USER MANUAL

SP-7145/7147

15" / 17" Fanless Panel PC

Powered by Intel® Atom® E3845 / Celeron® J1900 CPU Processor

With DVI-I, 3COM, 4USB & 2LAN

SP-7145/7147 M2

SP-7145/7147

15”/17” High Performance Panel PC

DISCLAIMER

This user’s manual is meant to assist users in installing and setting up the system. The information contained in this document is subject to change without any notice.

CE NOTICE

This is a class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

FCC NOTICE

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

You are cautioned that any change or modifications to the equipment not expressly approve by the party responsible for compliance could void your authority to operate such equipment.

	**CAUTION:** Danger of explosion may occur when the battery is incorrectly replaced. Replace the battery only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

	**WARNING:** Some internal parts of the system may have high electrical voltage. We strongly recommend that only qualified engineers are allowed to service and disassemble the system. If any damages should occur on the system and are caused by unauthorized servicing, it will not be covered by the product warranty.

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Revision History

The revision history of SP-7145/7147 User Manual is described below:

Version No.	Revision History	Date
M1	Initial Release	2017/06/27
M2	1. SP-7145/7147 system diagrams have been changed. 2. SP-7145/7147 rear I/O ports diagrams have been changed. 3. SP-7145/7147 exploded diagrams have been changed.	2017/08/15

1 Introduction

This chapter provides the introduction for the SP-7145/7147 system as well as the framework of the user manual.

The following topic is included:

- About This Manual

1.1 About This Manual

Thank you for purchasing our SP-7145/7147 system. The SP-7145/7147 is an updated system designed to be comparable with the highest performance of IBM AT personal computers. The SP-7145/7147 provides faster processing speed, greater expandability and can handle more tasks than before. This manual is designed to assist you how to install and set up the whole system. It contains 5 chapters and 2 appendixes. Users can configure the system according to their own needs. This user manual is intended for service personnel with strong hardware background. It is not intended for general users.

The following section outlines the structure of this user manual.

Chapter 1 Introduction

This chapter introduces you to the background of this manual.

Chapter 2 Getting Started

This chapter describes the package contents and outlines the system specifications. It also includes the physical illustrations for the SP-7145/7147 system. Read the safety reminders carefully on how to take care of your system properly.

Chapter 3 System Configuration

This chapter outlines the locations of the motherboard and daughter boards components and their respective functions. You will learn how to set the jumpers and configure the system to meet your own needs.

Chapter 4 Software Utilities

This chapter contains helpful information for proper installations of the Intel Chipset Software Installation Utility, Intel Trusted Execution Engine Driver Utility, Graphics Driver Utility, LAN Driver Utility, Intel USB3.0 eXtensible Host Controller Utility, Sound Driver Utility, Resistive Touch Driver Utility and Projected Capacitive Touch Driver Utility.

Chapter 5 AMI BIOS Setup

This chapter indicates you how to change the BIOS configurations.

Appendix A System Assembly Diagrams

This appendix provides the system exploded diagrams and part numbers of SP-7145/7147.

Appendix B Technical Summary

This appendix provides the information about the system block diagram, allocation maps for system resources, Watchdog Timer Configuration and Flash BIOS Update.

2 Getting Started

This chapter provides the information for the SP-7145/7147 system. It describes how to set up the system quickly and outlines the system specifications.

The following topics are included:

- Package List
- System Overview
- System Diagrams
- System Specification
- Safety Precautions

Experienced users can go to Chapter 3 System Configuration on page 3-1 for a quick start.

2.1 Package List

If you discover any of the items listed below are damaged or lost, please contact your local distributor immediately.

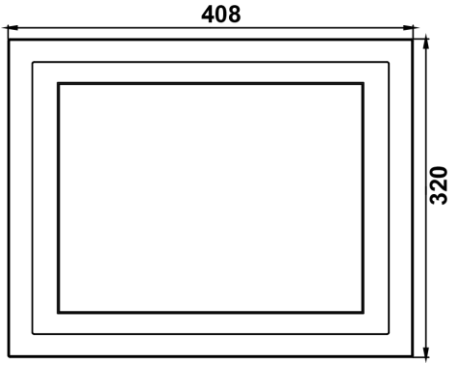
Item	Q'ty
SP-7145/7147	1
Manual / Driver DVD	1
Quick Guide	1
AC Power Cord	1
Power Adapter	1
Power Adapter Cable	1

2.2 System Diagrams

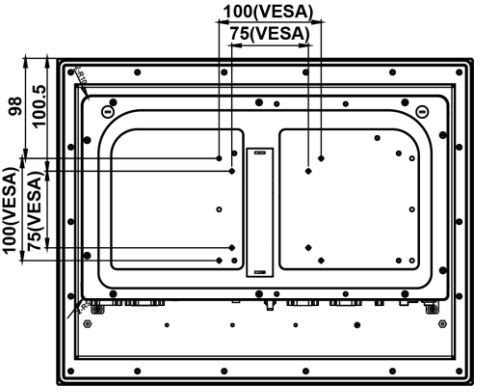
Unit: mm

SP-7145

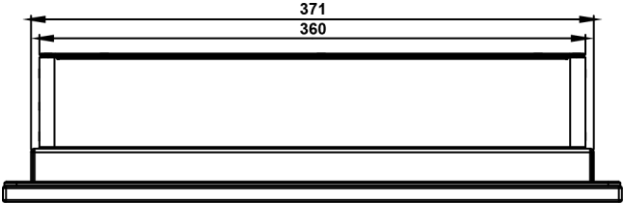
Front View



Rear View

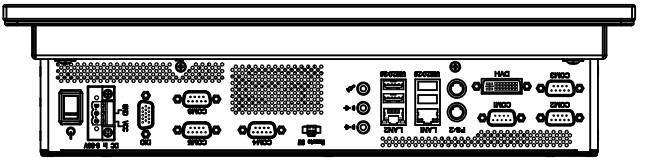


Top View

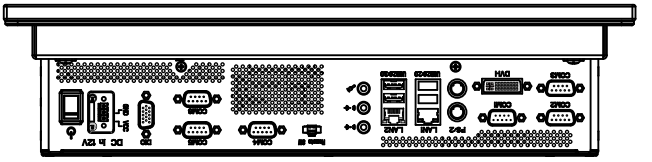


Bottom View

DC-IN: 9 ~ 36V

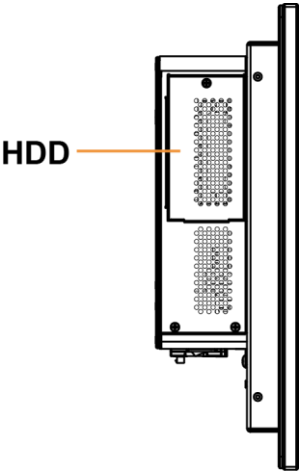


DC-IN: 12V

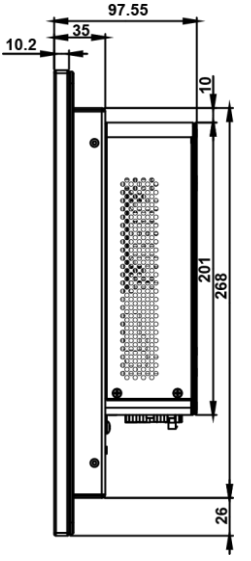


Unit: mm

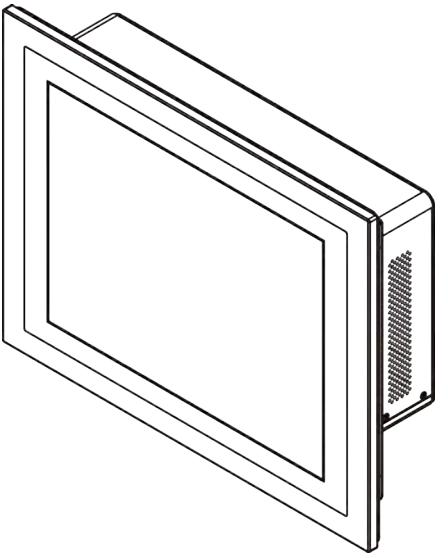
Left Side View



Right Side View



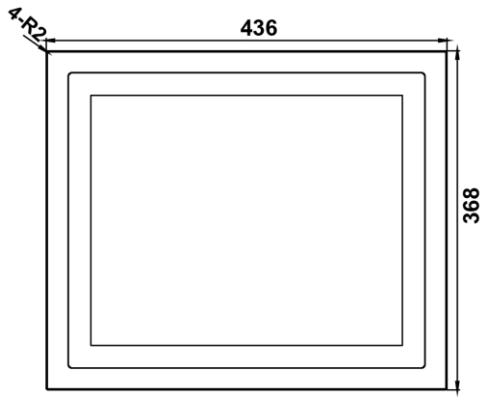
Quarter View



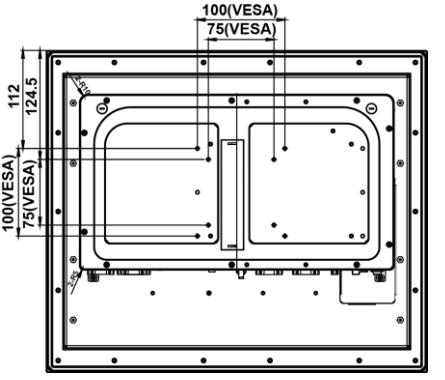
SP-7147

Unit: mm

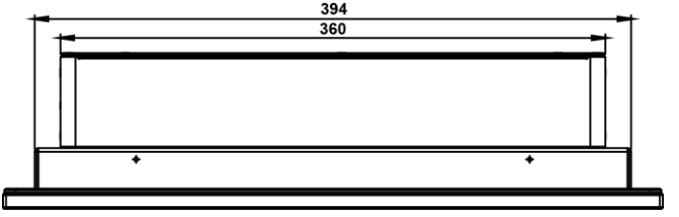
Front View



Rear View

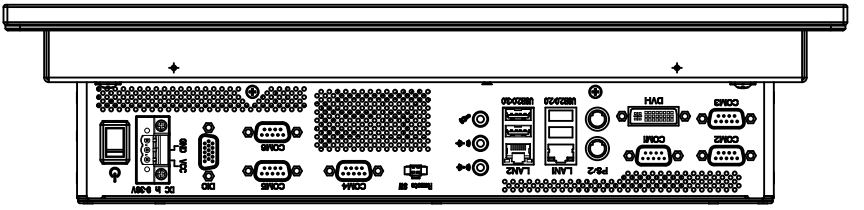


Top View

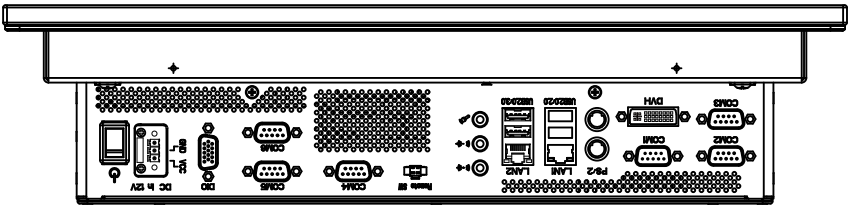


Bottom View

DC-IN: 9 ~ 36V

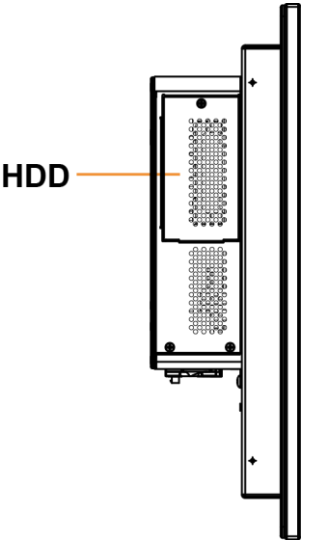


DC-IN: 12V

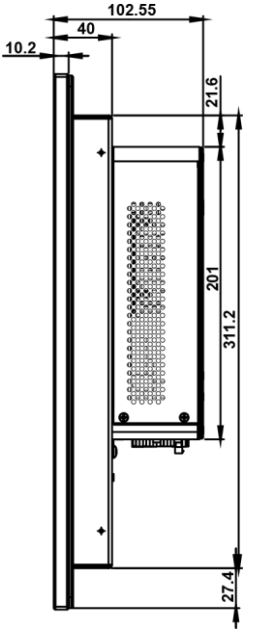


Unit: mm

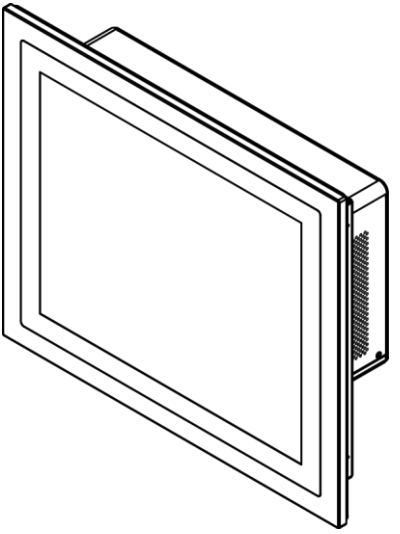
Left Side View



Right Side View



Quarter View



2.3 System Specifications

System	
CPU Support	➢ Intel® E3845 (Bay Trail-I)/J1900 (Bay Trail-D)
Memory Support	➢ 2 x 204-pin DDR3L 1333/1600MHz SO-DIMM (up to 8GB)
OS Support	➢ Win 7, Win 10, Microsoft Azure, Linux Ubuntu 14.04
Drive Bay	➢ 2 x 2.5" SATAII HDD or SSD
Power Supply	➢ DC-in 9V~36V
Power Adapter	➢ 12V, 60W / 24V, 120W
Expansion Slot	➢ 1 x half-sized Mini PCIe slot
Mounting Support	➢ Wall mount / VESA 75 / VESA 100 / Panel mount
Net Weight & Dimension (WxHxD)	➢ **SP-7145:** 6.8 kg, 408mm x 320mm x 26mm ➢ **SP-7147:** 7.9 kg, 436mm x 368mm x 27.4mm
Certificate	➢ CE/FCC
I/O Ports	
Serial Port	➢ COM1/2/3/4 for RS-232 (COM4 optional) ➢ COM3/4 pin9 5V/12V/RI selectable ➢ COM5/6 for RS-232/422/485 via daughter board (optional) ➢ COM4/5/6 are not available for optional DC IN 12V SKU
USB	➢ 3 x USB 2.0, 1 x USB 3.0
Display Port	➢ 1 x DVI-I
LAN	➢ 2 x LAN, RJ-45 (Controller: 2 x Intel I210-IT), Wake-On-LAN
Audio	➢ 1 x Line-out, 1 x Line-in,1 x Mic-in
Digital I/O	➢ 4in/4out (optional) (not available for optional DC IN 12V SKU)
Keyboard / Mouse	➢ 2 x PS/2 ports
DC-IN	➢ 1 x 3-pin terminal block connector on rear I/O
Power On/Off	➢ 1 x Power On/Off button and 1 x Remote Switch on rear I/O
Display	
LCD Panel Size	➢ **SP-7145:** 15" TFT LCD(LED) XGA (resolution: 1024 x 768)

	➢ **SP-7147:** 17" TFT LCD(LED) SXGA (resolution: 1280 x 1024)
Touchscreen	➢ Projected resistive / capacitive touch screen
Environment	
Operating Temp. (with airflow)	➢ HDD: 0°C ~ 40°C (32°F ~ 104°F) ➢ SSD: 0°C ~ 45°C (32°F ~ 113°F) Wide Temperature: ➢ 0°C ~50°C SSD (with J1900, Sunlight readable panel) ➢ 0°C ~55°C SSD (with J1900) ➢ -20°C ~50°C SSD (with E3845, Sunlight readable panel) ➢ -20°C ~55°C SSD (with E3845)
Storage Temp.	➢ -20°C ~ 80°C (-4°F ~ 176°F)
Humidity	➢ 20%~ 90%

2.4 Safety Precautions

Before operating this system, read the following information carefully to protect your systems from damages, and extend the life cycle of the system.

1. Check the Line Voltage
   - The operating voltage for the power supply should be within the range of 100V to 240V AC; otherwise the system may be damaged.

2. Environmental Conditions
   - Place your SP-7145/7147 on a sturdy, level surface. Be sure to allow enough space around the system to have easy access needs.
   - Avoid installing your SP-7145/7147 system in extremely hot or cold places.
   - Avoid direct sunlight exposure for a long period of time (for example, in a closed car in summer time. Also avoid the system from any heating device.). Or do not use SP-7145/7147 when it has been left outdoors in a cold winter day.
   - Avoid moving the system rapidly from a hot place to a cold place, and vice versa, because condensation may occur inside the system.
   - Protect your SP-7145/7147 from strong vibrations which may cause hard disk failure.
   - Do not place the system too close to any radio-active device. Radio-active device may cause signal interference.
   - Always shut down the operating system before turning off the power.
3. Handling
   - Avoid placing heavy objects on the top of the system.
   - Do not turn the system upside down. This may cause the hard drive to malfunction.
   - Do not allow any objects to fall into this device.
   - If water or other liquid spills into the device, unplug the power cord immediately.
4. Good Care
   - When the outside case gets stained, remove the stains using neutral washing agent with a dry cloth.
   - Never use strong agents such as benzene and thinner to clean the surface of the case.
   - If heavy stains are present, moisten a cloth with diluted neutral washing agent or alcohol and then wipe thoroughly with a dry cloth.
   - If dust is accumulated on the case surface, remove it by using a special vacuum cleaner for computers.

3 System Configuration

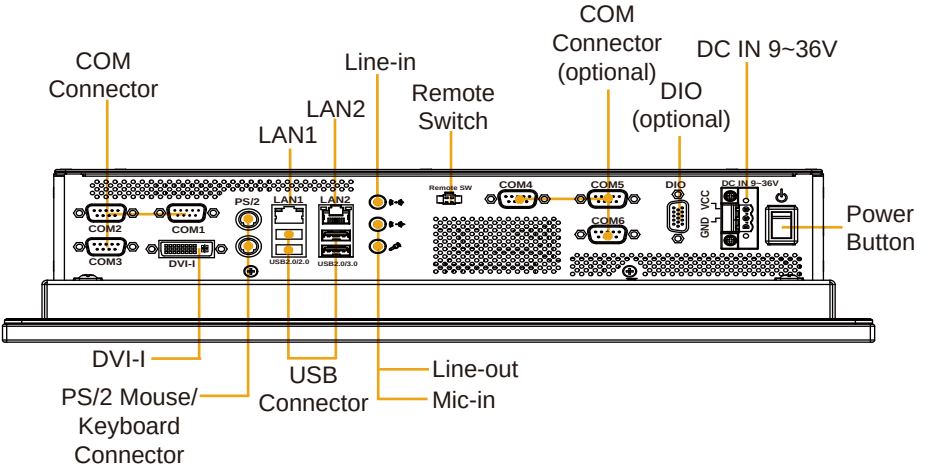
This chapter contains helpful information about the external I/O Ports diagram, and jumper & connector settings, and component locations for the main board and daughter board.

The following topics are included:

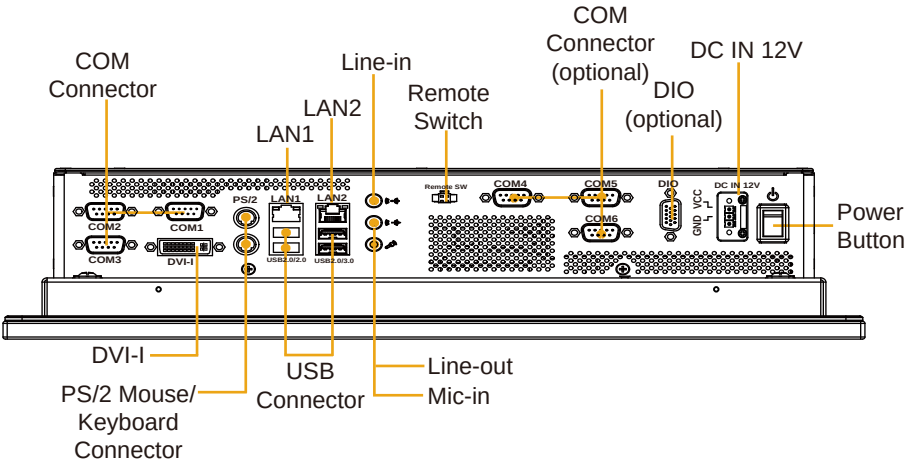
- External I/O Ports Diagram
- Main Board Jumper Settings and Component Locations
- How to Set Jumpers
- Setting Main Board Connectors and Jumpers
- Daughter Board Component Locations
- Setting Daughter Board Connectors and Jumpers

3.1 External I/O Ports Diagrams

3.1.1 Rear I/O Ports Diagram (DC IN: 9 ~ 36V)



3.1.2 Rear I/O Ports Diagram (DC IN: 12V)



3.2 JUMPER & CONNECTOR QUICK REFERENCE TABLE

JUMPER/CONNECTOR	NAME
LVDS Power Selection	JP4
Backlight Power Selection	JP5
AT/ATX Mode Selection	JP7
Backlight Enable Selection	JP9
VGA/DVI Selection	JP10
LVDS Resolution Selection	JP14, JP15
COM3 Voltage Selection	JP_COM3
COM4 Voltage Selection	JP_COM4
Audio Port	JAUDIO1
Battery Wafer	JBAT1
COM Port	JCOM2_3
COM4 Connector	JCOM4
COM5 Connector	JCOM5
COM6 Connector	JCOM6
DVI-I & COM Port	JCOM_DVII1
FAN Connector	JCPU_FAN1, JSYS_FAN1
DC 12V Connector	JDC_PWR1
DIO Wafer	JDIO1
Front Connector	JFP1
Inverter Wafer	JINV1
KB/MS Port	JKB_MS1
LAN & USB2.0 Port	JLAN_USB1
LAN& USB2.0/3.0 Port	JLAN_USB2
LVDS Connector	JLVDS1
SATA Connector	JSATA1, JSATA2
SATA Power Connector	JSATA_PWR1, JSATA_PWR2
USB Connector	JUSB1
MINI PCIE Connector	M_PCI_E1
PCIE BUS	PCI_E1
LPC Connector	JLPC1
Clear CMOS Data Selection	JP1

3.3 COMPONENT LOCATIONS

3.3.1 Top View and Jumper Settings of SP-7145/7147

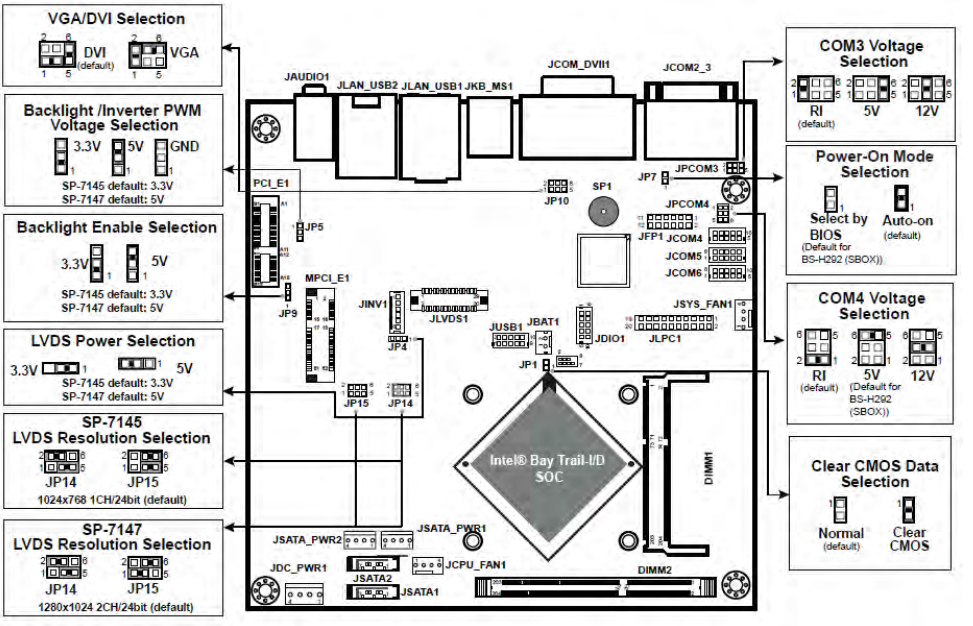


Figure 3-1. Main Board Component Location (Top View)

	**WARNING:** Always disconnect the power cord when you are working with connectors and jumpers on the main board. Make sure both the system and peripheral devices are turned OFF as sudden surge of power could damage sensitive components. Make sure SP-7145/7147 is properly grounded.

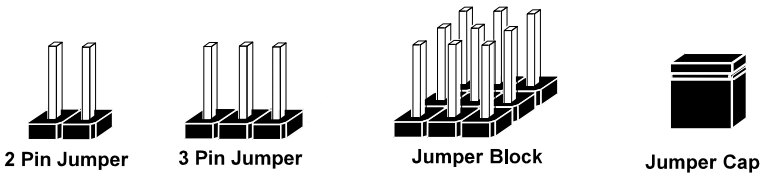
	**CAUTION:** Observe precautions while handling electrostatic sensitive components. Make sure to ground yourself to prevent static charge while you are working on the connectors and jumpers. Use a grounding wrist strap and place all electronic components in any static-shielded devices.
	**CAUTION:** Always touch the motherboard components by the edges. Never touch components such as a processor by its pins. Take special cares while you are holding electronic circuit boards by the edges only. Do not touch the mainboard components.

3.4 Setting Jumpers

You can configure your board by setting the jumpers. A jumper consists of two or three metal pins with a plastic base mounted on the card. By using a small plastic "cap", also known as the jumper cap (with a metal contact inside), you are able to connect the pins. So you can configure your hardware settings by "opening" or "closing" jumpers.

Jumpers can be combined into sets that are called jumper blocks. When jumpers are all in the block, you have to put them together to set up the hardware configuration. The figure below shows what this looks like.

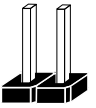
Jumpers & Caps



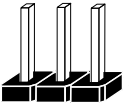
If a jumper has three pins, for example, labeled 1, 2 and 3. You can connect pins 1 and 2 to create one setting and shorting. You can also select to connect pins 2 and 3 to create another setting. The format of the jumper picture will be illustrated throughout this manual. The figure below shows different types of jumpers and jumper settings.

Jumper diagrams

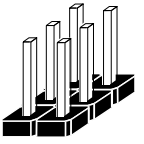
Jumper Cap looks like this



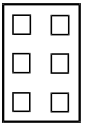
2 pin Jumper looks like this



3 pin Jumper looks like this

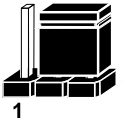


Jumper Block looks like this

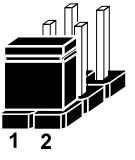


Jumper settings

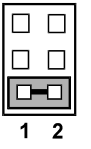
2 pin Jumper closed(enabled)
looks like this



3 pin Jumper
2-3 pin closed(enabled)
looks like this



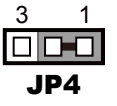
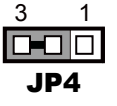
Jumper Block
1-2 pin closed(enabled)
looks like this



3.5 Setting Main Board Connectors and Jumpers

3.5.1 LVDS POWER SELECTION

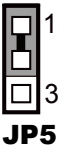
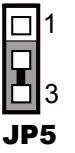
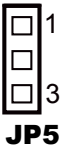
JP4: LVDS Power Selection

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
3.3V	1-2	 JP4
5V	2-3	 JP4

Note: Manufacturing default for SP-7145 is 3.3V.
Manufacturing default for SP-7147 is 5V.

3.5.2 BACKLIGHT INVERTER PWM VOLTAGE SELECTION

JP5: Backlight Inverter PWM Voltage Selection

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
3.3V	1-2	 JP5
5V	2-3	 JP5
GND	NC	 JP5

Note: Manufacturing default for SP-7145 is 3.3V.
Manufacturing default for SP-7147 is 5V.

3.5.3 POWER-ON MODE SELECTION

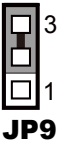
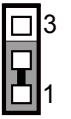
JP7: Power-On Mode Selection

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
Auto-on	**1-2**	 **JP7**
Select by BIOS	NC	 **JP7**

Note 1: Manufacturing default is **Auto-on**.
Note 2: Manufacturing default for BS-H292 (SBOX) is "NC".
Note 3: Auto-On means that system will turn on automatically whenever the main power is restored.

3.5.4 BACKLIGHT ENABLE SELECTION

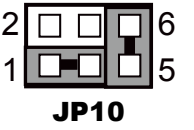
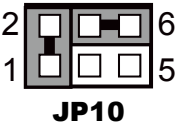
JP9: BACKLIGHT ENABLE Selection

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
5V	2-3	 **JP9**
3.3V	1-2	 **JP9**

Note: Manufacturing default for SP-7145 is 3.3V.
Manufacturing default for SP-7147 is 5V.

3.5.5 VGA/DVI SELECTION

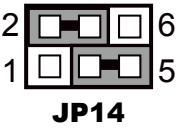
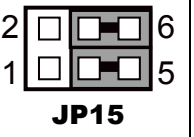
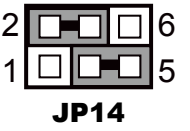
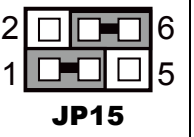
JP10: VGA/DVI Selection

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
DVI	(1-3) (5-6)	 **JP10**
VGA	(1-2) (4-6)	 **JP10**

Note: Manufacturing default is DVI.

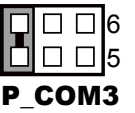
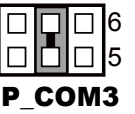
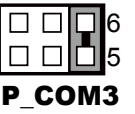
3.5.6 LVDS RESOLUTION SELECTION

JP14 & JP15: LVDS Resolution Selection

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION	
1024x768 1CH/24bit **(for SP-7145)**	JP15(4-6) JP15(3-5) JP14(2-4) JP14(3-5)	 **JP14**	 **JP15**
1280x1024 2CH/24bit **(for SP-7147)**	JP15(4-6) JP15(1-3) JP14(2-4) JP14(3-5)	 **JP14**	 **JP15**

3.5.7 COM3 PIN9 DEFINITION SELECTION GUIDE

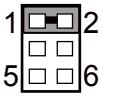
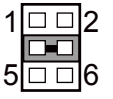
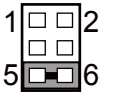
JP_COM3: COM3 Port pin9 RI/5V/12V Selection

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
RI	1-2	
12V	3-4	
5V	5-6	

Note: Manufacturing default is **RI**.

3.5.8 COM4 VOLTAGE SELECTION

JP_COM4: COM4 Voltage Selection

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
RI	1-2	 **JP_COM4**
12V	3-4	 **JP_COM4**
5V	5-6	 **JP_COM4**

Note 1: Manufacturing default is **RI**.

Note 2: Manufacturing default for BS-H292 (SBOX)) is 5V (5-6).

3.5.9 AUDIO PORT

JAUDIO1: Line-In, Line-Out & Microphone
The connector can also support only Microphone.

Line-In:

PIN	ASSIGNMENT
32	LINE-IN-L
33	NC
34	NC
35	LINE-IN-R

Line-Out:

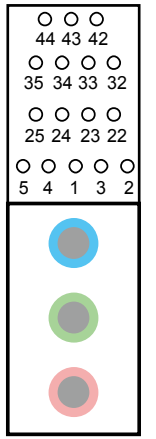
PIN	ASSIGNMENT
22	LINE-OUT-L
23	NC
24	NC
25	LINE-OUT-R

Mic-In:

PIN	ASSIGNMENT
1	GND
2	MIC_L
3	NC
4	NC
5	MIC_R

Others:

PIN	ASSIGNMENT
42	NC
43	NC
44	NC

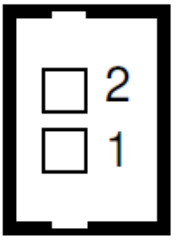


JAUDIO1

3.5.10 BATTERY WAFER

JBAT1: Battery Wafer

PIN	ASSIGNMENT
1	RTC_BAT
2	GND

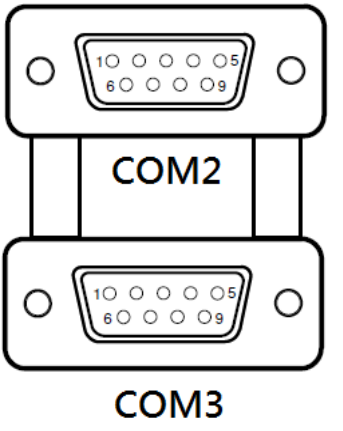


JBAT1

3.5.11 COM2 and COM3 PORTS

JCOM2_3: COM Port

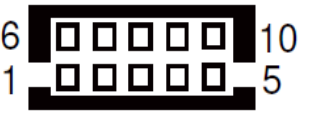
PIN	ASSIGNMENT
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI



JCOM2_3

3.5.12 COM4 CONNECTOR

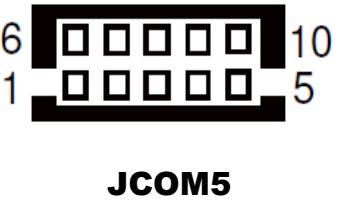
JCOM4: COM4 Connector



JCOM4

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND	10	NC

3.5.13 COM5 CONNECTOR

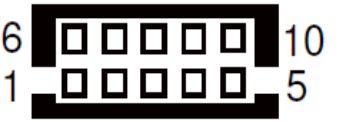


JCOM5

JCOM5: COM5 Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND	10	NC

3.5.14 COM6 CONNECTOR



JCOM6

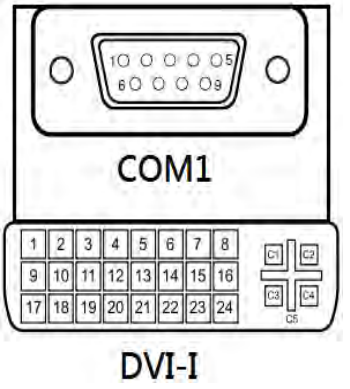
JCOM6: COM6 Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	DCD	6	DSR
2	RXD	7	RTS
3	TXD	8	CTS
4	DTR	9	RI
5	GND	10	NC

3.5.15 DVI-I & COM PORT

JCOM_DVII1: DVI-I & COM PORT
DVI-I: DVI Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	TMDS_D2-	2	TMDS_D2+
3	GND	4	NC
5	NC	6	DDC_CLK
7	DDC_DATA	8	VSYNC
9	TMDS_D1-	10	TMDS_D1+
11	GND	12	NC
13	NC	14	5V
15	GND	16	HPD
17	TMDS_D0-	18	TMDS_D0+
19	GND	20	NC
21	NC	22	GND
23	TMDS_CLK+	24	TMDS_CLK-
C1	RED	C2	GREEN
C3	BLUE	C4	HSYNC
C5	CND	-	-



JCOM_DVII1

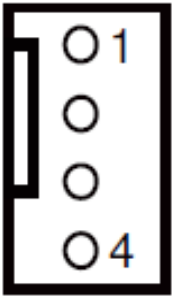
COM1: COM Connector

PIN	ASSIGNMENT
1	DCD
2	RXD
3	TXD
4	DTR
5	GND
6	DSR
7	RTS
8	CTS
9	RI

3.5.16 FAN CONNECTOR

JCPU_FAN1, JSYS_FAN1: Fan Connector

PIN	ASSIGNMENT
1	GND
2	12V
3	FAN_CONTROL
4	FAN_SIGNAL



JCPU_FAN1/ JSYS_FAN1

3.5.17 DC 12V CONNECTOR

JDC_PWR1: DC 12V Connector

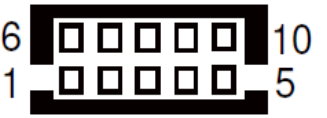
PIN	ASSIGNMENT
1	12V
2	12V
3	GND
4	GND

JDC_PWR1

3.5.18 DIO WAFER (optional)

JDIO1: DIO Wafer

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	5V	6	GND
2	DIN0	7	DOUT0
3	DIN1	8	DOUT1
4	DIN2	9	DOUT2
5	DIN3	10	DOUT3

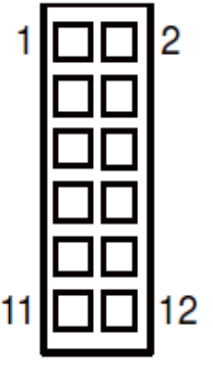


JDIO1

3.5.19 FRONT CONNECTOR

JFP1: Front Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	HDD_LED+	7	RESET SWITCH
2	PWR_LED+	8	SPEAKER SIGNAL
3	HDD_LED-	9	POWER BUTTON
4	PWR_LED-	10	SPEAKER SIGNAL
5	GND	11	GND
6	SPK_VCC	12	SPEAKER SIGNAL

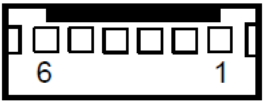


JFP1

3.5.20 INVERTER WAFER

JINV1: Inverter Wafer

PIN	ASSIGNMENT
1	12V
2	12V
3	GND
4	PWM SIGNAL
5	GND
6	BACKLIGHT EN



JINV1

3.5.21 KB/MS PORT

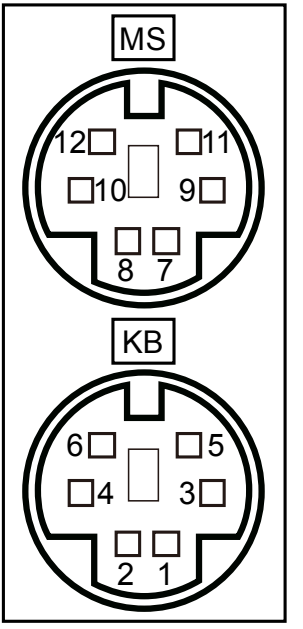
JKB_MS1: KB/MS Port

Keyboard:

PIN	ASSIGNMENT
1	DATA
2	NC
3	GND
4	5V
5	CLK
6	NC

Mouse:

PIN	ASSIGNMENT
7	DATA
8	NC
9	GND
10	5V
11	CLK
12	NC



JKB_MS1

3.5.22 LAN & USB2.0 PORT

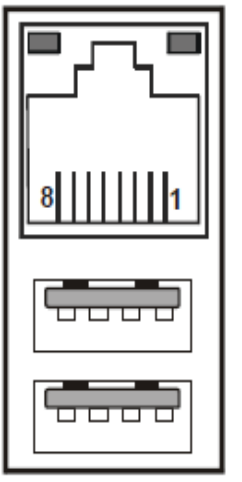
JLAN_USB1: LAN & USB2.0 PORT

LAN:

PIN	ASSIGNMENT
1	TX_D1+
2	TX_D1-
3	RX_D2+
4	BI_D3+
5	BI_D3-
6	RX_D2-
7	BI_D4+
8	BI_D4-

USB2.0:

PIN	ASSIGNMENT
1	5V
2	D-
3	D+
4	GND



JLAN_USB1

3.5.23 LAN& USB2.0/3.0 PORT

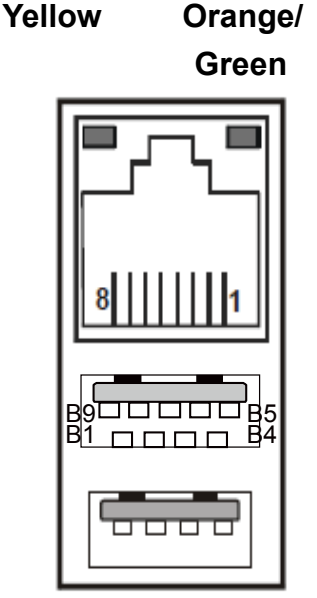
JLAN_USB2: LAN & USB2.0/3.0 PORT

LAN:

PIN	ASSIGNMENT
1	TX_D1+
2	TX_D1-
3	RX_D2+
4	BI_D3+
5	BI_D3-
6	RX_D2-
7	BI_D4+
8	BI_D4-

USB2.0:

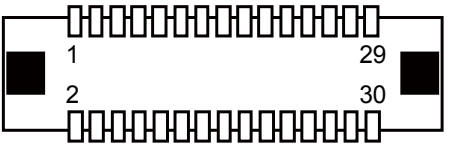
PIN	ASSIGNMENT
B1	VBUS
B2	D-
B3	D+
B4	GND
B5	STDA_SSRX-
B6	STDA_SSRX+
B7	GND
B8	STDA_SSTX-
B9	STDA_SSTX+



JLAN_USB2

2-28. LVDS CONNECTOR

JLVDS1: LVDS Connector



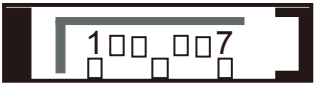
JLVDS1

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LVDS_VCC	2	GND
3	LVDS1_CLK-	4	LVDS1_CLK+
5	GND	6	LVDS1_D2-
7	LVDS1_D2+	8	GND
9	LVDS1_D1-	10	LVDS1_D1+
11	LVDS1_D3+	12	LVDS1_D3-
13	LVDS1_D0+	14	LVDS1_D0-
15	GND	16	LVDS0_CLK+
17	LVDS0_CLK-	18	GND
19	LVDS0_D2+	20	LVDS0_D2-
21	GND	22	LVDS0_D1+
23	LVDS0_D1-	24	GND
25	LVDS0_D0+	26	LVDS0_D0-
27	LVDS0_D3+	28	LVDS0_D3-
29	LVDS_VCC	30	LVDS_VCC

3.5.24 SATA CONNECTOR

JSATA1, JSATA2: Two Serial ATA Connectors

PIN	ASSIGNMENT
1	GND
2	TX+
3	TX-
4	GND
5	RX-
6	RX+
7	GND

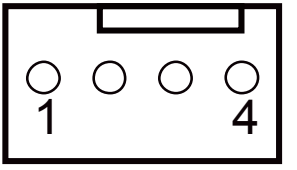


JSATA1/ JSATA2

2-30. SATA POWER CONNECTOR

JSATA_PWR1, JSATA_PWR2: SATA Power Connector

PIN	ASSIGNMENT
1	5V
2	GND
3	GND
4	12V

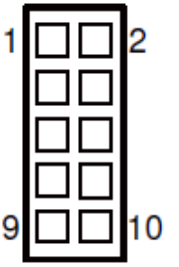


JSATA_PWR1/ JSATA_PWR2

3.5.25 USB CONNECTOR

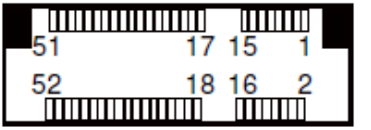
JUSB1: USB Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	5V	2	5V
3	D-	4	D-
5	D+	6	D+
7	GND	8	GND
9	GND	10	GND



JUSB1

3.5.26 MINI PCIE CONNECTOR



M_PCI_E1

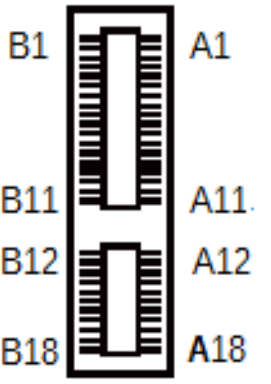
M_PCI_E1: MINI PCIE Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	WAKE#	2	3.3V
3	NC	4	GND
5	NC	6	1.5V
7	CLKREQ#	8	NC
9	GND	10	NC
11	REFCLK-	12	NC
13	REFCLK+	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	NC
21	GND	22	PERST#
23	PERn0	24	3.3V
25	PERp0	26	GND
27	GND	28	1.5V
29	GND	30	SMB_CLK
31	PETn0	32	SMB_DATA
33	PETp0	34	GND
35	GND	36	USB_D-
37	GND	38	USB_D+
39	3.3V	40	GND
41	3.3V	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	1.5V
49	NC	50	GND
51	NC	52	3.3V

3.5.27 PCIE BUS

PCI_E1: PCIE BUS

PIN	ASSIGNMENT	PIN	ASSIGNMENT
A1	NC	B1	12V
A2	12V	B2	12V
A3	12V	B3	12V
A4	GND	B4	GND
A5	NC	B5	SMB_CLK
A6	NC	B6	SMB_DATA
A7	NC	B7	GND
A8	NC	B8	3.3V
A9	3.3V	B9	NC
A10	3.3V	B10	3.3V_SB
A11	PWRGD	B11	WAKE#
A12	GND	B12	NC
A13	REFCLK+	B13	GND
A14	REFCLK-	B14	HSOP0
A15	GND	B15	HSON0
A16	HSIP0	B16	GND
A17	HSIN0	B17	PRSNT#
A18	GND	B18	GND

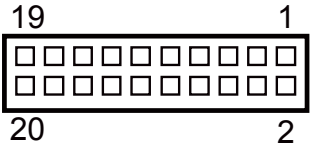


PCI_E1

3.5.28 LPC CONNECTOR

JLPC1: LPC Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	CLK	2	GND
3	FRAME	4	NC
5	RESET	6	VCC5
7	LAD3	8	LAD2
9	VCC3	10	LAD1
11	LAD0	12	GND
13	SMBCLK	14	SMBDATA
15	3VSB	16	SERIRQ
17	GND	18	CLK RUN
19	SUS_TAT	20	DREQ0

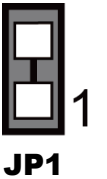


JLPC1

3.5.29 CLEAR CMOS DATA SELECTION

Jumper Location: JP1
Description: Clear CMOS Data Selection

Step 1. Remove the main power of the PC.
Step 2. Close **JP1** (pins 1-2) for 6 seconds by a cap.
Step 3. Remove the cap which is just used on **JP1** (1-2), so that **JP1** returns to "OPEN".
Step 4. Power on the PC and the PC will then auto-reboot for once in order to set SoC's register.
Step 5. Done!

SELECTION	JUMPER SETTINGS	JUMPER ILLUSTRATION
Normal	***Open*** ***(Default Setting)***	
Clear CMOS Data	Close	

Note: Please make sure the main power is off before you clear CMOS.

3.6 DAUGHTER BOARD BR-6062 JUMPER QUICK REFERENCE TABLE

DAUGHTER BOARD BR-6062: 50 x 89mm Daughter Board with 2UART to RS-232/422/485 Transceiver

JUMPER	NAME
JP1	RS-485 Auto Flow Control for JCOM1_1 & JCOM1
JP2	RS-232/422/485 Selection for JCOM1_1 & JCOM1
JP3	RS-485 Auto Flow Control for JCOM2_1
JP3	RS-232/422/485 Selection for JCOM2_1

3.7 DAUGHTER BOARD BR-6062 COMPONENT LOCATIONS

3.7.1 BR-6062 Top View

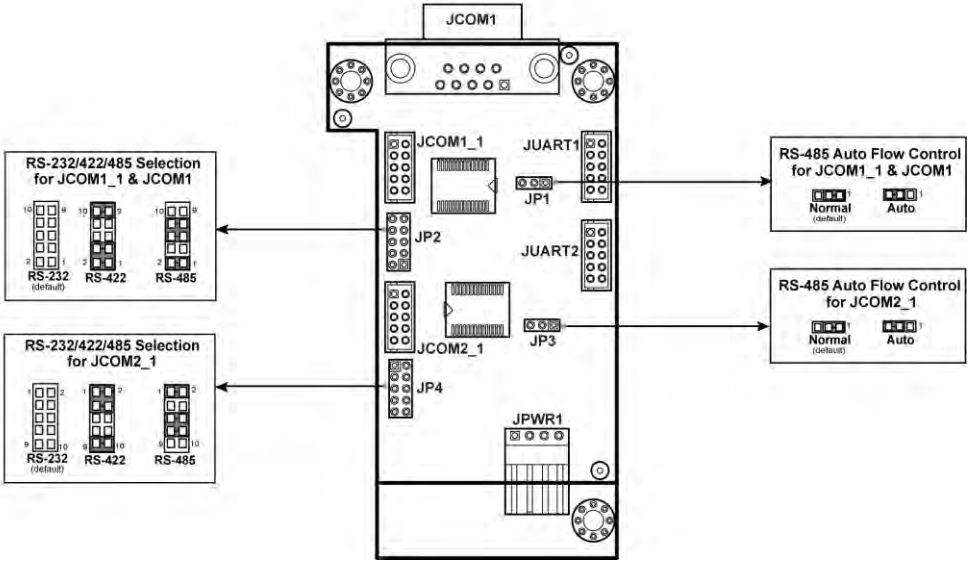
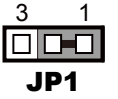
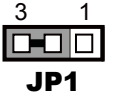


Figure 3-2. Daughter Board BR-6062 Component Location (Top View)

3.8 SETTING DAUGHTER BOARD BR-6062 JUMPERS

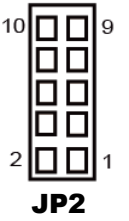
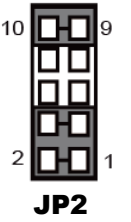
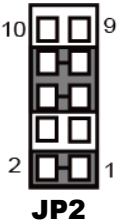
3.8.1 RS-485 AUTO FLOW CONTROL FOR JCOM1_1 & JCOM1

JP1: RS-485 Auto Flow Control Selection for JCOM1_1 and JCOM1

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
Normal (Default)	1-2	 JP1
Auto	2-3	 JP1

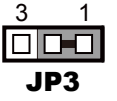
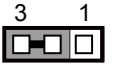
3.8.2 RS-232/422/485 SELECTION FOR JCOM1_1 & JCOM1

JP2: RS-232/422/485 Selection for JCOM1_1 & JCOM1

Selection	Jumper Setting	Jumper Illustration
RS-232 (Default)	Open	
RS-422	1-2, 3-4, 9-10	
RS-485	1-2, 5-6, 7-8	

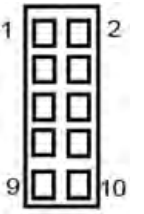
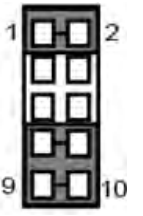
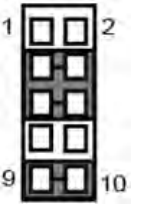
3.8.3 RS-485 AUTO FLOW CONTROL FOR JCOM2_1

JP3: RS-485 Auto Flow Control Selection for JCOM2_1

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
Normal (Default)	1-2	 **JP3**
Auto	2-3	 **JP3**

3.8.4 RS-232/422/485 SELECTION FOR JCOM2_1

JP4: RS-232/422/485 Selection for JCOM2_1

Selection	Jumper Setting	Jumper Illustration
RS-232 (Default)	Open	 **JP4**
RS-422	1-2, 3-4, 9-10	 **JP4**
RS-485	1-2, 5-6, 7-8	 **JP4**

3.9 DAUGHTER BOARD SR-6100 CONNECTOR & JUMPER QUICK REFERENCE TABLE

DAUGHTER BOARD SR-6100: 50 x 89mm Daughter Board with 2UART to RS-232/422/485 Transceiver

JUMPER	NAME
JP1	Run Control Output Selection
JP2/JP3	Pulse Skipping Mode Selection
JP2/JP3	Continuous Mode Selection

CONNECTOR	NAME
VIN	VIN Voltage Selection (+9V ~ +36V)
VOUT	VOUT Voltage Selection (+12V)

3.10 DAUGHTER BOARD SR-6100 COMPONENT LOCATIONS

3.10.1 SR-6100 Top View

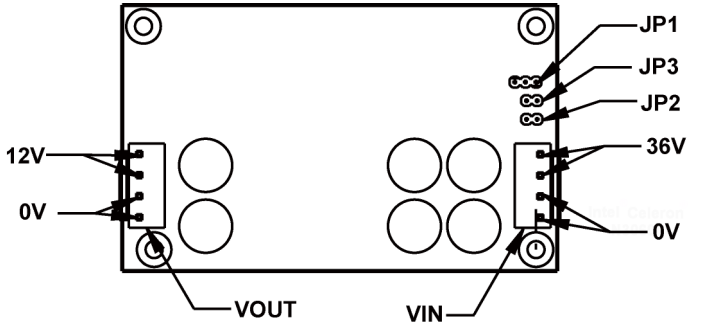


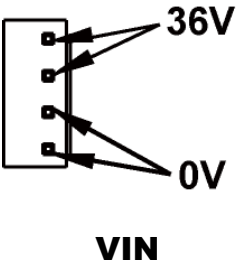
Figure 3-3. Daughter Board SR-6100 Component Location (Top View)

3.11 SETTING DAUGHTER BOARD SR-6100 CONNECTORS & JUMPERS

3.11.1 VIN Connector (+9V~+36V)

VIN: VIN Connector

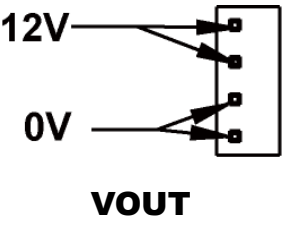
PIN	ASSIGNMENT
1	VIN+
2	VIN+
3	GND
4	GND



3.11.2 VOUT Connector (+12V)

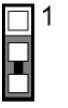
VIN: VIN Connector

PIN	ASSIGNMENT
1	GND
2	GND
3	VOUT
4	VOUT



3.11.3 RUN CONTROL INPUT SELECTION

JP1: Run Control Input Selection

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
VIN+ (Turn On) (Default)	1-2	 **JP1**
GND (Shut Down)	2-3	 **JP1**

3.11.4 PULSE SKIPPING MODE SELECTION

JP2/JP3: Pulse Skipping Mode Selection

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
Pulse Skipping Mode (Default)	1-2	 **JP2**
NC	Open	 **JP3**

3.11.5 CONTINUOUS MODE SELECTION

JP2/JP3: Continuous Mode Selection

SELECTION	JUMPTER SETTING	JUMPER ILLUSTRATION
NC	Open	 **JP2**
Continuous Mode (Default)	1-2	 **JP3**

4 Software Utilities

This chapter provides the detailed information that guides users to install driver utilities for the system. The following topics are included:

- Installing Intel® Chipset Software Installation Utility
- Installing Intel® Trusted Execution Engine Interface
- Installing Graphics Driver Utility
- Installing LAN Driver Utility
- Installing Intel® USB 3.0 eXtensible Host Controller Utility
- Installing Sound Driver Utility
- Installing Resistive Touch Driver Utility
- Installing Projected Capacitive Touch Driver Utility

4.1 Introduction

Enclosed with the SP-7145/7147 Series package is our driver utilities contained in a DVD-ROM disk. Refer to the following tables for driver locations:

Filename (Assume that DVD- ROM drive is D:)	Purpose	OS	
		DOS	Win7/32 bit
D:\Driver\Flash BIOS	For Aptio(EFI) BIOS update utility	✓	X
D:\Driver\Platform\Main Chip	Intel(R) Chipset Device Software Installation Utility	X	✓
D:\Driver\Platform\TXE	For Intel Trusted Execution Engine Interface	X	✓
D:\Driver\Platform\Graphics	Intel HD Graphics	X	✓
D:\Driver\Platform\LAN Chip	Intel I210-IT For LAN Driver installation	X	✓
D:\Driver\ Platform\ USB3.0	Intel(R) USB 3.0 eXtensible Host Controller Utility	X	✓
D:\Driver\Platform\Sound Codec	Realtek ALC888S For Sound driver installation	X	✓
D:\Driver\Platform\ Windows 7 KMDF	Windows Kernel-Mode Driver Framework driver installation	X	✓
D:\Driver\Device\touch driver	Resistive touch driver installation	X	✓
D:\Driver\Device\touch driver\WES7	Projected Capacitive touch driver installation	X	For WES7 only

X : Not support

✓: Support

Note: Install the driver utilities immediately after the OS installation is completed.

Filename (Assume that DVD- ROM drive is D:)	Purpose	OS	
		DOS	Win7/64 bit
D:\Driver\Flash BIOS	For Aptio (EFI) BIOS update utility	✓	X
D:\Driver\Platform\Main Chip	Intel(R) Chipset Device Software Installation Utility	X	✓
D:\Driver\Platform\TXE	For Intel Trusted Execution Engine Interface	X	✓

Filename (Assume that DVD- ROM drive is D:)	Purpose	OS	
		DOS	Win7/64 bit
D:\Driver\Platform\Graphics	Intel HD Graphics	X	✓
D:\Driver\Platform\LAN Chip	Intel I210-IT For LAN Driver installation	X	✓
D:\Driver\ Platform\ USB3	Intel(R) USB 3.0 eXtensible Host Controller Utility	X	✓
D:\Driver\Platform\Sound Codec	Realtek ALC888S For Sound driver installation	X	✓
D:\Driver\Platform\ Windows 7 KMDF	Windows Kernel-Mode Driver Framework driver installation	X	✓
D:\Driver\Device\touch driver	Resistive touch driver installation	X	✓
D:\Driver\Device\touch driver\WES7	Projected Capacitive touch driver installation	X	For WES7 only

X : Not support

✓: Support

Note: Install the driver utilities immediately after the OS installation is completed.

Filename (Assume that DVD- ROM drive is D:)	Purpose	OS	
		DOS	Win10/32 bit
D:\Driver\Flash BIOS	For Aptio(EFI) BIOS update utility	✓	X
D:\Driver\Platform\Main Chip	Intel(R) Chipset Device Software Installation Utility	X	✓
D:\Driver\Platform\TXE	For Intel Trusted Execution Engine Interface	X	✓
D:\Driver\Platform\Graphics	Intel HD Graphics	X	✓
D:\Driver\Platform\LAN Chip	Intel I210-IT For LAN Driver installation	X	✓
D:\Driver\Platform\Sound Codec	Realtek ALC888S For Sound driver installation	X	✓
D:\Driver\Device\touch driver	Resistive touch driver installation	X	✓

X : Not support

✓: Support

Note: Install the driver utilities immediately after the OS installation is completed.

Filename (Assume that DVD- ROM drive is D:)	Purpose	OS	
		DOS	Win10/64 bit
D:\Driver\Flash BIOS	For Aptio (EFI) BIOS update utility	✓	X
D:\Driver\Platform\Main Chip	Intel(R) Chipset Device Software Installation Utility	X	✓
D:\Driver\Platform\TXE	For Intel Trusted Execution Engine Interface	X	✓
D:\Driver\Platform\Graphics	Intel HD Graphics	X	✓
D:\Driver\Platform\LAN Chip	Intel I210-IT For LAN Driver installation	X	✓
D:\Driver\Platform\Sound Codec	Realtek ALC888S For Sound driver installation	X	✓
D:\Driver\Device\touch driver	Resistive touch driver installation	X	✓

X : Not support

✓: Support

Note: Install the driver utilities immediately after the OS installation is completed.

4.2 Installing Intel® Chipset Software Installation Utility

4.2.1 Introduction

The Intel® Chipset Software Installation Utility installs the Windows *.INF files to the target system. These files outline to the operating system how to configure the Intel chipset components in order to ensure that the following functions work properly:

- Core PCI and ISAPNP Services
- PCIe Support
- SATA Storage Support
- USB Support
- Identification of Intel® Chipset Components in the Device Manager

4.2.2 Intel® Chipset Software Installation Utility

The utility pack is to be installed only for Windows® 7/10 series, and it should be installed immediately after the OS installation is finished. Please follow the steps below:

1. Connect the USB DVD-ROM device to SP-7145/7147 and insert the driver disk.
2. Enter the **Main Chip** folder where the Chipset driver is located.
3. Select Windows 7 (32/64-bit) / Windows 10 (32/64-bit) for your OS platform.
4. Click the chipset driver installation file for driver installation.
5. Follow the on-screen instructions to install the driver.
6. Once the installation is completed, shut down the system and restart SP-7145/7147 for the changes to take effects.

4.3 Intel® Trusted Execution Engine Installation Utility

For Windows 7 only. Pre-install Microsoft's Kernel-Mode Driver Framework (KMDF) version 1.11 before you install the Intel® Trusted Execution Engine Installation Utility (TXE) in order to avoid errors in Device Manager.

Installation Instructions for Kernel-Mode Driver Framework (KMDF)

To install the Kernel-Mode Driver Framework (KMDF), follow the steps below:

1. Insert the driver disk into a DVD-ROM device.
2. (For Windows 7 only) Enter the KMDF folder where the installation driver file is located.
3. (For Windows 7 only) Click the **Setup kmdf-1.11.exe** file for driver installation.

Installation Instructions for Intel® Trusted Execution Engine Installation Utility

1. Connect the USB DVD-ROM device to SP-7145/7147 and insert the driver disk.
2. Enter the **TXE** folder where the driver is located.
3. Select Windows 7 (32/64-bit) / Windows 10 (32/64-bit) for your OS platform.
4. Click **SetupTXE.exe** file for TXE driver installation.
5. Follow the on-screen instructions to complete the installation.

6 Once the installation is completed, shut down the system and restart SP-7145/7147 for the changes to take effect.

4.4 Installing Graphics Driver Utility

The graphics interface embedded in SP-7145/7147 can support a wide range of display types. You can have dual displays via DVI-D ports and make the system work simultaneously.

To install the Graphics driver utility, follow the steps below:

1 Connect the USB DVD-ROM device to SP-7145/7147 and insert the driver disk.

2 Enter the **Graphics** folder where the driver is located.

3 Select Windows 7 (32/64-bit) / Windows 10 (32/64-bit) for your OS platform.

4 Click the graphics driver installation file for driver installation.

5 Follow the on-screen instructions to complete the installation.

6 Once the installation is completed, shut down the system and restart SP-7145/7147 for the changes to take effect.

4.5 Installing LAN Driver Utility

Enhanced with LAN function, SP-7145/7147 supports various network adapters. To install the LAN Driver, follow the steps below:

1. Connect the USB DVD-ROM device to SP-7145/7147 and insert the driver disk.
2. Enter the **LAN** folder where the driver is located.
3. Select Windows 7 (32/64-bit) / Windows 10 (32/64-bit) for your OS platform.
4. Click the LAN driver installation file for driver installation.
5. Follow the on-screen instructions to complete the installation.
6. Once the installation is completed, shut down the system and restart SP-7145/7147 for the changes to take effects.

For more details on the installation procedure, refer to the README.txt file that you can find on LAN Driver Utility.

4.6 Intel® USB 3.0 eXtensible Host Controller Utility

(For Windows 7 Only) Intel® USB 3.0 eXtensible Host Controller Driver supports the following Intel® Chipsets/Processors:

- Intel® 8 Series/C220 series Chipset Family
- Intel® 4th Generation Core™ Processors
- Intel® C610 series Chipset Family
- Intel® 9 Series Chipset Family
- Intel® Pentium® Processor or Intel® Celeron® Processor N- & J-Series
- Intel® 5th generation Intel® Core™ Processors
- Intel® Core™ M Processor
- Intel® 6th generation Intel® Core™ processors
- Intel® 100 Series Chipset Family

To install the utility, follow the steps below:

1 Insert the driver disk into a DVD-ROM device.

2 Under Windows system, go to the directory where the driver is located.

3 Run the application with administrative privileges.

4.7 Installing Sound Driver Utility

The sound function enhanced in this system is fully compatible with Windows® 7/10 series.

To install the Sound Driver, follow the steps below:

1. Connect the USB DVD-ROM device to SP-7145/7147 and insert the driver disk.
2. Open the **Sound** folder where the driver is located.
3. Select Windows 7 (32/64-bit) / Windows 10 (32/64-bit) for your OS platform.
4. Click the Sound driver installation file for driver installation.
5. Follow the on-screen instructions to complete the installation.
6. Once the installation is completed, shut down the system and restart SP-7145/7147 for the changes to take effect.

4.8 Installing Resistive Touch Driver Utility

To install the Resistive Touch Driver, follow the steps below:

1. Connect the USB DVD-ROM device to SP-7145/7147 and insert the driver disk.
2. Enter the **Touch driver** folder where the driver is located.
3. Select Windows 7 (32/64-bit) / Windows 10 (32/64-bit) for your OS platform.
4. Click the Touch driver installation file for driver installation.
5. Follow the on-screen instructions to complete the installation.
6. Once the installation is completed, shut down the system and restart SP-7145/7147 for the changes to take effects.

4.9 Installing Projected Capacitive Touch Driver Utility

To install the Projected Capacitive Touch Driver, follow the steps below:

1. Connect the USB DVD-ROM device to SP-7145/7147 and insert the driver disk.
2. Enter the **Touch driver > WES7** folder where the driver is located.
3. Select WES 7 (32/64-bit) for your OS platform.
4. Click the Touch driver installation file for driver installation.
5. Follow the on-screen instructions to complete the installation.
6. Once the installation is completed, shut down the system and restart SP-7145/7147 for the changes to take effects.

5 BIOS SETUP

This chapter guides users how to configure the basic system configurations via the BIOS (Basic Input / Output System) Setup Utilities. The information of the system configuration is saved in battery-backed CMOS RAM and BIOS NVRAM so that the Setup information is retained when the system is powered off. The BIOS Setup Utilities consist of the following menu items:

- Accessing Setup Utilities
- Main Menu
- Advanced Menu
- Chipset Menu
- Security Menu
- Boot Menu
- Save & Exit Menu

5.1 Introduction

The SP-7145/7147 System uses an AMI (American Megatrends Incorporated) Aptio BIOS that is stored in the Serial Peripheral Interface Flash Memory (SPI Flash) and can be updated. The SPI Flash contains the built-in BIOS setup program, Power-On Self-Test (POST), PCI auto-configuration utility, LAN EEPROM information, and Plug and Play support.

Aptio is AMI's BIOS firmware based on the UEFI (Unified Extensible Firmware Interface) specifications and the Intel Platform Innovation Framework for EFI. The UEFI specification defines an interface between the operating system and platform firmware. The interface consists of data tables that contain platform-related information, boot service calls, and runtime service calls that are available to the operating system and its loader. These elements have combined to provide a standard environment for booting the operating system and running pre-boot applications.

The diagram below shows the Extensible Firmware Interface's location in the software stack.

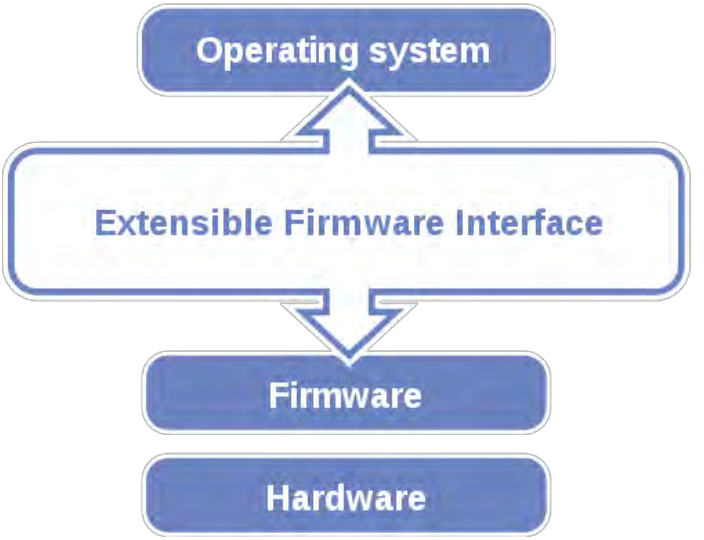


Figure 5-1. Extensible Firmware Interface Diagram

EFI BIOS provides an user interface that allows you to modify hardware configuration, e.g. change the system date and time, enable/disable a system component, determine bootable device priority, set up personal password, etc., which is convenient for engineers to perform modifications and customize the computer system and allows technicians to troubleshoot the occurred errors when the hardware is faulty.

The BIOS setup menu allows users to view and modify the BIOS settings for the computer. After the system is powered on, users can access the BIOS setup menu by pressing <Del> or <Esc> immediately while the POST message is running before the operating system is loading.

All the menu settings are described in details in this chapter.

5.2 Accessing Setup Utility

After the system is powered on, BIOS will enter the Power-On Self-Test (POST) routines and the POST message will be displayed:

Figure 5-2. POST Screen with AMI Logo

Press **<Del>** or **<Esc>** to access the Setup Utility program and the **Main** menu of the Aptio Setup Utility will appear on the screen as below:

BIOS Setup Menu Initialization Screen

You may move the cursor by <↑> and <↓> keys to highlight the individual menu items. As you highlight each item, a brief description of the highlighted selection will appear on the right side of the screen.

The language of the BIOS setup menu interface and help messages are shown in US English. You may use <↑> or <↓> key to select among the items and press <Enter> to confirm and enter the sub-menu. The following table provides the list of the navigation keys that you can use while operating the BIOS setup menu.

BIOS Setup Navigation Key	Description
<←> and <→>	Select a different menu screen (move the cursor from the selected menu to the left or right).
<↑> and <↓>	Select a different item (move the cursor from the selected item upwards or downwards)
<Enter>	Execute the command or select the sub-menu.
<F2>	Load the previous configuration values.
<F3>	Load the default configuration values.
<F4>	Save the current values and exit the BIOS setup menu.
<Esc>	Close the sub-menu. Trigger the confirmation to exit BIOS setup menu.

BIOS Messages

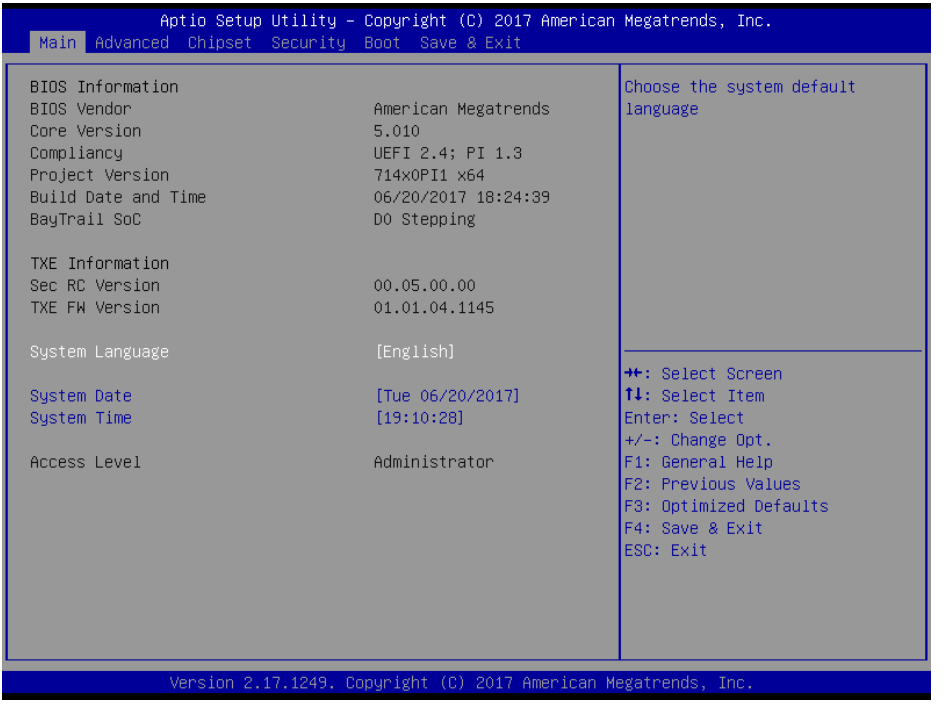
This section describes the alert messages generated by the board's BIOS. These messages would be shown on the monitor when certain recoverable errors/events occur during the POST stage. The table bellow gives an explanation of the BIOS alert messages:

BIOS Message	Explanation
A first boot or NVRAM reset condition has been detected.	BIOS has been updated or the battery was replaced.
The CMOS defaults were loaded.	Default values have been loaded after the BIOS was updated or the battery was replaced.
The CMOS battery is bad or has been recently replaced.	The battery may be losing power and users should replace the battery immediately. Also, this message is displayed once the new battery is replaced.

5.3 Main

Menu Path *Main*

The **Main** menu allows you to view the BIOS Information, change the system date and time, and view the user access privilege level. Use tab to switch between date elements. Use <↑> or <↓> arrow keys to highlight the item and enter the value you want in each item. This screen also displays the BIOS version (project) and BIOS Build Date and Time.



Main Screen

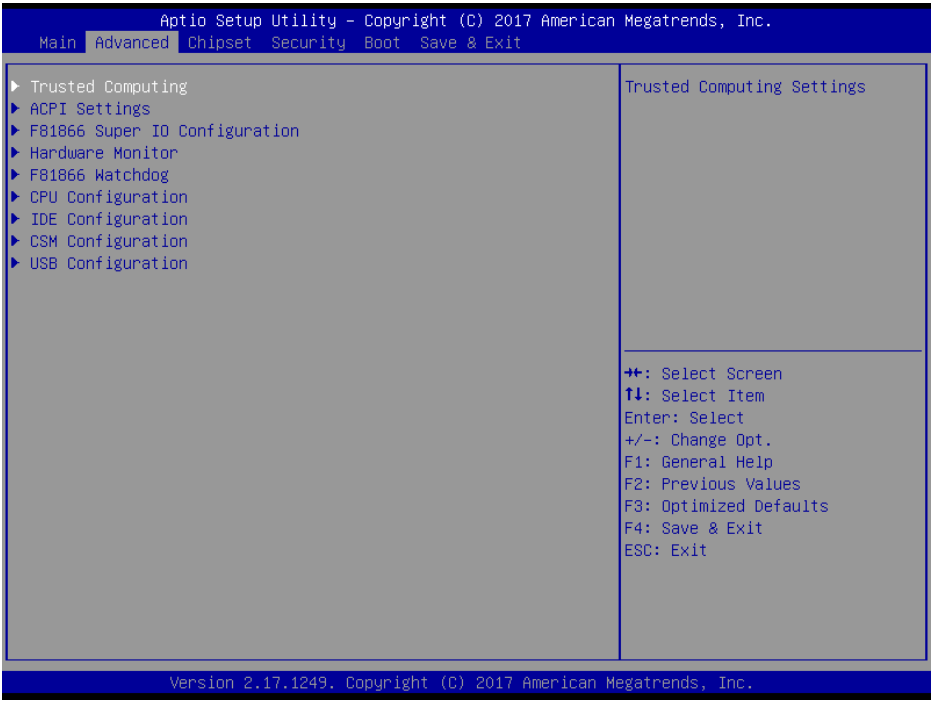
BIOS Setting	Options	Description/Purpose
BIOS Vendor	No changeable options	Displays the BIOS vendor.
Core Version	No changeable options	Displays the current BIOS core version.
Compliancy	No changeable options	Displays the current UEFI version.
Project Version	No changeable options	Displays the version of the BIOS currently installed on the platform.
Build Date and Time	No changeable options	Displays the date of current BIOS version.
BayTrail SoC	No changeable options	SoC stepping (BayTrail-I only)
Sec RC Version	No changeable options	Displays the current Sec RC version.

BIOS Setting	Options	Description/Purpose
TXE FW Version	No changeable options	Displays the current TXE Version
System Language	English	BIOS Setup language.
System Date	Month, day, year	Sets the system date. The format is [Day Month/ Date/ Year]. Users can directly enter values or use <+> or <-> arrow keys to increase/decrease it. The "Day" is automatically changed.
System Time	Hour, minute, second	Sets the system time. The format is [Hour: Minute: Second]. Users can directly enter values or use <+> or <-> arrow keys to increase/decrease it.

5.4 Advanced

Menu Path *Advanced*

This menu provides advanced configurations such as sub-menus of Trusted Computing, ACPI Settings, F81866 Super IO Configuration, Hardware Monitor, F81866 Watchdog, CPU Configuration, IDE Configuration, CSM Configuration and USB Configuration.



Advanced Menu Screen

BIOS Setting	Options	Description/Purpose
Trusted Computing	Sub-Menu	Trusted Computing Parameters. (BayTrail-I only)
ACPI Settings	Sub-Menu	System ACPI Parameters.
F81866 Super IO Configuration	Sub-Menu	Super I/O Chip Configuration.
Hardware Monitor	Sub-Menu	Monitor hardware status
F81866 Watchdog	Sub-Menu	F81866 Watchdog Parameters.
CPU Configuration	Sub-Menu	CPU Configuration. Parameters.
IDE Configuration	Sub-Menu	SATA Configuration Parameters.
OS Selection	Sub-Menu	OS Selection (BayTrail-D only).

BIOS Setting	Options	Description/Purpose
CSM Configuration	Sub-Menu	Configures Option ROM execution, boot options filters, etc..
USB Configuration	Sub-Menu	USB Configuration Parameters.

5.4.1 Advanced – Trusted Computing (BayTrail-I only)

Menu Path *Advanced > Trusted Computing*

The **Trusted Computing** allows users to enable/disable BIOS support for security device. The operating system will not show Security Device. The TCG EFI protocol and INT1A interface will not be available.

Trusted Computing Configuration Screen (BayTrail-I only)

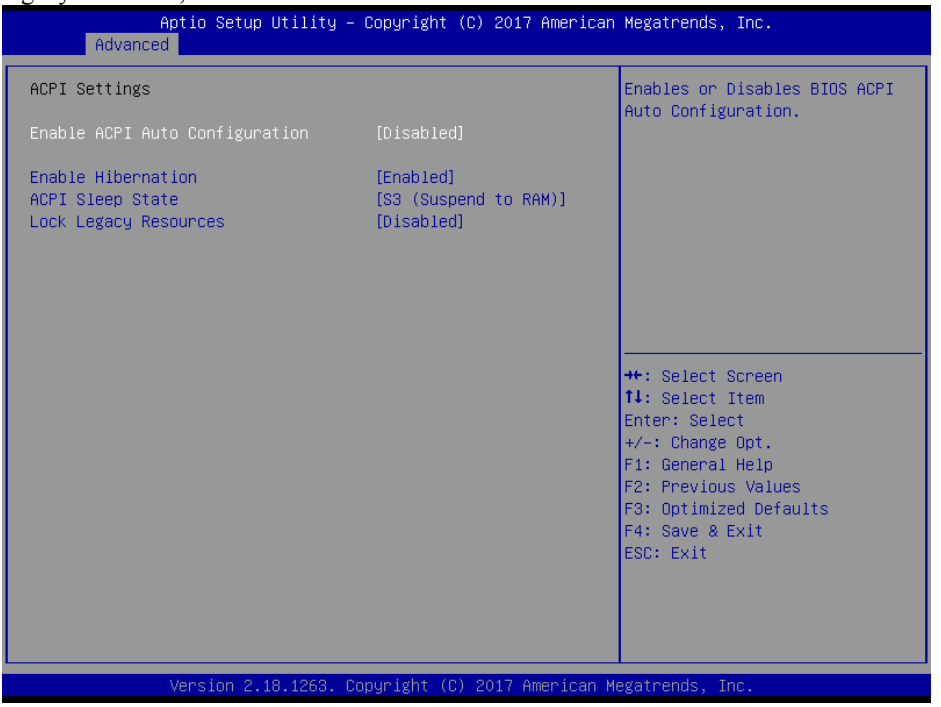
BIOS Setting	Options	Description/Purpose
Security Device Support	- Disabled - Enabled	Enables or Disables BIOS support for security device. O.S. will not show Security Device. TCG EFI Protocol and INT1A interface will not be available.
Device Select	- TPM 1.2 - TPM 2.0	**TPM 1.2** will restrict support to TPM 1.2 devices.**TPM 2.0** will restrict

BIOS Setting	Options	Description/Purpose
	- Auto	support to TPM 2.0 devices. **Auto** will support both with the default set to TPM 2.0 devices if not found, TPM 1.2 devices will be enumerated.

5.4.2 Advanced – ACPI Settings

Menu Path *Advanced > ACPI Settings*

The **ACPI Settings** allows users to configure relevant ACPI (Advanced Configuration and Power Management Interface) settings, such as Enable/Disable ACPI Auto Configuration, Enable/Disable Hibernation, ACPI Sleep State, lock legacy resources, etc.



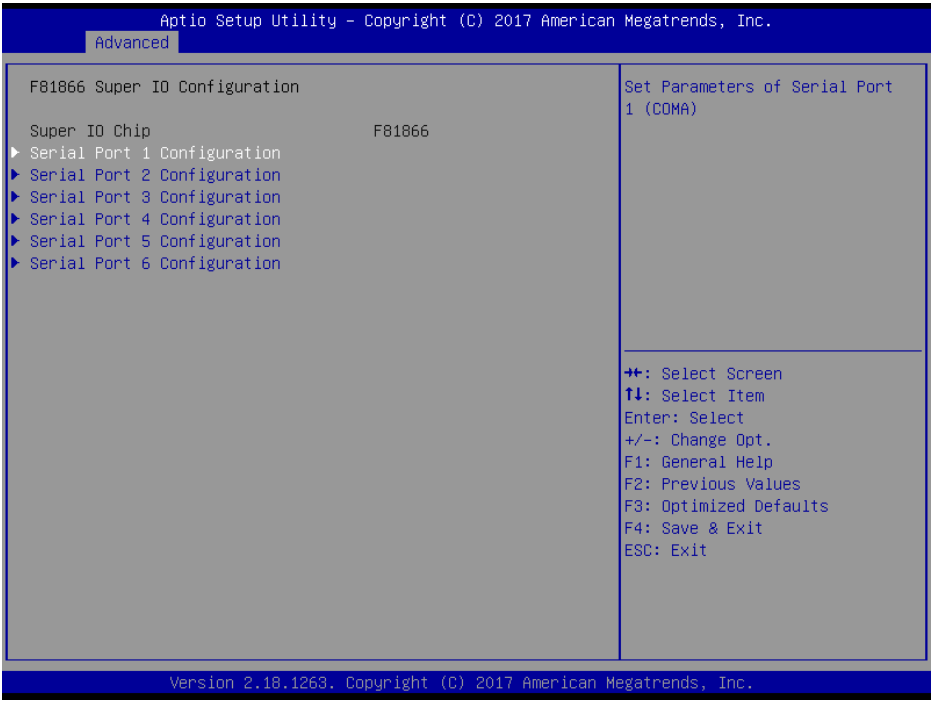
ACPI Settings Screen

BIOS Setting	Options	Description/Purpose
Enable ACPI Auto Configuration	- Disabled - Enabled	Enables or Disables ACPI feature.
Enable Hibernation	- Disabled - Enabled	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with

BIOS Setting	Options	Description/Purpose
		some OS.
ACPI Sleep State	- Suspend Disabled - S3 Only (Suspend to RAM)	Specifies the ACPI sleep state. • **Suspend Disabled** disables ACPI sleep feature. • **S3** allows the platform to enter Suspend to RAM mode.
Lock Legacy Resources	- Disabled - Enabled	Enables or Disables Lock of Legacy Resources.

5.4.3 Advanced – F81866 Super IO Configuration

Menu Path *Advanced > F81866 Super IO Configuration*

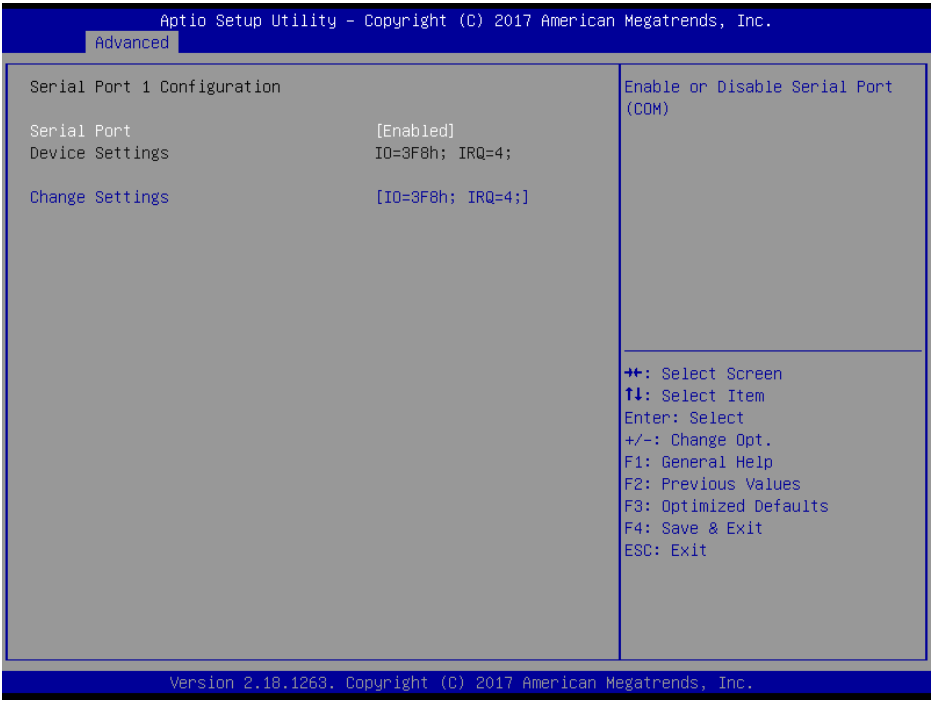


F81866 Super IO Configuration Screen

BIOS Setting	Options	Description/Purpose
Super IO Chip	No changeable options	Displays the super IO chip model and its manufacturer.
Serial Port 1 Configuration	Sub-menu	Sets the parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Sub-menu	Sets the parameters of Serial Port 2

BIOS Setting	Options	Description/Purpose
		(COMB).
Serial Port 3 Configuration	Sub-menu	Sets the parameters of Serial Port 3 (COMC).
Serial Port 4 Configuration	Sub-menu	Sets the parameters of Serial Port 4 (COMD).
Serial Port 5 Configuration	Sub-menu	Sets the parameters of Serial Port 5 (COME).
Serial Port 6 Configuration	Sub-menu	Sets the parameters of Serial Port 6 (COMF).

Menu Path *Advanced > F81866 Super IO Configuration > Serial Port 1 Configuration*

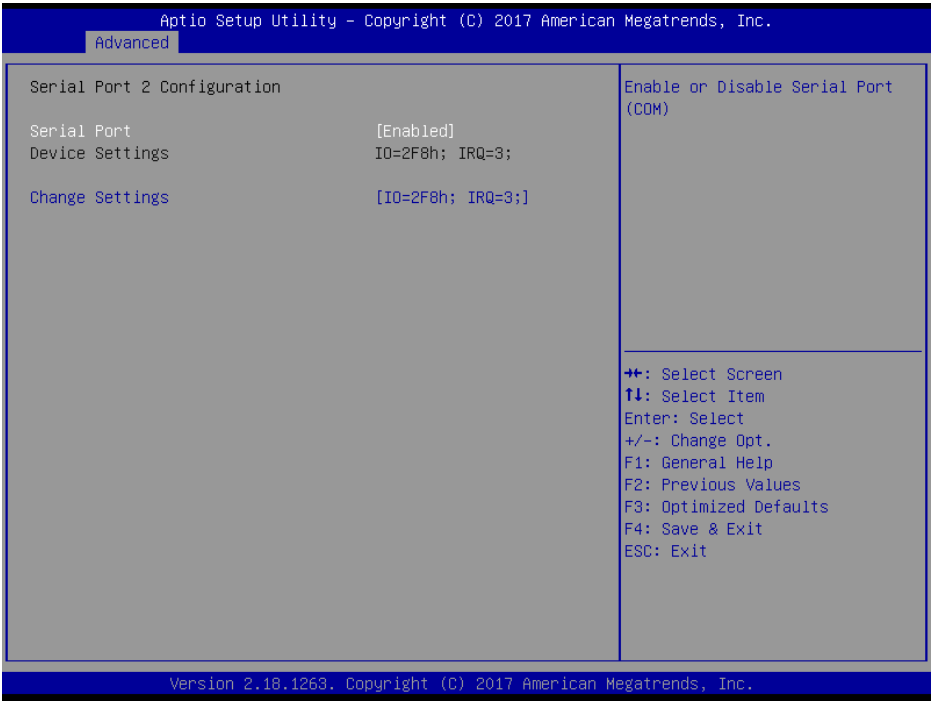


Serial Port 1 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or Disables Serial Port 1.
Device Settings	No changeable options	Displays the current settings of Serial Port 1.

BIOS Setting	Options	Description/Purpose
Change Settings	- IO=3F8h; IRQ=4 - 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	Allows you to select specific IO address and IRQ for Serial Port 1.

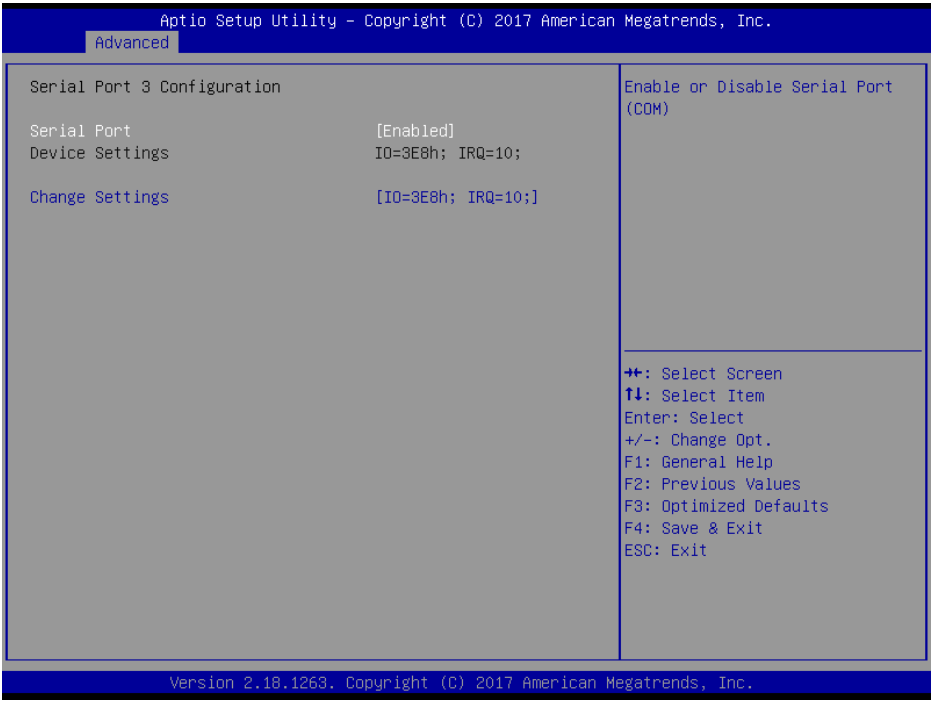
Menu Path *Advanced > F81866 Super IO Configuration > Serial Port 2 Configuration*



Serial Port 2 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or Disables Serial Port 2.
Device Settings	No changeable options	Displays the current settings of Serial Port 2.
Change Settings	- IO=2F8h; IRQ=3 - 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	Allows you to select specific IO address and IRQ for Serial Port 2.

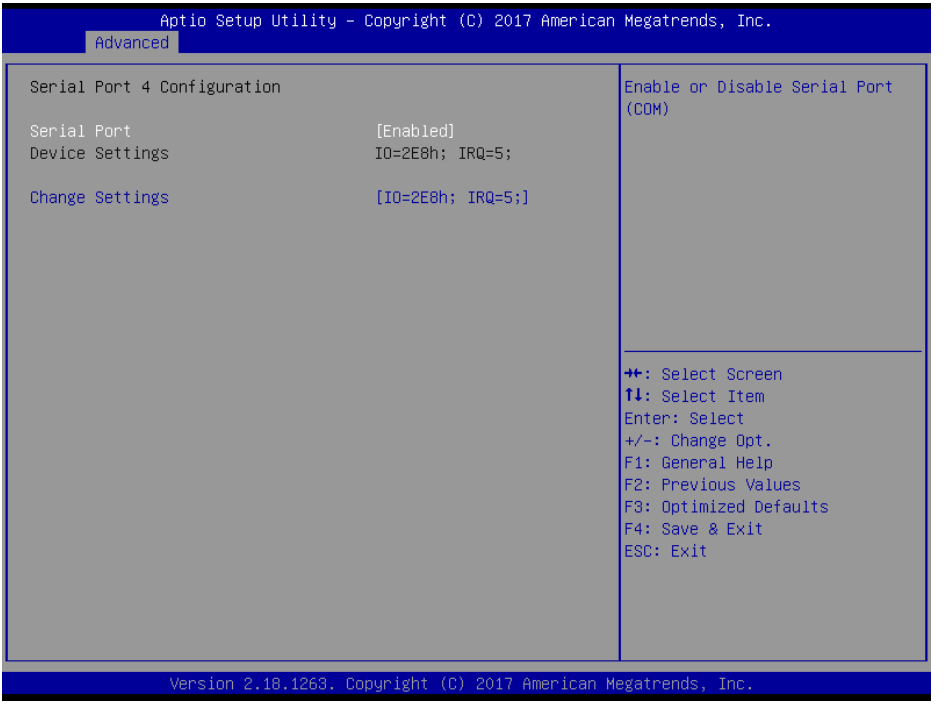
Menu Path *Advanced > F81866 Super IO Configuration > Serial Port 3 Configuration*



Serial Port 3 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or Disables Serial Port 3.
Device Settings	No changeable options	Displays the current settings of Serial Port 3.
Change Settings	- IO=3E8h; 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=2F0h;IRQ=3,4,5,6,7,9,10,11,12 - IO=2E0h;IRQ=3,4,5,6,7,9,10,11,12	Allows you to select specific IO address and IRQ for Serial Port 3.

Menu Path *Advanced > F81866 Super IO Configuration > Serial Port 4 Configuration*



Serial Port 4 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or Disables Serial Port 4.
Device Settings	No changeable options	Displays the current settings of Serial Port 4.
Change Settings	- IO=2E8h; IRQ=5 - 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	Allows you to select specific IO address and IRQ for Serial Port 4.

Menu Path	*Advanced > F81866 Super IO Configuration > Serial Port 5 Configuration*

Serial Port 5 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or Disables Serial Port 5.
Device Settings	No changeable options	Displays the current settings of Serial Port 5.
Change Settings	- IO=2F0h; IRQ=7 - 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	Allows you to select specific IO address and IRQ for Serial Port 5.

Menu Path *Advanced > F81866 Super IO Configuration > Serial Port 6 Configuration*

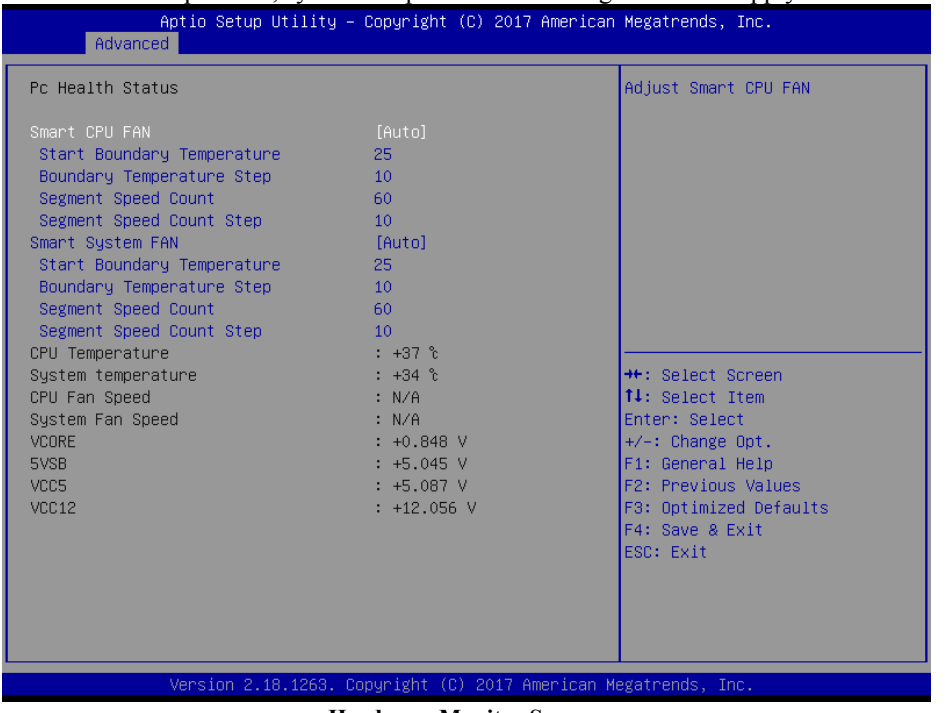
Serial Port 6 Configuration Screen

BIOS Setting	Options	Description/Purpose
Use This Device	- Disabled - Enabled	Enables or Disables Serial Port 6.
Device Settings	No changeable options	Displays the current settings of Serial Port 6.
Change Settings	- IO=2E0h; IRQ=7 - 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	Allows you to select specific IO address and IRQ for Serial Port 6.

5.4.4 Advanced – Hardware Monitor

Menu Path *Advanced > Hardware Monitor*

The **Hardware Monitor** allows users to monitor the health and status of the system such as CPU temperature, system temperature and voltage levels in supply.



Hardware Monitor Screen

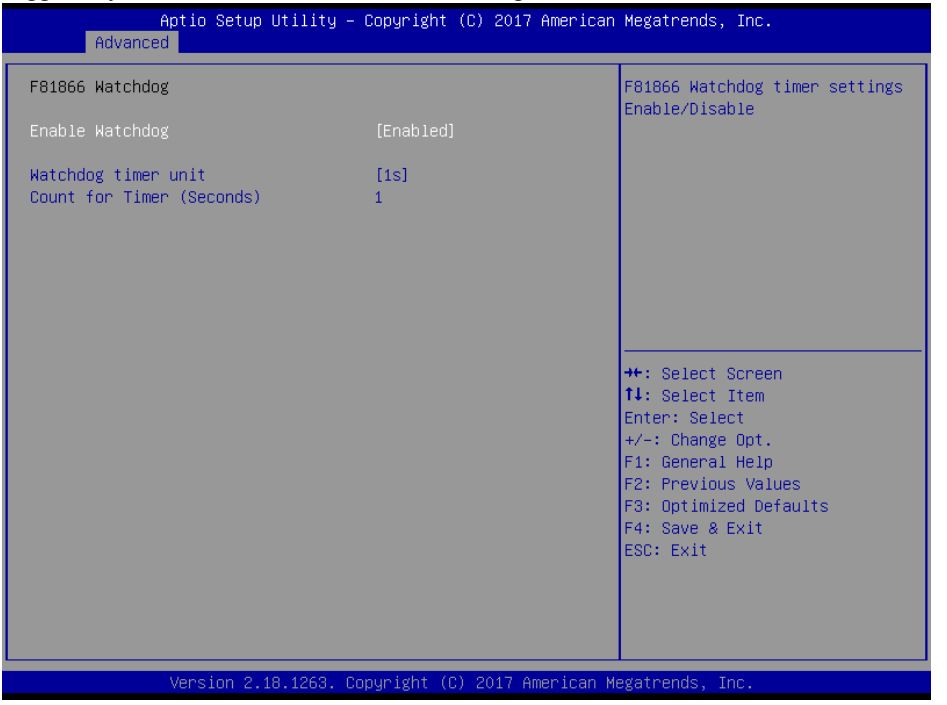
BIOS Setting	Options	Description/Purpose
Smart CPU FAN	- Auto - Disabled - Manual	Adjusts Smart CPU Fan
Start Boundary Temperature	-20 ~ 60	Adjusts Smart Boundary Temperature. If set Boundary=25,Step=10, the boundary will set 25,35,45,55
Boundary Temperature Step	-5~10	Adjusts boundary Temperature Step.
Segment Speed Count	-20~60	Adjusts Segment Speed Count.(%)If set Segment Speed Count=60%, Step=10%, the segment speed will set 60% , 70%, 80% , 90% , 100%

BIOS Setting	Options	Description/Purpose
Segment Speed Count Step	- 5~ 10	Adjust Segment Speed Count Step(%).
Smart System FAN	- Auto - Disabled - Manual	Adjusts Smart System Fan
Start Boundary Temperature	-20 ~ 60	Adjusts Smart Boundary Temperature. If set Boundary=25,Step=10, the boundary will set 25,35,45,55
Boundary Temperature Step	-5~10	Adjusts boundary Temperature Step.
Segment Speed Count	-20~60	Adjust Segment Speed Count.(%)If set Segment Speed Count=60%, Step=10%, the segment speed will set 60% , 70%, 80% , 90% , 100%
Segment Speed Count Step	- 5~ 10	Adjust Segment Speed Count Step(%).
CPU Temperature	No changeable options	Displays the processor's temperature.
System Temperature	No changeable options	Displays the system's temperature.
CPU Fan Speed	No changeable options	Displays the CPU fan's speed.
System Fan Speed	No changeable options	Displays the system fan's speed
VCORE	No changeable options	Detects and displays the VCORE CPU voltage.
5VSB	No changeable options	Detects and displays voltage level of the VSB5V in supply.
VCC5	No changeable options	Detects and displays voltage level of the VCC5V in supply.
VCC12	No changeable options	Detects and displays voltage level of the VCC12 in supply.

5.4.5 Advanced – F81866 Watchdog Configuration

Menu Path *Advanced > F81866 Watchdog*

If the system hangs or fails to respond, enable the F81866 Watchdog function to trigger a system reset via the 255-level watchdog timer.



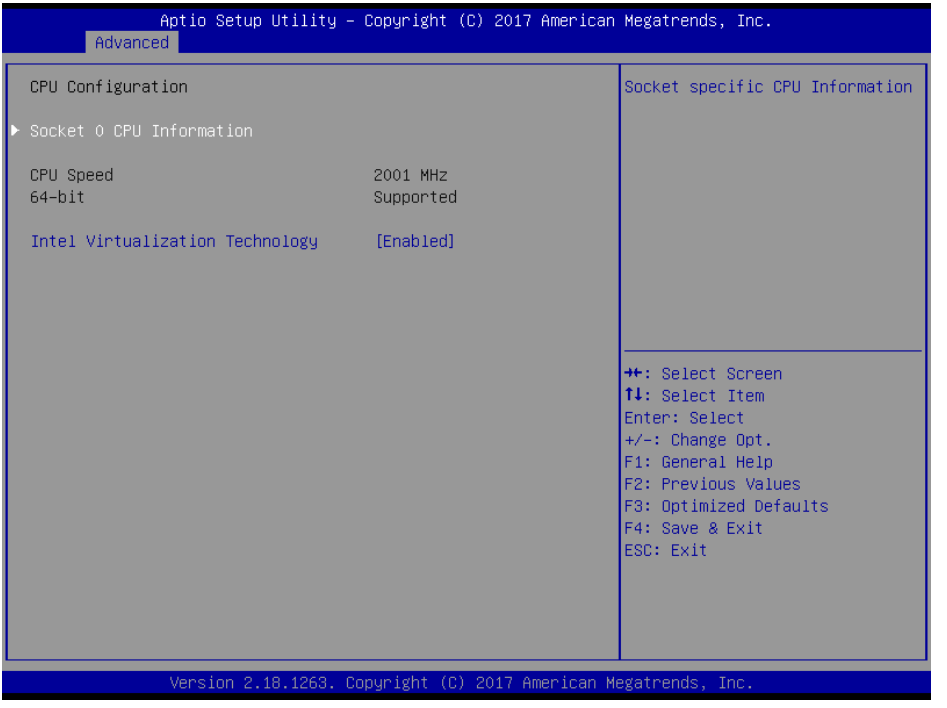
F81866 Watchdog Configuration Screen

BIOS Setting	Options	Description/Purpose
Enable Watchdog	- Enabled - Disabled	Enables/Disables F81866 Watchdog timer settings.
Watchdog timer unit	- 1s - 60s	Selects 1s (second) or 60s (minute) as the time unit of Watchdog timer.
Count for Timer (Seconds)	Numeric (from 1 to 255)	Sets the timeout for Watchdog timer. (Max. value: 255 seconds or minutes)

5.4.6 Advanced – CPU Configuration

Menu Path *Advanced > CPU Configuration*

The **CPU Configuration** provides advanced CPU settings and some information about CPU.



CPU Configuration Screen

BIOS Setting	Options	Description/Purpose
Socket 0 CPU Information	Sub-Menu	Reports CPU Information
CPU Speed	No changeable options	Reports the current CPU Speed.
64-bit	No changeable options	Reports if the processor supports Intel x86-64 (amd64) implementation.
Intel Virtualization Technology	- Disabled - Enabled	When enabled, a VMM can utilize the additional hardware capabilities provided by Vanderpool Technology (VT).(BayTrail -D only)

Menu Path *Advanced > CPU Configuration> Socket 0 CPU Information*

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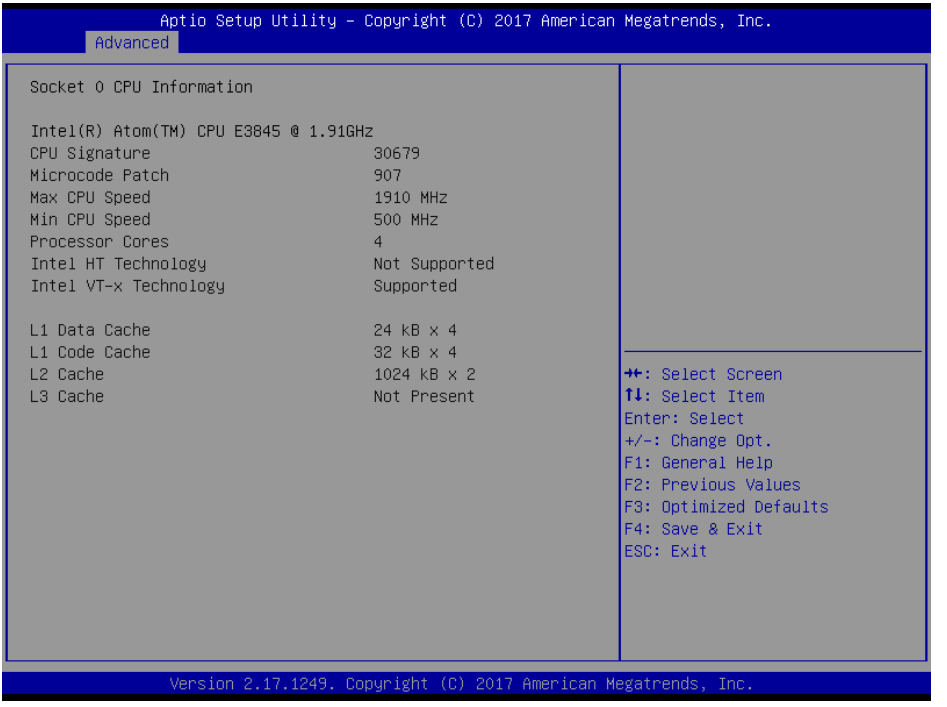
Socket 0 CPU Information Screen

BIOS Setting	Options	Description/Purpose
CPU Signature	No changeable options	Reports the CPU Signature
Microcode Patch	No changeable options	Reports the CPU Microcode Patch Version.
Max CPU Speed	No changeable options	Reports the maximum CPU Speed.
Min CPU Speed	No changeable options	Reports the minimum CPU Speed
Processor Cores	No changeable options	Displays the number of physical cores in the processor.
Intel HT Technology	No changeable options	Reports if Intel Hyper-Threading Technology is supported by the processor
Intel VT-x Technology	No changeable options	Reports if Intel VT-x Technology is supported by the processor.
L1 Data Cache	No changeable options	Displays L1 Data Cache size.

BIOS Setting	Options	Description/Purpose
L1 Code Cache	No changeable options	Displays L1 Code Cache size.
L2 Cache	No changeable options	Displays L2 Cache size.
L3 Cache	No changeable options	Displays L3 Cache size.

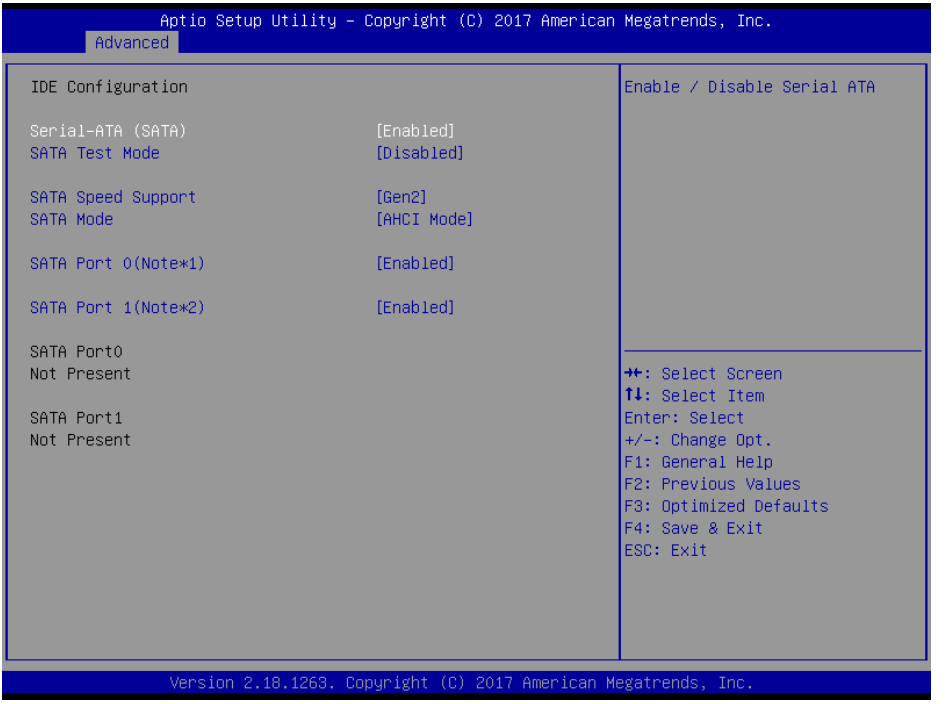


BayTrail-I SoC E3845

5.4.7 Advanced – IDE Configuration

Menu Path *Advanced > IDE Configuration*

The **IDE Configuration** allows users to enable / disable the SATA controller as well as the operational mode after the SATA controller is enabled. The following screen indicates the functions available when the SATA controller is enabled and the AHCI mode is selected.



IDE Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial-ATA Controller(s)	- Disabled - Enabled	Enables or disables SATA Device.
SATA Test Mode	- Disabled - Enabled	Enables or disables SATA Test Mode.
SATA Speed Support	- Gen1 - Gen2	• **Gen1** mode sets device to 1.5 Gbit/s speed. • **Gen2** mode sets the device to 3 Gbit/s speed (in case it is compatible).
SATA Mode	- IDE mode	Configures SATA as following:

BIOS Setting	Options	Description/Purpose
	- AHCI mode	• **IDE:** Set SATA operation mode to IDE. • **AHCI:** SATA works as AHCI (Advanced Host Controller Interface) mode for getting better performance.
Serial-ATA Port 0 (Note*1)	- Disabled - Enabled	Enables or disables SATA port 0 Device.
Serial-ATA Port 1 (Note*2)	- Disabled - Enabled	Enables or disables SATA port 1 Device.
SATA Port 0	[drive]	Displays the drive installed on this SATA port 0. Shows [Empty] if no drive is installed. (BayTrail-D only)
SATA Port 1	[drive]	Displays the drive installed on this SATA port 1. Shows [Empty] if no drive is installed. (BayTrail-D only)

5.4.8 OS Selection (BayTrail-D only)

Menu Path *Advanced > OS Selection*

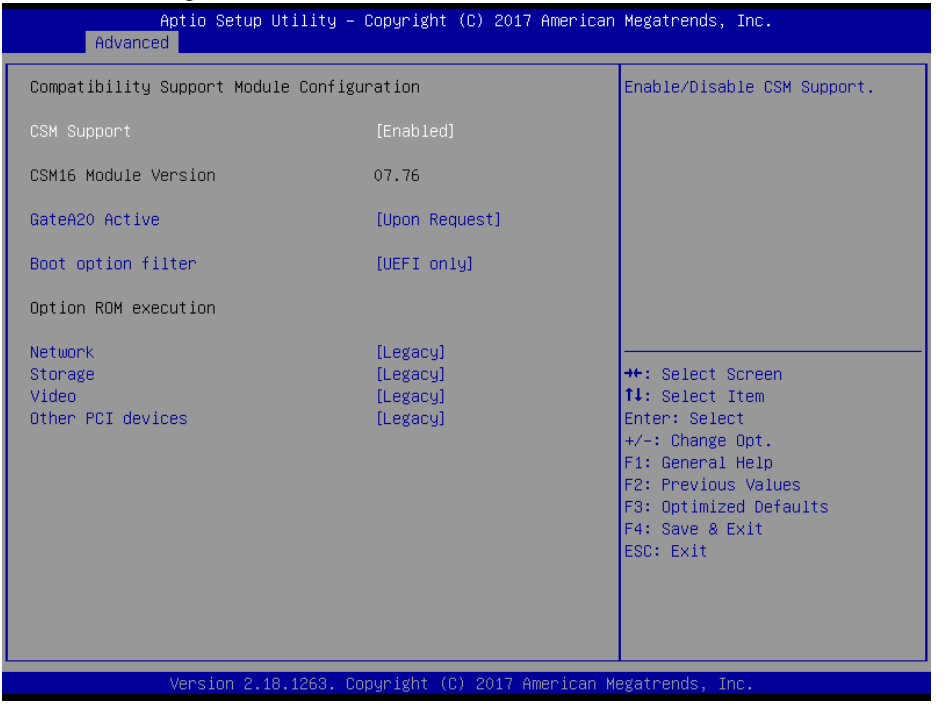
OS Selection Screen

BIOS Setting	Options	Description/Purpose
OS Selection	- Windows 8.x - Windows 7	Operation System Selection

5.4.9 Advanced – CSM Configuration

Menu Path *Advanced > CSM Configuration*

The **CSM Configuration** provides advanced CSM (Compatibility Support Module) configurations such as Enable/Disable CSM Support, configure Option ROM execution, boot option filter, etc.



CSM Configuration Screen

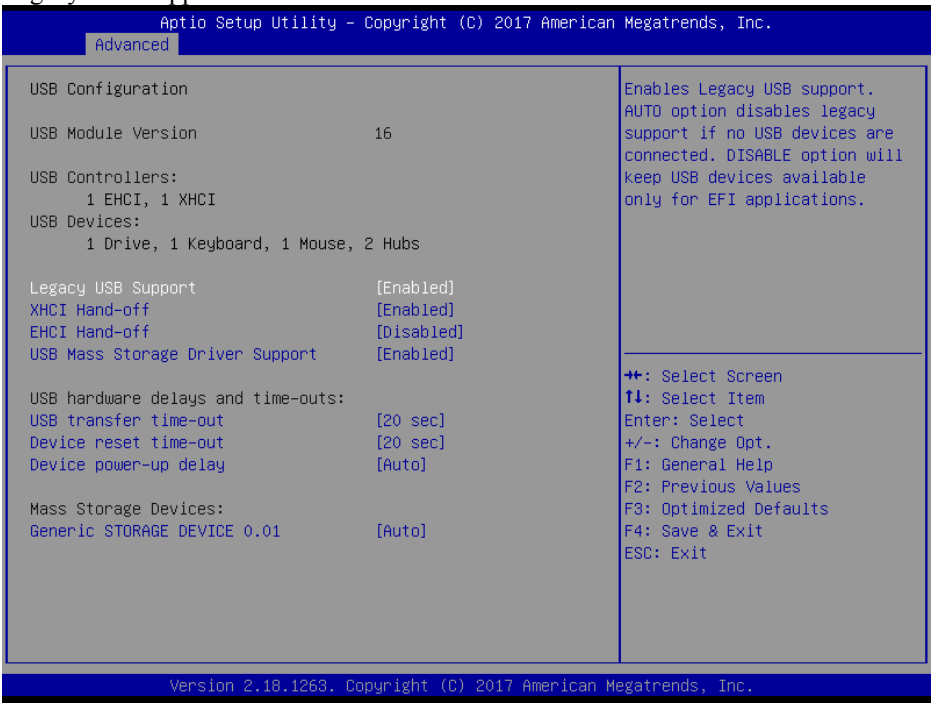
BIOS Setting	Options	Description/Purpose
CSM Support	- Disabled - Enabled	Enables or Disables CSM Support.
CSM16 Module Version	No changeable options	Displays the CSM 16 Module version.

BIOS Setting	Options	Description/Purpose
GateA20 Active	- Upon Request - Always	Select Gate A20 operation mode. • **Upon Request:** GA20 can be disabled using BIOS services. • **Always:** do not allow disabling GA20; this option is useful when any RT code is executed above 1MB. (BayTrail-D only)
Boot option filter	- UEFI and Legacy - Legacy only - UEFI only	This option controls what kind of devices system can boot.
Network	- Do not launch - UEFI only - Legacy only	Controls the execution of UEFI or Legacy PXE.
Storage	- Do not launch - UEFI only - Legacy only	Controls the execution of UEFI or Legacy Storage.
Video	- Do not launch - UEFI only - Legacy only	Controls the execution of UEFI and Legacy Video.
Other PCI devices	- UEFI first - Legacy only	Select launch method for other PCI devices, such as NIC, mass storage or video card.

5.4.10 Advanced – USB Configuration

Menu Path	*Advanced > USB Configuration*

The **USB Configuration** allows users to configure advanced USB settings such as Legacy USB support.



USB Configuration Screen

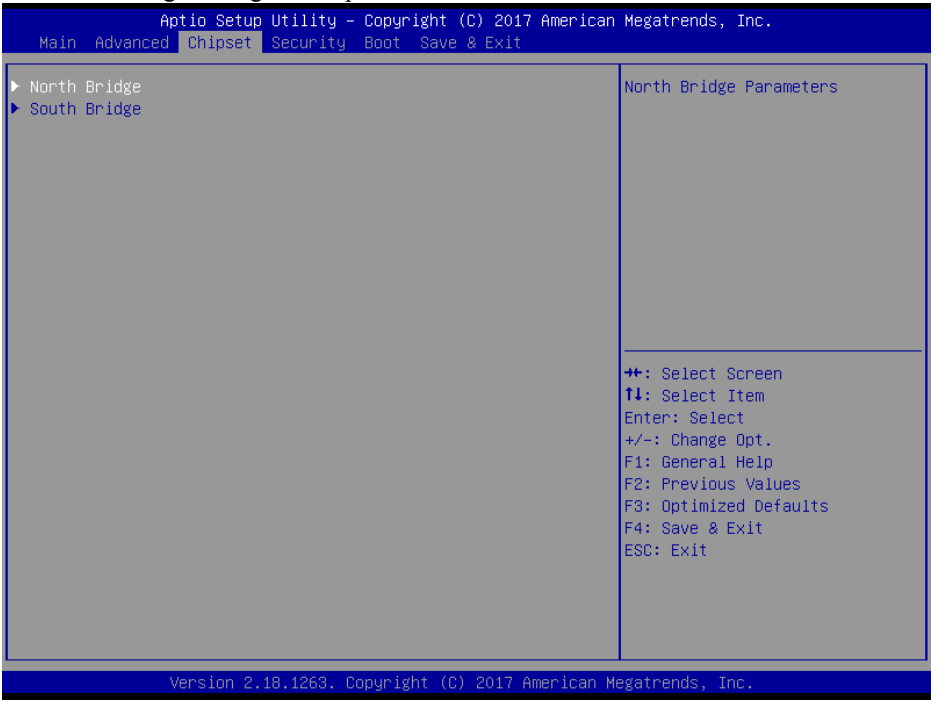
BIOS Setting	Options	Description/Purpose
USB Devices	No changeable options	Displays the number of available USB devices.
Legacy USB Support	- Disabled - Enabled - Auto	Enables support for legacy USB.
XHCI Hand-off	- Disabled - Enabled	This is a workaround for OSes without XHCI hand-off support. (BayTrail-D only)
EHCI Hand-off	- Disabled - Enabled	This is a workaround for OSes without EHCI hand-off support.
USB Mass Storage Driver Support.	- Disabled - Enabled	Enables/Disables USB mass storage driver support.

BIOS Setting	Options	Description/Purpose
USB transfer time-out	1 / 5 / 10 /20 sec	The time-out value for Control, Bulk, and Interrupt transfers.
Device reset time-out	10 / 20 / 30 / 40 sec	USB mass storage device Start Unit command time-out.
Device power-up delay	- Auto - Manual	The 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.
Mass Storage Devices:	- Auto - Force FDD - Hard Disk - CD-ROM	Displays the device name and choose the device emulation type.

5.5 Chipset

Menu Path *Chipset*

This menu allows users to configure advanced Chipset settings such as North Bridge and South Bridge configuration parameters.



Chipset Screen

BIOS Setting	Options	Description/Purpose
North Bridge	Sub-menu	Sets Parameter for (North Bridge) configuration.
South Bridge	Sub-menu	Sets Parameter for (South Bridge) configuration.

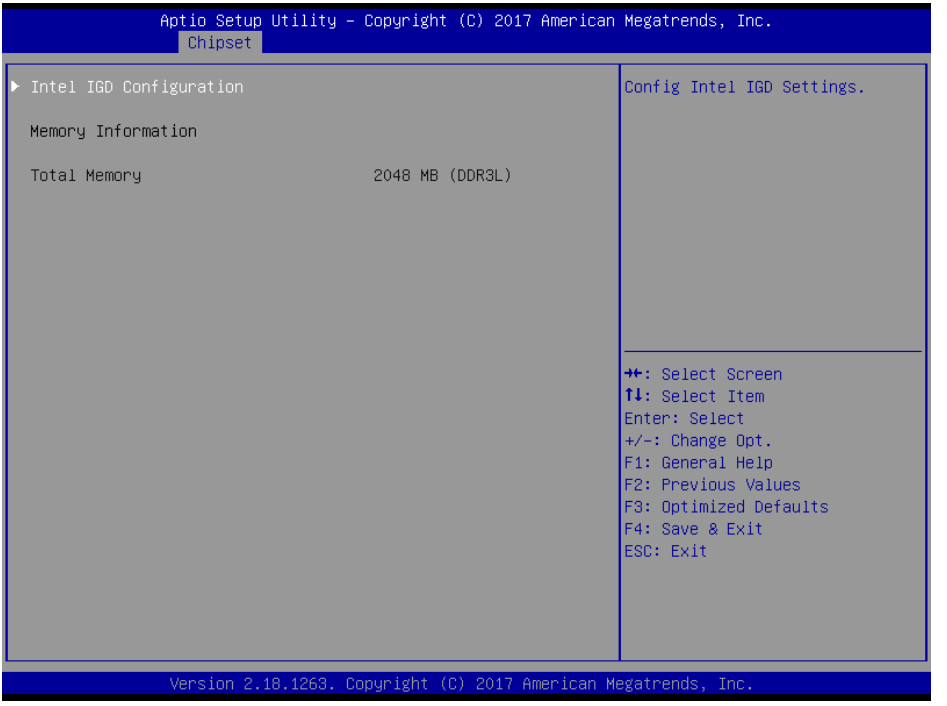
5.5.1 Chipset – North Bridge

Menu Path *Chipset > North Bridge*

The **North Bridge** allows users to configure graphics settings and display the DRAM information on the platform.

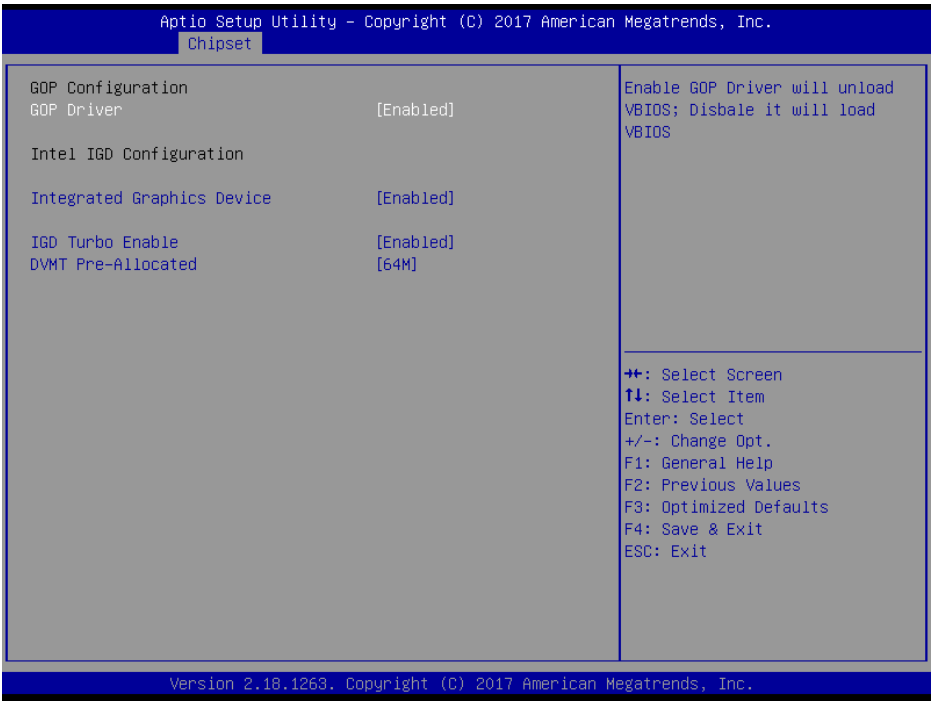
North Bridge Screen

BIOS Setting	Options	Description/Purpose
LCD Control	Sub-menu	LCD Control Settings. (BayTrail-I only)
Intel IGD Configuration	Sub-menu	Configure Graphic Settings. (BayTrail-D only)
Memory Information	No changeable options	Displays the DRAM information on platform.
Total Memory	No changeable options	Displays the DRAM size
Max TOLUD	- 2 GB - 2.25 GB - 2.5 GB - 2.75 GB - 3 GB	Maximum Value of TOLUD.


Aptio Setup Utility – Copyright (C) 2017 American Megatrends, Inc.
Chipset
Intel IGD Configuration
Memory Information
Total Memory 2048 MB (DDR3L)
Config Intel IGD Settings.
→←: Select Screen
↑↓: Select Item
Enter: Select
+/-: Change Opt.
F1: General Help
F2: Previous Values
F3: Optimized Defaults
F4: Save & Exit
ESC: Exit
Version 2.18.1263. Copyright (C) 2017 American Megatrends, Inc.

BayTrail-D

Menu Path *Chipset > North Bridge > GOP Configuration*



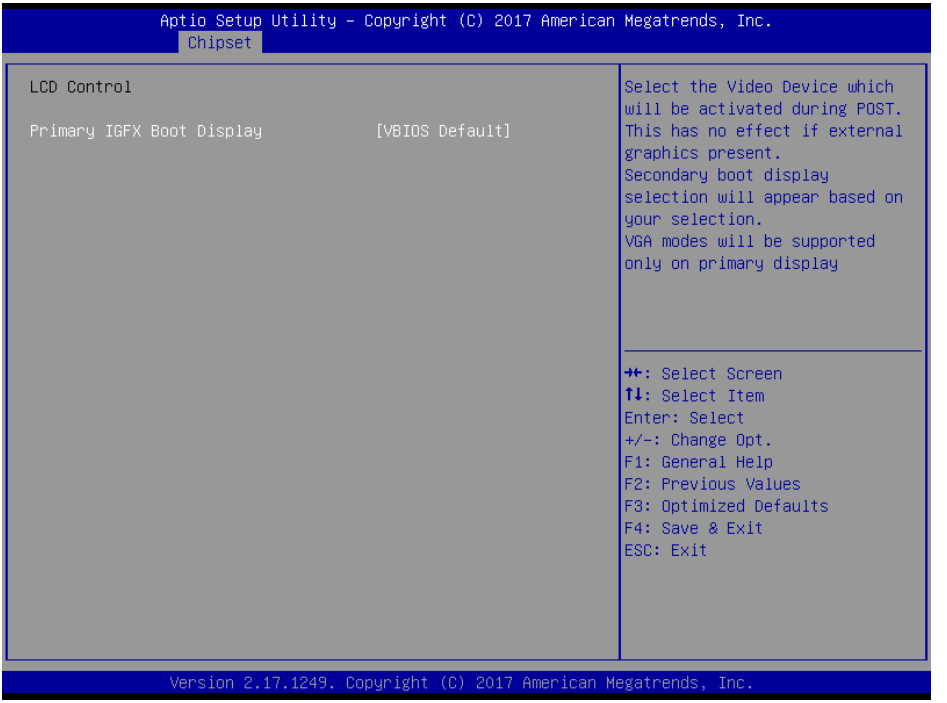
GOP Configuration Screen

BIOS Setting	Options	Description/Purpose
GOP Driver	- Disabled - Enabled	Enables or disables GOP Driver for UEFI OS.
Intel IGD Configuration	No changeable options	Displays the IGD information on platform.
Integrated Graphics Device	- Disabled - Enabled	• **Enabled:** Enable Integrated Graphics Device (IGD) when selected as the Primary Video Adaptor. • **Disabled:** Always disable IGD.
IGD Turbo Enable	- Disabled - Enabled	Enables or disables IGD Turbo.
DVMT Pre-Allocated	- 32M - 64M - 96M - 128M - 256M	Selects DVMT 5.0 Pre-Allocated (Fixed) Graphics Memory size used by the Internal Graphics Device.

BIOS Setting	Options	Description/Purpose
	- 512M	

Menu Path *Chipset > North Bridge > LCD Control (BayTrail-I only)*

The **LCD Control** allows users to select the primary display device.

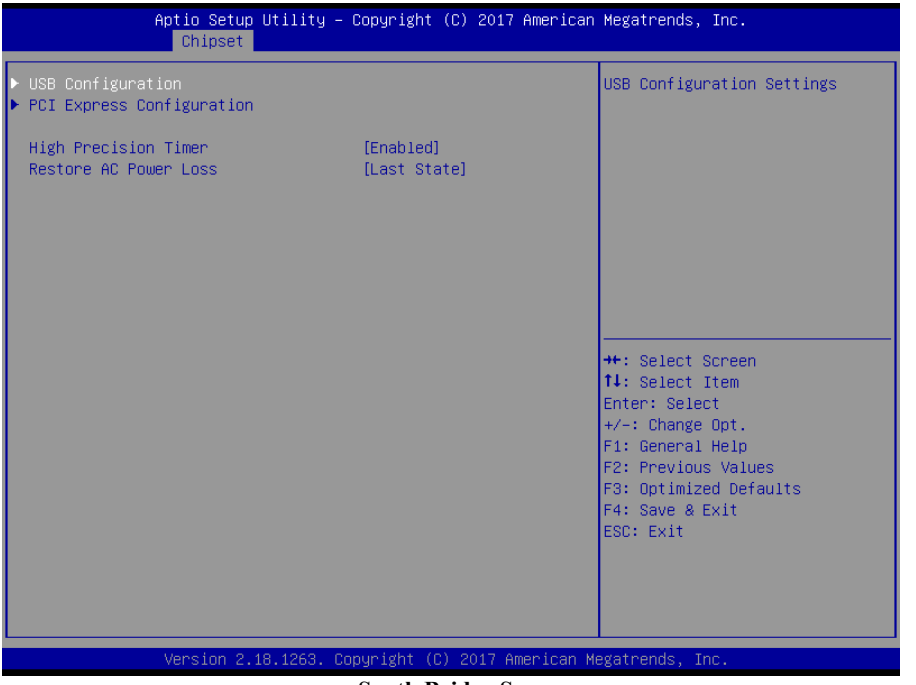


LCD Control Screen

BIOS Setting	Options	Description/Purpose
Primary IGFX Boot Display	- VBIOS Default - CRB - DVI - LVDS	Select the video Device which will be activated during POST. This has no effect if an external graphics is present. (BayTrail-I only)

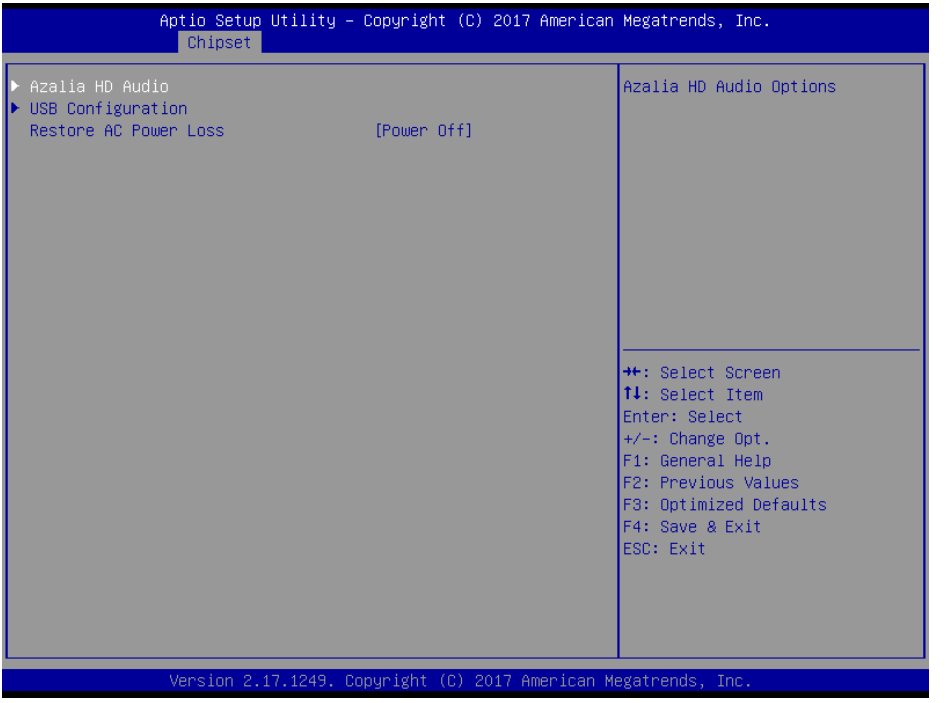
5.5.2 Chipset – South Bridge

Menu Path *Chipset > South Bridge*



South Bridge Screen

BIOS Setting	Options	Description/Purpose
USB Configuration	Sub-menu	Configures USB parameters.
PCI Express Configuration	Sub-menu	Configures PCH PCIE parameters. (BayTrail-D only)
High Precision Timer	- Disabled - Enabled	Enables or disables the HPET (High Precision Event Timer) (BayTrail-D only)
Restore AC Power Loss	- Power Off - Power On - Last State	Selects AC power state when power is re-applied following a power failure. • **Power Off** keeps the power off till the power button is pressed. • **Power On** turns on the system power after AC power is restored to the board. • **Last State** brings the system back to the last power state before AC power is removed.



BayTrail-I SoC

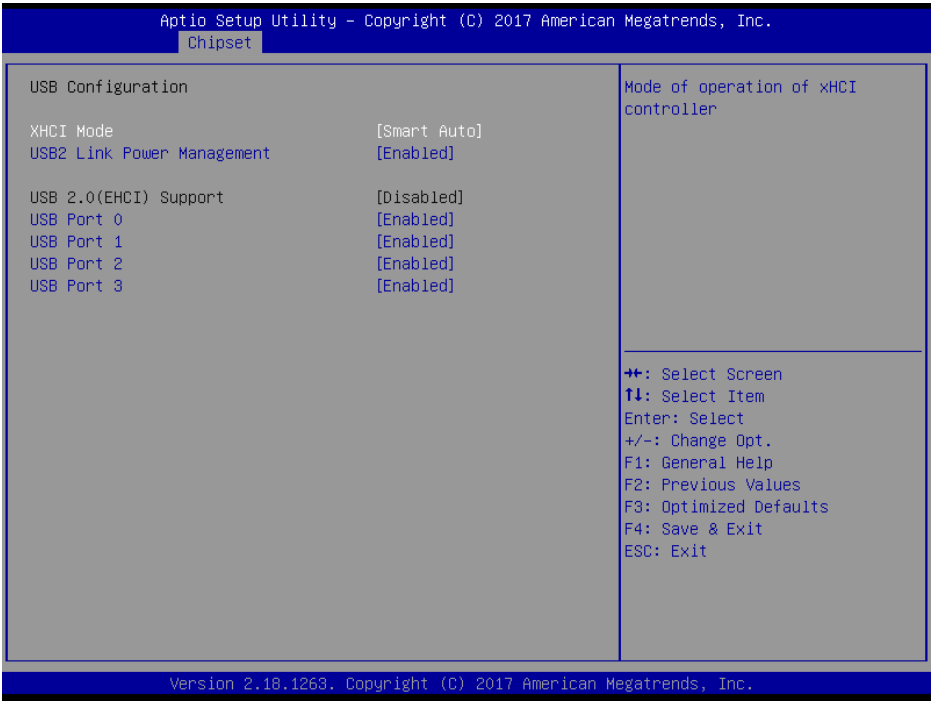
Menu Path *Chipset > South Bridge > Azalia HD Audio*

The ***Azalia HD Audio*** allows users to controls the detection of the Azalia device.

Azalia HD Audio Screen

BIOS Setting	Options	Description/Purpose
Audio Controller	- Disabled - Enabled	Controls the detection of the Azalia device.

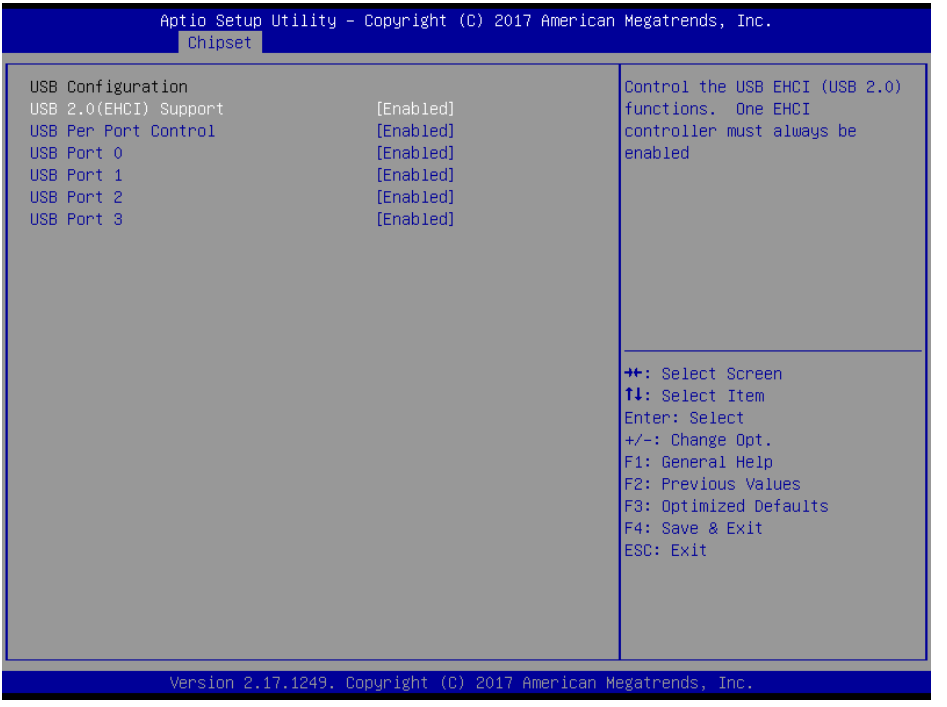
Menu Path *Chipset > South Bridge > USB Configuration*



USB Configuration Screen

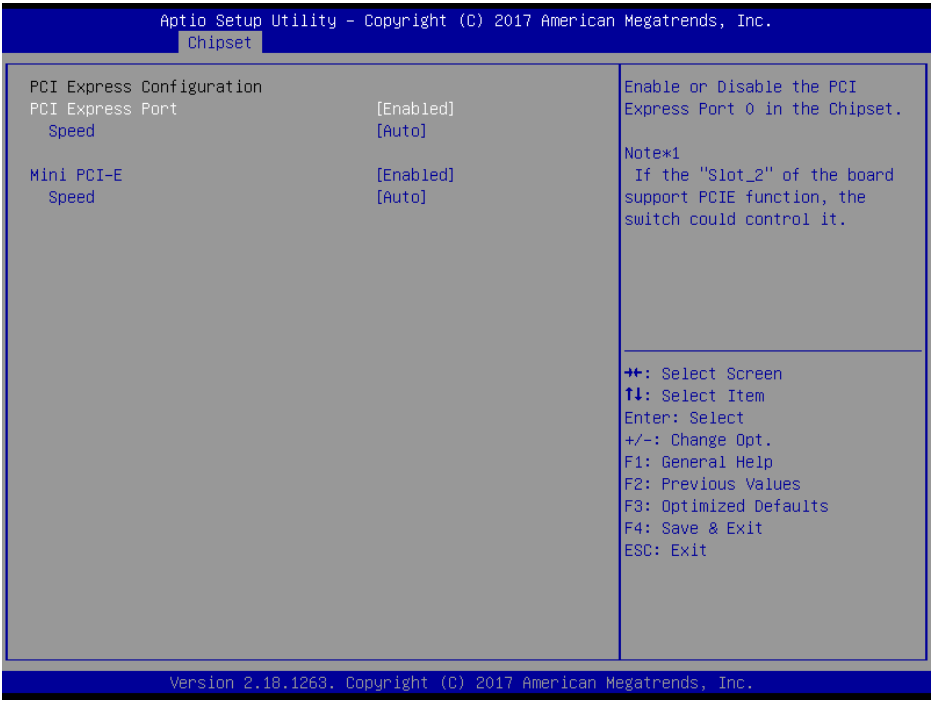
BIOS Setting	Options	Description/Purpose
XHCI Mode	- Disabled - Enabled - Smart Auto - Auto	Selects the operation mode of XHCI controller. (BayTrail-D only)
USB2 Link Power Management	- Disabled - Enabled	Enables/Disables USB2 Link Power Management. (BayTrail-D only)
USB 2.0 (EHCI) Support	- Disabled - Enabled	(Users needs to disable XHCI Mode.) Enables Enhanced Host Controller Interface 1 for high-speed USB functions (USB 2.0).
USB Per Port Control	- Disabled - Enabled	Controls each of the USB ports (0~3). Enabled: Enable USB per port Disabled: Use USB port X settings. (BayTrail-I only)
USB Port 0	- Disabled - Enabled	Enables or Disables USB port 0.
USB Port 1	- Disabled	Enables or Disables USB port 1.

BIOS Setting	Options	Description/Purpose
	- Enabled	(USB Hub 1~4)
USB Port 2	- Disabled - Enabled	Enabled or Disabled USB port 2
USB Port 3	- Disabled - Enabled	Enabled or Disabled USB port 3



BayTrail-I SoC

Menu Path	*Chipset > South Bridge > PCI Express Configuration (BayTrail-D only)*



PCI Express Port Configuration Screen

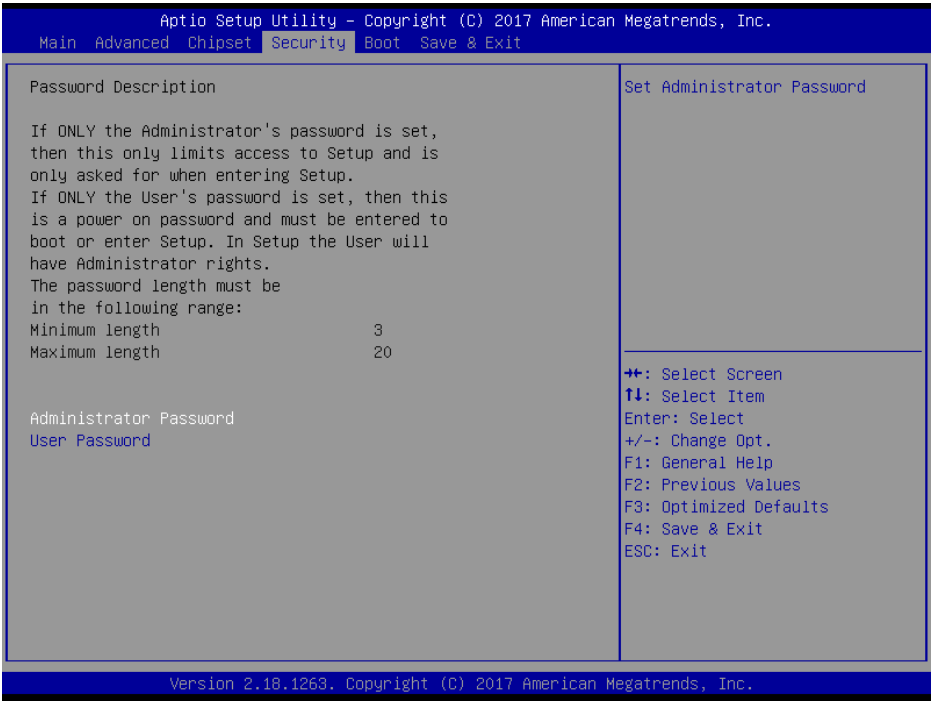
BIOS Setting	Options	Description/Purpose
PCI Express Port	- Disabled - Enabled	Enables or Disables PCI Express port.
Speed	- Auto - Gen1 - Gen2	Selects PCI Express port Speed.
Mini PCI-E	- Disabled - Enabled	Enabled or Disabled Mini PCI-E port.
Speed	- Auto - Gen1 - Gen2	Selects Mini PCI-E port Speed.

5.6 Security

Menu Path *Security*

From the **Security** menu, you are allowed to create, change or clear the administrator password. You will be asked to enter the configured administrator password before you can access the Setup Utility.

By setting an administrator password, you will prevent other users from changing your BIOS settings. You can configure an Administrator password and then configure a user password. An administrator has much more privileges over the settings in the Setup utility than a user. Heed that a user password does not provide access to most of the features in the Setup utility.



Security Screen

BIOS Setting	Options	Description/Purpose
Administrator Password	Password can be 3-20 alphanumeric characters.	Specifies the administrator password.
User Password	Password can be 3-20 alphanumeric characters.	Specifies the user password.

Create an Administrator or User Password

1. Select the **Administrator Password** / **User Password** option from the Security menu and press <Enter>, and the password dialog entry box appears.
2. Enter the password you want to create. A password can be 3-20 alphanumeric characters. After you have configured the password, press <Enter> to confirm.
3. Type the new password again and press <Enter>.

Change an Administrator or User Password

1. Select the **Administrator Password** / **User Password** option from the Security menu and press <Enter>, and the password dialog entry box appears.
2. Select the Administrator Password or User Password that you want to change. A password can be 3-20 alphanumeric characters. After you have changed the password, press <Enter> to confirm.
3. Type the changed password again and press <Enter>.

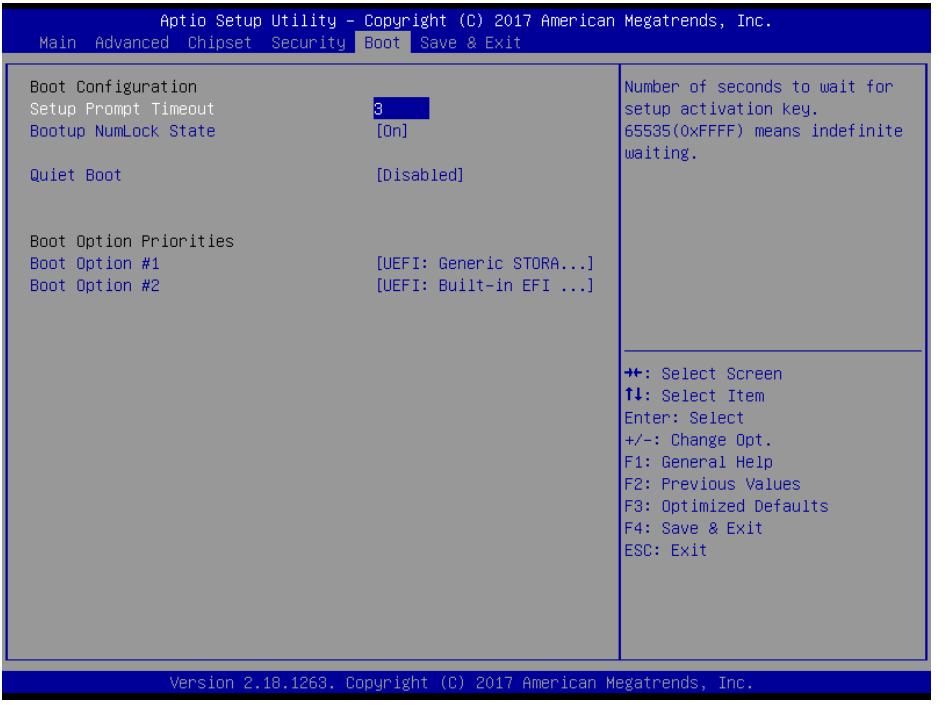
Remove an Administrator or User Password

1. Select the **Administrator Password** / **User Password** option from the Security menu and press <Enter>, and the password dialog entry box appears.
2. Select the configured Administrator Password or User Password that you want to delete. Leave the dialog box blank and press <Enter>.
3. Press <Enter> again when the password confirmation box appears.

5.7 Boot

Menu Path *Boot*

This menu provides control items for system boot configuration such as setting setup prompt timeout, enabling/disabling quiet boot and fast boot and changing the boot order from the available bootable device(s).



Boot Screen

BIOS Setting	Options	Description/Purpose
Setup Prompt Timeout	Numeric	Number of seconds to wait for setup activation key.
Bootup NumLock State	- On - Off	Specifies the power-on state of the NumLock Key.
Quiet Boot	- Disabled - Enabled	Enables/Disables Quiet Boot Options
Boot Option #1~#n	- [Drive(s)] - Disabled	Allows to set the boot option listed in Hard Drive BBS Priorities.

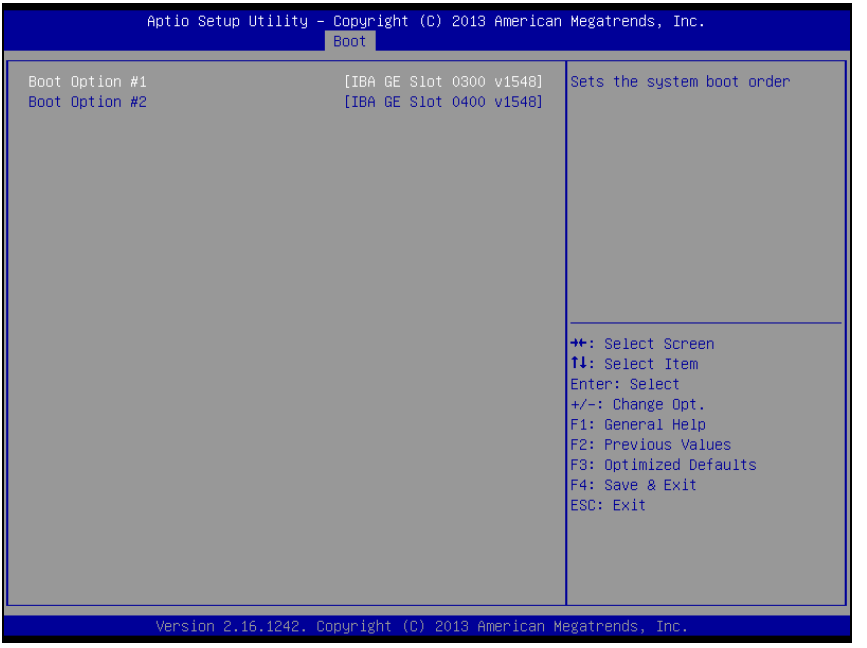
BIOS Setting	Options	Description/Purpose
Hard Drive BBS Priorities	Sub-Menu	Allow user to select boot order of available drive(s)
Network Drive BBS Priorities	Sub-Menu	Allow user to select boot order of available drive(s)

Boot – Hard Drive BBS Priorities

Hard Drive BBS Priorities

BIOS Setting	Options	Description/Purpose
Boot Option #1 - #n	- [Drive(s)] - Disabled	Change the boot order of available drive(s).

Boot – Network Drive BBS Priorities



Network Drive BBS Priorities

BIOS Setting	Options	Description/Purpose
Boot Option #1 - #n	- [Drive(s)] - Disabled	Change the boot order of available drive(s).

5.8 Save & Exit

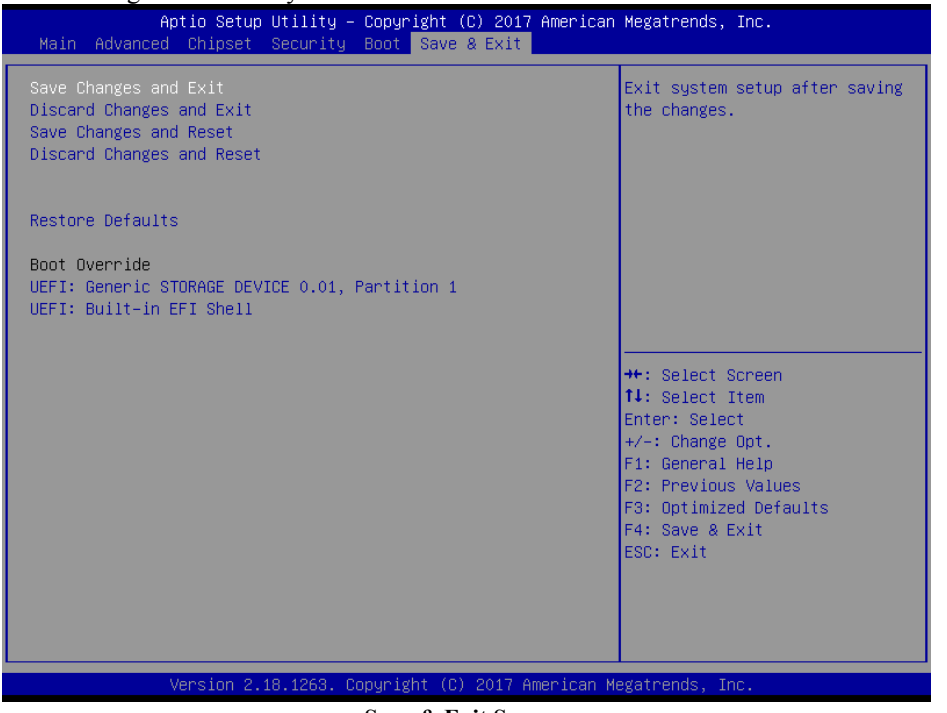
Menu Path *Save & Exit*

The **Save & Exit** allows users to save or discard changed BIOS settings as well as load factory default settings.

Save Changed BIOS Settings
To save and validate the changed BIOS settings, select **Save Changes and Exit** (or press **F4**) from the **Save & Exit** menu to validate the changes and then exit the system. Select **Save Changes and Reset** to validate the changed BIOS settings and then restart the system

Discard Changed BIOS Settings
To cancel the BIOS settings you have previously configured, select **Discard Changes and Exit** from this menu, or simply press **Esc** to exit the BIOS setup. You can also select **Discard Changes and Reset** to discard any changes you have made and restore the factory BIOS defaults.

Load User Defaults
You may simply press **F3** at any time to load the **Optimized Values** which resets all BIOS settings to the factory defaults.



Save & Exit Screen

BIOS Setting	Options	Description/Purpose
Save Changes and Exit	No changeable options	Exits the system and saves the changes in NVRAM.
Discard Changes and Exit	No changeable options	Exits the system without saving any changes configured in BIOS settings.
Save Changes and Reset	No changeable options	Saves the changes in NVRAM and resets the system.
Discard Changes and Reset	No changeable options	Resets the system without saving any changes configured in BIOS settings.
Restore Defaults	No changeable options	Loads the optimized defaults for BIOS settings.
Boot Override	- [Drive(s)]	Forces to boot from selected [drive(s)].

Appendix A System Diagrams

This appendix contains exploded diagrams and part numbers of the SP-7145/7147 system.

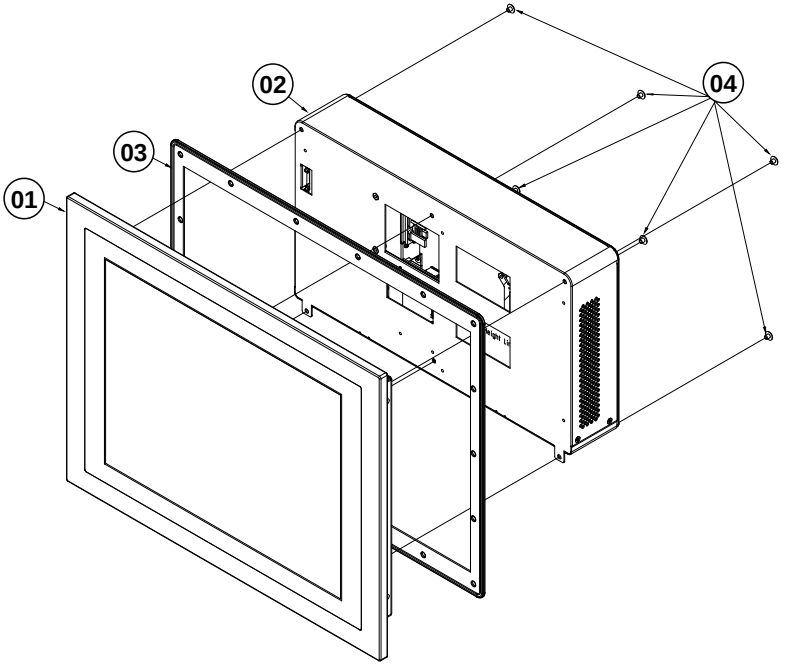
The following topics are included:

- SP-7145 System Exploded Diagram
- SP-7145 Touch Panel & LCD Display Exploded Diagram
- SP-7145 Box PC Exploded Diagram
- SP-7145 HDD Tray Exploded Diagram
- SP-7145 Panel Mount Exploded Diagram
- SP-7147 System Exploded Diagram
- SP-7147 Touch Panel & LCD Display Exploded Diagram
- SP-7147 Box PC Exploded Diagram
- SP-7147 HDD Tray Exploded Diagram
- SP-7147 Panel Mount Exploded Diagram

SP-7145 System Exploded Diagram

The exploded diagram and part numbers below applies to SP-7145 system equipped with the following features:

- Resistive touch screen (DC-IN: 9-36V or 12V)
- Projected capacitive touch screen (DC-IN: 9-36V or 12V)

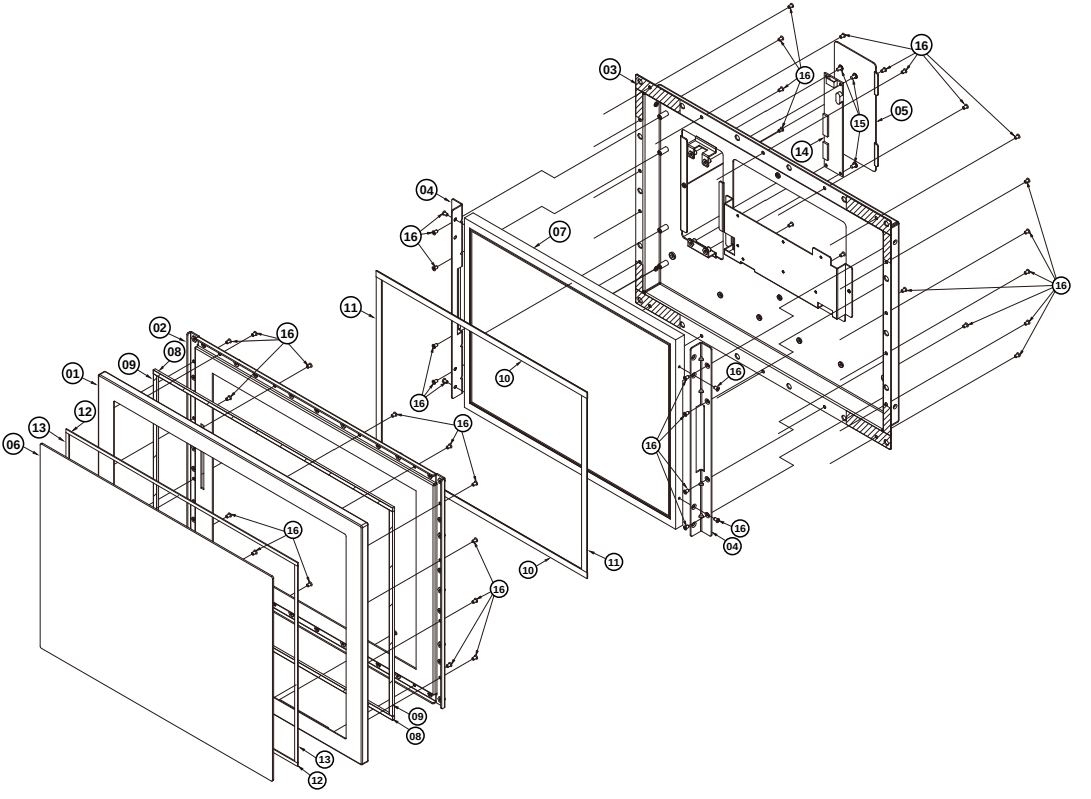


No.	Component Name	P/N No.	Q'ty
1	SP-7145_PANEL_SUS_EXP	SEE PAGE A-3 ~ A-10	1
2	BOX_PC_BM0962_NO_VESA_EXP	SEE PAGE A-11 ~ A-18	1
3	SP-7145_WALL_ORING	30-013-01300411	1
4	TRUSS HEAD SCREW #2 / M4x0.7Px4mm	22-232-40004011	6

SP-7145 Touch Panel & LCD Display Exploded Diagram

The exploded diagram and part numbers applies to SP-7145 system equipped with the following feature:

- Projected capacitive touch screen (DC-IN: 9-36V)

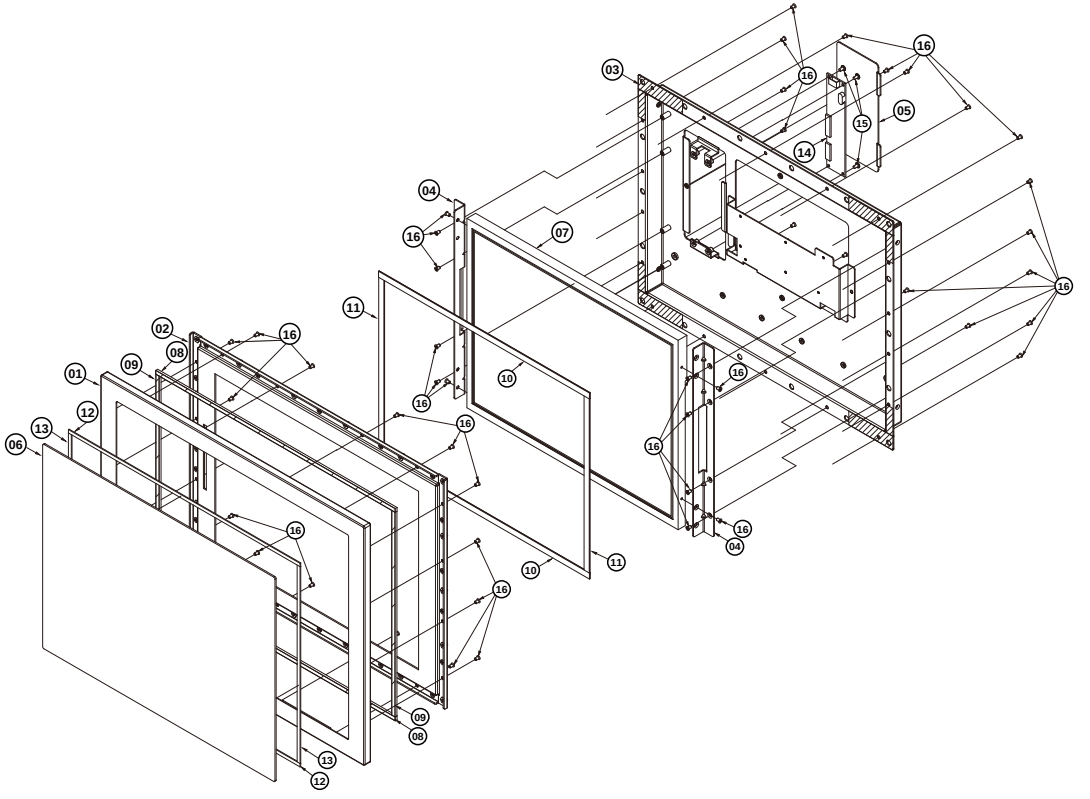


No.	Component Name	P/N No.	Q'ty
1	SP-7145 SUS PANEL COVER	20-004-07001411	1
2	SP-7145 THIN GAP SGCC COVER KIT	20-004-21001411	1
3	SP-7145 LCD COVER KIT (w/Paint) (Silver Gray)	20-004-03061411	1
4	SP-745 LCD LINK HOLDER	20-029-03001411	2
5	SP-7145 TOUCH BOARD COVER KIT (w/Paint) (Silver Gray)	20-004-03062411	1
6	15" Capacitive Multi-Touch Panel	52-380-00075014	1
7	15" TFT LCD Panel (LED Backlight), 450 nits, HD(1024x768)	52-351-03006802	1
8	SP-7145 TOUCH THIN GAP EPDM H (370x5x3mm)	30-013-01100411	2
9	SP-7145 TOUCH THIN GAP EPDM V (274x5x3mm)	30-013-01200411	2
10	SP-7145 THIN GAP LCD PORON H (326x8x1mm)	30-013-24100411	2
11	SP-7145 THIN GAP LCD PORON V (233x8x1mm)	30-013-24200411	2
12	SP-7145 DOUBLE TAPE H (358x4.5x1.1mm)	34-026-06203411	2
13	SP-7145 DOUBLE TAPE V (263.5x4.5x1.1mm)	34-026-06204411	2
14	Resistive Control Board	52-370-01623007	1
15	FILLISTER HEAD SCREW #2 / M3x0.5Px5mm	22-272-30049015	4
16	FLAT HEAD SCREW #2 / M3x0.5Px5mm (BLACK)	22-212-30005311	47

SP-7145 Touch Panel & LCD Display Exploded Diagram

The exploded diagram and part numbers applies to SP-7145 system equipped with the following feature:

- Projected capacitive touch screen (DC-IN: 12V)

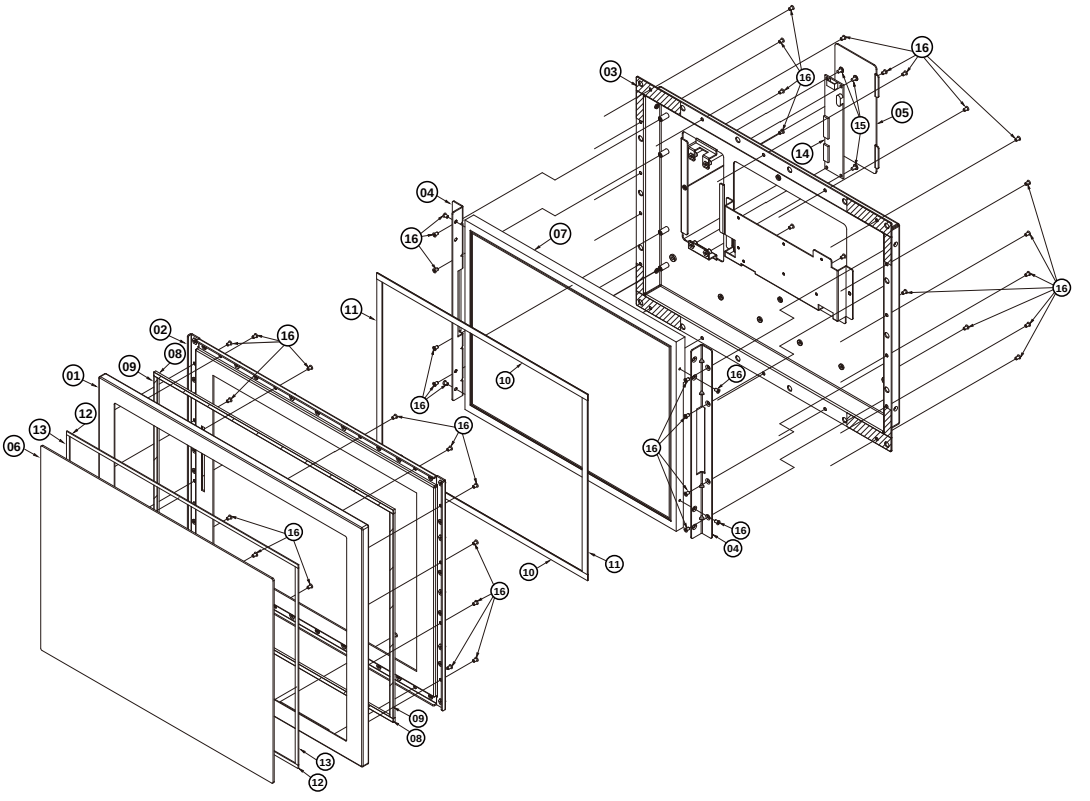


No.	Component Name	P/N No.	Q'ty
1	SP-7145 SUS PANEL COVER	20-004-07001411	1
2	SP-7145 THIN GAP SGCC COVER KIT	20-004-21001411	1
3	SP-7145 LCD COVER KIT (w/Paint) (Silver Gray)	20-004-03061411	1
4	SP-745 LCD LINK HOLDER	20-029-03001411	2
5	SP-7145 TOUCH BOARD COVER KIT (w/Paint) (Silver Gray)	20-004-03062411	1
6	15" Capacitive Multi-Touch Panel	52-380-00075014	1
7	15" TFT LCD Panel (LED Backlight), 450 nits, HD(1024x768)	52-351-03006802	1
8	SP-7145 TOUCH THIN GAP EPDM H (370x5x3mm)	30-013-01100411	2
9	SP-7145 TOUCH THIN GAP EPDM V (274x5x3mm)	30-013-01200411	2
10	SP-7145 THIN GAP LCD PORON H (326x8x1mm)	30-013-24100411	2
11	SP-7145 THIN GAP LCD PORON V (233x8x1mm)	30-013-24200411	2
12	SP-7145 DOUBLE TAPE H (358x4.5x1.1mm)	34-026-06203411	2
13	SP-7145 DOUBLE TAPE V (263.5x4.5x1.1mm)	34-026-06204411	2
14	Touch Control Board for P-CAP,USB & RS-232 Interface (ABON Touch)	52-370-01623007	1
15	FILLISTER HEAD SCREW #2 / M3x0.5Px5mm	22-272-30049015	4
16	FLAT HEAD SCREW #2 / M3x0.5Px5mm (BLACK)	22-212-30005311	47

SP-7145 Touch Panel & LCD Display Exploded Diagram

The exploded diagram and part numbers applies to SP-7145 system equipped with the following feature:

- Resistive touch screen (DC-IN: 9-36V)

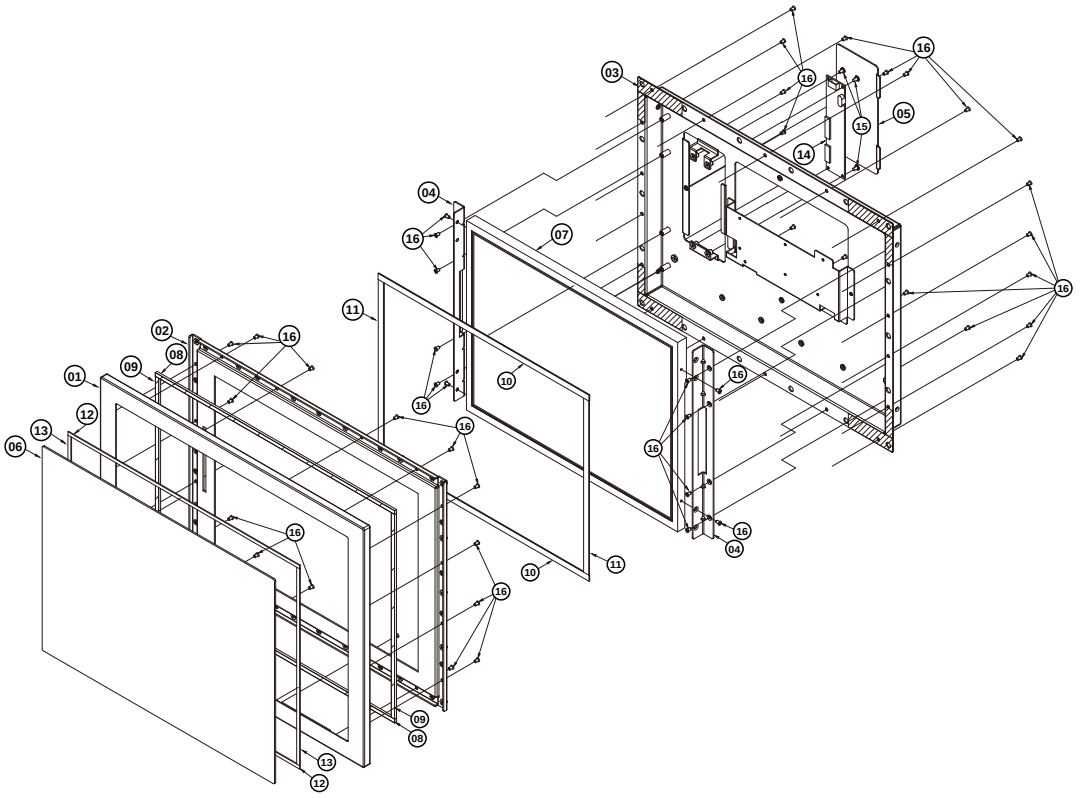


No.	Component Name	P/N No.	Q'ty
1	SP-7145 SUS PANEL COVER	20-004-07001411	1
2	SP-7145 THIN GAP SGCC COVER KIT	20-004-21001411	1
3	SP-7145 LCD COVER KIT (w/Paint) (Silver Gray)	20-004-03061411	1
4	SP-745 LCD LINK HOLDER	20-029-03001411	2
5	SP-7145 TOUCH BOARD COVER KIT (w/Paint) (Silver Gray)	20-004-03062411	1
6	15" 5-Wire Resistive Touch Panel	52-380-00212114	1
7	15" TFT LCD Panel (LED Backlight), 450 nits, HD(1024x768)	52-351-03006802	1
8	SP-7145 TOUCH THIN GAP EPDM H (370x5x3mm)	30-013-01100411	2
9	SP-7145 TOUCH THIN GAP EPDM V (274x5x3mm)	30-013-01200411	2
10	SP-7145 THIN GAP LCD PORON H (326x8x1mm)	30-013-24100411	2
11	SP-7145 THIN GAP LCD PORON V (233x8x1mm)	30-013-24200411	2
12	SP-7145 DOUBLE COATED TAPE A (358.49x14.5x0.8mm)	34-026-06201411	2
13	SP-7145 DOUBLE Coated TAPE B (252.83x20x0.8mm)	34-026-06202411	2
14	Touch Control Board for 5-Wire, USB Interface	52-370-01040504	1
15	FILLISTER HEAD SCREW #2 / M3x0.5Px5mm	22-272-30049015	2
16	FLAT HEAD SCREW #2 / M3x0.5Px5mm	22-212-30005311	47

SP-7145 Touch Panel & LCD Display Exploded Diagram

The exploded diagram and part numbers applies to SP-7145 system equipped with the following feature:

- Resistive touch screen (DC-IN: 12V)

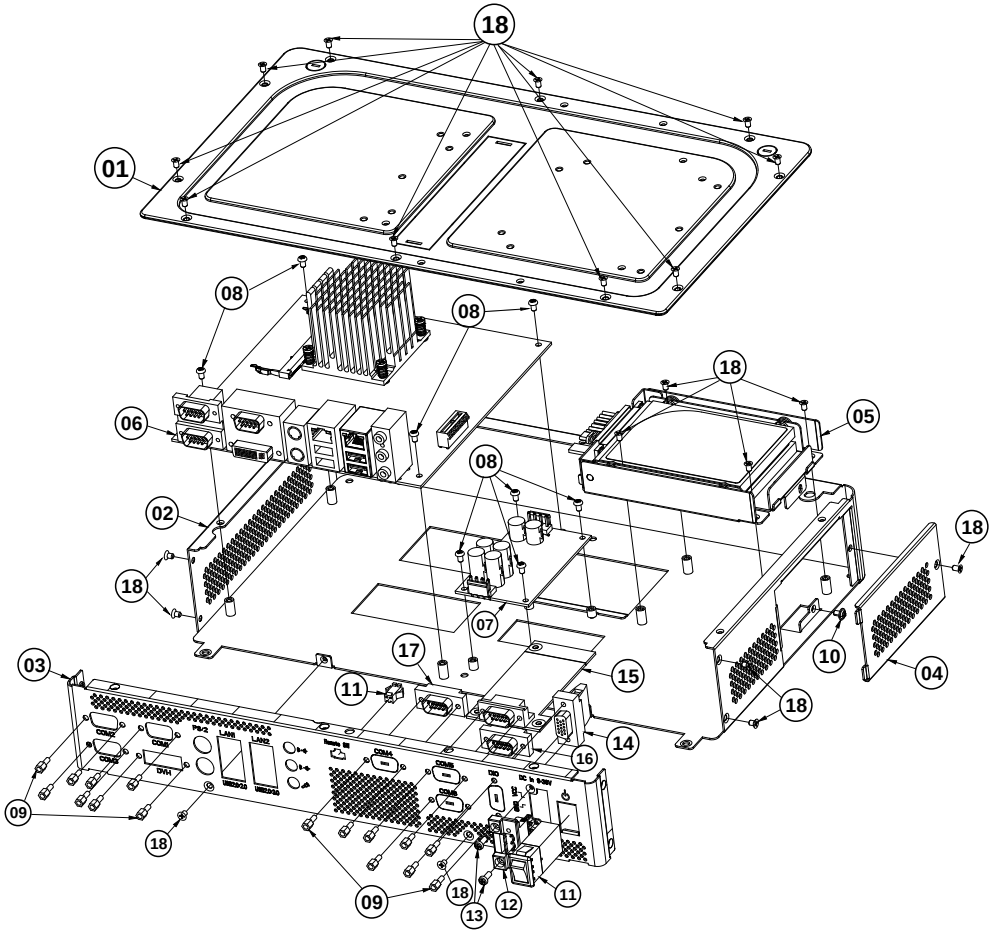


No.	Component Name	P/N No.	Q'ty
1	SP-7145 SUS PANEL COVER	20-004-07001411	1
2	SP-7145 THIN GAP SGCC COVER KIT	20-004-21001411	1
3	SP-7145 LCD COVER KIT (w/Paint) (Silver Gray)	20-004-03061411	1
4	SP-745 LCD LINK HOLDER	20-029-03001411	2
5	SP-7145 TOUCH BOARD COVER KIT (w/Paint) (Silver Gray)	20-004-03062411	1
6	15" 5-Wire Resistive Touch Panel	52-380-00212114	1
7	15" TFT LCD Panel (LED Backlight), 450 nits, HD(1024x768)	52-351-03006802	1
8	SP-7145 TOUCH THIN GAP EPDM H (370x5x3mm)	30-013-01100411	2
9	SP-7145 TOUCH THIN GAP EPDM V (274x5x3mm)	30-013-01200411	2
10	SP-7145 THIN GAP LCD PORON H (326x8x1mm)	30-013-24100411	2
11	SP-7145 THIN GAP LCD PORON V (233x8x1mm)	30-013-24200411	2
12	SP-7145 DOUBLE COATED TAPE A (358.49x14.5x0.8mm)	34-026-06201411	2
13	SP-7145 DOUBLE Coated TAPE B (252.83x20x0.8mm)	34-026-06202411	2
14	Touch Control Board for 5-Wire, USB Interface	52-370-01040504	1
15	FILLISTER HEAD SCREW #2 / M3x0.5Px5mm	22-272-30049015	2
16	FLAT HEAD SCREW #2 / M3x0.5Px5mm	22-212-30005311	47

SP-7145 Box PC Exploded Diagram

The exploded diagram and part numbers applies to SP-7145 system equipped with the following feature:

- Projected capacitive touch screen (DC-IN: 9-36V)

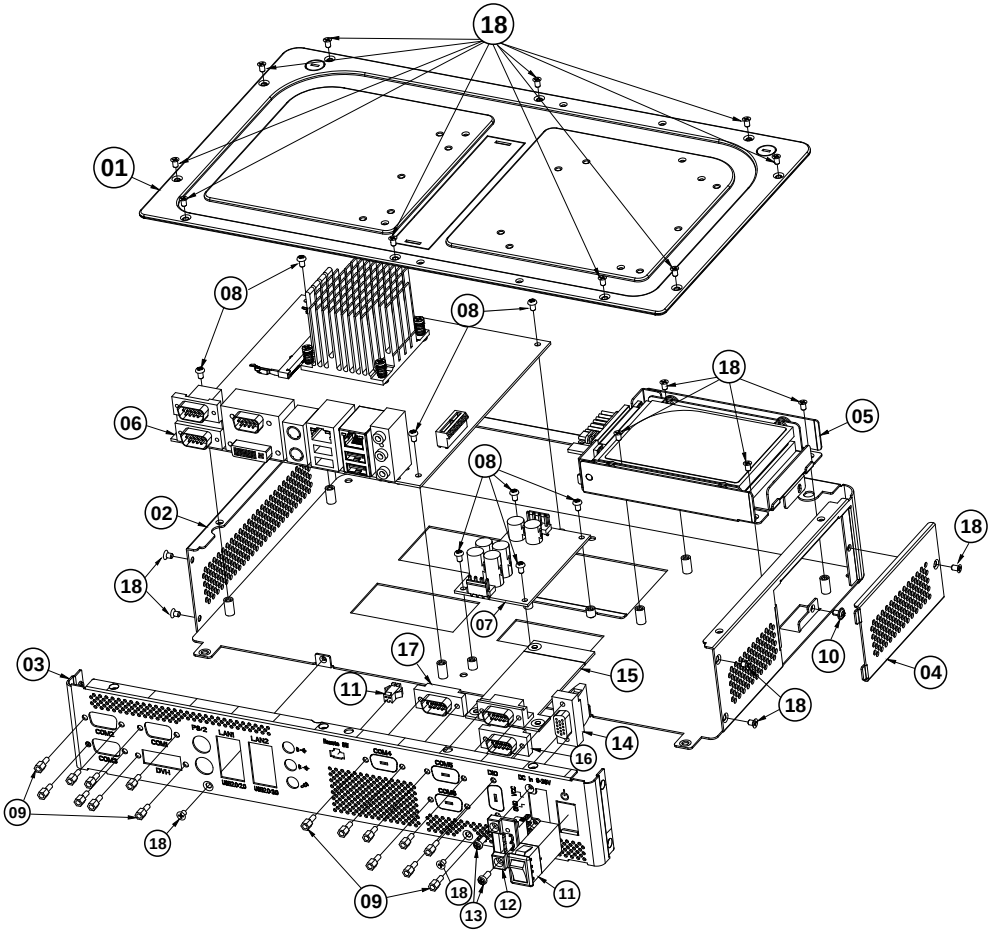


No.	Component Name	P/N No.	Q'ty
1	SP-7147 BR REAR COVER (w/Paint) (Silver Gray)	20-004-03063412	1
2	SP-7147 BR BASE (w/Paint) (Silver)	20-032-02061412	1
3	SP-7147 BR IO 9-36V (w/Paint) (Silver Gray)	20-006-03061412	1
4	SP-7147 HDD ACTIVITY COVER (w/Paint) (Silver Gray)	20-004-03064412	1
5	PK-7090_HDD_ASSY_EXP	SEE Page A-19	1
6	Mainboard	BM-0962RA	1
7	SR-6100RX	SR-6100RA-D3N	1
8	ROUND HEAD SCREW M3x0.5Px5mm	22-230-30005811	8
9	HEX CU BOSS UNC No.4-40, L=4.8, H=7mm	22-692-40048051	16
10	ROUND WASHER HEAD SCREW M3x0.5Px5mm	22-242-30005311	1
11	SP-7147 REMOTE SWITCH CABLE L=390mm+190mm	27-019-41208071	1
12	PSP-7147 DC TO DC IN CABLE (DC-IN) L= 230mm	27-012-41205071	1
13	PAN HEAD SCREW M3x0.5Px8mm	22-232-30008811	2
14	SP-7147 DIO to DB15 (Female) CABLE (15F to 10F) L=320mm	27-071-41207031	1
15	COM BOARD	BR-6062RA-00N BR-6062RA-01N	1
16	SP-7147 COM3 DB9 (Male Pin) CABLE (9M to 10F) L=90mm	27-024-41202031	1
17	SP-7147 COM4 DB9 (Male Pin) CABLE (9M to 10F) L=270mm	27-024-41206031	1
18	FLAT HEAD SCREW #2 /φ5 / M3x0.5Px5mm	22-212-30005311	21

SP-7145 Box PC Exploded Diagram

The exploded diagram and part numbers applies to SP-7145 system equipped with the following feature:

- Projected capacitive touch screen (DC-IN: 12V)

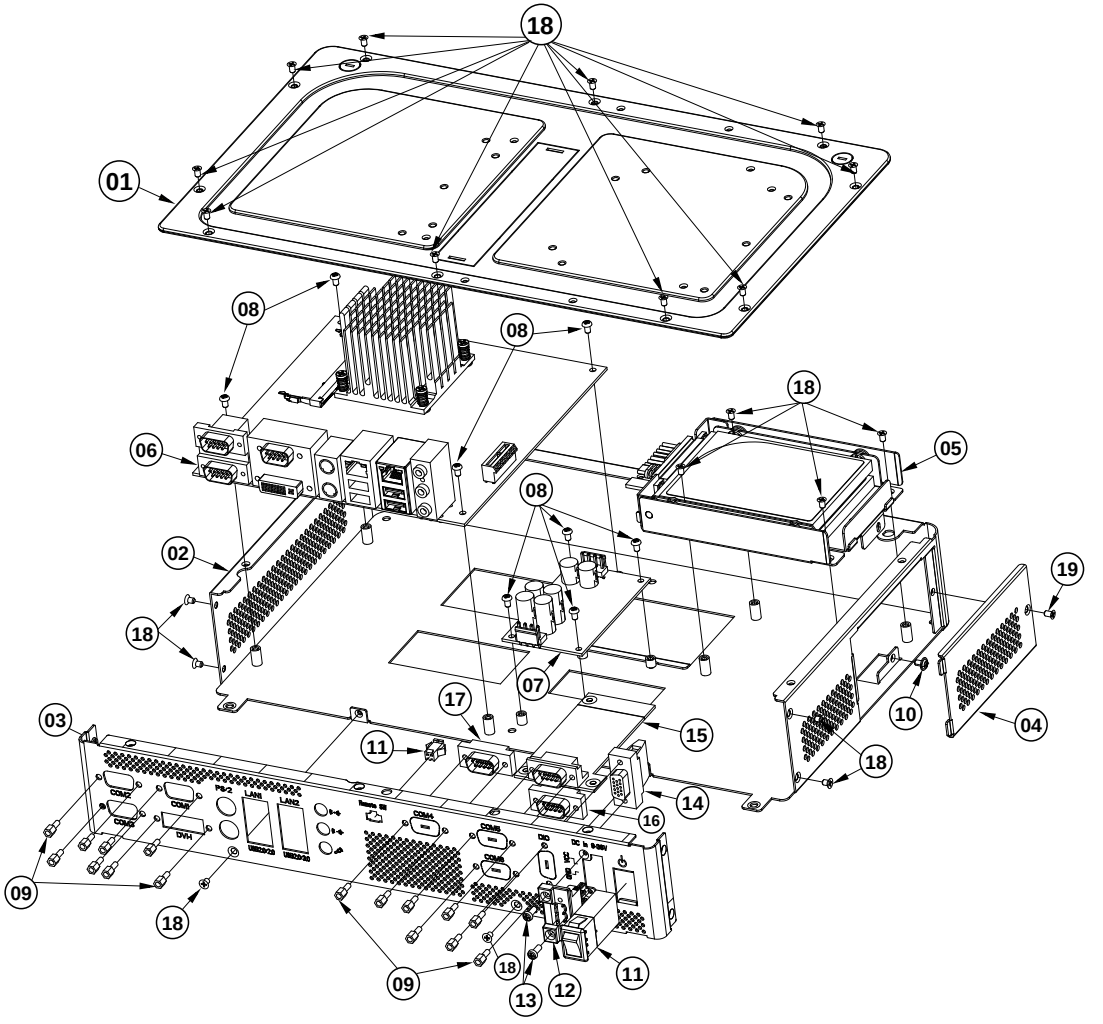


No.	Component Name	P/N No.	Q'ty
1	SP-7147 BR REAR COVER (w/Paint) (Silver Gray)	20-004-03063412	1
2	SP-7147 BR BASE (w/Paint) (Silver)	20-032-02061412	1
3	SP-7147 BR IO 12V (w/Paint) (Silver)	20-006-03062412	1
4	SP-7147 HDD ACTIVITY COVER (w/Paint) (Silver Gray)	20-004-03064412	1
5	PK-7090_HDD_ASSY_EXP	SEE Page A-19	1
6	Mainboard	BM-0962RA	1
7	SR-6100RX	SR-6100RA-D3N	1
8	ROUND HEAD SCREW M3x0.5Px5mm	22-230-30005811	8
9	HEX CU BOSS UNC No.4-40, L=4.8, H=7mm	22-692-40048051	16
10	ROUND WASHER HEAD SCREW M3x0.5Px5mm	22-242-30005311	1
11	SP-7147 REMOTE SWITCH CABLE L=390mm+190mm	27-019-41208071	1
12	SP-7147 TERMINAL DC-IN CALBE L=400mm	27-012-41208112	1
13	PAN HEAD SCREW M2.0x0.4Px6mm	22-222-20060011	2
14	SP-7147 DIO to DB15 (Female) CABLE (15F to 10F) L=320mm	27-071-41207031	1
15	COM BOARD	BR-6062RA-00N BR-6062RA-01N	1
16	SP-7147 COM3 DB9 (Male Pin) CABLE (9M to 10F) L=90mm	27-024-41202031	1
17	SP-7147 COM4 DB9 (Male Pin) CABLE (9M to 10F) L=270mm	27-024-41206031	1
18	FLAT HEAD SCREW #2 /φ5 / M3x0.5Px5mm	22-212-30005311	21

SP-7145 Box PC Exploded Diagram

The exploded diagram and part numbers applies to SP-7145 system equipped with the following feature:

- Resistive touch screen (DC-IN: 9-36V)

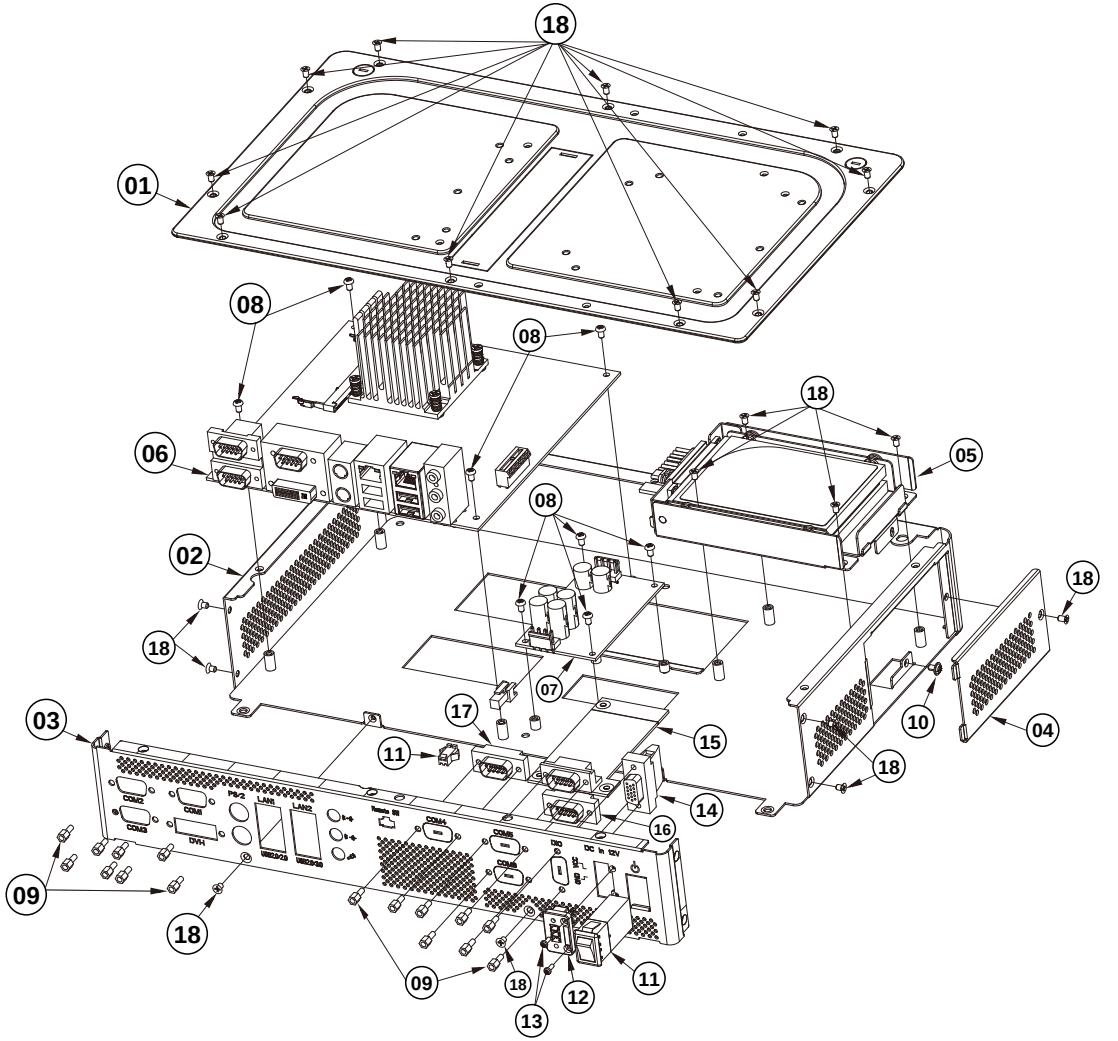


No.	Component Name	P/N No.	Q'ty
1	SP-7147 BR REAR COVER (w/Paint) (Silver Gray)	20-004-03063412	1
2	SP-7147 BR BASE (w/Paint) (Silver)	20-032-02061412	1
3	SP-7147 BR IO 9-36V (w/Paint) (Silver Gray)	20-006-03061412	1
4	SP-7147 HDD ACTIVITY COVER (w/Paint) (Silver Gray)	20-004-03064412	1
5	PK-7090_HDD_ASSY_EXP	SEE Page A-19	1
6	Mainboard	BM-0962RA	1
7	SR-6100RX	SR-6100RA-D3N	1
8	ROUND HEAD SCREW M3x0.5Px5mm	22-230-30005811	8
9	HEX CU BOSS UNC No.4-40, L=4.8, H=7mm	22-692-40048051	16
10	ROUND WASHER HEAD SCREW M3x0.5Px5mm	22-242-30005311	1
11	SP-7147 REMOTE SWITCH CABLE L=390mm+190mm	27-019-41208071	1
12	PSP-7147 DC TO DC IN CABLE (DC-IN) L= 230mm	27-012-41205071	1
13	PAN HEAD SCREW M3x0.5Px8mm	22-232-30008811	2
14	SP-7147 DIO to DB15 (Female) CABLE (15F to 10F) L=320mm	27-071-41207031	1
15	COM BOARD	BR-6062RA-00N BR-6062RA-01N	1
16	SP-7147 COM3 DB9 (Male Pin) CABLE (9M to 10F) L=90mm	27-024-41202031	1
17	SP-7147 COM4 DB9 (Male Pin) CABLE (9M to 10F) L=270mm	27-024-41206031	1
18	FLAT HEAD SCREW #2 /φ5 / M3x0.5Px5mm	22-212-30005311	21

SP-7145 Box PC Exploded Diagram

The exploded diagram and part numbers applies to SP-7145 system equipped with the following feature:

- Resistive touch screen (DC-IN: 12V)

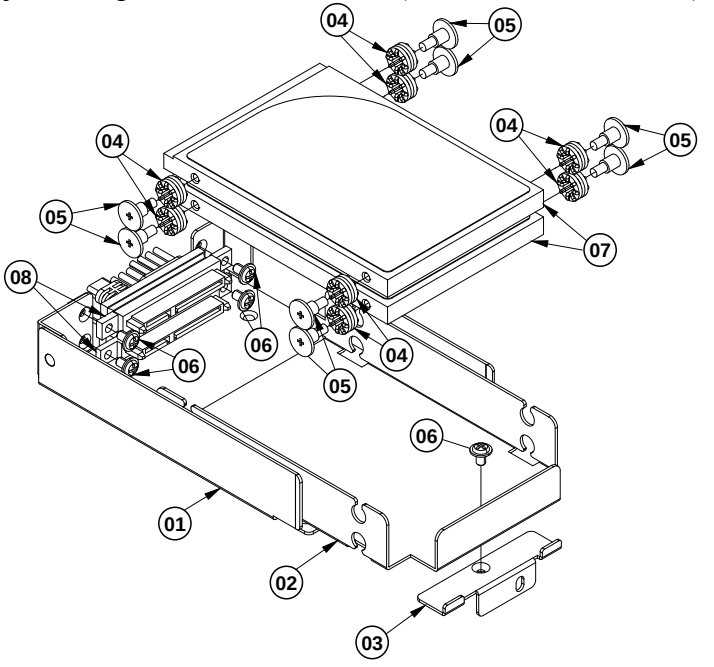


No.	Component Name	P/N No.	Q'ty
1	SP-7147 BR REAR COVER (w/Paint) (Silver Gray)	20-004-03063412	1
2	SP-7147 BR BASE (w/Paint) (Silver)	20-032-02061412	1
3	SP-7147 BR IO 12V (w/Paint) (Silver)	20-006-03062412	1
4	SP-7147 HDD ACTIVITY COVER (w/Paint) (Silver Gray)	20-004-03064412	1
5	PK-7090_HDD_ASSY_EXP	SEE Page A-19	1
6	Mainboard	BM-0962RA	1
7	SR-6100RX	SR-6100RA-D3N	1
8	ROUND HEAD SCREW M3x0.5Px5mm	22-230-30005811	8
9	HEX CU BOSS UNC No.4-40, L=4.8, H=7mm	22-692-40048051	16
10	ROUND WASHER HEAD SCREW M3x0.5Px5mm	22-242-30005311	1
11	SP-7147 REMOTE SWITCH CABLE L=390mm+190mm	27-019-41208071	1
12	SP-7147 TERMINAL DC-IN CALBE L=400mm	27-012-41208112	1
13	PAN HEAD SCREW M2.0x0.4Px6mm	22-222-20060011	2
14	SP-7147 DIO to DB15 (Female) CABLE (15F to 10F) L=320mm	27-071-41207031	1
15	COM BOARD	BR-6062RA-00N BR-6062RA-01N	1
16	SP-7147 COM3 DB9 (Male Pin) CABLE (9M to 10F) L=90mm	27-024-41202031	1
17	SP-7147 COM4 DB9 (Male Pin) CABLE (9M to 10F) L=270mm	27-024-41206031	1
18	FLAT HEAD SCREW #2 /φ5 / M3x0.5Px5mm	22-212-30005311	21

SP-7145 HDD Tray Exploded Diagram

The exploded diagram and part numbers below applies to SP-7145 system equipped with the following features:

- Resistive touch screen (DC-IN: 9-36V or 12V)
- Projected capacitive touch screen (DC-IN: 9-36V or 12V)

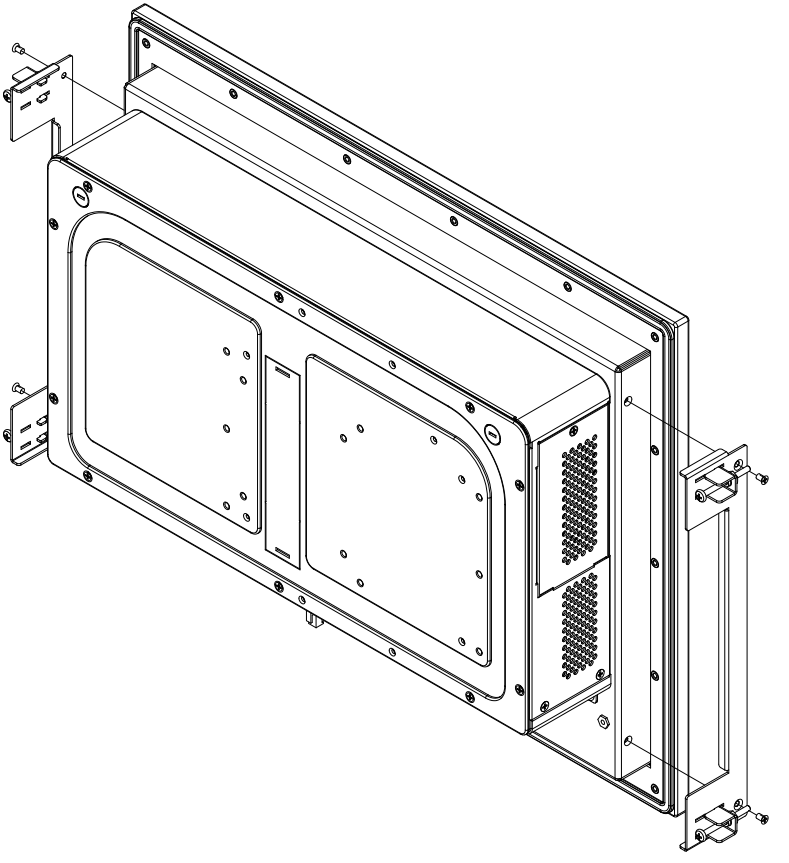


No.	Component Name	P/N No.	Q'ty
1	PK-7090 HDD SUPPORT BRACKET	20-006-03006284	1
2	PK-7090 HDD BRACKET	20-006-03005284	1
3	SP-7625 HDD BRACKET FIX PLATE	80-006-03011328	1
4	RUBBER WASHER (OD=φ9.62mm, ID=φ3.9mmx5.8T) (Blue)	23-680-39580963	8
5	FILLISTER HEAD SCREW M3x0.5Px4.8mm	82-272-30005013	8
6	ROUND WASHER HEAD SCREW M3x0.5Px5mm	22-242-30005311	5
7	2.5-Inch HDD	N/A	2
8	SP-7625 SATA HDD & POWER CABLE L=150mm+250mm	27-012-32805081	2

SP-7145 Panel Mount Exploded Diagram

The exploded diagram and part numbers below applies to SP-7145 system equipped with the following features:

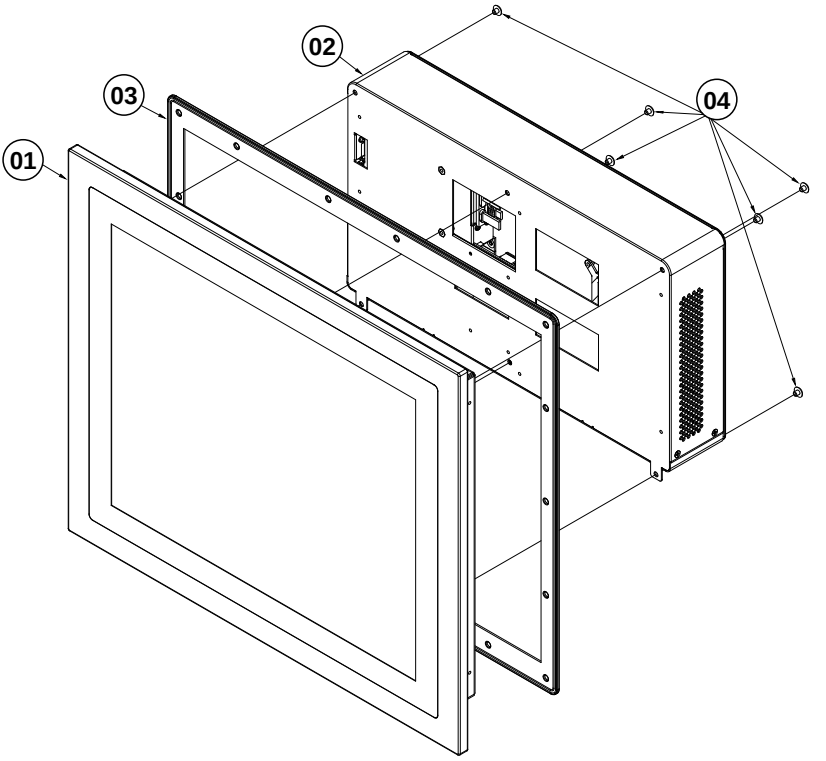
- Resistive touch screen (DC-IN: 9-36V or 12V)
- Projected capacitive touch screen (DC-IN: 9-36V or 12V)



SP-7147 System Exploded Diagram

The exploded diagram and part numbers below applies to SP-7147 system equipped with the following features:

- Resistive touch screen (DC-IN: 9-36V or 12V)
- Projected capacitive touch screen (DC-IN: 9-36V or 12V)

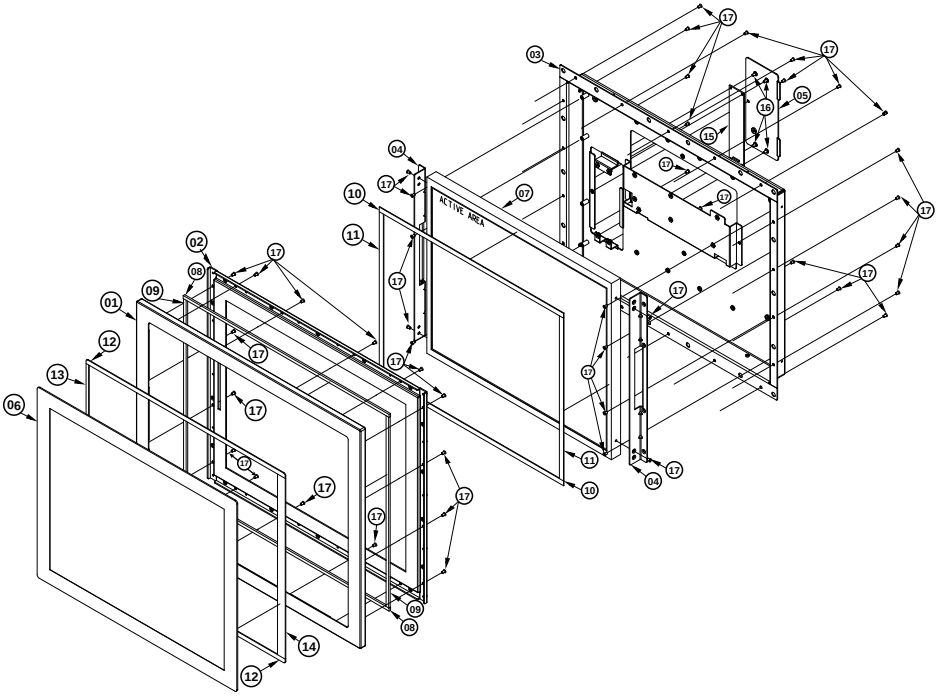


No.	Component Name	P/N No.	Q'ty
1	SP-7147_PANEL_MODULE_EXP	SEE PAGE A-22 ~ A-25	1
2	BOX_PC_BM0962_NO_VESA_EXP	SEE PAGE A-26 ~ A-33	1
3	SP-7147_WALL_ORING	30-013-01300412	1
4	TRUSS HEAD SCREW #2 / M4x0.7Px4mm	22-232-40004011	6

SP-7147 Touch Panel & LCD Display Exploded Diagram

The exploded diagram and part numbers applies to SP-7147 system equipped with the following feature:

- Projected capacitive touch screen (DC-IN: 9-36V or 12V)

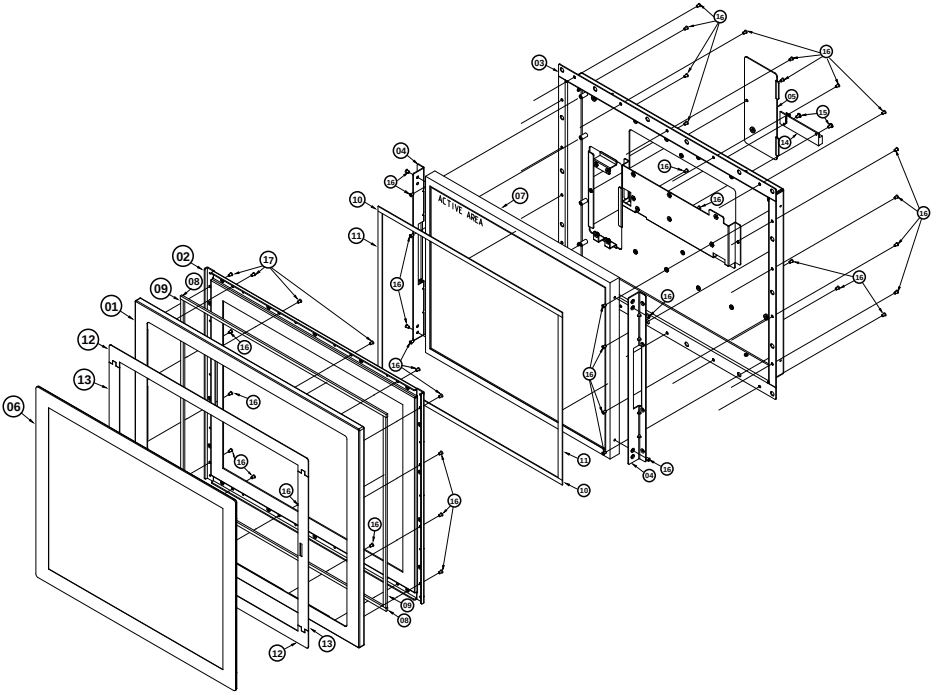


No.	Component Name	P/N No.	Q'ty
1	SP-7147 THIN GAP SUS COVER	20-004-07001412	1
2	SP-7147 THIN GAP SGCC COVER	20-004-21001412	1
3	SP-7147 LCD COVER KIT (w/Paint) (Silver Gray)	20-004-03062412	1
4	SP-747 LCD LINK HOLDER	20-029-03001412	2
5	SP-7147 ABON TOUCH BOARD COVER KIT (with/Paint) (Silver)	20-004-03061412	1
6	17" P-CAP Touch Panel	52-380-04121114	1
7	17" TFT LCD Panel (LED Backlight), 350 nits, SXGA (1280x1024)	52-351-04117002	1
8	SP-7147 TOUCH THIN GAP EPDM H (400x5x3mm)	30-013-01100412	2
9	SP-7147 TOUCH THIN GAP EPDM V (321x5x3mm)	30-013-01200412	2
10	ST-2017 THIN GAP LCD PORON-H (358x8x1mm)	30-013-24100366	2
11	ST-2017 THIN GAP LCD PORON-V (274x8x1mm)	30-013-24200366	2
12	SP-7147 ABON TP A-68170-0401 EPDM-H (387x7.5x1.1mm)	34-026-06203412	2
13	SP-7147 ABON TP A-68170-0401 EPDM-V A (304x15x1.1mm)	34-026-06204412	1
14	SP-7147 ABON TP A-68170-0401 EPDM-V B (304x5x1.1mm)	34-026-06205412	1
15	Touch Control Board for P-CAP,USB & RS-232 Interface(Abon Touch)	52-370-02318007	1
16	FILLISTER HEAD SCREW #2 / M3x0.5Px5mm	22-272-30049015	4
17	FLAT HEAD SCREW #2 /ψ 5 / M3x0.5Px5mm (BLACK)	22-212-30005311	47

SP-7147 Touch Panel & LCD Display Exploded Diagram

The exploded diagram and part numbers applies to SP-7147 system equipped with the following feature:

- Resistive touch screen (DC-IN: 9-36V or 12V)

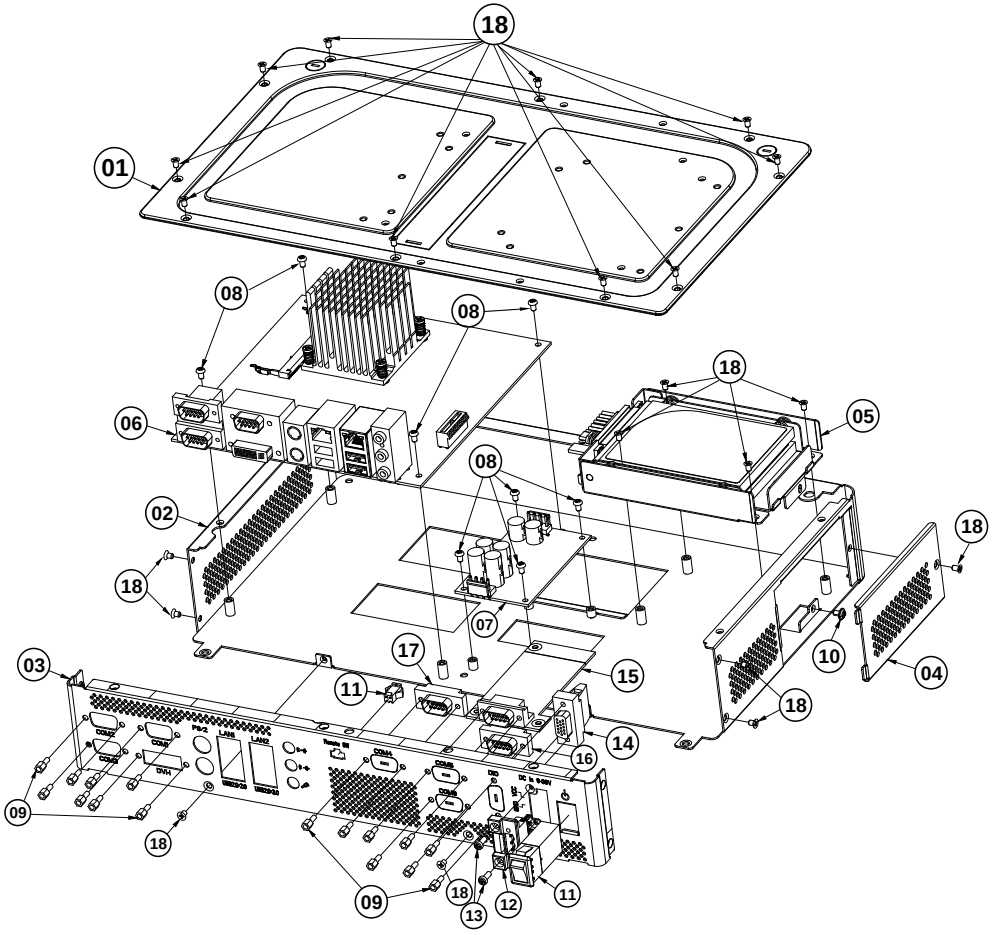


No.	Component Name	P/N No.	Q'ty
1	SP-7147 THIN GAP SUS COVER	20-004-07001412	1
2	SP-7147 THIN GAP SGCC COVER	20-004-21001412	1
3	SP-7147 LCD COVER KIT (w/Paint) (Silver Gray)	20-004-03062412	1
4	SP-747 LCD LINK HOLDER	20-029-03001412	2
5	SP-7147 ABON TOUCH BOARD COVER KIT (with/Paint) (Silver)	20-004-03061412	1
6	17" 5-wire Resistive Touch Panel	52-380-04221114	1
7	17" TFT LCD Panel (LED Backlight), 350 nits, SXGA (1280x1024)	52-351-04117002	1
8	SP-7147 TOUCH THIN GAP EPDM H (400x5x3mm)	30-013-01100412	2
9	SP-7147 TOUCH THIN GAP EPDM V (321x5x3mm)	30-013-01200412	2
10	ST-2017 THIN GAP LCD PORON-H (358x8x1mm)	30-013-24100366	2
11	ST-2017 THIN GAP LCD PORON-V (274x8x1mm)	30-013-24200366	2
12	SP-7147 ABON A-15170-1452 EPDM-H (386.92x30x0.8mm)	34-026-06201412	2
13	SP-7147 ABON A-15170-1452 EPDM-V (271.24x20x0.8mm)	34-026-06202412	2
14	Touch Control Board for 5-wire, USB Interface	52-370-01040504	1
15	FILLISTER HEAD SCREW #2 / M3x0.5Px5mm	22-272-30049015	2
16	FLAT HEAD SCREW #2 /ψ 5 / M3x0.5Px5mm (BLACK)	22-212-30005311	47

SP-7147 Box PC Exploded Diagram

The exploded diagram and part numbers applies to SP-7147 system equipped with the following feature:

- Projected capacitive touch screen (DC-IN: 9-36V)

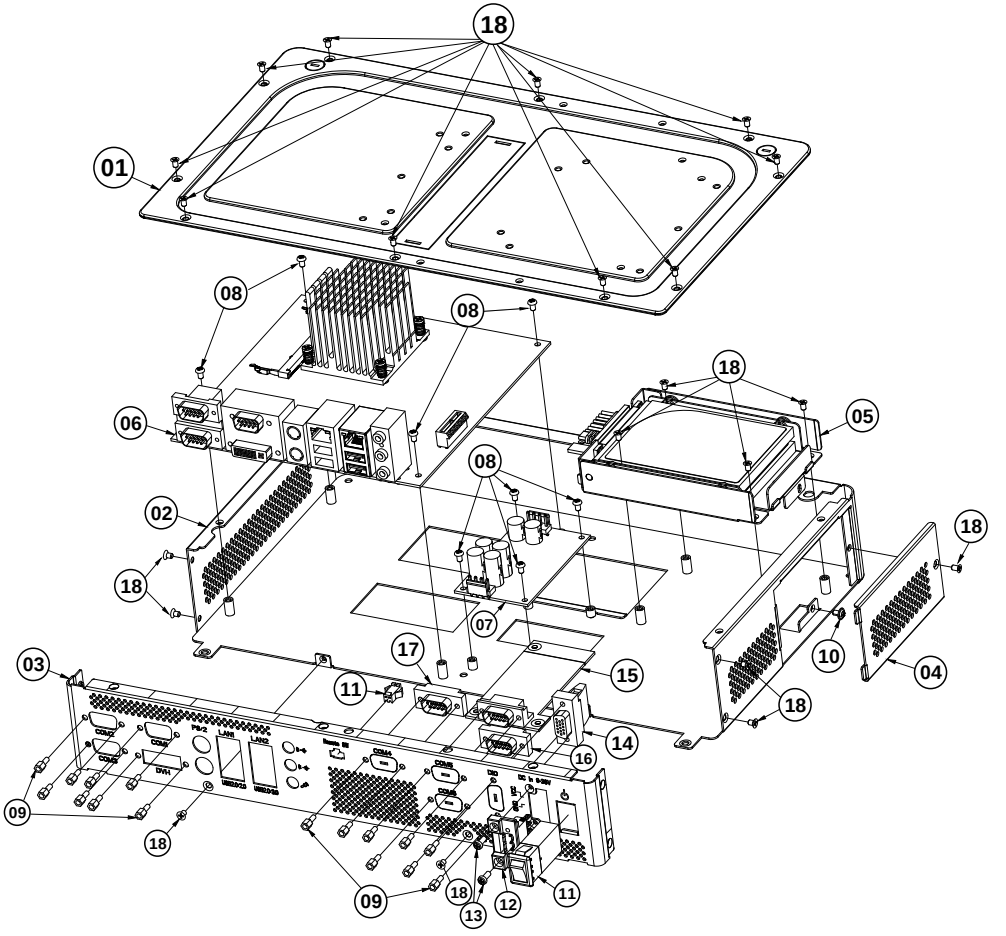


No.	Component Name	P/N No.	Q'ty
1	SP-7147 BR REAR COVER (w/Paint) (Silver Gray)	20-004-03063412	1
2	SP-7147 BR BASE (w/Paint) (Silver)	20-032-02061412	1
3	SP-7147 BR IO 9-36V (w/Paint) (Silver Gray)	20-006-03061412	1
4	SP-7147 HDD ACTIVITY COVER (w/Paint) (Silver Gray)	20-004-03064412	1
5	PK-7090_HDD_ASSY_EXP	SEE Page A-34	1
6	Mainboard	BM-0962RA	1
7	SR-6100RX	SR-6100RA-D3N	1
8	ROUND HEAD SCREW M3x0.5Px5mm	22-230-30005811	8
9	HEX CU BOSS UNC No.4-40, L=4.8, H=7mm	22-692-40048051	16
10	ROUND WASHER HEAD SCREW M3x0.5Px5mm	22-242-30005311	1
11	SP-7147 REMOTE SWITCH CABLE L=390mm+190mm	27-019-41208071	1
12	PSP-7147 DC TO DC IN CABLE (DC-IN) L= 230mm	27-012-41205071	1
13	PAN HEAD SCREW M3x0.5Px8mm	22-232-30008811	2
14	SP-7147 DIO to DB15 (Female) CABLE (15F to 10F) L=320mm	27-071-41207031	1
15	COM BOARD	BR-6062RA-00N BR-6062RA-01N	1
16	SP-7147 COM3 DB9 (Male Pin) CABLE (9M to 10F) L=90mm	27-024-41202031	1
17	SP-7147 COM4 DB9 (Male Pin) CABLE (9M to 10F) L=270mm	27-024-41206031	1
18	FLAT HEAD SCREW #2 /φ5 / M3x0.5Px5mm	22-212-30005311	21

SP-7147 Box PC Exploded Diagram

The exploded diagram and part numbers applies to SP-7147 system equipped with the following feature:

- Projected capacitive touch screen (DC-IN: 12V)

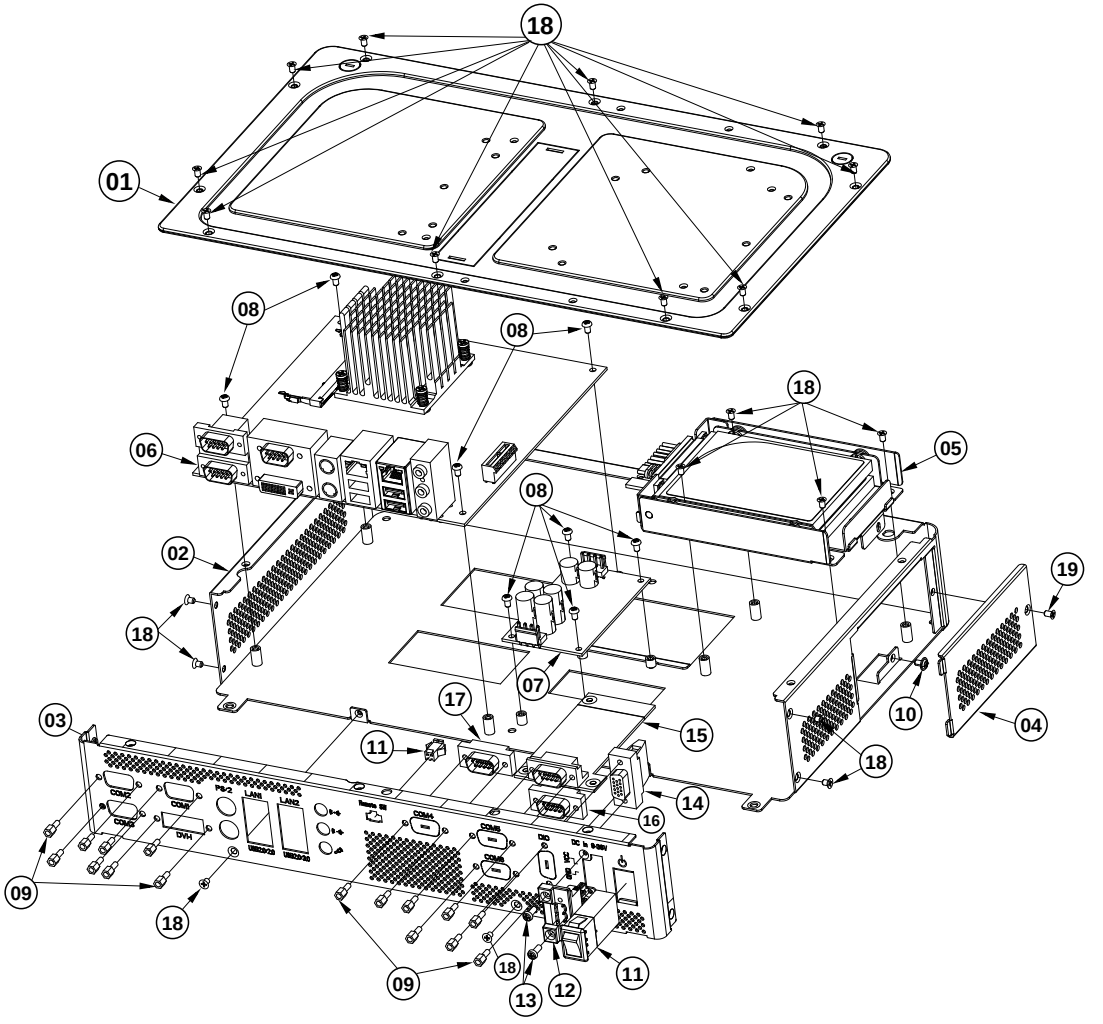


No.	Component Name	P/N No.	Q'ty
1	SP-7147 BR REAR COVER (w/Paint) (Silver Gray)	20-004-03063412	1
2	SP-7147 BR BASE (w/Paint) (Silver)	20-032-02061412	1
3	SP-7147 BR IO 12V (w/Paint) (Silver)	20-006-03062412	1
4	SP-7147 HDD ACTIVITY COVER (w/Paint) (Silver Gray)	20-004-03064412	1
5	PK-7090_HDD_ASSY_EXP	SEE Page A-34	1
6	Mainboard	BM-0962RA	1
7	SR-6100RX	SR-6100RA-D3N	1
8	ROUND HEAD SCREW M3x0.5Px5mm	22-230-30005811	8
9	HEX CU BOSS UNC No.4-40, L=4.8, H=7mm	22-692-40048051	16
10	ROUND WASHER HEAD SCREW M3x0.5Px5mm	22-242-30005311	1
11	SP-7147 REMOTE SWITCH CABLE L=390mm+190mm	27-019-41208071	1
12	SP-7147 TERMINAL DC-IN CALBE L=400mm	27-012-41208112	1
13	PAN HEAD SCREW M2.0x0.4Px6mm	22-222-20060011	2
14	SP-7147 DIO to DB15 (Female) CABLE (15F to 10F) L=320mm	27-071-41207031	1
15	COM BOARD	BR-6062RA-00N BR-6062RA-01N	1
16	SP-7147 COM3 DB9 (Male Pin) CABLE (9M to 10F) L=90mm	27-024-41202031	1
17	SP-7147 COM4 DB9 (Male Pin) CABLE (9M to 10F) L=270mm	27-024-41206031	1
18	FLAT HEAD SCREW #2 /φ5 / M3x0.5Px5mm	22-212-30005311	21

SP-7147 Box PC Exploded Diagram

The exploded diagram and part numbers applies to SP-7147 system equipped with the following feature:

- Resistive touch screen (DC-IN: 9-36V)



No.	Component Name	P/N No.	Q'ty
1	SP-7147 BR REAR COVER (w/Paint) (Silver Gray)	20-004-03063412	1
2	SP-7147 BR BASE (w/Paint) (Silver)	20-032-02061412	1
3	SP-7147 BR IO 9-36V (w/Paint) (Silver Gray)	20-006-03061412	1
4	SP-7147 HDD ACTIVITY COVER (w/Paint) (Silver Gray)	20-004-03064412	1
5	PK-7090_HDD_ASSY_EXP	SEE Page A-34	1
6	Mainboard	BM-0962RA	1
7	SR-6100RX	SR-6100RA-D3N	1
8	ROUND HEAD SCREW M3x0.5Px5mm	22-230-30005811	8
9	HEX CU BOSS UNC No.4-40, L=4.8, H=7mm	22-692-40048051	16
10	ROUND WASHER HEAD SCREW M3x0.5Px5mm	22-242-30005311	1
11	SP-7147 REMOTE SWITCH CABLE L=390mm+190mm	27-019-41208071	1
12	PSP-7147 DC TO DC IN CABLE (DC-IN) L= 230mm	27-012-41205071	1
13	PAN HEAD SCREW M3x0.5Px8mm	22-232-30008811	2
14	SP-7147 DIO to DB15 (Female) CABLE (15F to 10F) L=320mm	27-071-41207031	1
15	COM BOARD	BR-6062RA-00N BR-6062RA-01N	1
16	SP-7147 COM3 DB9 (Male Pin) CABLE (9M to 10F) L=90mm	27-024-41202031	1
17	SP-7147 COM4 DB9 (Male Pin) CABLE (9M to 10F) L=270mm	27-024-41206031	1
18	FLAT HEAD SCREW #2 /φ5 / M3x0.5Px5mm	22-212-30005311	21

SP-7147 Box PC Exploded Diagram

The exploded diagram and part numbers applies to SP-7147 system equipped with the following feature:

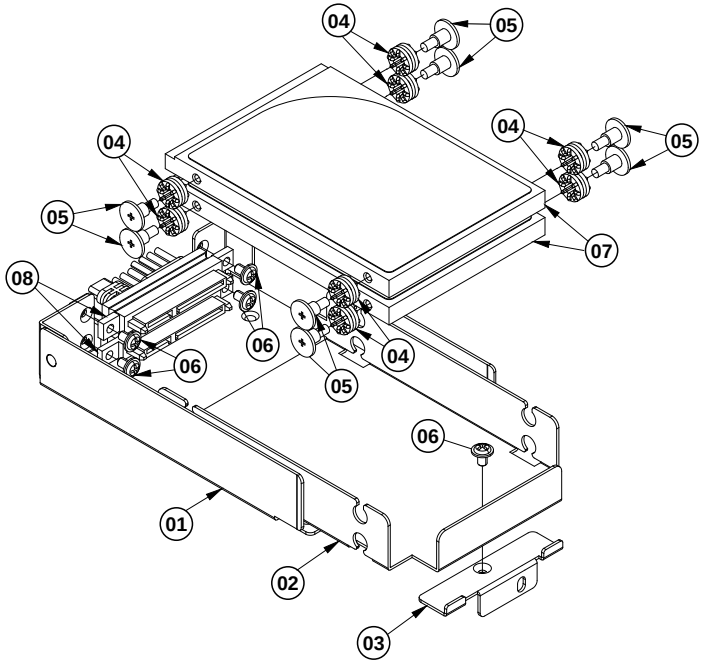
- Resistive touch screen (DC-IN:12V)

No.	Component Name	P/N No.	Q'ty
1	SP-7147 BR REAR COVER (w/Paint) (Silver Gray)	20-004-03063412	1
2	SP-7147 BR BASE (w/Paint) (Silver)	20-032-02061412	1
3	SP-7147 BR IO 12V (w/Paint) (Silver)	20-006-03062412	1
4	SP-7147 HDD ACTIVITY COVER (w/Paint) (Silver Gray)	20-004-03064412	1
5	PK-7090_HDD_ASSY_EXP	SEE Page A-34	1
6	Mainboard	BM-0962RA	1
7	SR-6100RX	SR-6100RA-D3N	1
8	ROUND HEAD SCREW M3x0.5Px5mm	22-230-30005811	8
9	HEX CU BOSS UNC No.4-40, L=4.8, H=7mm	22-692-40048051	16
10	ROUND WASHER HEAD SCREW M3x0.5Px5mm	22-242-30005311	1
11	SP-7147 REMOTE SWITCH CABLE L=390mm+190mm	27-019-41208071	1
12	SP-7147 TERMINAL DC-IN CALBE L=400mm	27-012-41208112	1
13	PAN HEAD SCREW M2.0x0.4Px6mm	22-222-20060011	2
14	SP-7147 DIO to DB15 (Female) CABLE (15F to 10F) L=320mm	27-071-41207031	1
15	COM BOARD	BR-6062RA-00N BR-6062RA-01N	1
16	SP-7147 COM3 DB9 (Male Pin) CABLE (9M to 10F) L=90mm	27-024-41202031	1
17	SP-7147 COM4 DB9 (Male Pin) CABLE (9M to 10F) L=270mm	27-024-41206031	1
18	FLAT HEAD SCREW #2 /φ5 / M3x0.5Px5mm	22-212-30005311	21

SP-7147 HDD Tray Exploded Diagram

The exploded diagram and part numbers below applies to SP-7147 system equipped with the following features:

- Resistive touch screen (DC-IN: 9-36V or 12V)
- Projected capacitive touch screen (DC-IN: 9-36V or 12V)

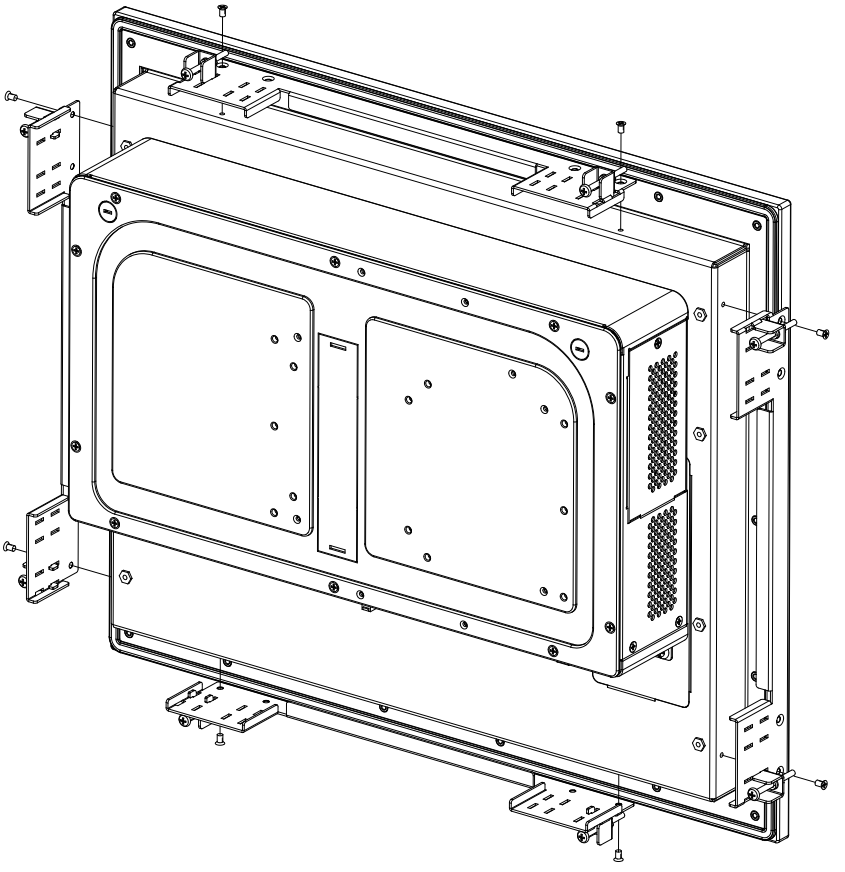


No.	Component Name	P/N No.	Q'ty
1	PK-7090 HDD SUPPORT BRACKET	20-006-03006284	1
2	PK-7090 HDD BRACKET	20-006-03005284	1
3	SP-7625 HDD BRACKET FIX PLATE	80-006-03011328	1
4	RUBBER WASHER (OD=φ9.62mm, ID=φ3.9mmx5.8T) (Blue)	23-680-39580963	8
5	FILLISTER HEAD SCREW M3x0.5Px4.8mm	82-272-30005013	8
6	ROUND WASHER HEAD SCREW M3x0.5Px5mm	22-242-30005311	5
7	2.5-Inch HDD	N/A	2
8	SP-7625 SATA HDD & POWER CABLE L=150mm+250mm	27-012-32805081	2

SP-7147 Panel Mount Exploded Diagram

The exploded diagram and part numbers below applies to SP-7147 system equipped with the following features:

- Resistive touch screen (DC-IN: 9-36V or 12V)
- Projected capacitive touch screen (DC-IN: 9-36V or 12V)



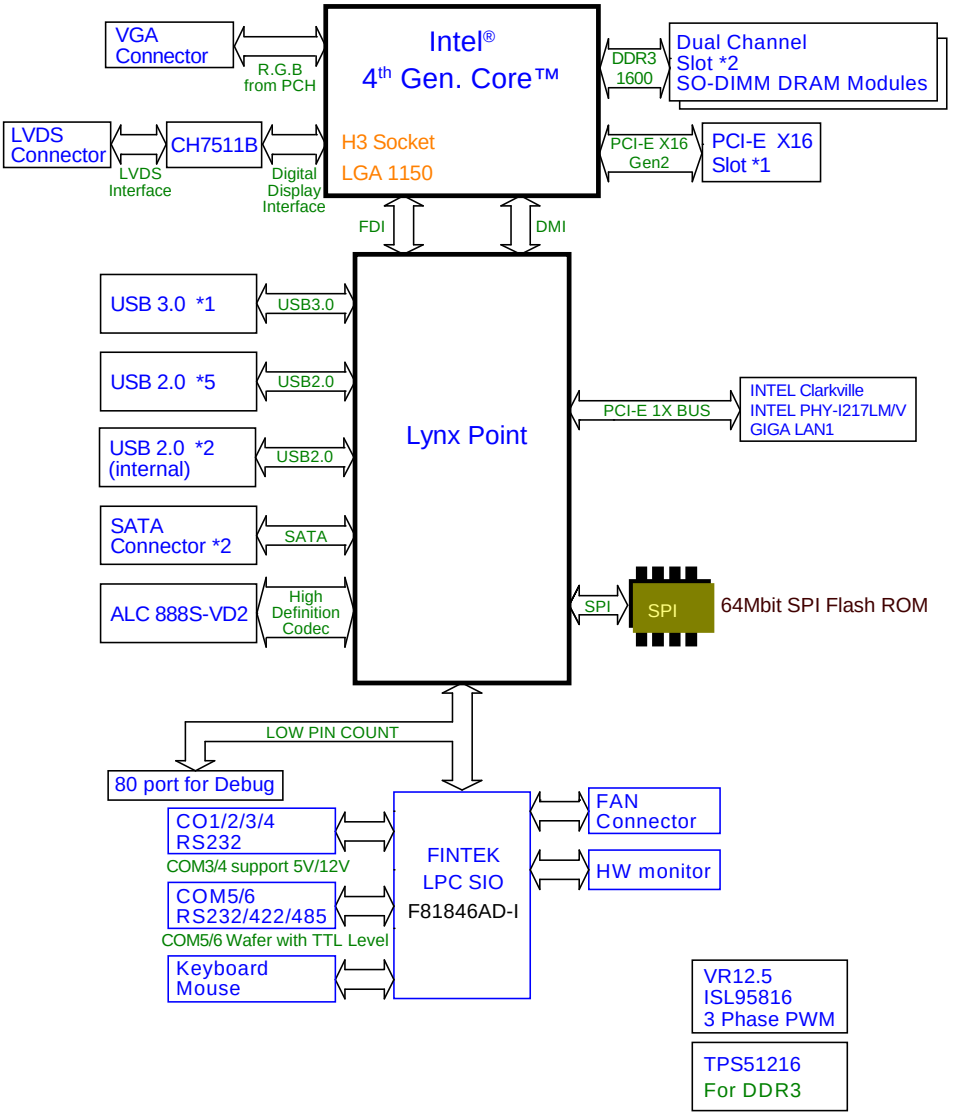
Appendix B Technical Summary

This appendix will give you a brief introduction of the allocation maps for the system resources.

The following topics are included:

- System Block Diagram
- Interrupt Map
- I/O Map
- Memory Map
- Configuring WatchDog Timer
- Flash BIOS Update

System Block Diagram



Interrupt Map

IRQ	ASSIGNMENT
0	System timer
3	Communications Port (COM2)
4	Communications Port (COM1)
5	Intel® Atom™/Celeron®/Pentium® Processor Platform Control Unit - SMBus Port - 0F12
7	Communications Port (COM3)
8	High precision event timer
10	Communications Port (COM4)
16	Intel® Atom™/Celeron®/Pentium® Processor PCI Express - Root Port 1 - 0F48
17	Intel® Atom™/Celeron®/Pentium® Processor PCI Express - Root Port 2 - 0F4A
18	Intel® Atom™/Celeron®/Pentium® Processor PCI Express - Root Port 3 - 0F4C
19	Intel® Atom™/Celeron®/Pentium® Processor AHCI - 0F23
19	Intel® Atom™/Celeron®/Pentium® Processor PCI Express - Root Port 4 - 0F4E
22	High Definition Audio Controller
23	Intel® Atom™/Celeron®/Pentium® Processor EHCI USB - 0F34
42	Intel Device
43	Intel Device
81	Microsoft ACPI-Compliant System
82	Microsoft ACPI-Compliant System
83	Microsoft ACPI-Compliant System
84	Microsoft ACPI-Compliant System
85	Microsoft ACPI-Compliant System
86	Microsoft ACPI-Compliant System
87	Microsoft ACPI-Compliant System
88	Microsoft ACPI-Compliant System
89	Microsoft ACPI-Compliant System
90	Microsoft ACPI-Compliant System
91	Microsoft ACPI-Compliant System
92	Microsoft ACPI-Compliant System
93	Microsoft ACPI-Compliant System
94	Microsoft ACPI-Compliant System
95	Microsoft ACPI-Compliant System
96	Microsoft ACPI-Compliant System
97	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
98	Microsoft ACPI-Compliant System
99	Microsoft ACPI-Compliant System
100	Microsoft ACPI-Compliant System
101	Microsoft ACPI-Compliant System
102	Microsoft ACPI-Compliant System
103	Microsoft ACPI-Compliant System
104	Microsoft ACPI-Compliant System
105	Microsoft ACPI-Compliant System
106	Microsoft ACPI-Compliant System
107	Microsoft ACPI-Compliant System
108	Microsoft ACPI-Compliant System
109	Microsoft ACPI-Compliant System
110	Microsoft ACPI-Compliant System
111	Microsoft ACPI-Compliant System
112	Microsoft ACPI-Compliant System
113	Microsoft ACPI-Compliant System
114	Microsoft ACPI-Compliant System
115	Microsoft ACPI-Compliant System
116	Microsoft ACPI-Compliant System
117	Microsoft ACPI-Compliant System
118	Microsoft ACPI-Compliant System
119	Microsoft ACPI-Compliant System
120	Microsoft ACPI-Compliant System
121	Microsoft ACPI-Compliant System
122	Microsoft ACPI-Compliant System
123	Microsoft ACPI-Compliant System
124	Microsoft ACPI-Compliant System
125	Microsoft ACPI-Compliant System
126	Microsoft ACPI-Compliant System
127	Microsoft ACPI-Compliant System
128	Microsoft ACPI-Compliant System
129	Microsoft ACPI-Compliant System
130	Microsoft ACPI-Compliant System
131	Microsoft ACPI-Compliant System
132	Microsoft ACPI-Compliant System
133	Microsoft ACPI-Compliant System
134	Microsoft ACPI-Compliant System
135	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
136	Microsoft ACPI-Compliant System
137	Microsoft ACPI-Compliant System
138	Microsoft ACPI-Compliant System
139	Microsoft ACPI-Compliant System
140	Microsoft ACPI-Compliant System
141	Microsoft ACPI-Compliant System
142	Microsoft ACPI-Compliant System
143	Microsoft ACPI-Compliant System
144	Microsoft ACPI-Compliant System
145	Microsoft ACPI-Compliant System
146	Microsoft ACPI-Compliant System
147	Microsoft ACPI-Compliant System
148	Microsoft ACPI-Compliant System
149	Microsoft ACPI-Compliant System
150	Microsoft ACPI-Compliant System
151	Microsoft ACPI-Compliant System
152	Microsoft ACPI-Compliant System
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156	Microsoft ACPI-Compliant System
157	Microsoft ACPI-Compliant System
158	Microsoft ACPI-Compliant System
159	Microsoft ACPI-Compliant System
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161	Microsoft ACPI-Compliant System
162	Microsoft ACPI-Compliant System
163	Microsoft ACPI-Compliant System
164	Microsoft ACPI-Compliant System
165	Microsoft ACPI-Compliant System
166	Microsoft ACPI-Compliant System
167	Microsoft ACPI-Compliant System
168	Microsoft ACPI-Compliant System
169	Microsoft ACPI-Compliant System
170	Microsoft ACPI-Compliant System
171	Microsoft ACPI-Compliant System
172	Microsoft ACPI-Compliant System
173	Microsoft ACPI-Compliant System

IRQ	ASSIGNMENT
174	Microsoft ACPI-Compliant System
175	Microsoft ACPI-Compliant System
176	Microsoft ACPI-Compliant System
177	Microsoft ACPI-Compliant System
178	Microsoft ACPI-Compliant System
179	Microsoft ACPI-Compliant System
180	Microsoft ACPI-Compliant System
181	Microsoft ACPI-Compliant System
182	Microsoft ACPI-Compliant System
183	Microsoft ACPI-Compliant System
184	Microsoft ACPI-Compliant System
185	Microsoft ACPI-Compliant System
186	Microsoft ACPI-Compliant System
187	Microsoft ACPI-Compliant System
188	Microsoft ACPI-Compliant System
189	Microsoft ACPI-Compliant System
190	Microsoft ACPI-Compliant System
4294967281	Intel® I211 Gigabit Network Connection
4294967282	Intel® I211 Gigabit Network Connection
4294967283	Intel® I211 Gigabit Network Connection
4294967284	Intel® I211 Gigabit Network Connection
4294967285	Intel® I211 Gigabit Network Connection
4294967286	Intel® I211 Gigabit Network Connection
4294967287	Intel® I210 Gigabit Network Connection
4294967288	Intel® I210 Gigabit Network Connection
4294967289	Intel® I210 Gigabit Network Connection
4294967290	Intel® I210 Gigabit Network Connection
4294967291	Intel® I210 Gigabit Network Connection
4294967292	Intel® I210 Gigabit Network Connection
4294967293	Intel® Trusted Execution Engine Interface
4294967294	Intel® Atom™ Processor E3800 Series/Intel® Celeron® Processor N2920/J1900

I/O MAP

I/O MAP	ASSIGNMENT
0x00000000-0x0000006F	PCI bus
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x0000002E-0x0000002F	Motherboard resources
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x00000040-0x00000043	System timer
0x0000004E-0x0000004F	Motherboard resources
0x00000050-0x00000053	System timer
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000070-0x00000077	System CMOS/real time clock
0x00000070-0x00000077	Motherboard resources
0x00000078-0x00000CF7	PCI bus
0x00000080-0x0000008F	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B2-0x000000B3	Motherboard resources
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000002E8-0x000002EF	Communications Port (COM4)
0x000002F8-0x000002FF	Communications Port (COM2)
0x000003B0-0x000003BB	Intel® Atom™ Processor E3800 Series/Intel®

I/O MAP	ASSIGNMENT
	Celeron® Processor N2920/J1900
0x000003C0-0x000003DF	Intel® Atom™ Processor E3800 Series/Intel® Celeron® Processor N2920/J1900
0x000003E8-0x000003EF	Communications Port (COM3)
0x000003F8-0x000003FF	Communications Port (COM1)
0x00000400-0x0000047F	Motherboard resources
0x000004D0-0x000004D1	Programmable interrupt controller
0x00000500-0x000005FE	Motherboard resources
0x00000600-0x0000061F	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A20-0x00000A2F	Motherboard resources
0x00000D00-0x0000FFFF	PCI bus
0x0000C000-0x0000CFFF	Intel® Atom™/Celeron®/Pentium® Processor PCI Express - Root Port 4 - 0F4E
0x0000D000-0x0000DFFF	Intel® Atom™/Celeron®/Pentium® Processor PCI Express - Root Port 3 - 0F4C
0x0000E000-0x0000E01F	Intel® Atom™/Celeron®/Pentium® Processor Platform Control Unit - SMBus Port - 0F12
0x0000E020-0x0000E03F	Intel® Atom™/Celeron®/Pentium® Processor AHCI - 0F23
0x0000E040-0x0000E043	Intel® Atom™/Celeron®/Pentium® Processor AHCI - 0F23
0x0000E050-0x0000E057	Intel® Atom™/Celeron®/Pentium® Processor AHCI - 0F23
0x0000E060-0x0000E063	Intel® Atom™/Celeron®/Pentium® Processor AHCI - 0F23
0x0000E070-0x0000E077	Intel® Atom™/Celeron®/Pentium® Processor AHCI - 0F23
0x0000E080-0x0000E087	Intel® Atom™ Processor E3800 Series/Intel® Celeron® Processor N2920/J1900

▪ I/O map:

I/O MAP	ASSIGNMENT
0x00000000-0x0000006F	PCI bus
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x0000002E-0x0000002F	Motherboard resources
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x00000040-0x00000043	System timer
0x0000004E-0x0000004F	Motherboard resources
0x00000050-0x00000053	System timer
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000070-0x00000077	System CMOS/real time clock
0x00000070-0x00000077	Motherboard resources
0x00000078-0x00000CF7	PCI bus
0x00000080-0x0000008F	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B2-0x000000B3	Motherboard resources
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller
0x000000BC-0x000000BD	Programmable interrupt controller
0x000002E8-0x000002EF	Communications Port (COM4)
0x000002F8-0x000002FF	Communications Port (COM2)

I/O MAP	ASSIGNMENT
0x000003B0-0x000003BB	Intel® Atom™ Processor E3800 Series/Intel® Celeron® Processor N2920/J1900
0x000003C0-0x000003DF	Intel® Atom™ Processor E3800 Series/Intel® Celeron® Processor N2920/J1900
0x000003E8-0x000003EF	Communications Port (COM3)
0x000003F8-0x000003FF	Communications Port (COM1)
0x00000400-0x0000047F	Motherboard resources
0x000004D0-0x000004D1	Programmable interrupt controller
0x00000500-0x000005FE	Motherboard resources
0x00000600-0x0000061F	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A20-0x00000A2F	Motherboard resources
0x00000D00-0x0000FFFF	PCI bus
0x0000D000-0x0000DFFF	Intel® Atom™/Celeron®/Pentium® Processor PCI Express - Root Port 4 - 0F4E
0x0000E000-0x0000EFFF	Intel® Atom™/Celeron®/Pentium® Processor PCI Express - Root Port 3 - 0F4C
0x0000F000-0x0000F01F	Intel® Atom™/Celeron®/Pentium® Processor Platform Control Unit - SMBus Port - 0F12
0x0000F020-0x0000F03F	Intel® Atom™/Celeron®/Pentium® Processor AHCI - 0F23
0x0000F040-0x0000F043	Intel® Atom™/Celeron®/Pentium® Processor AHCI - 0F23
0x0000F050-0x0000F057	Intel® Atom™/Celeron®/Pentium® Processor AHCI - 0F23
0x0000F060-0x0000F063	Intel® Atom™/Celeron®/Pentium® Processor AHCI - 0F23
0x0000F070-0x0000F077	Intel® Atom™/Celeron®/Pentium® Processor AHCI - 0F23
0x0000F080-0x0000F087	Intel® Atom™ Processor E3800 Series/Intel® Celeron® Processor N2920/J1900

Memory Map

- **Memory map:**

MEMORY MAP	ASSIGNMENT
0xFF000000-0xFFFFFFFF	Intel® 82802 Firmware Hub Device
0x90810000-0x908107FF	Intel® Atom™/Celeron®/Pentium® Processor AHCI - 0F23
0x90700000-0x9077FFFF	Intel® I210 Gigabit Network Connection
0x90700000-0x9077FFFF	Intel® Atom™/Celeron®/Pentium® Processor PCI Express - Root Port 3 - 0F4C
0x90780000-0x90783FFF	Intel® I210 Gigabit Network Connection
0x9081C000-0x9081FFFF	Intel Device
0x90000000-0x903FFFFF	Intel® Atom™ Processor E3800 Series/Intel® Celeron® Processor N2920/J1900
0x80000000-0x8FFFFFFF	Intel® Atom™ Processor E3800 Series/Intel® Celeron® Processor N2920/J1900
0x80000000-0x8FFFFFFF	PCI bus
0x90814000-0x90817FFF	Intel Device
0x90600000-0x9061FFFF	Intel® I211 Gigabit Network Connection
0x90600000-0x9061FFFF	Intel® Atom™/Celeron®/Pentium® Processor PCI Express - Root Port 4 - 0F4E
0x90620000-0x90623FFF	Intel® I211 Gigabit Network Connection
0x9080E000-0x9080E3FF	Intel® Atom™/Celeron®/Pentium® Processor EHCI USB - 0F34
0xFED00000-0xFED003FF	High precision event timer
0x90804000-0x90807FFF	High Definition Audio Controller
0xE0000000-0xEFFFFFFF	Motherboard resources
0xFED01000-0xFED01FFF	Motherboard resources
0xFED03000-0xFED03FFF	Motherboard resources
0xFED04000-0xFED04FFF	Motherboard resources
0xFED08000-0xFED08FFF	Motherboard resources
0xFED1C000-0xFED1CFFF	Motherboard resources
0xFEE00000-0xFEEFFFFF	Motherboard resources
0xFEF00000-0xFEFFFFFF	Motherboard resources
0x9080C000-0x9080C01F	Intel® Atom™/Celeron®/Pentium® Processor Platform Control Unit - SMBus Port - 0F12
0x90500000-0x905FFFFF	Intel® Trusted Execution Engine Interface
0x90400000-0x904FFFFF	Intel® Trusted Execution Engine Interface

MEMORY MAP	ASSIGNMENT
0xA0000-0xBFFFF	Intel® Atom™ Processor E3800 Series/Intel® Celeron® Processor N2920/J1900
0xA0000-0xBFFFF	PCI bus
0xC0000-0xDFFFF	PCI bus
0xE0000-0xFFFFF	PCI bus

Configuring WatchDog Timer

The I/O port address of the watchdog timer is 2E (hex) and 2F (hex). 2E (hex) is the address port. 2F (hex) is the data port. User must first assign the address of register by writing address value into address port 2E (hex), then write/read data to/from the assigned register through data port 2F (hex).

Configuration Sequence

To program F81866 configuration registers, the following configuration sequence must be followed:

(1) Enter the extended function mode

To place the chip into the Extended Function Mode, two successive writes of 0x87 must be applied to Extended Function Enable Registers (EFERs, i.e. 2Eh or 4Eh).

(2) Configure the configuration registers

The chip selects the Logical Device and activates the desired Logical Devices through Extended Function Index Register (EFIR) and Extended Function Data Register (EFDR). The EFIR is located at the same address as the EFER, and the EFDR is located at address (EFIR+1). First, write the Logical Device Number (i.e. 0x07) to the EFIR and then write the number of the desired Logical Device to the EFDR. If accessing the Chip (Global) Control Registers, this step is not required. Secondly, write the address of the desired configuration register within the Logical Device to the EFIR and then write (or read) the desired configuration register through the EFDR.

(3) Exit the extended function mode

To exit the Extended Function Mode, writing 0xAA to the EFER is required. Once the chip exits the Extended Function Mode, it is in the normal running mode and is ready to enter the configuration mode.

Code example for watchdog timer

Enable watchdog timer and set 30 sec. as timeout interval

```
;------ Enter to extended function mode ------------------------------------------------------
mov                 dx,                 2eh
mov                 al,                 87h
out                 dx,                 al
out                 dx,                 al
;------ Select Logical Device 7 of watchdog timer
-----------------------------------------
mov                 al,                 07h
out                 dx,                 al
inc                 dx
mov                 al,                 07h
out                 dx,                 al
;------ Enable Watch dog feature
-------------------------------------------------------------------
mov                 al,                 030h
out                 dx,                 al
inc                 dx
mov                 al,                 01h
out                 dx,                 al
;------ Enable Watch
PME-----------------------------------------------------------------------------
dec                 dx
mov                 al,                 0FAh
out                 dx,                 al
inc                 dx
in                  al,                 dx
and                 al,                 51h
out                 dx,                 al
;------ Set second as counting unit
-------------------------------------------------------------
dec                 dx
mov                 al,                 0f5h
out                 dx,                 al
inc                 dx
in                  al,                 dx
and                 al,                 30h
out                 dx,                 al
;------ Set timeout interval as 30seconds and start counting
---------------------------------
dec                 dx
mov                 al,                 0f6h
```

```
out             dx,             al
inc             dx
mov             al,             1Eh
out             dx,             al
;------ Exit the extended function mode
------------------------------------------------------------
dec             dx
mov             al,             0aah
out             dx,             al
```

Flash BIOS Update

I. Prerequisites

1 Prepare a bootable media (e.g. USB storage device) which can boot the system to DOS prompt.

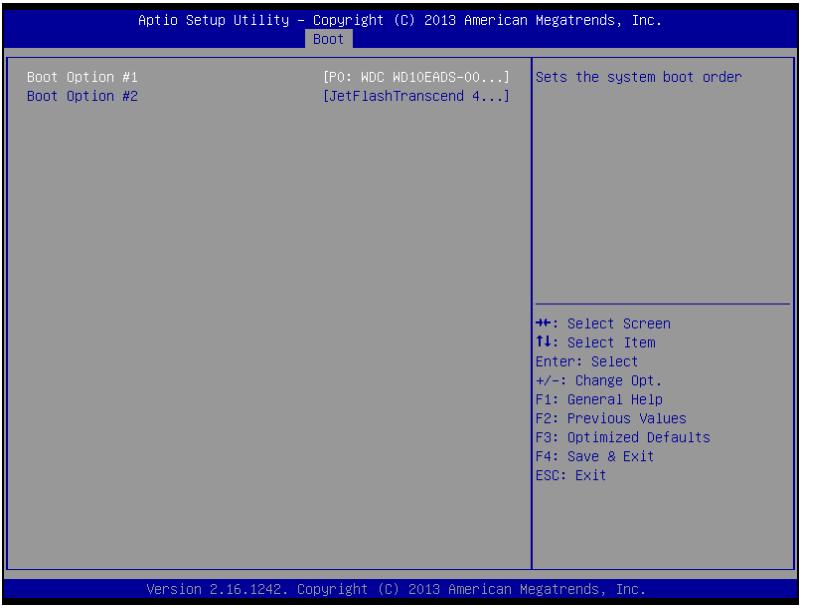
2 Download and save the BIOS file (e.g. 714x0PI1.bin) to the bootable device.

- 714x0PI1.bin for Intel® 4th Gen. Celeron® E3000 series
- 714x0PD1.bin for Intel® 4th Gen. Atom™ J1900 series

3 Copy AMI flash utility – AFUDOS.exe (V5.0x) into bootable device.

4 Make sure the target system can first boot to the bootable device.

(1) Connect the bootable USB device.
(2) Turn on the computer and press **<F2>** or **<Del>** key during boot to enter BIOS Setup.
(3) The system will go into the BIOS setup menu.
(4) Select **[Boot]** menu.
(5) Select **[Hard Drive BBS Priorities]** and set the USB bootable device as the 1st boot device.
(6) Press **F4** to save the configuration and exit the BIOS setup menu.



II. AFUDOS Command for System BIOS Update

AFUDOS.exe is the AMI firmware update utility; the command line is shown as below:

AFUDOS <ROM File Name> [option1] [option2]….

Users can type "AFUDOS/ ?" to see all the definition of each control options. The recommended options for BIOS ROM update include following parameters:

/P: Program main BIOS image.
/B: Program Boot Block.
/N: Program NVRAM.
/X: Don't check ROM ID.

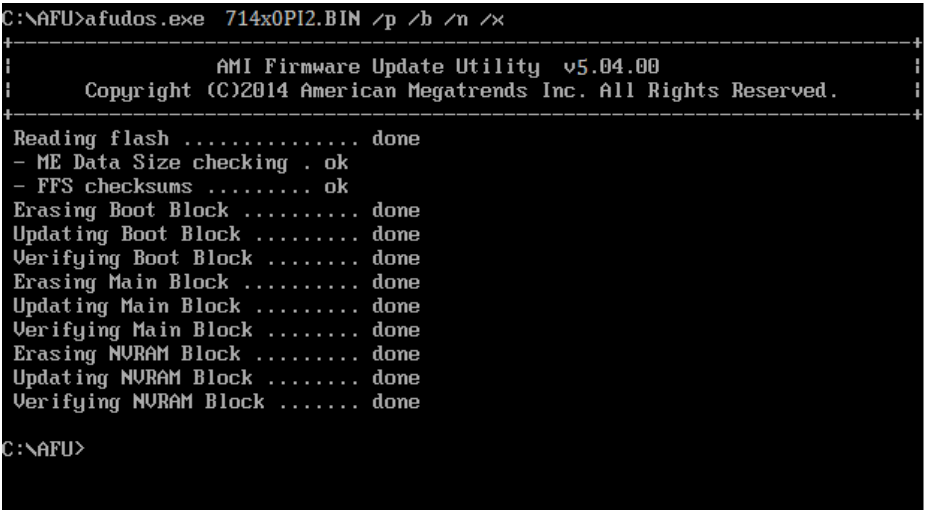
III. BIOS Update Procedure

1 Use the bootable USB storage to boot up the system into the DOS command prompt.

2 Type " AFUDOS 714Xxxxx.bin/p/b/n/x" and press **Enter** to start the flash procedure.
(Note that xxxx means the BIOS revision part, e.g. 0PI1…)

3 During the BIOS update procedure, you will see the BIOS update process status and its percentage. Beware! Do not turn off the system power or reset your computer when the entire update procedure are not complete; otherwise, the BIOS ROM may be crashed and the system will be unable to boot up next time.

4 After the BIOS update procedure is completed, the following messages will be shown:



5 Restart the system and boot up with the new BIOS configurations.

6 The BIOS Update is completed after the system is restarted.

7 Reboot the system and verify if the BIOS version shown on the initialization screen has been updated.