not place heavy objects on the top of the device.
- Operate this device from the type of power indicated on the marking label. If you are not sure of the type of power available, consult your distributor or local power company.
- Ensure to use the correct power supply voltage.
- Do not walk on the power cord or allow anything to rest on it.
- If you use an extension cord, make sure that the total ampere rating of the product plugged into the extension cord does not exceed its limits.

Avoid Disassembly

Disassembly, modification, or any attempt at repair could generate hazards and cause damage to the device, even bodily injury or property damage, and will void any warranty on the product.

CAUTION

Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

Warranty Policy

- **IBASE standard products:**

  24-month (2-year) warranty from the date of shipment. If the date of shipment cannot be ascertained, the product serial numbers can be used to determine the approximate shipping date.

- **3rd-party parts:**

  12-month (1-year) warranty from delivery for the 3rd-party parts that are not manufactured by IBASE, such as CPU, CPU cooler, memory, storage devices, power adapter, panel and touchscreen.

✳ Products, however, that fail due to misuse, accident, improper installation or unauthorized repair shall be treated as out of warranty and customers shall be billed for repair and shipping charges.

iBASE

Technical Support & Services

1. Visit the IBASE website at www.ibase.com.tw to find the latest information about the product.
2. If you need any assistance from your distributor or sales representative concerning problems that you may have encountered, please prepare the following information:

   - Product model name
   - Product serial number
   - Detailed description of the problem
   - Error messages in text or in screenshots if there is any
   - The arrangement of the peripherals
   - Software used (such as OS and application software, including the version numbers)

3. For repair service, please download the RMA form fromhttp://www.ibase.com.tw/english/Supports/RMAService/.
   Fill out the form and contact your distributor or sales representative.

Table of Contents

Chapter 1
General Information

The information provided in this chapter includes:

- Features
- Packing List
- Specifications
- Product View
- Dimensions

1.1 Introduction

IPPC1203-RE, IPPC1503-RE, IPPC1703-RE and IPPC1903-RE are12", 15", 17" and 19" expandable touch panel PCs that are ideal for industrial automation, factory automation applications. The devices are powered by Intel® Celeron®J1900 based processor, and come with the level of IP65 ingress protection for the front bezel.

1.2 Features

- Resistive touch screen
- Cost effective model
- Low power consumption
- IP65-rated front bezel
- PCIe (x1) and PCI expansion

1.3 Packing List

Your product package should include the items listed below. If any of the items below is missing, contact the distributor or the dealer from whom you have purchased the product.

Item \ Q'ty	IPPC1203-RE	IPPC1503-RE IPPC1703-RE	IPPC1903-RE
1. System	1	1	1
2. Power adapter	1	1	1
3. Power cord	1	1	1
4. Long screws (for mounting the device on wall)	6 (M4*20)	8 (M4*35)	10 (M4*22)
5. Short screws (for mounting the triangle brackets onto the rear side of the device)	12	16	20
6. Mounting Triangle Bracket	6	8	10

1.4 Specifications

Product Name	IPPC1203-RE	IPPC1503-RE(N)	IPPC1703-RE	IPPC1903-RE(N)
Display & Touch Screen				
Display Size	12.1” TFT-LCD	15” TFT-LCD	17” TFT-LCD	19” TFT-LCD
Max. Resolution	1024 x 768	1024 x 768	1280 x 1024	1280 x 1024
Luminance (cd/m^2)	350	420	250	350
Contrast	800:1	800:1	1000:1	1000:1
Max. Color	16.7M	16.2M	16.7M	16.7M
View Angle (H°/V°)	170/170	160/160	178/170	170/160
Backlight Lifetime (hrs)	30,000	30,000	50,000	50,000
Touch Type	Resistive	Resistive	Resistive	Resistive
Touch Interface	USB	USB	USB	USB
Light Transmission (%)	79	79	80	80
Point of Touch	1	1	1	1
I/O Interface				
USB 3.0	1	1	1	1
USB 2.0	2 at rear side	2 at rear side 1 at front side with cover	2 at rear side 1 at front side with cover	2 at rear side, 1 at front side with cover
RS-232/422/485 (Selectable under BIOS)	1	1	1	1
RS-232	1	1	1	1
LAN	2 x GbE	2 x GbE	2 x GbE	2 x GbE
Additional Graphics	1 x VGA & DVI-D	1 x VGA & DVI-D	1 x VGA & DVI-D	1 x VGA & DVI-D
Audio	Line-In, Line-Out & Mic-In	Line-In, Line-Out & Mic-In	Line-In, Line-Out & Mic-In	Line-In, Line-Out & Mic-In
Digital I/O	N/A	N/A	N/A	N/A
Power Connector	Terminal Block (Option: Jack type)	Terminal Block (Option: Jack type)	Terminal Block (Option: Jack type)	Terminal Block (Option: Jack type)
Power Button	Rock Switch	Rock Switch	Rock Switch	Rock Switch
Mechanical				
Dimensions (mm)	320 x 270 x 100.8	410 x 335 x 105	442 x 337 x 102.5	480 x 415 x 106.5
Net Weight (kg)	7.5	8.7	9.7	

System				
Processor	Intel® Celeron®J1900 2.42 GHz	Intel® Celeron®J1900 2.42 GHz	Intel® Celeron®J1900 2.42 GHz	Intel® Celeron® J1900 2.42 GHz
Memory	2 x DDR3L SO-DIMM, up to 8 GB, default 4GB	2 x DDR3L SO-DIMM, up to 8 GB, default 4GB	2 x DDR3L SO-DIMM, up to 8 GB, default 4 GB	2 x DDR3L SO-DIMM, up to 8 GB, default 4 GB
Thermal Design	Fanless	Fanless	Fanless	Fanless
Membrane Control	N/A	N/A	N/A	N/A
Built-in Speaker/Mic	N/A	N/A	N/A	N/A
Motherboard	MI805	MI805	MI805	MI805
Operating System	• Windows 10 / 8.1 • Windows 7 Professional • Windows Embedded Standard 8 / 7 • Linux Kernel 3.X	• Windows 10 / 8.1 • Windows 7 Professional • Windows Embedded Standard 8 / 7 • Linux Kernel 3.X	• Windows 10 / 8.1 • Windows 7 Professional • Windows Embedded Standard 8 / 7 • Linux Kernel 3.X	• Windows 10 / 8.1 • Windows 7 Professional • Windows Embedded Standard 8 / 7 • Linux Kernel 3.X
Expansion				
Internal Expansion Bus	1 x Mini-PCIe half size 1 x Mini-PCIe full/half size with mSATA	1 x Mini-PCIe half size 1 x Mini-PCIe full/half size with mSATA	1 x Mini-PCIe half size 1 x Mini-PCIe full/half size with mSATA	1 x Mini-PCIe half size 1 x Mini-PCIe full/half size with mSATA
Expansion Slot	1 x PCIe (x1), 1 x PCI	1 x PCIe (x1), 1 x PCI Except IPPC1503-REN	1 x PCIe (x1), 1 x PCI	1 x PCIe (x1), 1 x PCI Except IPPC1903-REN
Wireless	Optional	Optional	Optional	Optional
Storage Space				
HDD	1 x 2.5” SATA HDD, default 2.5” 64G MLC SSD	1 x 2.5” SATA HDD, default 2.5” 64G MLC SSD	1 x 2.5” SATA HDD, default 2.5” 64G MLC SSD	1 x 2.5” SATA HDD, default 2.5” 64G MLC SSD
Removable	N/A	N/A	N/A	N/A
Power				
Power Input Range	12V / 24V DC Input	12V / 24V DC Input	12V / 24V DC Input	12V / 24V DC Input
Construction				
Chassis Material	SGCC	SGCC	SGCC	SGCC
Color (Front /Back)	Black / Black	Black / Black	Black / Black	Black / Black
IP Rating (Front / Back)	IP65 / IP30	IP65 / IP30	IP65 / IP30	IP65 / IP30
Mounting	VESA 75 x 75 mm / 100 x 100 mm & Panel Mounting	VESA 75 x 75 mm / 100 x 100 mm & Panel Mounting	VESA 75 x 75 mm / 100 x 100 mm & Panel Mounting	VESA 75 x 75 mm / 100 x 100 mm & Panel Mounting

Environment				
Operating Temperature	**With SSD:** 0 ~ 50 °C (32 ~ 122 °F) **With HDD:** 0 ~ 40 °C (32 ~ 104 °F)	**With SSD:** 0 ~ 50 °C (32 ~ 122 °F) **With HDD:** 0 ~ 40 °C (32 ~ 104 °F)	**With SSD:** 0 ~ 50 °C (32 ~ 122 °F) **With HDD:** 0 ~ 40 °C (32 ~ 104 °F)	**With SSD:** 0 ~ 50 °C (32 ~ 122 °F) **With HDD:** 0 ~ 40 °C (32 ~ 104 °F)
Storage Temperature	-20 ~ 60 °C (-4 ~ 140 °F)	-20 ~ 60 °C (-4 ~ 140 °F)	-20 ~ 60 °C (-4 ~ 140 °F)	-20 ~ 60 °C (-4 ~ 140 °F)
Storage Humidity	10 ~ 90% (non-condensing) at 40 °C	10 ~ 90% (non-condensing) at 40 °C	10 ~ 90% (non-condensing)	10 ~ 90% (non-condensing)
Certification	CE, FCC Class B, LVD, CB, CCC	CE, FCC Class B, LVD	CE, FCC Class B, LVD	CE, FCC Class B, LVD

All specifications are subject to change without prior notice.

1.5 Product View

Front View

IPPC1203

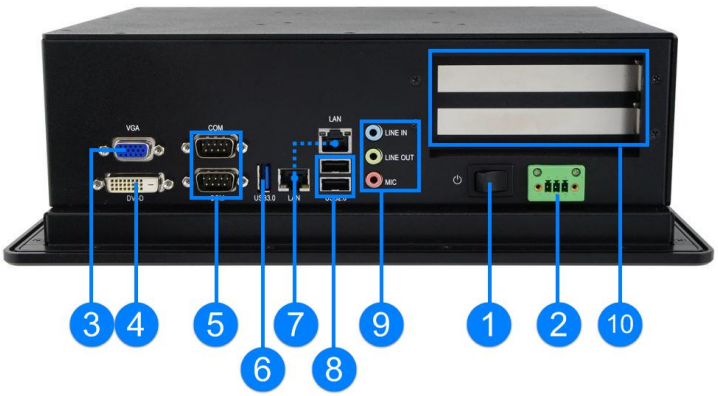
IPPC1503/1703/1903-RE
(with a USB 2.0 Port)

Oblique View

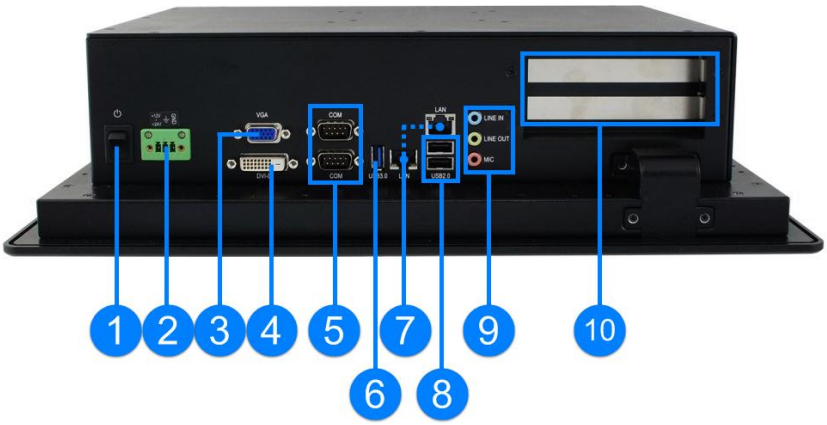
I/O View

No.	Name	No.	Name
1	Power Switch	6	USB 3.0 Port
2	DC-In Power Connector (terminal block, 12 ~ 24V)	7	GbE LAN Port
3	VGA Port	8	USB 2.0 Port
4	DVI-D Port	9	Audio Jacks (From top to bottom: Line-In, Line-Out, Microphone)
5	COM Ports (From top to bottom: COM1 RS-232/422/485, COM2 RS-232)	10	Expansion Card Slots

IPPC1203-RE:



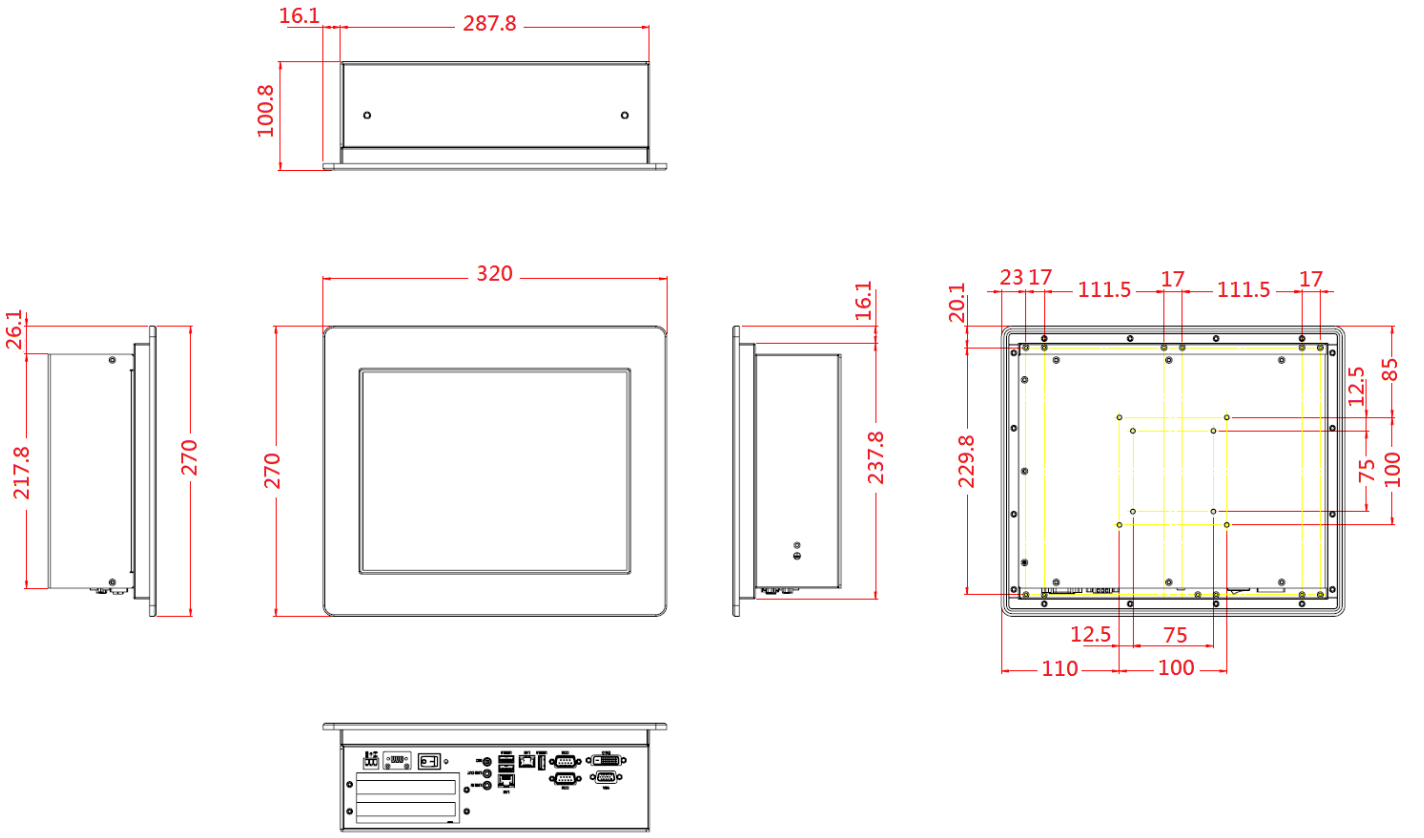
IPPC1503-RE / IPPC1703-RE / IPPC1903-RE



1.6 Dimensions

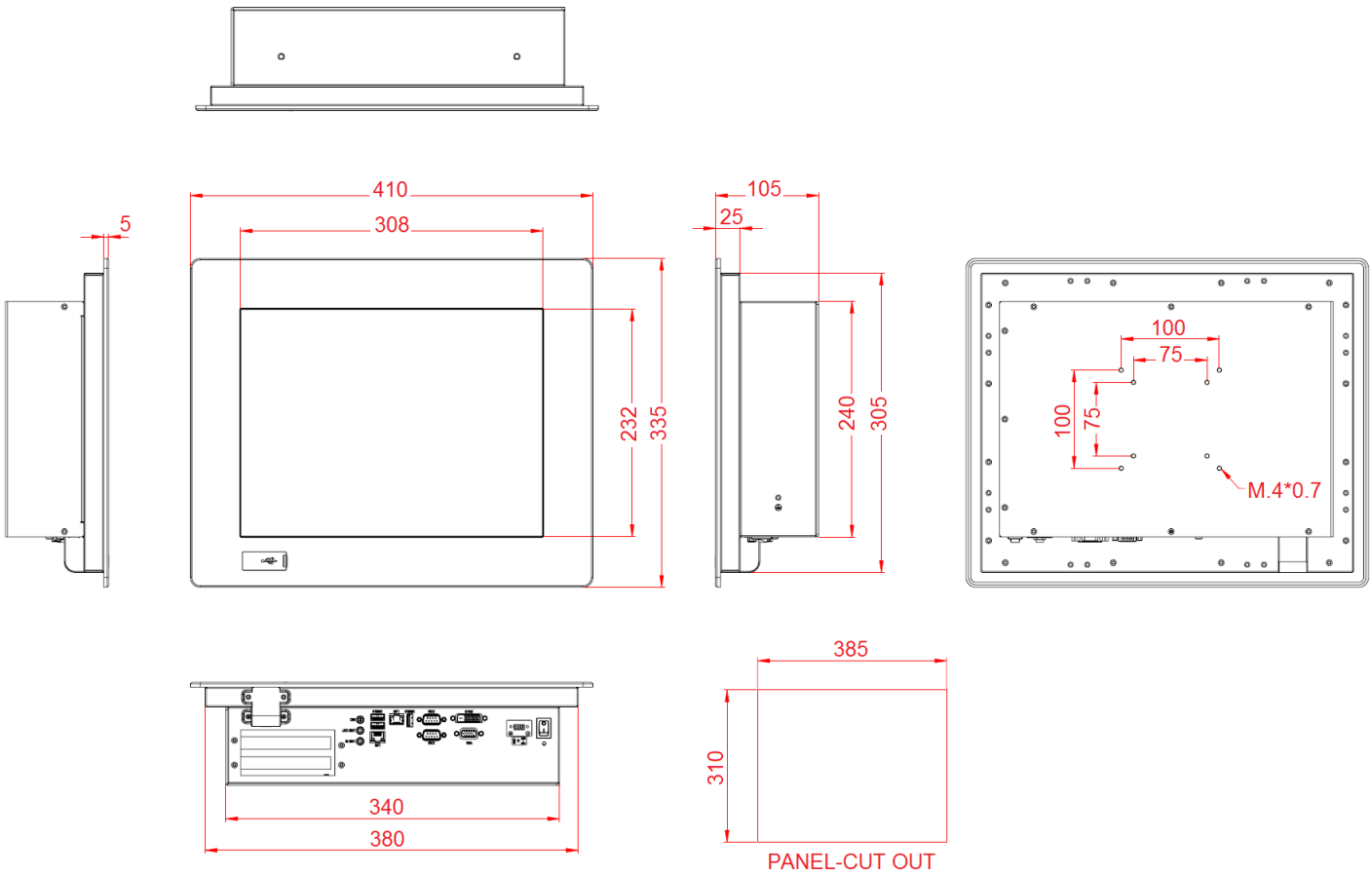
Unit: mm

IPPC1203-RE:



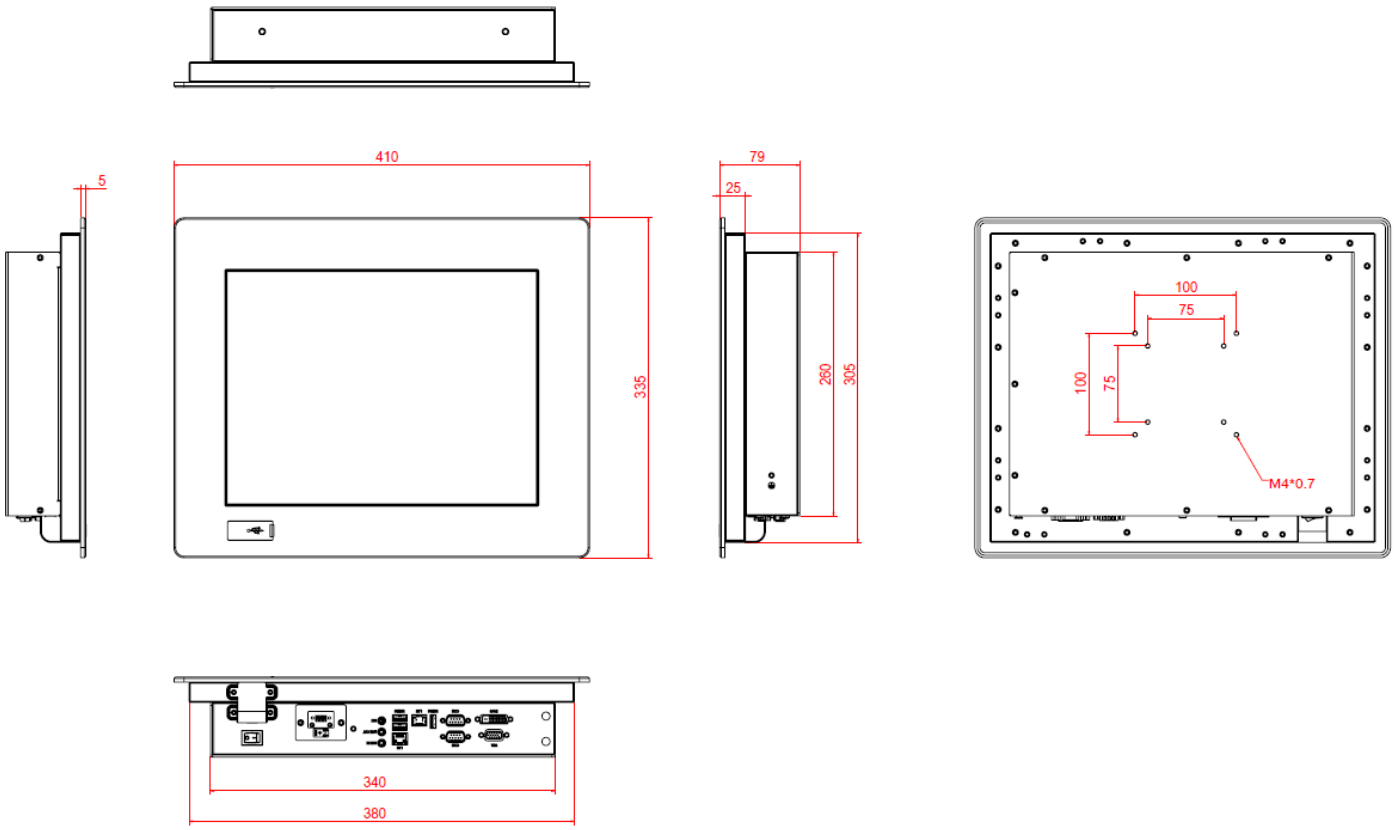
Unit: mm

IPPC1503-RE:

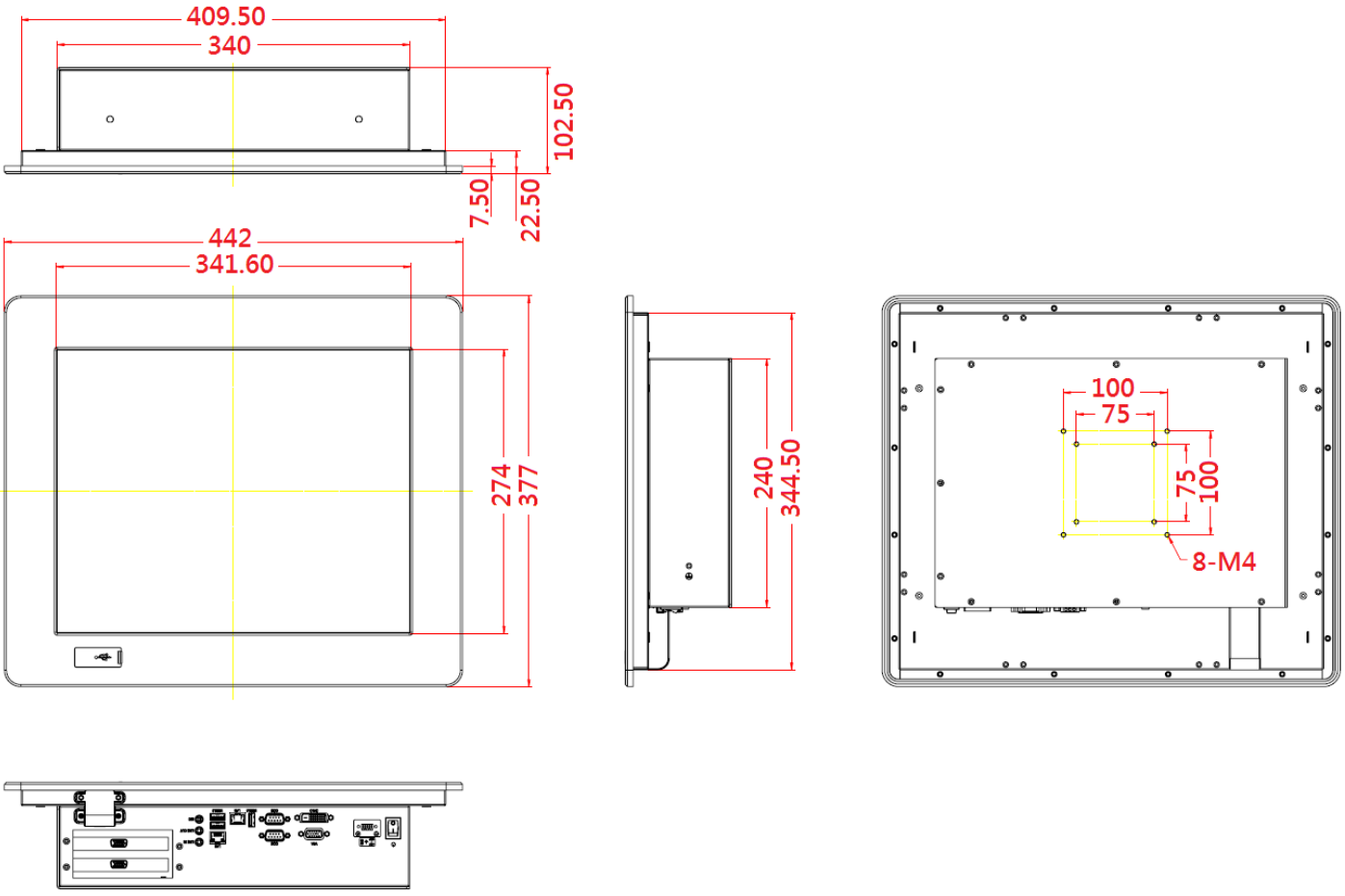


Unit: mm

IPPC1503-REN:

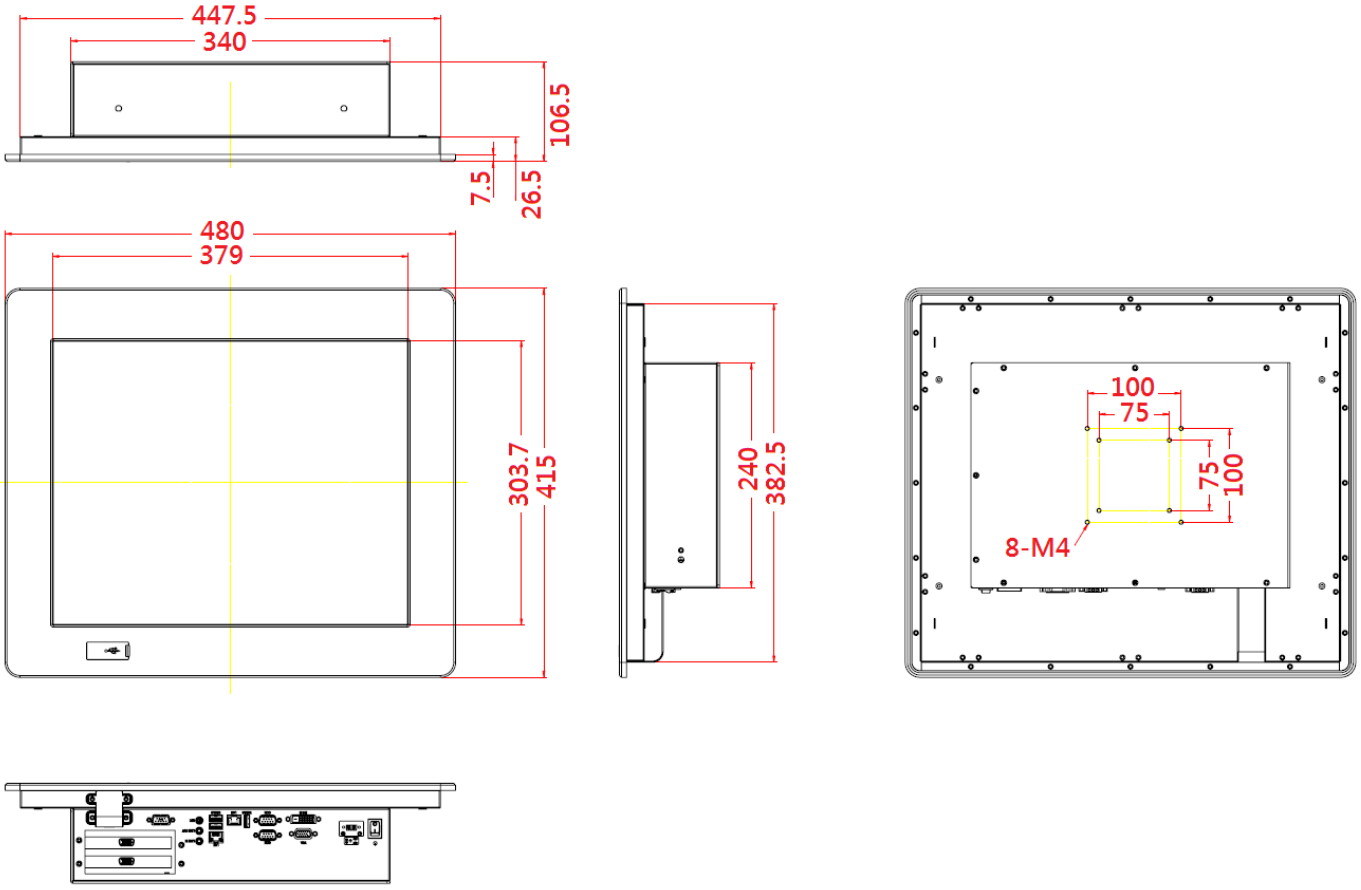


IPPC1703-RE:

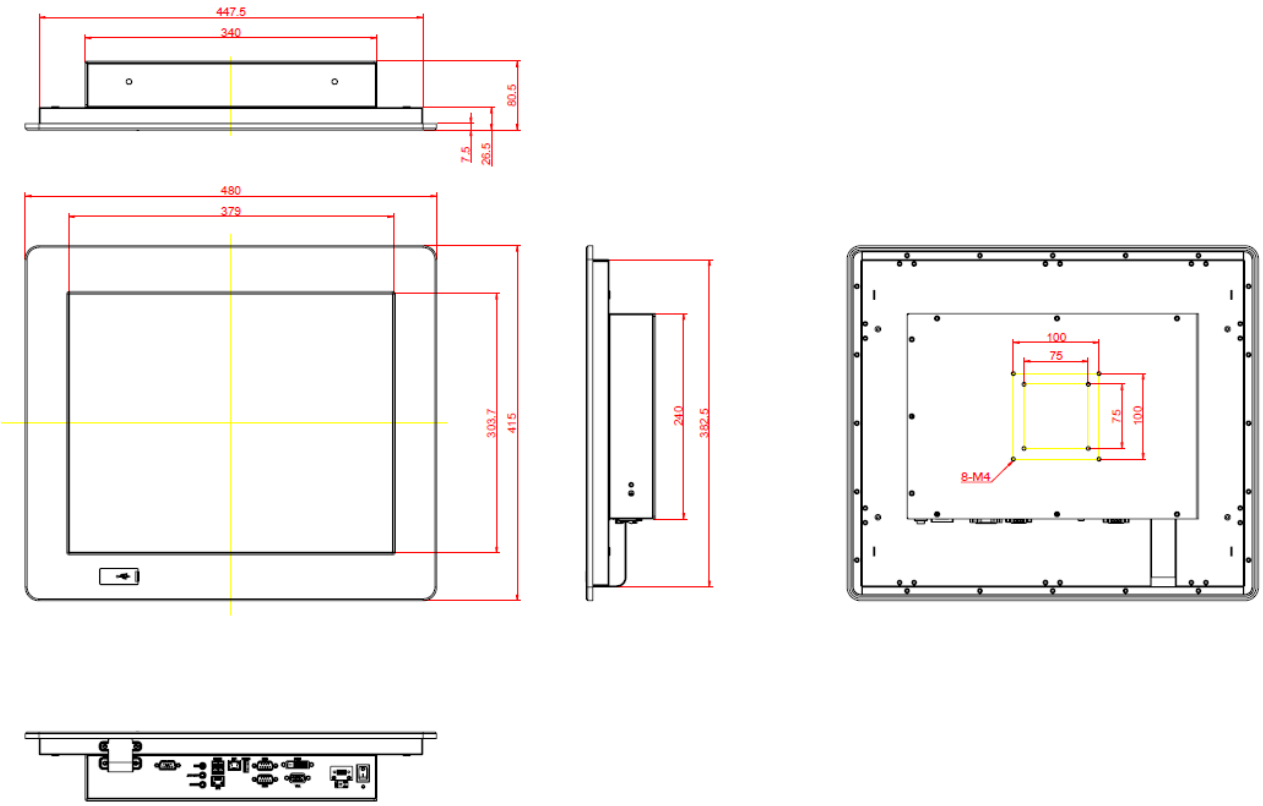

409.50
340
102.50
7.50
22.50
442
341.60
274
377
240
344.50
100
75
75
100
8-M4

Unit: mm

IPPC1903-RE:



IPPC1903-REN:



Chapter 2
Hardware Configuration

The information provided in this chapter includes:

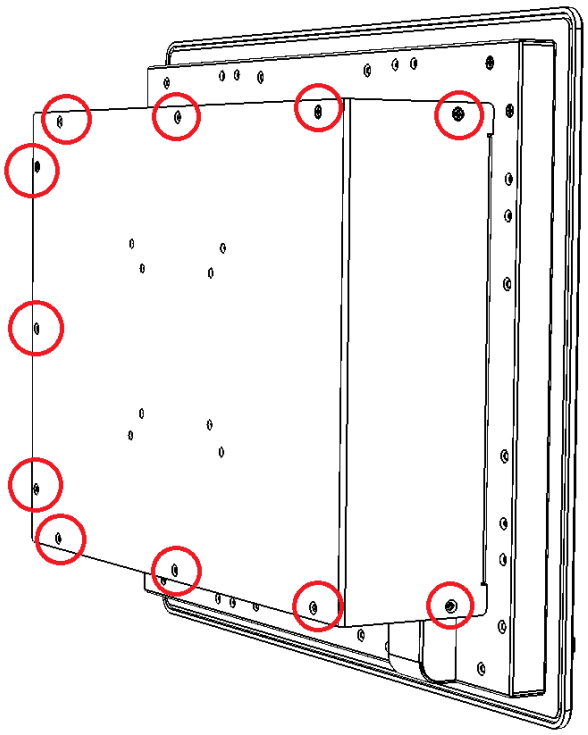
- Memory installation and membrane keypad extension
- Information and locations of connectors

2.1 Installations

Avoid device disassembly: Disassembly, modification, or any attempt at repair could generate hazards and cause damage to the device, injury, or property damage, and will void any warranty. If you need to make any changes to the device, be sure to unplug the power cord of the device and have qualified engineers or technicians do the disassembly or installation.

2.1.1 Rear Cover Disassembly

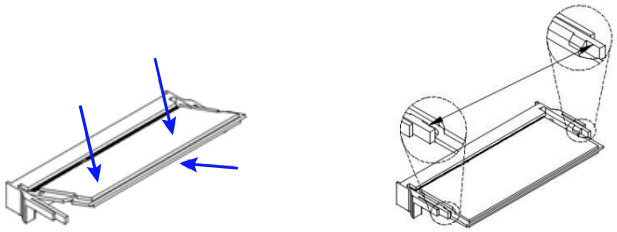
In case you need to remove the rear cover to install a memory module, a mini-PCIe card or any expansion card, unscrew the 11 screws as shown below to remove the rear cover.



2.1.2 Memory Replacement

To replace or install memory modules, perform the following steps after removing the system rear cover.

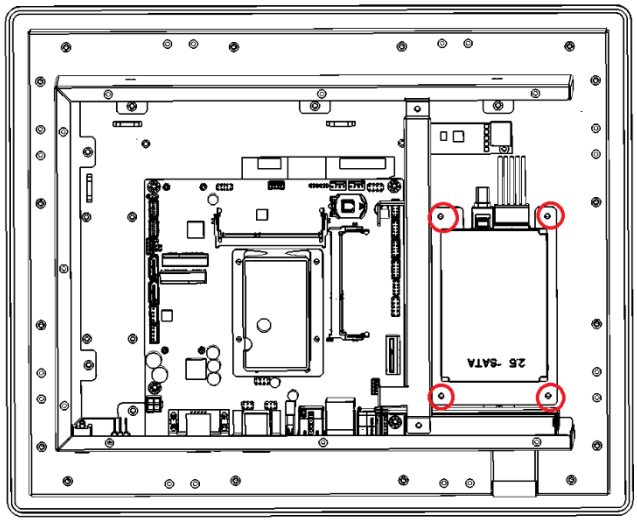
1. Locate the memory slot and align the key of the memory module with that on the memory slot.
2. Insert the module slantwise and gently push the module straight down until the clips of the slot close to hold the module in place when the module touches the bottom of the slot.



To remove the module, press the clips outwards with both hands.

2.1.3 SSD / HDD Replacement

1. After removing the rear cover,unscrewthe following4screws to remove the SSD/HDD tray.

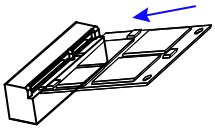


2. Unplug the cables of the SSD / HDD. Unscrewthe 4 screwson the bottom of the tray to release the SSD / HDD and replace it with a new one.
3. Secure the new SSD/ HDD to the tray, fix it onto the motherboard, and connect the cables.

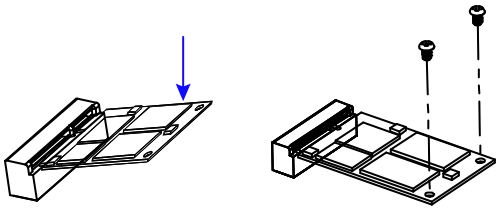
2.1.4 Mini-PCIe Installation

To replace or install a mini-PCIe card, perform the following steps after removing the rear cover.

1. Locate the mini-PCIeslot, align the key of the card to the interface, and insert the card slantwise.

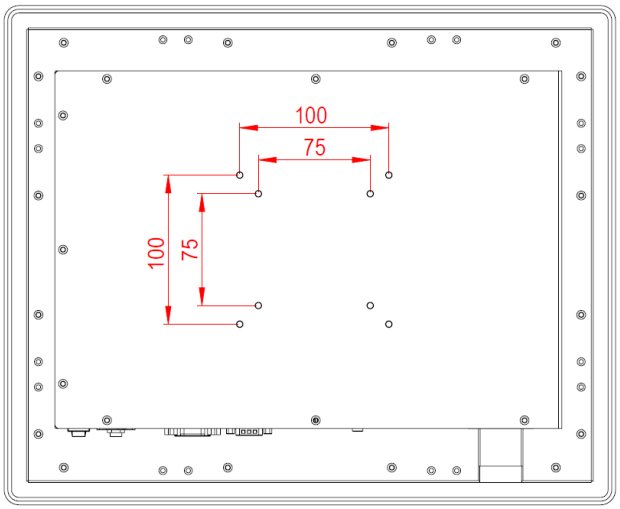


2. Push the card down and fix it with the supplied flat head screw.

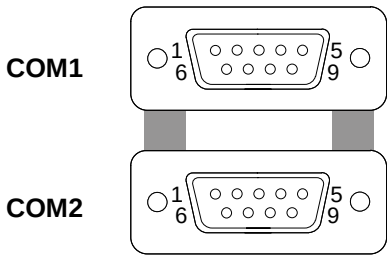


2.1.5 VESA Mounting Installation

You will need to prepare the VESA mount bracket in advance.Tighten 4VESA screws as shown below to mount the device onto your VESA bracket.



2.2 Pinout for COM1& COM2



- **COM1 RS232/422/485 Port**

COM 1 is features jumperless selection for RS-232/422/485 and configurable in BIOS.

Pin	Signal Name	Pin	Signal Name
1	DCD, Data carrier detect	6	DSR, Data set ready
2	RXD, Receive data	7	RTS, Request to send
3	TXD, Transmit data	8	CTS, Clear to send
4	DTR, Data terminal ready	9	RI, Ring indicator
5	Ground		

Pin	Signal Name		
	RS-232	RS-422	RS-485
1	DCD	TX-	DATA-
2	RX	TX+	DATA+
3	TX	RX+	NC
4	DTR	RX-	NC
5	Ground	Ground	Ground
6	DSR	NC	NC
7	RTS	NC	NC
8	CTS	NC	NC
9	RI	NC	NC

- **COM2 RS-232 Port**

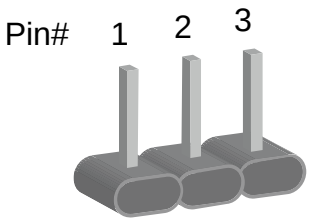
Pin	Signal Name	Pin	Signal Name
1	DCD, Data carrier detect	6	DSR, Data set ready
2	RXD, Receive data	7	RTS, Request to send
3	TXD, Transmit data	8	CTS, Clear to send
4	DTR, Data terminal ready	9	RI, Ring indicator
5	Ground		

2.3 Setting the Jumpers

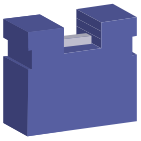
Configure the jumpers with the settings required to be able to use the features needed for your application. Contact your supplier if you have doubts about the best configuration for your use.

2.3.1 How to Set the Jumpers

Jumpers are short-length conductors consisting of several metal pins with a non-conductive base mounted on the circuit board. Jumper caps are used to have the functions and features enabled or disabled. If a jumper has 3 pins, you can connect either PIN1 to PIN2 or PIN2 to PIN3 by shorting with the jumper cap.

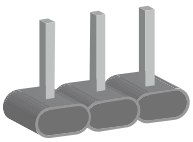
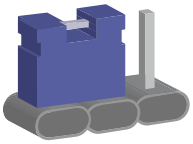
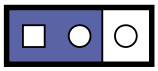
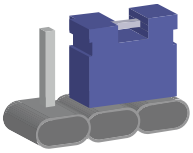
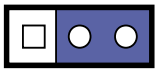


A 3-pin jumper



A jumper cap

Refer to the illustration below to set the jumpers.

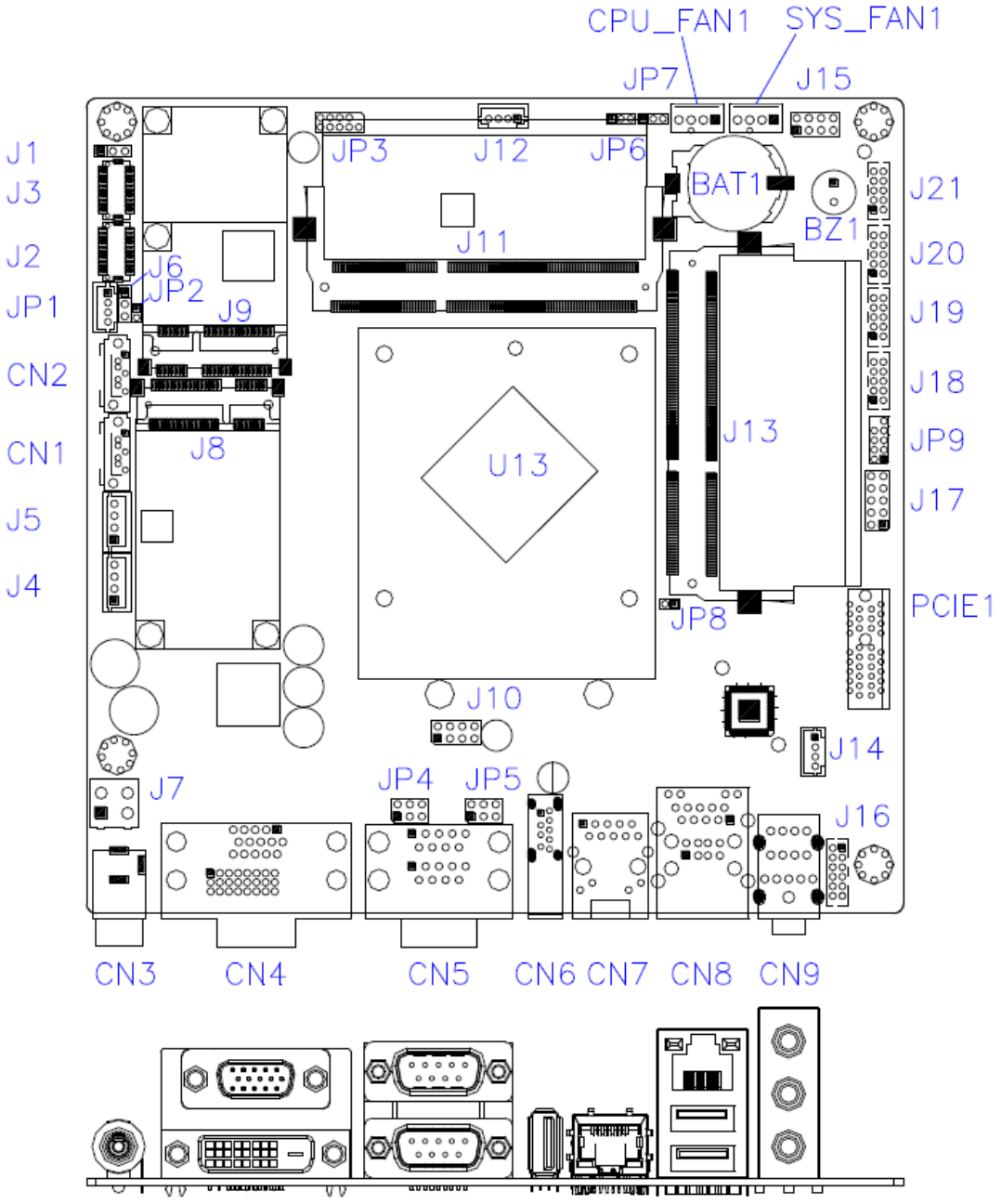
Pin closed	Oblique view	Illustration
Open		
1-2		
2-3		

When two pins of a jumper are encased in a jumper cap, this jumper is **closed**, i.e. turned **On**.

When a jumper cap is removed from two jumper pins, this jumper is **open**, i.e. turned **Off**.

2.4 Jumper & Connector Locations

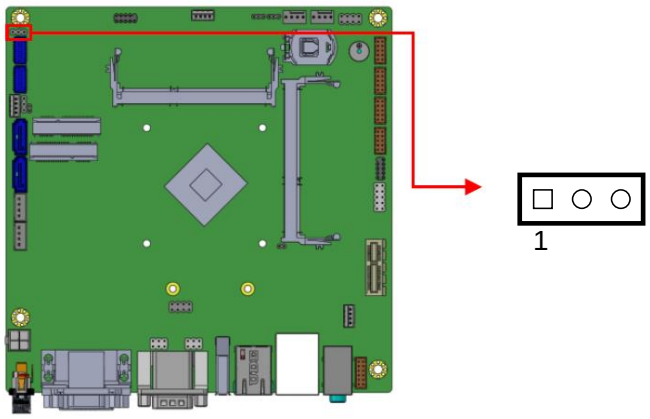
Motherboard: MI805

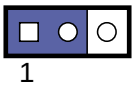
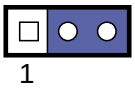


2.5 Jumpers Quick Reference

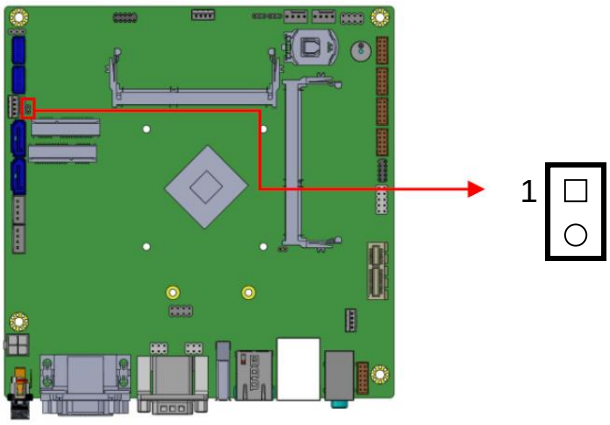
Function	Connector	Page
LCD Backlight Adjustment	J1	21
LVDS Panel Brightness Control Selection	JP2	22
LVDS Panel Power Selection	J6	22
COM1 & COM2 RS-232 Power Setting	JP4, JP5	23
Clearing CMOS Data	JP6	23
Clearing ME Register	JP7	24
Factory Use Only	JP8	- -

2.5.1 LCD Backlight Adjustment (J1)



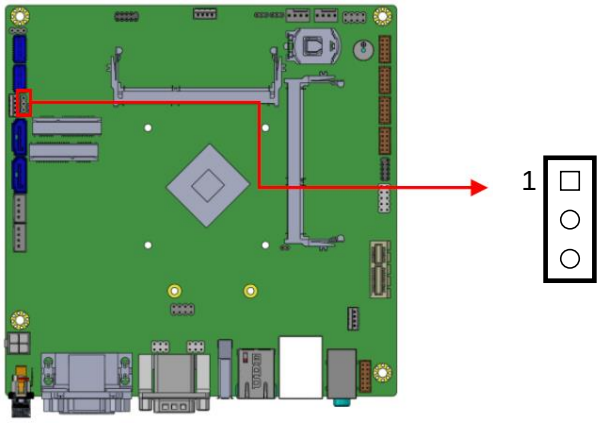
Function	Pin closed	Illustration
DC Mode (default)	1-2	
PWM Mode	2-3	

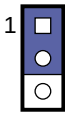
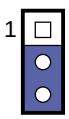
2.5.2 LVDS Panel Brightness Control Selection (JP2)



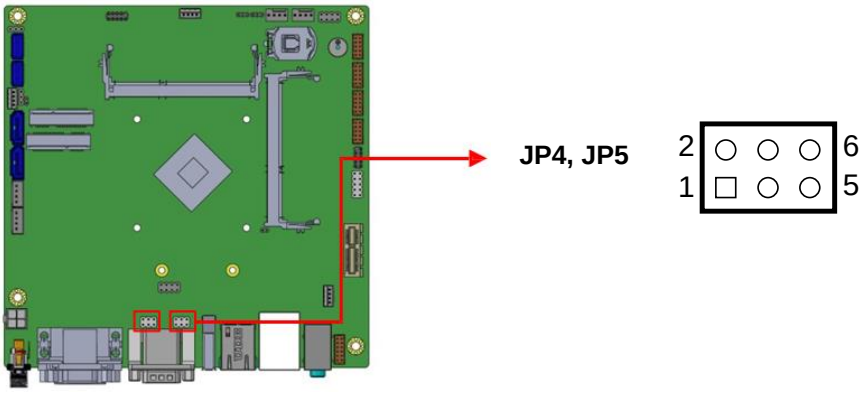
Function	Pin closed	Illustration
3.3V	Open	
5V (default)	Close	

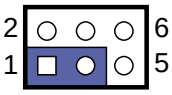
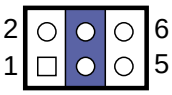
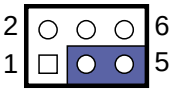
2.5.3 LVDS Panel Power Selection (J6)



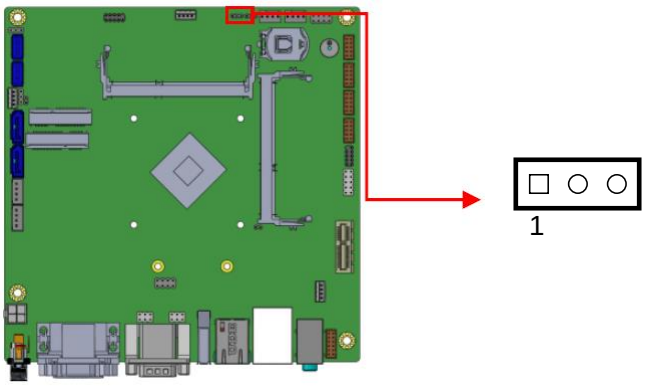
Function	Pin closed	Illustration
3.3V (default)	1-2	
5V	2-3	

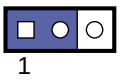
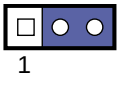
2.5.4 COM1 & COM2 RS-232 Power Setting (JP4, JP5)



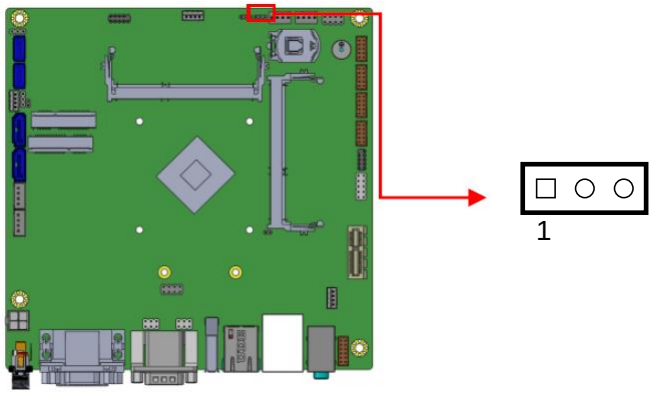
Function	Pin closed	Illustration
12V	1-3	
RI (default)	3-4	
5V	3-5	

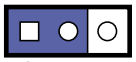
2.5.5 Clear CMOS Data (JP6)



Function	Pin closed	Illustration
Normal (default)	1-2	
Clear CMOS	2-3	

2.5.6 Clear ME Register (JP7)



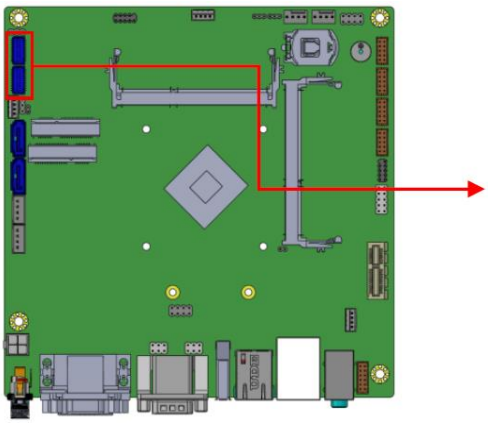
Function	Pin closed	Illustration
Normal (default)	1-2	 1
Clear ME Register	2-3	 1

2.6 Connectors Quick Reference

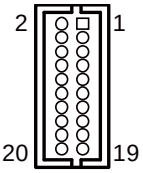
Function	Connector Name	Page
SATA2 Connector	CN1, CN2	- -
DC-In +12V~24V Connector	CN3	- -
CRT& DVI Port	CN4	- -
COM1 & COM2 Ports[1]	CN5	- -
USB 3.0 Port	CN6	- -
Gigabit LAN	CN7	- -
Gigabit LAN / USB 2.0 Connector	CN8	- -
Audio Port	CN9	- -
LVDS Connector (Hirose DF20G-20DP-1V)	J3 (1st channel), J2 (2nd channel)	26
SATA HDD Power Connector	J4, J5	27
DC-In Connector	J7	27
Mini-PCIe Slot	J8 (mSATA only), J9	- -
USB 2.0 Connector	J10	28
DDR3L SO-DIMM (CH-A) Sockets	J11 (channel A), J13 (channel B)	- -
Amplifier Connector	J14	28
Front Panel Setting Connector	J15	29
Audio Connector (DF11-12DP-2DSA)	J16	29
Digital I/O	J17	30
COM3, COM4, COM5, COM6	J21, J20, J19, J18	30
LCD Backlight Connector	JP1	31
CPU Fan Power Connector	CPU_FAN1	31
System Fan1 Power Connector	SYS_FAN1	32
PCI Express (x1) Slot	PCIE1	- -
Factory Use Only	J12, JP3, JP9	- -

[1]: Refer to *2.2Pinout for COM1& COM2*.

2.6.1 LVDS Connector (J3, J2)

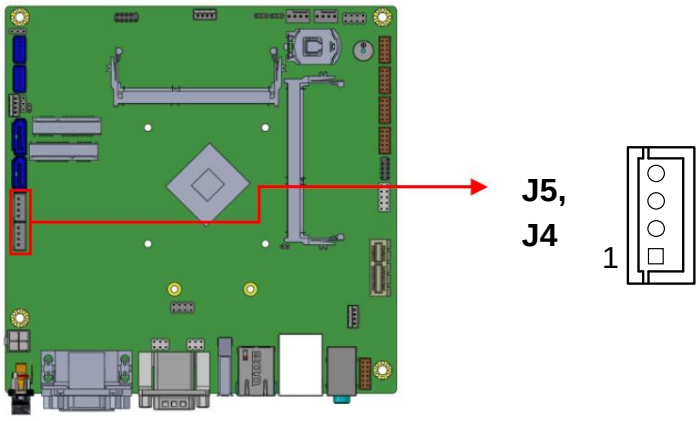


J3(1st channel),
J2(2nd channel)



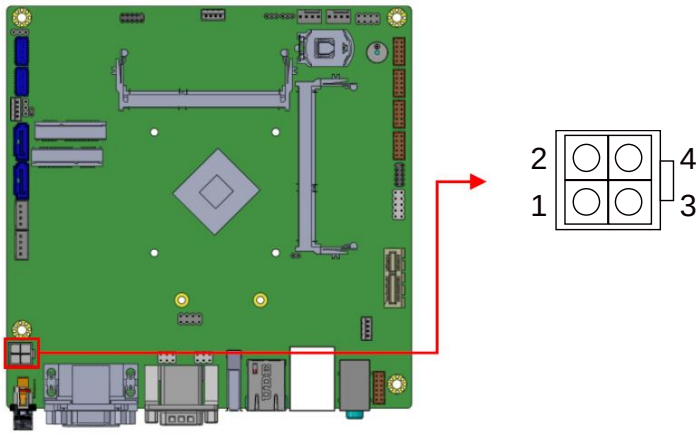
Pin	Signal Name	Pin	Signal Name
1	TX0P	2	TX0N
3	Ground	4	Ground
5	TX1P	6	TX1N
7	Ground	8	Ground
9	TX2P	10	TX2N
11	Ground	12	Ground
13	CLKP	14	CLKN
15	Ground	16	Ground
17	TX3P	18	TX3N
19	Power	20	Power

2.6.2 SATA HDD Power Connector (J4, J5)



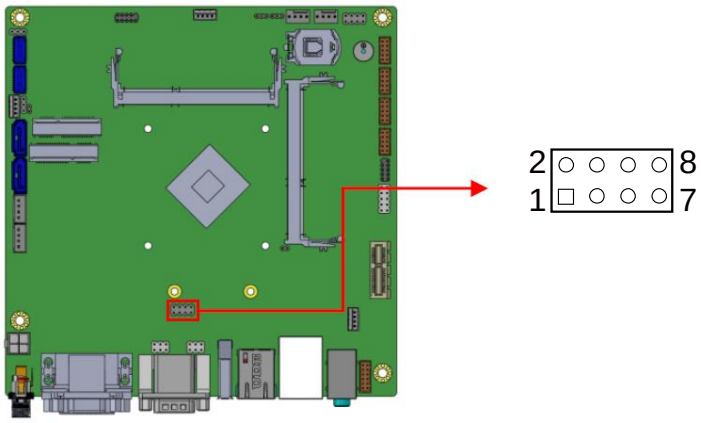
Pin	Signal Name	Pin	Signal Name
1	+5V	3	Ground
2	Ground	4	+12V

2.6.3 DC-In Connector (J7)



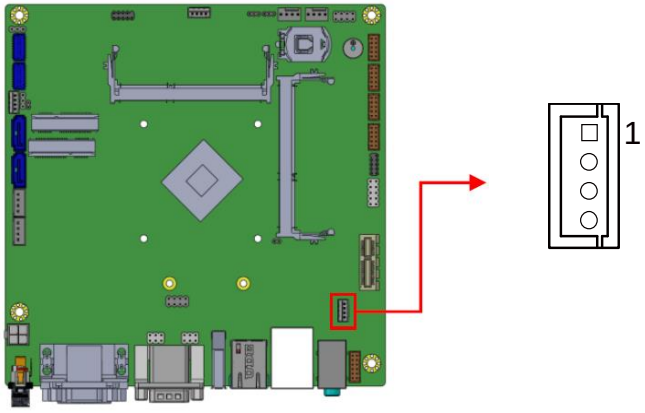
Pin	Signal Name	Pin	Signal Name
1	Ground	3	+12V ~ +24V
2	Ground	4	+12V ~ +24V

2.6.4 USB 2.0 Connector (J10)



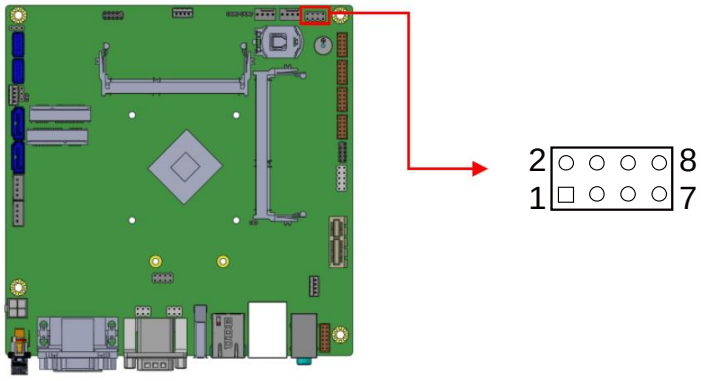
Pin	Signal Name	Pin	Signal Name
1	Vcc	2	Ground
3	D0-	4	D1+
5	D0+	6	D1-
7	Ground	8	Vcc

2.6.5 Amplifier Connector (J14)



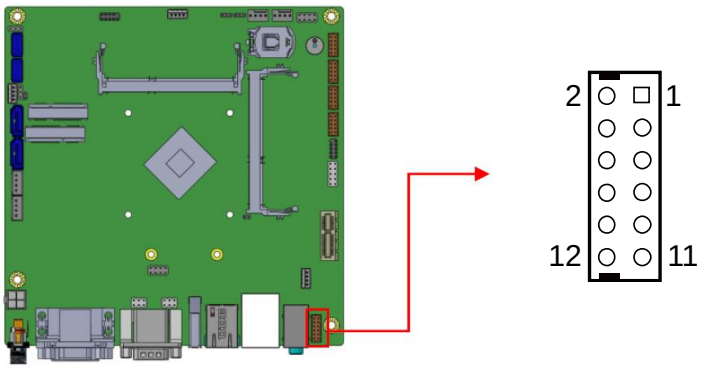
Pin	Signal Name	Pin	Signal Name
1	OUTL+	3	OUTR-
2	OUTL-	4	OUTR+

2.6.6 Front Panel Setting Connector (J15)



Pin	Signal Name	Pin	Signal Name
1	GND	2	PWR_BTN
3	3.3V	4	HDD Active
5	GND	6	Reset
7	+5V	8	GND

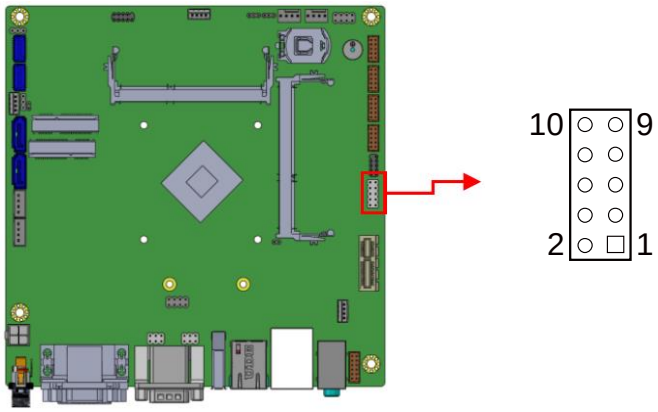
2.6.7 Audio Connector (J16)



Choose either CN9 (audio jacks) or J16 as the audio output.

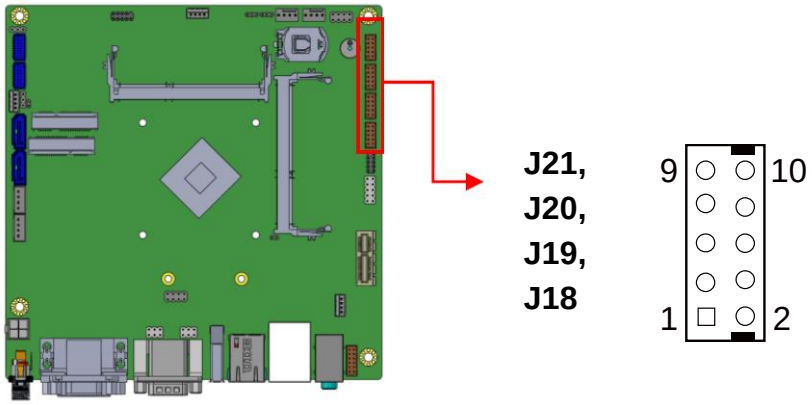
Pin	Signal Name	Pin	Signal Name
1	LINEOUT_L	2	LINEOUT_R
3	JD_FRONT	4	Ground
5	LINEIN_L	6	LINEIN_R
7	JD_LINEIN	8	Ground
9	MIC_L	10	MIC-R
11	JD_MIC1	12	Ground

2.6.8 Digital I/O Connector (J17)



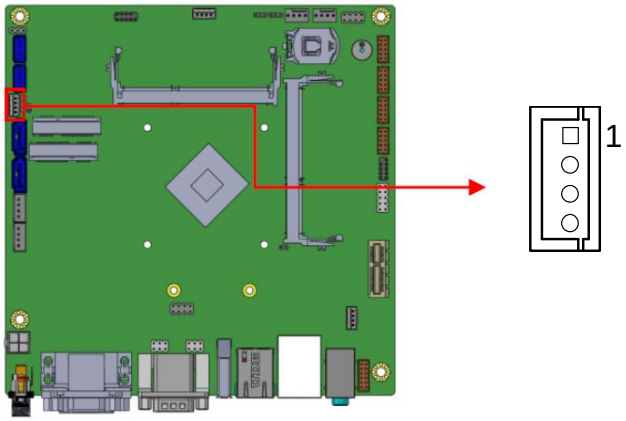
Pin	Signal Name	Pin	Signal Name
1	GND	2	VCC
3	OUT3	4	OUT1
5	OUT2	6	OUT0
7	IN3	8	IN1
9	IN2	10	IN0

2.6.9 COM3, COM4, COM5, COM6 Connectors (J21, J20, J19, J18)



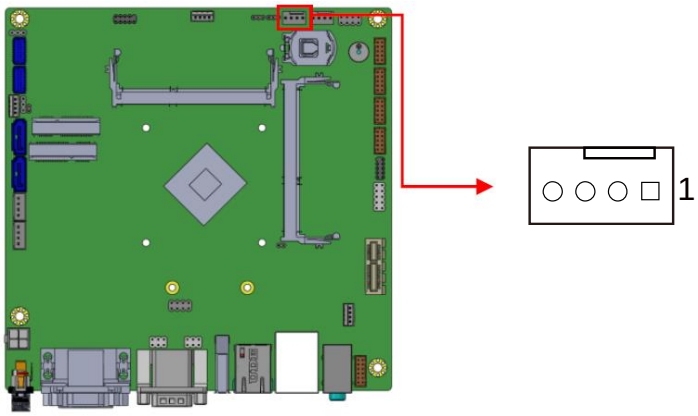
Pin	Signal Name	Pin	Signal Name
1	DCD, Data carrier detect	2	RXD, Receive data
3	TXD, Transmit data	4	DTR, Data terminal
5	GND, ground	6	DSR, Data set ready
7	RTS, Request to send	8	CTS, Clear to send
9	RI, Ring indicator	10	Not Used

2.6.10 LCD Backlight Connector (JP1)



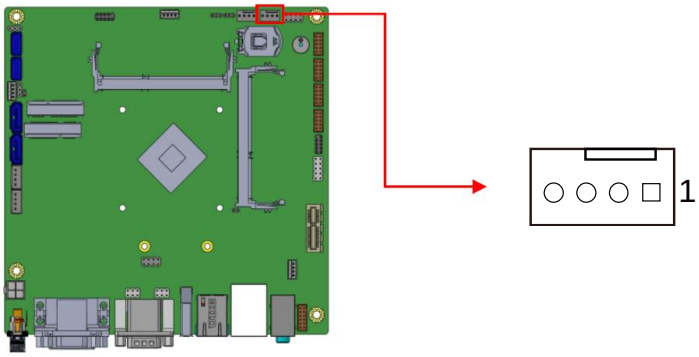
Pin	Signal Name	Pin	Signal Name
1	+12V	3	Brightness Control
2	Backlight Enable	4	Ground

2.6.11 CPU Fan Power Connector (CPU_FAN1)



Pin	Signal Name	Pin	Signal Name
1	Ground	3	Rotation detection
2	+12V	4	Control

2.6.12 System Fan Power Connector (SYS_FAN1)



Pin	Signal Name	Pin	Signal Name
1	Ground	3	Rotation detection
2	+12V	4	Control

Chapter 3
Driver Installation

The information provided in this chapter includes:

- Intel® Chipset Software Installation Utility
- Graphics Driver Installation
- HD Audio Driver Installation
- Intel® PRO LAN Network Drivers Installation
- Intel® ME 11.x Drivers Installation

3.1 Introduction

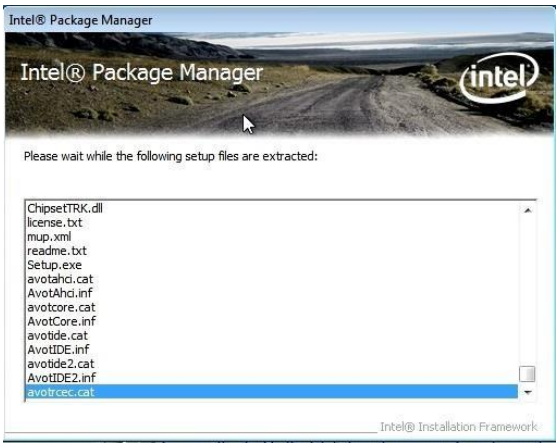
This section describes the installation procedures for software drivers. The software drivers are available on IBASE website www.ibase.com.tw. Register as a member on our website to download all the necessary drivers.

Note: After installing your Windows operating system, you must install the Intel® Chipset Software Installation Utility first before proceeding with the drivers installation.

3.2 Intel® Chipset Software Installation Utility

The Intel®Chipset drivers should be installed first before the software drivers to install INF files for Plug & Play function for the chipset components. Follow the instructions below to complete the installation.

1. Run the **Setup.exe** file.
2. Wait while the setup files are being extracted.



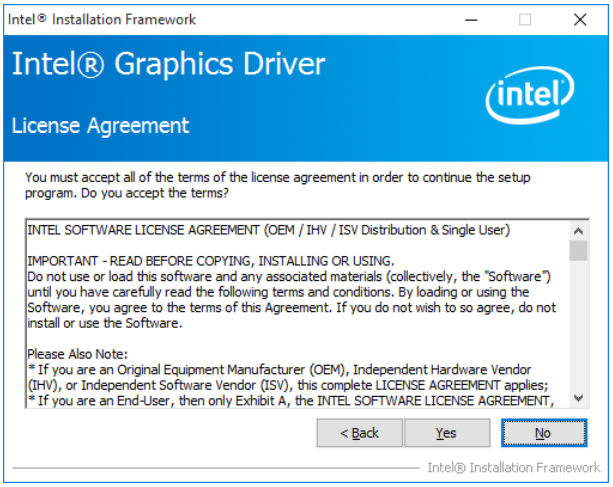
3. Click **Next**after the setup operations are being performed.

4. After the installation is complete, click **Finish** and restart the computer for changes to take effect.

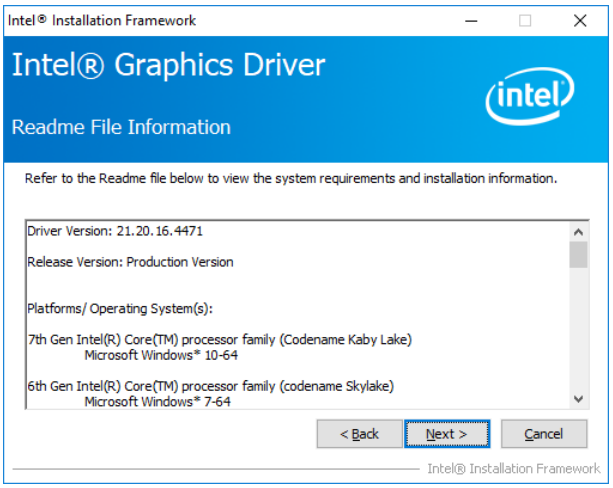
3.3 Graphics Driver Installation

1. Run the **Setup.exe** file.
2. When the *Welcome* screenappears, click **Next** to continue.

3. Click **Yes** to agree with the license agreement, and continue the installation.



4. Read the *Readme File Information,* and then click **Next**.

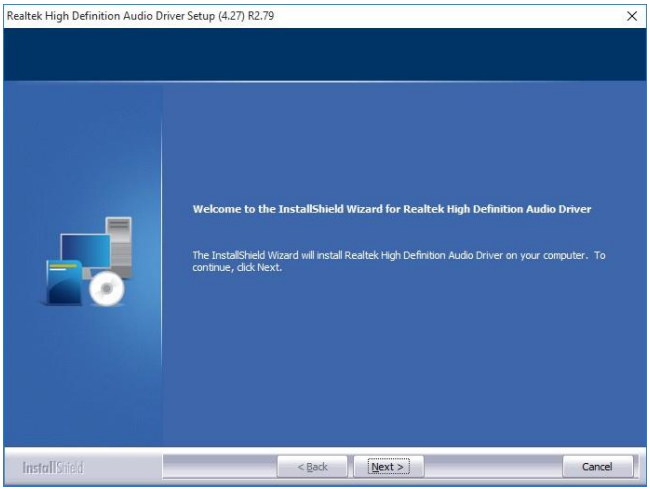


5. Choose a destination folder for installation.
6. After the installation is complete, click **Finish**and restart the computer for changes totake effect.

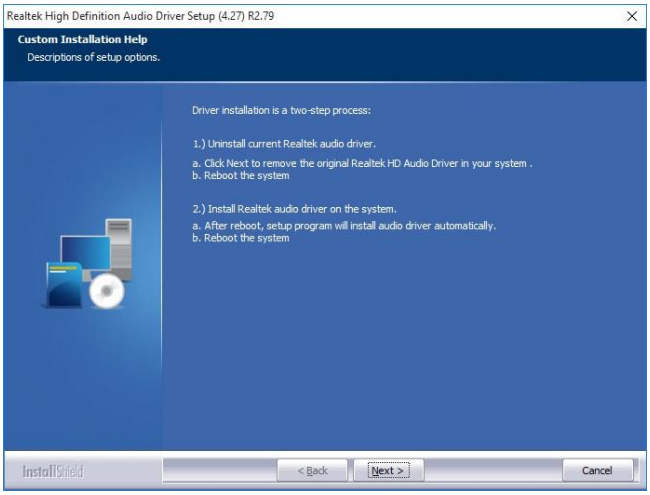
3.4 HD Audio Driver Installation

1. Run the **Setup.exe** file.
2. Click**Yes** to continue.

3. On the *Welcome*screen of the InstallShield Wizard, click**Next**.



4. The screenshot shows the description of the setup options. Click **Next**.



5. Choose a destination folder for installation.
6. After the installation is complete, click **Finish**and restart the computer for changes totake effect.

3.5 Intel® Trusted Execution Engine Driver Installation

1. Run the **Setup.exe** file.
2. When the *Welcome* screenappears, click **Next** to continue.

3. Accept the license agreement, and click **Next** to continue.

4. Choose a destination folder for installation.
5. After the installation is complete, restart the computer for changes totake effect.

3.6 Intel® USB 3.0 Driver Installation

1. Run the **Setup.exe** file.
2. When the *Welcome* screenappears, click **Next** to continue.

3. Choose a destination folder for installation.
4. After the installation is complete,restart the computer for changes totake effect.

3.7 LAN Network Driver Installation

1. Run the **Setup.exe** file.
2. Accept the license agreement and click **Next**.

3. Choose a destination folder for installation.
4. After the installation is complete, click **Finish**and restart the computer for changes totake effect.

Chapter 4
BIOS Setup

This chapter describes the different settings available in the AMI BIOS that comes with the board. The topics covered in this chapter are as follows:

- Main Settings
- Advanced Settings
- Chipset Settings
- Security Settings
- Boot Settings
- Save & Exit

4.1 Introduction

The BIOS (Basic Input/Output System) installed in the ROM of your computer system supports Intel® processors. The BIOS provides critical low-level support for standard devices such as disk drives, serial ports and parallel ports. It also provides password protection as well as special support for detailed fine-tuning of the chipset controlling the entire system.

4.2 BIOS Setup

The BIOS provides a Setup utility program for specifying the system configurations and settings. The BIOS ROM of the system stores the Setup utility. When you turn on the computer, the BIOS is immediately activated. Press the <Del> key immediately allows you to enter the Setup utility. If you are a little bit late pressing the <Del> key, POST (Power OnSelf Test) will continue with its test routines, thus preventing you from invoking the Setup.

If you still need to enter Setup, restart the system by pressing the ”Reset” button or simultaneously pressing the <Ctrl>, <Alt> and <Delete> keys. You can also restart by turning the system Off and back On again.

The following message will appear on the screen:

```
Press <DEL> to Enter Setup
```

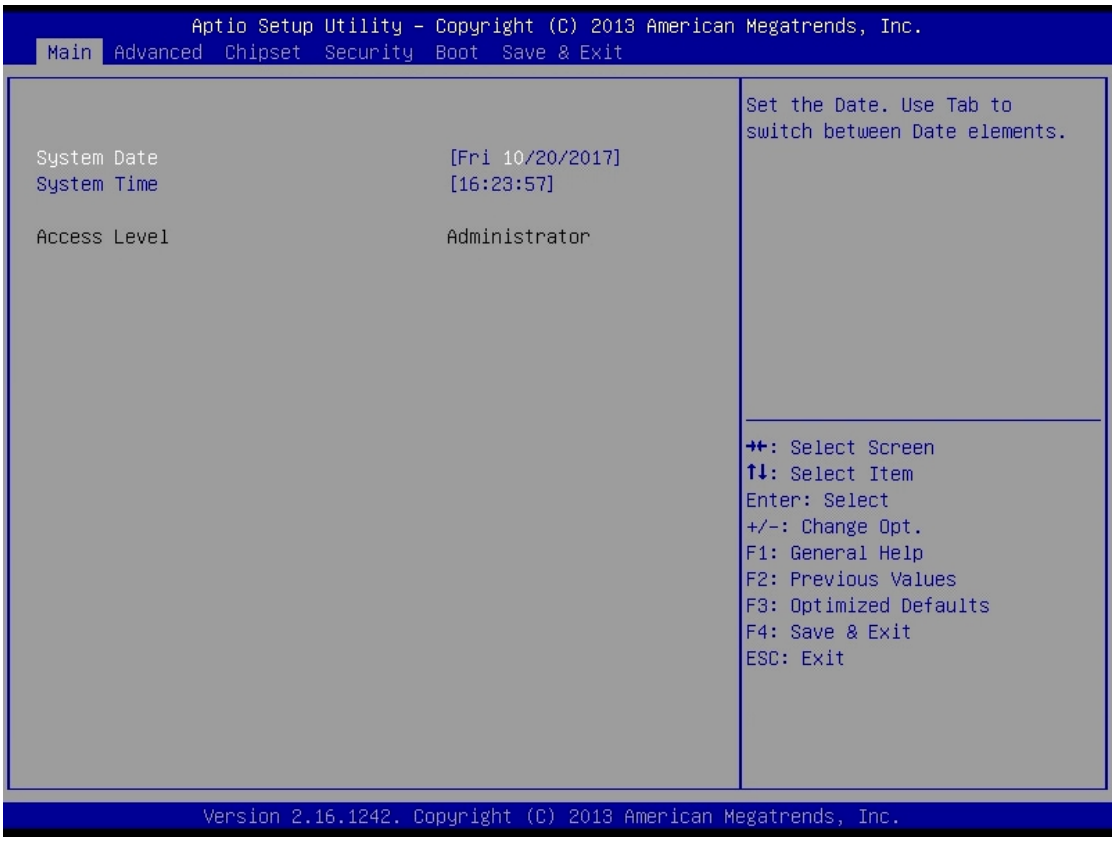
In general, press the arrow keys to highlight items, <Enter> to select, the <PgUp> and <PgDn> keys to change entries, <F1> for help, and <Esc> to quit.

When you enter the BIOS Setup utility, the *Main Menu* screen will appear on the screen. The Main Menu allows you to select from various setup functions and exit choices.

Warning: It is strongly recommended that you avoid making any changes to the chipset defaults.

These defaults have been carefully chosen by both AMI and your system manufacturer to provide the absolute maximum performance and reliability. Changing the defaults could make the system unstable and crash in some cases.

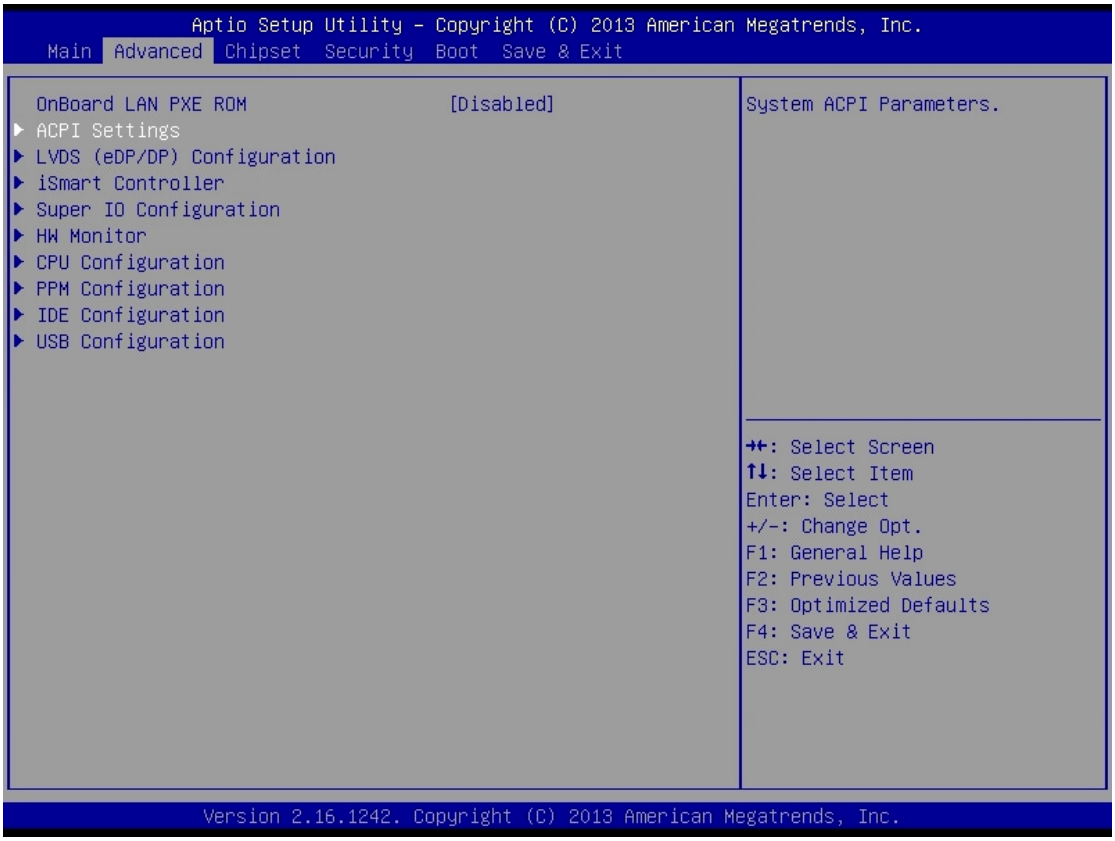
4.3 Main Settings



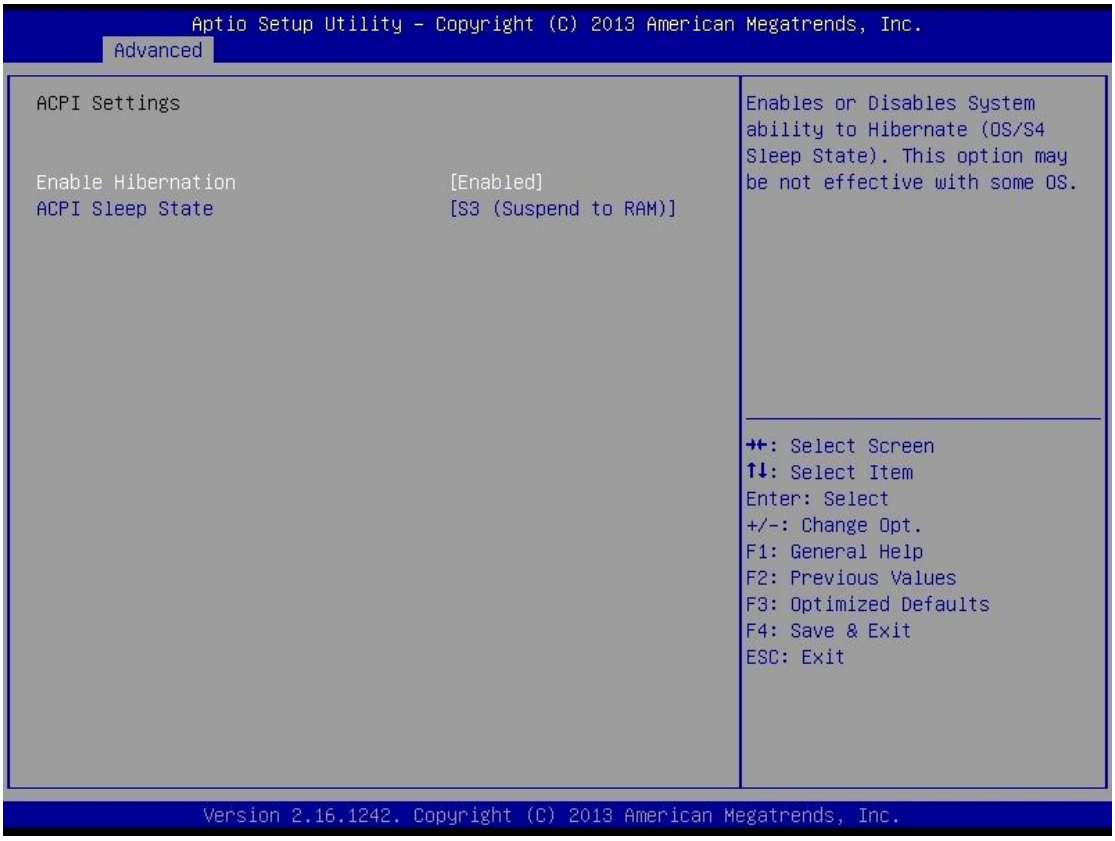
BIOS Setting	Description
System Date	Sets the date. Use the <Tab>key to switch between the data elements.
System Time	Set the time. Use the <Tab>key to switch between the data elements.

4.4 Advanced Settings

This section allows you to configure, improve your system and allows you to set up some system features according to your preference.

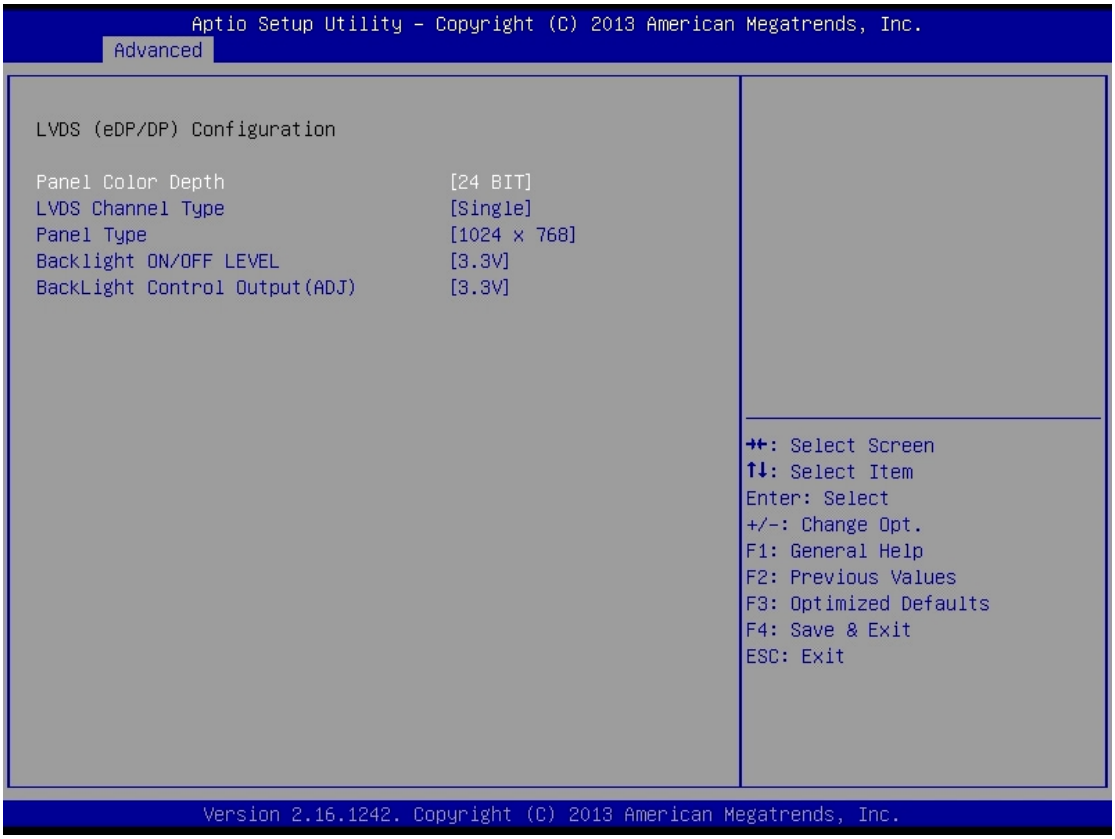


4.4.1 ACPI Settings



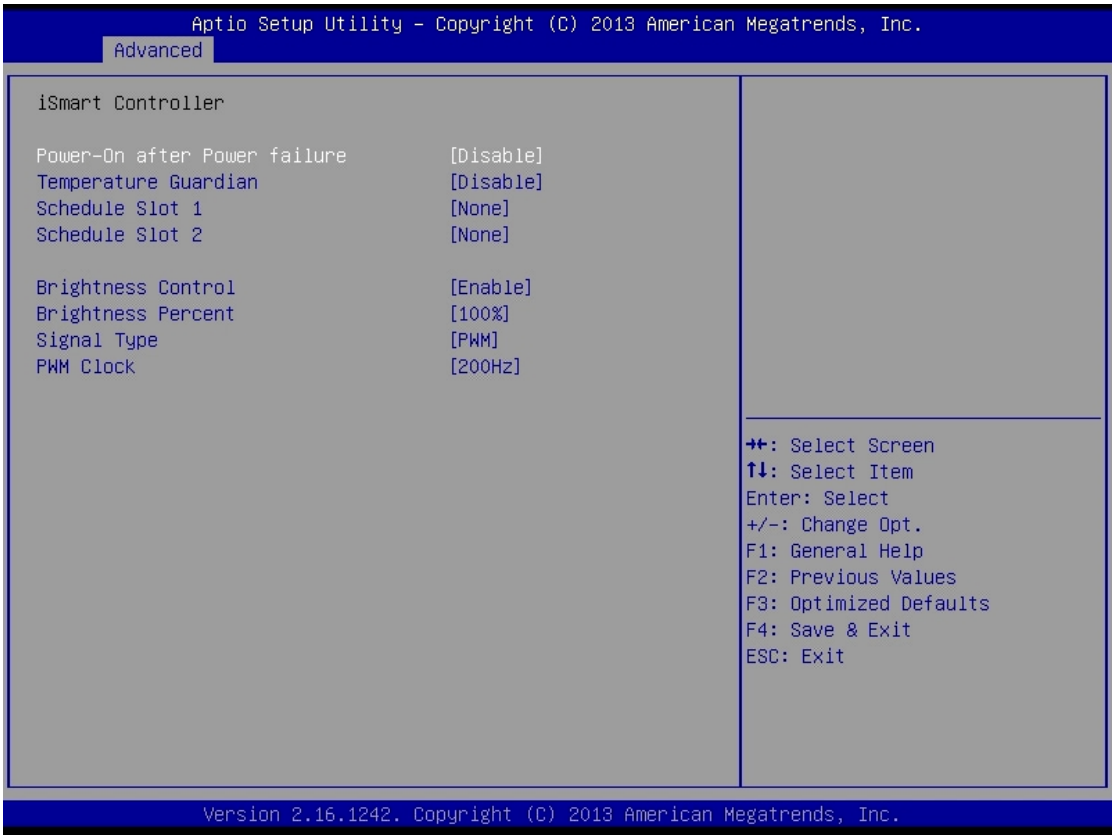
BIOS Setting	Description
Enable Hibernation	Enables / Disables the system ability to hibernate (OS/S4 Sleep State). This option may not be effective with some OS.
ACPI Sleep State	Selects a ACPI sleep state for the system to enter. Options:Suspend Disabled, S3 (Suspend to RAM)

4.4.2 LVDS (eDP/DP) Configuration



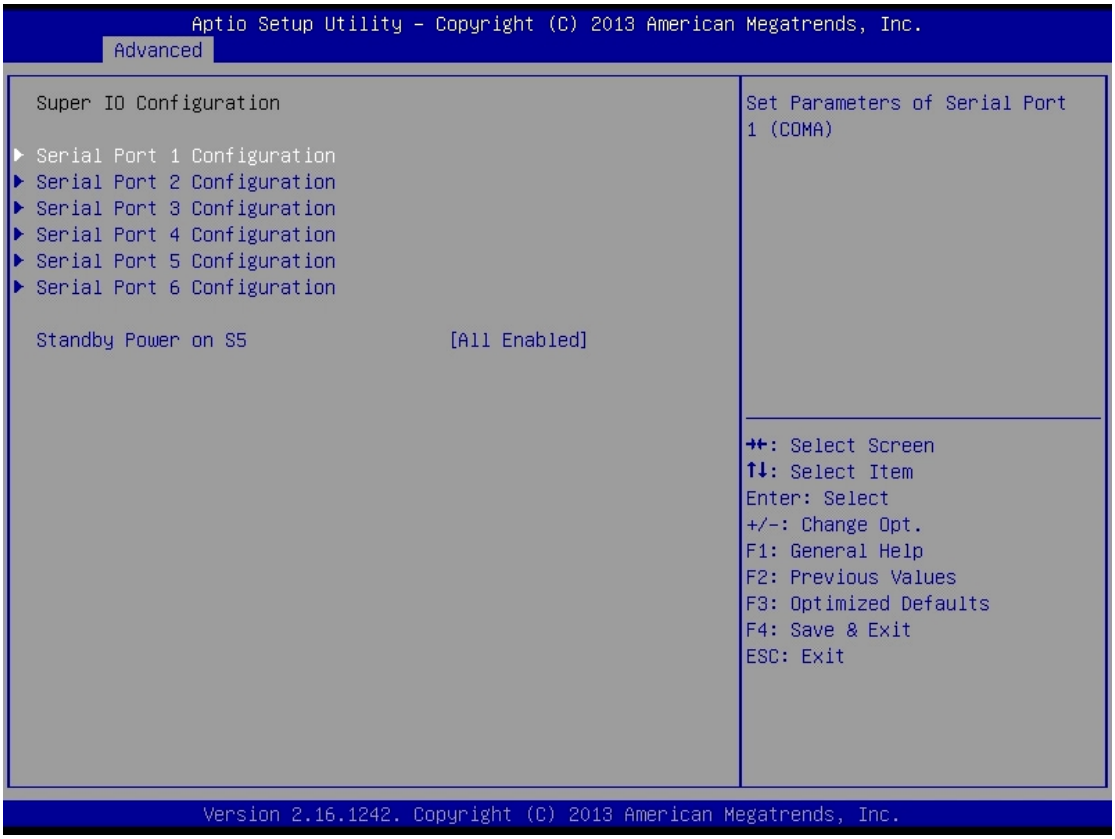
BIOS Setting	Description
Panel Color Depth	Sets the depth of the panel color as 18 / 24 bits.
LVDS Channel Type	Sets the LVDS display mode as the single or dual channel.
Panel Type	Sets the resolution identical with your panel.

4.4.3 iSmart Controller



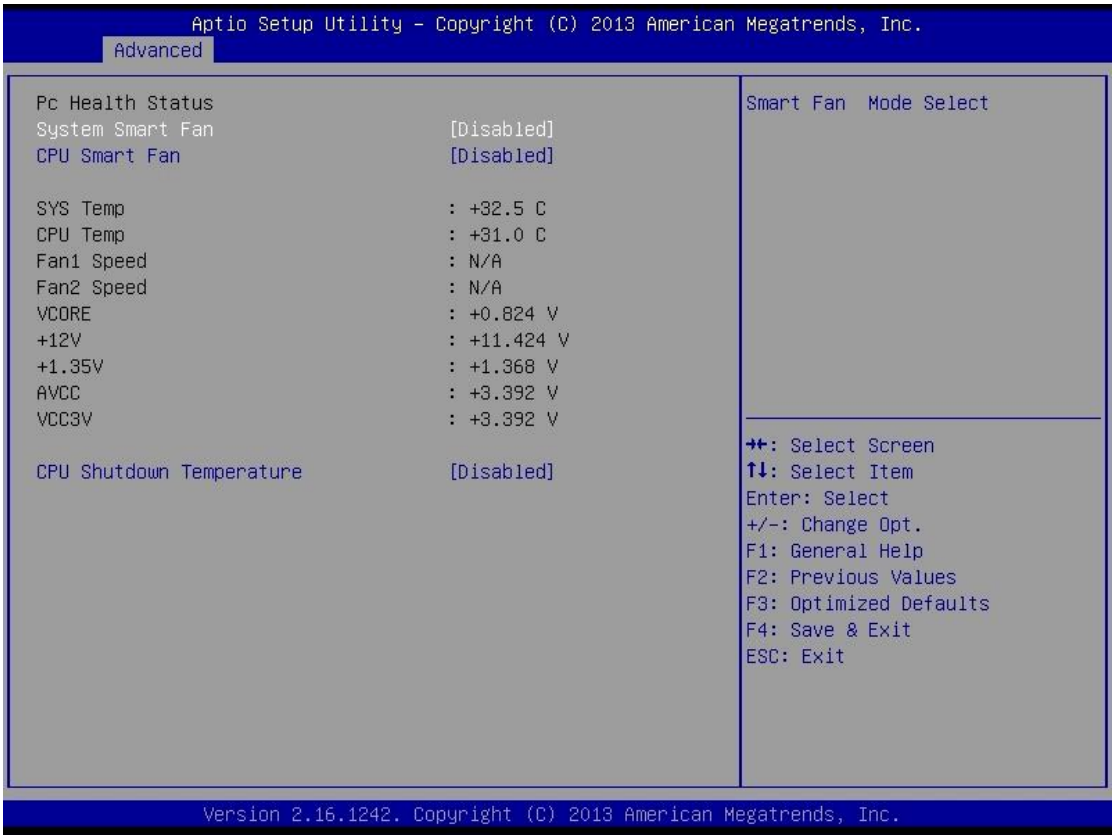
BIOS Setting	Description
Power-On after Power failure	Enables / Disables the system to be turned on automatically after a power failure.
Temperature Guardian	Generate the reset signal when system hands up on POST.
Schedule Slot 1 / 2	Sets up the hour / minute / day for the power-on schedule for the system. Options: • None • Power On • Power On / Off **Important:** If you would like to set up a schedule between adjacent days, configure two schedule slots. For example, if setting up a schedule from Wednesday 5 p.m. to Thursday 2 a.m., configure two schedule slots. But if setting up a schedule from 3 p.m to 5 p.m. on Wednesday, configure only a schedule slot.

4.4.4 Super IO Configuration



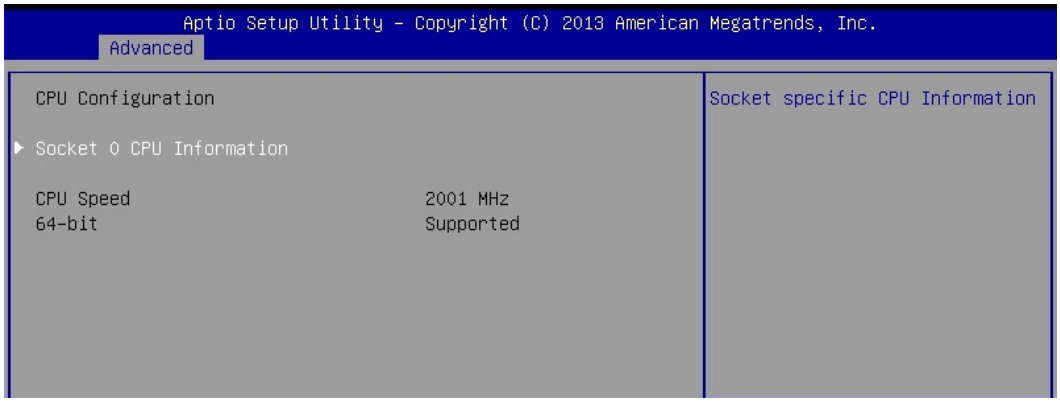
BIOS Setting	Description
Serial Ports Configuration	Setsparameters of serial ports. Enables /Disables the serial port and select an optimal setting for the Super IO device.

4.4.5 Hardware Monitor



BIOS Setting	Description
System Smart Fan	Enables / Disables smart fan control.
CPU Smart Fan	Enables / Disables smart fan control.
Temperatures/Voltages	These fields are the parameters of the hardware monitoring function feature of the motherboard. The values are read-only values as monitored by the system and show the PC health status.
CPU Shutdown Temperature	Sets a threshold of temperature to shut down if CPU goes overheated.

4.4.6 CPU Configuration

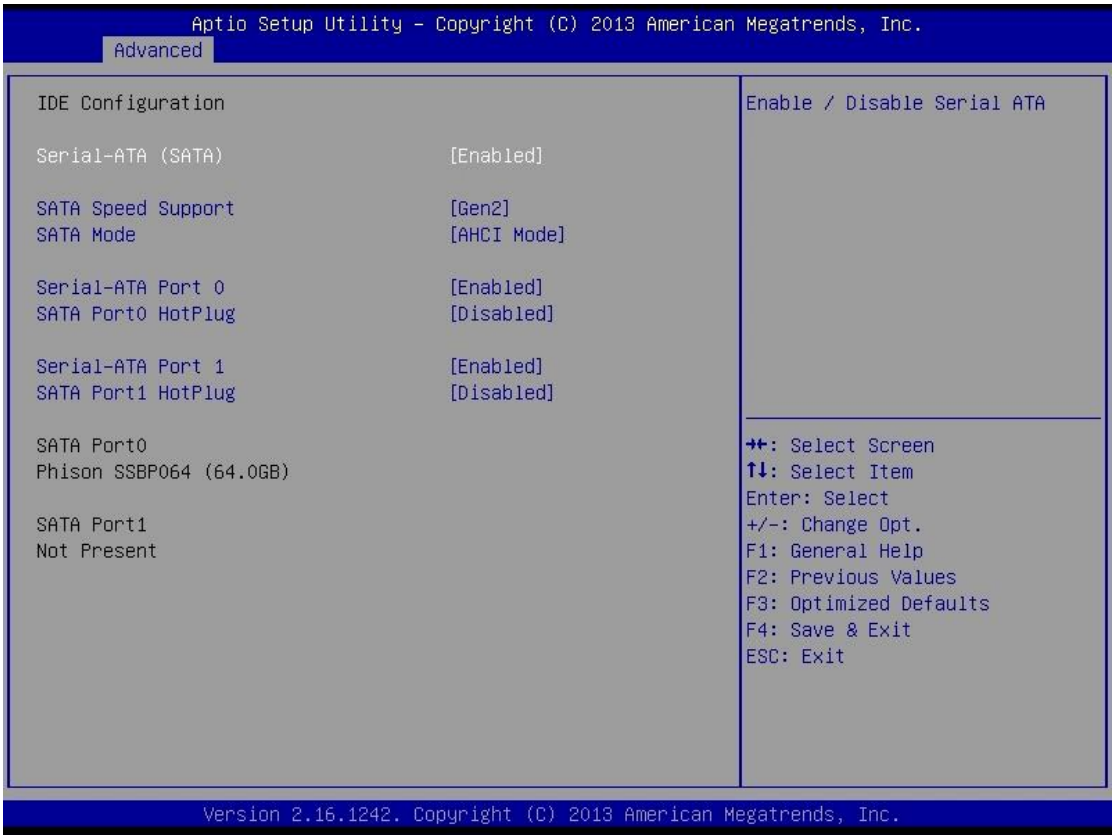


BIOS Setting	Description
Socket 0 CPU Information	Displays the information of the specific socket CPU.

4.4.7 PPM Configuration

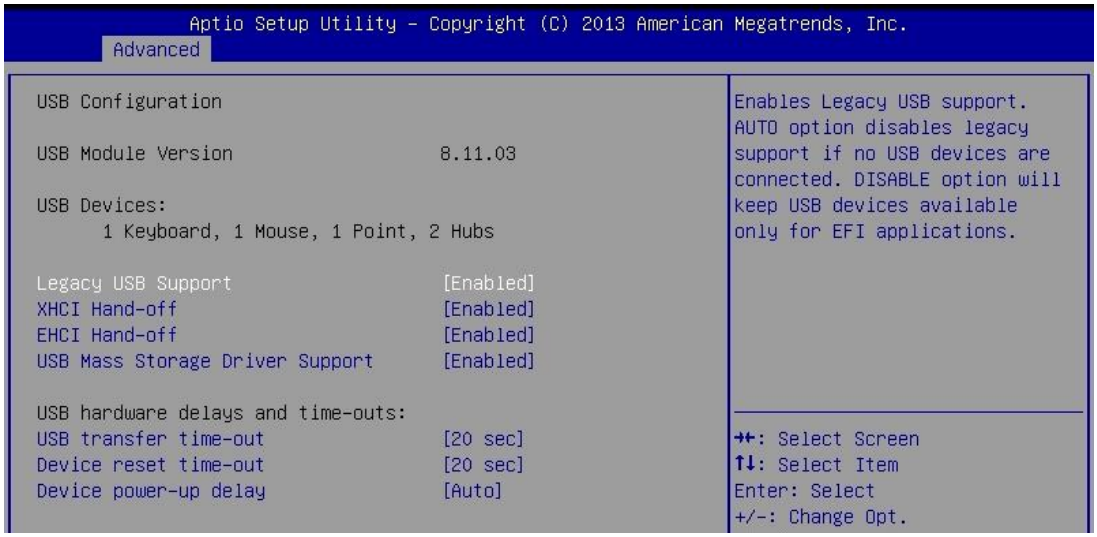
BIOS Setting	Description
EIST	Enables / Disables Intel SpeedStep.

4.4.8 IDE Configuration



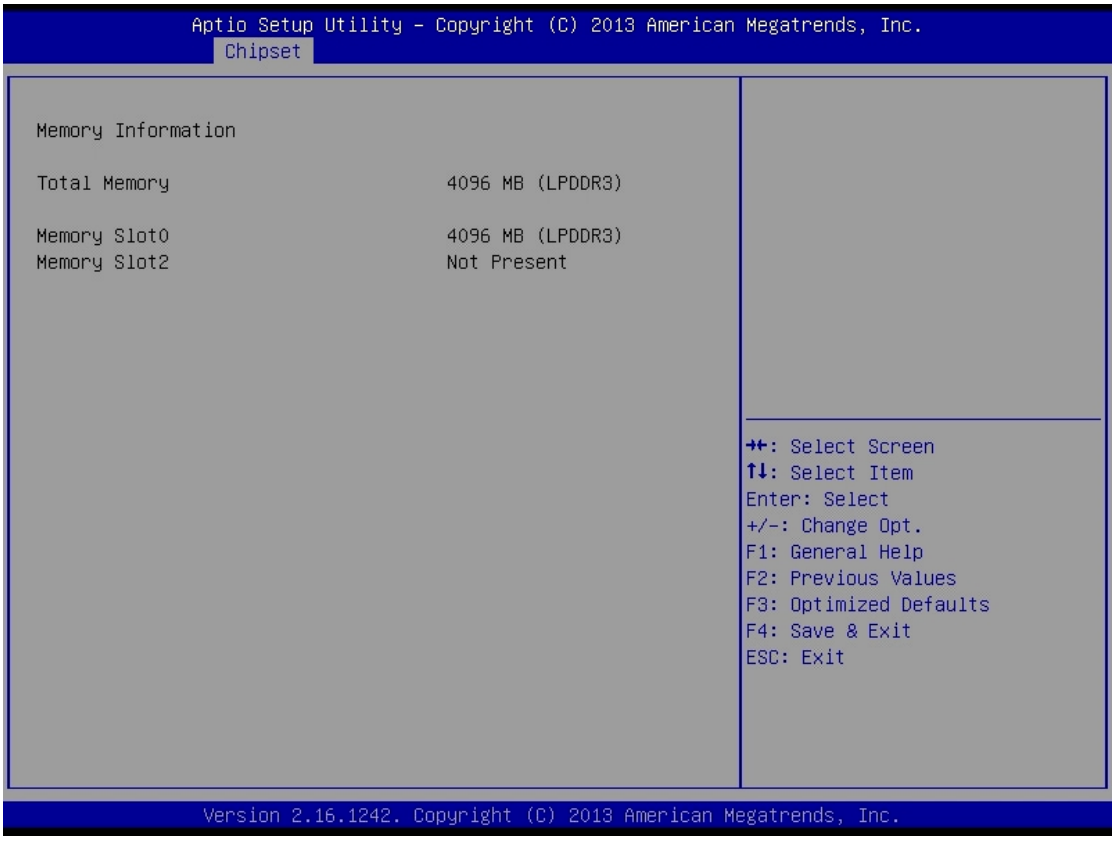
BIOS Setting	Description
Serial-ATA (SATA)	Enables / Disables SATA device.
SATA Speed Support	Selects a SATA interface speed mode.
SATA Mode	Selects AHCI Mode.
SATA Ports	Enables / Disables SATA Ports.
SATA Ports HotPlug	Enables / Disables SATA Port 1 HotPlug.

4.4.9 USB Configuration

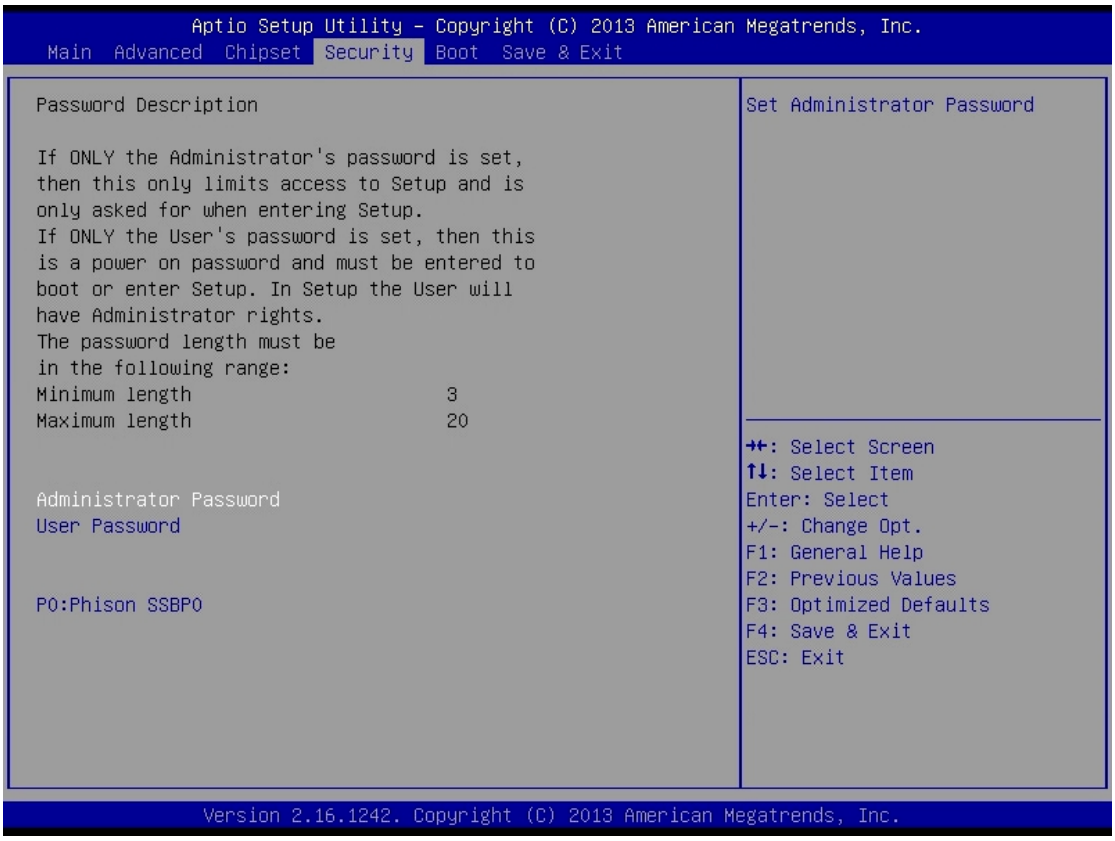


BIOS Setting	Description
Legacy USB Support	Enables / Disables Legacy USB support. • **Auto**disables legacy support if there is no USB deviceconnected. • **Disable** keeps USB devices available only for EFI applications.
XHCI Hand-pff	This is a workaround for OSes without XHCI hand-off support. The XHCI ownership change should be claimed by XHCI driver.
EHCI Hand-pff	This is a workaround for OSes without EHCI hand-off support. The EHCI ownership change should be claimed by EHCI driver.
USB Mass Storage Driver Support	Enables / Disables USB mass storage driver support.
USB Transfer time-out	Sets the time-out value 1, 5, 10 or 20 sec(s) for Control, Bulk, and Interrupt transfers.
Device reset time-out	Sets the seconds (10, 20, 30, 40 secs) of delaying execution of start unit command to USB mass storage device.
Device power-up delay	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, and for a hub port the delay is taken from hub descriptor.

4.5 Chipset Settings

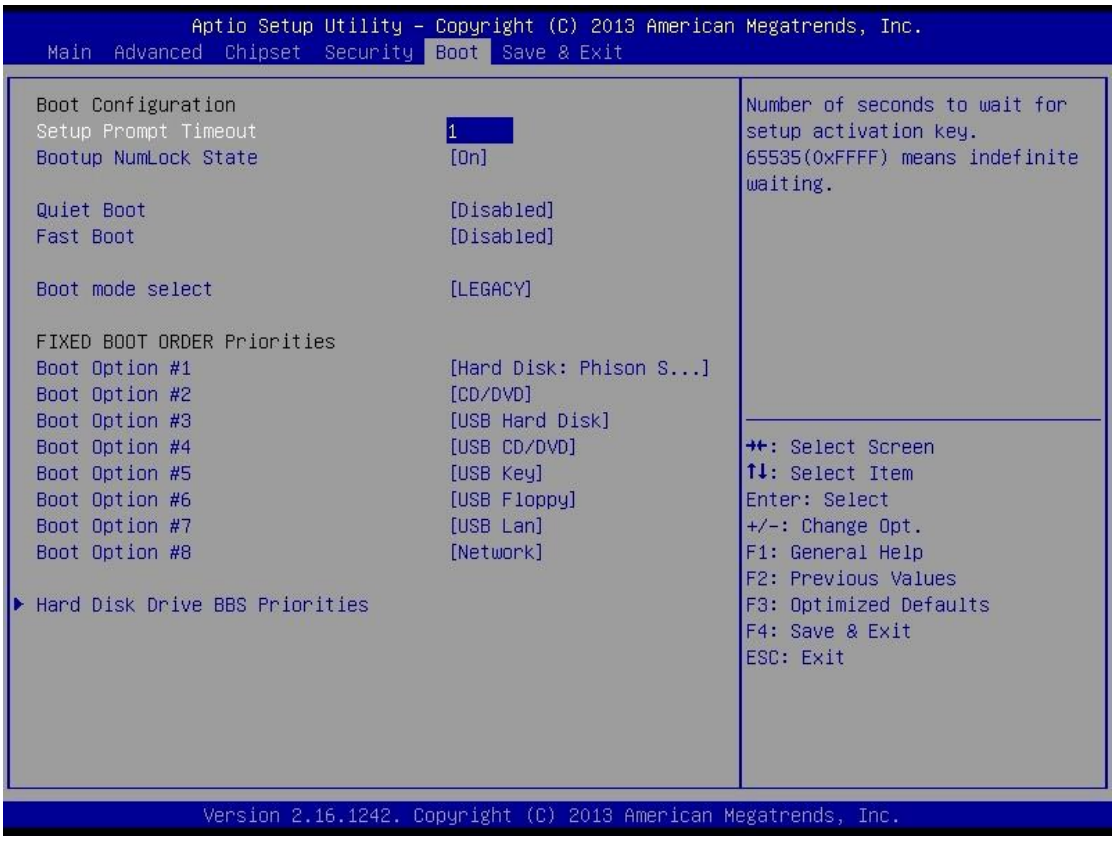


4.6 Security Settings



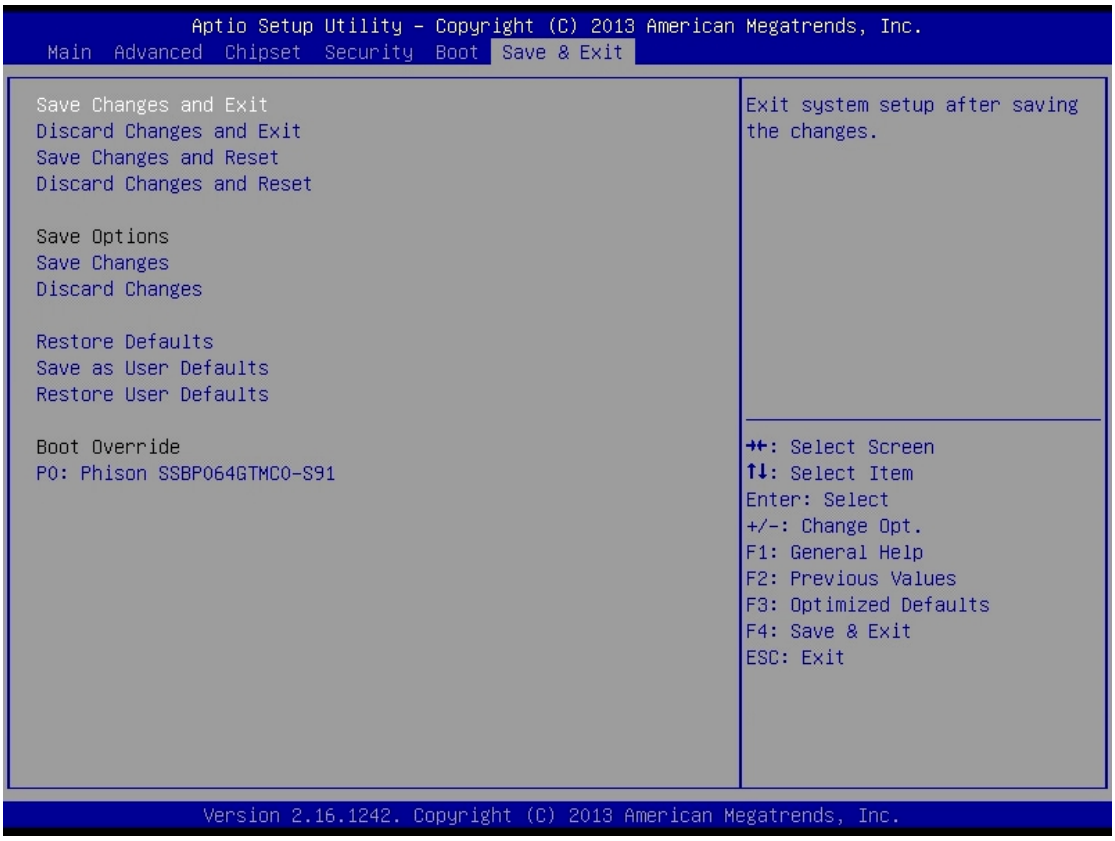
BIOS Setting	Description
Administrator Password	Sets an administrator password for the setup utility.
User Password	Sets a user password.

4.7 Boot Settings



BIOS Setting	Description
Setup Prompt Timeout	Number of seconds to wait for setup activation key. 65535(0xFFFF) means indefinite waiting.
Bootup NumLock State	Selects the keyboard NumLock state.
Quiet Boot	Enables/Disables Quiet Boot option.
Fast Boot	Enables/Disables boot with initialization of a minimal set of devices required to launch the active boot option. Has no effect for BBS boot options.
Boot Mode Select	Selects a Boot mode, Legacy / UEFI.
Boot Option Priorities	Sets the system boot order priorities for hard disk, CD/DVD, USB, Network.

4.8 Save & Exit Settings



BIOS Setting	Description
Save Changes and Exit	Exits system setup after saving the changes.
Discard Changes and Exit	Exits system setup without saving any changes.
Save Changes and Reset	Resets the system after saving the changes.
Discard Changes and Reset	Resets system setup without saving any changes.
Save Changes	Saveschanges done so far to any of the setup options.
Discard Changes	Discards changes done so far to any of the setup options.
Restore Defaults	Restores /Loads defaults values for all the setup options.
Save as User Defaults	Saves the changes done so far as user defaults.
Restore User Defaults	Restores the user defaults to all the setup options.

Appendix

This section provides the mapping addresses of peripheral devices and the sample code of watchdog timer configuration.

- I/O Port Address Map
- Interrupt Request Lines (IRQ)
- Digital I/O Sample Code
- Watchdog Timer Configuration

A. I/O Port Address Map

Each peripheral device in the system is assigned a set of I/O port addresses which also becomes the identity of the device. The following table lists the I/O port addresses used.

Address	Device Description
0x0000E070-0x0000E077	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
0x0000E060-0x0000E063	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
0x0000E050-0x0000E057	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
0x0000E040-0x0000E043	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
0x0000E020-0x0000E03F	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
0x0000E080-0x0000E087	Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0x000003B0-0x000003BB	Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0x000003C0-0x000003DF	Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller

Address	Device Description
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000004D0-0x000004D1	Programmable interrupt controller
0x00000040-0x00000043	System timer
0x00000050-0x00000053	System timer
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)
0x000002F0-0x000002F7	Communications Port (COM3)
0x000002E8-0x000002EF	Communications Port (COM4)
0x000003E8-0x000003EF	Communications Port (COM5)
0x000002E0-0x000002E7	Communications Port (COM6)
0x0000D000-0x0000DFFF	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series PCI Express - Root Port 1 - 0F48
0x00000000-0x0000006F	PCI bus
0x00000078-0x00000CF7	PCI bus
0x00000D00-0x0000FFFF	PCI bus
0x00000070-0x00000077	System CMOS/real time clock
0x00000070-0x00000077	Motherboard resources
0x00000A00-0x00000A0F	Motherboard resources
0x00000290-0x0000029F	Motherboard resources
0x00000A20-0x00000A2F	Motherboard resources
0x00000A30-0x00000A3F	Motherboard resources
0x0000E000-0x0000E01F	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series Platform Control Unit - SMBus Port - 0F12
0x0000C000-0x0000CFFF	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series PCI Express - Root Port 2 - 0F4A
0x0000002E-0x0000002F	Motherboard resources

Address	Device Description
0x0000004E-0x0000004F	Motherboard resources
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000080-0x0000008F	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000B2-0x000000B3	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x00000400-0x0000047F	Motherboard resources
0x00000500-0x000005FE	Motherboard resources
0x00000600-0x0000061F	Motherboard resources

B. Interrupt Request Lines (IRQ)

Peripheral devices use interrupt request lines to notify CPU for the service required. The following table shows the IRQ used by the devices on board.

Level	Function
IRQ 19	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series AHCI - 0F23
IRQ 19	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series PCI Express - Root Port 4 - 0F4E
IRQ 4294967281~86	Intel(R) I211 Gigabit Network Connection
IRQ 4294967294	Intel(R) Atom(TM) Processor E3800 Series/Intel(R) Celeron(R) Processor N2920/J1900
IRQ 4294967287~92	Intel(R) I211 Gigabit Network Connection #2
IRQ 0	System timer
IRQ 8	High precision event timer
IRQ 4	Communications Port (COM1)
IRQ 3	Communications Port (COM2)
IRQ 10	Communications Port (COM3)
IRQ 4294967293	Intel(R) USB 3.0 eXtensible Host Controller
IRQ 7	Communications Port (COM4)
IRQ 6	Communications Port (COM5)
IRQ 11	Communications Port (COM6)
IRQ 22	High Definition Audio Controller
IRQ 16	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series PCI Express - Root Port 1 - 0F48
IRQ 5	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series Platform Control Unit - SMBus Port - 0F12
IRQ 5	Intel(R) Trusted Execution Engine Interface
IRQ 17	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series PCI Express - Root Port 2 - 0F4A
IRQ 18	Intel(R) Pentium(R) processor N- and J-series / Intel(R) Celeron(R) processor N- and J-series PCI Express - Root Port 3 - 0F4C
IRQ 81 ~ IRQ 190	Microsoft ACPI-Compliant System

C. Watchdog Timer Configuration

The Watchdog Timer (WDT) is used to generate a variety of output signals after a user programmable count. The WDT is suitable for the use in the prevention of system lock-up, such as when software becomes trapped in a deadlock. Under these sorts of circumstances, the timer will count to zero and the selected outputs will be driven.

Under normal circumstance, you will need to restart the WDT at regular intervals before the timer counts to zero.

Sample Code:

```
//---------------------------------------------------------------------------
//
// T HIS CODE AND INFORMAT ION IS PROVIDED "AS IS" WIT HOUT WARRANT Y OF
ANY
// KIND, EIT HER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMIT ED T O T HE
// IMPLIED WARRANT IES OF MERCHANT ABILIT Y AND/OR FIT NESS FOR A PART
ICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include <dos.h>
#include <conio.h>
#include <stdio.h>
#include <stdlib.h>
#include "6106"
//---------------------------------------------------------------------------
int main (int argc, char *argv[]); void EnableWDT (int);
void DisableWDT (void);
//---------------------------------------------------------------------------
int main (int argc, char *argv[])
{
unsigned char bBuf; unsigned char bTime; char **endptr;
//      char SIO;

printf("6106 watch dog program\n");

bTime = strtol (argv[1], endptr, 10);
printf("System will reset after %d seconds\n", bTime);

if (bTime)
{
else
{

if (bTime> 0 &&bTime< 256)
{ A=2;
unsigned char result; Set_6106_LD(0x08);
gotoxy(1,12);
pr
```

```
}
}
//---------------------------------------------------------------------------
void EnableWDT (int interval)
{
return 0;
unsigned char bBuf; Set_6106_LD(0x08);
Set_6106_Reg(0x30,    0x01); Set_6106_Reg(0xF1, interval);
}
//---------------------------------------------------------------------------
void DisableWDT (void)
{
unsigned char bBuf; Set_6106_LD(0x08);
Set_6106_Reg(0x30,    0x00);
}
//---------------------------------------------------------------------------



//---------------------------------------------------------------------------
//
// T HIS CODE AND INFORMAT ION IS PROVIDED "AS IS" WIT HOUT WARRANT Y OF
ANY
// KIND, EIT HER EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMIT ED T O T HE
// IMPLIED WARRANT IES OF MERCHANT ABILIT Y AND/OR FIT NESS FOR A PART
ICULAR
// PURPOSE.
//
//---------------------------------------------------------------------------
#include "6106.H"
#include <dos.h>
//---------------------------------------------------------------------------
unsigned int 6106_BASE; void Unlock_6106 (void); void Lock_6106 (void);
//---------------------------------------------------------------------------
unsigned int    Init_6106(void)
{
unsigned int result; unsigned char ucDid;

6106_BASE = 0x4E;
result = 6106_BASE;
ucDid = Get_6106_Reg(0x20); if (ucDid == 0x07)
//6106
{       gotoInit_Finish;  }
6106_BASE = 0x2E;
result = 6106_BASE;
ucDid = Get_6106_Reg(0x20); if (ucDid == 0x07)
//6106
{       gotoInit_Finish;  }
6106_BASE = 0x00;
result = 6106_BASE;

Init_Finish:
return (result);
}
//---------------------------------------------------------------------------
```

```
void Unlock_6106 (void)
{
outportb(6106_INDEX_PORT ,    6106_UNL OCK); outportb(6106_INDEX_PORT ,
6106_UNLOCK);
}
//---------------------------------------------------------------------------
void Lock_6106 (void)
{
outportb(6106_INDEX_PORT ,    6106_LOCK);
}
//---------------------------------------------------------------------------
void Set_6106_LD( unsigned char LD)
{
Unlock_6106();
outportb(6106_INDEX_PORT ,    6106_REG_LD); outportb(6106_DAT A_PORT , LD);
Lock_6106();
}
//---------------------------------------------------------------------------
void Set_6106_Reg( unsigned char REG, unsigned char DAT A)
{
Unlock_6106();
outportb(6106_INDEX_PORT ,    REG); outportb(6106_DAT A_PORT , DAT A); Lock_6106();
}
//---------------------------------------------------------------------------
unsigned char Get_6106_Reg(unsigned char REG)
{
unsigned char Result; Unlock_6106();
outportb(6106_INDEX_PORT ,    REG); Result = inportb(6106_DAT A_PORT ); Lock_6106();
return Result;
}
//---------------------------------------------------------------------------
```