USER MANUAL

KF-P231

Indoor Multi-Functional Kiosk System

KF-P231 M1

KF-P231

Multi-Functional

Kiosk System with 17” P-Cap Touch

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 open and disassemble the system. Please operate the LCD and Touchscreen with extra care as they can be broken easily.

Contents

List of Figures

Revision History

The revision history of KF-P231 User Manual is described below:

Version No.	Revision History	Page No.	Date
M1	Initial Release	-	2022/11/02

1 Introduction

This chapter provides the introduction for KF-P231 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 KF-P231 system. The KF-P231 is an updated system designed to be comparable with the highest performance of IBM AT personal computers. The KF-P231 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 describes the structure of this user manual.

Chapter 1 Introduction

This chapter introduces the framework of this user manual.

Chapter 2 Getting Started

This chapter describes the package contents and system specifications, and illustrates the physical appearances for KF-P231 system. Read the safety reminders carefully on how to take care of your system properly.

Chapter 3 System Configuration

This chapter describes the locations and functions of the system main board components. You will learn how to properly configure the connectors and system configuration jumpers on the main board and configure the system to meet your own needs.

Chapter 4 Software Utilities

This chapter introduces how to install Intel Chipset Software Installation Utility, Intel Trusted Execution Engine Installation Utility, Graphics Driver Utility, LAN Driver Utility, Sound Driver Utility and Serial I/O Driver Utility.

Chapter 5 BIOS Setup

This chapter provides BIOS setup information.

Appendix A System Diagrams

This appendix provides the exploded diagrams and part numbers of KF-P231.

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 KF-P231 system. It describes how to set up the system quickly and outlines the system specifications.

The following topics are included:

- Package List
- System Overview
- Quick Setup
- System Specifications
- Safety Precautions

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

2.1 Package List

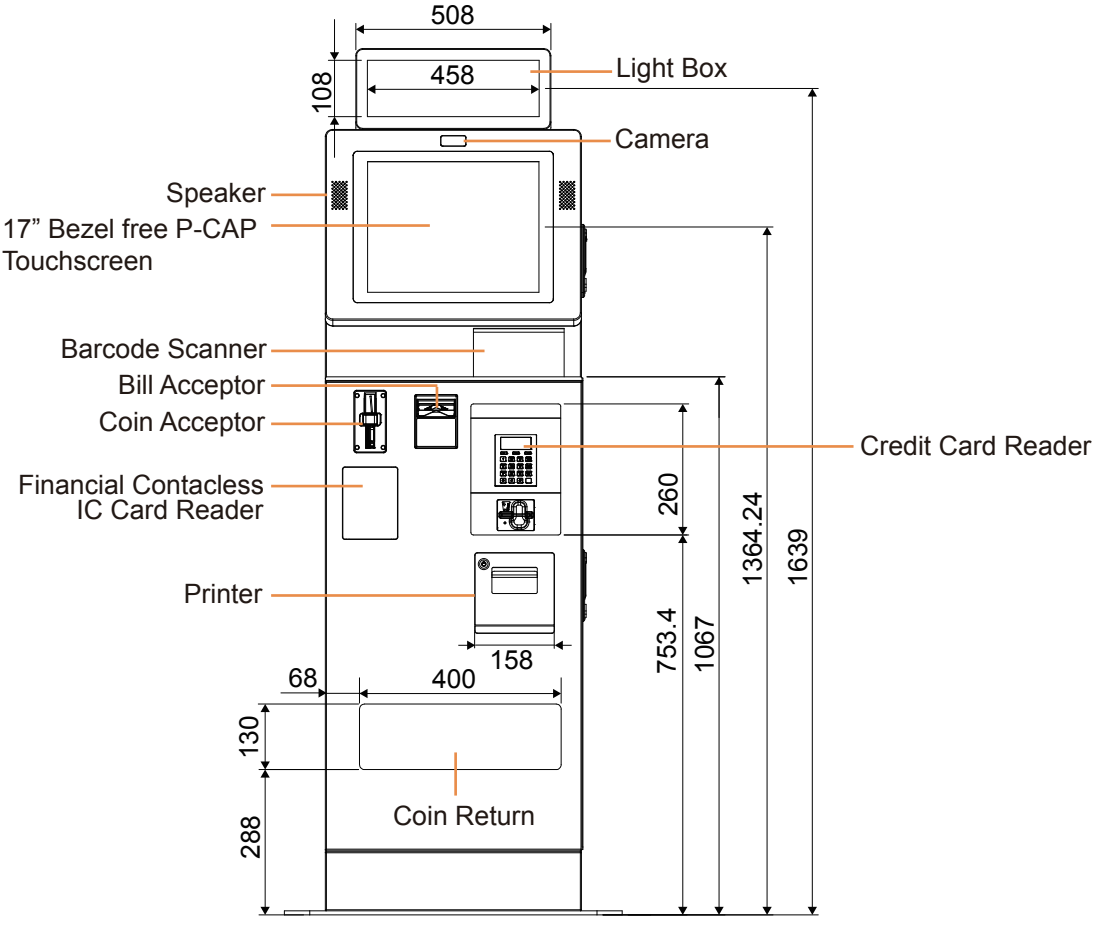
If you discover any of the items listed below are damaged or lost, please contact your local distributor immediately.

Item	Q'ty
KF-P231 Kiosk Main Unit	1
Light Box	1
AC Power Cord Cable	1
Panel Key	2
Door Key	2

2.3 System Overview (Standard Type)

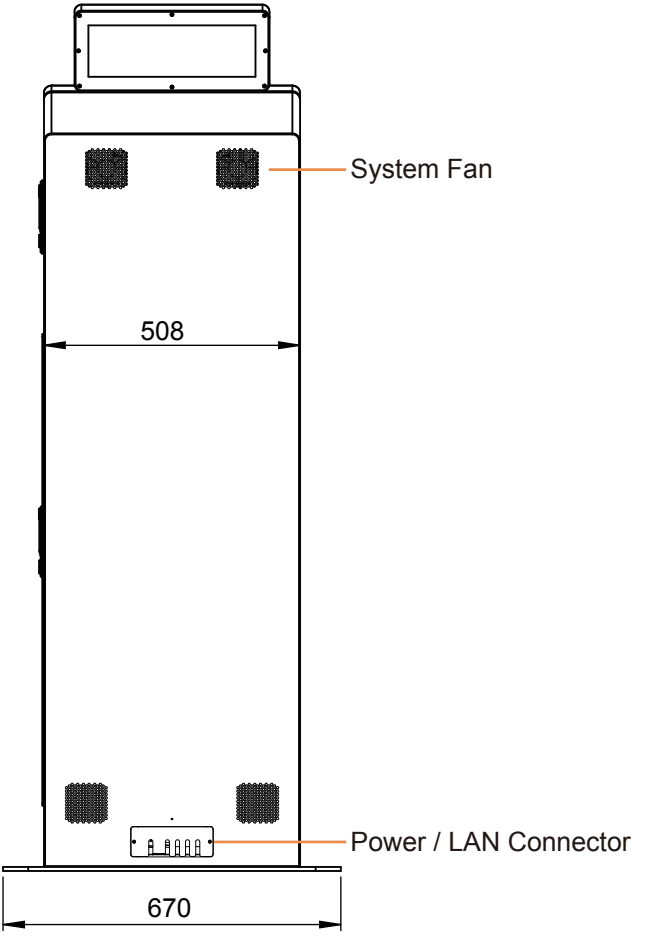
Unit: mm

2.3.1 Front View



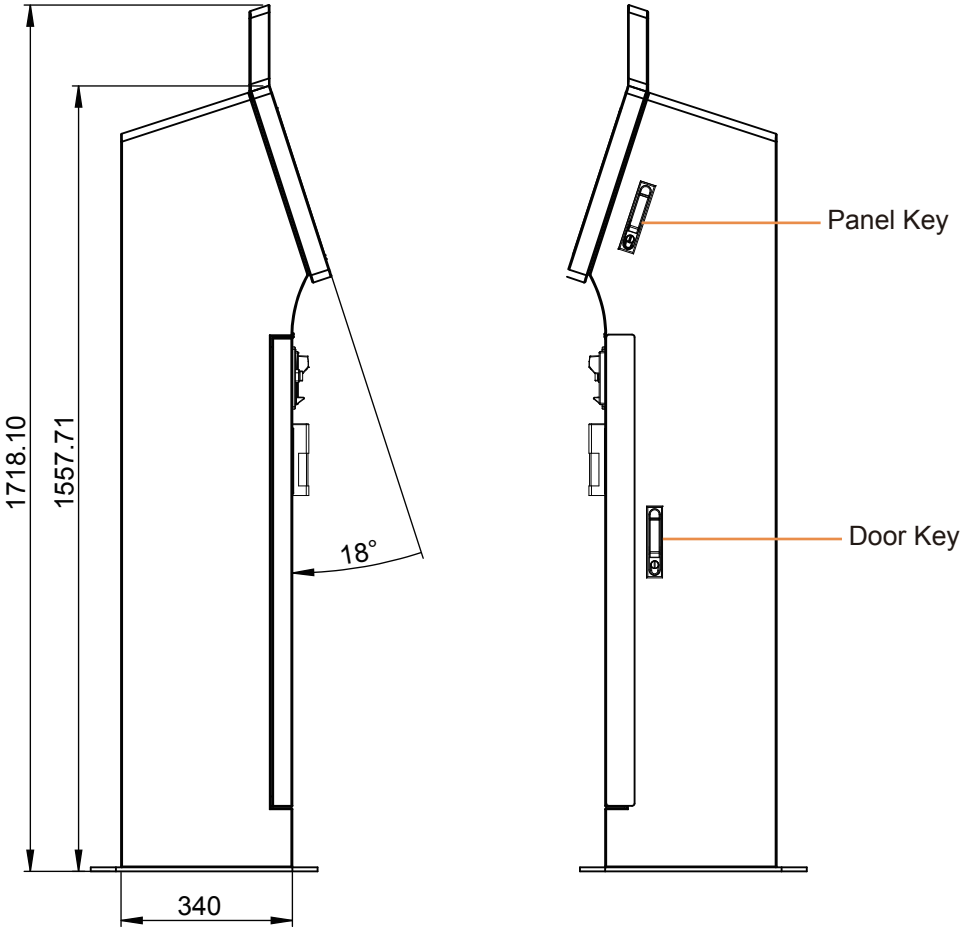
2.3.2 Rear View

Unit: mm



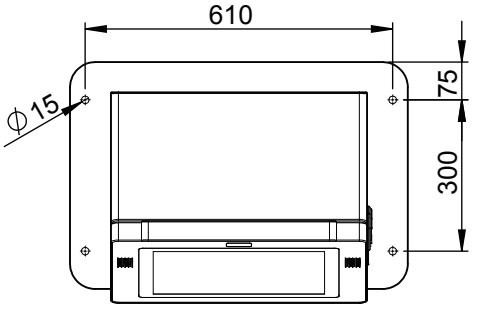
2.3.3 Side View

Unit: mm

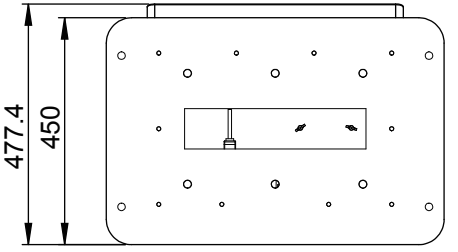


2.3.4 Top View

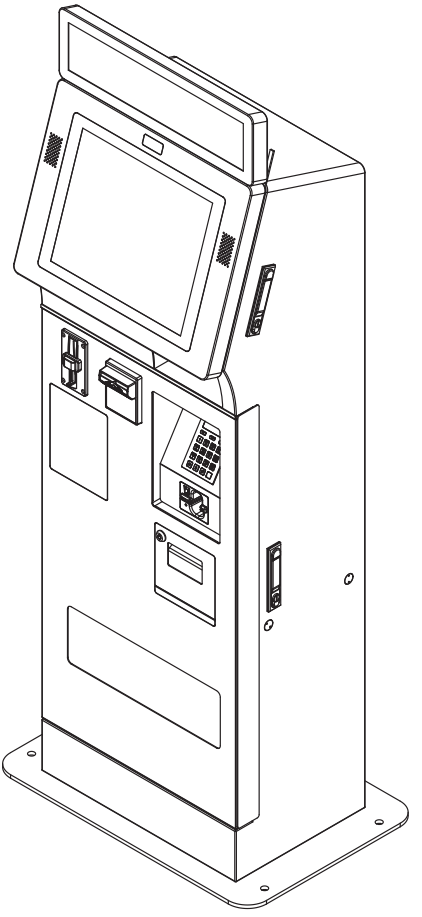
Unit: mm



2.3.5 Bottom View



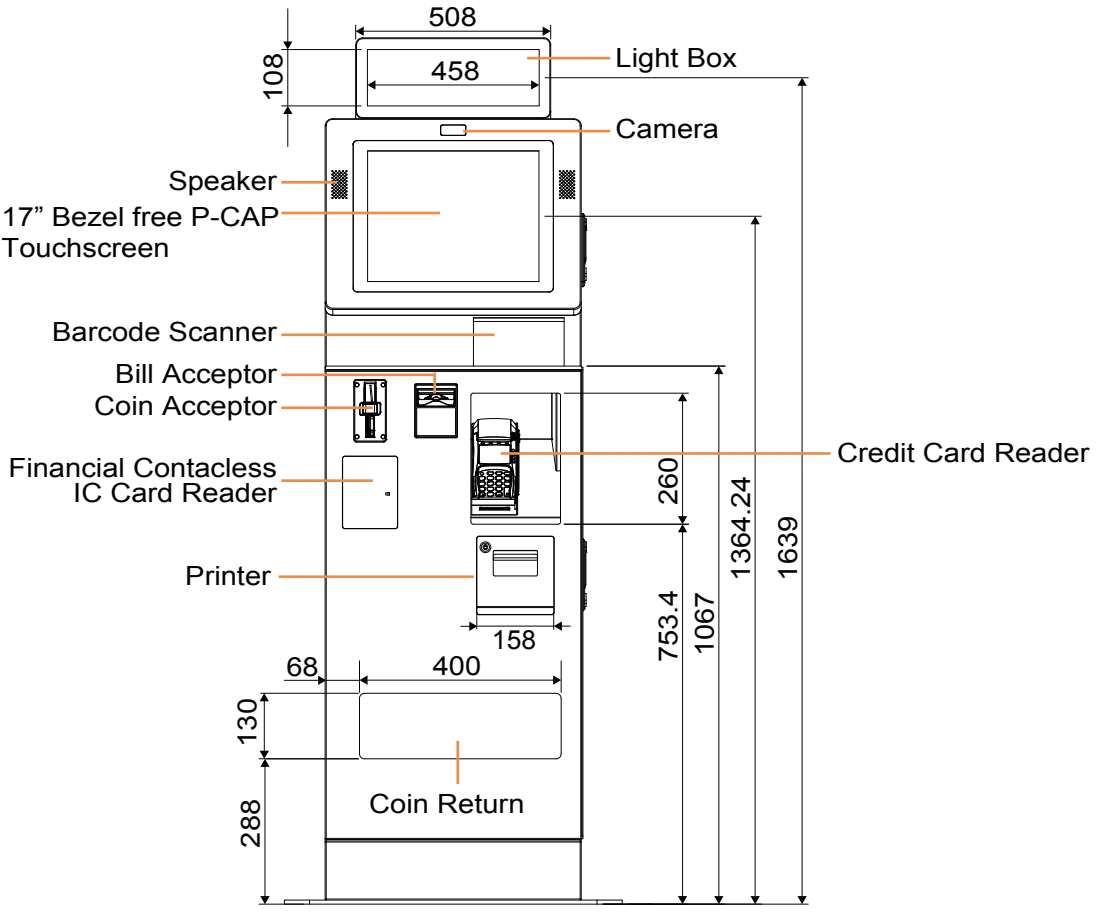
2.3.6 Quarter View



2.4 System Overview (S80 Type)

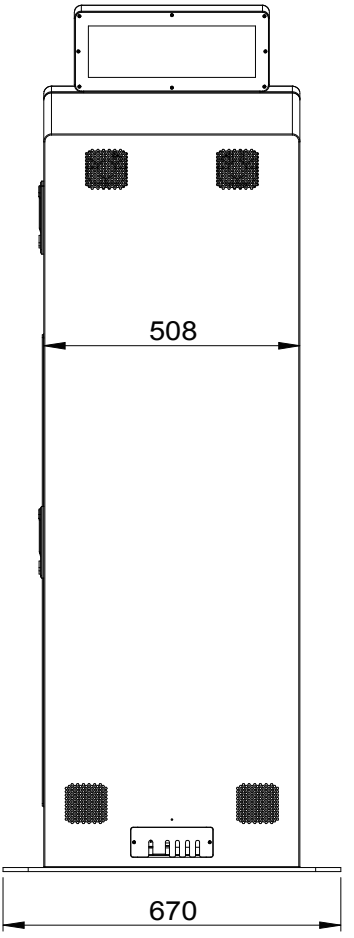
Unit: mm

2.4.1 Front View



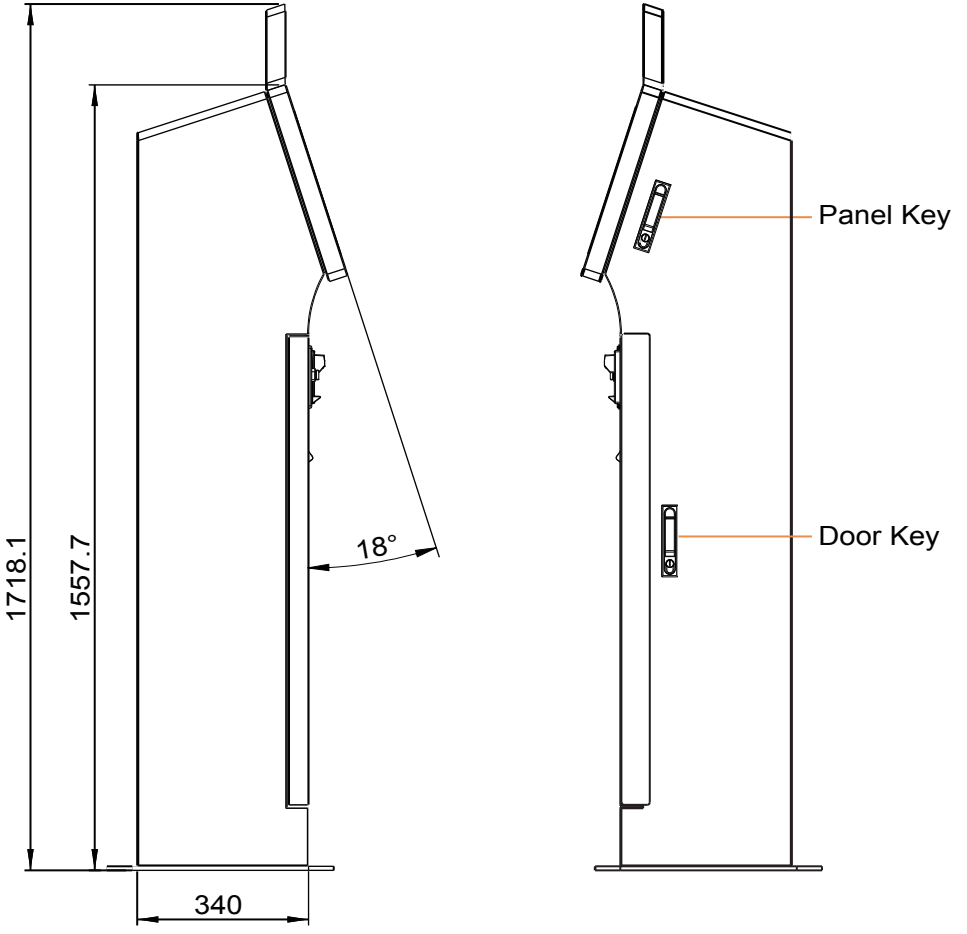
2.4.2 Rear View

Unit: mm



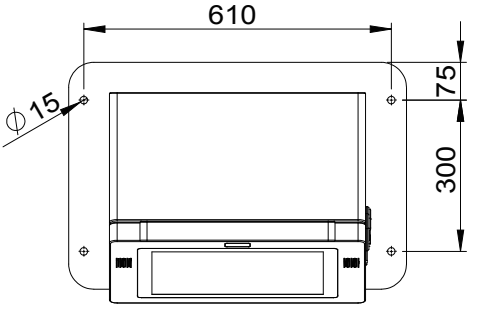
2.4.3 Side View

Unit: mm

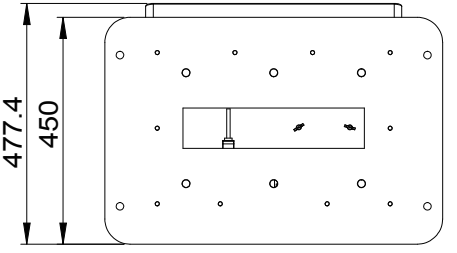


2.4.4 Top View

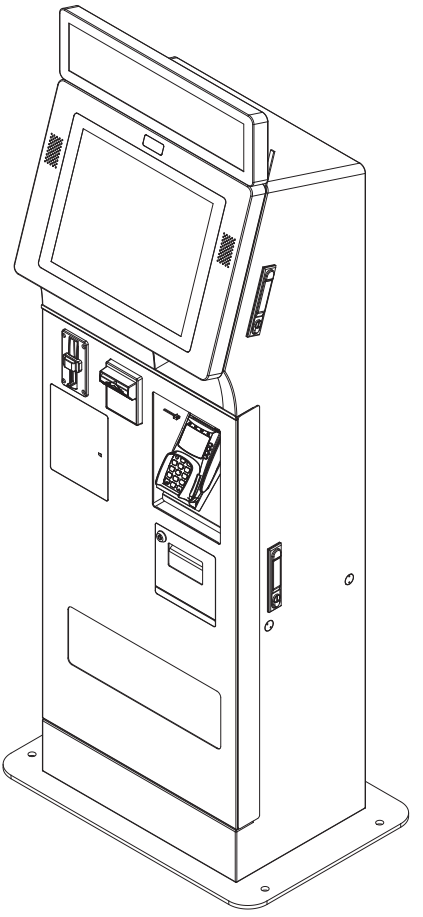
Unit: mm



2.4.5 Bottom View



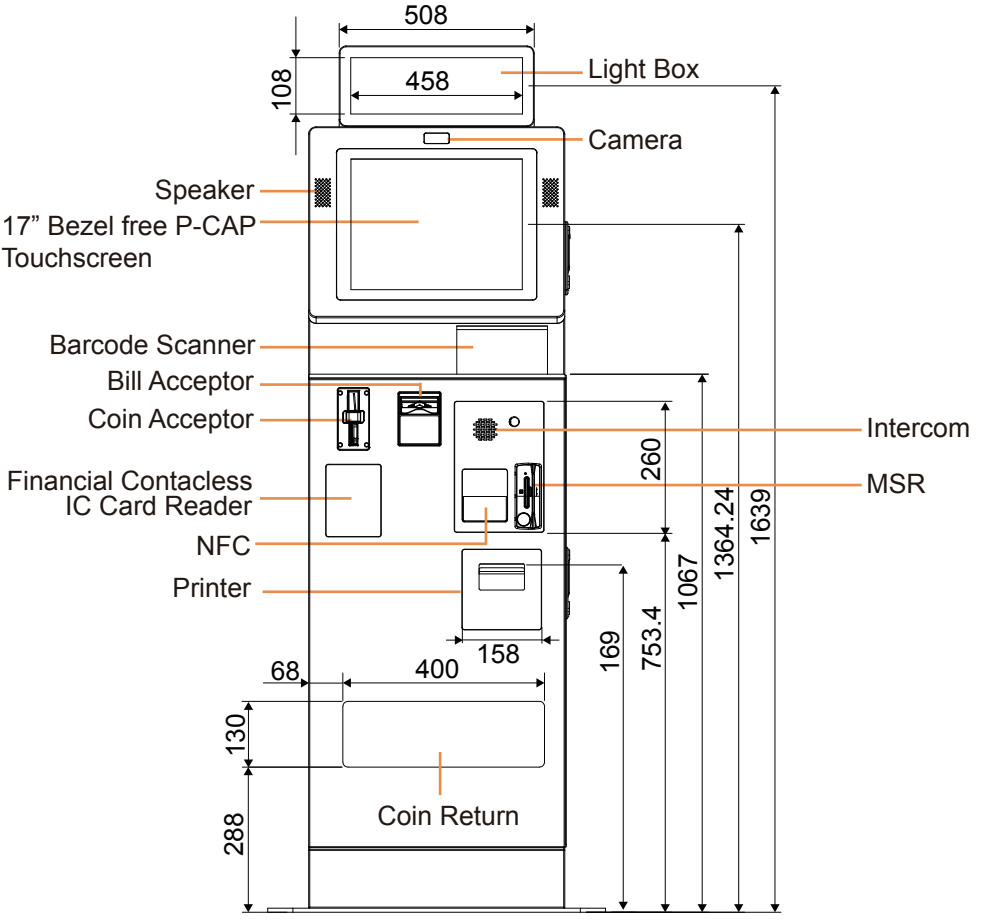
2.4.6 Quarter View



2.5 System Overview (Car Park Type)

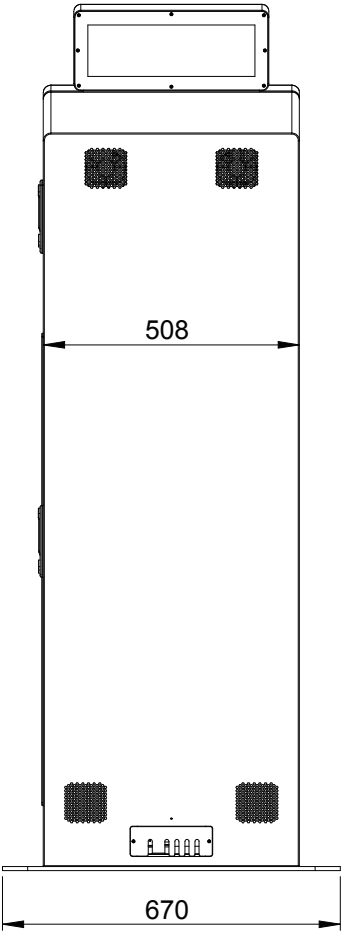
Unit: mm

2.5.1 Front View



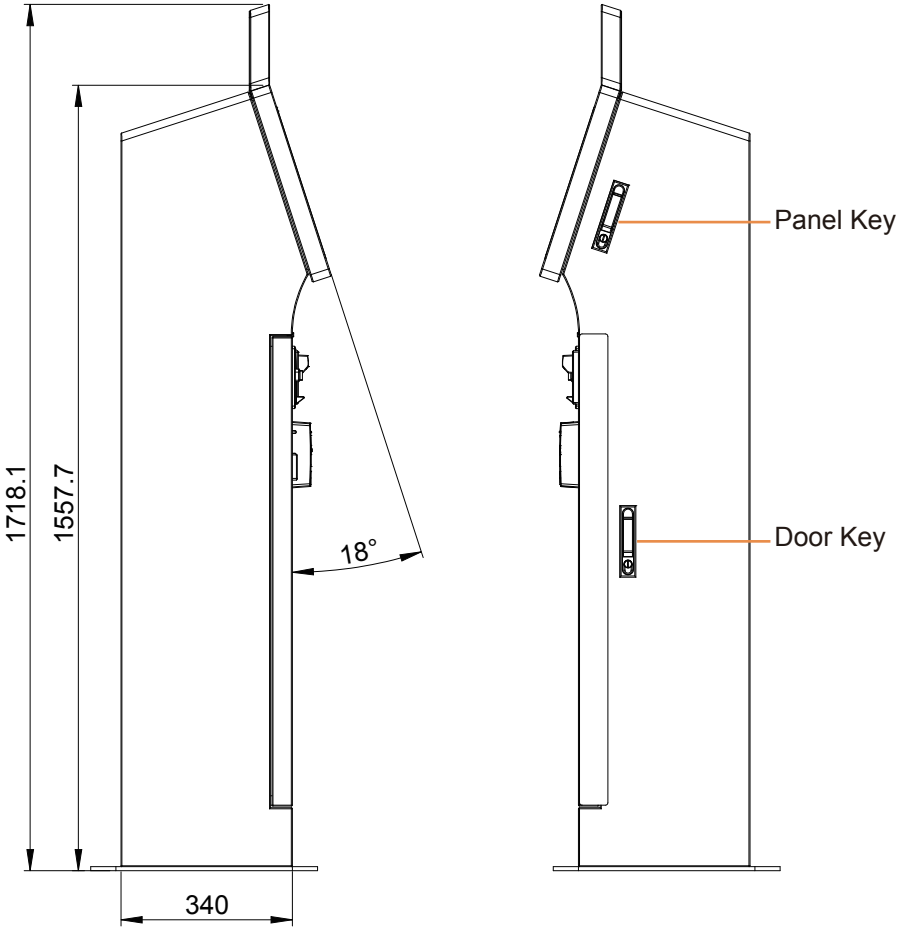
2.5.2 Rear View

Unit: mm



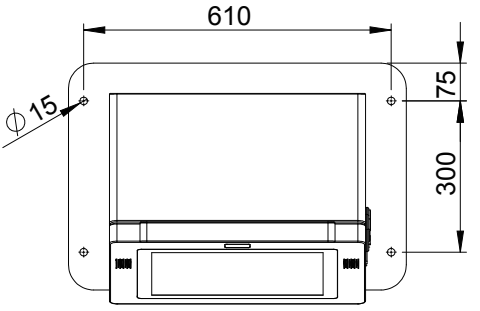
2.5.3 Side View

Unit: mm

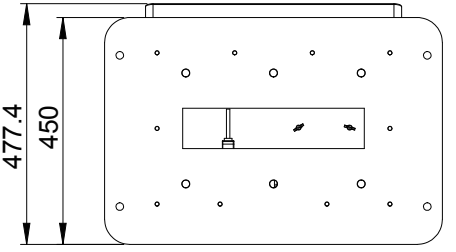


2.5.4 Top View

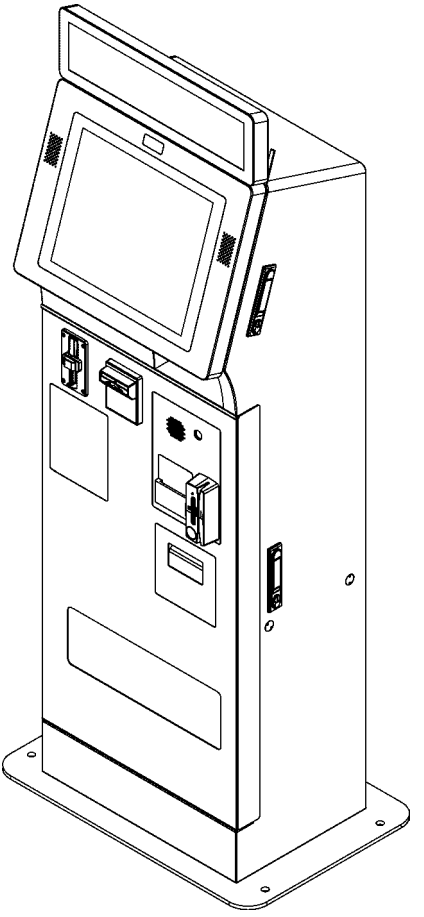
Unit: mm



2.5.5 Bottom View



2.5.6 Quarter View



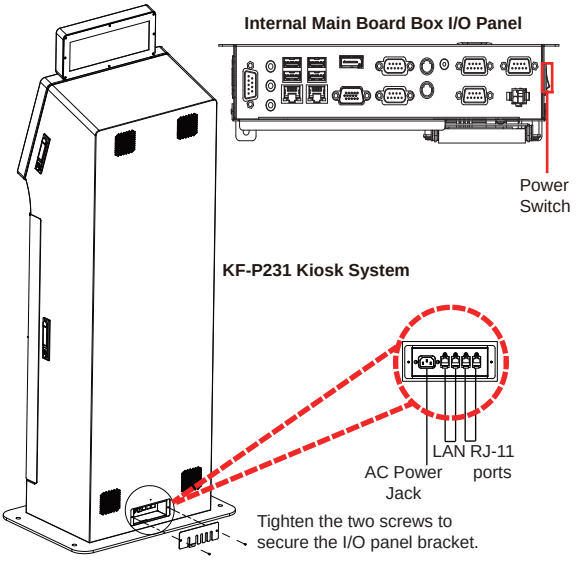
2.6 Quick Setup

2.6.1 Turning On KF-P231 and Connecting System to Network

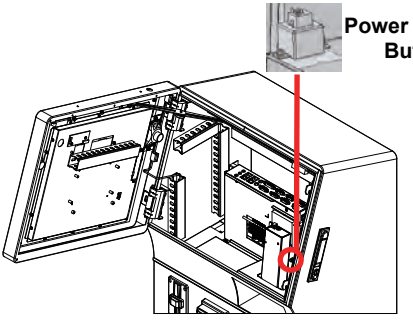
Step 1. Connect the AC power cord to the AC power jack located on the rear side of the system, and plug the other end to an AC power outlet.

Step 2. Connect the Ethernet cables to the dual LAN ports on the rear of the system and the other end to the ports on your hub, switch or router. Two RJ11 ports are also provided.

Step 3. Attach the cover bracket onto the rear I/O ports panel and secure it with two screws.



Step 4. Press the Power On/Off Button (see the picture below) or Power Switch (See the picture above) to turn on the system. Find the power switch on the right side of internal main board Box. The Power On/Off Button can be found on the left side of Barcode Scanner case.



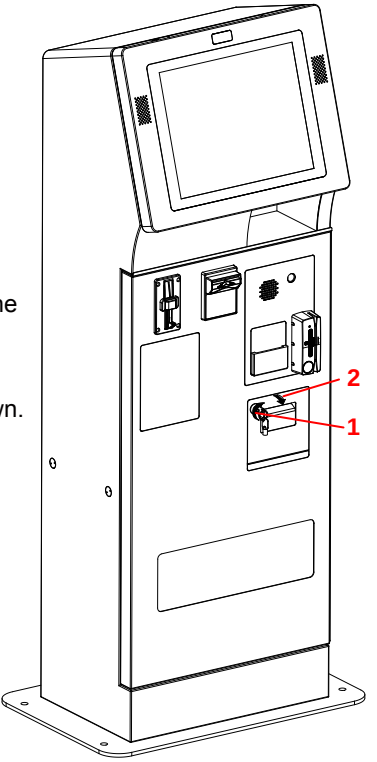
2.6.2 Installing Printer Paper Roll

Step 1. Insert the door key to unlock the printer door.

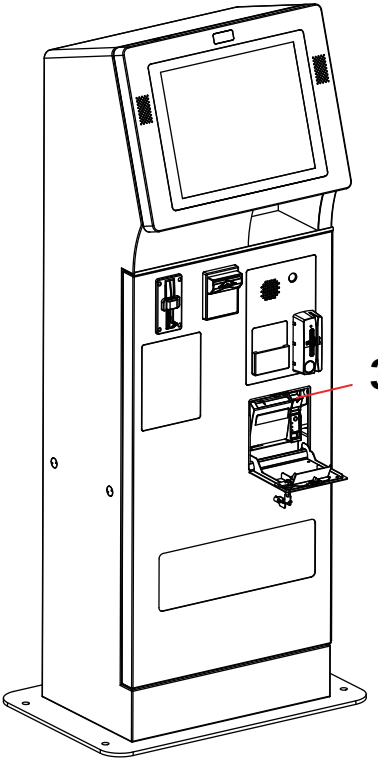
Step 2. Open up the printer door from the top side as shown.

1 Insert the key to unlock the Printer Door.

2 Open up the printer door from the top side as shown.



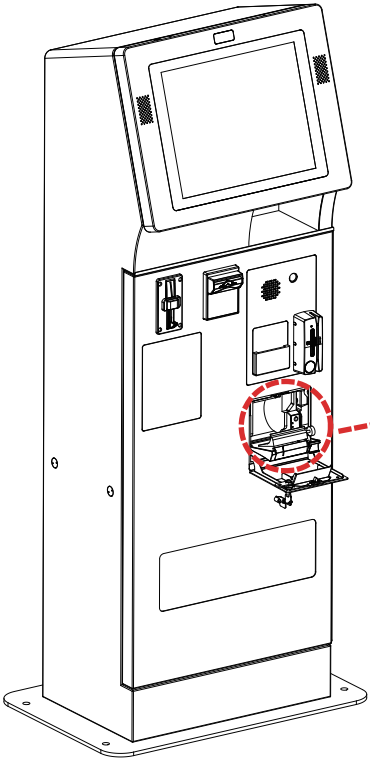
Step 3. Press the printer door latch located on the upper-right of the Printer to release.



Step 4. Pull out a small paper slip from the start of the paper roll and drop the paper roll into the thermal printer.

Step 5. Close the cover of Thermal Printer and the Kiosk Printer Door and lock it up with the key to complete.

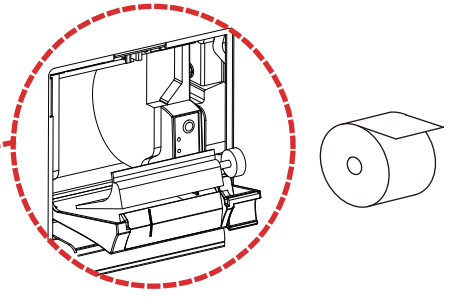
Note 1: The starting paper slip must be positioned on top of the paper roll before you drop it into the printer.



KF-P231 Kiosk System

4 Pull out a small paper slip from the start of the paper roll and drop the paper roll into the thermal printer .

5 Close the cover of Thermal Printer and the Kiosk Printer Door and lock it up with the key to complete.



KF-P231 Thermal Printer

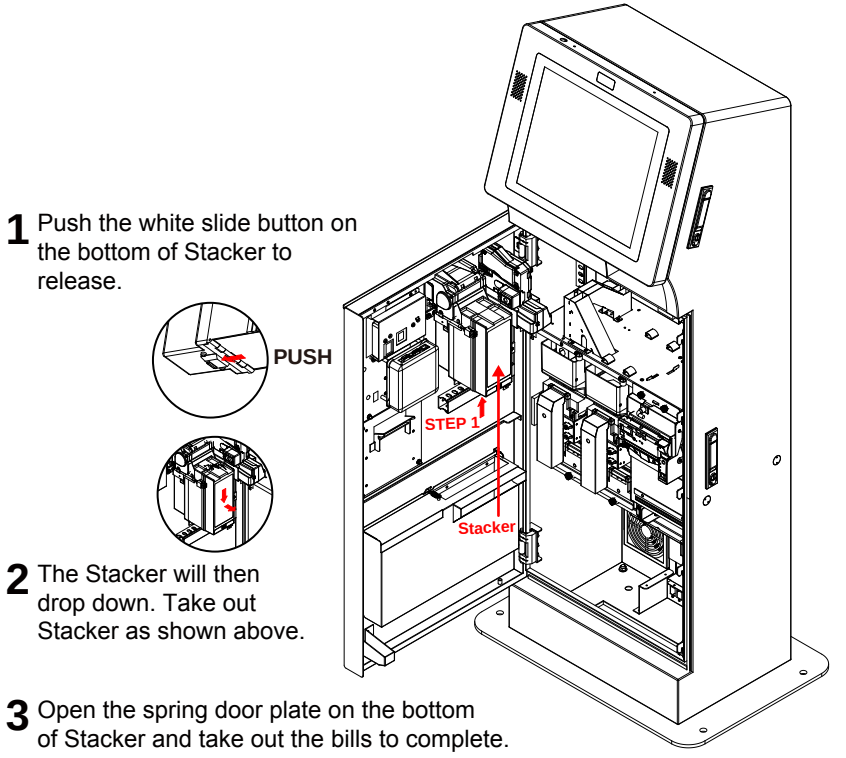
Note 2: Heed that the starting paper slip must stand out of the external printer door after the paper roll installation is completed.

2.6.3 Taking Out Bills from L70 Bill Acceptor

Step 1 Push the white slide button on the bottom of Stacker to release.

Step 2. The Stacker will then drop down. Take out Stacker as shown.

Step 3. Open the spring door plate on the bottom of Stacker and take out the bills to complete.



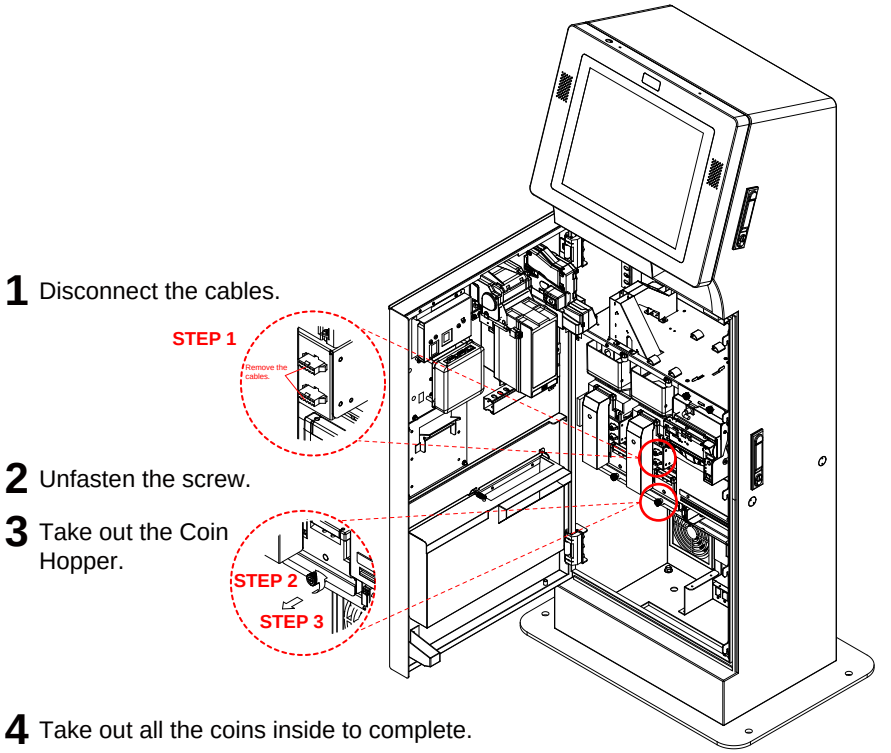
2.6.4 Taking Out Coins from Coin Hopper

Step 1. Disconnect the cables.

Step 2. Unfasten the screw on the bottom of Coin Hopper.

Step 3. Take out the Hopper device.

Step 4. Take out all the coins inside to complete.



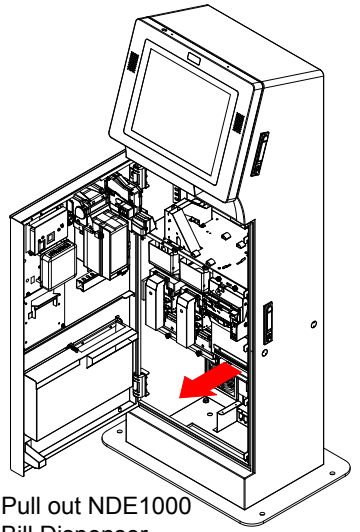
2.6.5 Loading Bills Into NDE1000 Bill Dispenser

Step 1. Pull out NED1000 Bill Dispenser from the system.

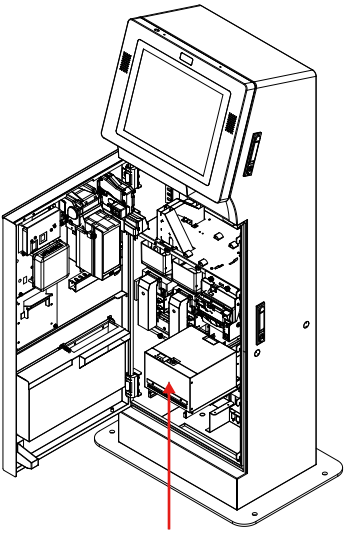
Step 2. Unlock and open NDE1000 device with the key provided.

Step 3. Follow the instructions printed on the rear side of NDE1000 upper metal cover and feed the bills into the device properly.

Step 4. Lock up NDE1000 device and push it back into the system to complete.



1 Pull out NDE1000 Bill Dispenser.



NDE1000 Bill Dispenser

2 Unlock and open NDE1000 with the key provided.

3 Follow the steps printed on the rear side of NDE1000 upper cover to feed bills into the device properly.

4 Lock up NDE1000 device and push it back into the system to complete.

2.6.6 Installing Light Box

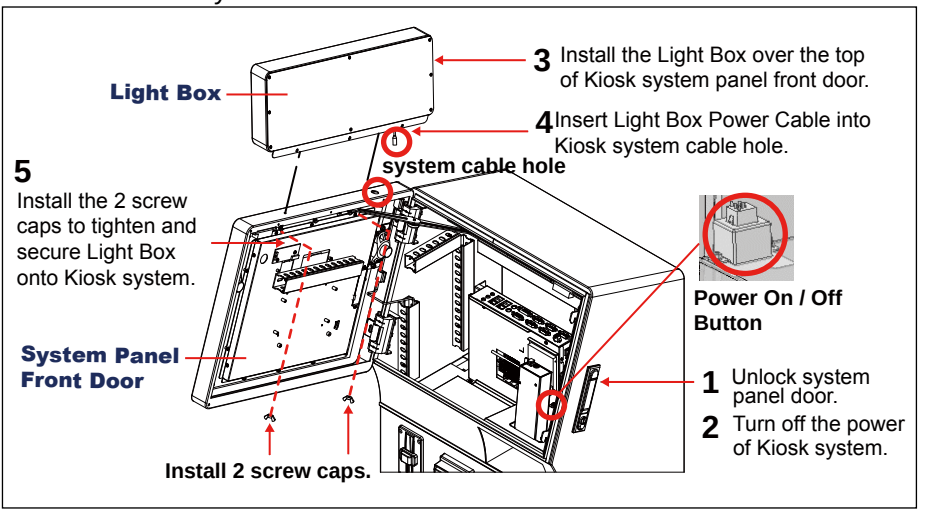
Step 1. Unlock to open the system panel door.

Step 2. Turn off the power of the Kiosk system.

Step 3. Install the Light Box over the top of Kiosk system panel front door.

Step 4. Insert Light Box Power Cable into the Kiosk system cable hole.

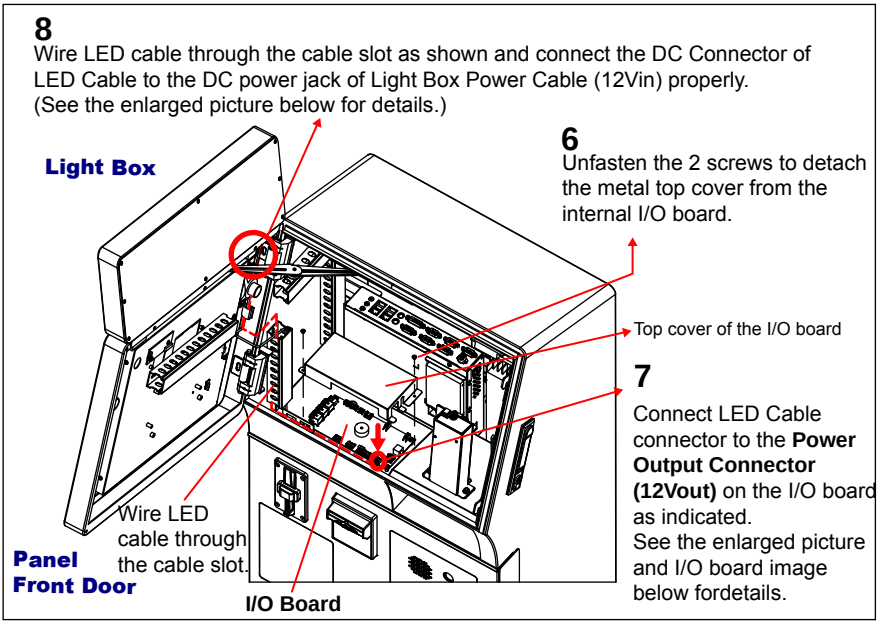
Step 5. Install 2 screw caps to tighten and secure the Light Box onto the Kiosk system.

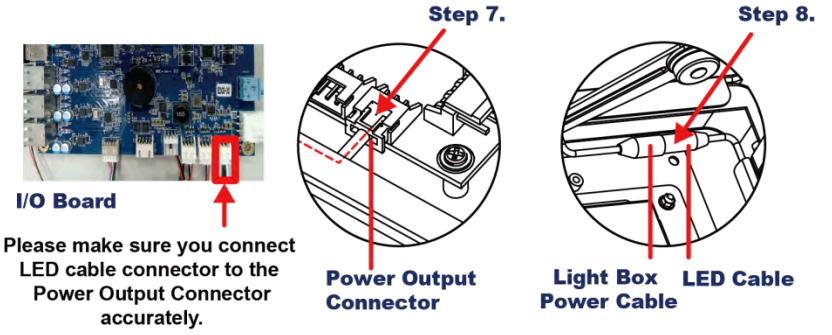


Step 6. Unfasten the 2 screws to detach the metal top cover from the internal I/O board.

Step 7. Connect LED Cable connector to the Power Output Connector (12Vout) on the I/O board as indicated. See the enlarged picture and I/O board image below for details.

Step 8. Wire LED cable through the cable slot as shown and connect the DC Connector of LED Cable to the DC power jack of Light Box Power Cable (12Vin) properly. (See the enlarged picture on the next page for details.)





Step 9. Fasten back the 2 screws of the metal top cover of the I/O board.

Step 10. Power on the Kiosk system to light ON the KF-P231 Light Box and complete the installation.

2.6.7 Installing Printer Door

Step 1. Install and lock up the spare parts of the printer door latch (No. 1, 2, 3) and door key lock (No. 4, 5). See Figure 1.

Step 2. Assemble the external and internal printer door plates together. See Figure 2.

1 Install and lock up the spare parts of the printer door latch (No. 1, 2, 3) and door key lock (No.4, 5). See Figure 1.

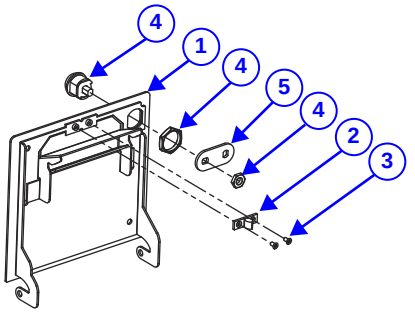


Figure 1

2 Assemble the external and internal printer door plates together. See Figure 2.

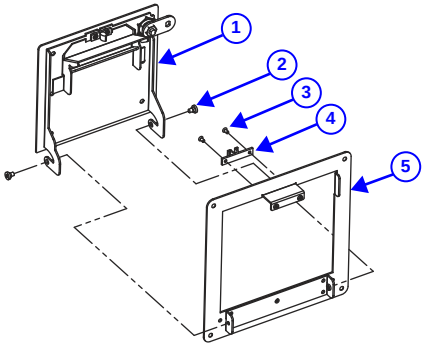


Figure 2

Components List for Figure 1

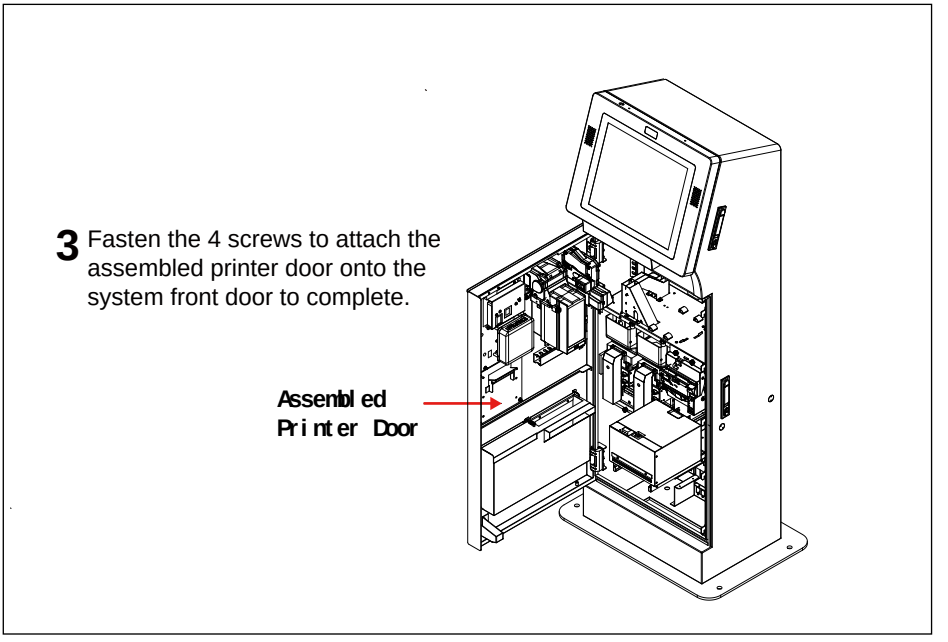
No.	Component Name	P/N No.	Q'ty
1	KF-7232 TM-T70 Door Spot Y (w/Paint) (Yellow)	20-247-02066444	1
	KF-7232 TM-T70 Door Spot B (w/Paint) (Blue)	20-247-02065444	
2	dl-8dk Striker	90-023-04101000	1
3	Flat Head Screw M3x0.5Px6mm(Black)	22-215-30060011	2
4	PK-7090 CAM Lock	20-025-30001284	1
5	c510ZS_sheet	N/A	1

The printer door assembly steps are continued on the next page.

Components List for Figure 2 (picture shown on the previous page)

No.	Component Name	P/N No.	Q'ty
1	KF-7232_TM-T70_Door_ASM	N/A	1
2	Fillister Head Screw M4x0.7Px4mm	22-272-40004911	2
3	Flat Head Screw M3x0.5Px6mm (Black)	22-215-30060011	2
4	DL-9DK Latch	90-023-09100000	1
5	KF-7232 TM-T70 Door Base Spot Y (w/Paint) (Yellow)	20-247-02064444	1
	KF-7232 TM-T70 Door Base Spot B (w/Paint) (Blue)	20-247-02063444	

Step 3. Fasten the 4 screws to attach the assembled printer door onto the system front door to complete.



2.7 System Specifications

System	
CPU Type	➢ Intel ApolloLake Celeron J3455 SoC
Chipset	➢ Apollolake SoC
Memory Support	➢ 2 x DDR3L SO-DIMM socket
Storage (HDD/SSD)	➢ 1 x 2.5" solid state SATAⅢ HDD,TLC
LAN	➢ Dual LAN (2 x RJ45 on rear I/O) ➢ Supports Wake-On-LAN ➢ Controller: 2 x Intel® I210 (GbE)
Power Supply	➢ DC In 12V~24V ➢ Connector: 1 x DC jack on rear IO, 1 x internal 4pin (2x2)
System Weight	➢
Dimensions (Wx H x D)	➢ 670 x 1719 x 340mm
O.S. Support	➢ Windows 10 (64) / Windows 7 Pro (32/64)
Fan	➢ 2 x system fans
Material	➢ SPCC, SECC
Speaker	➢ 2 x 4W HD speaker
Painting	➢ Powder-paint coating
Operating Display	
Touch	➢ 17” Bezel free P-CAP Touch
LCD	➢ 17" (4:3) LED backlight
Resolution	➢ 18/24bit LVDS 1280x1024 dots SXGA
Brightness	➢ 350 cd/m²
Touchscreen	➢ Projected Capacitive Touch
Contrast Ratio	➢ 800: 1 (Typ.)
Estimated luminance lifetime	➢ 50,000h
Integrated Devices	
Thermal Printer	➢ **Paper Width:**79.5 ± 0.5mm (3.13”) ➢ **Cutting Type:** Partial cut (one point left uncut) ➢ **Printing Speed:** 250mm/s {9.84"} maximum ➢ **Paper-end Detector:** Photodetector ➢ Supports Epson code
Barcode Scanner	➢ 1D/2D Barcode Scanner

Environment	
Operating Temperature	➢ 5°C ~ 35°C (40°F ~ 95°F)
Storage Temperature	➢ 0°C ~ 40°C (32°F ~ 103°F)
Humidity	➢ 20%~ 85% (no condensation)

2.8 Safety Precautions

Before operating this system, read the following information carefully to protect your system 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 KF-P231 on a sturdy, level surface. Be sure to allow enough space around the system to have easy access needs.
    - Avoid installing your KF-P231 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 KF-P231 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 KF-P231 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

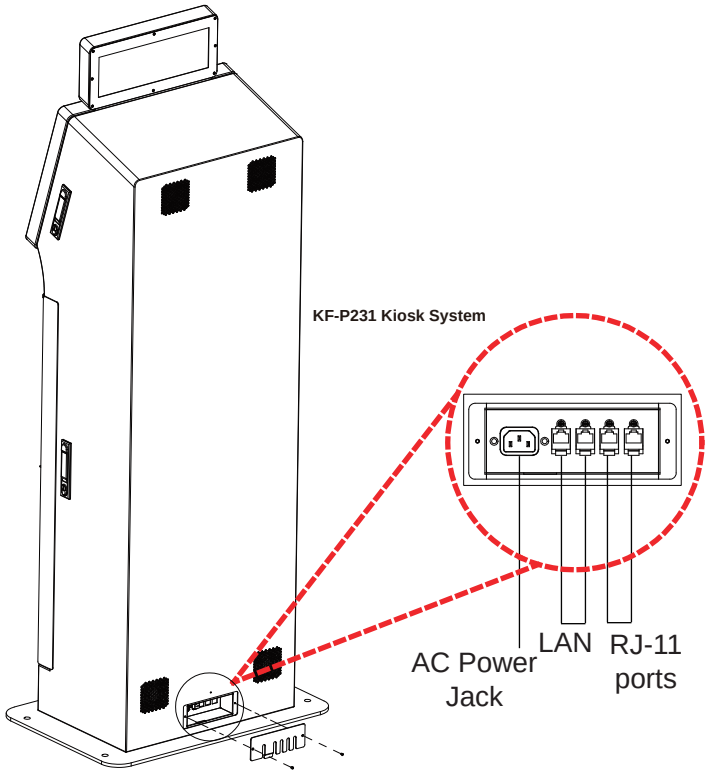
This chapter contains helpful information that describes the external and internal I/O ports diagrams, and jumper and connector settings, component locations, and pin assignment.

The following topics are included:

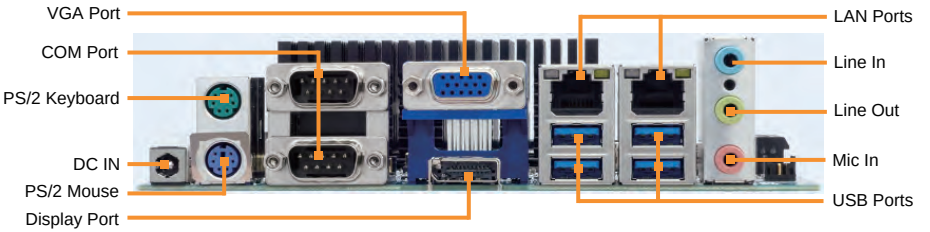
- External System I/O Ports Diagram
- Internal Main Board Box I/O Ports Diagram
- Main Board Component Locations
- How to Set Jumpers
- Setting Main Board Connectors and Jumpers

3.1 External System I/O Ports Diagram

1. **AC Power Jack:** Connect your AC power cord to the **AC Power Jack**.
2. **Dual LAN Ports:** Connect the Ethernet cables to the **LAN Ports** on the back of the system and the other end of the network cable to the ports on your hub, switch or router.
3. **RJ11 Ports:** Two RJ11 ports are also provided.



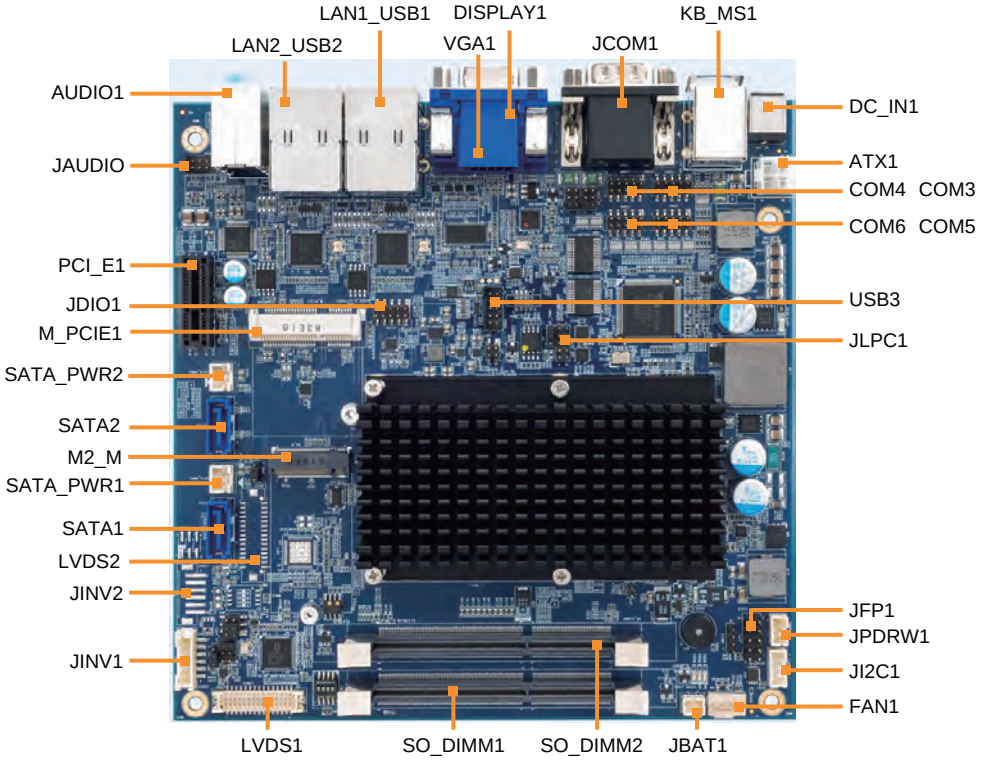
3.2 Internal Main Board Box I/O Ports Diagram



3.3 Main Board Component Locations & Jumper Settings

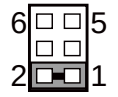
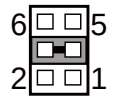
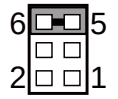
3.3.1 Top View of BM-0982RA-**N

M/B: BM-0982

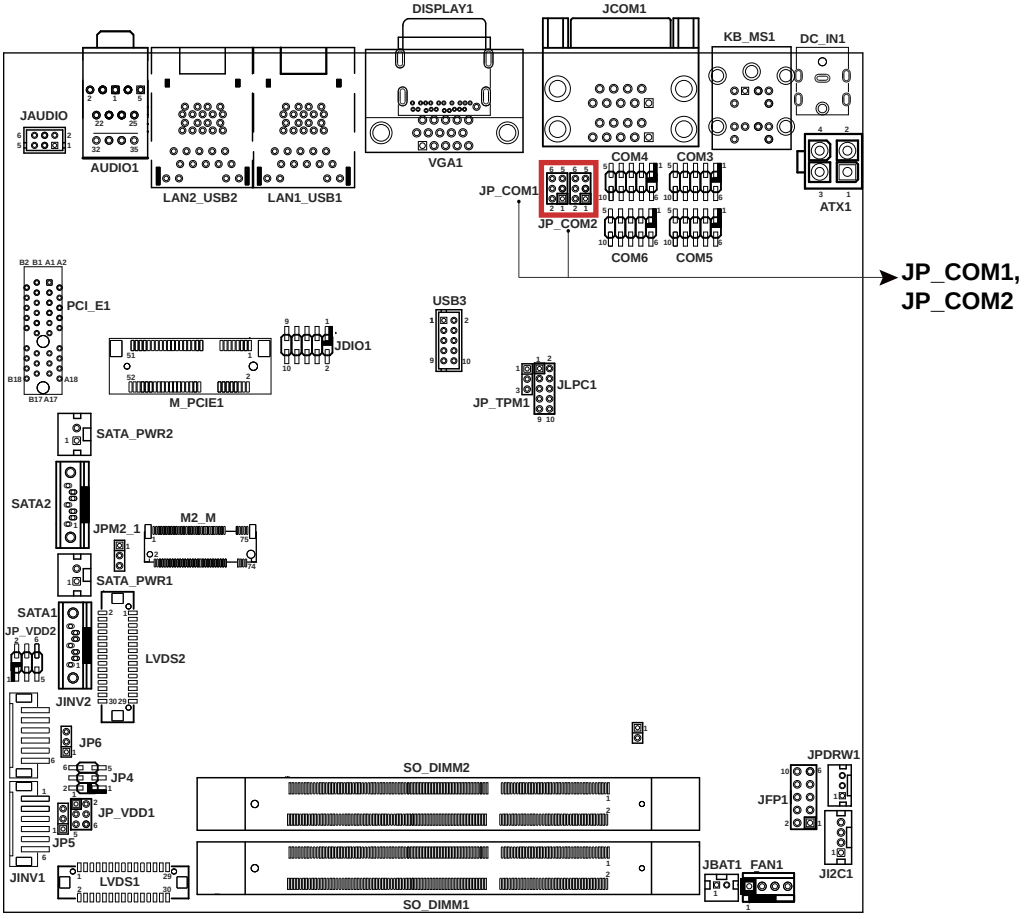


3.3.2 Jumper Settings of BM-0982RA-**N

1. COM1 and COM2 PIN9 Definition Selection Guide
Jumper Location: JP_COM1, JP_COM2
Description: COM1 and COM2 Port pin9 RI/5V/12V Selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION	
RI	***1-2 (Default Setting)***	 JP_COM1	 JP_COM2
+12V	3-4	 JP_COM1	 JP_COM2
+5V	5-6	 JP_COM1	 JP_COM2

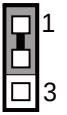
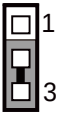
Please see the locations of **JP_COM1, JP_COM2** on the next page.

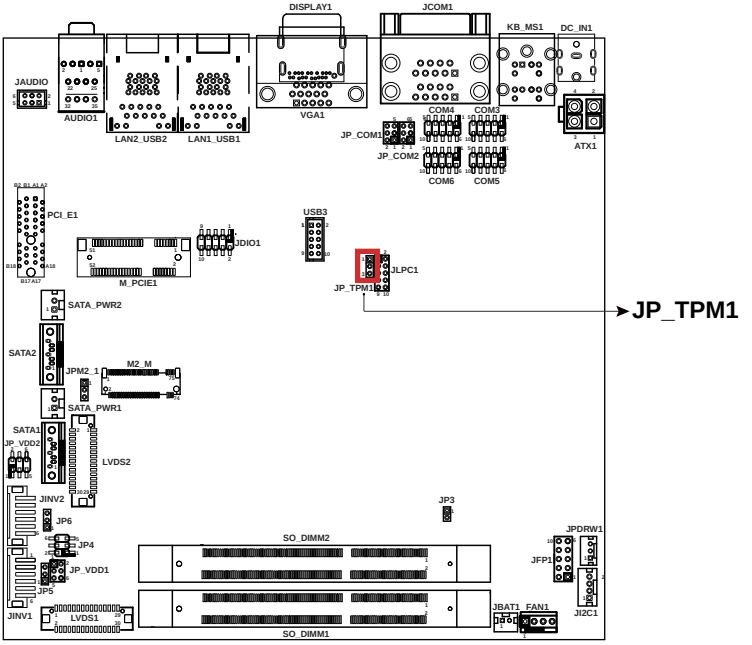

DISPLAY1
JCOM1
KB_MS1
DC_IN1
JAUDIO
AUDIO1
VGA1
LAN2_USB2
LAN1_USB1
JP_COM1
JP_COM2
COM4
COM3
COM6
COM5
ATX1
JP_COM1,
JP_COM2
PCI_E1
USB3
JDIO1
M_PCIE1
JLPC1
JP_TPM1
SATA_PWR2
SATA2
M2_M
JPM2_1
SATA_PWR1
SATA1
JP_VDD2
LVDS2
JINV2
JP6
JP4
JP_VDD1
JP5
JINV1
LVDS1
SO_DIMM2
SO_DIMM1
JPDRW1
JFP1
JI2C1
JBAT1_FAN1

2. TPM Module Selection (JP_TPM1)

Jumper Location: JP_TPM1

Description: TPM Module Selection

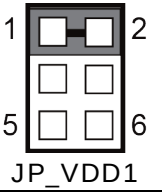
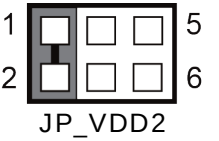
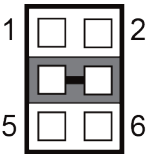
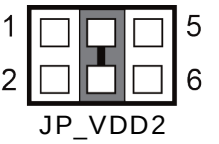
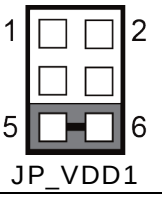
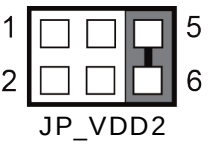
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Normal	**1-2** ***(Default Setting)***	 JP_TPM1
Enable	2-3	 JP_TPM1



3. LVDS VCC Voltage Selection (JP_VDD1, JP_VDD2)

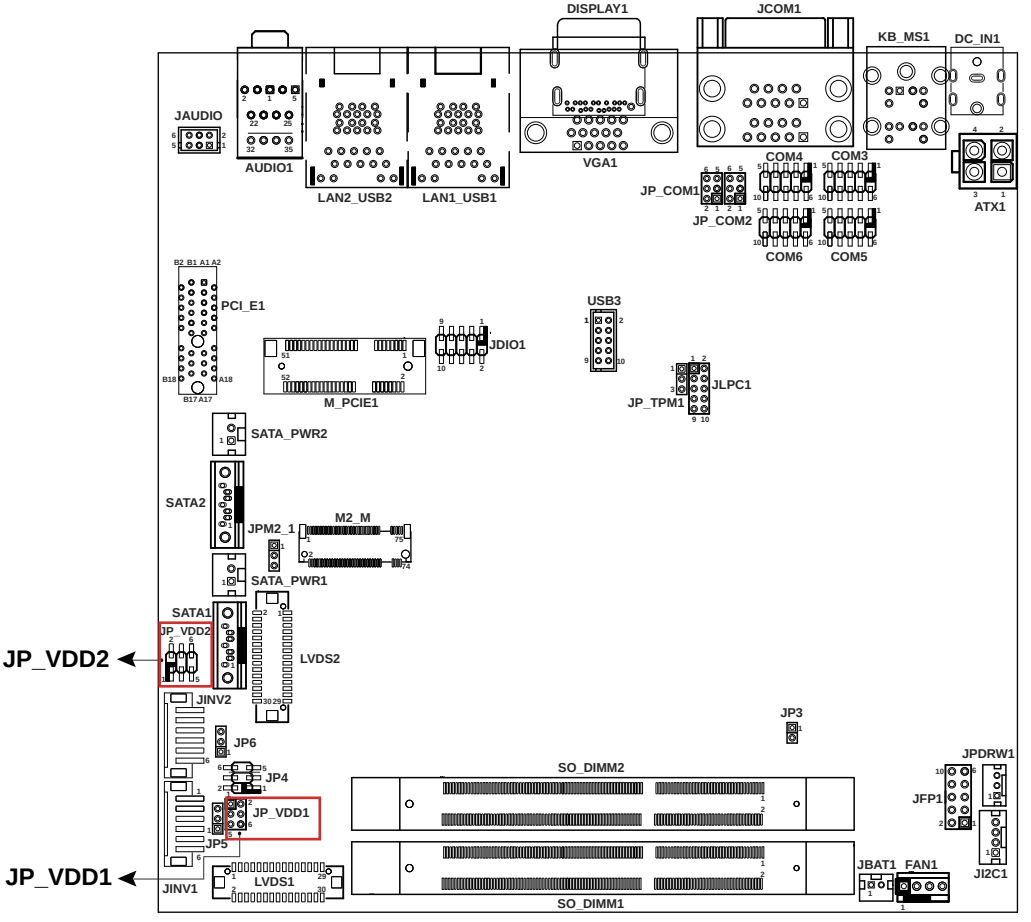
Jumper Location: JP_VDD1, JP_VDD2

Description: Voltage selection jumper for selecting PIN1, PIN29, PIN30 (LVDS_VCC) voltage of LVDS1.

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION	
3.3V	***1-2 (Default Setting)***		
5V	3-4		
12V	5-6		

Note: Please refer to **PANEL INVERTER CONNECTOR** for more information about pin definition of JINV1.

Please see the locations of **JP_VDD1, JP_VDD2** on the next page.

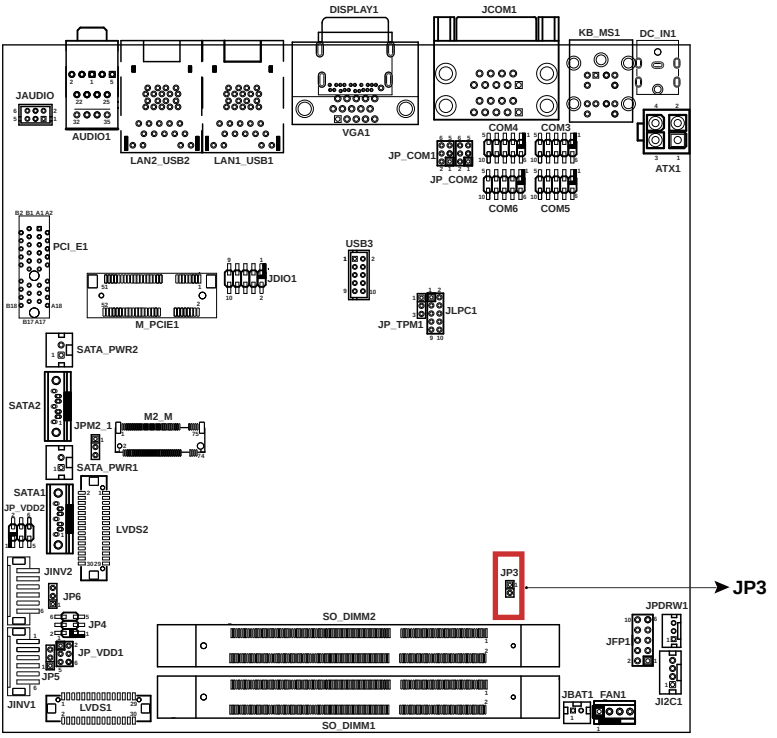

DISPLAY1
JCOM1
KB_MS1
DC_IN1
JAUDIO
AUDIO1
VGA1
LAN2_USB2
LAN1_USB1
COM4
COM3
JP_COM1
JP_COM2
COM6
COM5
ATX1
PCI_E1
JDIO1
USB3
JLPC1
JP_TPM1
M_PCIE1
SATA_PWR2
SATA2
JPM2_1
M2_M
SATA_PWR1
SATA1
JP_VDD2
LVDS2
JINV2
JP6
JP4
JP_VDD1
JP5
JINV1
LVDS1
JP3
SO_DIMM2
SO_DIMM1
JPDRW1
JFP1
JI2C1
JBAT1
FAN1
JP_VDD2
JP_VDD1

4. Clear CMOS Data Selection (JP3)

Jumper Location: JP3

Description: Clear CMOS Data Selection

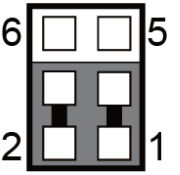
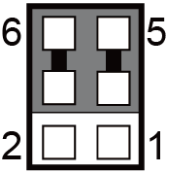
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Normal	**Open** ***(Default Setting)***	
Clear CMOS*	1-2	



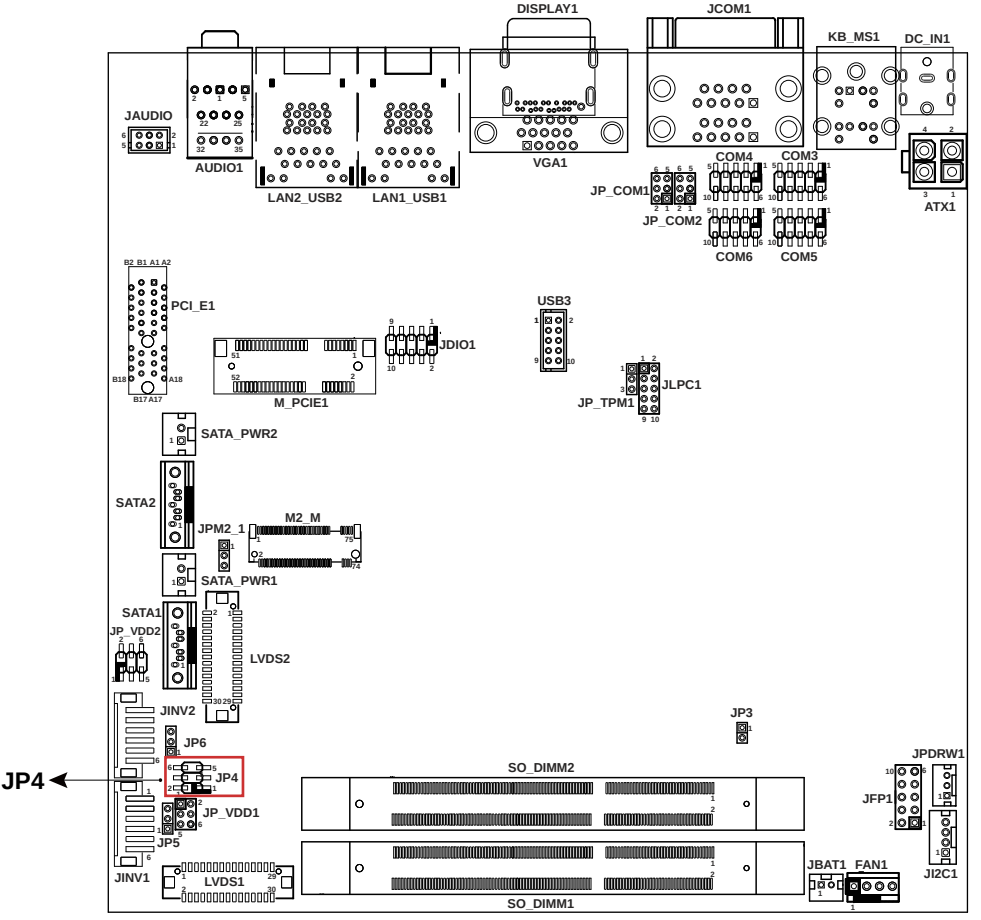
5. LVDS Panel Selection (JP4)

Jumper Location: JP4

Description: LVDS Panel Mode Selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
CPU	**1-3,** **2-4** ***(Default Setting)***	 JP4
CH7511	3-5, 4-6	 JP4

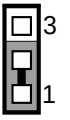
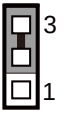
Please see the location of **JP4** on the next page.


DISPLAY1
JCOM1
KB_MS1
DC_IN1
JAUDIO
AUDIO1
LAN2_USB2
LAN1_USB1
VGA1
COM4
COM3
JP_COM1
JP_COM2
COM6
COM5
ATX1
PCI_E1
JDIO1
USB3
M_PCIE1
JLPC1
JP_TPM1
SATA_PWR2
SATA2
M2_M
JPM2_1
SATA_PWR1
SATA1
JP_VDD2
LVDS2
JINV2
JP6
JP4
JP_VDD1
JP5
JINV1
LVDS1
JP3
JPDRW1
JFP1
JI2C1
SO_DIMM2
SO_DIMM1
JBAT1
FAN1
JP4

6. LVDS Backlight Control Selection (JP5, JP6)

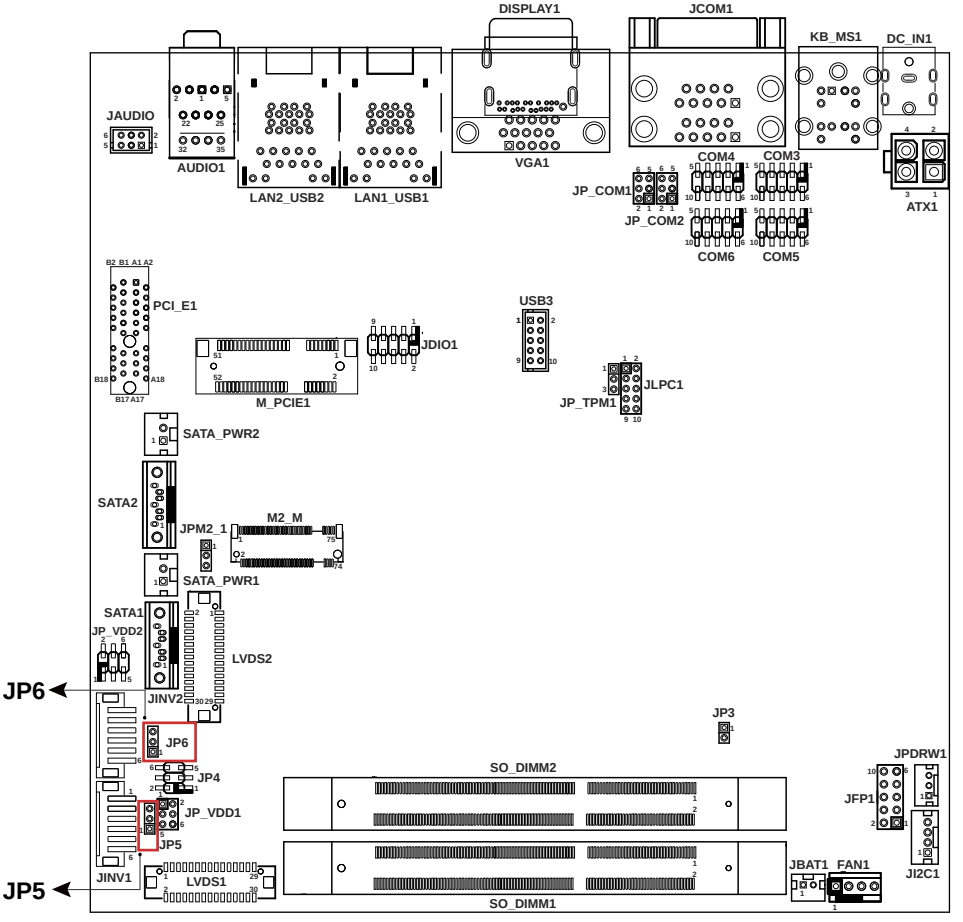
Jumper Location: JP5, JP6

Description: Jumper for selecting PIN18 (LVDS_BKLTCTL) voltage of JINV1.

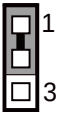
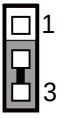
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
3.3V	**1-2** ***(Default Setting)***	 JP5, JP6
5V	2-3	 JP5, JP6

Note: Users can change the setting according to panel specification.

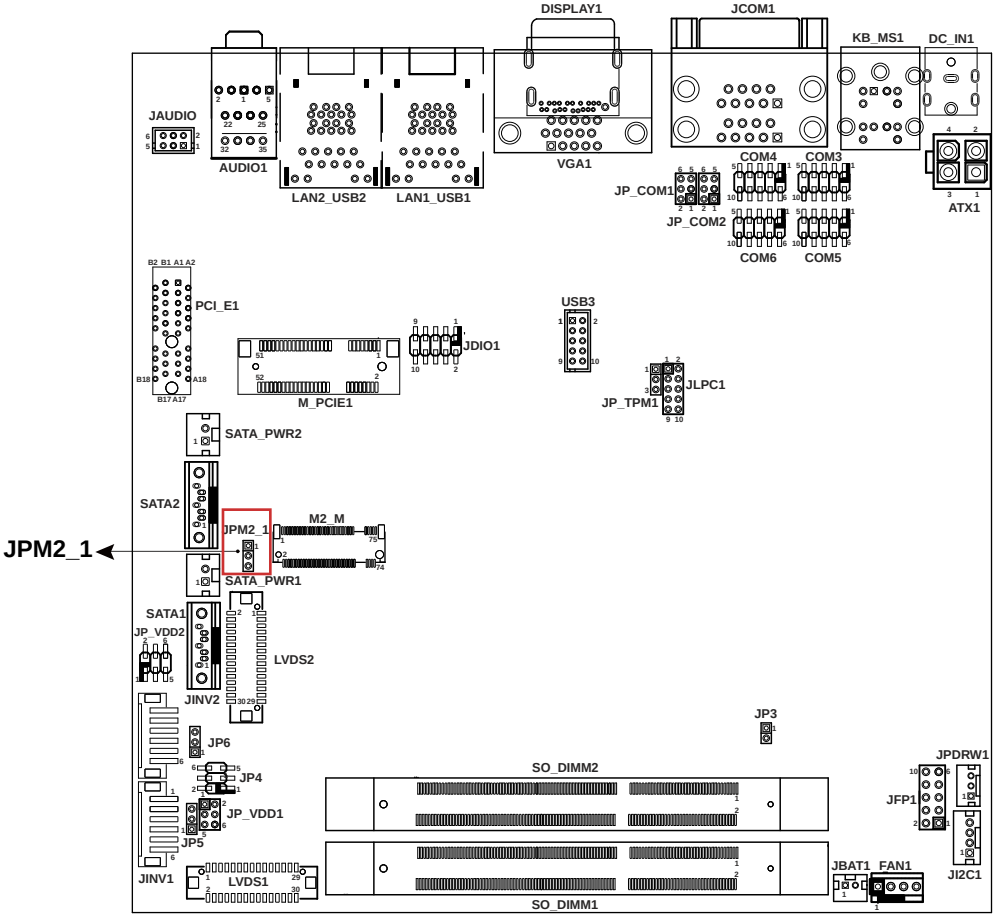
Please see the locations of **JP5, JP6** on the next page.


DISPLAY1
JCOM1
KB_MS1
DC_IN1
JAUDIO
AUDIO1
VGA1
LAN2_USB2
LAN1_USB1
COM4
COM3
JP_COM1
JP_COM2
COM6
COM5
ATX1
PCI_E1
JDIO1
USB3
JLPC1
JP_TPM1
M_PCIE1
SATA_PWR2
SATA2
JPM2_1
M2_M
SATA_PWR1
SATA1
JP_VDD2
LVDS2
JP6
JINV2
JP3
JPDRW1
JP6
JP4
SO_DIMM2
JFP1
JP_VDD1
JP5
JINV1
LVDS1
JBAT1
FAN1
JI2C1
JP5
SO_DIMM1

7. SATA Connector / M.2 Selection (JPM2_1)
Jumper Location: JPM2_1
Description: SATA Connector / M.2 Selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
SATA Connector	**2-3** ***(Default Setting)***	 JPM2_1
M.2_M	1-2	 JPM2_1

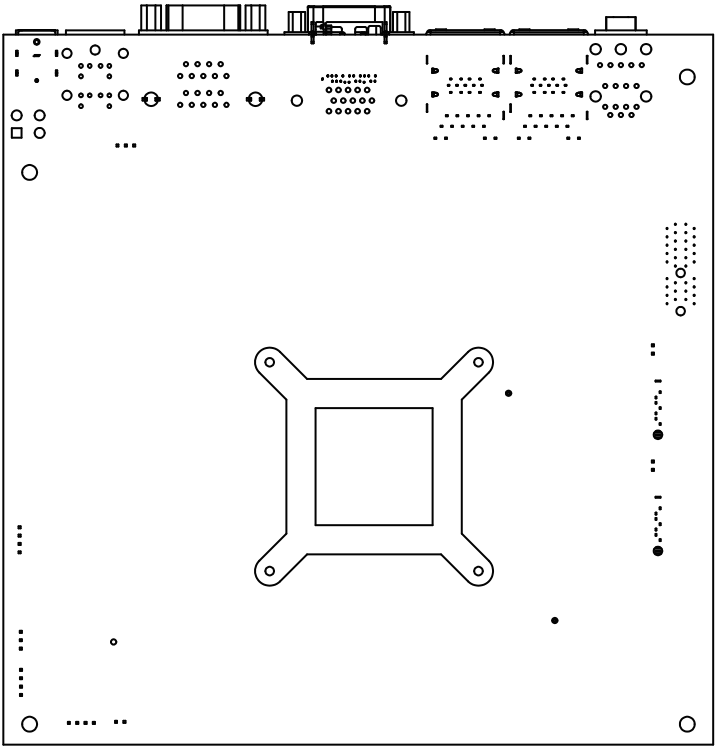
Please see the locations of **JPM2_1** on the next page.



	**WARNING:** Always disconnect the power cord when you are working with the connectors and jumpers on the main board. Make sure both the system and the external devices are turned OFF as sudden surge of power could ruin sensitive components. Make sure BM-0982 is properly grounded.
	**CAUTION:** Observe precautions while handling electrostatic sensitive components. Make sure to ground yourself to prevent static charge while configuring the connectors and jumpers. Use a grounding wrist strap and place all electronic components in any static-shielded devices.

3.3.3 Bottom View of BM-0982RA-**N

M/B: BM-0982



3.4 Jumper & Connector Quick Reference Table

JUMPER Description	NAME
COM1 and COM2 Pin9 RI / 5V / 12V Selection	JP_COM1, JP_COM2
TPM Module Selection	JP_TPM1
LVDS VCC Voltage Selection	JP_VDD1, JP_VDD2
Clear CMOS Data Selection	JP3
LVDS Panel Selection	JP4
LVDS Backlight Control Selection	JP5, JP6
SATA Connector / M.2 Selection	JPM2_1

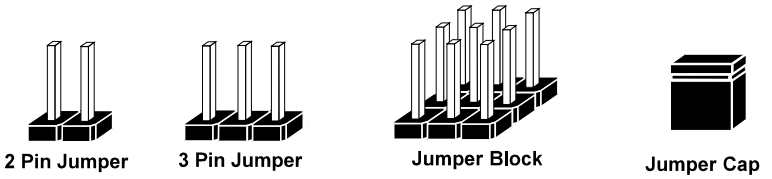
CONNECTOR Description	NAME
COM Connector	COM3, COM4, COM5, COM6, JCOM1
VGA Connector (Rear)	VGA1
Display Port Connector	DISPLAY1
2 x USB 3.0 Ports / LAN Ports	LAN1_USB1, LAN2_USB2
USB 2.0 Ports	USB3
Programmable GPIO Pin Header	JDIO1
I2C Wafer	JI2C1
System Fan Connector	FAN1
Mini PCI Express Slot	M_PCIE1
PCI Express Slot	PCI_E1
LVDS Panel Connector	LVDS1, LVDS2
Front Panel Connector	JFP1
HD Audio Connector	AUDIO1
Panel Backlight Connector	JINV1, JINV2
SATA 3.0 Connector	SATA1, SATA2
SATA Power Connector	SATA_PWR1, SATA_PWR2
M.2 M-Key Slot	M2_M
TPM Module / 80 Port	JLPC1
PS2 Keyboard / Mouse Connector	KB_MS1
Cash Drawer Connector	JPDRW1
RTC Battery Connector	JBAT1

3.5 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.

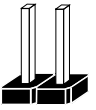
Jumpers & Caps



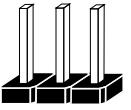
If a jumper has three pins, for example, labeled 1, 2 and 3. You can connect pins 1 and 2 to create one setting and shorting. You can also select to connect pins 2 and 3 to create another setting. The format of the jumper picture will be illustrated throughout this manual. The figure below shows different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

Jumper Diagrams

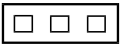
Jumper Cap looks like this

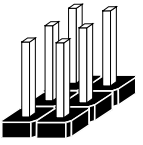


2 pin Jumper looks like this

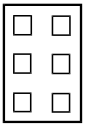


3 pin Jumper looks like this



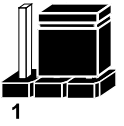


Jumper Block looks like this

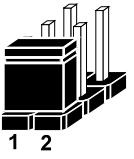


Jumper Settings

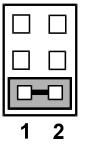
2 pin Jumper closed(enabled)
looks like this



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



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

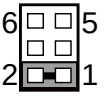
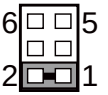
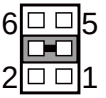
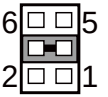
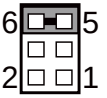
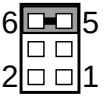


3.6 Setting Main Board Connectors and Jumpers

3.6.1 COM1 and COM2 PIN9 Definition Selection Guide

Jumper Location: JP_COM1, JP_COM2

Description: COM1 and COM2 Port pin9 RI/5V/12V Selection

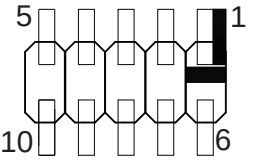
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION	
RI	***1-2 (Default Setting)***	 JP_COM1	 JP_COM2
+12V	3-4	 JP_COM1	 JP_COM2
+5V	5-6	 JP_COM1	 JP_COM2

3.6.2 COM Port (COM3, COM4, COM5, COM6, JCOM1)

Connector Location: COM3, COM4, COM5, COM6, JCOM1
Description: COM Connector

COM3(RS232) Connector Pin Assignment:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM3_DCD_R	6	COM3_DSR_R
2	COM3_RX_R	7	COM3_RTS_R
3	COM3_TX_R	8	COM3_CTS_R
4	COM3_DTR_R	9	COM3_RI_R
5	GND	10	NC



COM3/
COM4/
COM5/
COM6

COM4(RS232) Connector Pin Assignment:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM4_DCD_R	6	COM4_DSR_R
2	COM4_RX_R	7	COM4_RTS_R
3	COM4_TX_R	8	COM4_CTS_R
4	COM4_DTR_R	9	COM4_RI_R
5	GND	10	NC

COM5(RS232) Connector Pin Assignment:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM5_DCD_R	6	COM5_DSR_R
2	COM5_RX_R	7	COM5_RTS_R
3	COM5_TX_R	8	COM5_CTS_R
4	COM5_DTR_R	9	COM5_RI_R
5	GND	10	NC

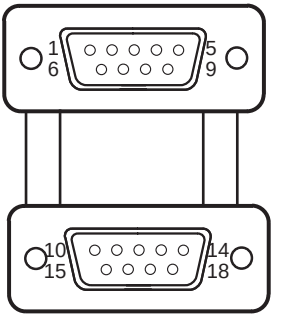
COM6(RS232) Connector Pin Assignment:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM6_DCD_R	6	COM6_DSR_R
2	COM6_RX_R	7	COM6_RTS_R
3	COM6_TX_R	8	COM6_CTS_R
4	COM6_DTR_R	9	COM6_RI_R
5	GND	10	NC

Note:
Default setting is RS232. Please see **Chapter 5 "Advanced – Onboard Device Configuration"** for selection details.

JCOM1 Connector Pin Assignment:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	COM1_DCD_R	10	COM2_DCD_R
2	COM1_RX_R	11	COM2_RX_R
3	COM1_TX_R	12	COM2_TX_R
4	COM1_DTR_R	13	COM2_DTR_R
5	GND	14	GND
6	COM1_DSR_R	15	COM2_DSR_R
7	COM1_RTS_R	16	COM2_RTS_R
8	COM1_CTS_R	17	COM2_CTS_R
9	COM1_RI_SEL	18	COM2_RI_SEL

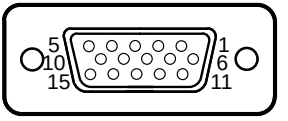


JCOM1

Note:
COM1, COM2: Pin 9 is selectable for RI, +5V or +12V by jumper setting. Default setting is RI, please see "**COM1 and COM2 PIN9 Definition Selection Guide"** for selection details.

3.6.3 VGA Port (VGA1)

Connector Location: VGA1
Description: VGA Port, D-Sub 15-pin (I/O port)



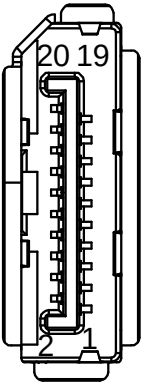
VGA1

PIN	ASSIGNMENT	PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	CRT_RED	6	GND	11	SPD_R
2	CRT_GREEN	7	GND	12	CRT_DDC_DATA_O
3	CRT_BLUE	8	GND	13	CRT_HSYNC_O
4	NC	9	VCC5	14	CRT_VSYNC_O
5	GND	10	GND	15	CRT_DDC_CLK_O

3.6.4 Display Port (DP1)

Connector Location: DP1
Description: Display Port Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
20	VCC3_PWR	19	HMIRHPD
18	DHPD_HDMI5V	17	AUXN_G
16	G_SDA	15	AUXP_SCL
14	G_NC	13	G_CEC
12	DP0_TX3_DN_C	11	GND
10	DP0_TX3_DP_C	9	DP0_TX2_DN_C
8	GND	7	DP0_TX2_DP_C
6	DP0_TX1_DN_C	5	GND
4	DP0_TX1_DP_C	3	DP0_TX0_DN_C
2	GND	1	DP0_TX0_DP_C



DP1

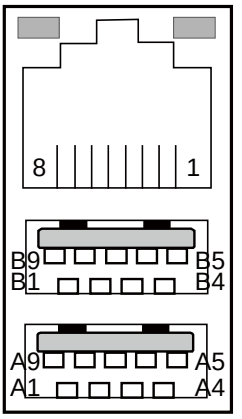
3.6.5 LAN & USB 3.0 Port (LAN1_USB1, LAN2_USB2)

Connector Location: LAN1_USB1, LAN2_USB2

Description: LAN & USB 3.0 Ports

LAN1 signals:

PIN	ASSIGNMENT
1	LAN1_MDI0_DP
2	LAN1_MDI0_DN
3	LAN1_MDI1_DP
4	LAN1_MDI1_DN
5	LAN1_MDI2_DP
6	LAN1_MDI2_DN
7	LAN1_MDI3_DP
8	LAN1_MDI3_DN



LAN1_USB1

LAN1 LED Status

There are LAN LED indicators on the rear side of the mainboard. By observing their status, you can know the status of the Ethernet connection.

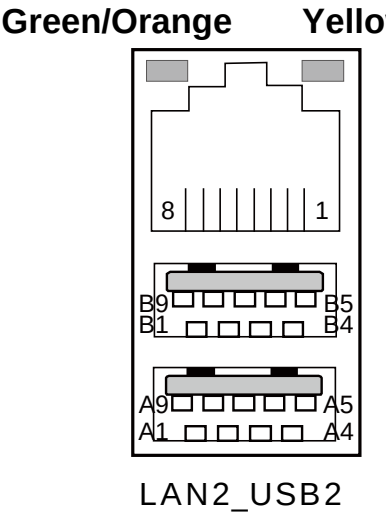
LAN LED Indicator	Color	Status	Description
Right Side LED	Yellow	Blink	LAN Message Active
	-	Off	No LAN Message Active
Left Side LED	Green	On	10/100Mbps LAN connection is enabled.
	Orange	On	Giga LAN connection is enabled.
	-	Off	No LAN switch/hub is connected

USB 3.0 signals:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
A1	VCC5_USB1	B1	VCC5_USB1
A2	USB2_PI_DN	B2	USB2_P0_DN
A3	USB2_PI_DP	B3	USB2_P0_DP
A4	GND	B4	GND
A5	USB3_RXN1	B5	USB3_RXN0
A6	USB3_RXP1	B6	USB3_RXP0
A7	GND	B7	GND
A8	USB3_TXN1	B8	USB3_TXN0
A9	USB3_TXP1	B9	USB3_TXP0

LAN2 signals:

PIN	ASSIGNMENT
1	LAN2_MDI0_DP
2	LAN2_MDI0_DN
3	LAN2_MDI1_DP
4	LAN2_MDI1_DN
5	LAN2_MDI2_DP
6	LAN2_MDI2_DN
7	LAN2_MDI3_DP
8	LAN2_MDI3_DN



LAN2_USB2

LAN2 LED Status

There are LAN LED indicators on the rear side of the mainboard. By observing their status, you can know the status of the Ethernet connection.

LAN LED Indicator	Color	Status	Description
Right Side LED	Yellow	Blink	LAN Message Active
	-	Off	No LAN Message Active
Left Side LED	Green	On	10/100Mbps LAN connection is enabled.
	Orange	On	Giga LAN connection is enabled.
	-	Off	No LAN switch/hub is connected

USB 3.0 signals:

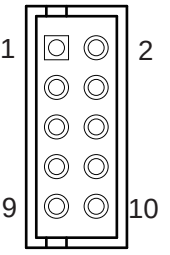
PIN	ASSIGNMENT	PIN	ASSIGNMENT
A1	VCC5_USB1	B1	VCC5_USB1
A2	USB2_P3_DN	B2	USB2_P4_DN
A3	USB2_P3_DP	B3	USB2_P4_DP
A4	GND	B4	GND
A5	USB3_RXN3	B5	USB3_RXN4
A6	USB3_RXP3	B6	USB3_RXP4
A7	GND	B7	GND
A8	USB3_TXN3	B8	USB3_TXN4
A9	USB3_TXP3	B9	USB3_TXP4

3.6.6 USB 2.0 Port (USB3)

Connector Location: USB3
Description: USB 2.0 Ports

USB 2.0 signals

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC5_USB2	2	VCC5_USB2
3	USB2_P5_DN_L	4	USB2_P6_DN_L
5	USB2_P5_DP_L	6	USB2_P6_DP_L
7	GND	8	GND
9	GND	10	GND

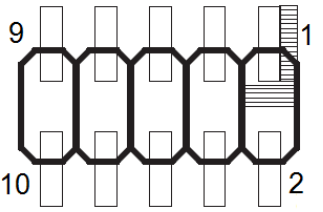


USB3

3.6.7 Programmable GPIO Pin Header (JDIO1)

Connector Location: JDIO1
Description: GPIO Pin Header and 5V power

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	VCC5	2	GND
3	DIN0	4	DOUT0
5	DIN1	6	DOUT1
7	DIN2	8	DOUT2
9	DIN3	10	DOUT3



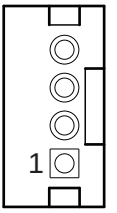
JDIO1

Note:
Users can set the DIN / DOUT configuration via Protech's API/Utility.

3.6.8 I2C Wafer (JI2C1)

Connector Location: JI2C1
Description: I2C Wafer

PIN	ASSIGNMENT
1	GND
2	V3P3S
3	I2C0_SCL_33
4	I2C0_SDA_33

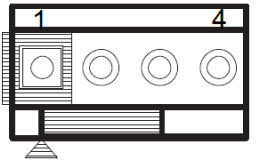


JI2C1

3.6.9 System Fan Connector (FAN1)

Connector Location: FAN1
Description: System Fan Connector

PIN	ASSIGNMENT
1	GND
2	VCC12
3	SYS_FANOUT
4	SYS_FANIN



FAN1

Note: Fan speed mode can be set by BIOS or API (optional).

3.6.10 Audio Port (AUDIO1)

Port Location: AUDIO1

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

Line-In ：

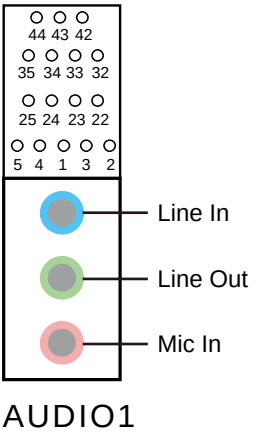
PIN	ASSIGNMENT
32	HD_FRONT-L
33	HD_GND
34	HD_FRONT-R
35	HD_GND

Line-Out:

PIN	ASSIGNMENT
22	HD_LINE_IN-L
23	HD_GND
24	HD_LINE_IN-R
25	HD_GND

Mic-In:

PIN	ASSIGNMENT
1	HD_GND
2	HD_MIC1-L
3	HD_GND
4	HD_MIC1-R
5	HD_GND

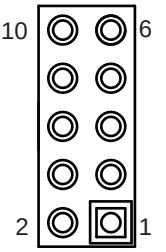


AUDIO1

3.6.11 Front Panel Connector (JFP1)

Connector Location: JFP1
Description: Front Panel Connector

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	WIDE_POWERIN	2	VCC_LED
3	SATA_LED_A_N	4	GND
5	GND	6	GND
7	RST_SW	8	GND
9	NC	10	LPC_PWRBTNJ

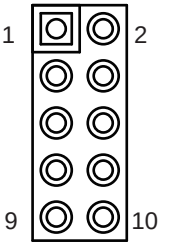


JFP1

3.6.12 TPM Module / S80 (JLPC1)

Connector Location: JLPC1
Description: TPM Module / S80

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	LPC_CLKOUT1_33	2	GND
3	LPC_LFRAMEJ_33	4	GND/LPC_SER_IRQ_33
5	PMU_PLTRST_N	6	LPC_AD0_33
7	LPC_AD3_33	8	LPC_AD2_33
9	V3P3A/V3P3S	10	LPC_AD1_33

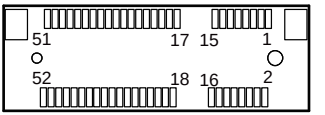


JLPC1

3.6.13 Mini-PCI Express Slot (M_PCIE1)

Connector Location: M_PCIE1
Description: Mini-PCI Express Slot

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	WAKE_MPCIE1_N	2	V3P3S
3	NC	4	GND
5	NC	6	V1P5S_MINI
7	PCIE_CLKREQ2	8	NC
9	GND	10	NC
11	M_PCIE_CLKN	12	NC
13	M_PCIE_CLKP	14	NC
15	GND	16	NC
17	NC	18	GND
19	NC	20	NC
21	GND	22	PMU_PLTRST_N
23	PCIE_P2_RXN	24	V3P3A
25	PCIE_P2_RXP	26	GND
27	GND	28	V1P5S_MINI
29	GND	30	SMB_3P3_SCL
31	PCIE_P2_TXN	32	SMB_3P3_SDA
33	PCIE_P2_TXP	34	GND
35	GND	36	USB2_P7_DN
37	GND	38	USB2_P7_DP
39	V3P3S	40	GND
41	V3P3S	42	NC
43	GND	44	NC
45	NC	46	NC
47	NC	48	VCC1_5
49	NC	50	GND
51	NC	52	V3P3S



M_PCIE1

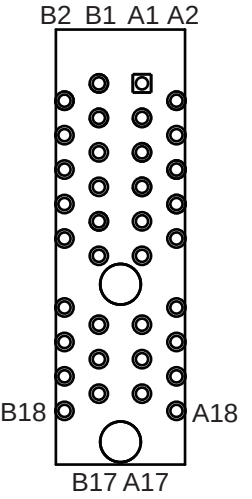
Mini PCI Express is the successor of the Mini PCI card and provides an increased data throughput. The cards have a detached network interface and are equipped with one lane. They are used in particular in embedded designs or compact box PCs.

3.6.14 PCI Express Slot (PCI_E1)

Connector Location: PCI_E1

Description: PCI Express Slot

PIN	ASSIGNMENT	PIN	ASSIGNMENT
B1	VCC12	A1	NC
B2	VCC12	A2	VCC12
B3	VCC12	A3	VCC12
B4	GND	A4	VCC12
B5	SMB_3P3_SCL	A5	NC
B6	SMB_3P3_SDA	A6	NC
B7	GND	A7	NC
B8	V3P3S	A8	NC
B9	NC	A9	V3P3S
B10	V3P3A	A10	V3P3S
B11	WAKE_PCIEx1_N	A11	PMU_PLTRST_N
B12	PCIE_CLKREQ3	A12	GND
B13	GND	A13	PCIEx1_CLKP
B14	PCIE_P5_TXP	A14	PCIEx1_CLKN
B15	PCIE_P5_TXN	A15	GND
B16	GND	A16	PCIE_P5_RXP
B17	V3P3S	A17	PCIE_P5_RXN
B18	GND	A18	GND



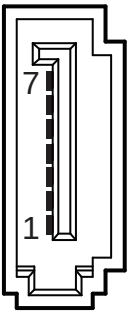
PCI_E1

3.6.15 SATA 3.0 Connector (SATA1, SATA2)

Connector Location: SATA1, SATA2
Description: SATA 3.0 Connector

SATA1 signals:

PIN	ASSIGNMENT
1	GND
2	SATA_TXP0
3	SATA_TXP0
4	GND
5	SATA_RXN0
6	SATA_RXP0
7	GND



SATA1 / SATA2

SATA2 signals:

PIN	ASSIGNMENT
1	GND
2	SATA_TXP1_B
3	SATA_TXP1_B
4	GND
5	SATA_RXN1_B
6	SATA_RXP1_B
7	GND

3.6.16 SATA Power Connector (SATA_PWR1, SATA_PWR2)

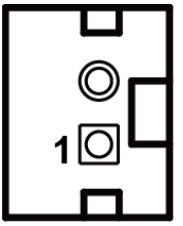
Connector Location: SATA_PWR1, SATA_PWR2
Description: SATA Power Connector

SATA_PWR1 signals:

PIN	ASSIGNMENT
1	VDD5
2	GND

SATA_PWR2 signals:

PIN	ASSIGNMENT
1	VDD5
2	GND

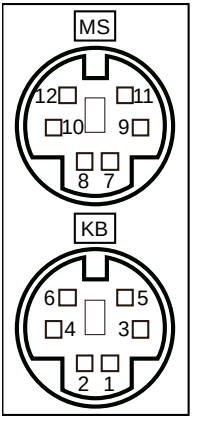


SATA_PWR1 / SATA_PWR2

3.6.17 Keyboard and Mouse Port (KB_MS1)

Connector Location: KB_MS1
Description: PS/2 Keyboard and Mouse Port

PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	KB_DATA_L	7	MS_DATA_L
2	NC	8	NC
3	GND	9	GND
4	KBMS_VCC_L	10	KBMS_VCC_L
5	KB_CLK_L	11	MS_CLK_L
6	NC	12	NC

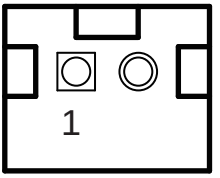


KB_MS1

3.6.18 RTC Battery Connector (JBAT1)

Connector Location: JBAT1
Description: RTC (Real-Time Clock) Battery Connector

PIN	ASSIGNMENT
1	VBAT
2	GND

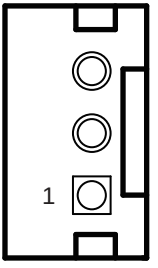


JBAT1

3.6.19 Cash Drawer Connector (JPDRW1)

Connector Location: JPDRW1
Description: Cash Drawer Connector

PIN	ASSIGNMENT
1	Drawer1_Open
2	GND
3	Drawer1_Sensor



JPDRW1

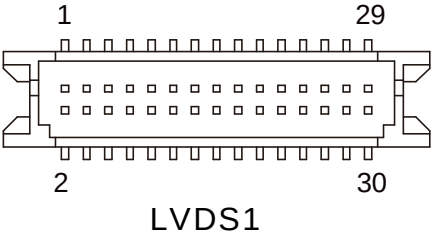
3.6.20 LVDS Connector (LVDS1, LVDS2)

Connector Location: LVDS1, LVD2

Description: LVDS Connector

LVDS1 signals:

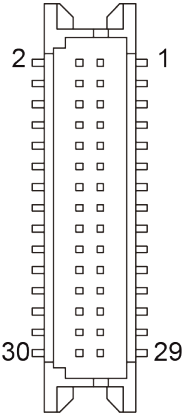
PIN	ASSIGNMENT	PIN	ASSIGNMENT
2	GND	1	LVDS_VCC
4	LVDS_CLKB_DP	3	LVDS_CLKB_DN
6	LVDS_B2_DN	5	GND
8	GND	7	LVDS_B2_DP
10	LVDS_B1_DP	9	LVDS_B1_DN
12	LVDS_B3_DN	11	LVDS_B3_DP
14	LVDS_B0_DN	13	LVDS_B0_DP
16	LVDS_CLKA_DP	15	GND
18	GND	17	LVDS_CLKA_DN
20	LVDS_A2_DN	19	LVDS_A2_DP
22	LVDS_A1_DP	21	GND
24	GND	23	LVDS_A1_DN
26	LVDS_A0_DN	25	LVDS_A0_DP
28	LVDS_A3_DN	27	LVDS_A3_DP
30	LVDS_VCC	29	LVDS_VCC



LVDS1

LVDS2 signals:

PIN	ASSIGNMENT	PIN	ASSIGNMENT
2	GND	1	LVDS_VCC
4	LVDS_CLKB_DP_2nd	3	LVDS_CLKB_DN_2nd
6	LVDS_B2_DN_2nd	5	GND
8	GND	7	LVDS_B2_DP_2nd
10	LVDS_B1_DP_2nd	9	LVDS_B1_DN_2nd
12	LVDS_B3_DN_2nd	11	LVDS_B3_DP_2nd
14	LVDS_B0_DN_2nd	13	LVDS_B0_DP_2nd
16	LVDS_CLKA_DP_2nd	15	GND
18	GND	17	LVDS_CLKA_DN_2nd
20	LVDS_A2_DN_2nd	19	LVDS_A2_DP_2nd
22	LVDS_A1_DP_2nd	21	GND
24	GND	23	LVDS_A1_DN_2nd
26	LVDS_A0_DN_2nd	25	LVDS_A0_DP_2nd
28	LVDS_A3_DN_2nd	27	LVDS_A3_DP_2nd
30	LVDS_VCC	29	LVDS_VCC



LVDS2

3.6.22 Panel Inverter Connector (JINV1, JINV2)

Connector Location: JINV1, JINV2
Description: Panel Inverter Connector

JINV1 Pin Assignment:

PIN	ASSIGNMENT
1	V12P0_INV
2	V12P0_INV
3	GND
4	LVDS_BKCTL
5	GND
6	LVDS_BKLTEN

JINV1 / JINV2

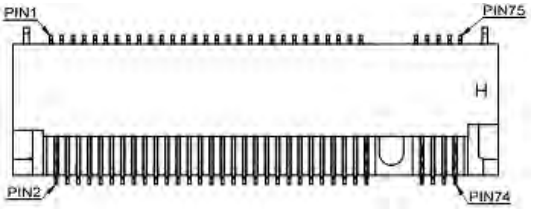
JINV2 Pin Assignment:

PIN	ASSIGNMENT
1	V12P0_INV_2nd
2	V12P0_INV_2nd
3	GND
4	LVDS_BKCTL_2nd
5	GND
6	LVDS_BKLTEN_2nd

3.6.23 M.2 M-Key Slot (M2_M)

Connector Location: M2_M

Description: M.2 M-Key Slot



M2_M

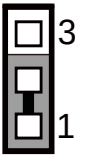
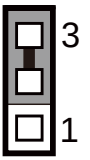
PIN	ASSIGNMENT	PIN	ASSIGNMENT
1	GND	2	V3P3S
3	GND	4	V3P3S
5	NC	6	NC
7	NC	8	NC
9	NC	10	TP28
11	NC	12	NC
13	NC	14	NC
15	NC	16	NC
17	NC	18	NC
19	NC	20	NC
21	GND	22	NC
23	NC	24	NC
25	NC	26	NC
27	GND	28	NC
29	NC	30	NC
31	NC	32	NC
33	GND	34	NC
35	NC	36	NC
37	NC	38	TP27
39	GND	40	NC
41	SATA_RXP1_C	42	NC
43	SATA_RXN1_C	44	NC
45	GND	46	NC
47	SATA_TXN1_C	48	NC

PIN	ASSIGNMENT	PIN	ASSIGNMENT
49	SATA_TXP1_C	50	NC
51	GND	52	NC
53	NC	54	NC
55	NC	56	NC
57	GND	58	NC
59	KEY	60	NC
61	KEY	62	NC
63	KEY	64	NC
65	KEY	66	NC
67	NC	68	TP26
69	GND	70	V3P3S
71	GND	72	V3P3S
73	GND	74	V3P3S
75	GND		

3.6.24 LVDS Backlight Control Selection (JP5, JP6)

Jumper Location: JP5, JP6

Description: Jumper for selecting PIN18 (LVDS_BKLTCTL) voltage of JINV1.

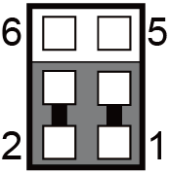
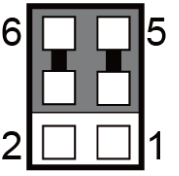
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
3.3V	**1-2** ***(Default Setting)***	 JP5, JP6
5V	2-3	 JP5, JP6

Note: Users can change the setting according to panel specification.

3.6.25 LVDS Panel Selection (JP4)

Jumper Location: JP4

Description: LVDS Panel Mode Selection

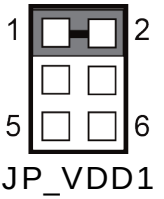
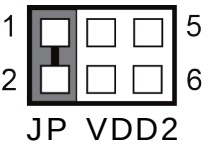
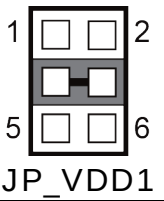
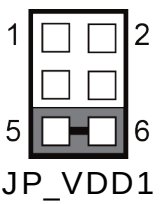
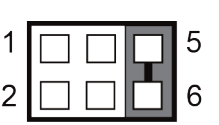
SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
CPU	**1-3,** **2-4** ***(Default Setting)***	 JP4
CH7511	3-5, 4-6	 JP4

JP4	LVDS Sequence
	BKLTCL FROM
1-3 (Default)	CPU
3-5	CH7511
	BKLEN FROM
2-4 (Default)	CPU
4-6	CH7511

3.6.26 LVDS VCC Voltage Selection (JP_VDD1, JP_VDD2)

Jumper Location: JP_VDD1, JP_VDD2

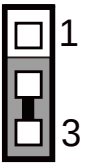
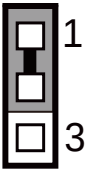
Description: Voltage selection jumper for selecting PIN1, PIN29, PIN30 (LVDS_VCC) voltage of LVDS1.

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION	
3.3V	***1-2 (Default Setting)***		
5V	3-4		
12V	5-6		

Note: Please refer to **PANEL INVERTER CONNECTOR** for more information about pin definition of JINV1.

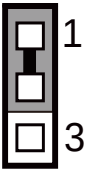
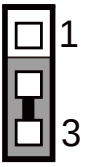
3.6.27 SATA Connector / M.2 Selection (JPM2_1)

Jumper Location: JPM2_1
Description: SATA Connector / M.2 Selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
SATA Connector	**2-3** ***(Default Setting)***	 JPM2_1
M.2_M	1-2	 JPM2_1

3.6.28 TPM Module Selection (JP_TPM1)

Jumper Location: JP_TPM1
Description: TPM Module Selection

SELECTION	JUMPER SETTING	JUMPER ILLUSTRATION
Normal	**1-2** ***(Default Setting)***	 JP_TPM1
Enable	2-3	 JP_TPM1

3.6.29 Clear CMOS Data Selection (JP3)

Jumper Location: JP3
Description: Clear CMOS Data Selection

Step 1. Remove the main power of the PC.
Step 2. Close JP3 (pins 1-2) for 6 seconds by a cap.
Step 3. Remove the cap which is just used on JP3 (1-2), so that JP3 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 SETTING	JUMPER ILLUSTRATION
Normal	**Open** ***(Default Setting)***	 JP3
Clear CMOS*	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 Graphics Driver Utility
- Installing LAN Driver Utility
- Installing Sound Driver Utility
- Installing Intel® Trusted Execution Engine Installation Utility
- Installing Intel® Serial I/O Driver Utility

4.1 Introduction

Enclosed with the KF-P231 Series package is our driver utilities contained in a DVD-ROM disk. Refer to the following table for driver locations:

Windows 10 IoT Enterprise LTSC 2021 21H2 x64

Filename (Assume that DVD- ROM drive is D :)	Purpose
D:\Driver\Platform\1_Main Chip\chipset_10.1.1.35_public	Intel® Chipset Device Software Installation Utility
D:\Driver\Platform\2_Graphics	Intel® Graphics Driver installation
D:\Driver\Platform\3_TXE\APL TXE 3.1.55.2269	Intel® Trusted Execution Engine
D:\Driver\Platform\4_Sound	Realtek High Definition Audio driver installation.
D:\Driver\Platform\5_LAN Chip\ LAN_21_1_cd	Intel® Network Connections Software
D:\Driver\Platform\6_Serial IO\ SerialIO_30.100.1631.03_APL_PV_RS1	Intel® Serial IO Driver

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® 10 (32-bit and 64-bit) 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 KF-P231 and insert the driver disk.
2. Enter the **Main Chip** folder where the Chipset driver is located.
3. Click **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to install the driver.
5. Once the installation is completed, shut down the system and restart KF-P231 for the changes to take effect.

4.3 Installing Graphics Driver Utility

The Graphics interface embedded in KF-P231 can support a wide range of display types.

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

1. Connect the USB DVD-ROM device to KF-P231 and insert the driver disk.
2. Enter the **Graphics** folder where the driver is located.
3. Click the **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KF-P231 for the changes to take effect.

4.4 Installing Intel® Trusted Execution Engine Installation Utility

Instructions for Intel® Trusted Execution Engine Installation Utility

1. Connect the USB DVD-ROM device to KF-P231 and insert the driver disk.
2. Enter the **TXE** folder where the driver is located.
3. Click **Setup.exe** file for TXE driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KF-P231 for the changes to take effect.
6. Run the application with the Administrator privilege.

4.5 Installing Sound Driver Utility

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

To install the Sound Driver, follow the steps below:

1. Connect the USB DVD-ROM device to KF-P231 and insert the driver disk.
2. Open the **Sound** folder where the driver is located.
3. Click the **Setup.exe** file for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KF-P231 for the changes to take effect.

4.6 Installing LAN Driver Utility

Enhanced with LAN function, KF-P231 supports various network adapters. To install the LAN Driver, follow the steps below:

1. Connect the USB DVD-ROM device to KF-P231 and insert the driver disk.
2. Enter the **LAN Chip** folder where the driver is located.
3. Click the LAN driver file **Autorun.exe** for driver installation.
4. Follow the on-screen instructions to complete the installation.
5. Once the installation is completed, shut down the system and restart KF-P231 for the changes to take effect.

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

4.7 Installing Intel® Serial I/O Driver Utility

To install the Serial I/O Driver, follow the steps below:

1. Connect the USB DVD-ROM device to KF-P231 and insert the driver disk.
2. Open the **Serial IO** folder where the driver is located.
3. Select Windows 10 (64-bit) for your OS platform.
4. Click the **Setup.exe** 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 KF-P231 for the changes to take effect.

5 BIOS SETUP

This chapter guides users how to configure the basic system configurations via the BIOS Setup Utilities. The information of the system configuration is saved in BIOS NVRAM so that the Setup information is retained when the system power is off. The BIOS Setup Utilities consist of the following menu items:

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

5.1 Introduction

The KF-P231 Kiosk 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.

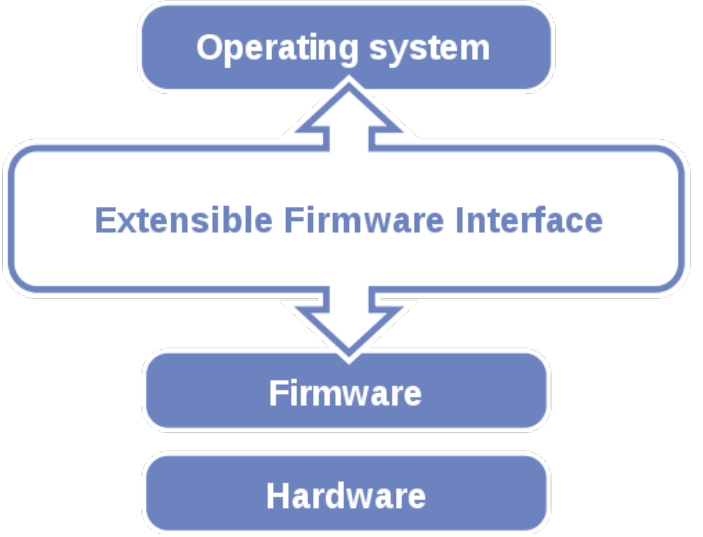


Figure 5-1. Extensible Firmware Interface Diagram

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 the <Del> key to access the Setup Utility program.

After you type the correct password and press **Enter**, the **Main** menu of the Aptio Setup Utility will appear on the screen as below:

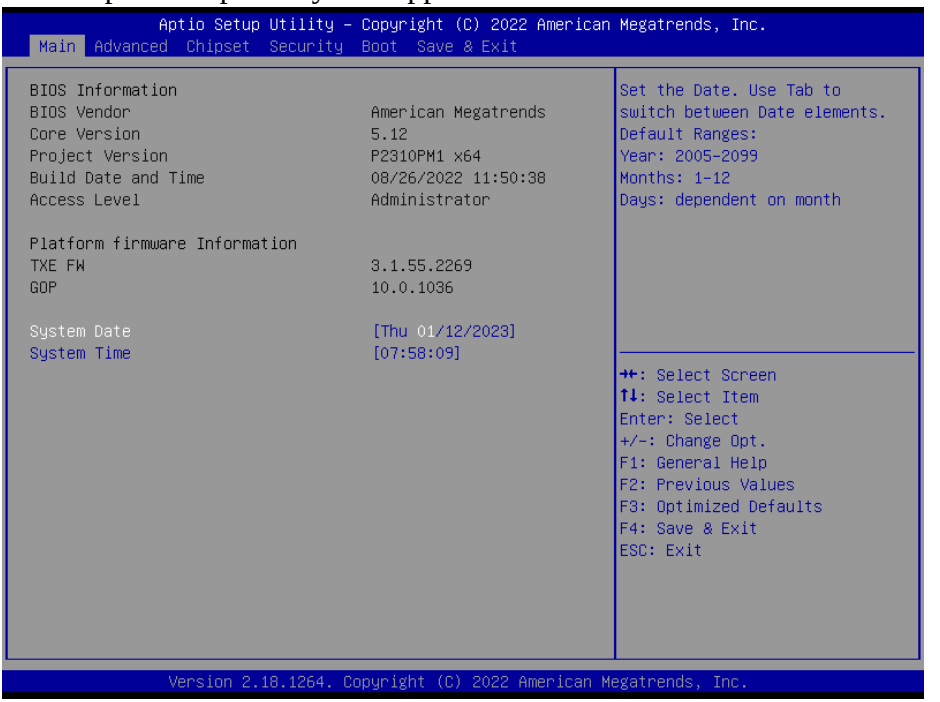


Figure 5-3. BIOS Setup Menu Initialization Screen

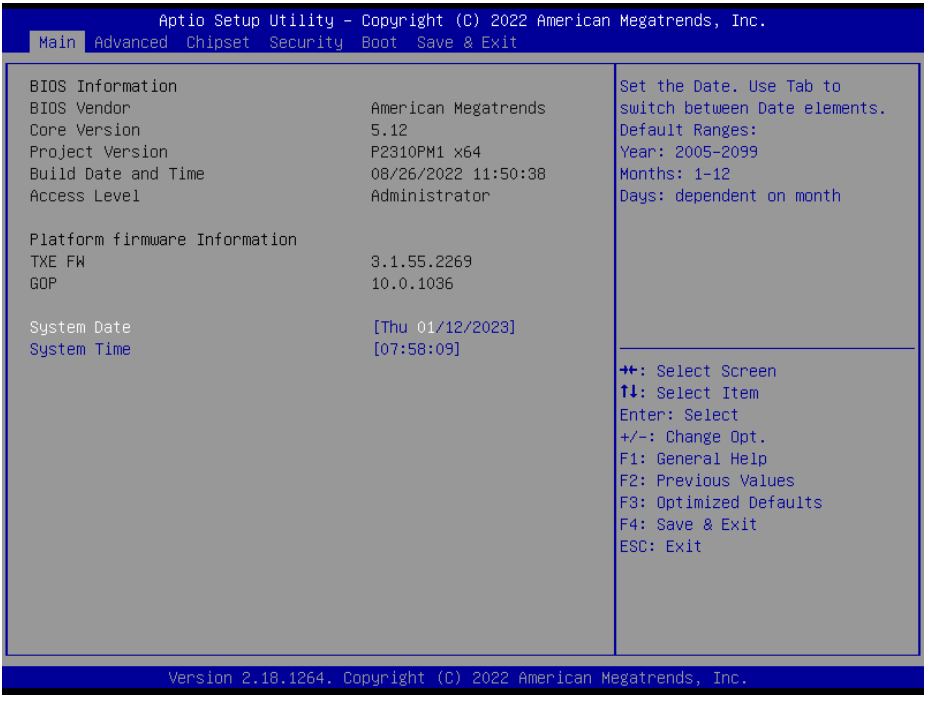
The language of the BIOS setup menu interface and help messages are shown in US English. You may use the up <↑> /down <↓> arrow key to select among the items and press <Enter> to confirm and enter the sub-menu. A brief help message of the selected item will also appear at the bottom of the screen for your information. The following table provides the list of the keys that you can use while operating the BIOS setup menu.

BIOS Setup Menu 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.

5.3 Main Menu

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.



BIOS Main Menu

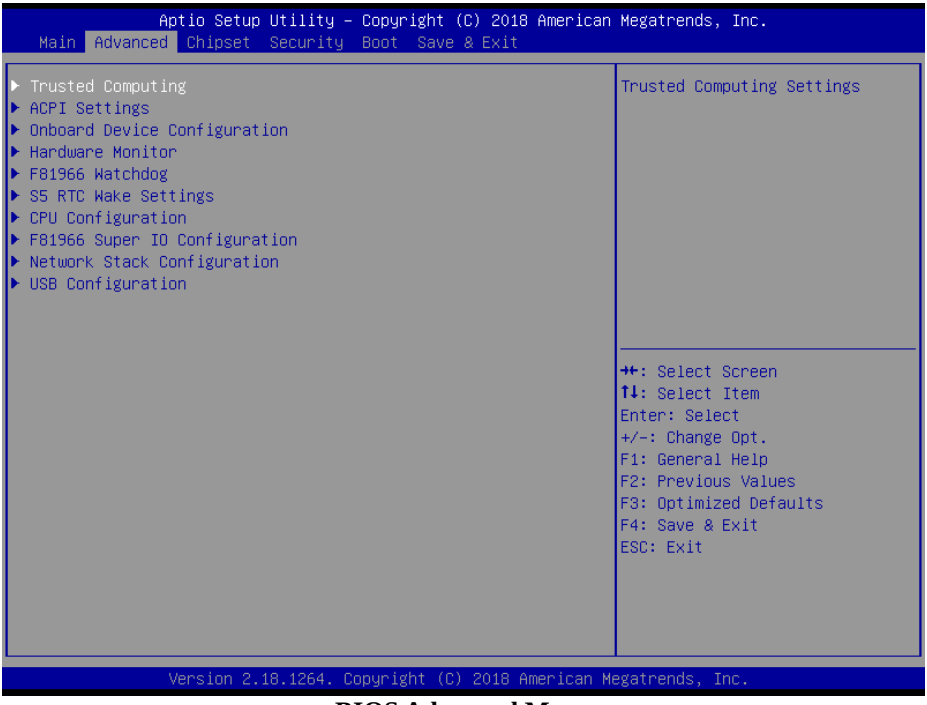
BIOS Setting	Options	Description/Purpose
BIOS Vendor	No changeable options	Displays the BIOS vendor.
Core Version	No changeable options	Displays the current BIOS core version.
Compliancy	No changeable options	Displays the current UEFI version.
Project Version	No changeable options	Displays the version of the BIOS currently installed on the platform.
Build Date and Time	No changeable options	Displays the date of current BIOS version is built.
Access Level	No changeable options	Displays the Access Level
BXT SOC	No changeable options	Displays the SoC stepping.
TXE FW	No changeable options	Displays the TXE firmware version.
GOP	No changeable options	Displays the GOP driver version

BIOS Setting	Options	Description/Purpose
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 Trusted Computing, ACPI Settings, Onboard Device Configuration, Hardware Monitor, F81966 Watchdog, S5 RTC Wake Settings, CPU Configuration, F81966 Super IO Configuration, Network Stack Configuration and USB Configuration.

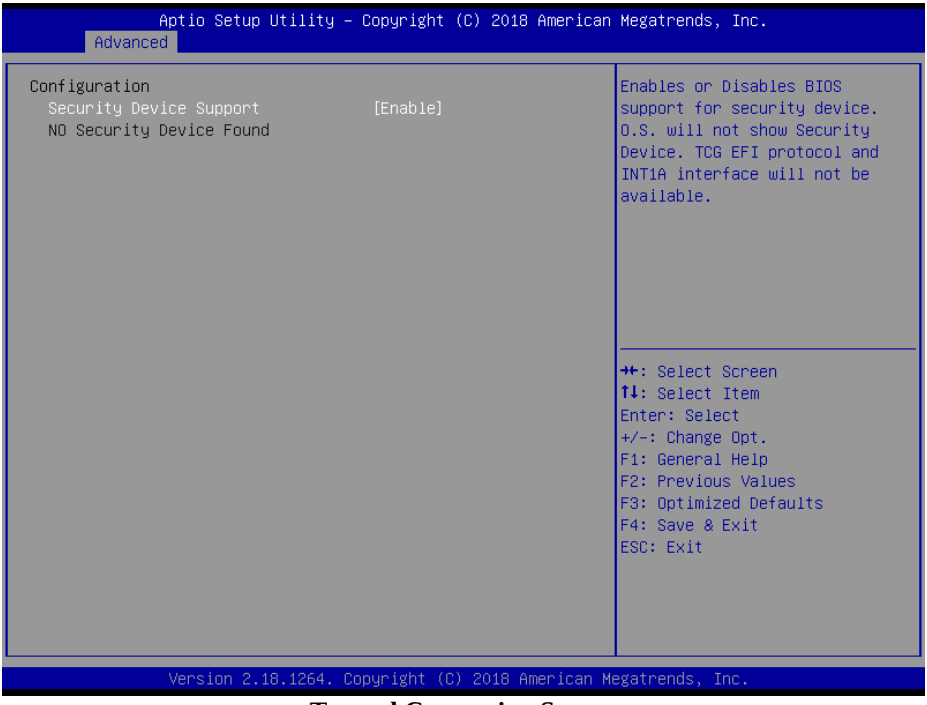


BIOS Advanced Menu

BIOS Setting	Options	Description/Purpose
Trusted Computing	Sub-Menu	Trusted Computing Settings
ACPI Settings	Sub-Menu	System ACPI Parameters.
Onboard Device Configuration	Sub-Menu	Onboard Device Parameters
Hardware Monitor	Sub-Menu	Monitor hardware status
F81966 Watchdog	Sub-Menu	F81966 Watchdog timer settings.
S5 RTC Wake Settings	Sub-Menu	Enable system to wake from S5 using RTC alarm
CPU Configuration	Sub-Menu	CPU Configuration Parameters.
F81966 Super IO Configuration	Sub-Menu	F81966 Super IO Configuration
Network Stack Configuration	Sub-Menu	Network Stack Settings
USB Configuration	Sub-Menu	USB Configuration Parameters.

5.4.1 Advanced – Trusted Computing

Menu Path *Advanced >Trusted Computing*



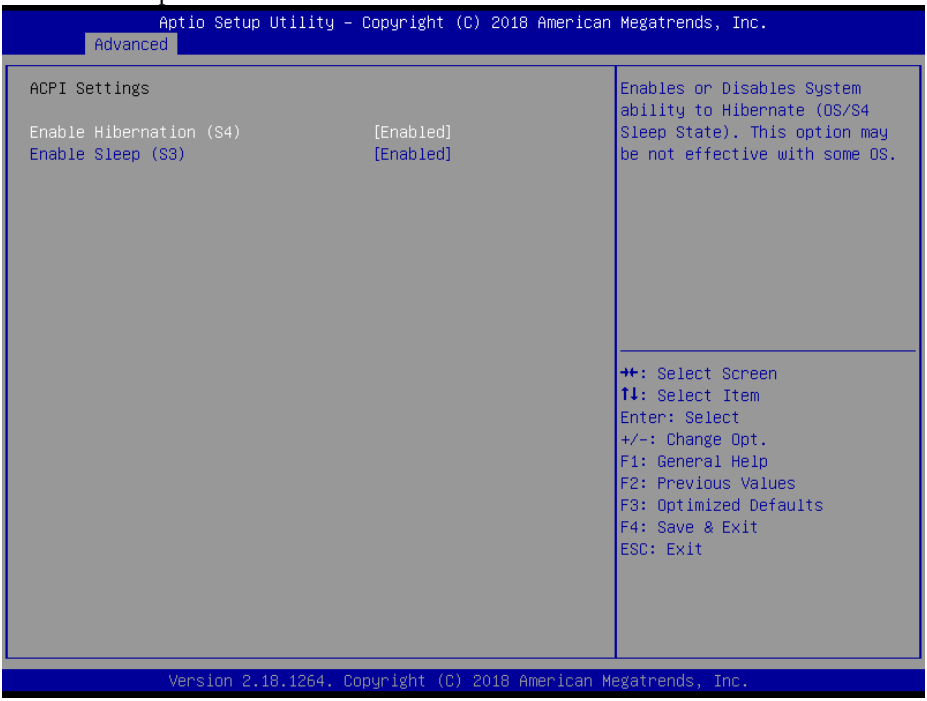
Trusted Computing Screen

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.
No Security Device Found	- No changeable options	Display the Security Device

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 Hibernation and ACPI Sleep State.



ACPI Settings Screen

BIOS Setting	Options	Description/Purpose
Enable Hibernation (S4)	- Disabled - Enabled	Enables or Disables System ability to Hibernate (OS/S4 Sleep State). This option may be not effective with some OS.
Enable Sleep (S3)	- Disabled - Enabled	Enables or Disables System ability to Sleep (OS/S3 Sleep State.)

5.4.3 Advanced – Onboard Device Configuration

Menu Path *Advanced > Onboard Device Configuration*

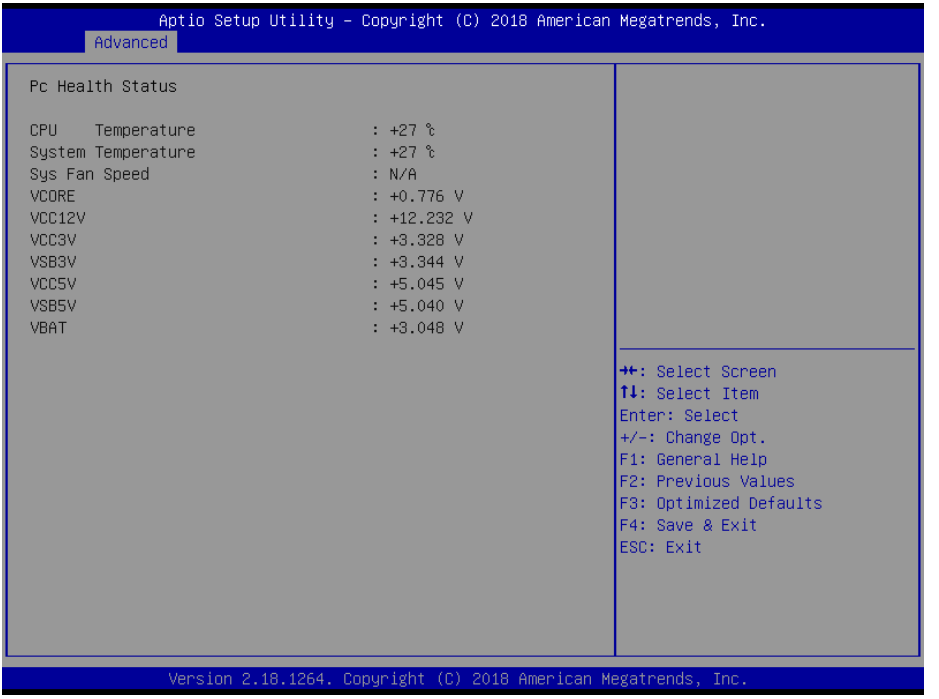
Onboard Device Configuration Screen

BIOS Setting	Options	Description/Purpose
COM1 Mode Selection	- RS-422 - RS-232 - RS-485	Selects COM1 port mode.
COM2 Mode Selection	- RS-422 - RS-232 - RS-485	Selects COM2 port mode.

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, system fan speed and voltage levels in supply.



Hardware Monitor Screen

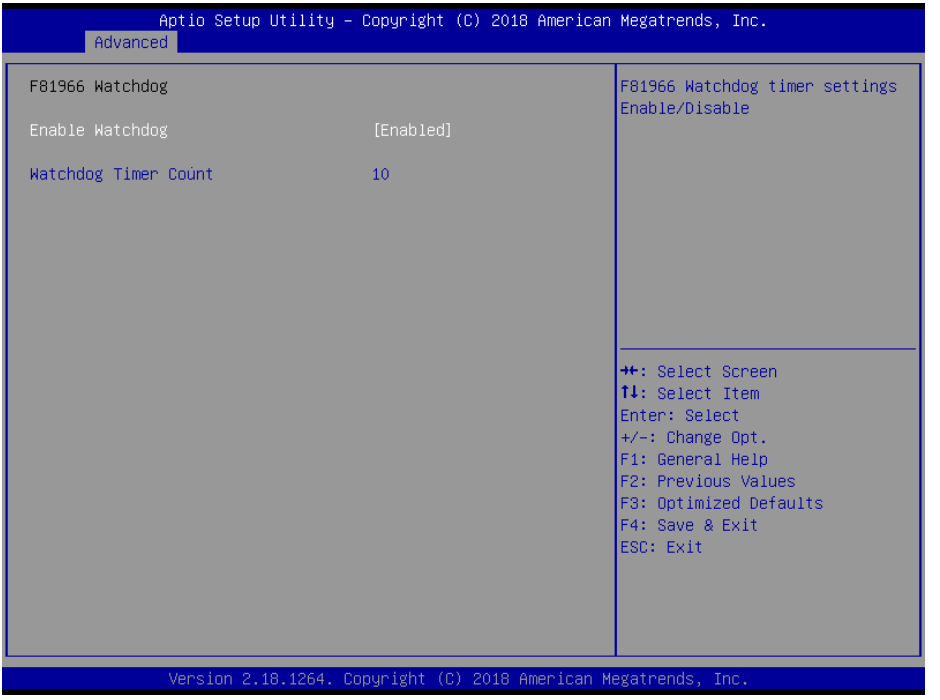
BIOS Setting	Options	Description/Purpose
CPU Temperature	No changeable options	Displays the processor's temperature.
System Temperature	No changeable options	Displays the system's temperature.
System Fan Speed	No changeable options	Displays the System Fan speed.
VCORE	No changeable options	Displays the voltage level of VCORE in supply.
VCC12V	No changeable options	Displays the voltage level of VCC12V in supply.
VCC3V	No changeable options	Displays the voltage level of VCC3V in supply.
VSB3V	No changeable options	Displays the voltage level of VSB3V in supply.

BIOS Setting	Options	Description/Purpose
VCC5V	No changeable options	Displays the voltage level of VCC5V in supply.
VSB5V	No changeable options	Displays the voltage level of VSB5V in supply.
VBAT	No changeable options	Displays the voltage level of VBAT in supply.

5.4.5 Advanced – F81966 Watchdog Configuration

Menu Path *Advanced > F81966 Watchdog Configuration*

If the system hangs or fails to respond, enable the F81966 watchdog function to trigger a system reset via the 255-level watchdog timer.



F81966 Watchdog Screen

BIOS Setting	Options	Description/Purpose
Enable Watchdog	- Enabled - Disabled	F81966 Watchdog timer settings Enable/Disable.
Watchdog Timer Count	Numeric	Selects count of watchdog timer. Watchdog Timer = 1sec * Count

5.4.6 Advanced – S5 RTC Wake Settings

Menu Path *Advanced > S5 RTC Wake Setting*

S5 RTC Wake Settings Screen

BIOS Setting	Options	Description/Purpose
Wake system from S5	- Disabled - Fixed Time - Dynamic Time	Enable or disable System wake on alarm event. Select **Fixed Time**, system will wake on the hr:min:sec specified. Select **Dynamic Time**, System will wake on the current time + Increase minute(s)

Advanced - S5 RTC Wake Setting- Fixed Time

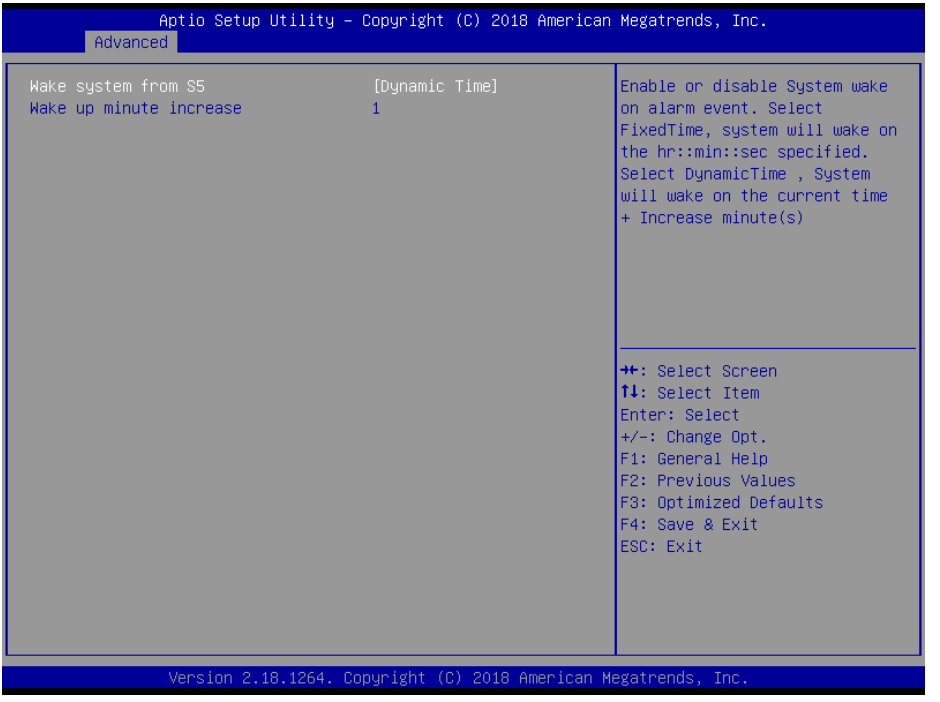
Menu Path *Advanced > S5 RTC Wake Setting (Fixed Time)*

S5 RTC Wake Setting Screen (Fixed Time)

BIOS Setting	Options	Description/Purpose
Wake up hour	Numeric	Selects **0-23**. For example, enter 3 for 3am and 15 for 3pm
Wake up minute	Numeric	Selects **0-59** for Minute.
Wake up second	Numeric	Selects **0-59** for Second.

Advanced - S5 RTC Wake Setting- Dynamic Time

Menu Path *Advanced > S5 RTC Wake Setting (Dynamic Time)*



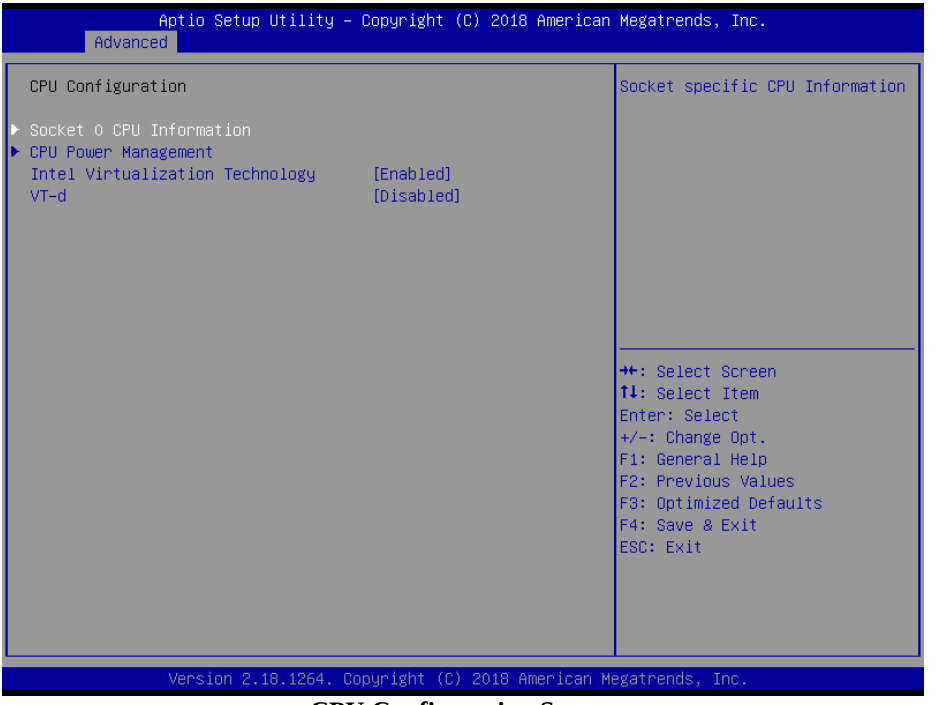
S5 RTC Wake Setting Screen (Dynamic Time)

BIOS Setting	Options	Description/Purpose
Wake up minute increase	Numeric	1 - 5

5.4.7 Advanced – CPU Configuration

Menu Path *Advanced > CPU Configuration*

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

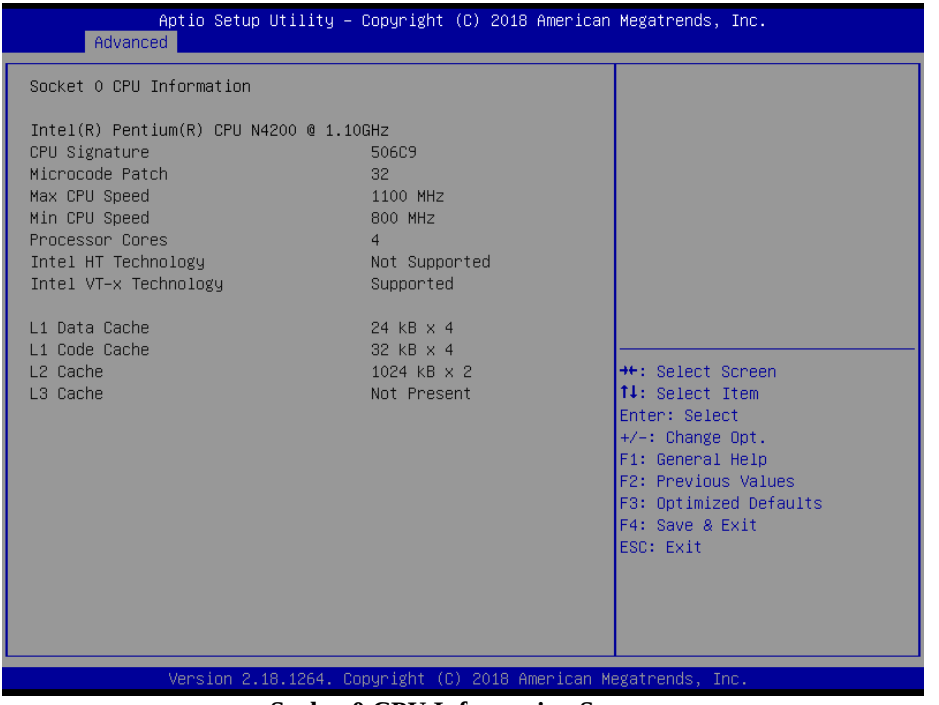


CPU Configuration Screen

BIOS Setting	Options	Description/Purpose
Socket 0 CPU Information	Sub-Menu	Reports CPU Information.
CPU Power Management	Sub-Menu	CPU Power Management options
Intel Virtualization Technology	- Disabled - Enabled	When enabled, a VMM (Virtual Machine Monitor) can utilize the additional hardware capabilities provided by Vanderpool Technology (VT).
VT-d	- Disabled - Enabled	Enables or Disables VT-d function.

Socket 0 CPU Information

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



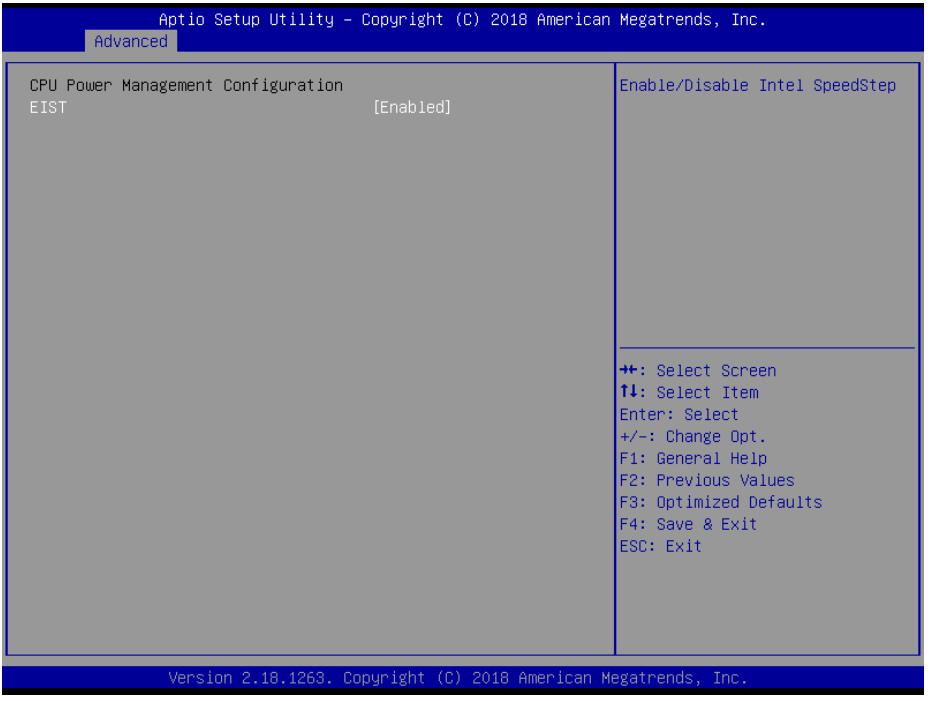
Socket 0 CPU Information Screen

BIOS Setting	Options	Description/Purpose
Microcode Patch	No changeable options	CPU Microcode Patch Revision.
Max CPU Speed	No changeable options	Displays the CPU Max Speed.
Min CPU Speed	No changeable options	Displays the CPU Min Speed.
Processor Cores	No changeable options	Displays number of cores.
Intel HT Technology	No changeable options	Reports if Intel Hyper-Threading Technology is supported by processor
Intel VT-x Technology	No changeable options	Reports if Intel VT-x Technology is supported by processor.
L1 Data Cache	No changeable options	L1 Data Cache Size.
L1 Code Cache	No changeable options	L1 Code Cache Size.
L2 Cache	No changeable options	L2 Cache Size.

BIOS Setting	Options	Description/Purpose
L3 Cache	No changeable options	L3 Cache Size.

CPU Power Management

Menu Path *Advanced > CPU Configuration > CPU Power Management*

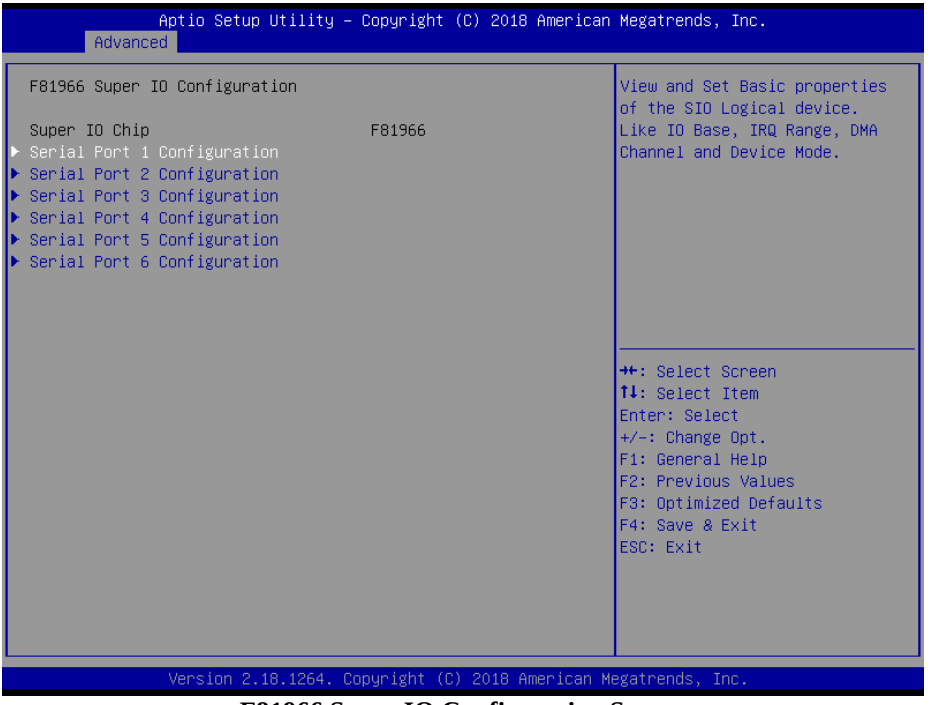


CPU Power Management Screen

BIOS Setting	Options	Description/Purpose
EIST	- Disabled - Enabled	Enables or Disables Intel SpeedStep.

5.4.8 Advanced – F81966 Super IO Configuration

Menu Path *Advanced > F81966 Super IO Configuration*

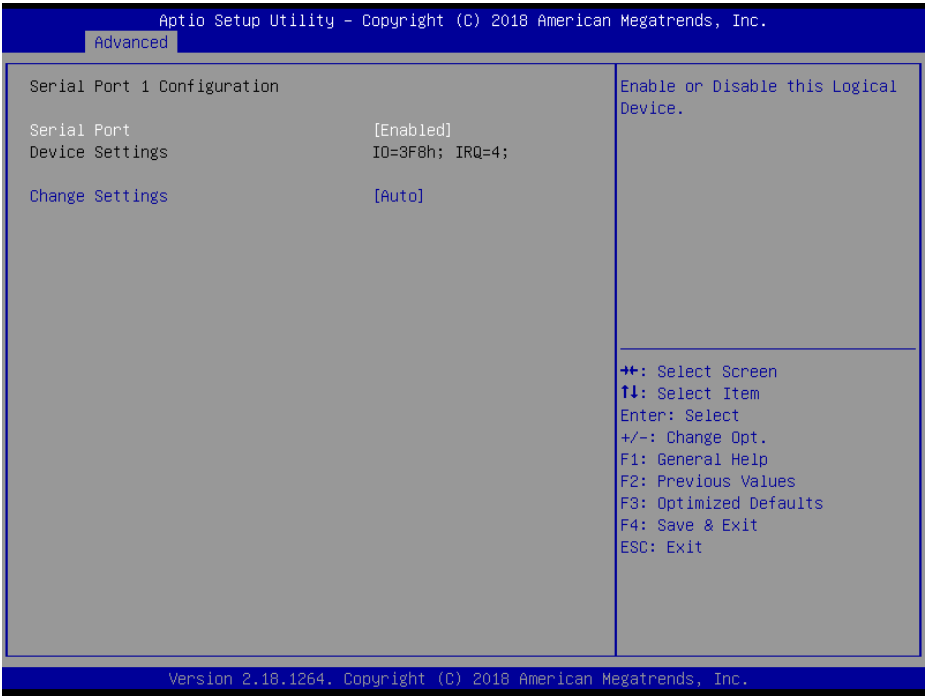


F81966 Super IO Configuration Screen

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 Parameters of Serial Port 1 (COMA).
Serial Port 2 Configuration	Sub-Menu	Sets Parameters of Serial Port 2 (COMB).
Serial Port 3 Configuration	Sub-Menu	Sets Parameters of Serial Port 3 (COMC).
Serial Port 4 Configuration	Sub-Menu	Sets Parameters of Serial Port 4 (COMD).
Serial Port 5 Configuration	Sub-Menu	Sets Parameters of Serial Port 5 (COME).
Serial Port 6 Configuration	Sub-Menu	Sets Parameters of Serial Port 6 (COMF).

Serial Port 1 Configuration

Menu Path *Advanced > F81966 Super IO Configuration > Serial Port 1 Configuration*

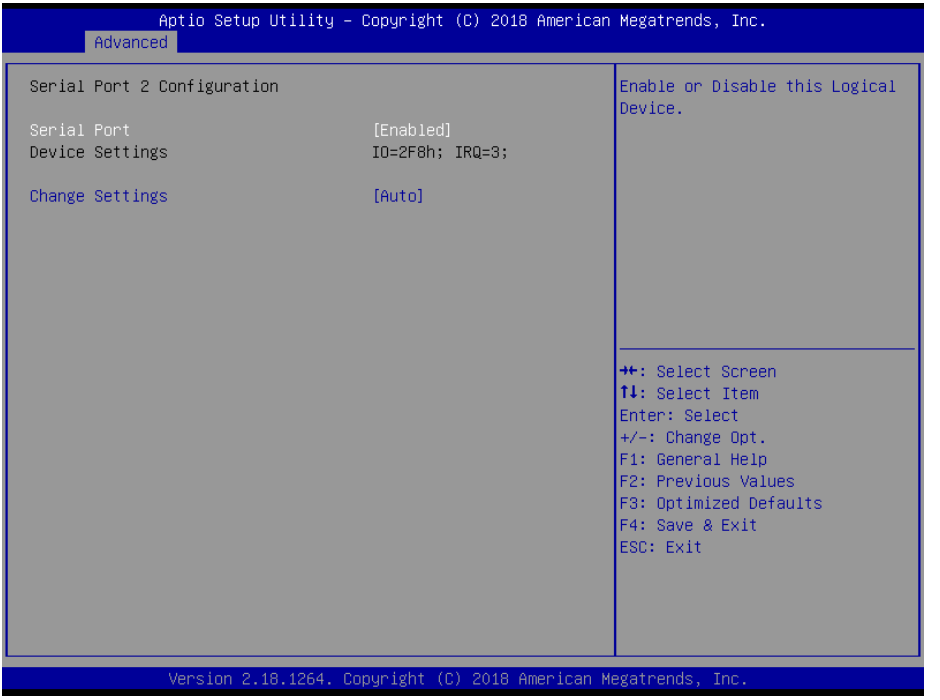


Serial Port 1 Configuration Screen

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.
Change Settings	- Auto - IO=3F8h; IRQ=4; - IO=3F8h; IRQ=3,4,5,7,9,10,11,12; - IO=2F8h; IRQ=3,4,5,7,9,10,11,12; - IO=3E8h; IRQ=3,4,5,7,9,10,11,12; - IO=2E8h; IRQ=3,4,5,7,9,10,11,12;	Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.

Serial Port 2 Configuration

Menu Path *Advanced > F81966 Super IO Configuration > Serial Port 2 Configuration*

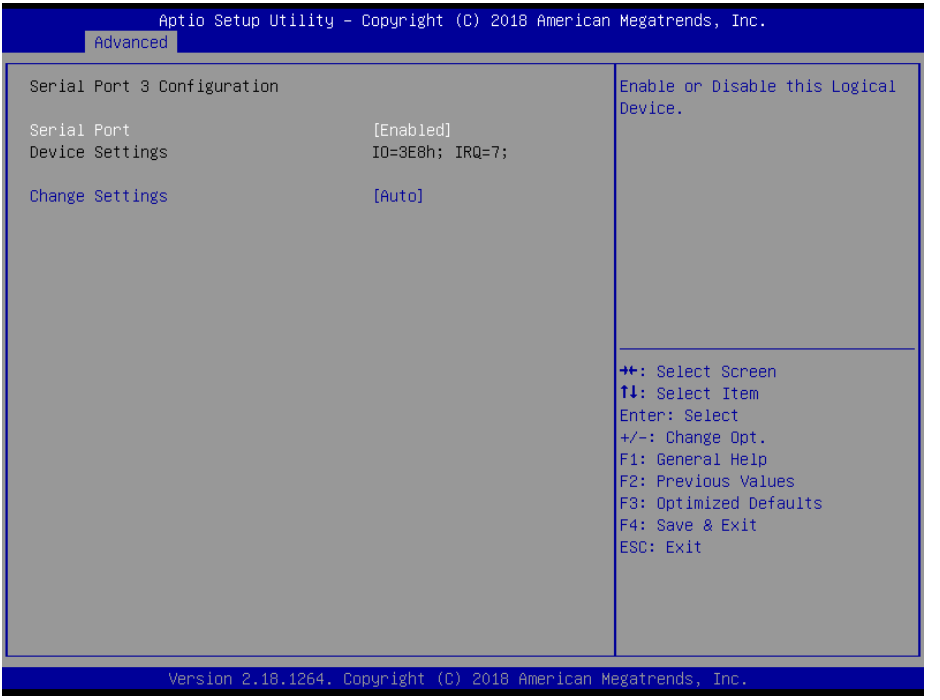


Serial Port 2 Configuration Screen

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	- Auto - IO=2F8h; IRQ=3; - IO=3F8h; IRQ=3,4,5,7,9,10,11,12; - IO=2F8h; IRQ=3,4,5,7,9,10,11,12; - IO=3E8h; IRQ=3,4,5,7,9,10,11,12; - IO=2E8h; IRQ=3,4,5,7,9,10,11,12;	Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.

Serial Port 3 Configuration

Menu Path *Advanced > F81966 Super IO Configuration > Serial Port 3 Configuration*

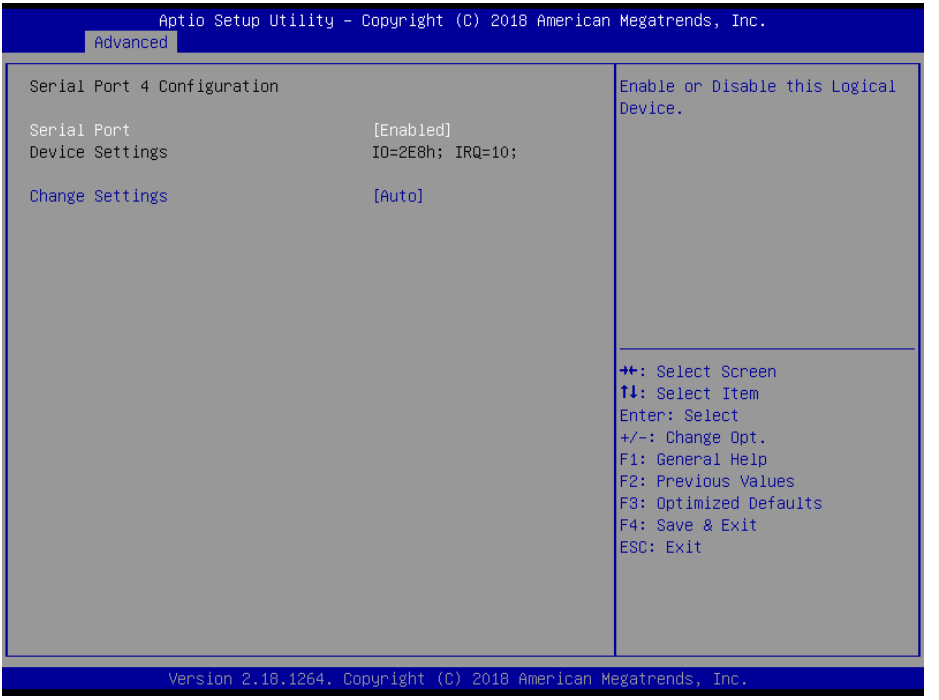


Serial Port 3 Configuration Screen

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	- Auto - IO=3E8h; IRQ=7; - IO=3F8h; IRQ=3,4,5,7,9,10,11,12; - IO=2F8h; IRQ=3,4,5,7,9,10,11,12; - IO=3E8h; IRQ=3,4,5,7,9,10,11,12; - IO=2E8h; IRQ=3,4,5,7,9,10,11,12;	Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.

Serial Port 4 Configuration

Menu Path *Advanced > F81966 Super IO Configuration > Serial Port 4 Configuration*

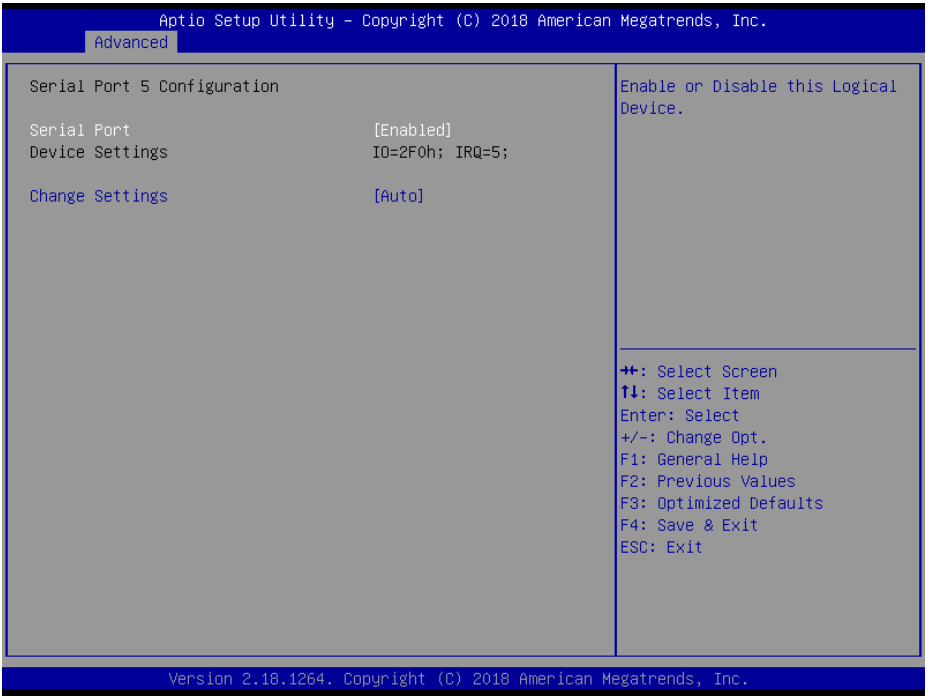


Serial Port 4 Configuration Screen

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	- Auto - IO=2E8h; IRQ=10; - IO=3F8h; IRQ=3,4,5,7,9,10,11,12; - IO=2F8h; IRQ=3,4,5,7,9,10,11,12; - IO=3E8h; IRQ=3,4,5,7,9,10,11,12; - IO=2E8h; IRQ=3,4,5,7,9,10,11,12;	Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.

Serial Port 5 Configuration

Menu Path *Advanced > F81966 Super IO Configuration > Serial Port 5 Configuration*

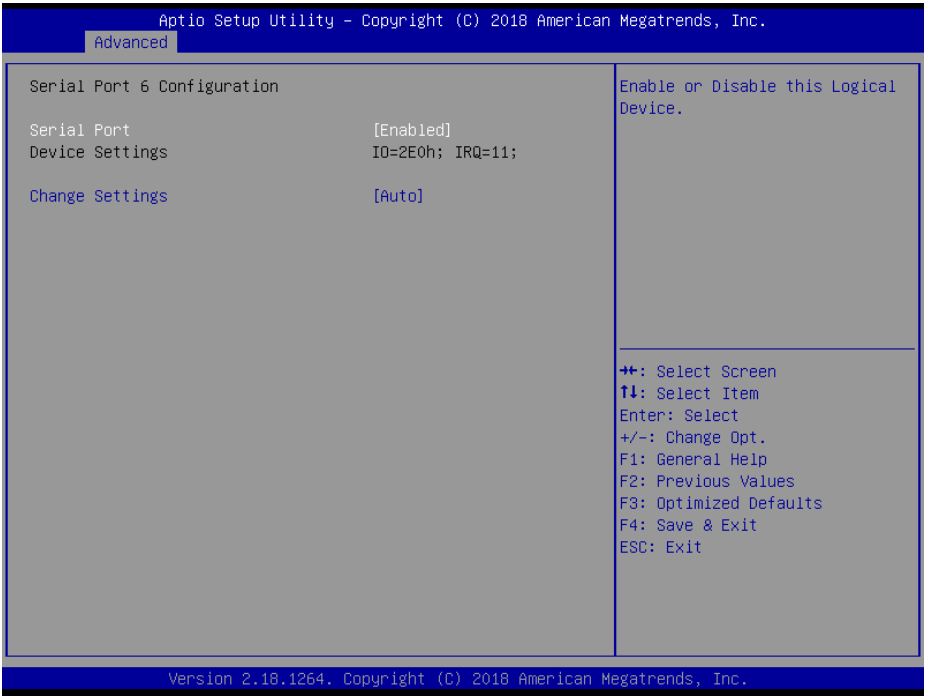


Serial Port 5 Configuration Screen

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	- Auto - IO=2F0h; IRQ=5; - IO=3F8h; IRQ=3,4,5,7,9,10,11,12; - IO=2F8h; IRQ=3,4,5,7,9,10,11,12; - IO=3E8h; IRQ=3,4,5,7,9,10,11,12; - IO=2E8h; IRQ=3,4,5,7,9,10,11,12;	Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.

Serial Port 6 Configuration

Menu Path *Advanced > F81966 Super IO Configuration > Serial Port 6 Configuration*



Serial Port 6 Configuration Screen

BIOS Setting	Options	Description/Purpose
Serial Port	- Disabled - Enabled	Enables or Disables Serial Port 6.
Device Settings	No changeable options	Displays the current settings of Serial Port 6.
Change Settings	- Auto - IO=2E0h; IRQ=11; - IO=3F8h; IRQ=3,4,5,7,9,10,11,12; - IO=2F8h; IRQ=3,4,5,7,9,10,11,12; - IO=3E8h; IRQ=3,4,5,7,9,10,11,12; - IO=2E8h; IRQ=3,4,5,7,9,10,11,12;	Allows the user to change the device resource settings. New settings will be reflected on this setup page after system restarts.

5.4.9 Advanced – Network Stack Configuration

Menu Path *Advanced > Network Stack Configuration*

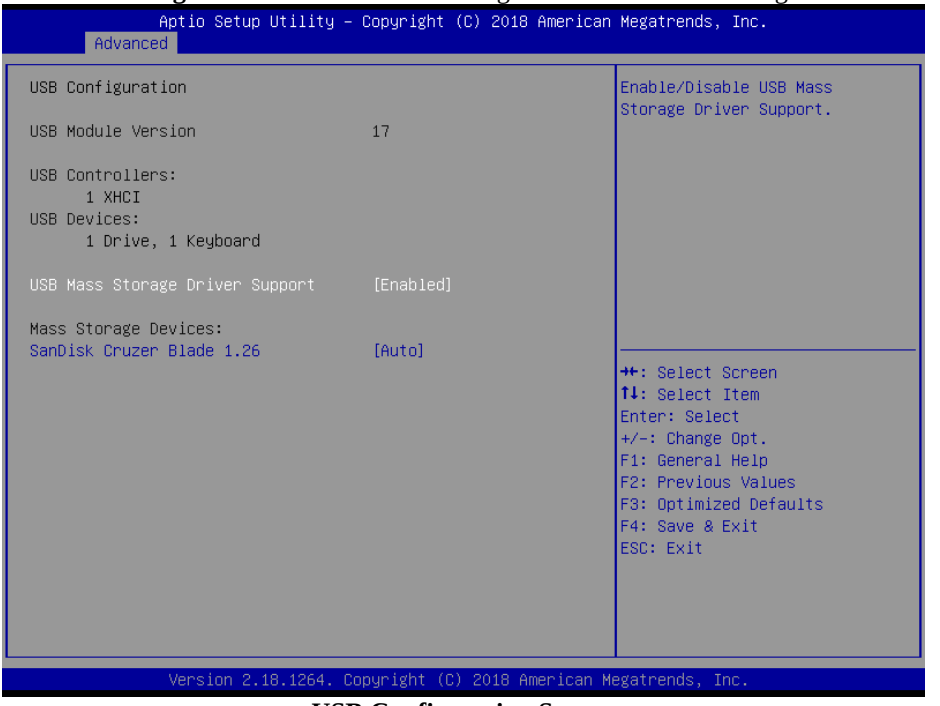
Network Stack Configuration Screen

BIOS Setting	Options	Description/Purpose
Network Stack	- Disabled - Enabled	Enables or Disables UEFI Network Stack.
Ipv4 PXE Support	- Disabled - Enabled	Enables Ipv4 PXE Boot Support. If disabled, Ipv4 PXE boot option will not be created.
Ipv6 PXE Support	- Disabled - Enabled	Enables Ipv6 PXE Boot Support. If disabled, Ipv6 PXE boot option will not be created.
PXE boot wait time	Numeric (from 0 to 5)	Wait time to press ESC key to abort the PXE boot.
Media detect count	Numeric (from 1 to 50)	Numbers of times presence of media will be checked.

5.4.10 Advanced – USB Configuration

Menu Path *Advanced > USB Configuration*

The **USB Configuration** allows users to configure advanced USB settings.



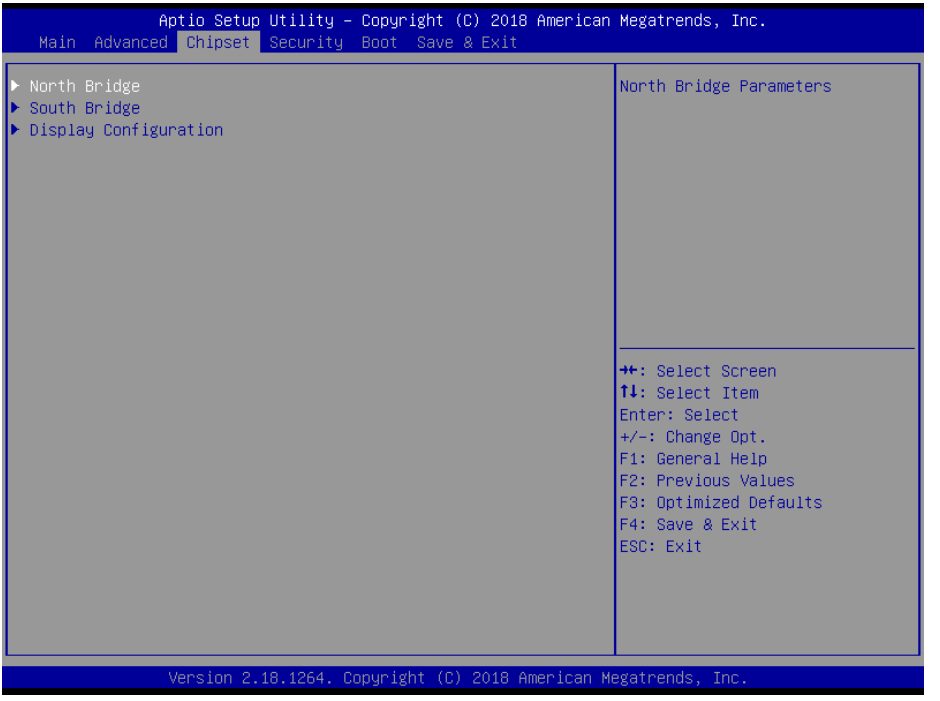
USB Configuration Screen

BIOS Setting	Options	Description/Purpose
USB Mass Storage Driver Support	- Disabled - Enabled	Enables or Disables USB Mass Storage Driver Support.

5.5 Chipset

Menu Path *Chipset*

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

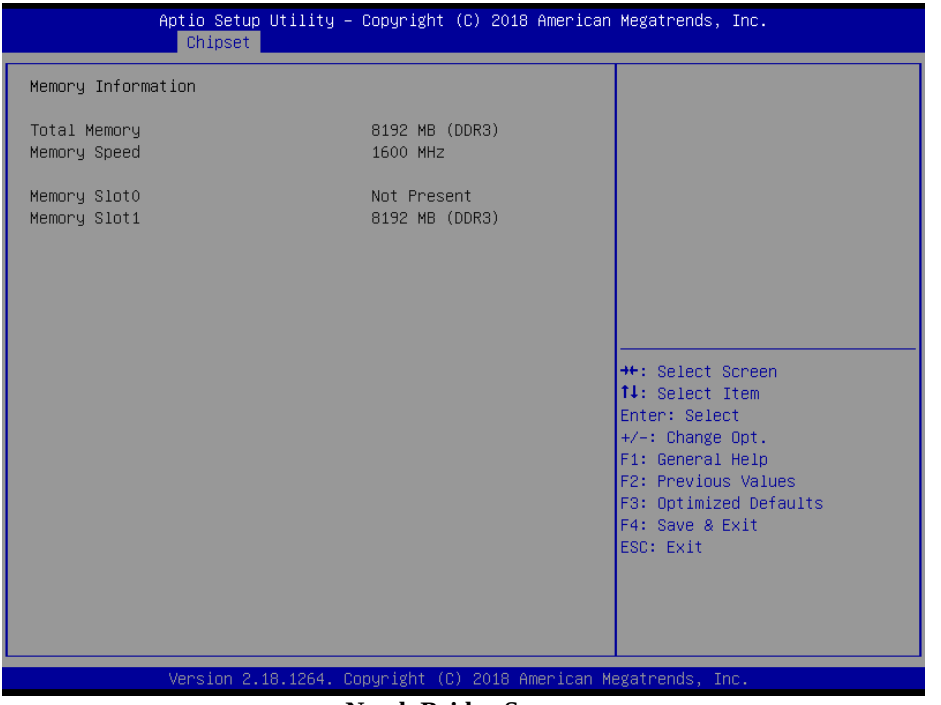


Chipset Screen

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.
Display Configuration	Sub-Menu	Display Parameters.

5.5.1 Chipset – North Bridge

Menu Path *Chipset > North Bridge*



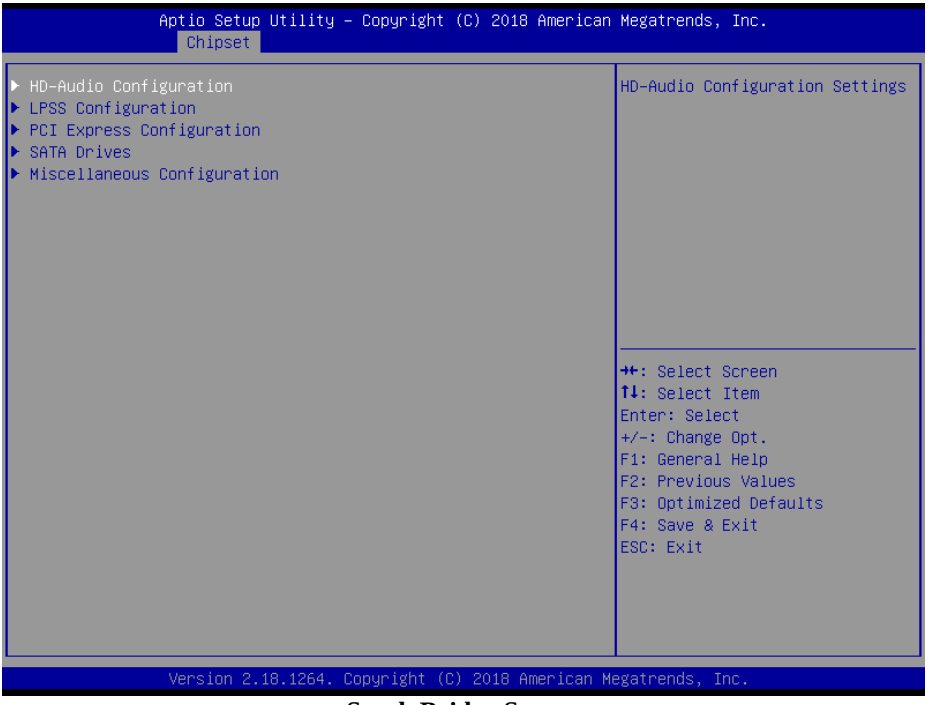
North Bridge Screen

BIOS Setting	Options	Description/Purpose
Total Memory	No changeable options	Displays the Total Memory.
Memory Speed	No changeable options	Displays the speed of Memory
Memory Slot0	No changeable options	Displays the size of Slot 0
Memory Slot1	No changeable options	Displays the size of Slot 1

5.5.2 Chipset – South Bridge

Menu Path *Chipset > South Bridge*

The **South Bridge** allows users to configure computer's I/O functions.

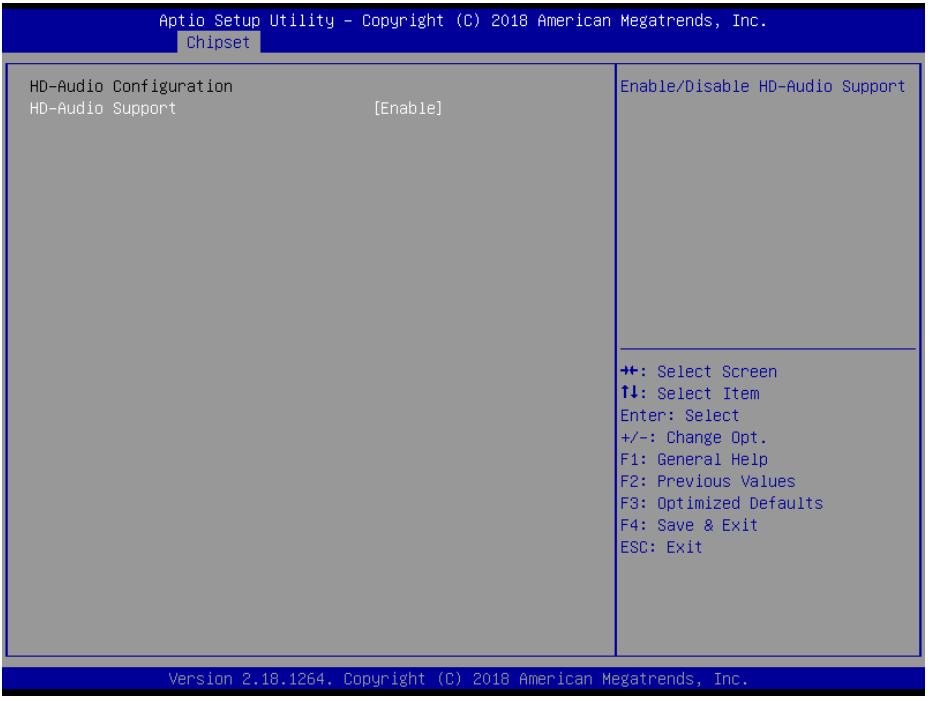


South Bridge Screen

BIOS Setting	Options	Description/Purpose
HD-Audio Configuration	Sub-Menu	HD-Audio Configuration Settings
LPSS Configuration	Sub-Menu	LPSS Configuration Settings.
PCI Express Configuration	Sub-Menu	PCI Express Configuration Settings.
SATA Drives	Sub-Menu	SATA Device Configuration Settings.
Miscellaneous Configurations	Sub-Menu	Miscellaneous Configurations Settings.

HD-Audio Configuration

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

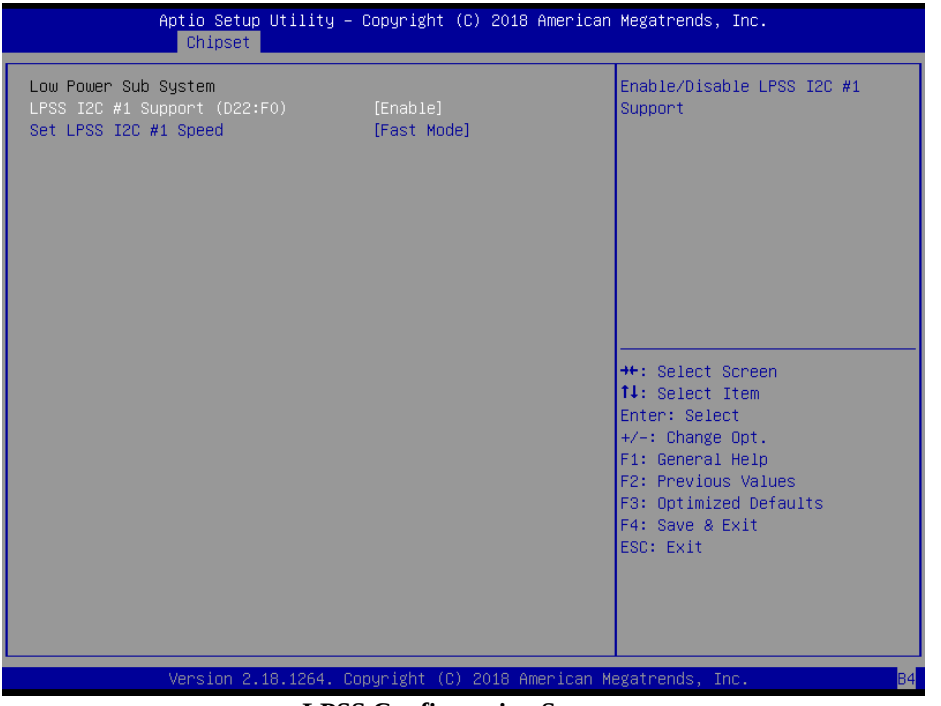


HD-Audio Configuration Screen

BIOS Setting	Options	Description/Purpose
HD-Audio Support	- Disabled - Enabled	Enables or Disables HD-Audio Support.

LPSS Configuration

Menu Path *Chipset > South Bridge > LPSS Configuration*

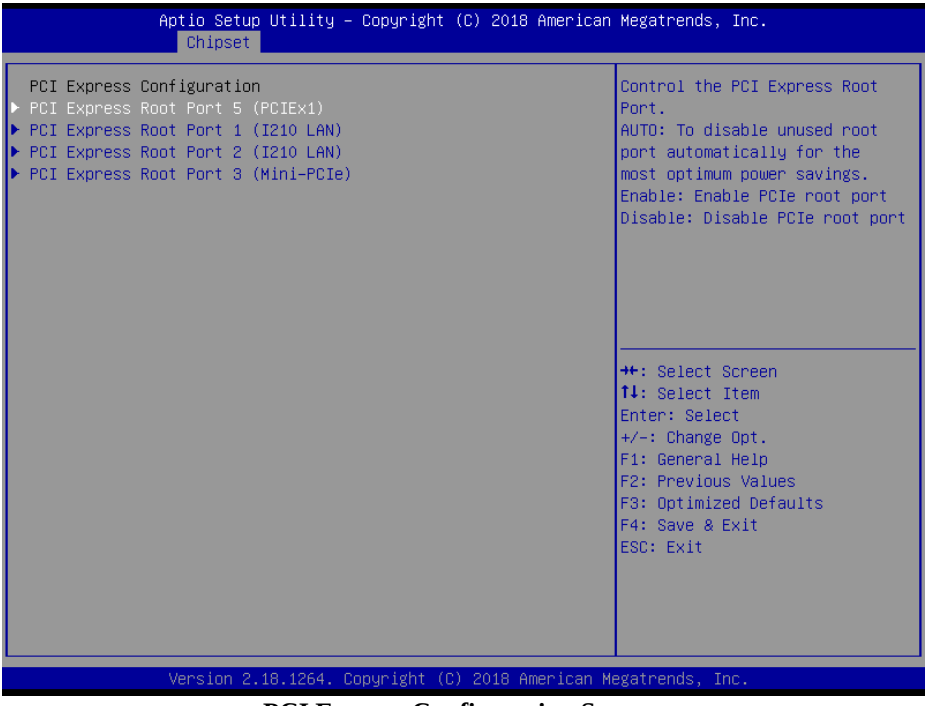


LPSS Configuration Screen

BIOS Setting	Options	Description/Purpose
LPSS I2C2 #1 Support(D22:F0)	- Disabled - Enabled	Enables or Disables LPSS I2C #1 Support.
Set I2C2 Speed	- Standard Mode - Fast Mode - Fast Plus Mode - High Speed Mode	Selects I2C2 Speed

PCI Express Configuration

Menu Path *Chipset > South Bridge > PCI Express Configuration*

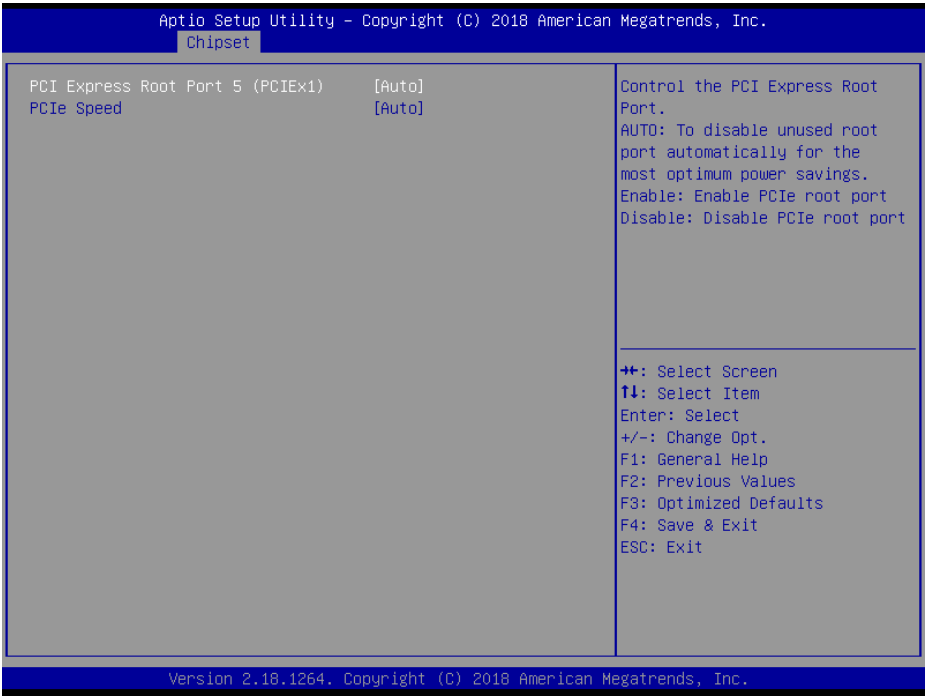


PCI Express Configuration Screen

BIOS Setting	Options	Description/Purpose
PCI Express Root Port 5 (PCIEx 1)	Sub-Menu	PCI Express Root Port 5 (PCIEx 1) Settings.
PCI Express Root Port 1 (I210 LAN)	Sub-Menu	PCI Express Root Port 1 (I210 LAN) Settings.
PCI Express Root Port 2 (I210 LAN)	Sub-Menu	PCI Express Root Port 2 (I210 LAN) Settings.
PCI Express Root Port 3 (Mini-PCIe)	Sub-Menu	PCI Express Root Port 2 (Mini-PCIe) Settings.

PCI Express Root Port 5 (PCIEx1)

Menu Path *Chipset > South Bridge > PCI Express Configuration > PCI Express Root Port 5 (PCIEx1)*

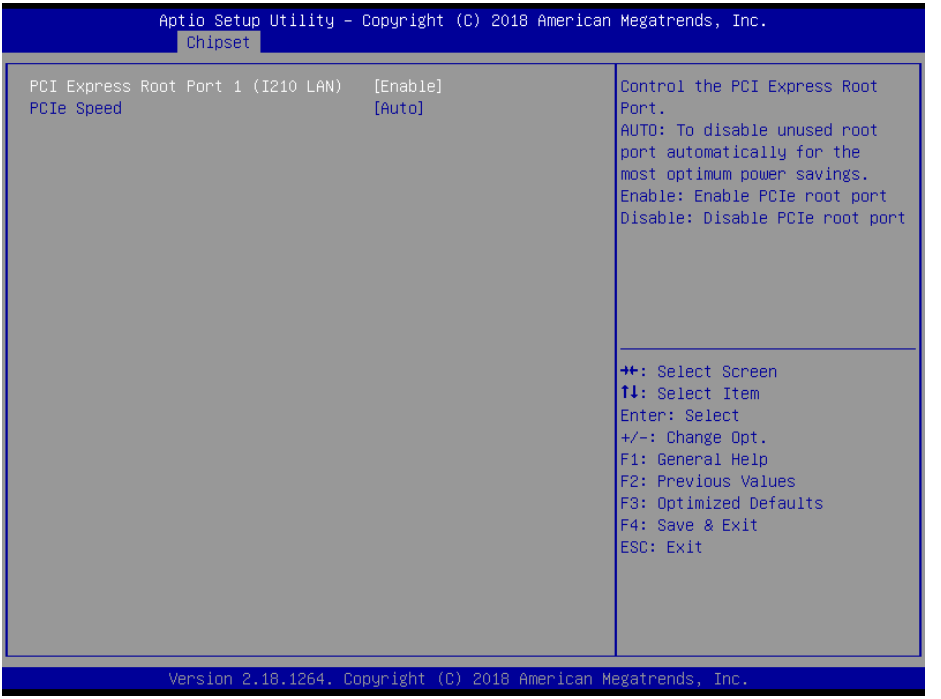


PCI Express Root Port 5 (PCIEx1) Screen

BIOS Setting	Options	Description/Purpose
PCI Express Root Port 5 (PCIEx 1)	- Disable - Enable - Auto	Controls the PCI Express Root Port. **AUTO:** To disable unused root port automatically for the most optimum power savings. **Enable:** Enables PCIe root port. **Disable:** Disables PCIe root port.
PCIe Speed	- Auto - Gen1 - Gen2	Configures PCIe Speed.

PCI Express Root Port 1 (I210 LAN)

Menu Path *Chipset > South Bridge > PCI Express Configuration > PCI Express Root Port 1 (I210 LAN)*

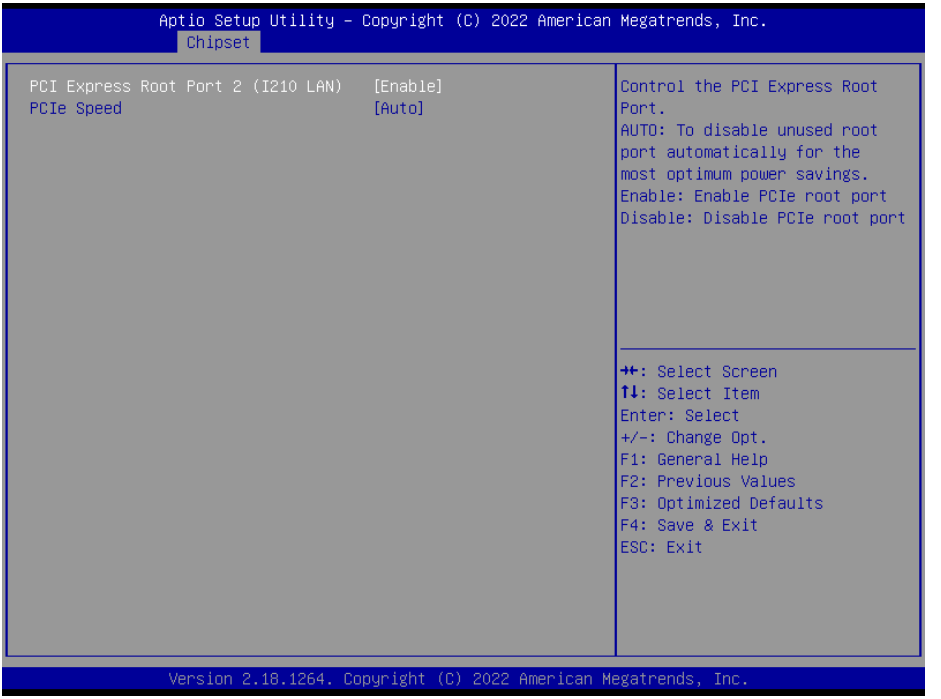


PCI Express Root Port 1 (I210 LAN) Screen

BIOS Setting	Options	Description/Purpose
PCI Express Root Port 1 (I210 LAN)	- Disable - Enable - Auto	Controls the PCI Express Root Port. **AUTO:** To disable unused root port automatically for the most optimum power savings. **Enable:** Enable PCIe root port. **Disable:** Disable PCIe root port.
PCIe Speed	- Auto - Gen1 - Gen2	Configures PCIe Speed.

PCI Express Root Port 2 (I210 LAN)

Menu Path *Chipset > South Bridge > PCI Express Configuration > PCI Express Root Port 2 (I210 LAN)*

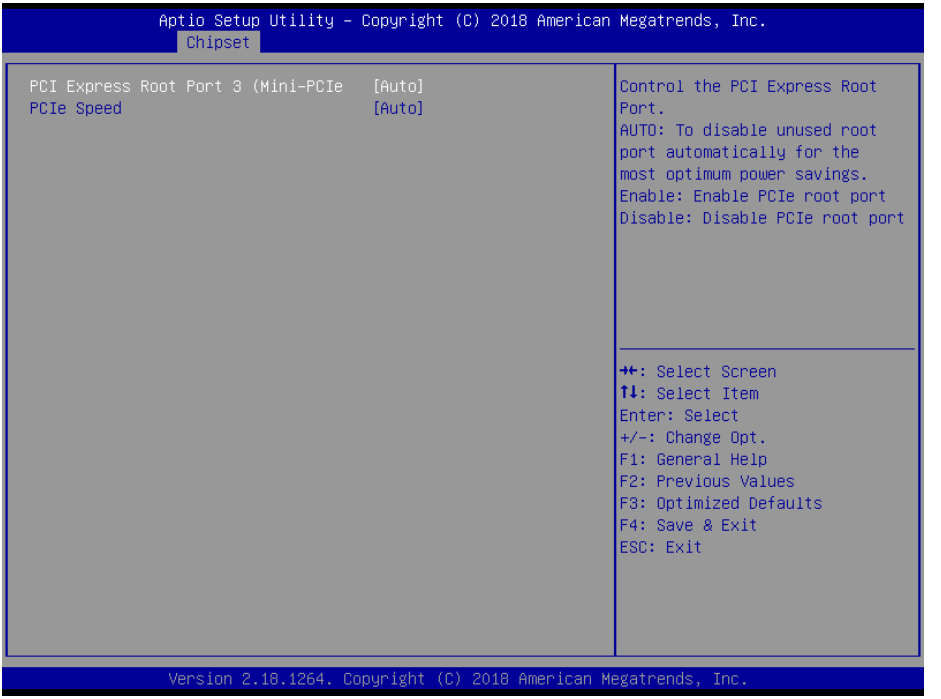


PCI Express Root Port 2 (I210 LAN) Screen

BIOS Setting	Options	Description/Purpose
PCI Express Root Port 2 (I210 LAN)	- Disable - Enable - Auto	Controls the PCI Express Root Port. **AUTO:** To disable unused root port automatically for the most optimum power savings. **Enable:** Enable PCIe root port. **Disable:** Disable PCIe root port.
PCIe Speed	- Auto - Gen1 - Gen2	Configures PCIe Speed.

PCI Express Root Port 3 (Mini-PCIe)

Menu Path *Chipset > South Bridge > PCI Express Configuration > PCI Express Root Port 3 (Mini-PCIe)*

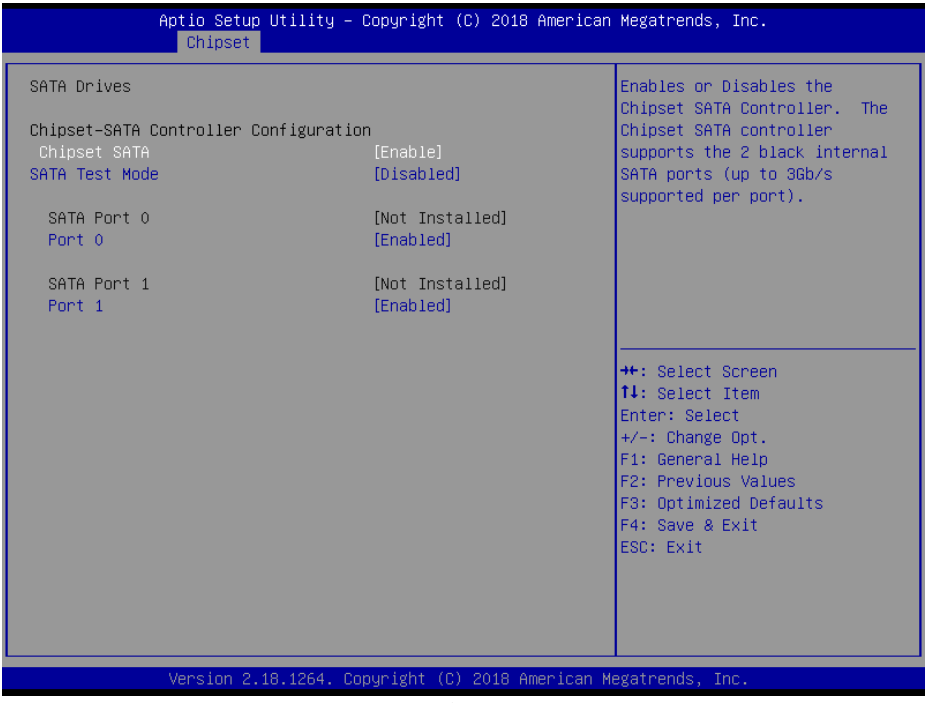


PCI Express Root Port 3 (Mini-PCIe) Screen

BIOS Setting	Options	Description/Purpose
PCI Express Root Port 3 (Mini-PCIe)	- Disable - Enable - Auto	Controls the PCI Express Root Port. **AUTO:** To disable unused root port automatically for the most optimum power savings. **Enable:** Enables PCIe root port. **Disable:** Disables PCIe root port.
PCIe Speed	- Auto - Gen1 - Gen2	Configures PCIe Speed.

SATA Drives

Menu Path *Chipset > South Bridge > SATA Drives*

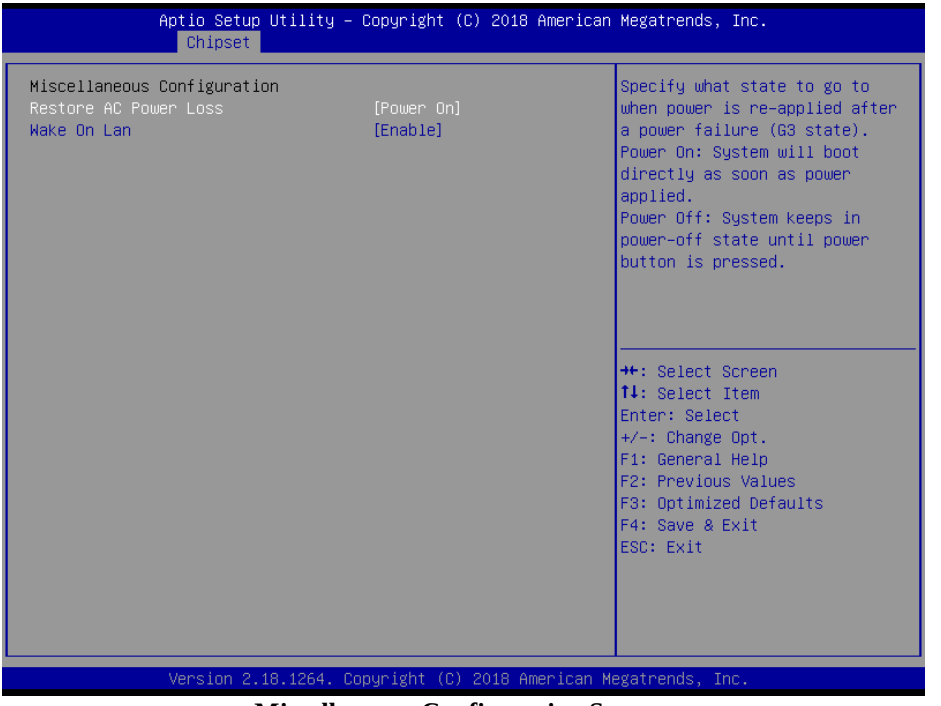


SATA Drives Screen

BIOS Setting	Options	Description/Purpose
Chipset SATA	- Disabled - Enabled	Enables or Disables the Chipset SATA Controller.
SATA Test Mode	- Disabled - Enabled	Test Mode Enabled/Disabled.
SATA Port 0	No changeable options	Displays the connected device on SATA Port 0
Port 0	- Disabled - Enabled	Enable or Disable SATA Port 0
SATA Port 1	No changeable options	Displays the connected device on SATA Port 1
Port 1	- Disabled - Enabled	Enables or Disables SATA Port 1

Miscellaneous Configuration

Menu Path *Chipset > South Bridge > Miscellaneous Configuration*



Miscellaneous Configuration Screen

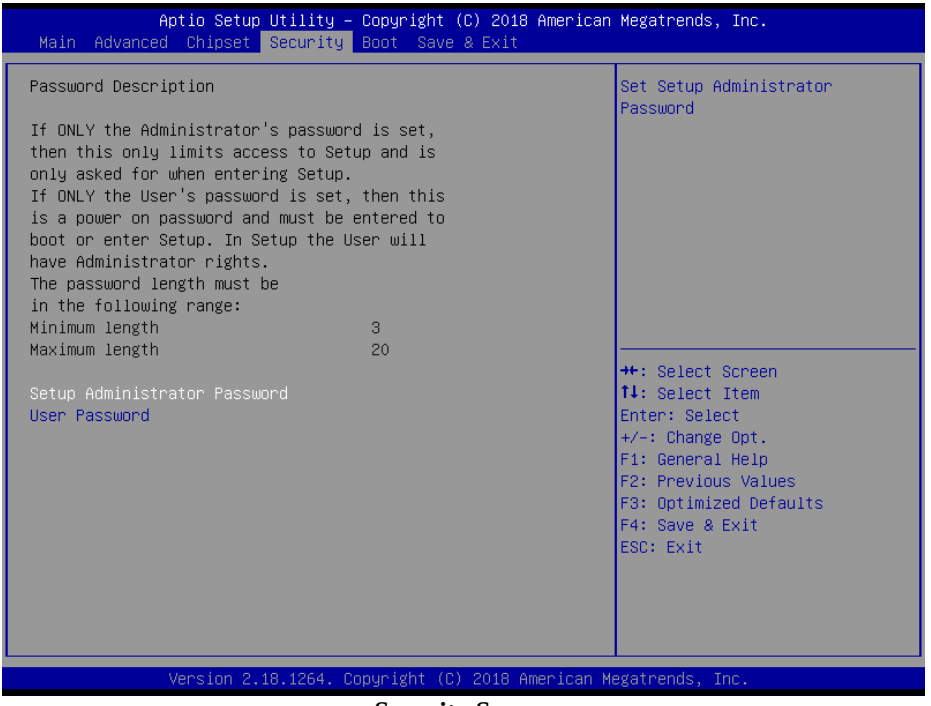
BIOS Setting	Options	Description/Purpose
Restore AC Power Loss	- Power On - Power Off	Specify what state to go to when power is re-applied after power failure (G3 state). **S0 State:** System will boot directly as soon as power applied. **S5 State:** System will keeps in power-off state until power button is pressed.
Wake On Lan	- Disabled - Enabled	Enables or Disables the Wake-On-LAN.

5.6 Security

Menu Path *Security*

From the **Security** menu, you are allowed to configure or change 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. Heed that a user password does not provide access to most of the features in the Setup utility.



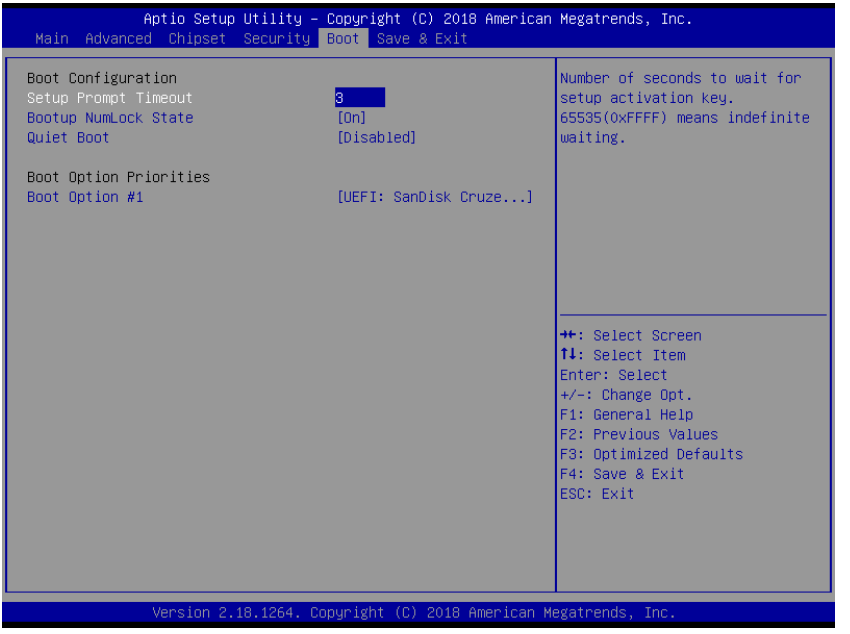
Security Screen

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.

5.7 Boot

Menu Path *Boot*

This menu provides control items for setting system boot configuration and boot priorities.



Boot Screen

BIOS Setting	Options	Description/Purpose
Setup Prompt Timeout	Numeric (from 1 to 65535)	Number of seconds to wait for setup activation key.
Bootup NumLock State	- On - Off	Specifies the NumLock state after the system is powered on. • **On:** Enables the NumLock function automatically after the system is powered on. • **Off:** Disables the NumLock function after the system is powered on.
Quiet Boot	- Disabled - Enabled	Enables or Disables Quiet Boot Options
Fast Boot	- Disabled - Enabled	Enables or Disables Fast Boot Options
Boot Option #1~#n	- [Drive(s)] - Disabled	Sets the system boot order.

5.8 Save & Exit

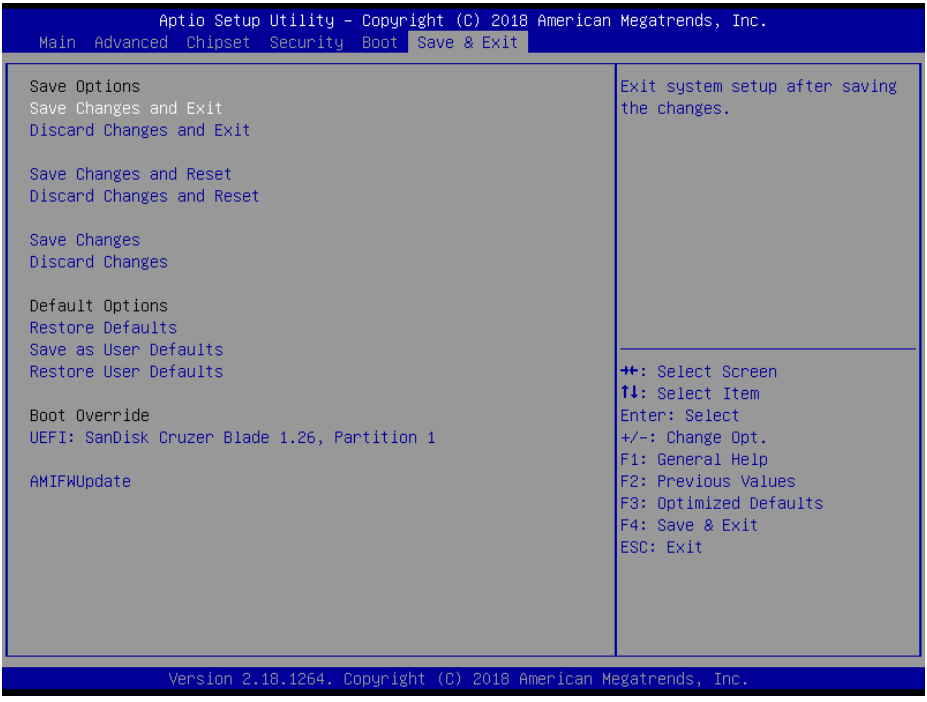
Menu Path *Save & Exit*

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** 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

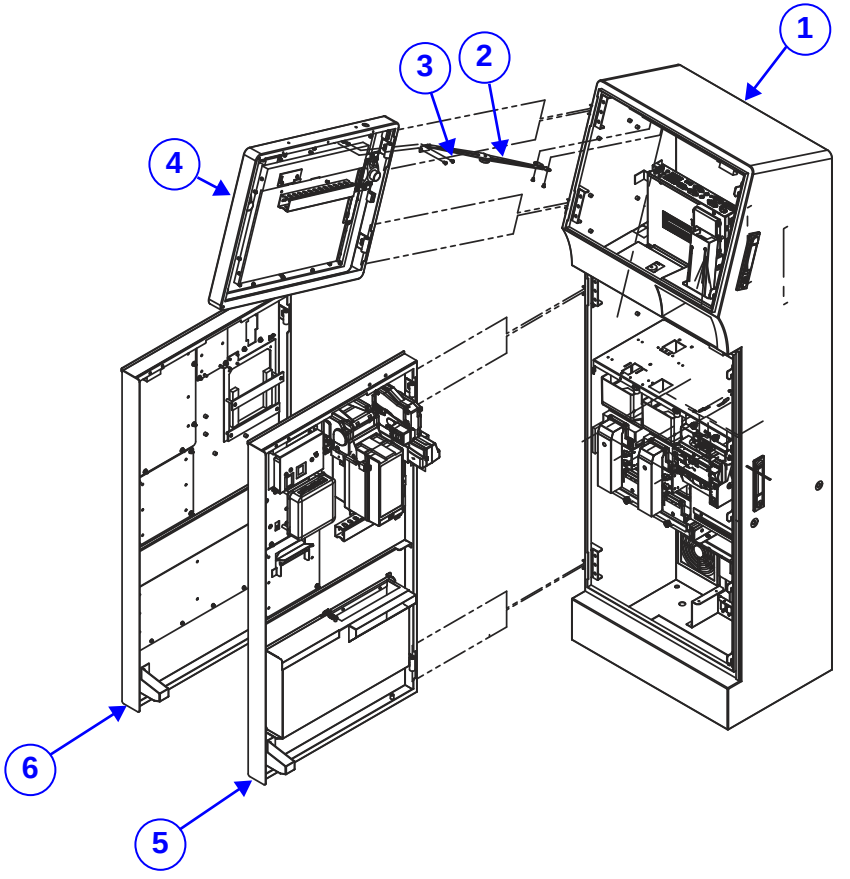
BIOS Setting	Options	Description/Purpose
Save Changes and Exit	No changeable options	Exits and saves the changes in NVRAM.
Discard Changes and Exit	No changeable options	Exits without saving any changes made in BIOS settings.
Save Changes and Reset	No changeable options	Saves the changes in NVRAM and resets.
Discard Changes and Reset	No changeable options	Resets without saving any changes made in BIOS settings.
Save Changes	No changeable options	Saves Changes done so far to any of the setup options.
Discard Changes	No changeable options	Discards Changes done so far to any of the setup options.
Restore Defaults	No changeable options	Loads the optimized defaults for BIOS settings.
Save as User Defaults	No changeable options	Saves the changes done so far as User Defaults.
Restore User Defaults	No changeable options	Restores the User Defaults to all the setup options.
Boot Override	- [Drive(s)]	Forces to boot from selected [drive(s)].

Appendix A System Diagrams

This appendix contains exploded diagrams and part numbers of KF-P231 system. The following topics are included:

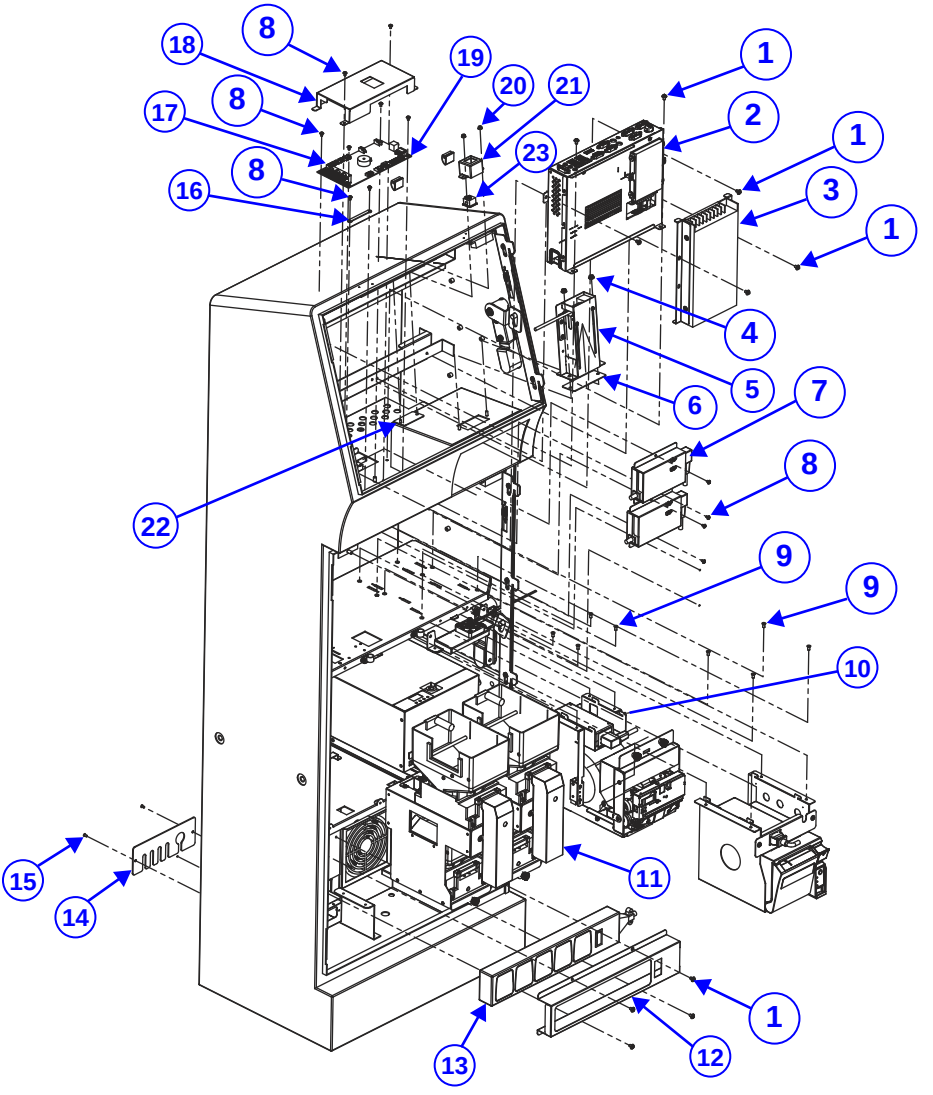
- Body Unit, Panel Unit, Front Door Unit Exploded Diagram
- Body Unit & Key Parts Exploded Diagrams
- Body Unit Assembly Exploded Diagrams
- Touch Panel Unit Assembly Exploded Diagram
- LCD Holder Assembly Exploded Diagram
- Key Pad Assembly Exploded Diagrams
- Payment Device Assembly Exploded Diagrams
- S80 Assembly Exploded Diagram
- MSC Reader / RFID / Payment Device Assembly Exploded Diagram
- Parkinsys's Device Assembly Exploded Diagram
- EasyCard Device Assembly Exploded Diagram
- No Device Door Style Assembly Exploded Diagrams
- Printer Assembly Exploded Diagram
- Mini Hopper Assembly Exploded Diagram (Without Coin Box Type)
- Mini Hopper Assembly Exploded Diagram (Single & Add Coin Barrel Type)
- Barcode Scanner Assembly Exploded Diagrams
- Banknote Machine Assembly Exploded Diagram
- Coin Door Assembly Exploded Diagram
- Door Lock Assembly Exploded Diagram
- BOX PC Assembly Exploded Diagram
- HDD Assembly Exploded Diagrams
- Light Box Exploded Diagram
- Speaker Holder and Fan Assembly Exploded Diagrams
- Power Adapter Assembly Exploded Diagrams
- Printer Door Assembly Exploded Diagrams
- Door Lock Assembly Exploded Diagram
- Printer Fan Assembly Exploded Diagram

Body Unit, Panel Unit, Front Door Unit Exploded Diagram



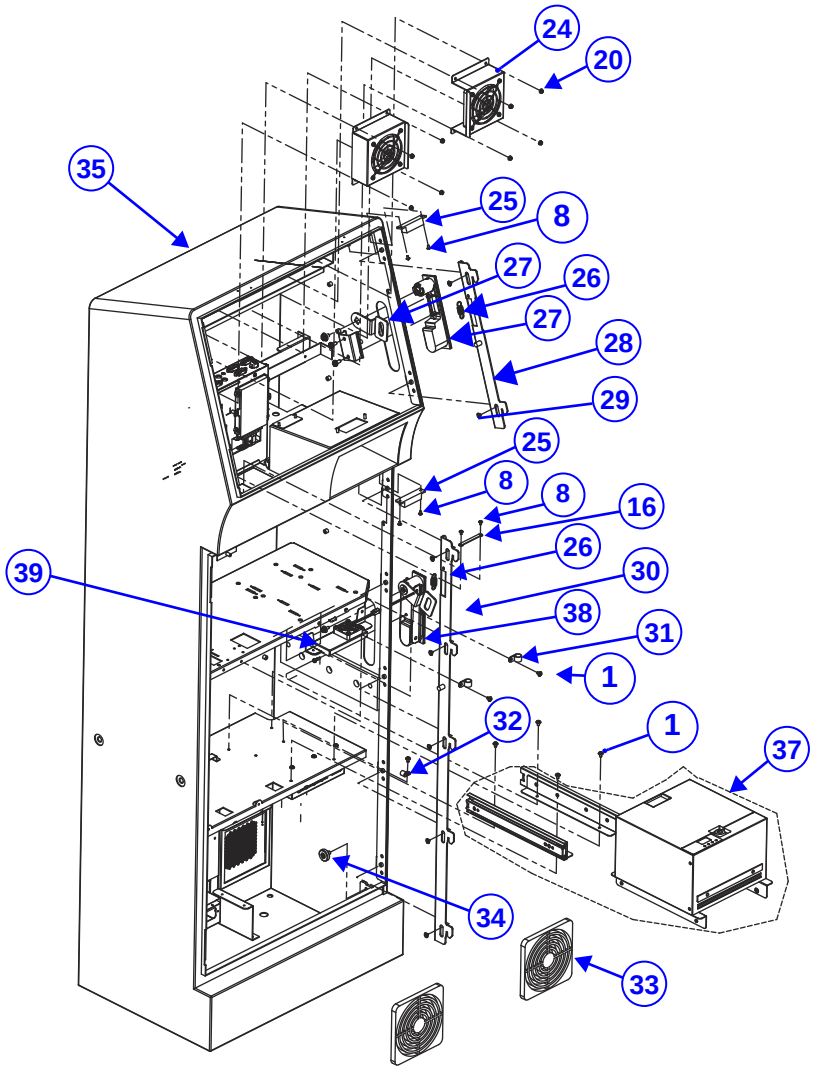
No.	Component Name	P/N No.	Q'ty
1	KF-7131 Body Unit	N/A	1
2	Door Stay	20-030-10031000	1
3	Round Head Screw #2 / M4x0.7Px5mm (Black)	22-235-40005911	4
4	KF-7232_Panel_Unit	N/A	2
5	KF-7232_F_Door_Unit	N/A	1
6	KF-7232_F_Simple_Door_Unit	N/A	1

Body Unit & Key Parts Exploded Diagram (1)



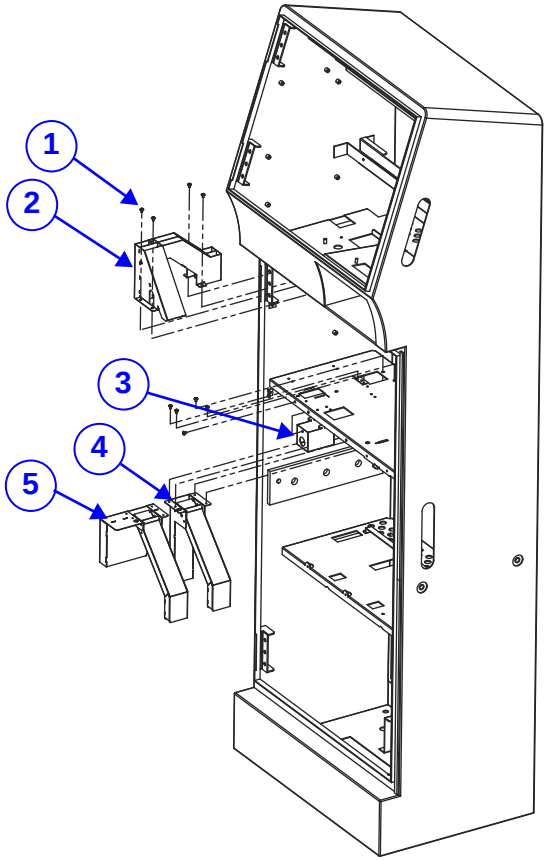
No.	Component Name	P/N No.	Q'ty
1	Round Washer Head Screw M4x0.7Px6mm	22-232-40006311	17
2	PCB Box Unit	N/A	1
3	12V_Power_Unit	N/A	1
4	Slip Nuts (M4x0.7P, H=4.5mm)	23-142-40450801	2
5	Barcode Unit	N/A	1
6	KF-7232 Without Barcode Cover (w/Paint) (Black C)	20-204-02113444	1
7	12V_FSP060_unit	N/A	2
8	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	16
9	Flat Head Screw Φ6.4 / M4x0.7Px8mm (Black)	22-215-40008711	8
10	KF-7232_Printer_Unit	N/A	1
11	7232_MH245_Unit_7232b	N/A	2
12	KF-7232 Extension Set Holder	20-229-02023444	1
13	AC Socket *5 Set	52-990-01050040	1
14	KF-7232 AC Socket Cover (w/Paint) (Gray)	20-204-02061444	1
	KF-7232 AC Socket Cover Black (w/Paint) (Black)	20-204-02115444	
15	Flat Head Screw (M3x0.5Px6mm (Black)	22-215-30060011	2
16	KF-7232 Switch Holder Lock	20-225-03001444	1
17	KR-7230	KR-7230	1
18	KF-7232 Top Cover for KR-7230RA	20-204-02001444	1
19	PC-6505NKC Tie Mount	30-023-04300010	2
20	Slip Nuts (M3x0.5P, H=4mm)	23-142-30400801	10
21	KF-7232 SW Box (w/Paint)(Black)	20-240-02067444	1
22	KF-7232 Without SW Cover (w/Paint) (Black)	20-204-02118444	1
23	KF-7232 Power Button Cable L=408mm	27-019-44409111	1

Body Unit & Key Parts Exploded Diagram (2)



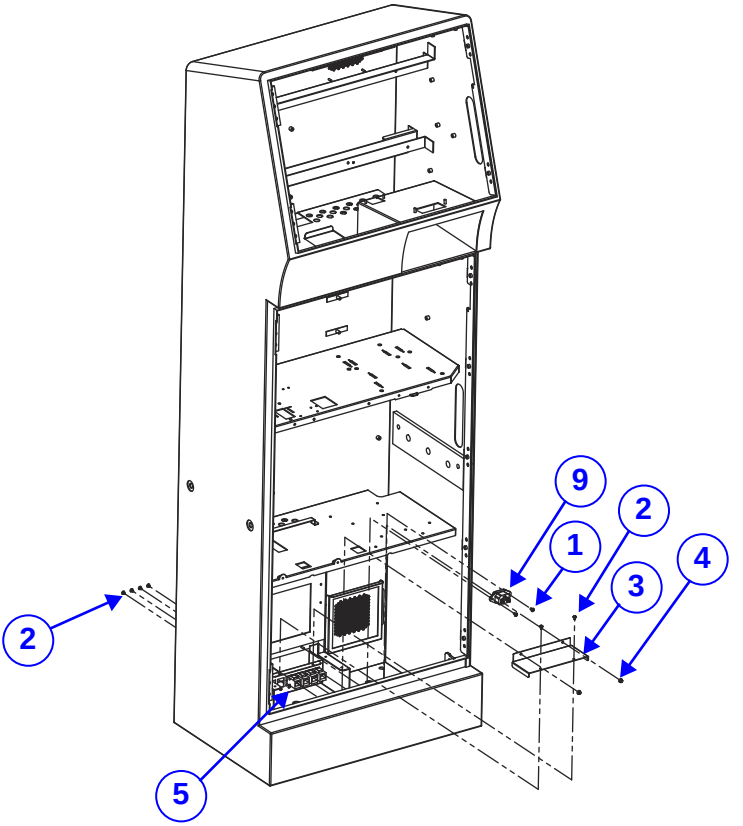
No.	Component Name	P/N No.	Q'ty	Remark
24	KF-7232 Fan Unit	N/A	2	See Page A-45
25	KF-7232 Alarm For Kiosk Door	52-990-42390058	2	
26	KF-7330 Panel Lock Spring (Φ10)	23-002-00001002	2	
27	MS818_for_7230	N/A	1	
28	KF-7232 U Lock	20-225-07002444	1	
29	Fillister Head Screw #2 / M4x0.7Px4mm	22-275-40004911	7	
30	KF-7232 L Lock	20-225-07001444	1	
31	Cable Clamp (Φ11mm)	90-023-04201000	2	
32	CABLE Clamp	90-023-04900000	1	
33	PK-7090 Plastic Filters (12cm)	30-089-28100284	2	
34	PK-7090 Plastic Wheel M6x1.0Px8mm (White)	22-281-60007001	1	
35	KF-P231_Body_asm	N/A	1	
36	KF- P231_TM-T70_Unit	N/A	1	
37	NDE-100_Unit_P231-B	N/A	1	See Page A-50
38	Auto Lock Flush Handles (Black)	20-025-38001444	1	
39	KF-P231_printer_fan_unit	N/A	1	See Page A-50
40	KF-P231_sys_unit	N/A	1	

Body Unit Assembly Exploded Diagram (1)



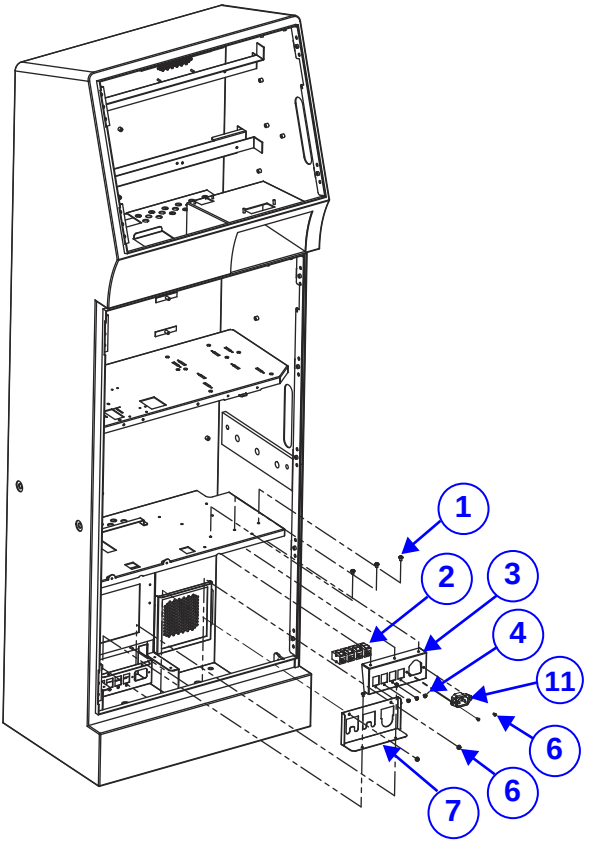
No.	Component Name	P/N No.	Q'ty
1	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	9
2	KF-7232 Coin Pole V2	20-256-07002444	1
3	KF-7232 Coin Pool-2	20-201-02001444	1
4	KF-7232 Coin Pole V3	20-256-07003444	1
5	KF-7232 Coin Pole V4	20-256-07004444	1
7	PORON (476x8x3mm)	90-013-24700000	1
8	PORON (476x8x3mm)	90-013-24700000	1

Body Unit Assembly Exploded Diagram (2)



No.	Component Name	P/N No.	Q'ty
1	Round Washer Head Screw #2 / M3x0.5Px7mm	22-232-30007011	2
2	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	6
3	KF-7232 AC Box Top Black (w/Paint) (Black)	20-240-02065444	1
4	Slip Nuts (M3x0.5P, H=4mm)	23-142-30400801	2
5	8P8C Modular Coupler Jack Shielded	10-085-08012135	4
7	PORON(476x8x3mm)	90-013-24700000	1
8	PORON(476x8x3mm)	90-013-24700000	1
9	KF-7130 AC Power Extend Cable L=200mm	27-012-36004111	1

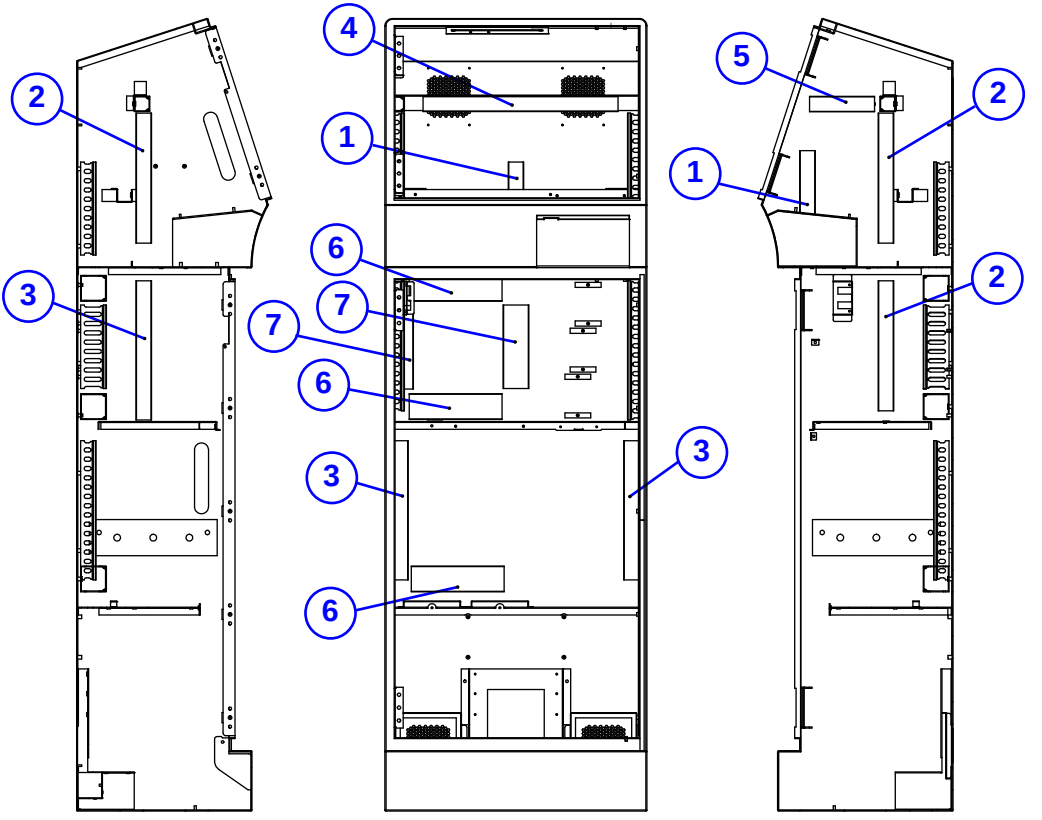
Body Unit Assembly Exploded Diagram (3-1)



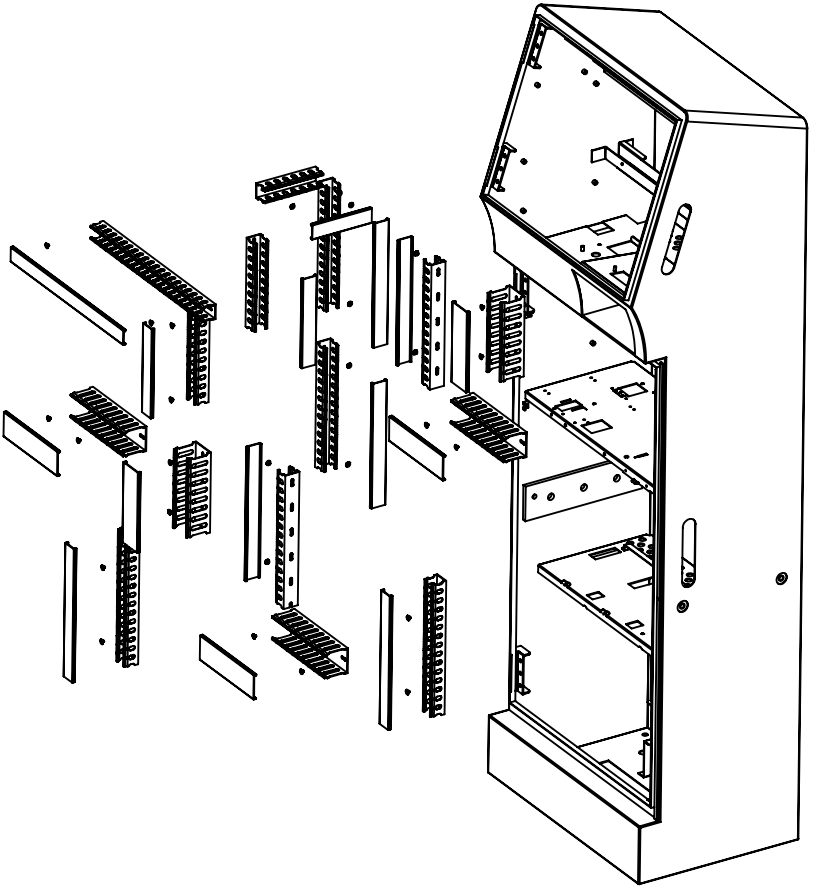
No.	Component Name	P/N No.	Q'ty
1	Round Washer Head Screw M4x0.7Px6mm	22-232-40006311	3
2	8P8C Modular Coupler Jack Shielded	10-085-08012135	4
3	KF-7232 AC Socket Panel	20-203-02001444	1
4	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	6
5	Flat Head Screw M3x0.5Px6mm(Black)	22-215-30060011	2
6	Slip Nuts (M3x0.5P, H=4mm)	23-142-30400801	2
7	KF-7232 AC Box Wall Black (w/Paint)(Black)	20-240-02066444	1
9	PORON (476x8x3mm)	90-013-24700000	1
10	PORON (476x8x3mm)	90-013-24700000	1
11	KF-7130 AC Power Extend Cable L=200mm	27-012-36004111	1

Body Unit Assembly Exploded Diagram (3-2)

Reference Diagram for Cable Slots Assembly

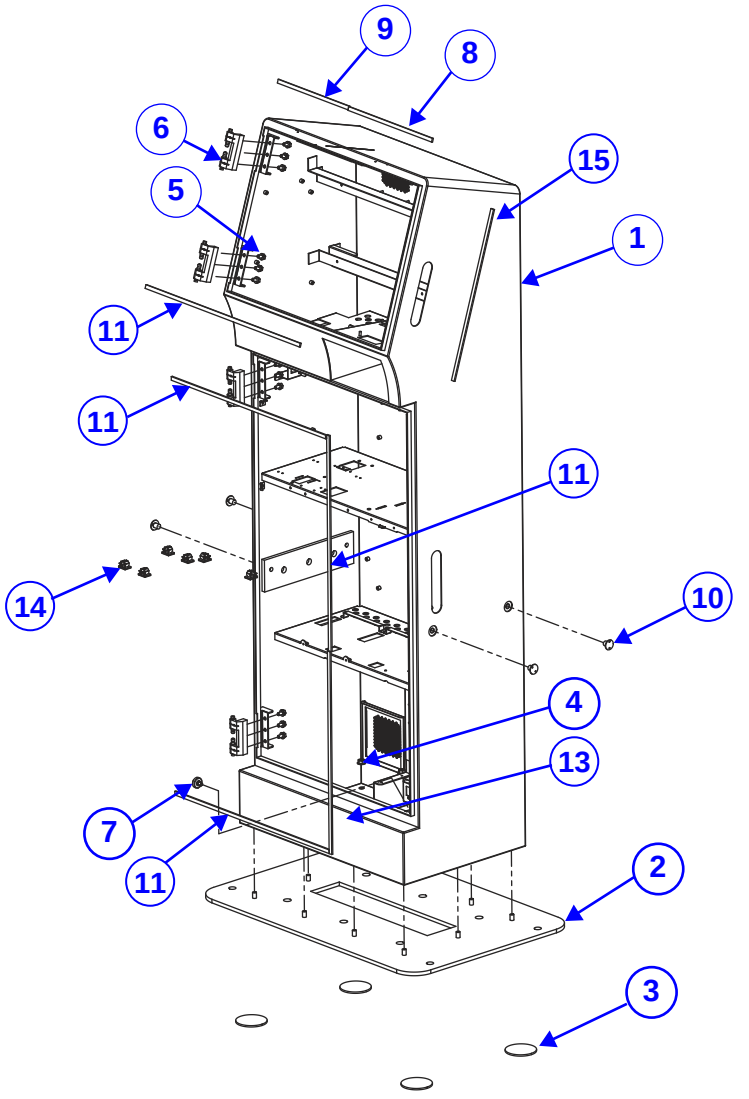


(continued on the next page)



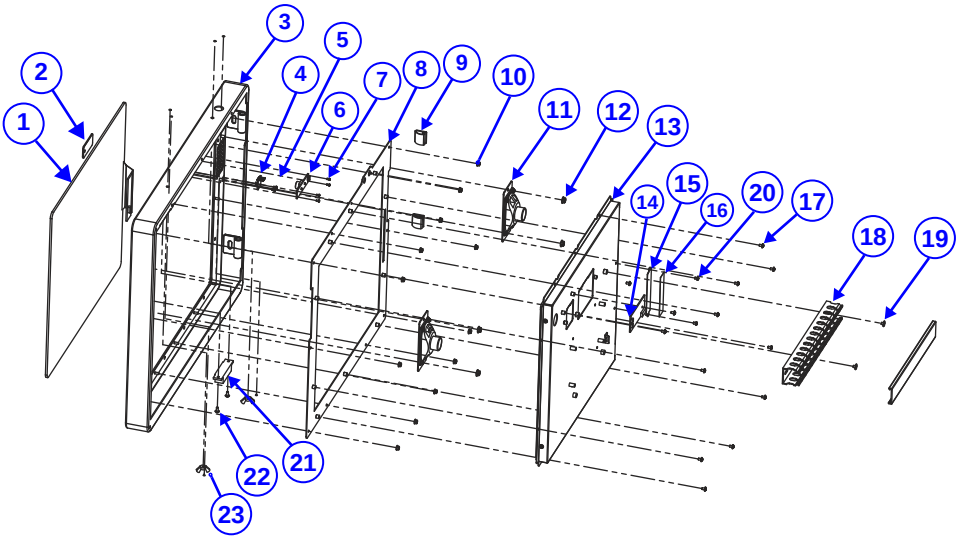
No.	Component Name	P/N No.	Q'ty	Remark
1	KSS_30*30_Slot (30x30x1700mm)	30-023-16100375	2	L198mm
2	KSS_30*30_Slot (30x30x1700mm)	30-023-16100375	3	L252mm
3	KSS_30*30_Slot (30x30x1700mm)	30-023-16100375	3	L270mm
4	KSS_30*30_Slot (30x30x1700mm)	30-023-16100375	1	L378mm
5	KSS_30*30_Slot (30x30x1700mm)	30-023-16100375	1	L126mm
6	KSS_50*50_Slot (50x50x1700mm)	30-023-16200375	3	L180mm
7	KSS_50*50_Slot (50x50x1700mm)	30-023-16200375	2	L162mm
9	Fillister Head Screw #2 / M4x0.7Px4mm	22-275-40004911	28	
10	PORON (476x8x3mm)	90-013-24700000	1	
11	PORON (476x8x3mm)	90-013-24700000	1	

Body Unit Assembly Exploded Diagram (4)



No.	Component Name	P/N No.	Q'ty	Remark
1	KF-7232 Body Spot Case (w/Paint)(Gray)	20-201-02061444	1	
	KF-7232 Body Spot Case Black (w/Paint)(Black)	20-201-02062444		
2	KF-7232 Foot (w/Paint) (Gray)	20-204-02021444	1	
	KF-7232 Foot Black (w/Paint)(Black)	20-204-02116444	1	
3	KF-7270 D65 T3 Rubber Foot (Φ 65x3mm)	90-004-01100439	4	Depends on the customers
4	Slip Nuts (M8x1.25P, H=7.5mm)	23-142-80801201	10	
5	Hex Head With Spring Washer Screw #3 / M6x1.0Px12mm	22-251-60012011	12	
6	PK-7090 Concealed Hinge	80-012-30001284	4	
7	PK-7090 Plastic Wheel M6x1.0Px8mm (White)	22-281-60007001	1	Can only be locked manually
8	KF-7130 Front Sponge Bot (258.5x8x2mm)	30-013-40100360	1	
9	KF-7130 Front Sponge Bot (258.5x8x2mm)	30-013-40100360	1	
10	KF-7232 Screw Cover (w/Paint)(Gray)	20-204-02114444	4	
	KF-7232 Screw Cover Black (w/Paint) (Black)	20-204-02117444		
11	PORON (476x8x3mm)	90-013-24700000	4	
12	PORON (476x8x3mm)	90-013-24700000	1	
13	PORON (476x8x3mm)	90-013-24700000	1	
14	PDS-9040LF Tie Mount (Φ11.7mm)	30-042-04100142	6	

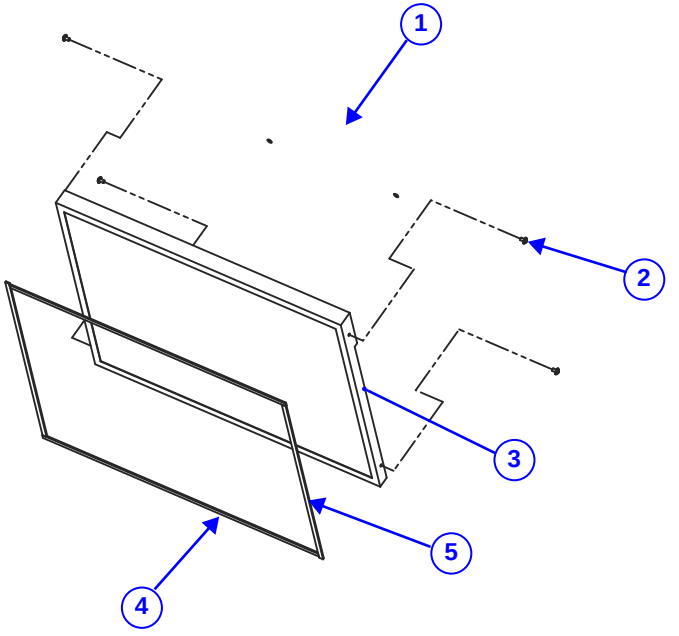
Touch Panel Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty	Remark
1	17" Capacitive Multi-Touch Panel	52-380-04203317	1	
2	KF-7232 Without CAM PMMA	30-002-08230444	1	
3	KF-7232 Panel Cover Blue (w/Paint)(Blue)	20-204-02065444	1	
	KF-7232 Panel Cover Yellow (w/Paint)(Yellow)	20-204-02066444	1	
4	Light Sensor PCBA	52-152-28010063	1	
5	Round Head Screw M2.5x0.45Px4mm	22-232-25004011	2	
6	2.1M FHD Fixed-Focus Face camera, USB Type	52-151-08000231	1	
7	Round Head Screw Φ3.3/#1 / M2x0.4Px4mm	22-232-20004811	4	
8	KF-7232 Touch Base Part	20-232-02021444	1	
9	PC-6505NKC Tie Mount	30-023-04300010	2	
10	Slip Nuts (M3x0.5P, H=4mm)	23-142-30400801	12	
11	KF-7232_speaker_unit	N/A	2	
12	Slip Nuts (M4x0.7P, H=4.5mm)	23-142-40450801	4	
13	KF-7232_LCD_Unit	N/A	1	
14	AF03075-50	High brightness LCD accessory	1	
15	MM-7017 Touch Board Bracket	80-006-03001258	1	

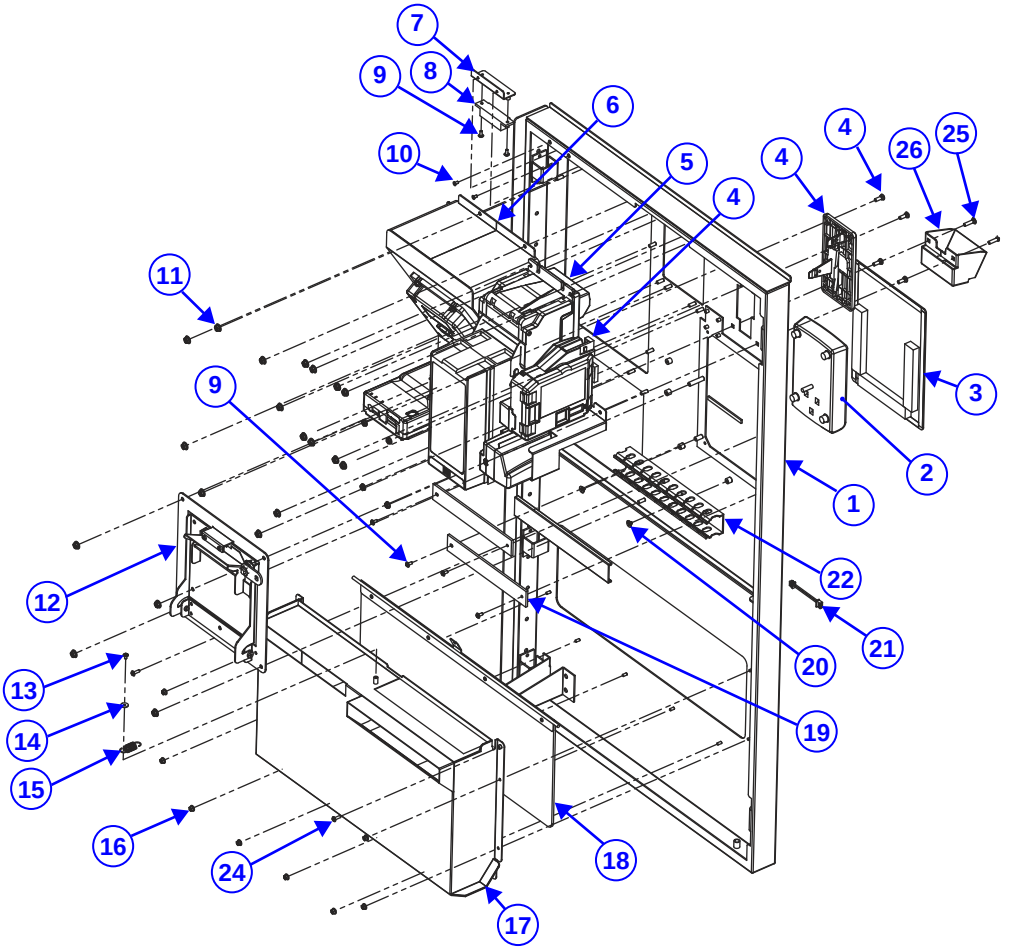
No.	Component Name	P/N No.	Q'ty	Remark
16	Double Faced Adhesive Tape (75mmx19.2mm)	94-026-04502258	1	
17	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	13	
18	KS_30*30_Slot (30x30x1700mm)	30-023-16100375	1	L234mm
19	Fillister Head Screw #2 / M4x0.7Px4mm	22-275-40004911	2	
20	Pan Head Screw #2 / M3x0.5Px4mm	22-222-30004311	2	
21	KF-7232 Alarm for Kiosk Door	52-990-42390058	1	
22	Round Washer Head Screw #2 / M3x0.5Px7mm	22-232-30007011	2	
23	Handle Head Airfoil Nuts (M4x0.7P, H=10.2mm)	23-142-40100981	2	

LCD Holder Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty
1	KF-7232 LCD Holder	20-229-02024444	1
2	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	4
3	17" TFT LCD Panel (LED Backlight), 350nits, SXGA (1280x1024)	52-351-04117002	1
4	Poron_341.9x8x0.5	30-013-24200045	2
5	Poron_281x5x1.5	30-013-24100045	2

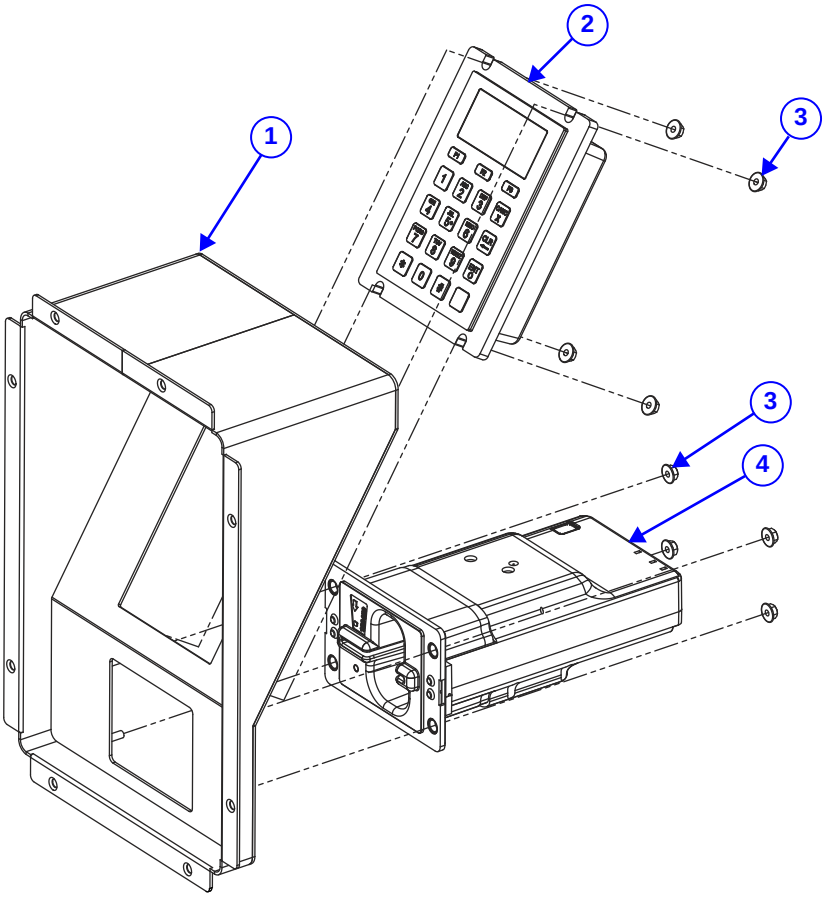
Key Pad Assembly Exploded Diagram (1)



No.	Component Name	P/N No.	Q'ty	Remark
1	KF-7232 F Door Blue (w/Paint) (Blue)	20-247-02062444	1	
	KF-7232 F Door Yellow (w/Paint) (Yellow)	20-247-02061444		
2	EasyCard	N/A	1	
3	KF-7232 NFC Cover-A (192.8x149.8x1.5mm)	30-002-10230444	1	
4	Coin_Sorter_Unit	N/A	1	
5	L70 RS232 Interface (NT)	52-990-07050044	1	
6	KF-7232_KeyPad_unit	N/A	1	

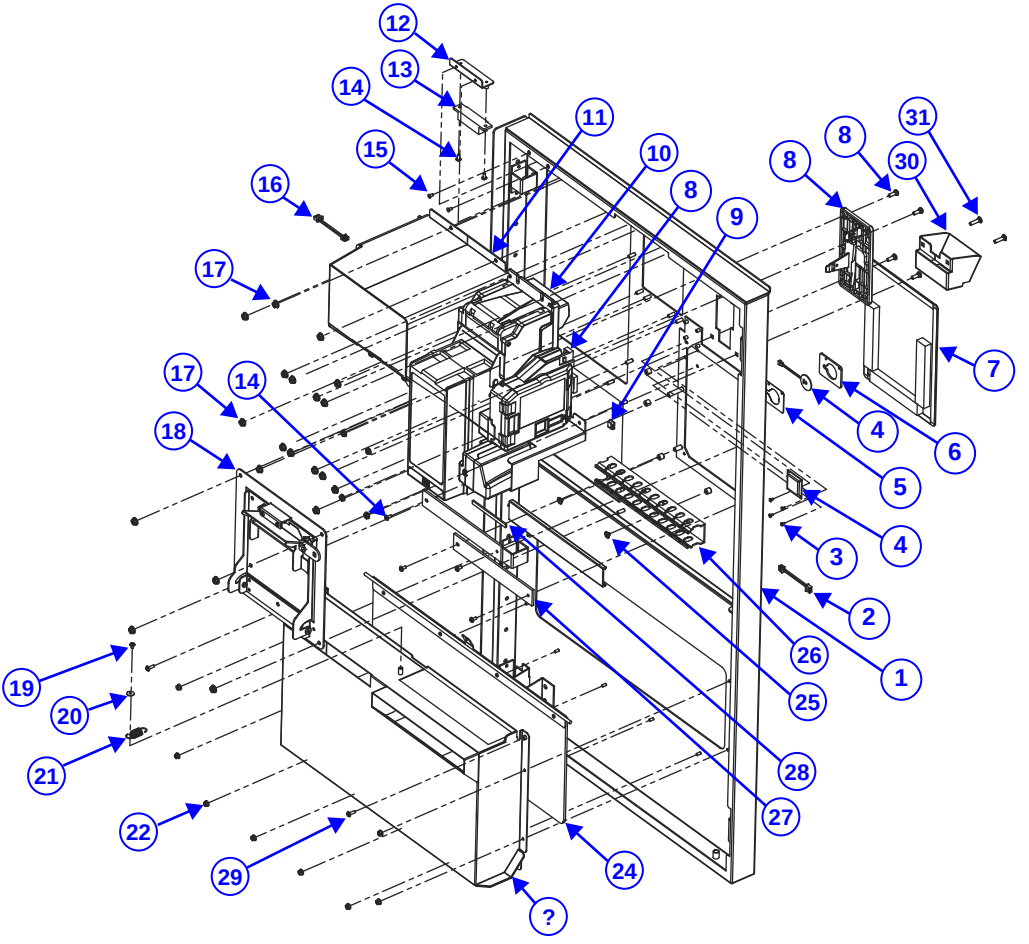
No.	Component Name	P/N No.	Q'ty	Remark
7	KF-7232 Reed Switch A-Side Holder	20-229-02028444	1	
9	KF-7232 Alarm for Kiosk Door	52-990-42390058	1	
10	Round Washer Head Screw #2 / M3x0.5Px7mm	22-232-30007011	6	
11	Flat Head Screw M3x0.5Px6mm (Black)	22-215-30060011	2	
12	KF-7232_T-70_Door_Unit	N/A	20	
13	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	1	
14	Washer (OD=Φ10mm, ID=Φ3mmx0.8T)	23-312-30080101	1	
15	KF-7330 Panel Lock Spring (Φ10)	23-002-00001002	1	
16	Slip Nuts (M3x0.5P, H=4mm)	23-142-30400801	8	
17	KF-7232 Coin Pool	20-201-07001444	1	
18	KF-7232_coin-door_unit	N/A	1	
19	KF-7232 EasyCard Support V	30-002-10130444	2	
20	Fillister Head Screw #2 / M4x0.7Px4mm	22-275-40004911	2	
21	KF-7232 Coin Store Power Cable L=2100mm	27-012-44441111	1	
22	KSS_30*30 Slot (30x30x1700mm)	30-023-16100375	1	L198mm
23	PS-8852 Poron (70x5x2mm)	30-013-02403091	1	
24	Round Washer Head Screw (M3x0.5Px10mm)	22-232-30010311	2	
25	Carriage Bolt Screw M4x0.7Px16mm	22-202-40016001	2	
26	KF-7232 Coin Pool S (w/Paint) (Black)	20-201-02063444	1	

Key Pad Assembly Exploded Diagram (2)



No.	Component Name	P/N No.	Q'ty
1	KF-7232 Device Keypad Base (w/Paint)(Gray)	20-232-02061444	1
2	PCI Certified Modular Pin Entry Device (ID-TECH SmartPIN B100) (RS-232)	52-990-01000042	1
3	Slip Nuts (M4x0.7P, H=4.5mm)	23-142-40450801	8
4	Sptp-983-33-In2c	Installed by customer	1

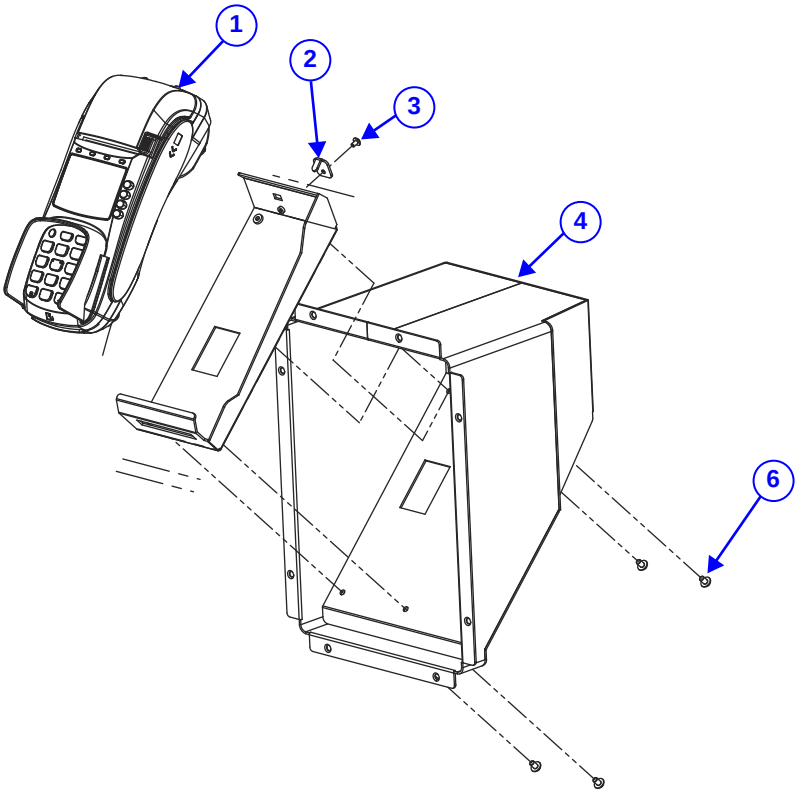
Payment Device Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty	Remark
1	KF-7232 F Door Blue (w/Paint) (Blue)	20-247-02062444	1	
	KF-7232 F Door Yellow (w/Paint) (Yellow)	20-247-02061444		
2	KF-7232 Coin Store Power Cable L=2100mm	27-012-44441111	1	
3	Fillister Head Screw #1 / M2x0.4Px4mm	22-272-20004011	4	
4	Mifare Card Reader/Writer Module, Support ISO14443A, MIFARE Ultra-Light/1K/PRO Cart Type, USB interface	52-551-00032000	1	

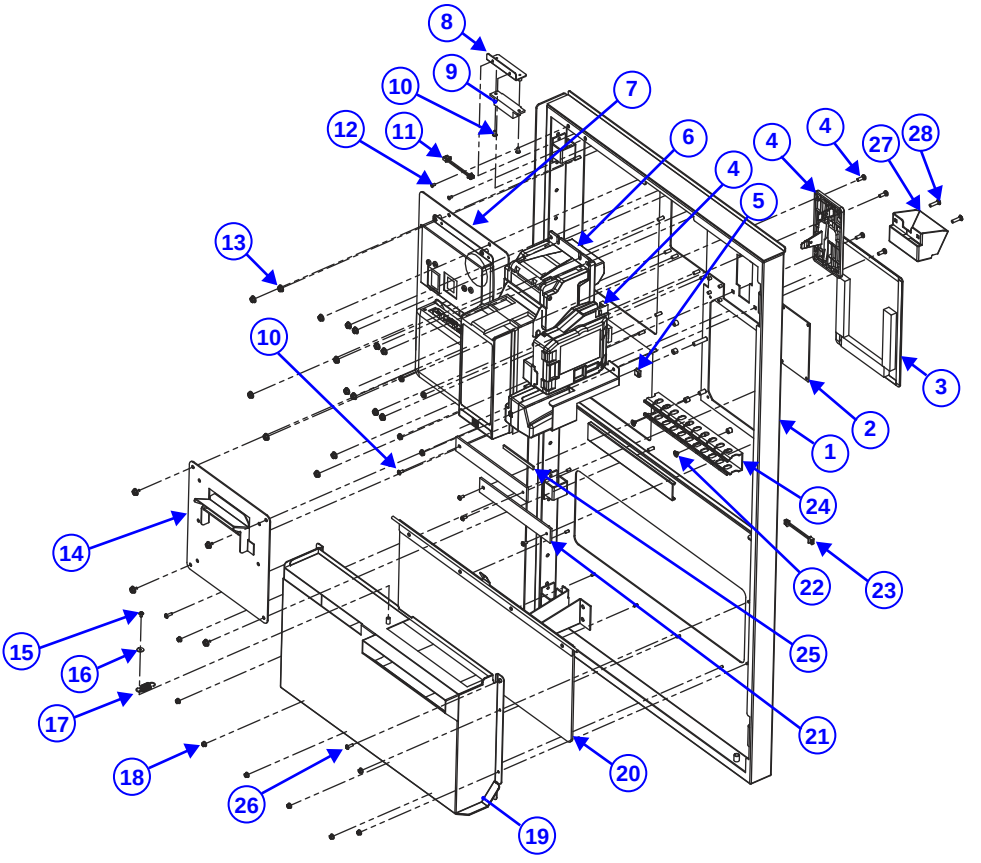
No.	Component Name	P/N No.	Q'ty	Remark
5	PA-3100 RFID PP Sheet (45x33x0.43mm)	30-013-05100165	1	
6	PA-3100 RFID CR (45x33x2.3mm)	30-013-24100165	1	
7	KF-7232 NFC Cover-A (192.8x149.8x1.5mm)	30-002-10230444	1	
8	Coin_Sorter_Unit	N/A		
9	Wire Mount	90-059-04200000	1	
10	L70 RS232 Interface (NT)	52-990-07050044	1	
11	KF-7232_s80_Unit	N/A	1	
12	KF-7232 Reed Switch A-Side Holder	20-229-02028444	1	
13	KF-7232 Alarm for Kiosk Door	52-990-42390058	1	
14	Round Washer Head Screw #2 / M3x0.5Px7mm	22-232-30007011	6	
15	Flat Head Screw M3x0.5Px6mm (Black)	22-215-30060011	2	
16	KF-7232 Bill Power Cable L=1800mm	27-012-44436111	1	
17	Slip Nuts (M4x0.7P, H=4.5mm)	23-142-40450801	20	
18	KF-7232_T-70_Door_Unit	N/A	1	
19	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	1	
20	Washer (OD=Φ10mm, ID=Φ3mmx0.8T)	23-312-30080101	1	
21	KF-7330 Panel Lock Spring (Φ10)	23-002-00001002	1	
22	Slip Nuts (M3x0.5P, H=4mm)	23-142-30400801	8	
23	KF-7232 Coin Pool	20-201-07001444	1	
24	KF-7232_coin-door_unit	N/A	1	
25	Fillister Head Screw #2 / M4x0.7Px4mm	22-275-40004911	2	
26	SS_30*30 Slot (30x30x1700mm)	30-023-16100375	1	
27	KF-7232 EasyCard Support V	30-002-10130444	2	
28	PS-8852 Poron (70x5x2mm)	30-013-02403091	1	
29	Round Washer Head Screw (M3x0.5Px10mm)	22-232-30010311	2	
30	KF-7232 Coin Pool S (w/Paint) (Black)	20-201-02063444	1	
31	Carriage Bolt Screw M4x0.7Px16mm	22-202-40016001	1	

S80 Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty
1	S80	Installed by customer	1
2	KF-7232 S80 Hook Gray (w/Paint) (Gray)	20-211-02061444	1
3	Flat Head Screw #2 / ϕ5 / M3x0.5Px5mm	22-212-30005311	1
4	KF-7232 Device S80 Base (w/Paint) (Gray)	20-232-02062444	1
5	KF-7232 S80 Fix Holder (w/Paint) (Gray)	20-229-02062444	1
6	Round Washer Head Screw M4x0.7Px6mm	22-232-40006311	4

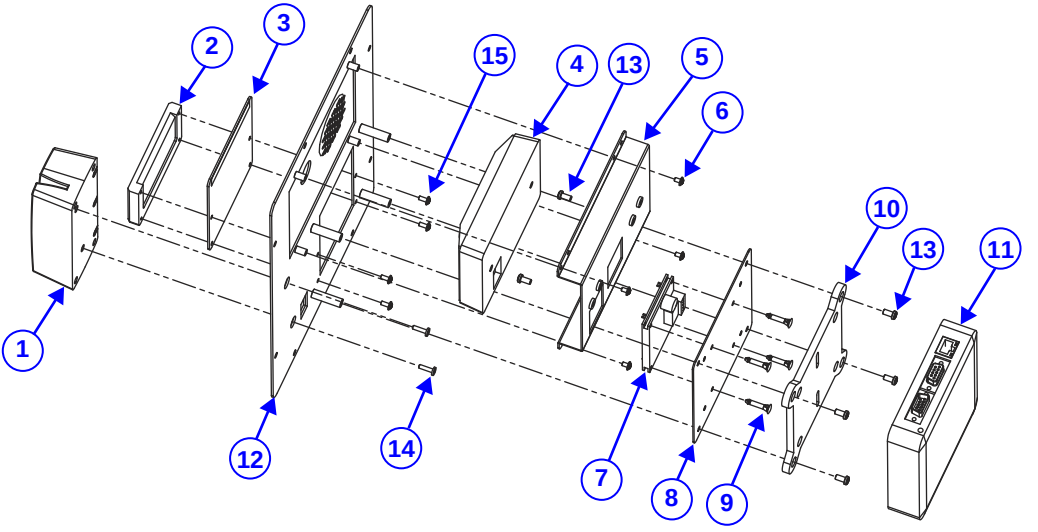
MSC Reader / RFID / Payment Device Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty	Remark
1	KF-7232 F Door Yellow (w/Paint) (Yellow)	20-247-02061444	1	
2	MP-500_wire_lenss_PCB	Installed by customer	1	
3	KF-7232 NFC Cover-A (192.8x149.8x1.5mm)	30-002-10230444	1	
4	Coin_Sorter_Unit	N/A	1	
5	Wire Mount	90-059-04200000	1	
6	L70 RS232 Interface (NT)	52-990-07050044	1	
7	KF-7232_talk_box_unit	N/A	1	
8	KF-7232 Reed Switch A-Side Holder	20-229-02028444	1	
9	KF-7232 Alarm For Kiosk Door	52-990-42390058	1	

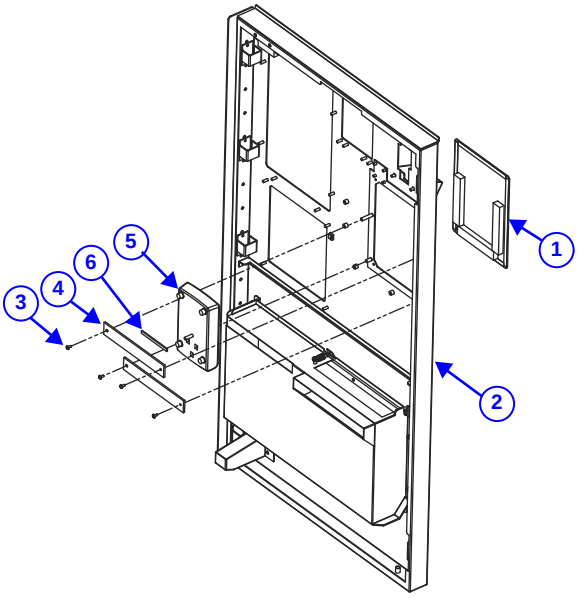
No.	Component Name	P/N No.	Q'ty	Remark
10	Round Washer Head Screw #2 / M3x0.5Px7mm	22-232-30007011	6	
11	KF-7232 Bill Power Cable L=1800mm	27-012-44436111	1	
12	Flat Head Screw M3x0.5Px6mm (Black)	22-215-30060011	2	
13	Slip Nuts (M4x0.7P, H=4.5mm)	23-142-40450801	20	
14	KF-7232 TM-T70 Panel Yellow (w/Paint) (Yellow)	20-203-02063444	1	
15	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	1	
16	Washer (OD=Φ10mm, ID=Φ3mmx0.8T)	23-312-30080101	1	
17	KF-7330 Panel Lock Spring (Φ10)	23-002-00001002	1	
18	Slip Nuts (M3x0.5P, H=4mm)	23-142-30400801	8	
19	KF-7232 Coin Pool	20-201-07001444	1	
20	KF-7232_coin-door_unit	N/A	1	
21	KF-7232 EasyCard Support V	30-002-10130444	2	
22	Fillister Head Screw #2 / M4x0.7Px4mm	22-275-40004911	2	
23	KF-7232 Coin Store Power Cable L=2100mm	27-012-44441111	1	
24	KSS_30*30 Slot (30x30x1700mm)	30-023-16100375	1	L198mm
25	PS-8852 Poron (70x5x2mm)	30-013-02403091	1	
26	Round Washer Head Screw (M3x0.5Px10mm)	22-232-30010311	2	
27	KF-7232 Coin Pool S (w/Paint) (Black)	20-201-02063444	1	
28	Carriage Bolt Screw M4x0.7Px16mm	22-202-40016001	2	

Parkinsys's Device Assembly Exploded Diagram



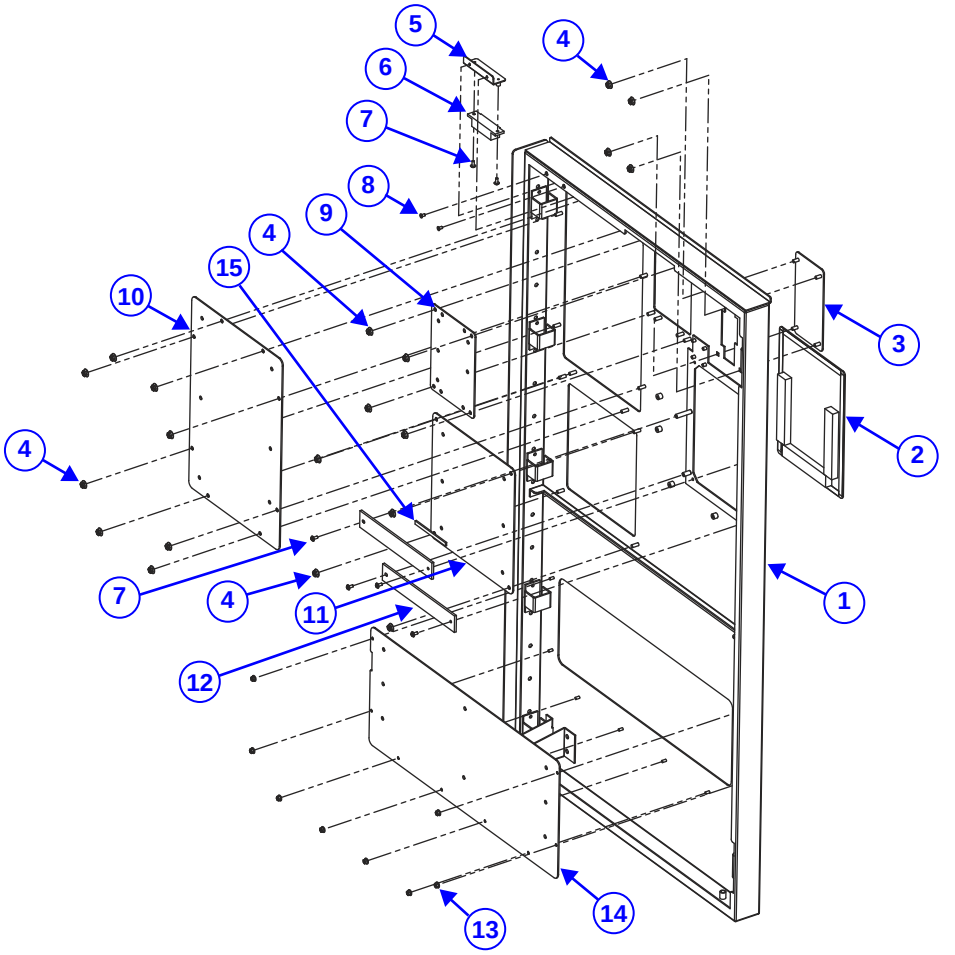
No.	Component Name	P/N No.	Q'ty
1	MSC Reader Module, USB Virtual COM interface, L=160cm(Black)(w/Housing)	52-551-00600002	1
2	KF-7232 Card Set Plastic Box (Black)	30-051-08130444	1
3	KF-7232 EWT Card Base Sheet (Black)	30-002-08330444	1
4	7232_Talk_Box_B	Installed by customer	1
5	KF-7232 Talk Box Support	20-240-02025444	1
6	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	4
7	EWT_scanner	Installed by customer	1
8	Round Washer Head Screw M3x0.5Px5mm	20-229-02027444	1
9	SPACER SUPPORT (D3.2, H=15mm, D4)	90-041-04103000	4
10	MP-500_RFID-BOX_holder	Installed by customer	1
11	MP-500_RFID-BOX	Installed by customer	1
12	KF-7232 Device Talk Box Base (w/Paint)(Black)	20-232-02063444	1
13	Pan Head Screw #2 / M4x0.7Px8mm	22-222-40008011	6
14	Fillister Head Screw M3x0.5Px12mm (Black)	22-2753010120	2
15	Round Washer Head Screw #2 / M3x0.5Px7mm	22-232-30007011	4

EasyCard Device Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty
1	KF-7232 NFC Cover-A (192.8x149.8x1.5mm)	30-002-10230444	1
2	KF-7232 F Door Blue-2 (w/Paint)(Blue)	20-247-02081444	1
3	Round Washer Head Screw #2 / M3x0.5Px7mm	22-232-30007011	6
4	KF-7232 EasyCard Support V	30-002-10130444	2
5	EasyCard	N/A	1
6	PS-8852 Poron (70x5x2mm)	30-013-02403091	1

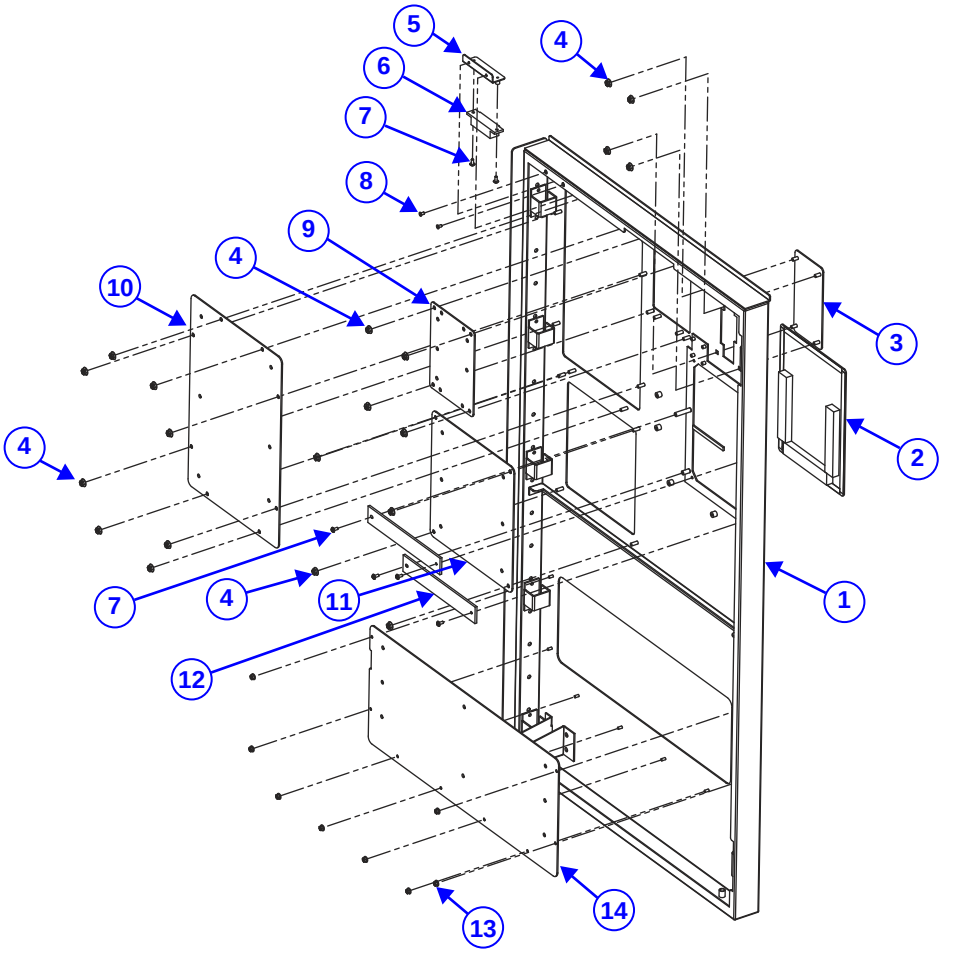
No Device Door Style Assembly Exploded Diagram (1)



No.	Component Name	P/N No.	Q'ty
1	KF-7232 F Door Blue (w/Paint) (Blue)	20-247-02062444	1
2	KF-7232 NFC Cover-A (192.8x149.8x1.5mm)	30-002-10230444	1
3	KF-7232 Without Coin Sorter Panel Blue (w/Paint) (Blue)	20-203-02066444	1
4	Slip Nuts (M4x0.7P, H=4.5mm)	23-142-40450801	20
5	KF-7232 Reed Switch A-Side Holder	20-229-02028444	1
6	KF-7232 Alarm For Kiosk Door	52-990-42390058	1

No.	Component Name	P/N No.	Q'ty
7	Round Washer Head Screw #2 / M3x0.5Px7mm	22-232-30007011	6
8	Flat Head Screw M3x0.5Px6mm (Black)	22-215-30060011	2
9	KF-7232 Without L70 Panel Blue (w/Paint) (Blue)	20-203-02068444	1
10	KF-7232 Device Cover Blue (w/Paint) (Blue)	20-204-02062444	1
11	KF-7232 Without Printer Panel Blue (w/Paint) (Blue)	20-203-02011444	1
12	KF-7232 EasyCard Support V	30-002-10130444	2
13	Slip Nuts (M3x0.5P, H=4mm)	23-142-30400801	8
14	KF-7232 Without Coin Pool Panel Blue (w/Paint) (Blue)	20-203-02064444	1
15	PS-8852 Poron (70x5x2mm)	30-013-02403091	1

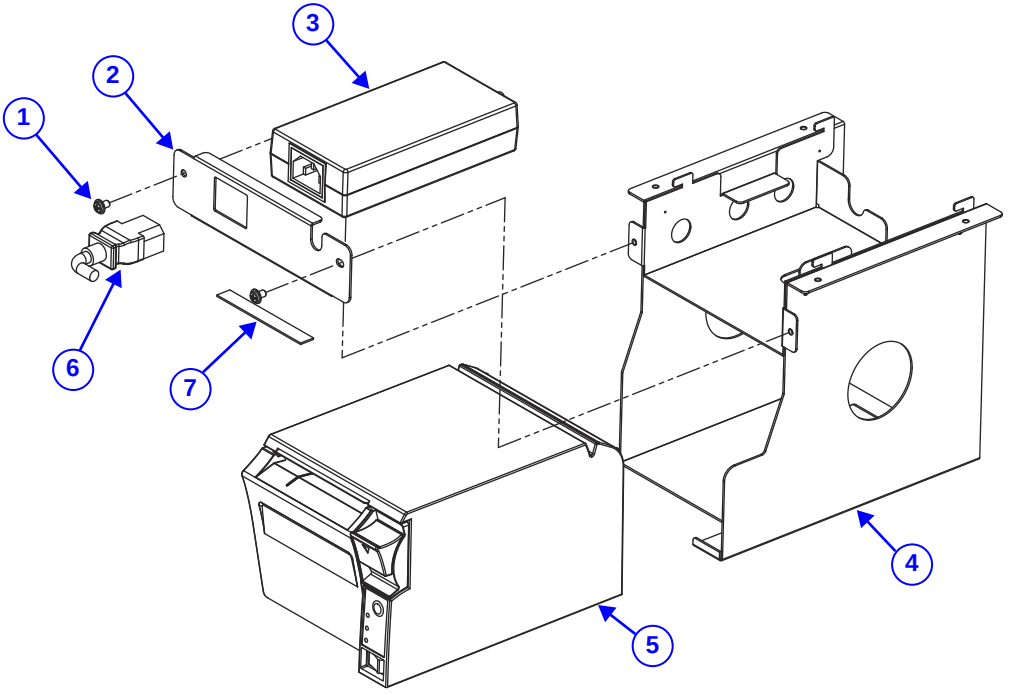
No Device Door Style Assembly Exploded Diagram (2)



No.	Component Name	P/N No.	Q'ty
1	KF-7232 F Door Yellow (w/Paint) (Yellow)	20-247-02061444	1
2	KF-7232 NFC Cover-A (192.8x149.8x1.5mm)	30-002-10230444	1
3	KF-7232 Without Coin Sorter Panel Yellow (w/Paint) (Yellow)	20-203-02067444	1
4	Slip Nuts (M4x0.7P, H=4.5mm)	23-142-40450801	20
5	KF-7232 Reed Switch A-Side Holder	20-229-02028444	1
6	KF-7232 Alarm For Kiosk Door	52-990-42390058	1
7	Round Washer Head Screw #2 / M3x0.5Px7mm	22-232-30007011	6

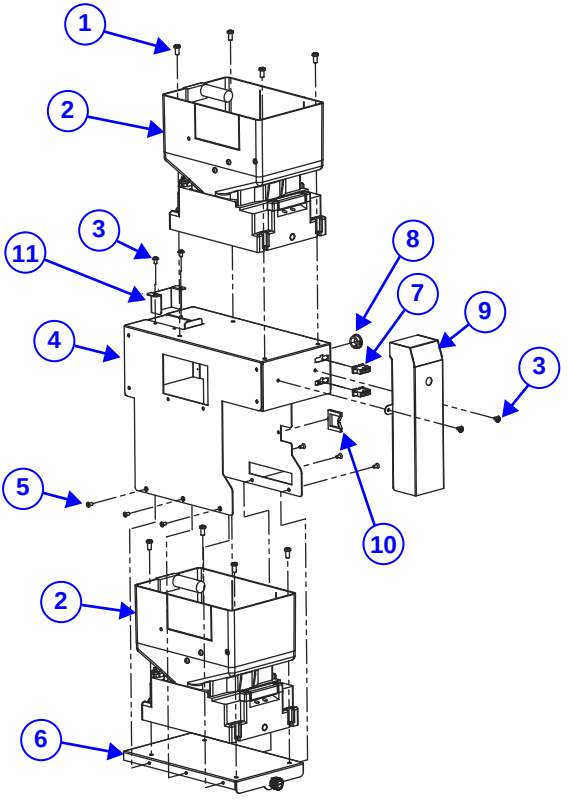
No.	Component Name	P/N No.	Q'ty
8	Flat Head Screw M3x0.5Px6mm (Black)	22-215-30060011	2
9	KF-7232 Without L70 Panel Yellow (w/Paint) (Yellow)	20-203-02069444	1
10	KF-7232 Device Cover Yellow (w/Paint) (Yellow)	20-204-02063444	1
11	KF-7232 Without Printer Panel Yellow (w/Paint) (Yellow)	20-203-02012444	1
12	KF-7232 EasyCard Support V	30-002-10130444	2
13	Slip Nuts (M3x0.5P, H=4mm)	23-142-30400801	8
14	KF-7232 Without Coin Pool Panel Yellow (w/Paint) (Yellow)	20-203-02065444	1
15	PS-8852 Poron (70x5x2mm)	30-013-02403091	1

Printer Assembly Exploded Diagram



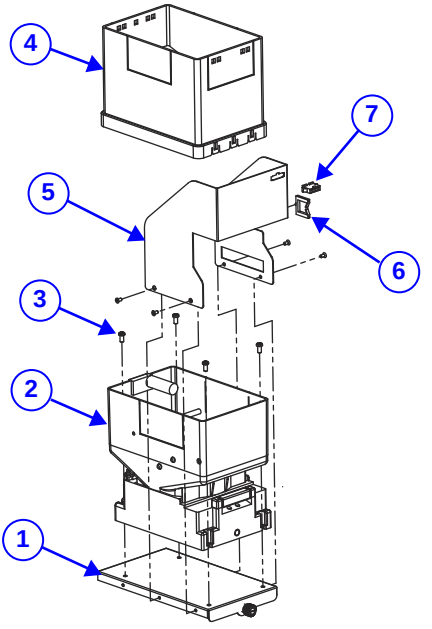
No.	Component Name	P/N No.	Q'ty	Remark
1	Round Washer Head Screw M4x0.7Px6mm	22-232-40006311	2	
2	KF-7232 T70 Adapter Panel	20-203-02023444	1	
3	TM-T70II_Adapter	Printer Accessory	1	
4	KF-7232 TM-T70 Holder	20-229-02111444	1	
5	Printer Epson_TM-T70II	See Order	1	
6	T70_ac-cable	N/A	1	T70 Accessories
7	PA-6225 Rotate Base Sponge (75x10x1mm)	30-013-24100314	1	

Mini Hopper Assembly Exploded Diagram (Without Coin Box Type)



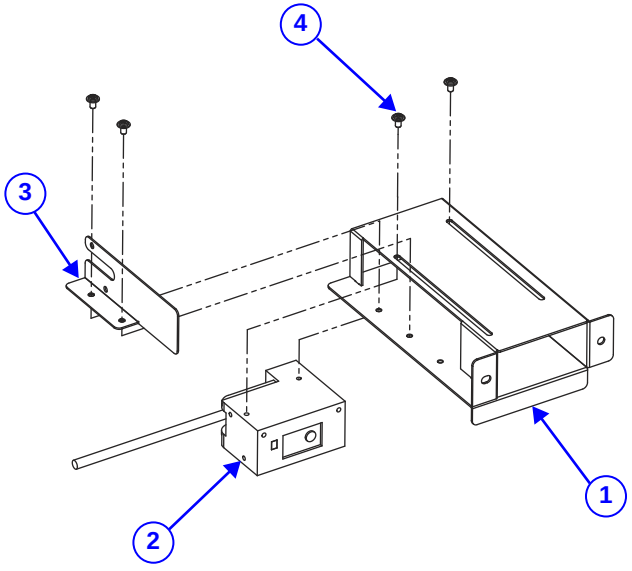
No.	Component Name	P/N No.	Q'ty
1	Pan Head Screw #2 / M4x0.7Px8mm	22-222-40008011	8
2	mh245_Asm	See Order	2
3	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	6
4	KF-7232 MH245 Simple Holder	20-229-02001444	1
5	Flat Head Screw #2 /Φ5 / M3x0.5Px6mm	22-212-30006311	6
6	KF-7232 MH245 Unit Tray-2	20-254-02021444	1
7	KF-7232 Coin Hopper COM and Power Cable L=200mm+200mm	27-012-44404071	2
8	Open Closed Bushing (Black)	30-026-04300000	1
9	KF-7232 MH245 Coin Pole	20-256-02021444	1
10	Square SNAP Bushing	90-026-04500000	1
11	KF-7232 MH245 ADD Part-A (w/Plate)	20-206-02021444	1

Mini Hopper Assembly Exploded Diagram (Single & Add Coin Barrel Type)



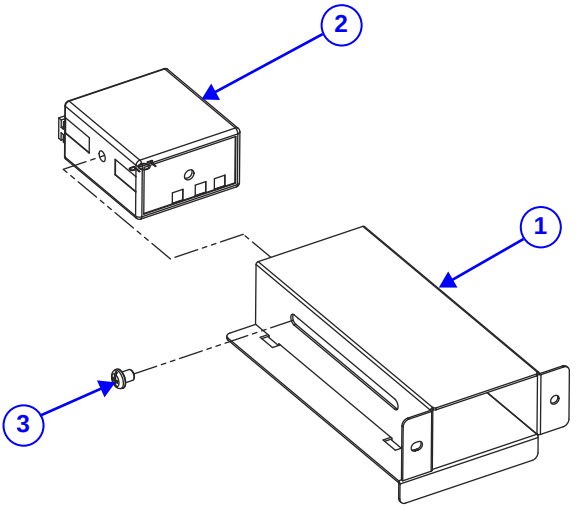
No.	Component Name	P/N No.	Q'ty
1	KF-7232 MH245 Unit Tray-2	20-254-02021444	1
2	mh245_asm	See Order	1
3	Pan Head Screw #2 / M4x0.7Px8mm	22-222-40008011	4
4	MiniHopper 1000pcs	52-990-00000144	1
5	KF-7232 MH245 Single Part-A	20-206-02001444	1
6	Square SNAP Bushing	90-026-04500000	1
7	KF-7232 Coin Hopper COM and Power Cable L=200mm+200mm	27-012-44404071	1
8	Flat Head Screw #2 /Φ5 / M3x0.5Px6mm	22-212-30006311	4

Barcode Scanner Assembly Exploded Diagram (1)



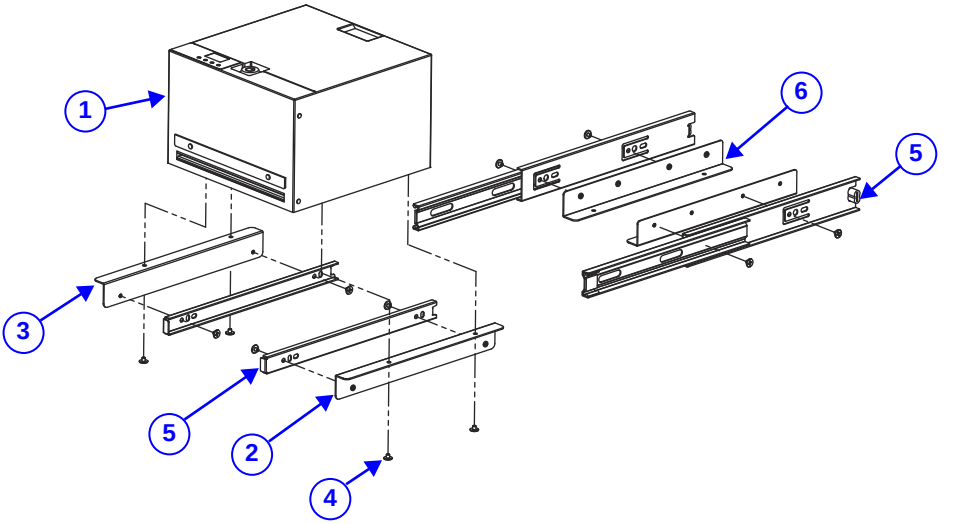
No.	Component Name	P/N No.	Q'ty
1	KF-7232 Barcode A Part (w/Paint)(Black)	20-204-02067444	1
2	CM2D	See Order	1
3	KF-7232 CM2D ADD Sheet (w/Paint) (Black)	20-204-02068444	1
4	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	4

Barcode Scanner Assembly Exploded Diagram (2)



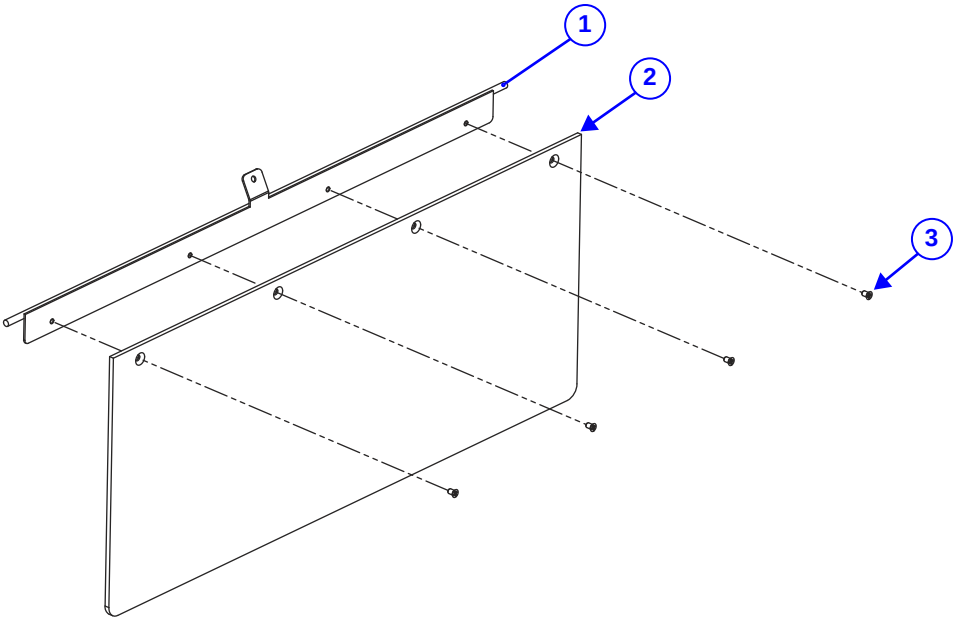
No.	Component Name	P/N No.	Q'ty
1	7232_Barcode_holder_for_FS5020	20-229-02061444	1
2	2D Barcode Scanner (25cm)	52-820-50220207	1
3	Round Head Screw M5x0.8Px6mm	22-232-50006011	1

Banknote Machine Assembly Exploded Diagram



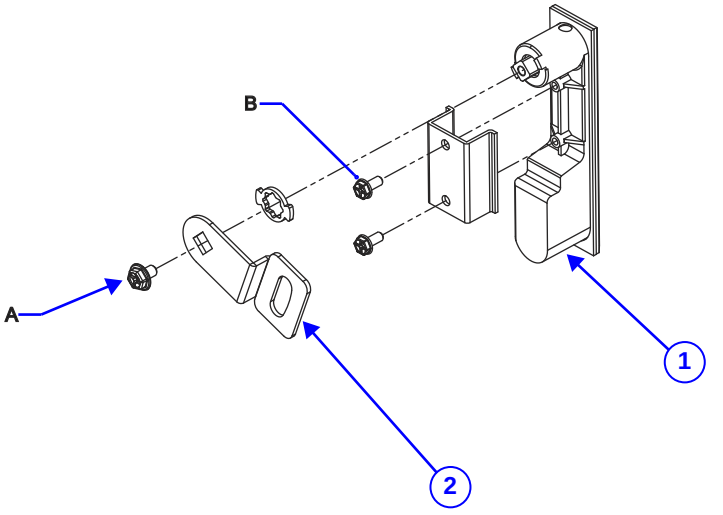
No.	Component Name	P/N No.	Q'ty
1	NDE-1000-r1	52-990-10000044	1
2	KF-7232 NDE-1000 Tray-R	20-254-02023444	1
3	KF-7232 NDE-1000 Tray-L	20-254-02022444	1
4	Fillister Head Screw #2 / M4x0.7Px4mm	22-275-40004911	12
5	KF-7232 Full Extension Drawer Slide	20-039-02021444	2
6	KF-7232 SJ-3610-250 Holder	20-229-02011444	2

Coin Door Assembly Exploded Diagram



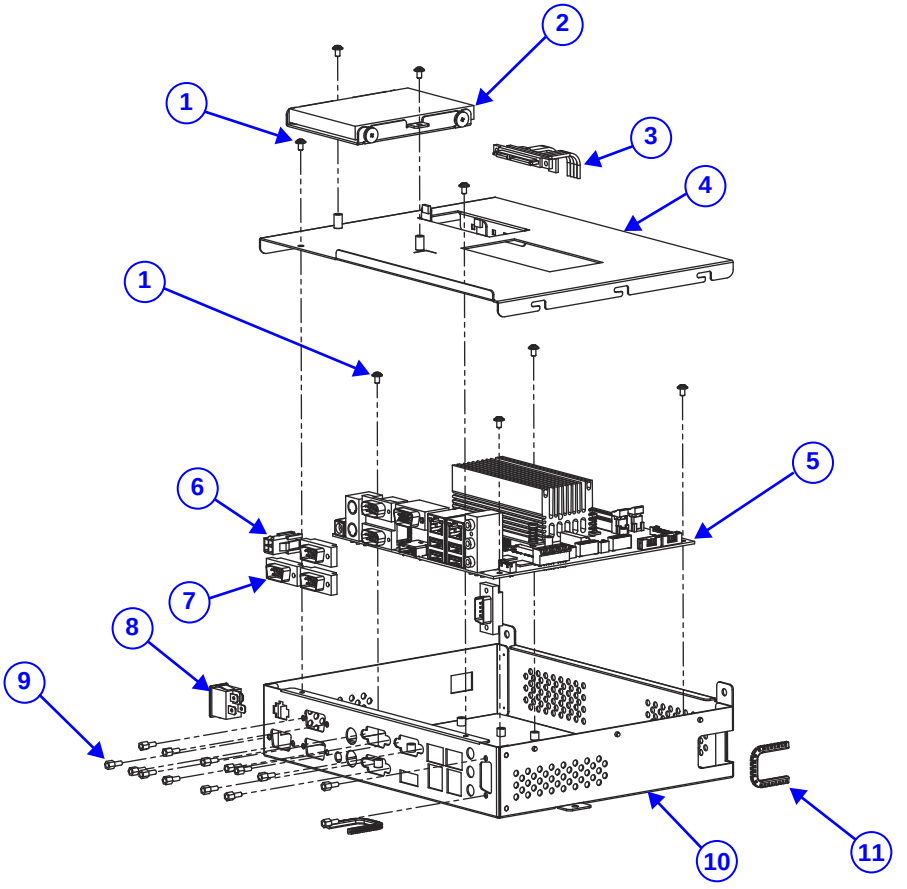
No.	Component Name	P/N No.	Q'ty
1	KF-7232 Coin Door Hinge	20-212-02021444	1
2	KF-7232 Coin Door	30-007-10130444	1
3	Flat Head Screw #2 / M3x0.5Px5mm	22-215-30005011	4

Door Lock Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty
1	KF-7232 Life and Turn Latch	80-035-35001444	1
2	KF-7232 MS-818 for P231 Sheet	20-204-07002444	1

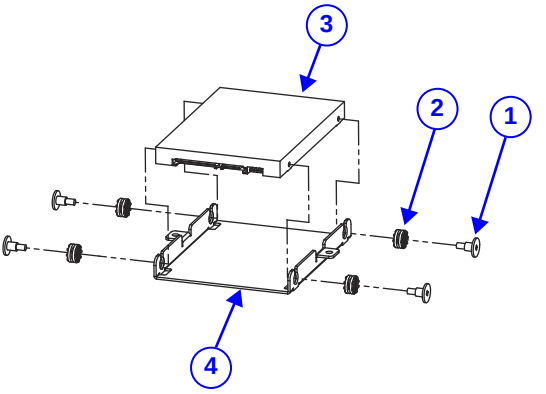
BOX PC Assembly Exploded Diagram



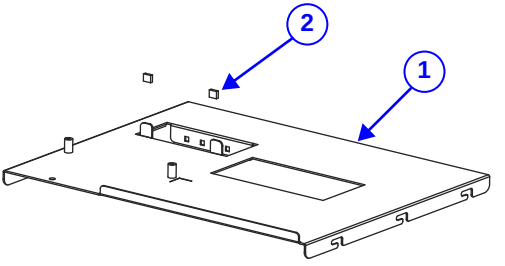
No.	Component Name	P/N No.	Q'ty
1	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	8
2	KF-7232_hdd_Unit2	N/A	1
3	SATA HDD & Power Cable (SATA F7+15/GOLD to SATAF7 / GOLD+2F/P2.5/TIN) L=350mm+350mm	27-008-52207081	1
4	KF-P231_system_Top_Unit	N/A	1
5	BM-0982R2	BM-0982R2	1
6	KF-P231 Power Cable (4M/P4.2/TIN to 4F/P4.2/TIN) L=100mm	27-012-52202071	1
7	BS-E098 COM Port Cable (9M to 10F) (Black) L=220mm	27-024-39505031	4

No.	Component Name	P/N No.	Q'ty
8	KF-7232 Power Switch Cable L=210mm	27-019-44405071	1
9	HEX CU BOSS UNC No.4-40, L=4.8, H=7mm	22-692-40048051	14
10	KF-P231 SYS Box (w/Plate)	20-240-02061522	1
11	PMP-1120 Movable Bushing	90-026-04100185	2

HDD Assembly Exploded Diagrams

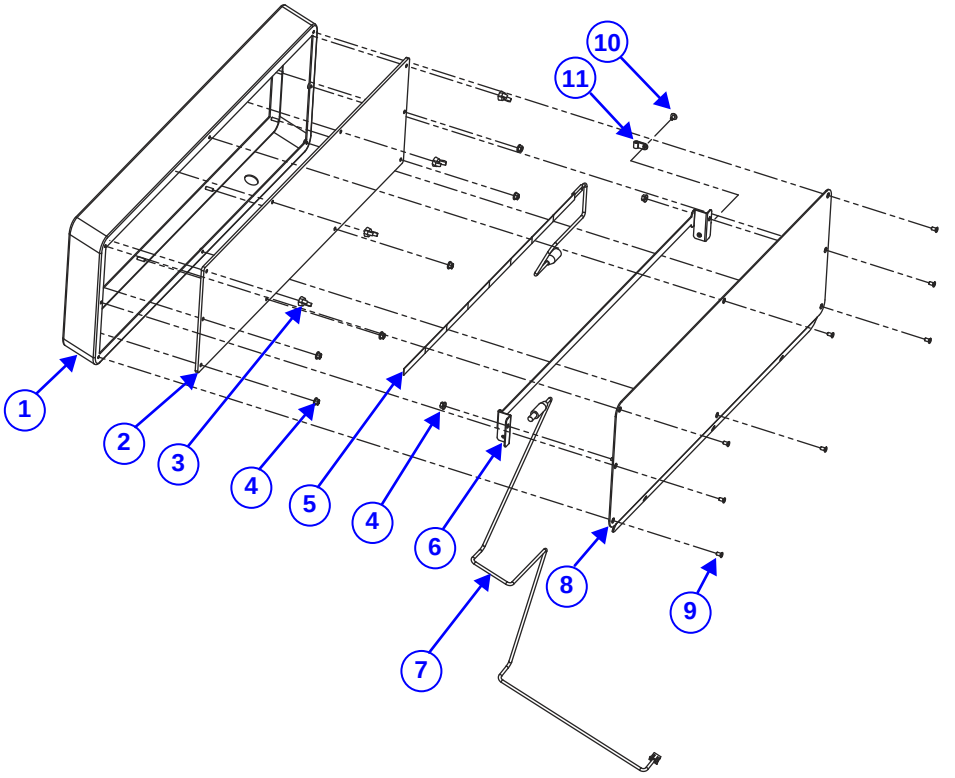


No.	Component Name	P/N No.	Q'ty
1	Fillister Head Screw M3x0.5Px4.8mm	82-272-30005013	4
2	Shock Absorb Rubber (Black)	90-013-01200000	4
3	2inch_sata_hdd	See Order	1
4	KS-M220 HDD Holder	20-229-02001482	1



No.	Component Name	P/N No.	Q'ty
1	KF-P231 SYS Box Top (w/Plate)	20-240-02062522	1
2	PS-8852 Poron (6x5x2mm)	30-013-02401091	2

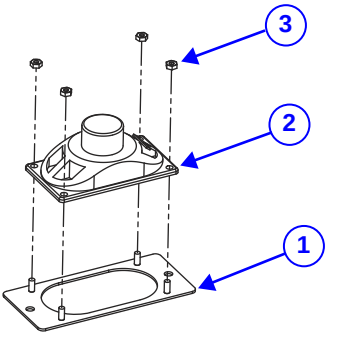
Light Box Assembly Exploded Diagram



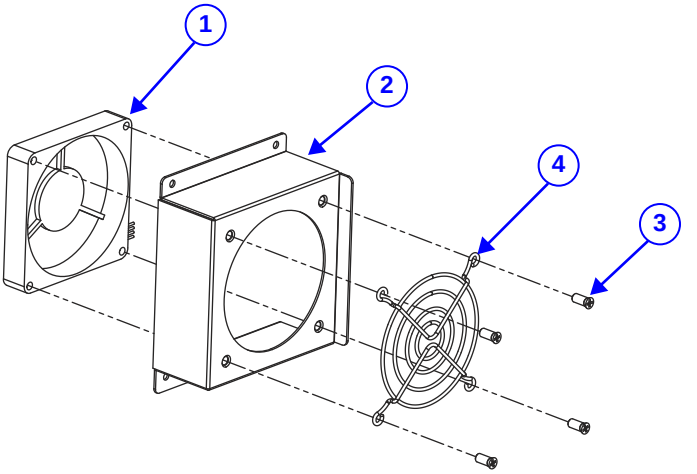
No.	Component Name	P/N No.	Q'ty	Remark
1	KF-P231_Logo_Box_Blue	20-240-02063444	1	KF-7232RZ-21N
	KF-P231 Logo Box Yellow (w/Paint) (Yellow)	20-240-02064444		KF-7232RZ-21Y
2	KF-P231_logo_Box_back	30-009-10130444	1	
	KF-P231 Car Park Logo PMMA	30-009-10230444		KF-7232RZ-21Y
3	Handle Head Airfoil Nuts (M3x0.5P, H=4mm)	23-142-30400981	4	N/A
4	Slip Nuts (M3x0.5P, H=4mm)	23-142-30400801	8	
5	KF-P231 Light_Pad_300mm	52-990-01530055	1	
6	KF-P231 Light Holder	20-229-02025444	1	

No.	Component Name	P/N No.	Q'ty	Remark
7	KF-P231 LED Power Cable L=790mm	27-012-44416112	1	
8	KF-P231_Logo_Box_back_ Yellow	20-240-02061444	1	KF-7232RZ-21N
	KF-P231 Logo Box Back Yellow (w/Paint)	20-240-02062444		KF-7232RZ-21Y
9	Flat Head Screw #2/Φ 5/M3x0.5Px6mm	22-212-30006311	8	
10	Round Washer Head Screw M3x0.5Px5mm	22-242-30005311	1	
11	Cable Clamp (Φ3.0mm)	90-023-04800000	1	

Speaker Holder and Fan Assembly Exploded Diagrams

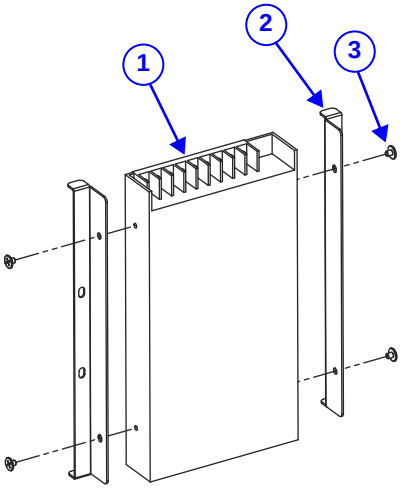


No.	Component Name	P/N No.	Q'ty
1	KF-7232 Speaker Holder	20-229-02029444	1
2	KS-1130 Dynamic Speaker Cable L=350mm	27-021-41007071	1
3	HEX Nuts (M3x0.5P, H=2.2mm)	23-142-30020051	4

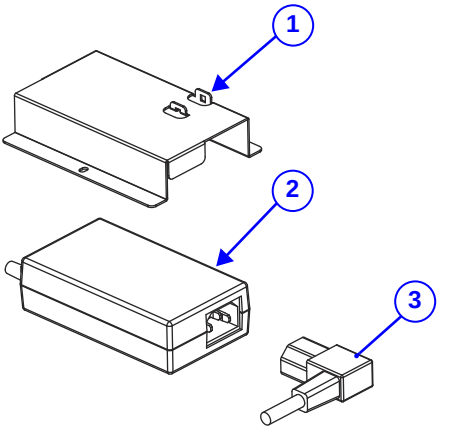


No.	Component Name	P/N No.	Q'ty
1	ADDA 80x80x15 system fan (AD0812LB-D76) @12V, 2000rpm, L=100mm, 3-wire	21-004-08080121	1
2	KF-7232 Fan Holder (w/Paint)(Black)	20-229-02064444	1
3	Flat Head Screw T4.7x11mm	22-112-47011011	4
4	Fan_holder_for 80-80 (80x80x5mm)	20-044-02011012	1

Power Adapter Assembly Exploded Diagrams

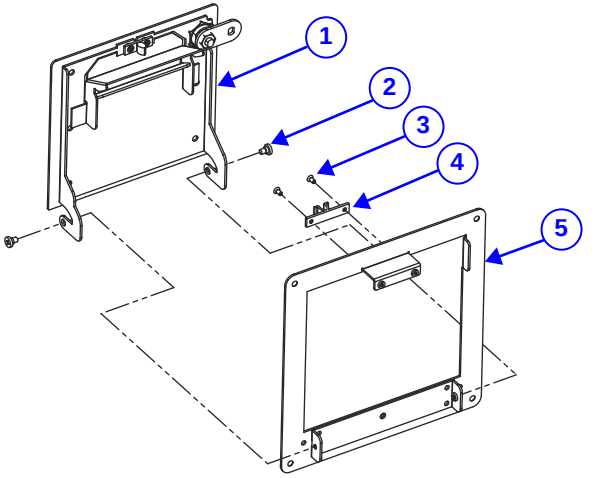


No.	Component Name	P/N No.	Q'ty
1	320W 12V Output with PFC Function Power Supply	52-001-50321209	1
2	KF-7232 SP-240-12 Holder	20-229-02012444	2
3	Fillister Head Screw #2 / M4x0.7Px4mm	22-275-40004911	4



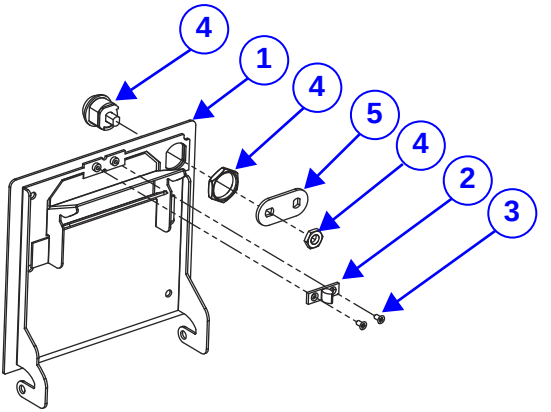
No.	Component Name	P/N No.	Q'ty
1	KF-7232 FSP060 Holder (w/Plated)	20-229-02115444	1
2	FSP060 60W AC to DC 12V/5A Power Adapter	52-002-10608001	1
3	AC Cable	N/A	1

Printer Door Assembly Exploded Diagram (1)



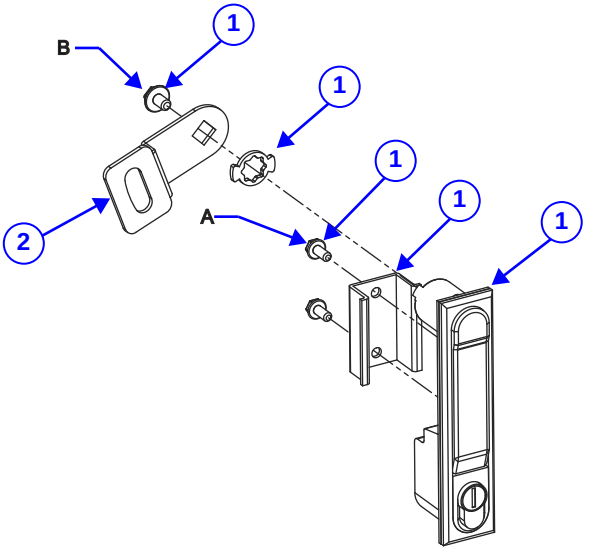
No.	Component Name	P/N No.	Q'ty
1	KF-7232 TM-T70 Door Spot Y (w/Paint) (Yellow)	20-247-02066444	1
	KF-7232 TM-T70 Door Spot B (w/Paint) (Blue)	20-247-02065444	
2	dl-8dk Striker	90-023-04101000	1
3	Flat Head Screw M3x0.5Px6mm(Black)	22-215-30060011	2
4	PK-7090 CAM Lock	20-025-30001284	1
5	c510ZS_sheet	N/A	1

Printer Door Assembly Exploded Diagram (2)



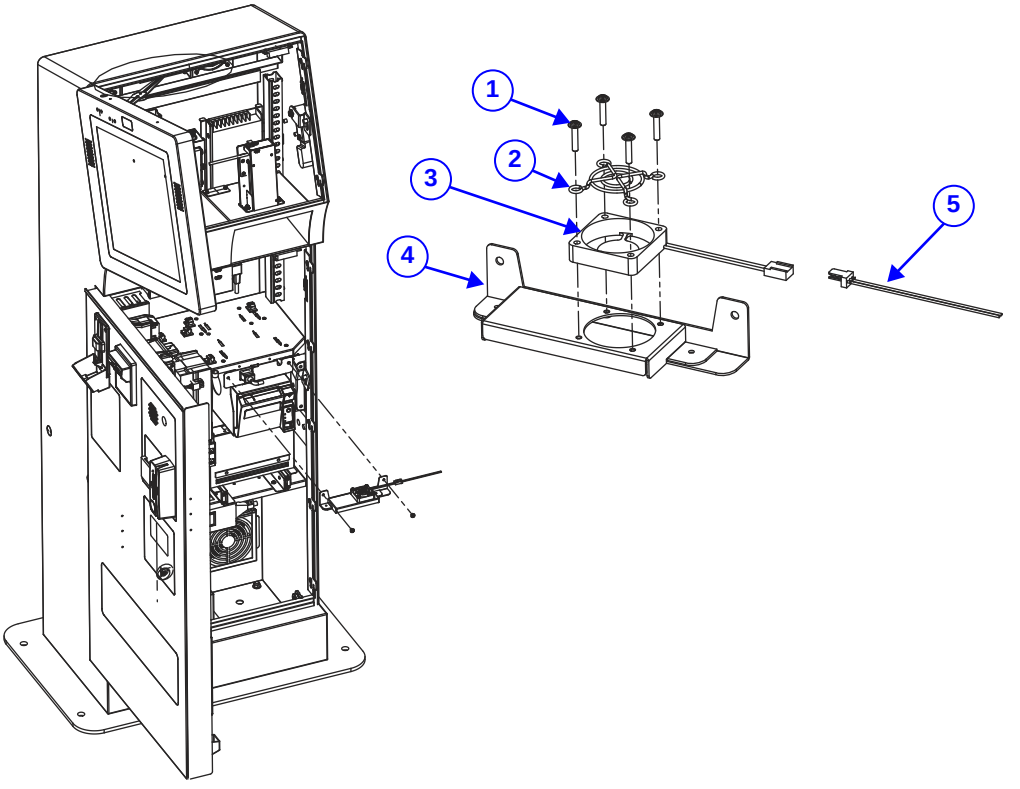
No.	Component Name	P/N No.	Q'ty
1	KF-7232_TM-T70_Door_ASM	N/A	1
2	Fillister Head Screw M4x0.7Px4mm	22-272-40004911	2
3	Flat Head Screw M3x0.5Px6mm (Black)	22-215-30060011	2
4	DL-9DK Latch	90-023-09100000	1
5	KF-7232 TM-T70 Door Base Spot Y (w/Paint) (Yellow)	20-247-02064444	1
	KF-7232 TM-T70 Door Base Spot B (w/Paint) (Blue)	20-247-02063444	

Door Lock Assembly Exploded Diagram



No.	Component Name	P/N No.	Q'ty
1	KF-7232 Life and Turn Latch	80-035-35001444	1
2	KF-7232 MS-818 for P231 Sheet	20-204-07002444	1

Printer Fan Assembly Exploded Diagram



The diagram above shows the installation position for printer fan holder. User can install the fan holder onto the system with the same screws installed previously.

No.	Component Name	P/N No.	Q'ty
1	Round Washer Head Screw #2 / M3x0.5Px15mm	22-235-30015011	4
2	Fan_holder_for P231	20-044-24011044	1
3	BM-0822 System Fan (40x40x10mm) L=60mm	21-004-04040373	1
4	KF-7232 Printer Fan Holder (w/Plate)	20-229-02116444	1
5	Fan (40x40x10mm) Power _cable_for_P231	27-012-44420111	1

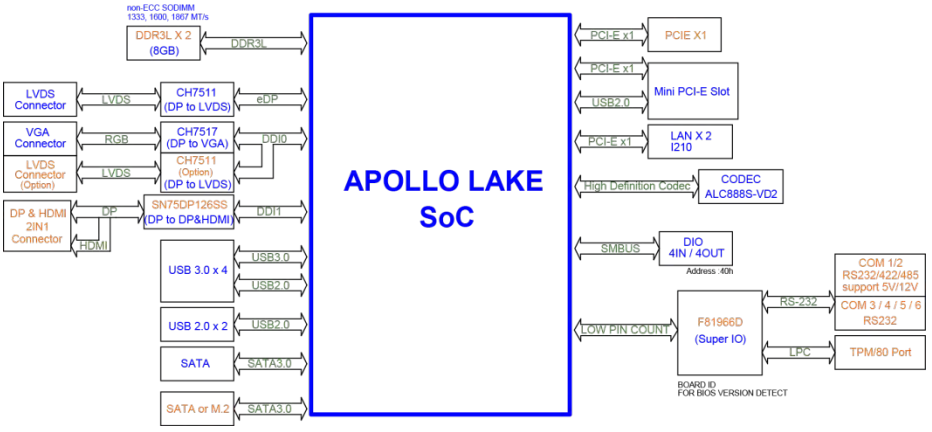
Appendix B Technical Summary

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

The following topics are included:

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

Block Diagram



Interrupt Map

IRQ	ASSIGNMENT
IRQ 0	System timer
IRQ 3	Intel SD Host Controller
IRQ 4	Communications Port (COM1)
IRQ 6	Communications Port (COM2)
IRQ 7	Communications Port (COM3)
IRQ 8	System CMOS/real time clock
IRQ 10	Communications Port (COM4)
IRQ 14	Intel(R) Serial IO GPIO Host Controller - INT3452
IRQ 25	High Definition Audio Controller
IRQ 31	Intel(R) Serial IO I2C Host Controller - 5AB4
IRQ 32	Intel(R) Serial IO I2C Host Controller - 5AB6
IRQ 54	Microsoft ACPI-Compliant System
IRQ 55	Microsoft ACPI-Compliant System
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IRQ 511	Microsoft ACPI-Compliant System
IRQ 1024	Intel SD Host Controller
IRQ 4294967277	Intel(R) HD Graphics
IRQ 4294967278	Intel(R) I210 Gigabit Network Connection #2
IRQ 4294967279	Intel(R) I210 Gigabit Network Connection #2
IRQ 4294967280	Intel(R) I210 Gigabit Network Connection #2
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IRQ 4294967283	Intel(R) I210 Gigabit Network Connection #2
IRQ 4294967284	Intel(R) I210 Gigabit Network Connection
IRQ 4294967285	Intel(R) I210 Gigabit Network Connection
IRQ 4294967286	Intel(R) I210 Gigabit Network Connection
IRQ 4294967287	Intel(R) I210 Gigabit Network Connection
IRQ 4294967288	Intel(R) I210 Gigabit Network Connection
IRQ 4294967289	Intel(R) I210 Gigabit Network Connection
IRQ 4294967290	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)

IRQ	ASSIGNMENT
IRQ 4294967291	Intel(R) Trusted Execution Engine Interface
IRQ 4294967292	Standard SATA AHCI Controller
IRQ 4294967293	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9
IRQ 4294967294	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8

Note: These resource information were gathered using Windows 10 (the IRQ could be assigned differently depending on OS).

I/O Map

I/O	ASSIGNMENT
0x00000A00-0x00000A0F	Motherboard resources
0x00000A10-0x00000A1F	Motherboard resources
0x00000A20-0x00000A2F	Motherboard resources
0x0000002E-0x0000002F	Motherboard resources
0x0000004E-0x0000004F	Motherboard resources
0x00000061-0x00000061	Motherboard resources
0x00000063-0x00000063	Motherboard resources
0x00000065-0x00000065	Motherboard resources
0x00000067-0x00000067	Motherboard resources
0x00000070-0x00000070	Motherboard resources
0x00000070-0x00000070	System CMOS/real time clock
0x00000080-0x0000008F	Motherboard resources
0x00000092-0x00000092	Motherboard resources
0x000000B2-0x000000B3	Motherboard resources
0x00000680-0x0000069F	Motherboard resources
0x00000400-0x0000047F	Motherboard resources
0x00000500-0x000005FE	Motherboard resources
0x00000600-0x0000061F	Motherboard resources
0x0000164E-0x0000164F	Motherboard resources

I/O	ASSIGNMENT
0x0000F040-0x0000F05F	Intel(R) Celeron(R)/Pentium(R) Processor SMBUS - 5AD4
0x0000D000-0x0000DFFF	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9
0x000003F8-0x000003FF	Communications Port (COM1)
0x000002F8-0x000002FF	Communications Port (COM2)
0x000003E8-0x000003EF	Communications Port (COM3)
0x000002E8-0x000002EF	Communications Port (COM4)
0x0000F000-0x0000F03F	Intel(R) HD Graphics
0x0000E000-0x0000EFFF	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8
0x00000000-0x0000006F	PCI Express Root Complex
0x00000078-0x00000CF7	PCI Express Root Complex
0x00000D00-0x0000FFFF	PCI Express Root Complex
0x00000020-0x00000021	Programmable interrupt controller
0x00000024-0x00000025	Programmable interrupt controller
0x00000028-0x00000029	Programmable interrupt controller
0x0000002C-0x0000002D	Programmable interrupt controller
0x00000030-0x00000031	Programmable interrupt controller
0x00000034-0x00000035	Programmable interrupt controller
0x00000038-0x00000039	Programmable interrupt controller
0x0000003C-0x0000003D	Programmable interrupt controller
0x000000A0-0x000000A1	Programmable interrupt controller
0x000000A4-0x000000A5	Programmable interrupt controller
0x000000A8-0x000000A9	Programmable interrupt controller
0x000000AC-0x000000AD	Programmable interrupt controller
0x000000B0-0x000000B1	Programmable interrupt controller
0x000000B4-0x000000B5	Programmable interrupt controller
0x000000B8-0x000000B9	Programmable interrupt controller

I/O	ASSIGNMENT
0x000000BC-0x000000BD	Programmable interrupt controller
0x000004D0-0x000004D1	Programmable interrupt controller
0x0000F090-0x0000F097	Standard SATA AHCI Controller
0x0000F080-0x0000F083	Standard SATA AHCI Controller
0x0000F060-0x0000F07F	Standard SATA AHCI Controller
0x00000040-0x00000043	System timer
0x00000050-0x00000053	System timer

Memory Map

MEMORY MAP	ASSIGNMENT
0xE0000000-0xEFFFFFFF	Motherboard resources
0xE0000000-0xEFFFFFFF	PCI Express Root Complex
0xFEA00000-0xFEAFFFFF	Motherboard resources
0xFED01000-0xFED01FFF	Motherboard resources
0xFED03000-0xFED03FFF	Motherboard resources
0xFED06000-0xFED06FFF	Motherboard resources
0xFED08000-0xFED09FFF	Motherboard resources
0xFED80000-0xFEDBFFFF	Motherboard resources
0xFED1C000-0xFED1CFFF	Motherboard resources
0xFEE00000-0xFEEFFFFF	Motherboard resources
0x91310000-0x91313FFF	High Definition Audio Controller
0x91000000-0x910FFFFF	High Definition Audio Controller
0x91316000-0x913160FF	Intel(R) Celeron(R)/Pentium(R) Processor SMBUS - 5AD4
0x91180000-0x911FFFFF	Intel(R) I210 Gigabit Network Connection
0x9117C000-0x9117FFFF	Intel(R) I210 Gigabit Network Connection
0x91100000-0x911FFFFF	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD9
0x9131C000-0x9131CFFF	Intel(R) Serial IO I2C Host Controller - 5AB4
0x9131B000-0x9131BFFF	Intel(R) Serial IO I2C Host Controller - 5AB4
0xFED00000-0xFED003FF	High precision event timer
0x91300000-0x9130FFFF	Intel(R) USB 3.0 eXtensible Host Controller - 1.0 (Microsoft)
0x90000000-0x90FFFFFF	Intel(R) HD Graphics
0x80000000-0x8FFFFFFF	Intel(R) HD Graphics
0x80000000-0x8FFFFFFF	PCI Express Root Complex

MEMORY MAP	ASSIGNMENT
0x91200000-0x912FFFFF	Intel(R) Celeron(R)/Pentium(R) Processor PCI Express Root Port - 5AD8
0x9131A000-0x9131AFFF	Intel(R) Serial IO I2C Host Controller - 5AB6
0x91319000-0x91319FFF	Intel(R) Serial IO I2C Host Controller - 5AB6
0x7C000001-0x7FFFFFFF	PCI Express Root Complex
0x7B800001-0x7BFFFFFF	PCI Express Root Complex
0x91321000-0x91321FFF	Intel(R) Trusted Execution Engine Interface
0xD0C00000-0xD0C00653	Intel(R) Serial IO GPIO Host Controller - INT3452
0xCFFFF000-0xCFFFFFFF	Intel SD Host Controller
0xCFFFE000-0xCFFFEFFF	Intel SD Host Controller
0x91314000-0x91315FFF	Standard SATA AHCI Controller
0x9131E000-0x9131E0FF	Standard SATA AHCI Controller
0x9131D000-0x9131D7FF	Standard SATA AHCI Controller
0x91280000-0x912FFFFF	Intel(R) I210 Gigabit Network Connection #2
0x9127C000-0x9127FFFF	Intel(R) I210 Gigabit Network Connection #2

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. Users 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 F81966 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 watch dog timer

Enable watchdog timer and set timeout interval to 30 seconds.

```
; ------------------------ 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 timeout interval to 30 ---------------------------------------
dec     dx
mov     al,     0F6h
out     dx,     al
inc     dx
mov     al,     1Eh
out     dx,     al
;-------------------Set second as counting unit and start counting ---------------------
dec     dx
mov     al,     0F5h
out     dx,     al
inc     dx
in      al,     dx
and     al,     30h
out     dx,     al
;--------------------------------Exit the extended function mode ------------------------
dec     dx
mov     al,     0AAh
out     dx,     al
```

Flash BIOS Update

I. Prerequisites

1 Prepare a USB storage device which can save the required files for BIOS update.

2 Download and save the BIOS file (e.g. P2310PM1.bin) to the bootable device.

3 Copy AMI flash utility – AFUEFIx64.efi (v5.12.02.2028) into the storage device. The utility and BIOS file should be saved to the same path.

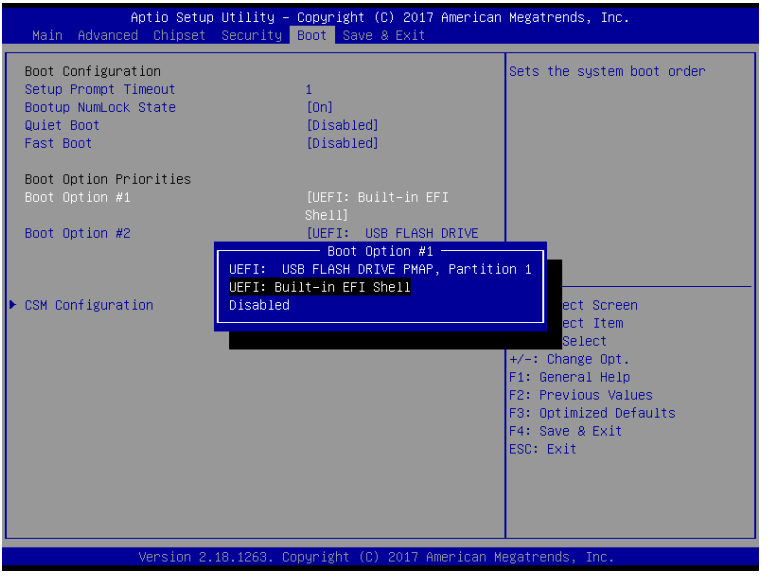
4 Make sure the target system can first boot to the EFI shell environment.

(1) Connect the USB storage device.

(2) Turn on the computer and press **<F2>** or **<Del>** key during boot to enter BIOS Setup.

(3) Select **[Boot]** menu and set **[UEFI: Built-in EFI Shell]** to be the 1st boot device.

(4) Press **<F4>** key to save the configuration and restart the system to boot into EFI Shell environment.



II. AFUEFIx64 Command for System BIOS Update

AFUEFIx64.efi is the AMI firmware update utility; the command line is shown as below:

AFUEFIx64 <ROM File Name> [option1] [option2]….

User can type "AFUEFIx64 /?" to see all the definition of each control options. The recommended options for BIOS ROM update include following parameters:

/P: Program main BIOS image.

/N: Program NVRAM.

/X: Don't check ROM ID.

III. BIOS update procedure

1 Boot into EFI Shell, change to the path where you put BIOS image and AFUEFIx64.

```
Shell> fs0:
fs0:\> cd afuefix64
```

2 Type "**AFUEFIx64 P231xxxx.bin /p /n /x"** and press enter to start the flash procedure. (xxxx means the BIOS revision part, ex. 0PM1…)

3 During the update procedure, you will see the BIOS update process status and its percentage. Beware! Do not turn off system power or reset your computer if the whole procedure are not complete yet, or it may crash the BIOS ROM and make system unable to boot up next time.

4 After BIOS update procedures is complete, the messages should be like the figure shown below.

```
fs0:\> AfuEfix64 P2310PM1.bin /p /n /x

+--------------------------------------------------------------------+
|             AMI Firmware Update Utility v5.12.02.2028              |
|                       APL FaultTolerance Mode                      |
|   Copyright (c) 1985-2019 American Megatrends International LLC,   |
|     All Rights Reserved. Subject to AMI licensing agreement.       |
+--------------------------------------------------------------------+
Reading flash ..... done.
- FFS checksums ..... ok.
- Check Romlayout ..... ok.
- Fault Tolerance Flash Support Enabled.
Fault Tolerant Backup..... done.
Erasing AplFt Block ..... done.
Updating AplFt Block ..... done.
Verifying AplFt Block ..... done.
Erasing Main Block ..... done.
Updating Main Block ..... done.
Verifying Main Block ..... done.
Erasing NVRAM Block ..... done.
Updating NVRAM Block ..... done.
Verifying NVRAM Block ..... done.

Process completed.

fs0:\>
```

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.