KS070-FS
7" Light Industrial Touch Panel PC
User's Manual

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Trademarks

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FCC and DOC Statement on Class A

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

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

Notice:

1. The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.
2. Shielded interface cables must be used in order to comply with the emission limits.

Table of Contents

About this Manual

An electronic file of this manual can be obtained from the DFI website at www.dfi.com.

To download the user's manual from our website, please go to "Support" > "Download Center."

On the Download Center page, select your product or type the model name and click "Search" to find all technical documents including the user's manual for a specific product.

Warranty

1. Warranty does not cover damages or failures that arised from misuse of the product, inability to use the product, unauthorized replacement or alteration of components and product specifications.

2. The warranty is void if the product has been subjected to physical abuse, improper installation, modification, accidents or unauthorized repair of the product.

3. Unless otherwise instructed in this user's manual, the user may not, under any circumstances, attempt to perform service, adjustments or repairs on the product, whether in or out of warranty. It must be returned to the purchase point, factory or authorized service agency for all such work.

4. We will not be liable for any indirect, special, incidental or consequencial damages to the product that has been modified or altered.

Static Electricity Precautions

It is quite easy to inadvertently damage your PC, system board, components or devices even before installing them in your system unit. Static electrical discharge can damage computer components without causing any signs of physical damage. You must take extra care in handling them to ensure against electrostatic build-up.

1. To prevent electrostatic build-up, leave the system board in its anti-static bag until you are ready to install it.

2. Wear an antistatic wrist strap.

3. Do all preparation work on a static-free surface.

4. Hold the device only by its edges. Be careful not to touch any of the components, contacts or connections.

5. Avoid touching the pins or contacts on all modules and connectors. Hold modules or con nectors by their ends.

Important:
Electrostatic discharge (ESD) can damage your processor, disk drive and other components. Perform the upgrade instruction procedures described at an ESD workstation only. If such a station is not available, you can provide some ESD protection by wearing an antistatic wrist strap and attaching it to a metal part of the system chassis. If a wrist strap is unavailable, establish and maintain contact with the system chassis throughout any procedures requiring ESD protection.

Safety Measures

To avoid damage to the system:
• Use the correct AC input voltage range.

To reduce the risk of electric shock:
• Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

Battery:
• Danger of explosion if battery incorrectly replaced.
• Replace only with the same or equivalent type recommend by the manufacturer.
• Dispose of used batteries according to local ordinance.

Safety Precautions

• Use the correct DC input voltage range.

• Unplug the power cord before removing the system chassis cover for installation or servicing. After installation or servicing, cover the system chassis before plugging the power cord.

• Danger of explosion if battery incorrectly replaced.

• Replace only with the same or equivalent type recommend by the manufacturer.

• Dispose of used batteries according to local ordinance.

• Keep this system away from humidity.

• Place the system on a stable surface. Dropping it or letting it fall may cause damage.

• The openings on the system are for air ventilation to protect the system from overheating. DO NOT COVER THE OPENINGS.

• Place the power cord in such a way that it will not be stepped on. Do not place anything on top of the power cord. Use a power cord that has been approved for use with the system and that it matches the voltage and current marked on the system's electrical range label.

• If the system will not be used for a long time, disconnect it from the power source to avoid damage by transient overvoltage.

• If one of the following occurs, consult a service personnel:

  - The power cord or plug is damaged.

  - Liquid has penetrated the system.

  - The system has been exposed to moisture.

  - The system is not working properly.

  - The system dropped or is damaged.

  - The system has obvious signs of breakage.

• The unit uses a three-wire ground cable which is equipped with a third pin to ground the unit and prevent electric shock. Do not defeat the purpose of this pin. If your outlet does not support this kind of plug, contact your electrician to replace the outlet.

• Disconnect the system from the DC outlet before cleaning. Use a damp cloth. Do not use liquid or spray detergents for cleaning.

About the Package

The package contains the following items. If any of these items are missing or damaged, please contact your dealer or sales representative for assistance.

• 1 KS070-FS Touch Panel PC
• 1 Poron foam
• 1 Quick Installation Guide

Optional Items

• Wi-Fi
• Power Cord
• Panel Mount
• Power Adapter

The board and accessories in the package may not come similar to the information listed above. This may differ in accordance to the sales region or models in which it was sold. For more information about the standard package in your region, please contact your dealer or sales representative.

Chapter 1 - Introduction

Overview

KS070-FS

Side View

Top View

Bottom View

Key Features

• 7" 1024x600 TFT LCD panel with touch screen
• 1 x SD socket for storage
• IP65 front panel protection
• 4GB eMMC for storage
• Rich I/O: 1 LAN, 2 COM, 2 USB 2.0, 1 USB OTG

6

Specifications

SYSTEM	Processor	NXP i.MX6 Series Processor
		NXP i.MX6 Cortex-A9 Dual Lite, 1.0GHz
	Memory	2GB SDRAM Memory Down - Single Channel DDR3L 1600MHz
DISPLAY AND TOUCH SCREEN	Display	7" 1024x600 TFT LCD Panel with Capacitive Touch Screen
	Brightness	425 cd/m²
	Contrast	800:1
	Backlight Lifetime	50,000 hours
GRAPHICS	Display	1 x HDMI - resolution up to 1920x1080 @ 60 Hz
	Single Display	HDMI
STORAGE		4GB eMMC
		1 x SD Socket
EXPANSION	Interface	1 x Full-size Mini PCIe (PCIe/USB)
		1 x mSATA
AUDIO	Audio Codec	Realtek ALC262
ETHERNET	Controller	1 x ATHEROS Ethernet Controller AR8033-AL1B (10/100/1000Mbps)
LED	Indicators	1 x Status LED
FRONT I/O	Ethernet	1 x GbE (RJ-45)
	Serial	1 x RS-232
	USB	2 x USB 2.0 (type A)
		1 x OTG USB
	Display	1 x HDMI
	Buttons	1 x Power Reset Button
BOTTOM I/O	Serial	1 x RS-232/422/485
	DIO	1 x 8-bit DIO
TOP I/O	Wi-Fi Antenna	2 x Wi-Fi Module Antenna Hole
INTERNAL I/O	USB	1 x MicroSD
		1 x SIM
WATCHDOG TIMER	Output & Interval	System Reset,
		Programmable via Software from 1 to 255 Seconds
POWER	Type	Wide Range 12~36V
	Connector	2-Pole Terminal Block
OS SUPPORT		Android 4.3
MECHANISM	Construction	Sheet Metal
	Mounting	VESA, Panel Mount
	Dimensions (W x H x D)	235mm x 150mm x 41mm
	Weight	1,310g
ENVIRONMENT	Operating Temperature	0 to 60°C
	Storage Temperature	-30 to 85°C
	Relative Humidity	10 to 90% RH (non-condensing)

STANDARDS AND CERTIFICATIONS	Shock	Operating: 3G, 11ms
		Non-Operating: 5G, 11ms
	Vibration	Operating: Random 5~500Hz, IEC68-2-64 (3G)
		Non-Operating: Sine 10~500Hz, IEC68-2-6 (3G)
	Certifications	CE, FCC Class B

Getting to Know the KS070-FS

Side View

2 built-in 1W speakers

Speakers
Built-in two 1W speakers on the left and right sides of the system.

Top View

SD   COM

COM Port
Used to connect a serial device.

SD
Used to insert a SD card.

Bottom View

USB
Line-out/Mic-in   DC-in

HDMI   LAN
12-bit GPIO   USB Client   COM   Power Switch
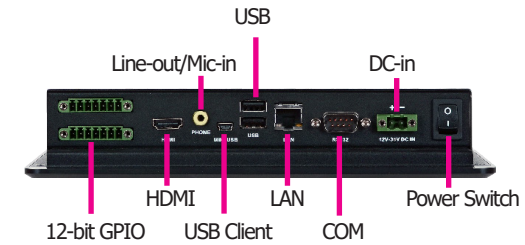
COM Port
Used to connect a serial device.

USB Ports
Used to connect USB 2.0/1.1 devices.

USB Client Port
Used to connect a USB device operating as a client port.

HDMI Port
Use to connect a HDMI device.

LAN Port
Used to connect the system to a local area network.

12-bit GPIO
Supports 12-bit GPIO 7-pole terminal block (6-bit in/ 6-bit out).

Line-out/Mic-in
Used to connect to a speaker or to an external microphone.

DC-in
Used to plug a power adapter.

8

Mechanical Dimensions

Top View

214.60

235.00

40.80

150.00

Left View   **Front View**   **Right View**

Bottom View

75.00

75.00

Rear View

0.00
14.98
24.00
29.94
41.71
75.71
90.71
96.07
102.03

0.00
5.50
45.00
50.01
58.50
75.00
87.40
101.50
119.14
145.49
173.65
190.01

5.50
28.88
73.70
104.01
117.51
136.21
185.00

17.00
26.71
39.21
59.52
97.00
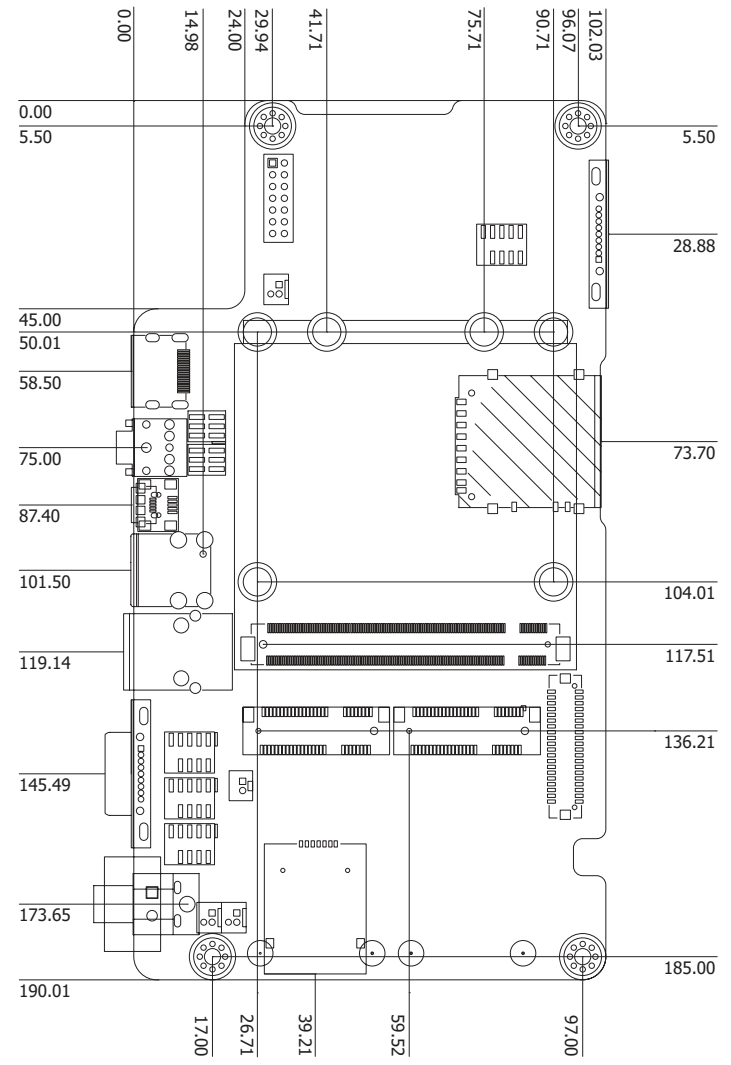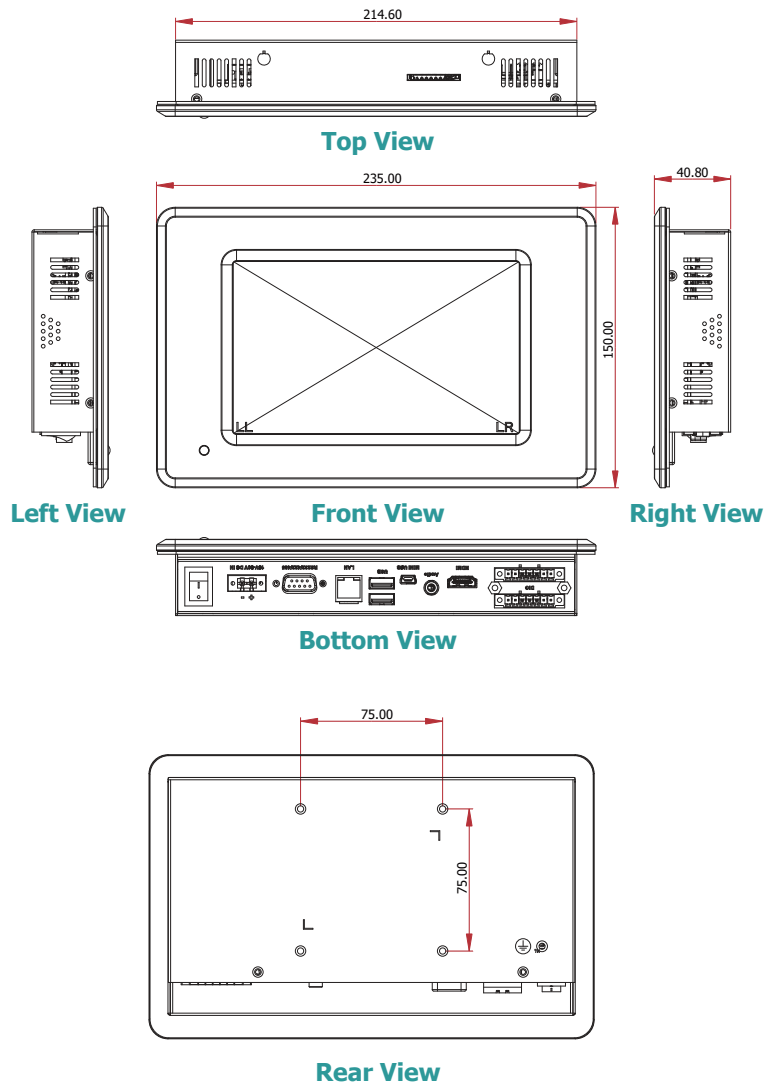
Chapter 2 - Installing the Devices

Connecting the Cable to the Terminal Block

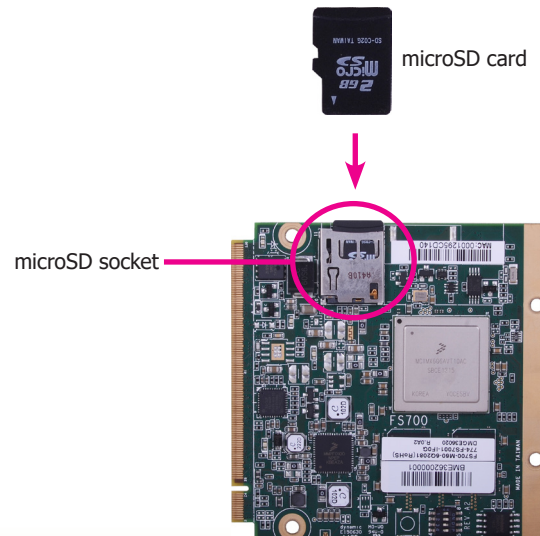> **Note:**
> The system unit used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

1. Insert the cable end of the power adapter to the terminal block. To firmly fix the cable into the terminal block, use a screwdriver to clamp down the wires to the screw that is in the terminal block.

Terminal block

Wire

Power adapter cable
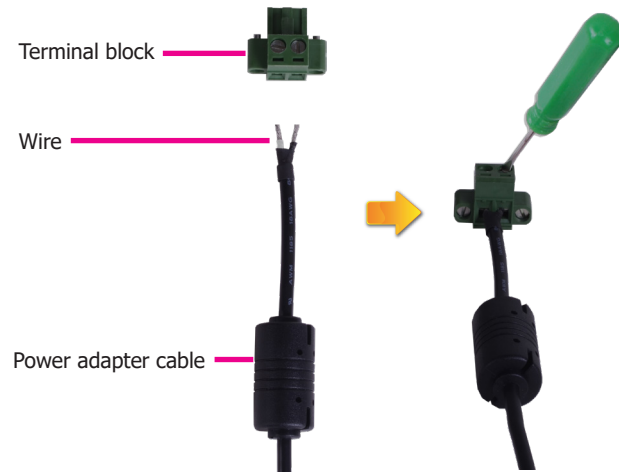
2. Plug the terminal block into the DC-in connector and then tighten the screws to secure the terminal block in place.

DC-in connector

Screws

+ -

White Wire   Black Wire

Removing the Chassis Cover

> **Note:**
> The system unit used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

1. Make sure the system and all other peripheral devices connected to it have been powered-off.

2. Disconnect all power cords and cables.

3. The 8 mounting screws on the side and cover of the system are used to secure the cover to the chassis and the 4 mounting screws are used to fix the COM port. Remove these screws and then put them in a safe place for later use.

Mounting Screw (COM port)

Mounting Screw
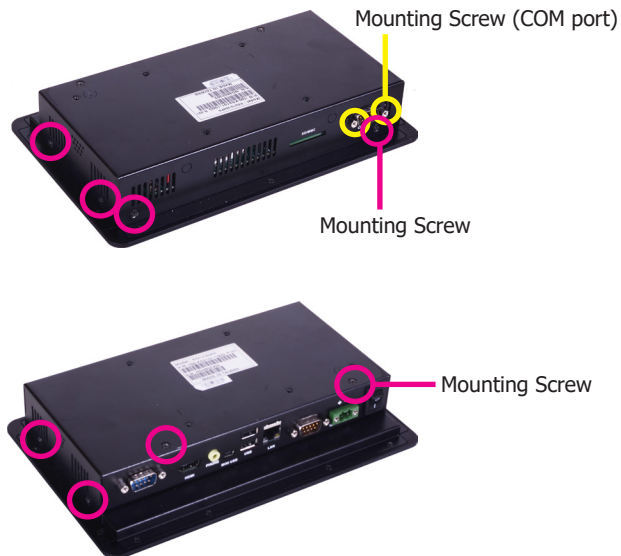
Mounting Screw

4. After removing the mounting screws, lift the cover up.

Lift the Cover Upward

5. 1 SIM card socket, 1 SD card socket, 1 mSATA slot and 1 Mini PCIe slot are readily accessible after removing the chassis cover.

Mini PCIe Slot

SIM card socket

SD card socket

mSATA Slot
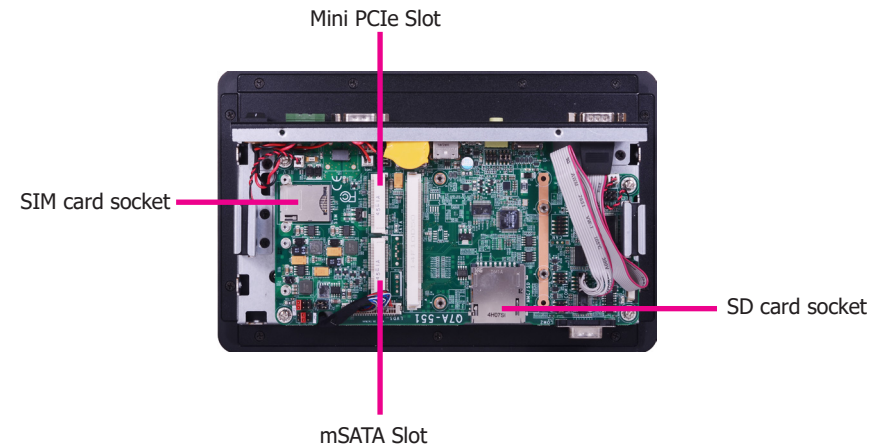
## Installing the microSD Card and the Qseven Module

> **Note:**
> The system unit used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

1. The microSD socket is located on the Qseven module.

microSD socket
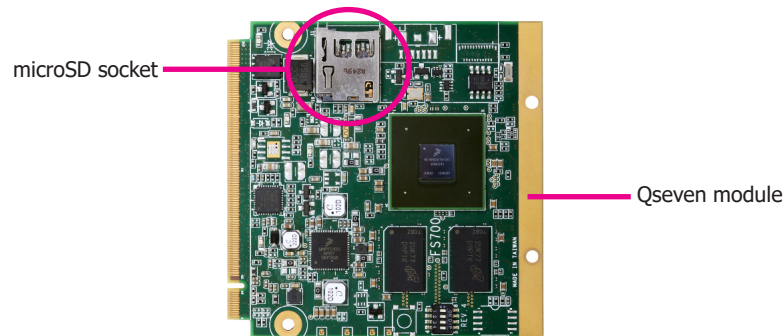
Qseven module

2. Insert a microSD card into the microSD socket on the Qseven module.

microSD card

microSD socket

3. Note the key on the MXM connector. The key ensures that the Qseven module with a microSD card in the socket can be plugged into the connector in one direction only.

MXM connector
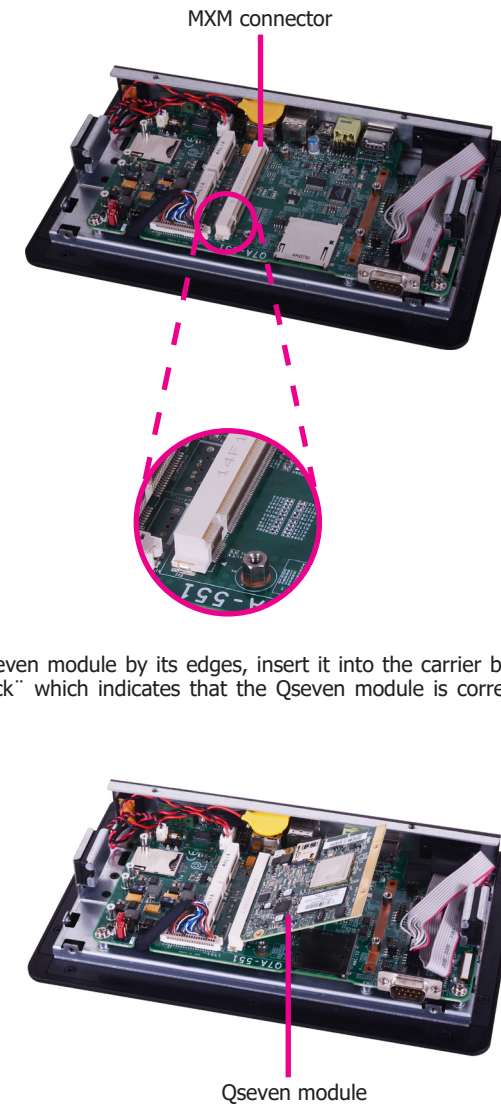
4. Grasp the Qseven module by its edges, insert it into the carrier board, and you will hear a distinctive¨click¨ which indicates that the Qseven module is correctly locked into the position.

Qseven module

5. Press down the Qseven module with a microSD card in the socket and use mounting screws to fix it on place.
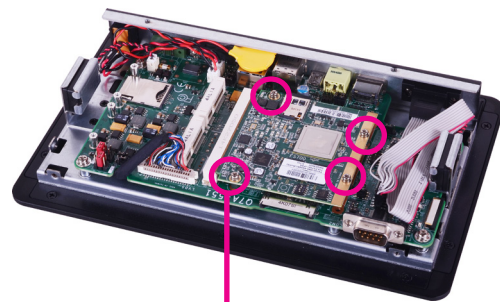
Mounting screw

Installing the SIM Card

Note:
The system unit used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

1. The SIM card socket is located on the system board.
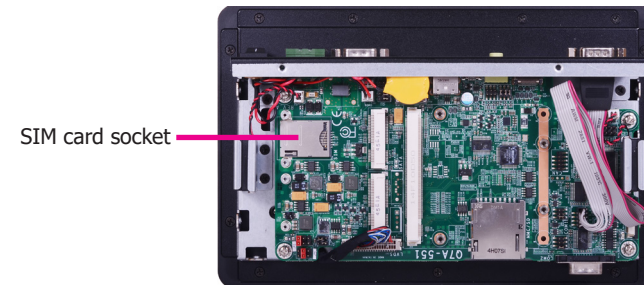
SIM card socket

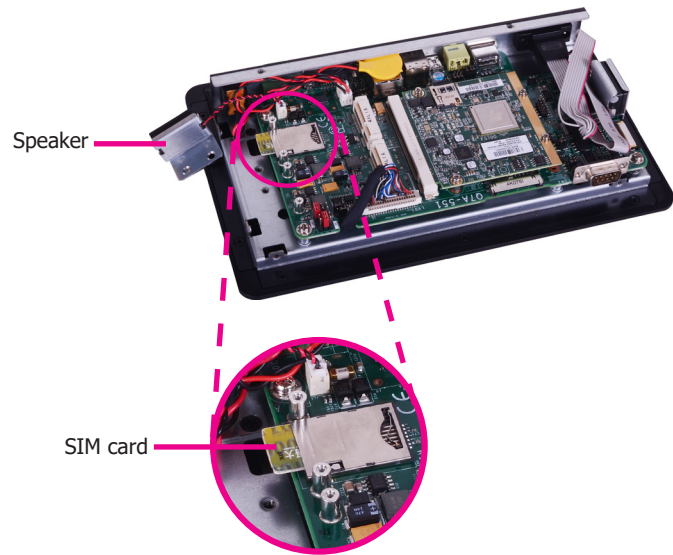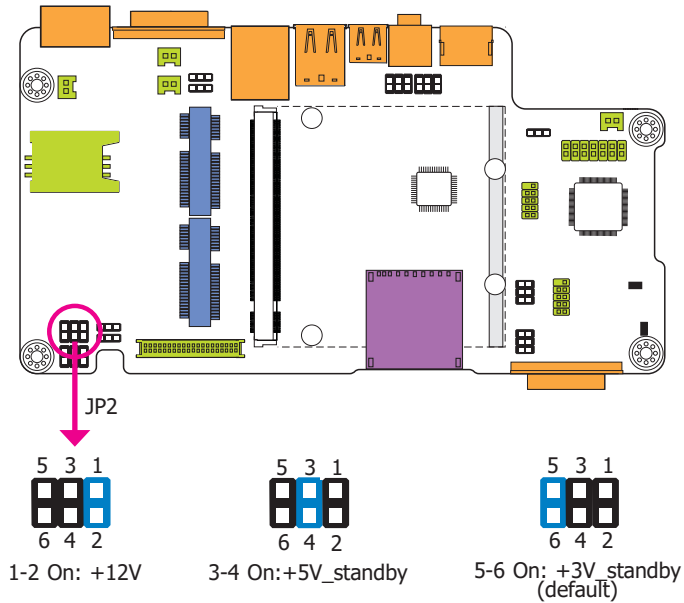2. Before inserting a SIM card into the socket, you have to remove mounting screws on the speaker.

Speaker
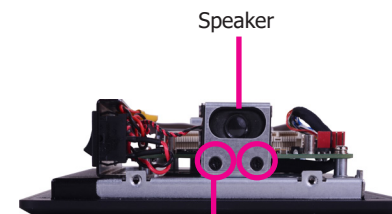
Mounting screw   Mounting screw

3. Insert the SIM card into the SIM card socket, and push it to take the card out of the socket.

Speaker

SIM card

Chapter 3 - Jumper Settings

Jumper Settings - System Board

Panel Power Select

JP2

5 3 1
6 4 2
1-2 On: +12V

5 3 1
6 4 2
3-4 On:+5V_standby

5 3 1
6 4 2
5-6 On: +3V_standby (default)

JP2 is used to select the power supplied with the LCD panel.

> **Important:**
> Before powering-on the system, make sure that the power settings of JP2 match the LCD panel's specification. Selecting the incorrect voltage will seriously damage the LCD panel.

COM RS232/UART5 Select

JP12
JP11

3 2 1
**1-2 On:
RS232 (default)**

3 2 1
2-3 On: UART5
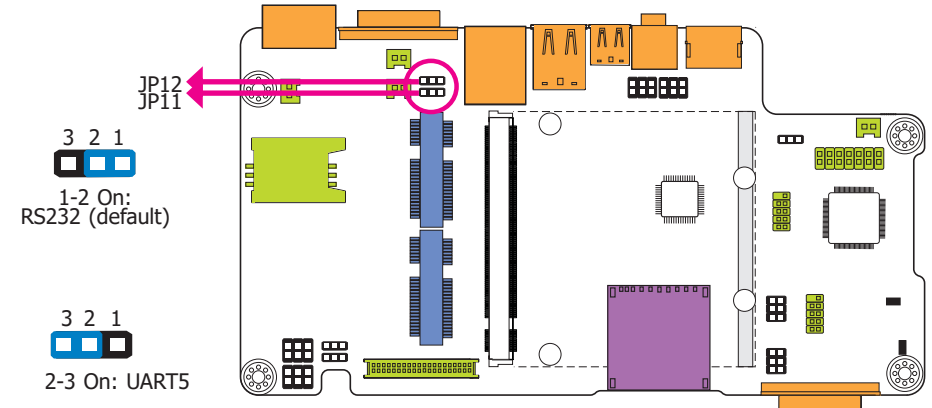
JP11 and JP12 are used to configure the COM port to RS232 (default) or UART5.

> **Important:**
> You need to set JP11 and JP12 simultaneously.

COM RS232/UART5 Select	JP11, JP12
RS232 (default)	1-2 On
UART 5	2-3 On

LCD Panel Power Select	JP2
+12V	1-2 On
+5V Standby	3-4 On
+3V Standby (default)	5-6 On

15

COM 1/COM 2 RS232/422/485 Select

COM 1:
RS232/422/485

COM 1

JP4

JP6

COM 2:
RS232/422/485
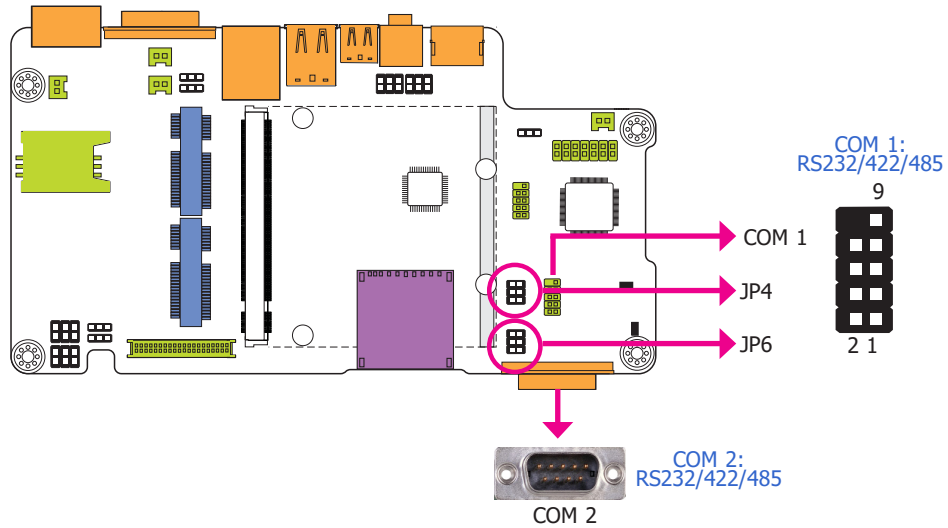
COM 2

JP4 (for COM 1) and JP6 (for COM 2) are used to configure the COM ports to RS232, RS422 (Full Duplex) or RS485. The pin functions of COM ports will vary according to jumpers' setting.

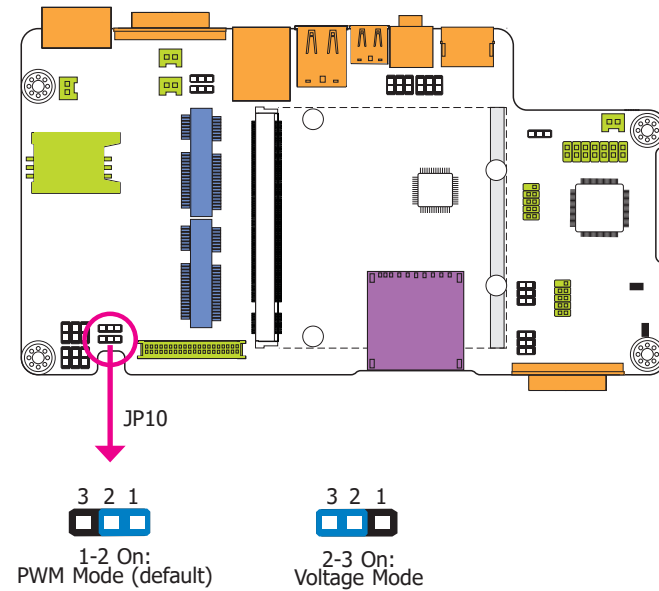| COM 1 /COM 2 RS232/422/485 Select	JP4 (for COM 1), JP6 (for COM 2)
RS232 (default)	1-2 On
RS422	3-4 On
RS485	5-6 On

JP4 (for COM 1)/JP6 (for COM 2)

1-2 On: RS232 (default)

3-4 On: RS422 Full Duplex

5-6 On: RS485

COM 1

RS232

RS422 Full Duplex

RS485

COM 2

RS232

RS422 Full Duplex

RS485
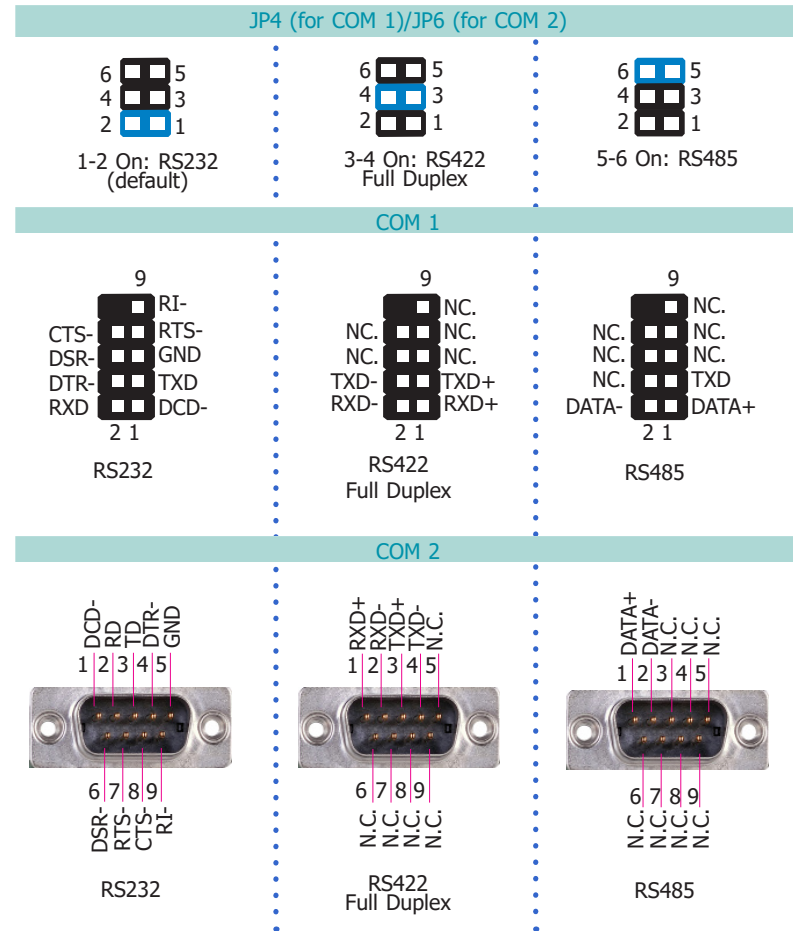
Touch Panel Power Select

JP3

3 2 1

1-2 On:
+5V_standby

2-3 On: +3V_standby
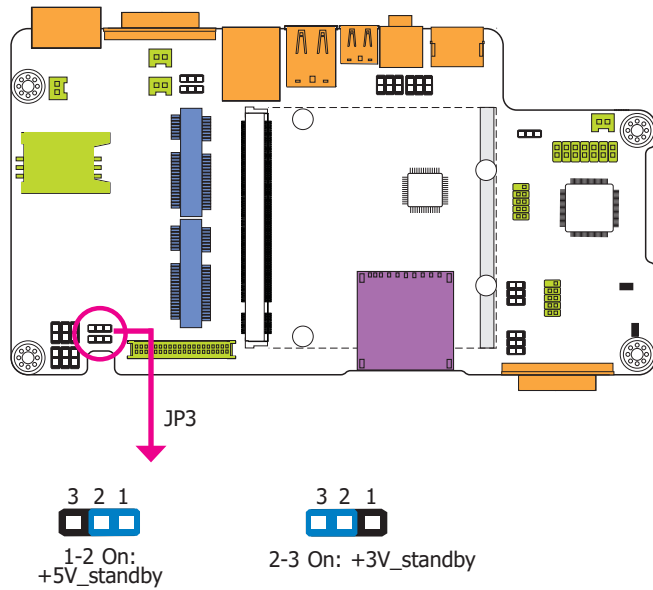
JP3 controls the power level of the touch panel IC.

Dimming Mode Select

JP10

3 2 1

1-2 On:
PWM Mode (default)

2-3 On:
Voltage Mode

JP10 allows you to select the mode for the lightness control of the LVDS panel.

Important:
You need to refer to your panel's user guide to determine the type of mode (PWM or Voltage) most appropriate for your panel.

Dimming Mode Select	JP10
PWM Mode (default)	1-2 On
Voltage Mode	2-3 On

LCD/Inverter Power Select

JP5

5 3 1
6 4 2
1-2 On: +12V

5 3 1
6 4 2
3-4 On:+5V_standby
(default)

5 3 1
6 4 2
5-6 On: +3V_standby
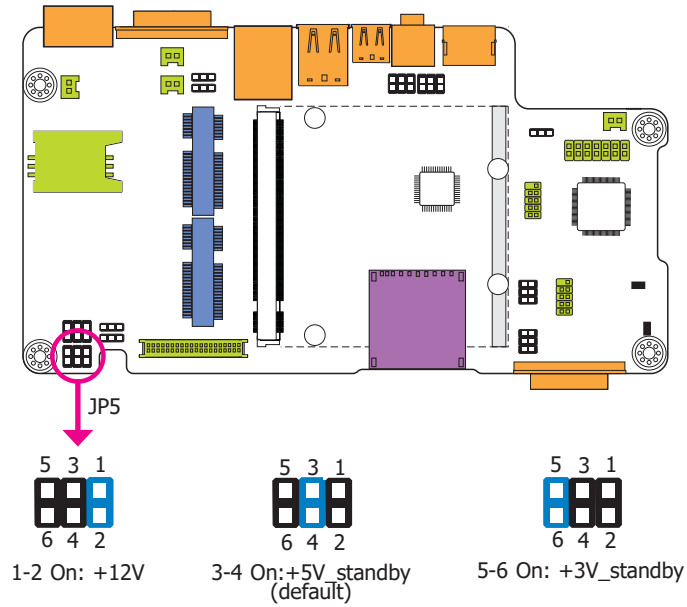
JP5 is used to select the power level of the LCD/inverter power connector.

Download Mode Select

3 2 1
1-2 On: Serial
Download Mode

JP9

3 2 1
2-3 On: Normal Boot
(default)
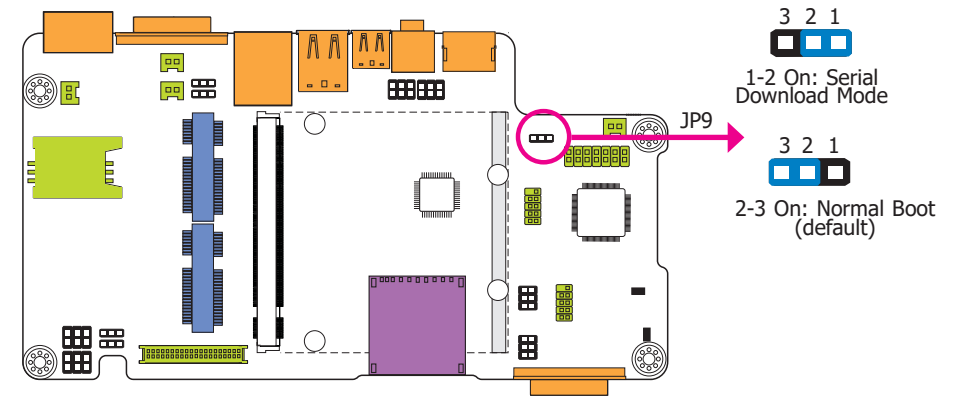
JP9 allows you to select the download mode for the serial port to update the firmware and OS.

Download Mode Select	JP9
Serial Download Mode	1-2 On
Normal Boot (default)	2-3 On

Line-out/Mic-in Select

1 3 5

JP7 1-2, 3-4, 5-6 On: JP8 1-2, 3-4, 5-6 On:
Line-out   Mic-in (default)

2 4 6

JP7 JP8
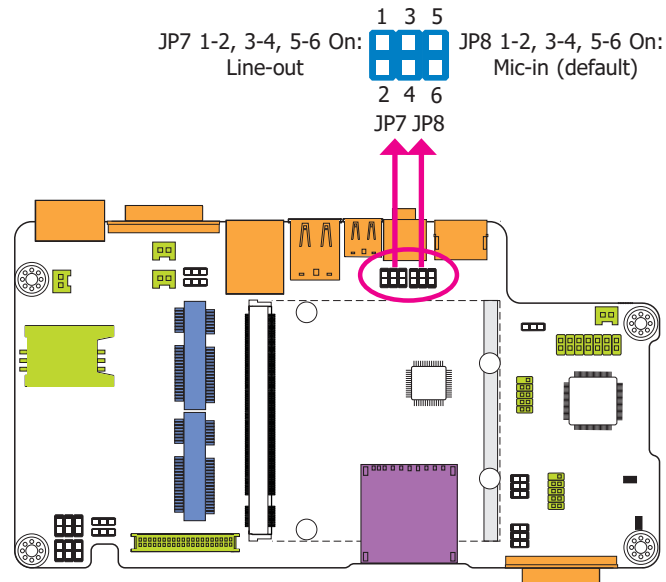
JP7 and JP8 allow you to select the audio function. When pins 1-2, 3-4, and 5-6 are set to On, JP7 is applied for the Line-out function and JP8 is used for the Mic-in function.

Jumper Setting - Qseven Module

Boot Device Select

Switch

1 Off, 2 Off, 3 On, 4 On: eMMC

1 Off, 2 Off, 3 On, 4 Off: uSD

1 On, 2 On, 3 Off, 4 On: SPI3 on board SPI

1 On, 2 Off, 3 Off, 4 On: SPI1 on carrier board
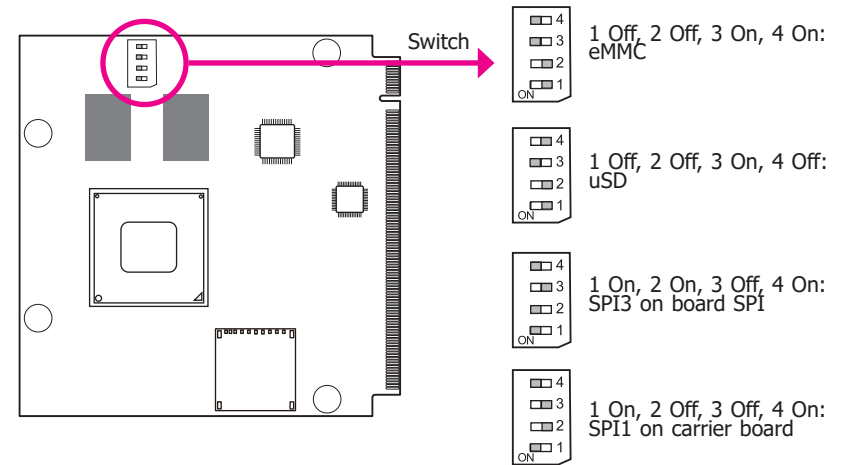
Switch is designed to select the device to boot the system.

Boot Device Select	Switch
eMMC	1 Off, 2 Off, 3 On, 4 On
uSD	1 Off, 2 Off, 3 On, 4 Off
SPI3 on board SPI	1 On, 2 On, 3 Off, 4 On
SPI1 on carrier board	1 On, 2 Off, 3 Off, 4 On

19

Chapter 4 - Ports and Connectors

Top Panel I/O Ports

SD   COM
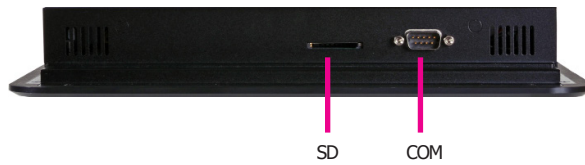
The top panel I/O ports consist of the following:

- 1 SD card socket
- 1 COM port

SD Card Socket
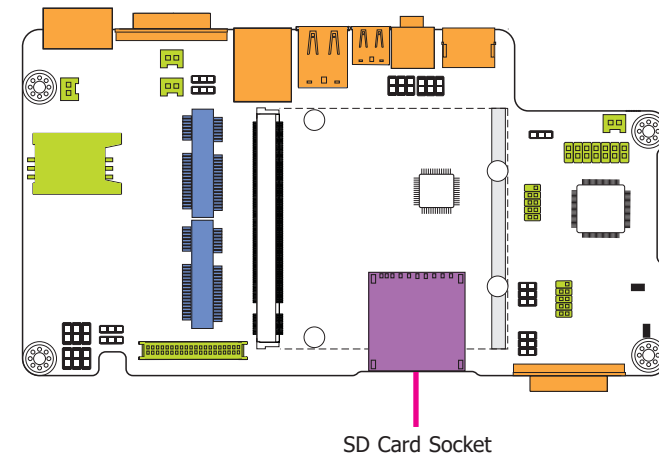
SD Card Socket

SD Card Socket

This expansion port is used to insert a Secure Digital Input/Output (SDIO) device. Aside from storing data files, an SDIO card is also capable of storing powerful software applications.

20

Serial (COM) Port

COM 2:
RS232/422/485
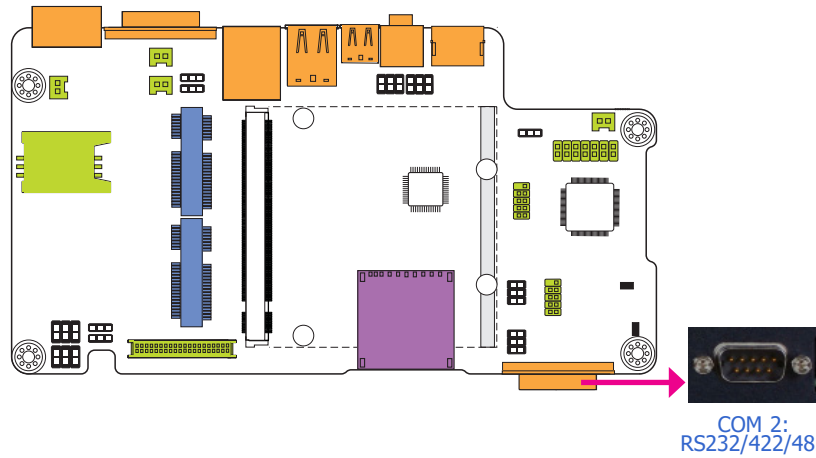
The serial COM port is RS232 asynchronous communication port with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

The system unit is equipped with 1 onboard serial port at the top side. JP6 is used to configure the COM port 2 to RS232, RS422 (Full Duplex) or RS485. The pin functions of the COM port will vary according to the jumper's setting.

JP6		
6 5 4 3 2 1 1-2 On: RS232 (default)	6 5 4 3 2 1 3-4 On: RS422 Full Duplex	6 5 4 3 2 1 5-6 On: RS485

COM 2		
DCD- RD TD DTR- GND 1 2 3 4 5 6 7 8 9 DSR- RTS- CTS- RI- RS232	RXD+ RXD- TXD+ TXD- N.C. 1 2 3 4 5 6 7 8 9 N.C. N.C. N.C. N.C. RS422 Full Duplex	DATA+ DATA- N.C. N.C. N.C. 1 2 3 4 5 6 7 8 9 N.C. N.C. N.C. N.C. RS485

Side Panel I/O Ports
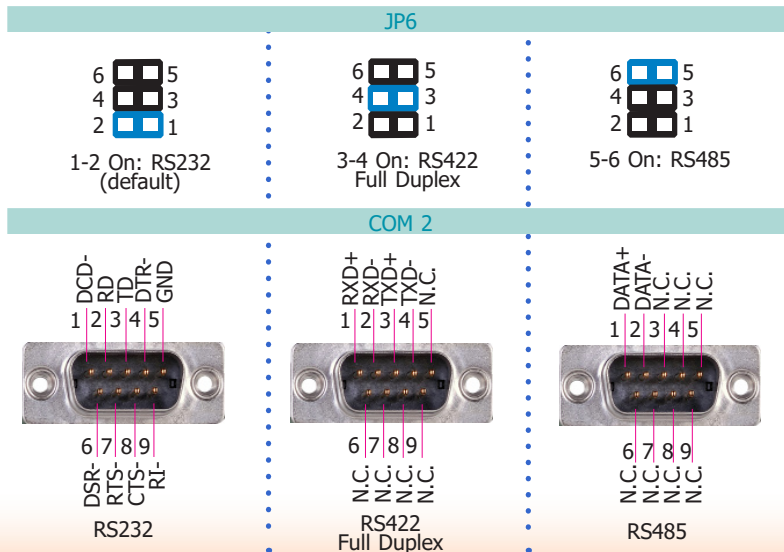
2 built-in 1W speakers

The side panel I/O ports consist of the following:

- 2 built-in 1W speakers (left and right sides)

Built-in Speakers

AMP_L

AMP_R

1
AOUT_L+
AOUT_L-
2

2 1

AOUT_R+
AOUT_R-
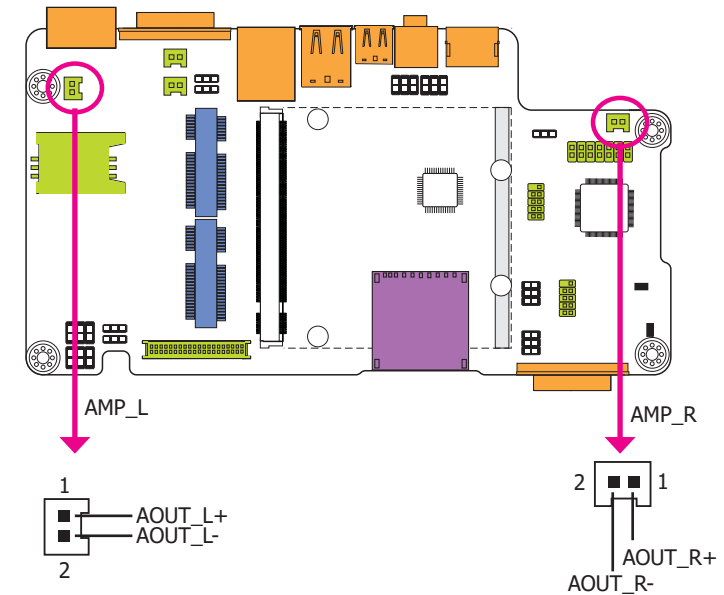
The amplify left and right connectors which have amplifying features are used to connect external speakers.

21

Bottom Panel I/O Ports
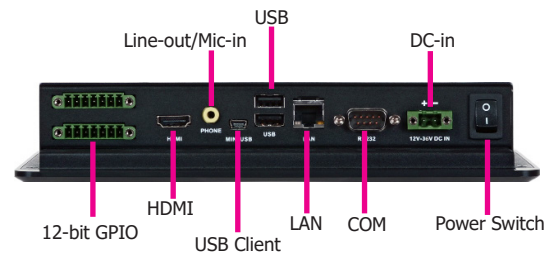
The bottom panel I/O ports consist of the following:

- 1 RS232 COM port
- 1 HDMI port
- 1 USB Client port (Type Mini B)
- 2 USB 2.0/1.1 ports (Type A)
- 1 Line-out/Mic-in jack
- 1 DC-in terminal block
- 1 RJ45 LAN port
- 12-bit GPIO
- 1 Power switch

Serial (COM) Port
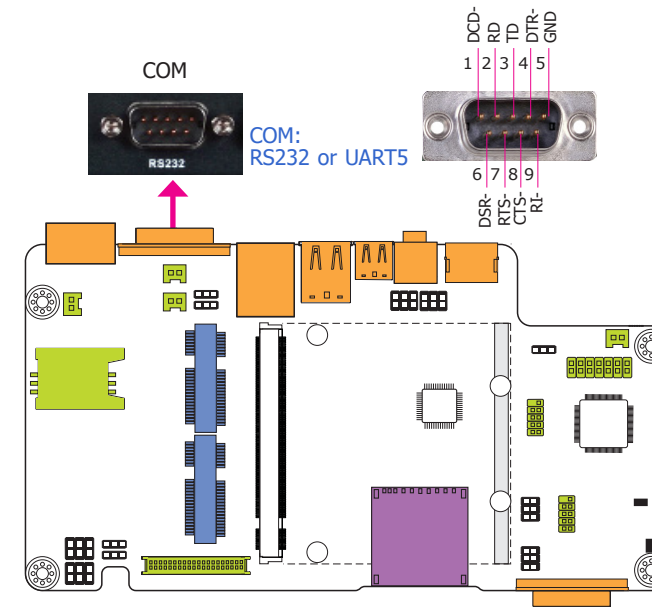
The system unit is equipped with one onboard serial COM port at the bottom side. This COM port is fixed at RS232 or UART5 via the setting of JP11 and JP12 which must be set simultaneously.

The serial COM port is RS232 asynchronous communication port with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices.

Important:
You need to set JP11 and JP12 simultaneously.

HDMI Port

HDMI

The HDMI port which carries both digital audio and video signals is used to connect a LCD monitor or digital TV that has the HDMI port.

USB Client Port

USB Client
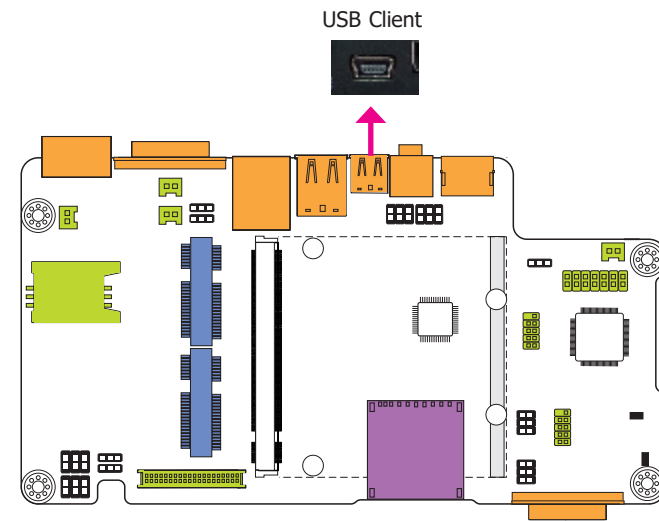
The shape of the mini USB port is smaller than the standard one and is a device operating as a client port.

23

USB Ports

USB 2.0

USB 1
USB 0
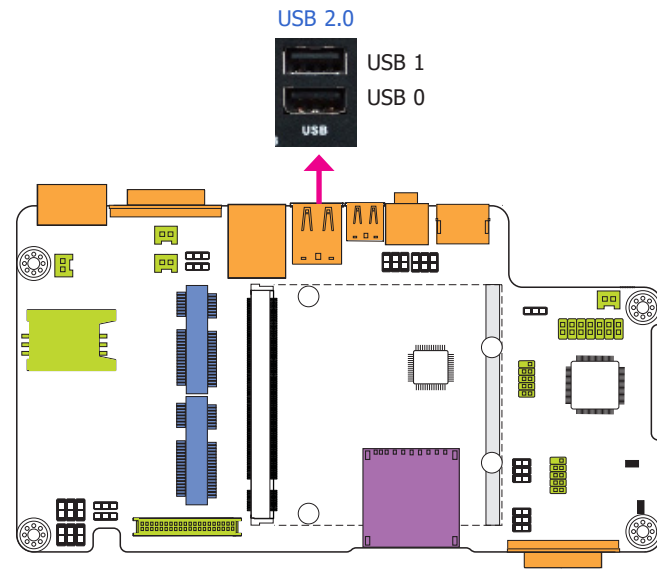
The USB device allows data exchange between your computer and a wide range of simultane-ously accessible external Plug and Play peripherals. The system unit is equipped with two on-board USB 2.0 ports (USB 0-1) at the bottom side.

Audio
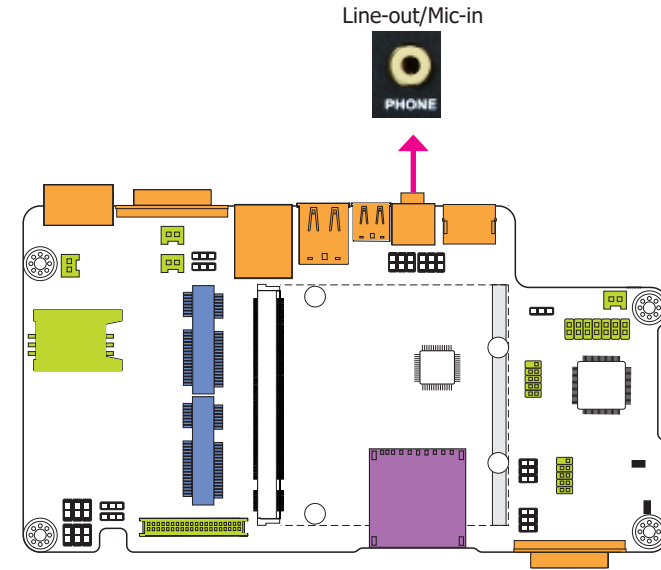
Line-out/Mic-in

The system unit is equipped with 1 audio jack to operate as a line-out jack or a mic-in jack. A jack is a one-hole connecting interface for inserting a plug. Being a line-out jack, this jack is used to connect a headphone or external speakers. Being a mic-in jack, this jack is used to connect to the center and subwoofer speakers of the audio system.

24

12~36V DC-in

DC-in
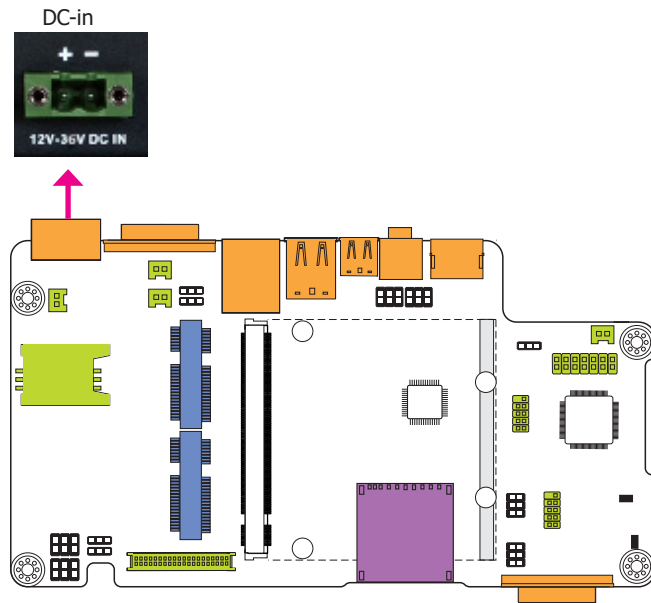
This jack is considered a low power solution. Connect a DC power cord to this jack. Use a power adapter within 12~36V DC output voltage. (We only provide 12V power adapter in the optional package contents.) Using a voltage out of the range 12~36V may fail to boot the system or cause damage to the system board.

RJ45 LAN Port

LAN
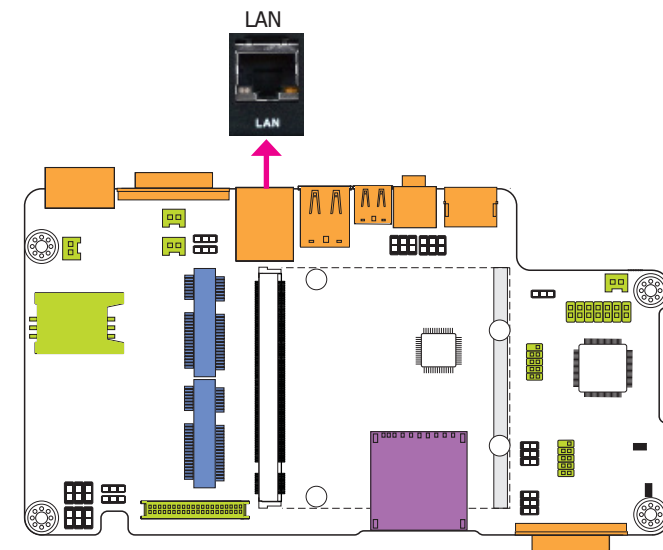
The onboard RJ45 LAN port allows the system board to connect to a local area network by means of a network hub.

12-bit GPIO
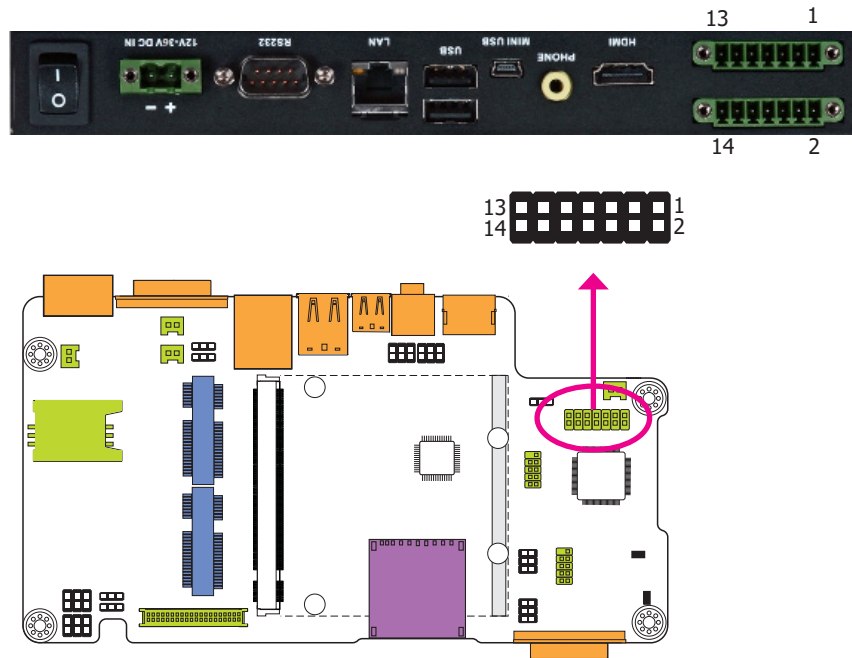
The 12-bit Digital I/O (6-bit input and 6-bit output) connector provides powering-on function to external devices that are connected to these connectors. The pin functions of the digital I/O connector are listed below:

Pins	Function	Pins	Function
1	DIO_OUT-0	2	DIO_IN-0
3	DIO_OUT-1	4	DIO_IN-1
5	DIO_OUT-2	6	DIO_IN-2
7	DIO_OUT-3	8	DIO_IN-3
9	DIO_OUT-4	10	DIO_IN-4
11	DIO_OUT-5	12	DIO_IN-5
13	+3.3V	14	GND

I/O Connectors

LVDS LCD Panel Connector
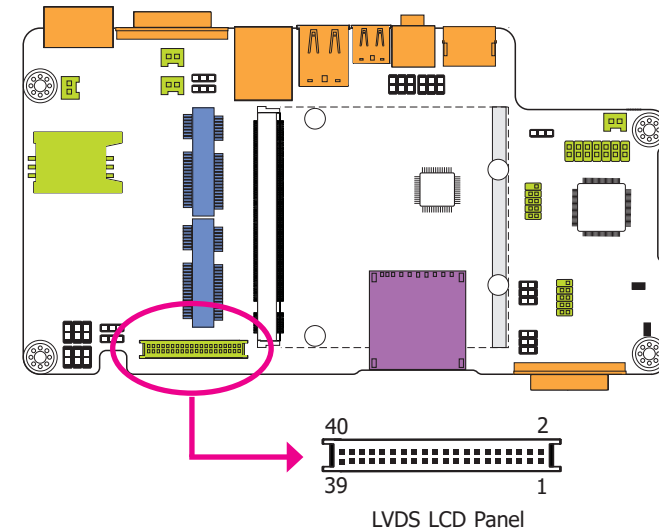
LVDS LCD Panel

The system board allows you to connect a LCD Display Panel by means of the LVDS LCD panel connector transmitting video signals and power from the system board to the LCD Display Panel.

Refer to the next page for the pin functions of the connector.

Jumper Settings

Refer to the "Jumper Settings" section in chapter 3 for settings relevant to the LVDS LCD panel.

Note:
DFI board's LVDS connector: Hirose DF13-40DP-1.25V(91)/40P/1.25mm; cable side connector: Hirose DF13-40DS-1.25C.

26

The table below illustrates the pin functions of the LVDS LCD Panel connector:

Pins	Function	Pins	Function
1	GND	2	GND
3	LVDS1_Out3+	4	LVDS0_Out3+
5	LVDS1_Out3-	6	LVDS0_Out3-
7	GND	8	GND
9	LVDS1_Out2+	10	LVDS0_Out2+
11	LVDS1_Out2-	12	LVDS0_Out2-
13	GND	14	GND
15	LVDS1_Out1+	16	LVDS0_Out1+
17	LVDS1_Out1-	18	LVDS0_Out1-
19	GND	20	GND
21	LVDS1_Out0+	22	LVDS0_Out0+
23	LVDS1_Out0-	24	LVDS0_Out0-
25	GND	26	GND
27	LVDS1_CLK+	28	LVDS0_CLK+
29	LVDS1_CLK-	30	LVDS0_CLK-
31	GND	32	GND
33	TP_INT	34	TP_SCL
35	TP_VDD	36	TP_SDA
37	Backlight Power	38	Dimming
39	Backlight Power	40	Panel Power

FlexCAN Connector

FlexCAN
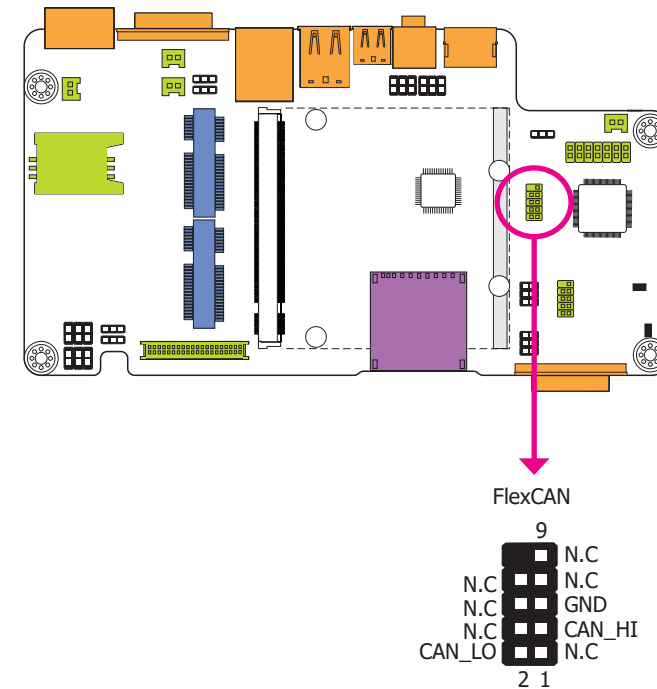
The CAN controller performs communication in accordance with the BOSCH CAN Protocol Version 2.0B Active1 (standard format and extended format). The bit rate can be programmed to a maximum of 1Mbit/s. To connect the CAN controller module to the FlexCAN connector, it is necessary to add transceiver hardware.

When communicating in a CAN network, individual message objects are configured. The message objects and the identifier masks for the receive filter for the received messages are stored in the message RAM.

Controller Area Network is a message based protocol designed specifically for automotive applications but now is also used in other areas such as industrial automation and medical equipment.

Expansion Slots

SIM Card Socket

Mini PCIe
(supports PCIe and USB signals)

Mini PCIe
(Supports mSATA signal)

SD Card Socket

LEDs

SD LED

Power LED
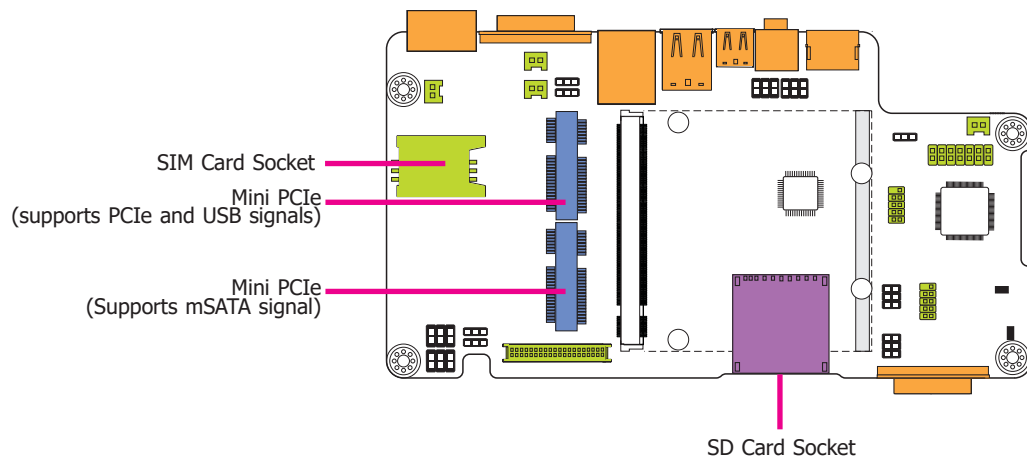
Mini PCIe Slot

The Mini PCIe socket is used to install a Mini PCIe card. Mini PCIe card is a small form factor PCI card with the same signal protocol, electrical definitions, and configuration definitions as the conventional PCI.
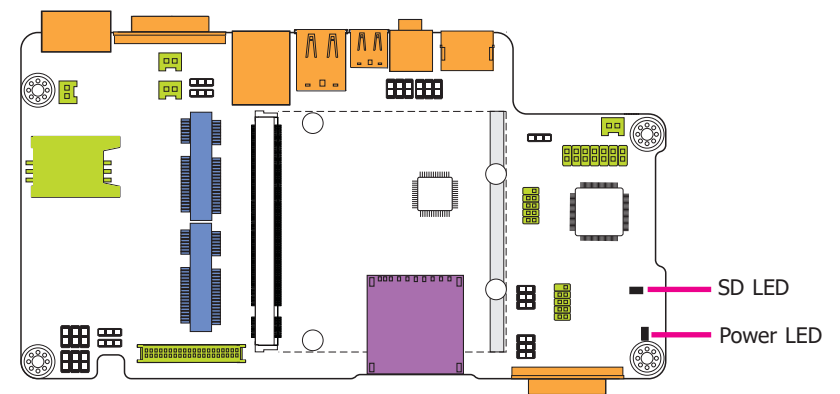
SIM Card Socket

The SIM slot on the system board is used to insert a SIM card.

SD Card Socket

This expansion port is used to insert a Secure Digital Input/Output (SDIO) device. Aside from storing data files, an SDIO card is also capable of storing powerful software applications.

SD LED

The SD LED will light when the SDIO card is inserted into the SD card socket.

Power LED

The power LED indicates that there is power on the system board. Power-off the PC and then unplug the power cord prior to installing any devices. Failure to do so will cause severe damage to the system board and components.

28

RTC Battery

RTC Battery

2   1

+3.3V

GND
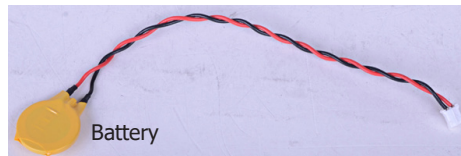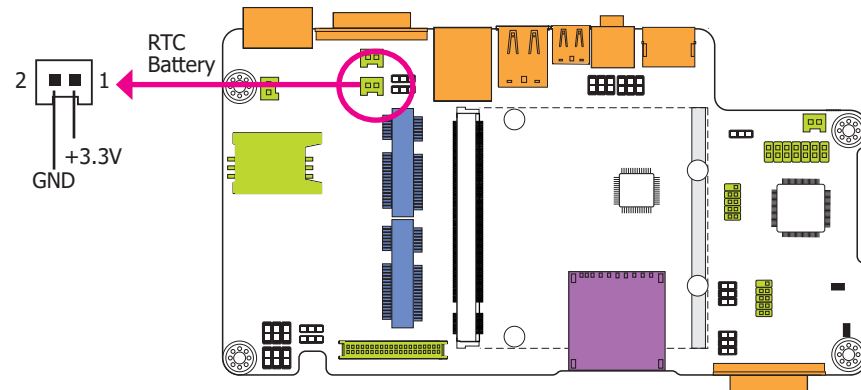
Battery ————— Connect to the battery connector

The RTC Battery powers the real-time clock and CMOS memory. It is an auxiliary source of power when the main power is shut off.

Safety Measures

• Danger of explosion if battery incorrectly replaced.

• Replace only with the same or equivalent type recommend by the manufacturer.

• Dispose of used batteries according to local ordinance.

Power Switch

Power Switch

2   1

Power_Enable

GND
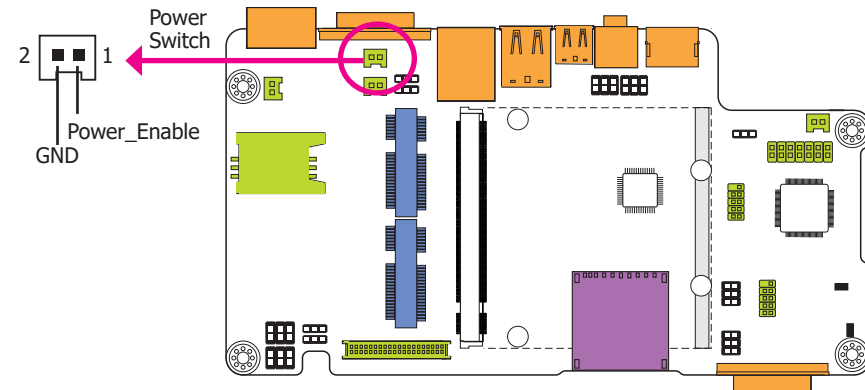
Power Switch

The power switch is used to power on or power off the system.

Serial (COM) Port
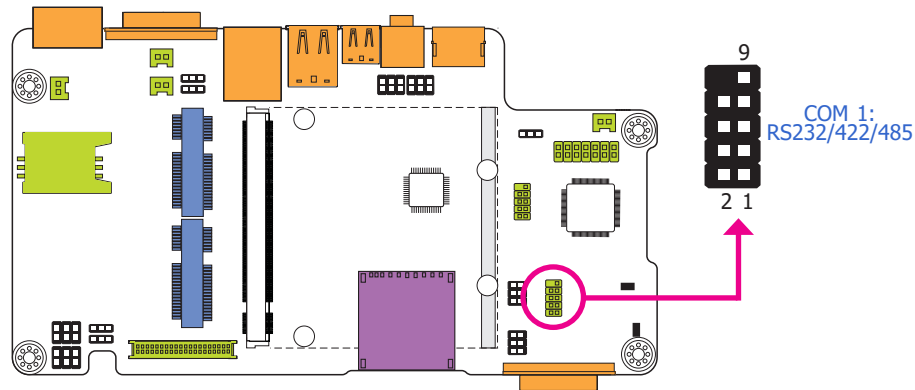
COM 1:
RS232/422/485

The system board is equipped with a 9-pin connector for connecting an external serial COM port (COM 1). COM port 1 will vary according to JP4's setting.

The serial COM port is RS232 asynchronous communication port with 16C550A-compatible UARTs that can be used with modems, serial printers, remote display terminals, and other serial devices. To connect COM 1, please refer to the following description. The serial port may be mounted on a card-edge bracket. Install the card-edge bracket to an available slot at the rear of the system chassis then insert the cable connector to the 9-pin connector. Make sure the colored stripe on the ribbon cable is aligned with pin 1 of the connector.

JP4

1-2 On: RS232 (default)

3-4 On: RS422 Full Duplex

5-6 On: RS485

COM 1

CTS-	RI-
DSR-	RTS-
DTR-	GND
RXD	TXD
	DCD-

RS232

NC.	NC.
NC.	NC.
TXD-	NC.
RXD-	TXD+
	RXD+

RS422 Full Duplex

NC.	NC.
NC.	NC.
NC.	NC.
DATA-	TXD
	DATA+

RS485

MXM Connector

MXM
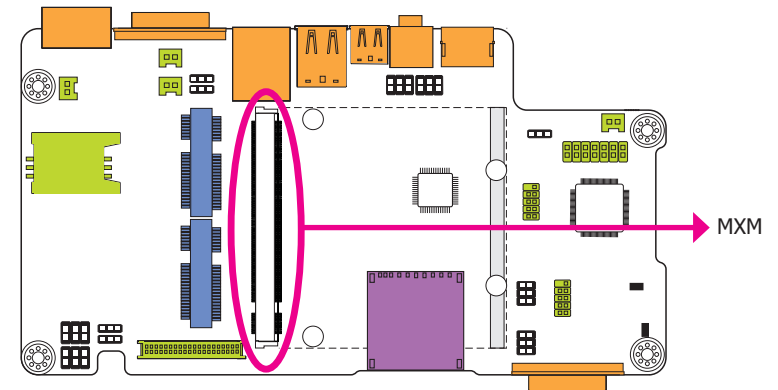
The MXM connector is used to interface the carrier board with a Qseven board. Refer to the table in the following pages for the pin functions of the MXM connector.
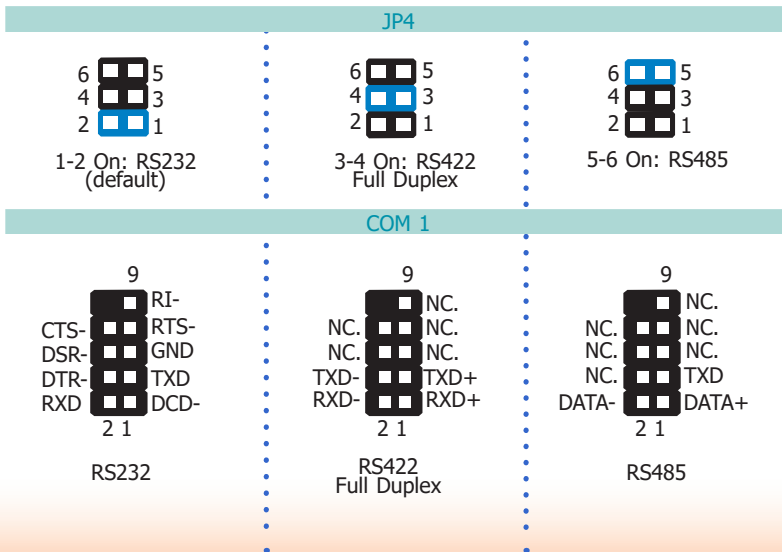
Pin	Signal	Pin	Signal
1	GND	2	GND
3	GBE_MDI3-	4	GBE_MDI2-
5	GBE_MDI3+	6	GBE_MDI2+
7	GBE_LINK100#	8	GBE_LINK1000#
9	GBE_MDI1-	10	GBE_MDI0-
11	GBE_MDI1+	12	GBE_MDI0+
13	GBE_LINK#	14	GBE_ACT#
15		16	SUS_S5#
17	WAKE#	18	SUS_S3#
19	SUS_STAT#	20	PWRBTN#
21	SLP_BTN#	22	LID_BTN#
23	GND	24	GND
25	GND	26	PWGIN
27	BATLOW#	28	RSTBTN#
29	SATA0_TX+	30	
31	SATA0_TX-	32	
33	SATA0_ACT#	34	GND
35	SATA0_RX+	36	
37	SATA0_RX-	38	
39	GND	40	GND
41	BIOS_DISABLE#/BOOT_ALT#	42	SDIO_CLK
43	SDIO_CD#	44	SDIO_LED
45	SDIO_CMD	46	SDIO_WP
47	SDIO_PWR#	48	SDIO_DAT1
49	SDIO_DAT0	50	SDIO_DAT3
51	SDIO_DAT2	52	SDIO_DAT5
53	SDIO_DAT4	54	SDIO_DAT7
55	SDIO_DAT6	56	RSVD
57	GND	58	GND
59	I2S_TXFS	60	SMB_CLK
61	I2S_CLK	62	SMB_DAT
63	I2S_TXC	64	SMB_ALERT#
65	I2S_RXD	66	I2C_CLK
67	I2S_TXD	68	I2C_DAT
69		70	WDTRIG#
71		72	WDOUT
73	GND	74	GND
75		76	
77		78	
79		80	USB_4_5_OC#
81		82	USB_P4-
83		84	USB_P4+
85	USB_2_3_OC#	86	USB_0_1_OC#
87	USB_P3-	88	USB_P2-
89	USB_P3+	90	USB_P2+
91	USB_CC	92	USB_ID
93	USB_P1-	94	USB_P0-
95	USB_P1+	96	USB_P0+
97	GND	98	GND
99	LVDS_A0+	100	LVDS_B0+

Pin	Signal	Pin	Signal
101	LVDS_A0-	102	LVDS_B0-
103	LVDS_A1+	104	LVDS_B1+
105	LVDS_A1-	106	LVDS_B1-
107	LVDS_A2+	108	LVDS_B2+
109	LVDS_A2-	110	LVDS_B2-
111	LVDS_PPEN	112	LVDS_BLEN
113	LVDS_A3+	114	LVDS_B3+
115	LVDS_A3-	116	LVDS_B3-
117	GND	118	GND
119	LVDS_A_CLK+	120	LVDS_B_CLK+
121	LVDS_A_CLK-	122	LVDS_B_CLK-
123	LVDS_BLT_CTRL/GP_PWM_OUT0	124	RSVD
125	LVDS_DID_DAT/GP_I2C_DAT	126	LVDS_BLC_DAT
127	LVDS_DID_CLK/GP_I2C_CLK	128	LVDS_BLC_CLK
129	CAN0_TX	130	CAN0_RX
131	TMDS_CLK+	132	
133	TMDS_CLK-	134	
135	GND	136	GND
137	TMDS_LANE1+	138	
139	TMDS_LANE1-	140	
141	GND	142	GND
143	TMDS_LANE0+	144	
145	TMDS_LANE0-	146	
147	GND	148	GND
149	TMDS_LANE2+	150	HDMI_CTRL_DAT
151	TMDS_LANE2-	152	HDMI_CTRL_CLK
153	HDMI_HPD#	154	
155	PCIE_CLK_REF+	156	PCIE_WAKE#
157	PCIE_CLK_REF-	158	PCIE_RST#
159	GND	160	GND
161		162	
163		164	
165	GND	166	GND
167		168	
169		170	
171	UART_TXD	172	UART_RTS
173		174	
175		176	
177	UART_RXD	178	UART_CTS
179	PCIE0_TX+	180	PCIE0_RX+
181	PCIE0_TX-	182	PCIE0_RX-
183	GND	184	GND
185		186	
187		188	
189		190	
191		192	
193	VCC_RTC	194	
195		196	
197	GND	198	GND
199	SPI_MOS1	200	SPI_CS0#

Pin	Signal	Pin	Signal
201	SPI_MOS0	202	
203	SPI_SCK	204	MFG_NC4
205	5V_SB	206	5V_SB
207	MFG_NC0	208	MFG_NC2
209	MFG_NC1	210	MFG_NC3
211	VCC (+5V)	212	VCC (+5V)
213	VCC (+5V)	214	VCC (+5V)
215	VCC (+5V)	216	VCC (+5V)
217	VCC (+5V)	218	VCC (+5V)
219	VCC (+5V)	220	VCC (+5V)
221	VCC (+5V)	222	VCC (+5V)
223	VCC (+5V)	224	VCC (+5V)
225	VCC (+5V)	226	VCC (+5V)
227	VCC (+5V)	228	VCC (+5V)
229	VCC (+5V)	230	VCC (+5V)

Chapter 5 - Mounting Options

Wall Mount

> **Note:**
> The system unit used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

The wall mount kit includes the following:

• 2 Wall mount brackets
• Bracket screws
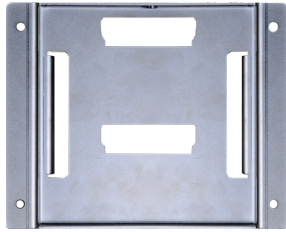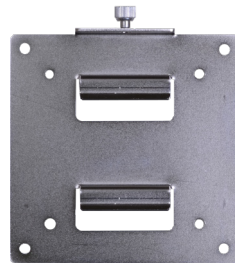
Wall mount bracket 1   Wall mount bracket 2

1. Select a place on the wall where you will mount the Panel PC.

2. Use the provided mounting screws to attach "wall mount bracket 1" to the wall.

Mounting screw

Wall mount bracket 1
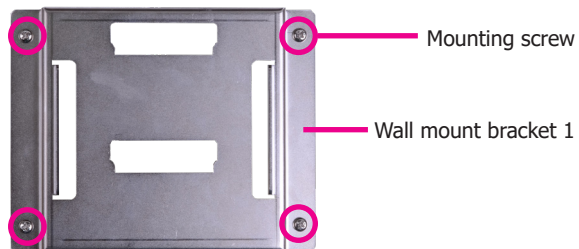
3. Attach the other bracket (wall mount bracket 2) to the rear of the Panel PC.

Mounting screw

Wall mount bracket 2
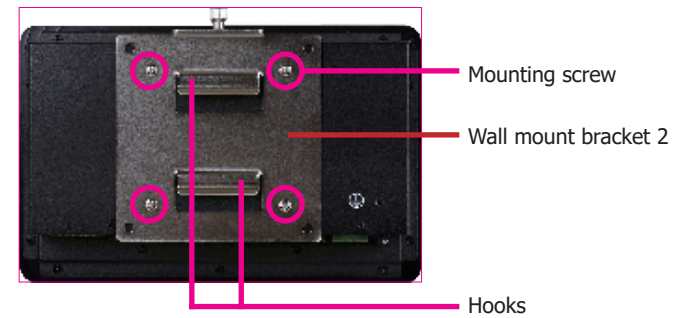
Hooks

4. Using the hooks on "bracket 2", slide the Panel PC to "bracket 1".

Wall mount bracket 2

Wall mount bracket 1
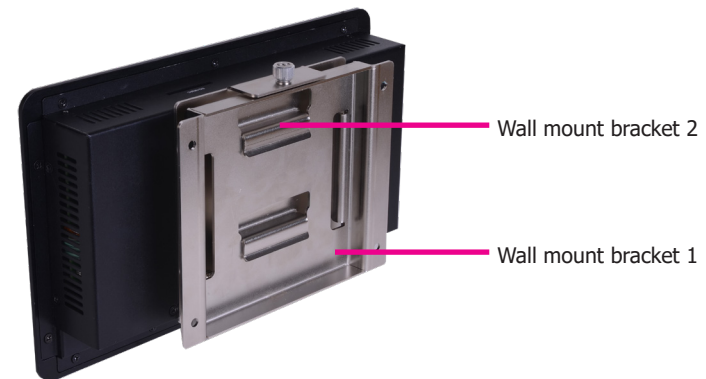
5. Tighten the screw to hold the assembly in place.

Mounting screw

33
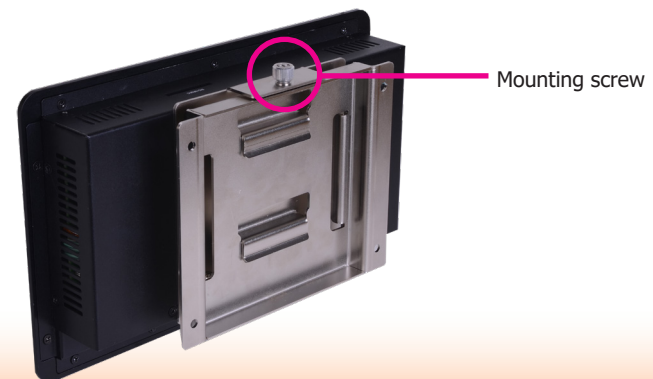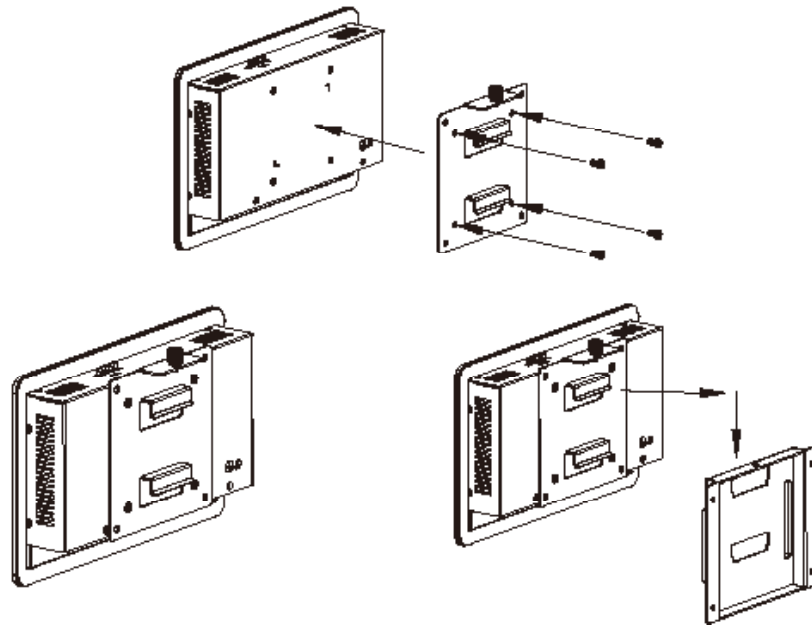
Panel Mount

> **Note:**
> The system unit used in the following illustrations may not resemble the actual one. These illustrations are for reference only.

The panel mounting kit includes the following:
• 6 mounting clamps
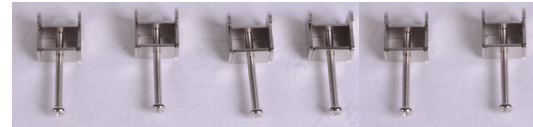
1. Select a place on the mounting wall where you will mount the Panel PC.

2. Cut out a shape on the panel that corresponds to the Panel PC's rear dimensions (217.60mm x 128.60mm) to ensure that the panel PC can be fitted into the wall correctly.

34
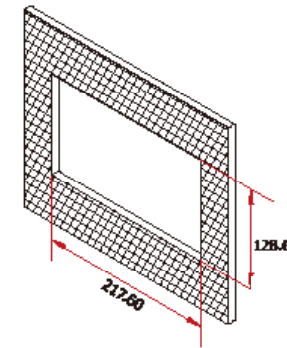
3. Slide the Panel PC through the hole until it is properly fitted against the panel.

4. Position the mounting clamps along the rear edges of the Panel PC, fitting them into the slits that are around the Panel PC.

Mounting clamp

Slit for mounting the clamp
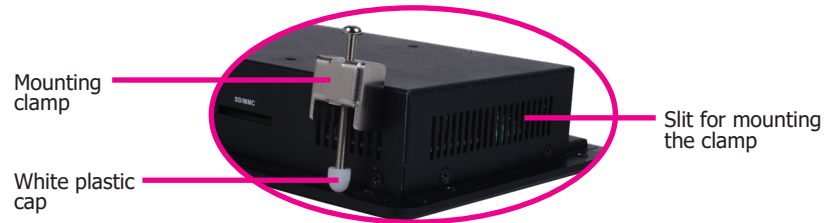
White plastic cap

5. The first and second clamps must be positioned and secured diagonally prior to mounting the rest of the clamps. Tighten the clamp's screw using an electric screwdriver until the white plastic cap touches the panel. Do not over tighten the screws to prevent damaging the Panel PC. The illustration below shows all clamps properly mounted.

Panel wall

128.60

217.60
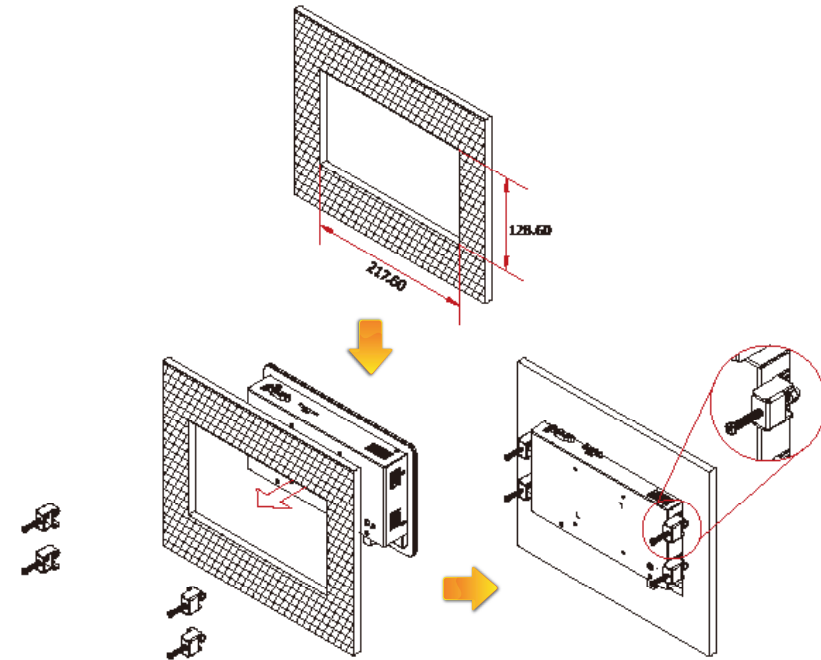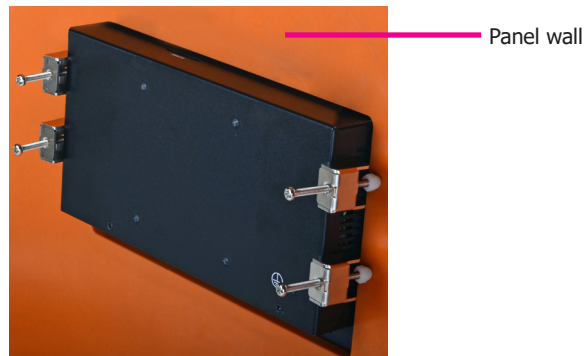
Note:
The maximum thickness of your panel's opening should be 10 mm. Be sure to route or trim down the thick wall to 10 mm or slightly less for the clamps to recess and be compatible with your wall or enclosure.

35

Chapter 6 - BSP Installation Guide

1. Preparing the Working Environment for the BSP installation

- 1 Windows XP/7 32-bit/64-bit

- 1 Putty.exe.

- 1 FS700

- 1 RS232 cable

- 1 Mini USB cable

- MFG Tool

  - FS700 Android DualLite/Solo:

  C:\MFGTools\FS700_android_DualLite_Solo

  - FS700 LTIB DualLite/Solo:

  C:\MFGTools\FS700_LTIB_DualLite_Solo

  - FS700 Android Quad/ Dual:

  C:\MFGTools\FS700_android_Quad_Dual

  - FS700 LTIB Quad/ Dual:

  C:\MFGTools\FS700_LTIB_Quad_Dual

2. Installing the MFG Tool

1. Set the jumper Download Mode Select (JP19) to 1-2: On.

Download Mode Select
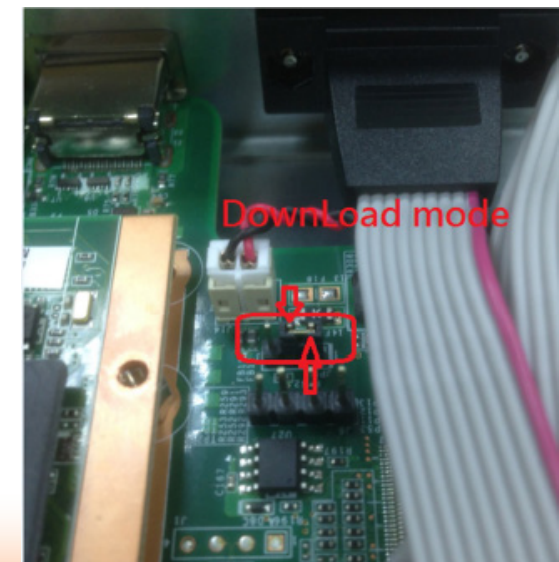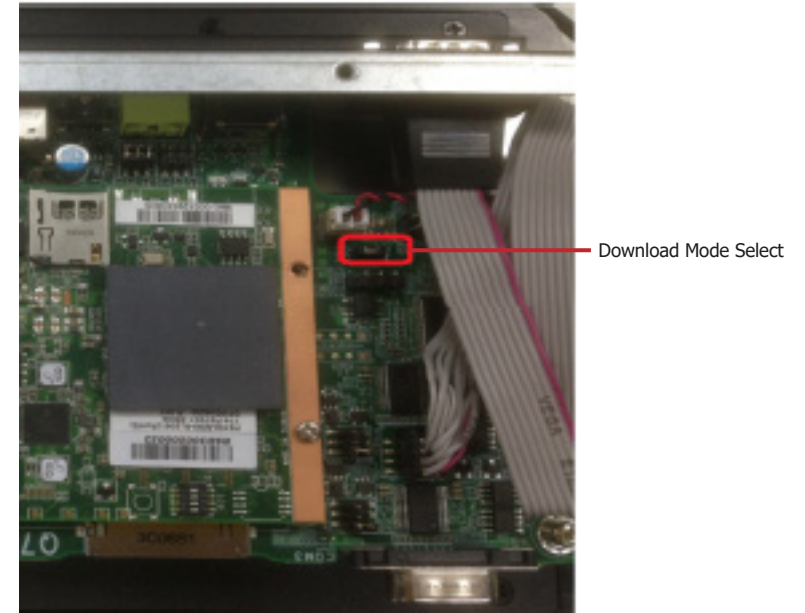
2. Connect the Mini USB cable and the RS232 cable, and then power-on the system.

3. Double check if the device is correctly installed.

3. Burn Bin files and copy Bin files into the content of MFG Tool.

- Android: (1)u-boot.bin (2)boot.img (3)system.img (4)recovery.img

- Path: x:\FS700_android_DualLite_Solo\Profiles\MX6DL Linux Update\OS Firmware\files\android

- Path : x:\FS700_android_Quad_Dual\Profiles\MX6Q Linux Update\OS Firmware\files\android

- LTIB : (1)u-boot.bin (2)uImage (3)rootfs.tar.bz2

- Path: x:\FS700_LTIB_DualLite_Solo\Profiles\MX6DL Linux Update\OS Firmware\files

- Path : x:\FS700_LTIB_Quad_Dual\Profiles\MX6Q Linux Update\OS Firmware\files

4. Execute Putty.exe and MfgTool. exe.
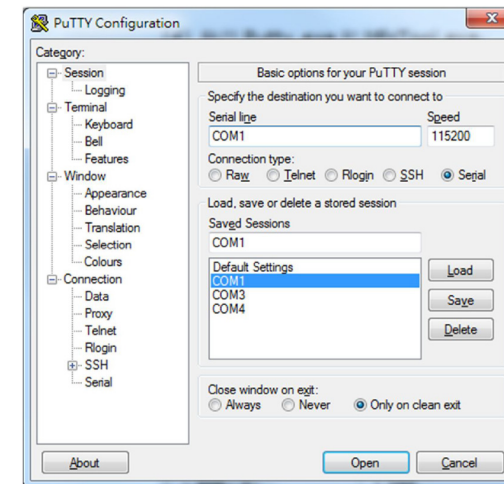
Putty.exe
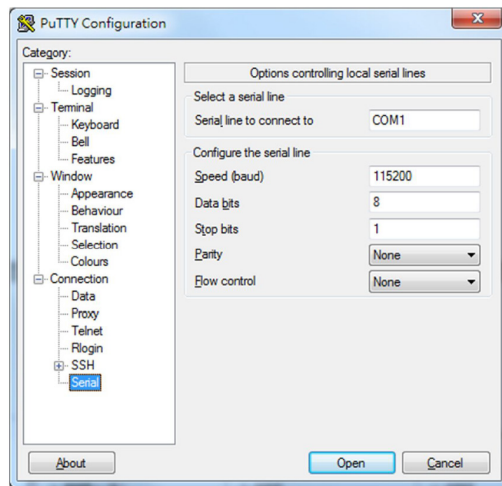
Putty.exe

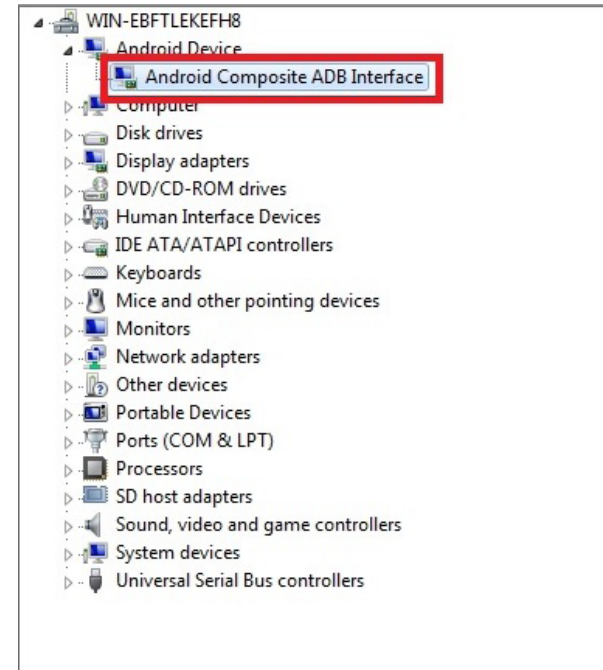5. Click "Start" to burn the file.

38

6. After the burning is done, click "Stop" and shut down FS700. Set to the "Start Mode" and then reboot the device into the OS.
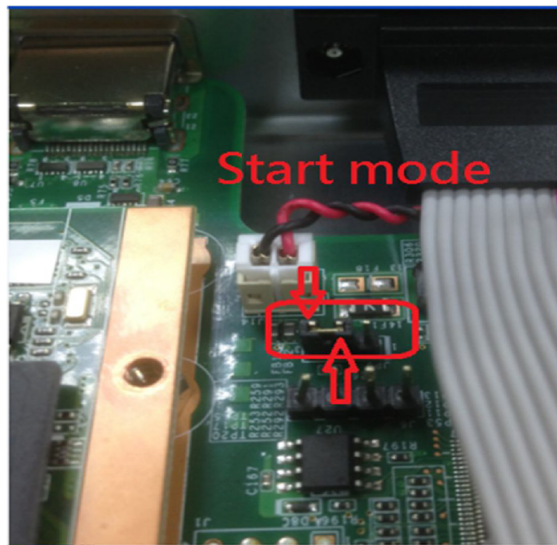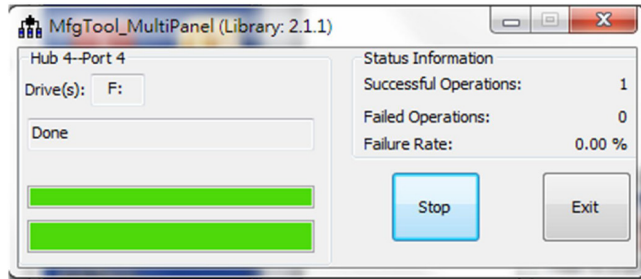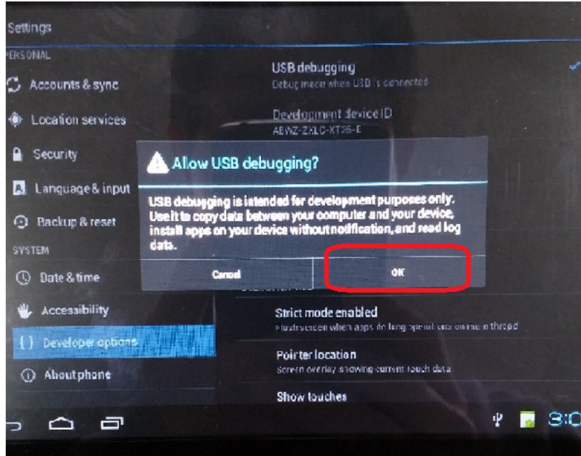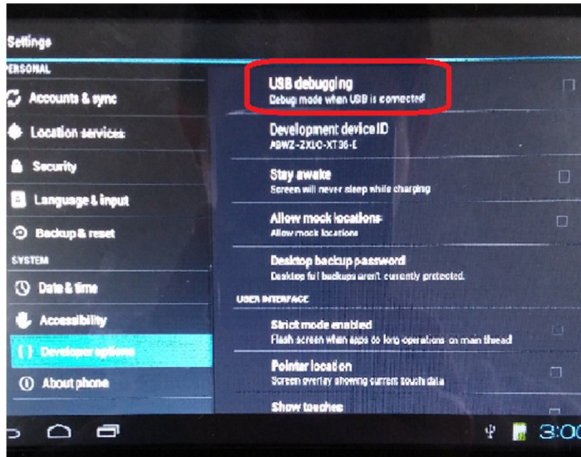

3. How to Use the ADB Tool

1. Install the driver while booting Android.

Path: C:\ADB\adb_usb_driver

2. Check if the USB debugging in Android is ticked off. If not, click on "Settings"->"Developer options"->"USB debugging".
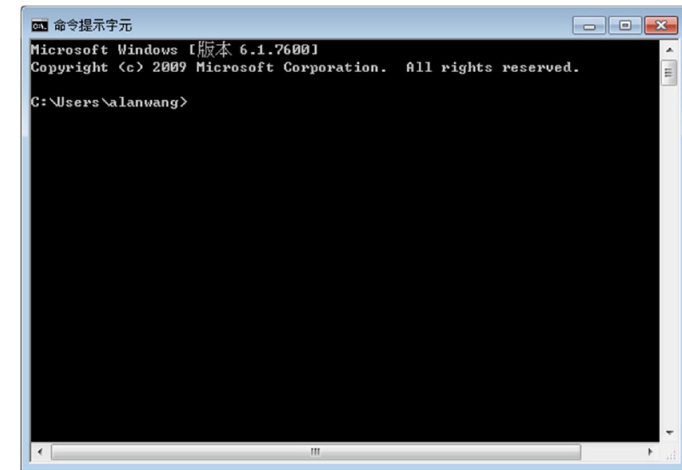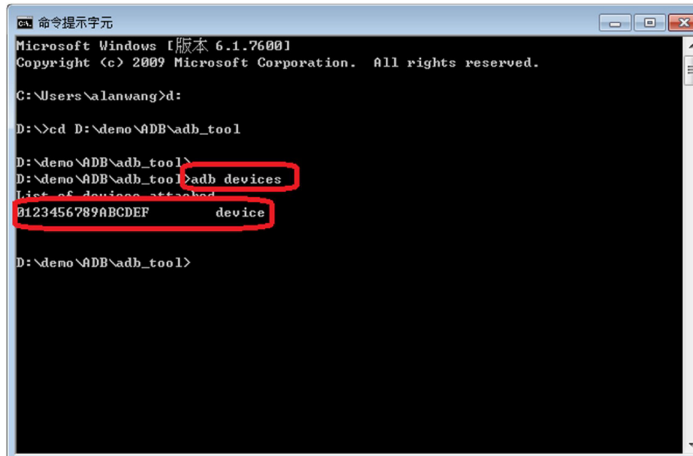

3. Prepare the ADB Tool.

- Copy the ".android" content to windows

- Path: C:\ADB

- XP: copy the ".android" content to C:\Documents and Settings\"Your PC logging name"

- Win7: copy the ".android" content to C:\User\ "Your PC logging name"

4. Use the ADB Tool.

Open the "Command Prompt" in Microsoft Windows.

40

Enter "adb devices." When "0123456789ABCDEF" appears, it means the connection is successful. The adb command can be used.

5. adb command

- Install APK --> "adb install D:\demo\APK\ ES1.4.8.9.apk"

- Close the adb service --> "adb kill-server"

- Start the adb service --> "adb start-server"

Note:
For more information about Freescale IMX6, please refer to the following website:
https://community.freescale.com/welcome

41