

RAY51

Technical Manual



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Preface

This User's Guide gives information about main unit/IO port layout, basic setup, component installation, and board layout for point of sale system "RAYPOS"

Intended Audience

The User's Guide is intended for technically qualified personnel. It is not intended for general audiences.

Document Organization

The chapters in this Product User's manual are arranged as follows:

1. product package contents
2. system configuration
3. Harness (cable connector)
4. Installing and Replacing POS SYSTEM Components: instructions on how to install the motherboard and other POS hardware components.
5. Product specification

RAYPOS Technical Manual Revision History

Changes to the RAYPOS Technical manual are listed below.

No.	Revision date	Revision History
01		
02		
03		
04		
05		
06		
07		
08		
09		
10		

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Warranty

We guarantee our POS terminal product and its parts against defects in materials and workmanship, under proper use, for a standard period of 1year from the original date of purchase.

Products out of the warranty period or scope shall be diagnosed at the customer's expense.

In the case of product damage due to error on part of the consumer, incorrect usage, carelessness or natural phenomenon, the customer shall bear the full cost for both repair and delivery.

Safety Instructions

The RAY51 product is an electronic device that uses precision components.

To ensure stable and normal operation, please pay attention to the following points:

1. Avoid using the device in places with high temperatures, high humidity, or direct sunlight.
2. Be careful not to place objects on the terminal or spill drinks, water, etc., as it may cause malfunction or damage.
3. When plugging or unplugging the power cord, ensure the terminal's power switch is turned off, and hold the plug's handle while doing so.
4. When cleaning the terminal, turn off the power and wipe it with a dry cloth. Do not use organic solvents such as thinner.
5. Do not install the terminal near items with strong magnetic fields, such as TVs, audio equipment, fluorescent light ballasts, or speakers.
6. Excessive operation may cause malfunction of the terminal.
7. If the terminal malfunctions or does not operate correctly, please contact your service center.
8. Do not install the terminal on a sloped surface or in places with severe vibrations.
9. Do not disassemble or modify the terminal.
10. Use only standard adapters and cables.

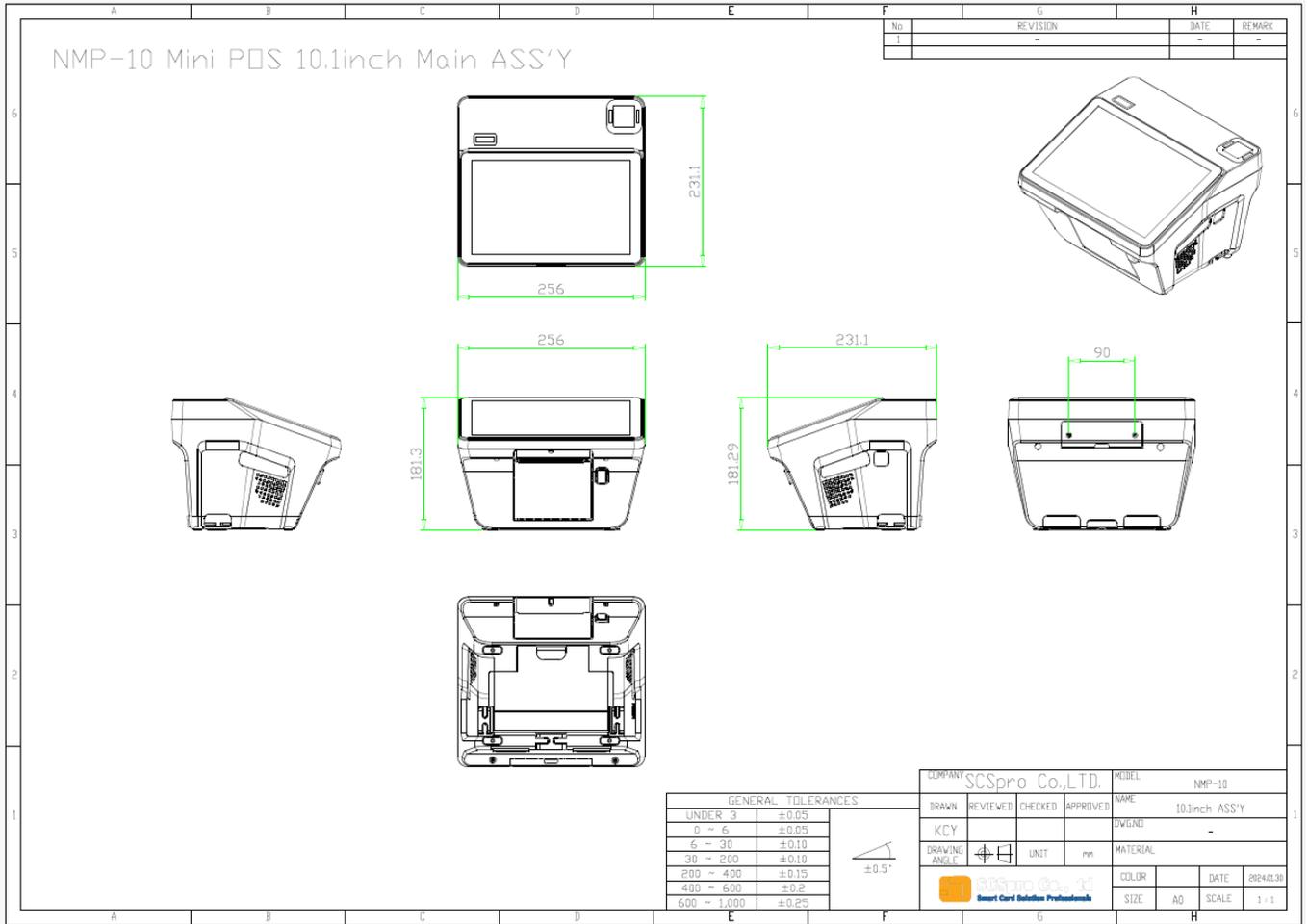
Specification

RAY51		
Processor		4 x Cortex-A55 core, 2.0GHz
O/S		Android 11
Memory		eMMC 16GB(up to 32GB) / DDR4 2GB(up to 4GB)
Display	Resolution	10.1", TFT Color LCD 1280 x 800 px (LED Backlight)
	Touch Screen	Capacitive Touch Panel
WiFi		802.11b/g/n
Bluetooth		BLE 4.2
Peripheral ports	USB	USB 3.0 Host x 2 ports, USB 2.0 Host x 2 ports
	Parallel	DSUB9 serial x 1
	LAN	RJ45 Serial x 1
	Serial Port	RJ9(4pin) serial x 3
	Power	DC Jack x 1
CASH DRAWER		RJ11(6pin) x 1, +24V
Printer	Size	3" Thermal
	Speed	250mm/s
	Roll Paper	80φ
NFC Reader	Peripheral ports	5 PIN Wire Cable
		4 PIN Gold Plate Terminal
	Certification	ISO14443 Type A, Type B, Mifare, Felica, EMV Contactless L1, L2(MCL, VCL, AMEX, JCB, CUP)
Barcode Reader		1D/2D Reader, CMOS Camera, 640×480 pixel
Sound		2W x 2 Speaker
Operating Temperature		0°C to +50°C
Power		24Vdc@2.5A
Dimension (W x D x H)		256mm x 231.1mm x 191.3mm
Certification		CE, FCC, RoHS

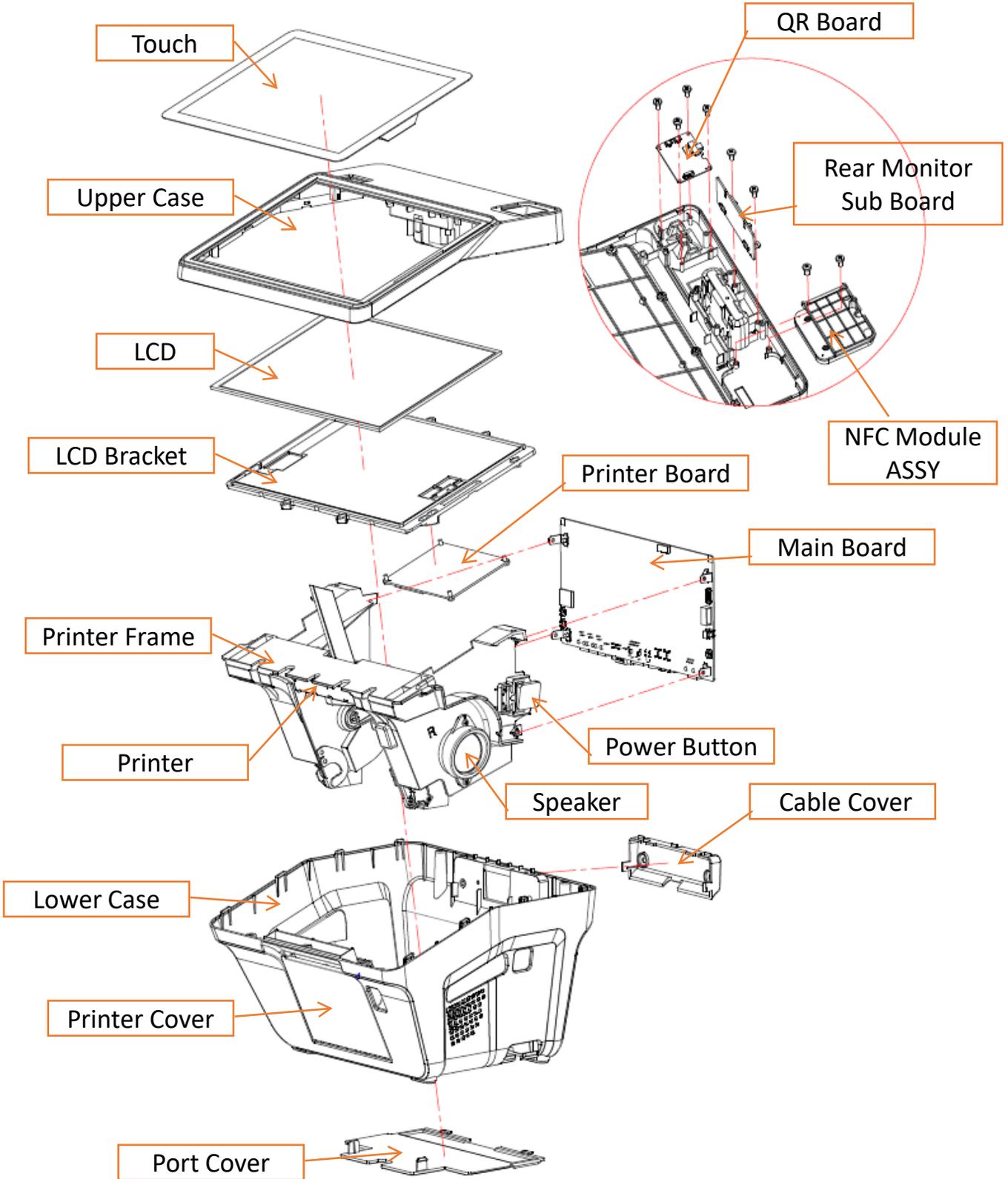
Specification - option

Option1 : RAY51D7 (Rear Monitor)		
Display	Resolution	7", TFT Color 800 x 480 px (LED Backlight)
	Touch Screen	Capacitive Touch Panel
I/O	Power & Display Data	JVT2041W4T-34SNC-S, 34 pin x 1
Operating Temperature		0°C to +50°C
Power		5Vdc@1.0A
Dimension (W x D x H)		256mm x 307.3mm x 184.5mm

Specification – Outside size



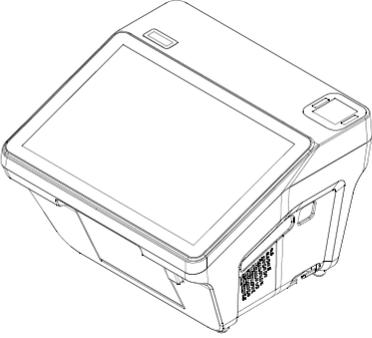
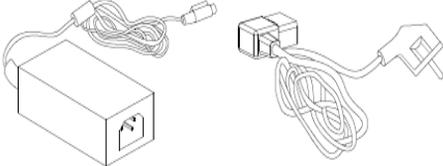
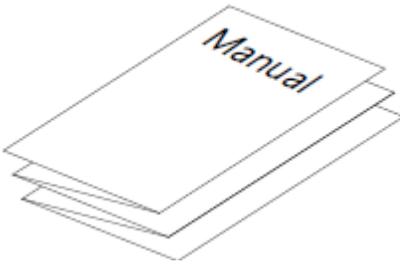
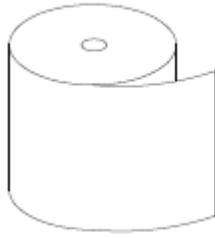
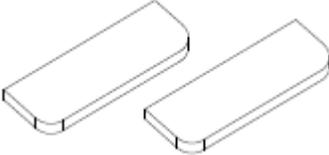
Specification – Body Exploded view



1. Product Overview

(1) Inside Your Package

1. Please check your package and confirm its contents.
2. The POS terminal main unit, power cable and user manual are included in the package.
If any items are missing or damaged, please contact your dealer for assistance.
» All user manuals are available for download on our website: www.rayposww.com

RAYPOS Main Unit	Adapter / Power cord
	
Installation Guide	Printer Paper (80φ)
	
Foot Rubber – 2ea	
	

* The components and installation instruction for the options are listed in their respective manuals.



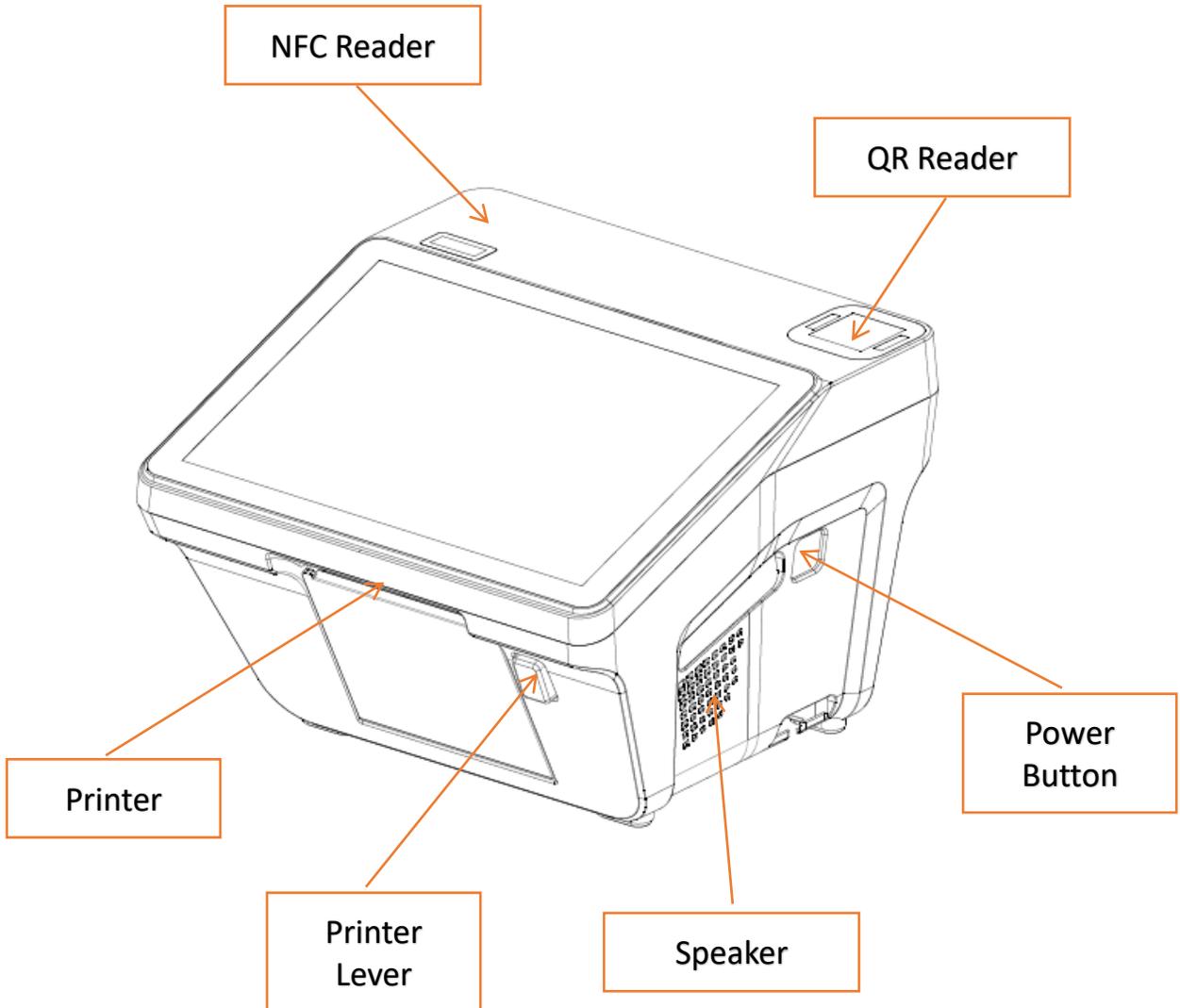
(2) Product Outline

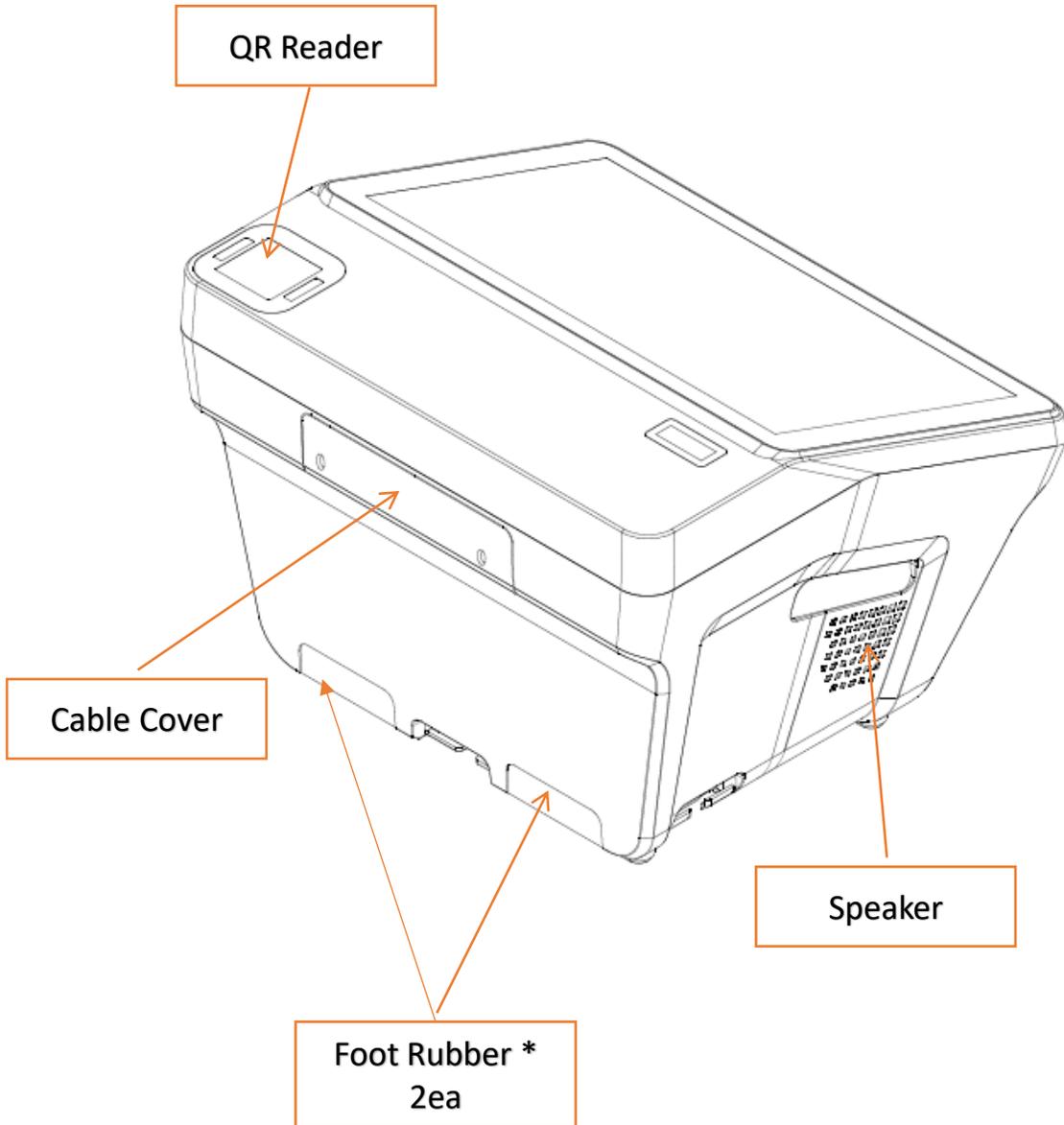
- Each part of product may differ depending on the specific POS model.
- Model-specific data sheets are provided on our website at www.rayposww.com

(3) Configuration

Refer to following diagram to identify the components on this side of the system.

Front view

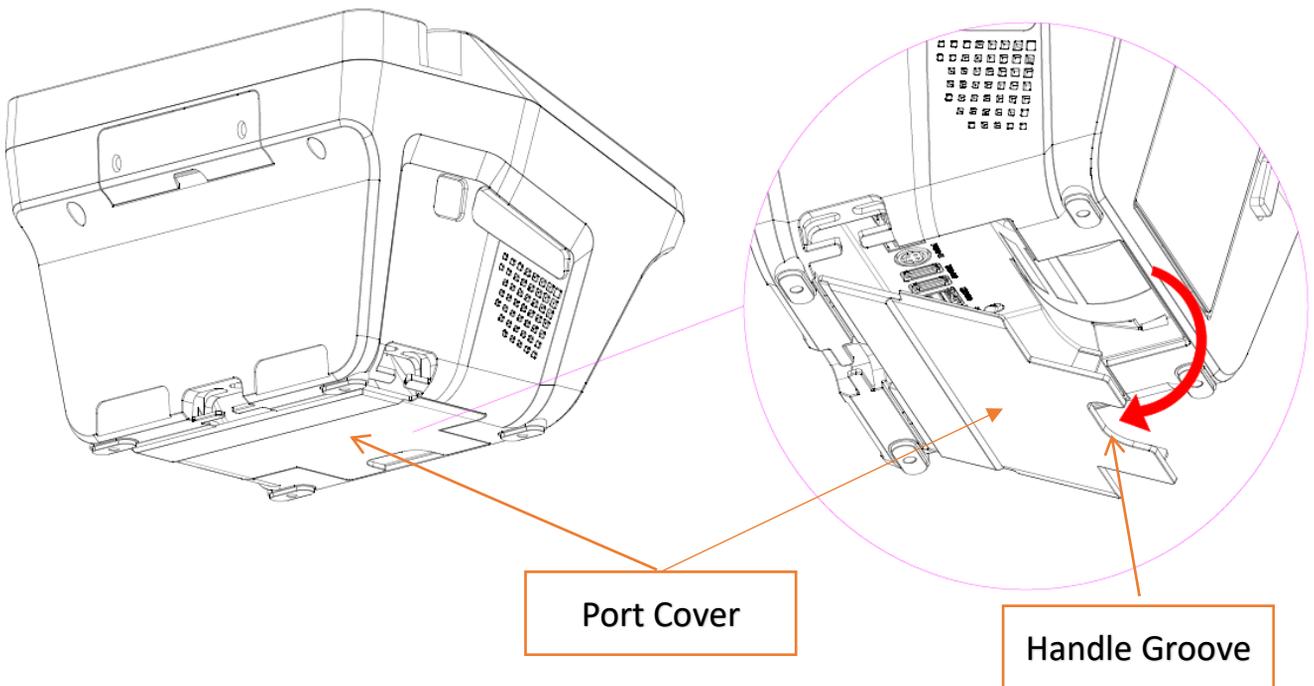




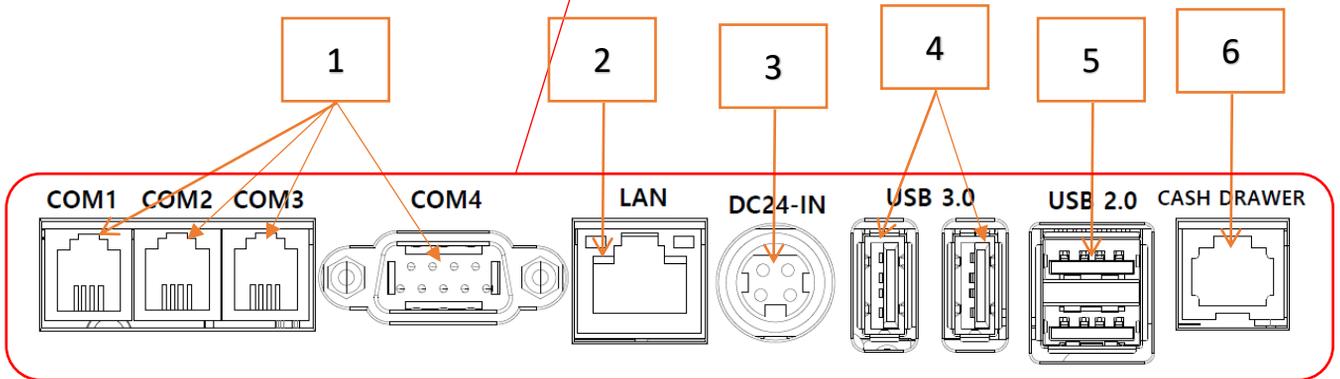
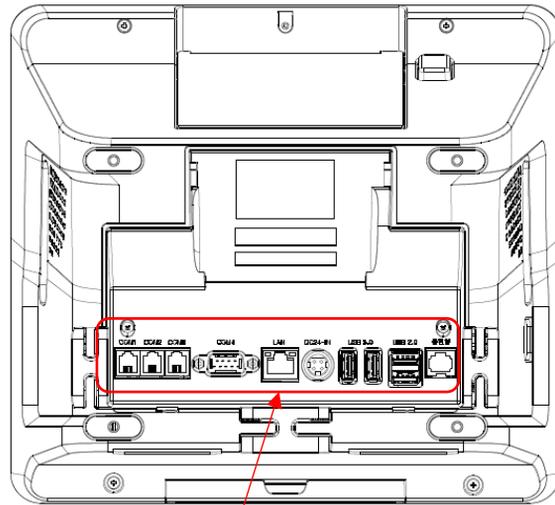
(4) I/O port : Details

* I/O ports may differ according to product model or options.

I/O front view



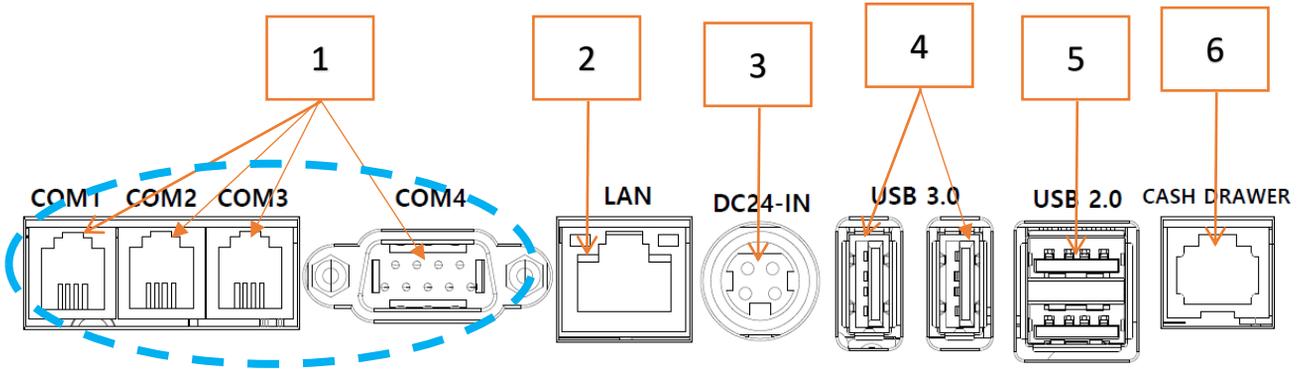
Please hold the handle groove on the port cover at the bottom of the Mini POS and open it in the direction of the arrow.



1. COM1, COM2, COM3, COM4 : Serial port
2. LAN : Connection via Ethernet
3. DC24V-IN : Power cable connection port
4. USB3.0 : USB3.0 connection 2ports
5. USB2.0 : USB2.0 connection 2ports
6. CASH DRAWER : Cash drawer port

(5) Setting up : Serial Port (RJ9, 4pin x 3 & DSUB9 x1)

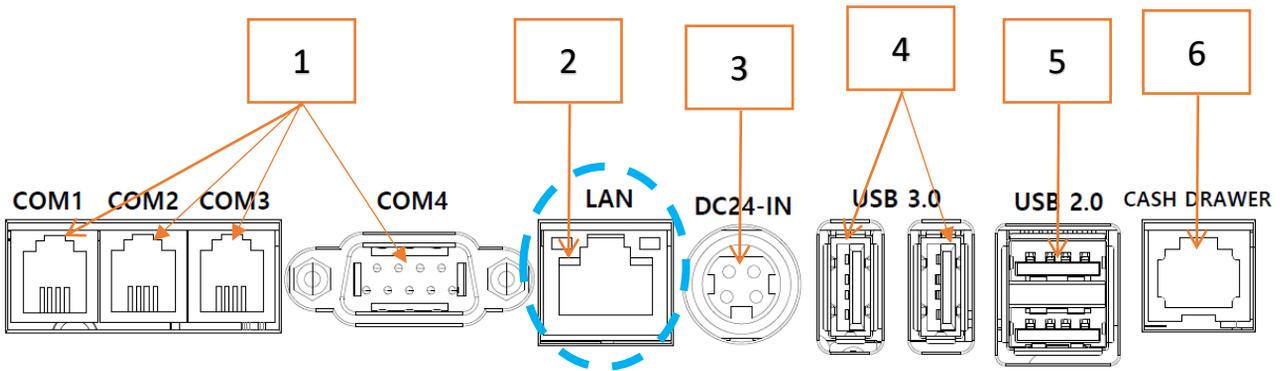
Connect the Serial Port on the rear of the device.

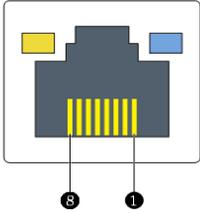


RJ9 Specification				
	Pin	I/O	Name	FUNCTION
	1	P	GND	Ground
	2	P	VCC(DC +5V)	Power
	3	I	RXD	Receive Data
	4	I	TXD	Transmit Data
DSUB9 Specification				
	Pin	I/O	Name	FUNCTION
	1	-	-	-
	2	I	RXD	Receive Data
	3	O	TXD	Transmit Data
	4	-	-	-
	5	P	GND	GND
	6	-	-	-
	7	-	-	-
	8	-	-	-
	9	P	Power (DC5V)	Power supply terminal, Power On/Off control possible

(6) Setting up : Connection via Ethernet Port (LAN)

The Ethernet port located on the rear I/O supports 10/100/1000Mbps using an RJ45 connector cable.

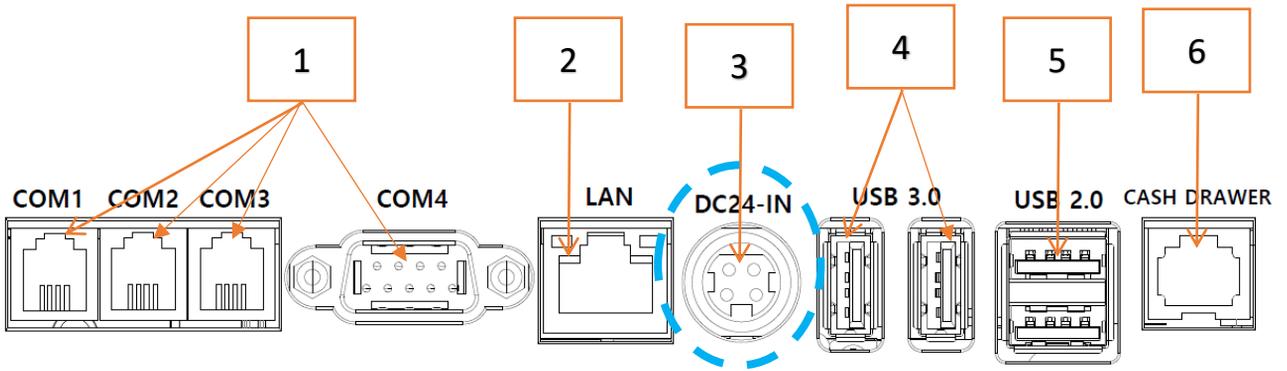


RJ45 Specification				
	Pin	10 base	100 base	1000 base
	1	TX +	TX +	DA +
	2	TX -	TX -	DA -
	3	RX +	RX +	DB +
	4	n/c	n/c	DC +
	5	n/c	n/c	DC -
	6	RX -	RX -	DB -
	7	n/c	n/c	DD +
	8	n/c	n/c	DD -

(7) Setting up : Power Cable Connection

The 'RAYPOS' POS system is equipped with a 24Vdc/ 2.5A power adapter. Connect the cable to the DC-IN port on system IO panel.

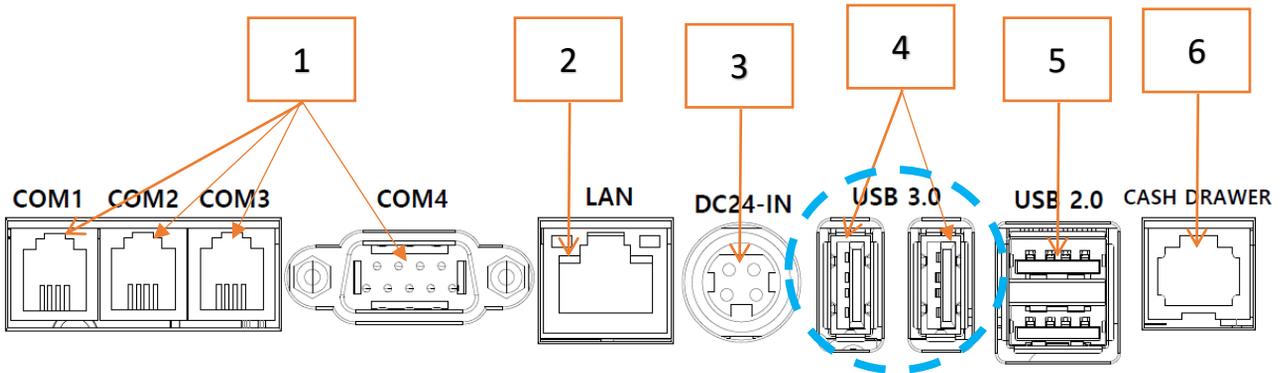
CAUTION : Do not pull on the adaptor cable! Disconnect cable by pulling the plug cap.



DC Power Specification				
	Pin	I/O	Name	FUNCTION
	1	P	VCC	+24V
	2	P	VCC	+24V
	3	I	GND	Ground
	4	I	GND	Ground

(8) Setting up : USB 3.0 Port Connection

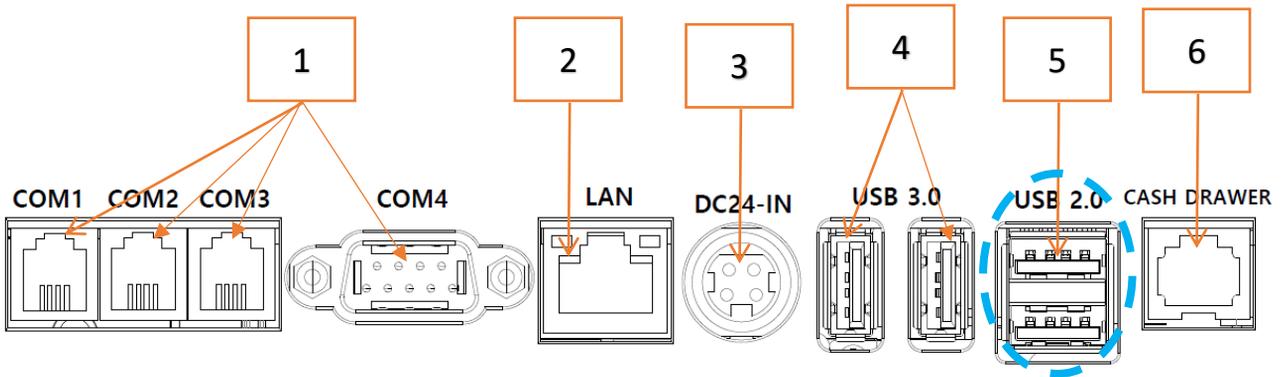
USB ports are provided in the POS unit, with two supporting the standard USB 2.0 and the others supporting USB 3.0.



USB 3.0 Specification				
	Pin	I/O	Name	FUNCTION
	1	P	VUSB	+5V
	2	I/O	D -	Data -
	3	I/O	D +	Data +
	4	P	GND	Ground
	5	I	SSRX -	USB 3.0 RX -
	6	I	SSRX +	USB 3.0 RX +
	7	P	GND_Drain	Ground
	8	O	SSTX -	USB 3.0 TX -
	9	O	SSTC +	USB 3.0 TX +

(9) Setting up : USB 2.0 Port Connection

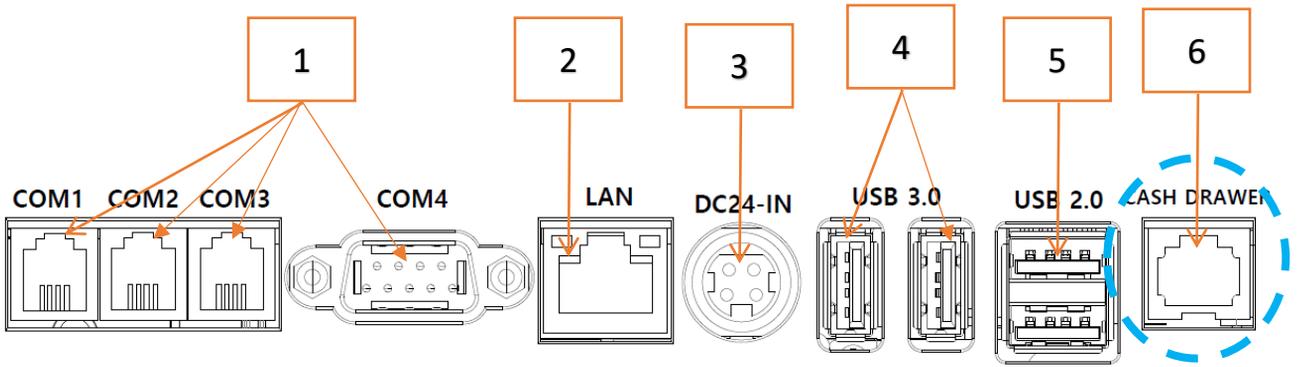
USB ports are provided in the POS unit, with two supporting the standard USB 2.0 and the others supporting USB 3.0.

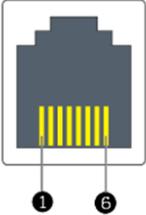


USB 2.0 Specification				
	Pin	I/O	Name	FUNCTION
	1	P	VUSB	+5V
	2	I/O	D -	Data -
	3	I/O	D +	Data +
	4	P	GND	Ground

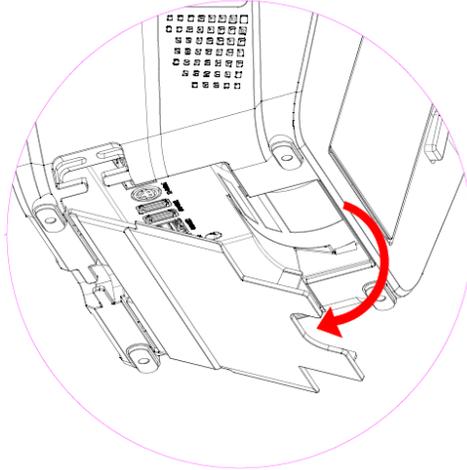
(10) Setting up : Cash Drawer connection

Connect the Cash Drawer port on the rear of the device.

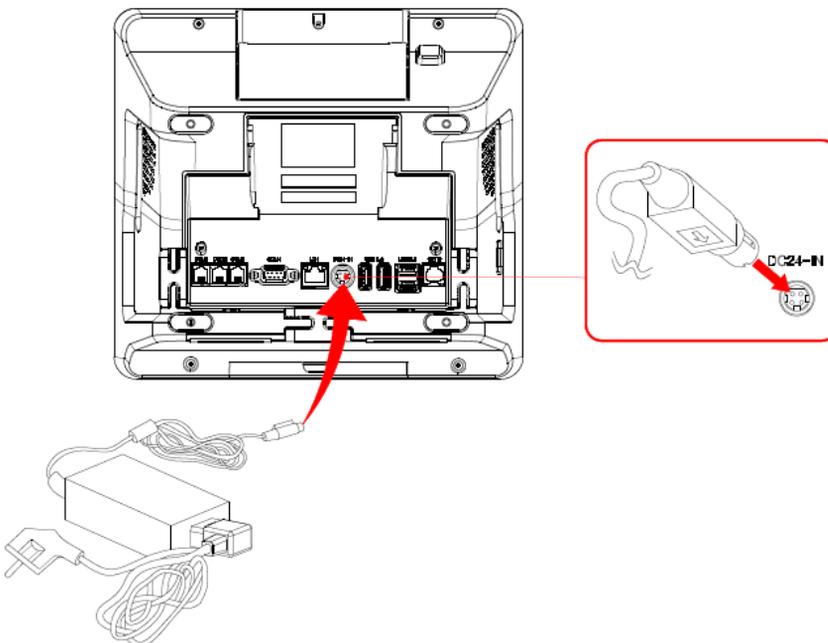


CASH DRAWER Specification				
	Pin	I/O	Name	FUNCTION
	1	P	GND	Ground
	2	P	GND	Ground
	3	Pules	Cash Drawer	+24V
	4	-	-	-
	5	P	GND	Ground
	6	P	GND	Ground

(11) Power On POS

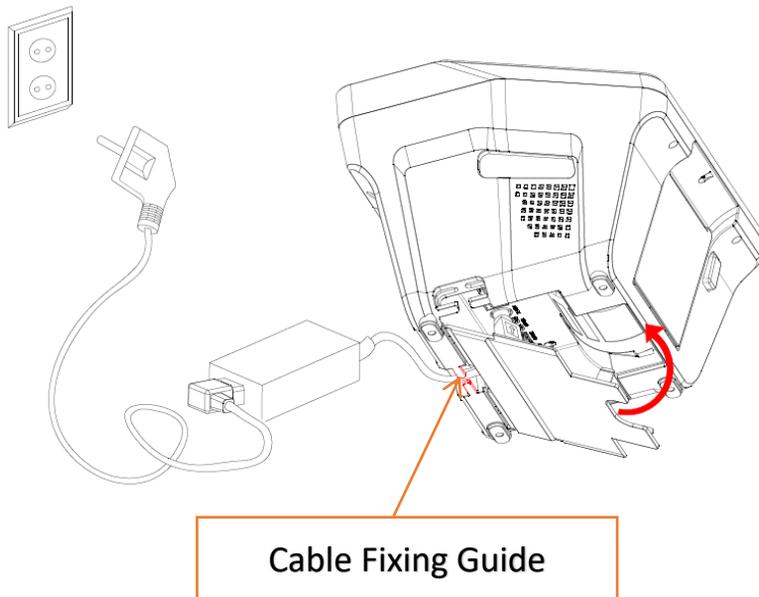


Please hold the handle groove on the port cover at the bottom of the Mini POS and open it in the direction of the arrow.

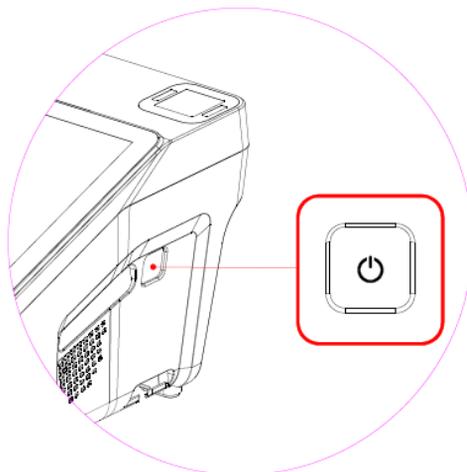


Insert the power adapter cable into the "DC24-IN" port.
※ Please pay attention to the connector orientation when plugging in the adapter.

(11) Power On POS

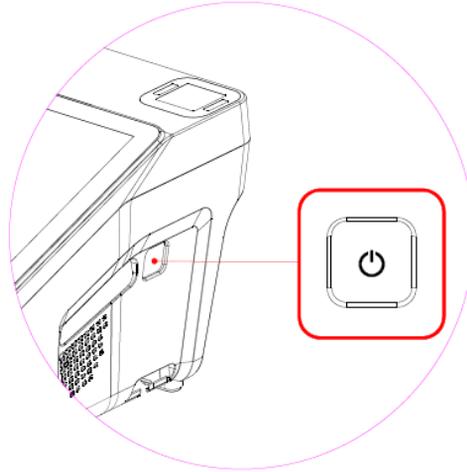


To prevent the device and power (adapter) cable from being pressed on the floor, organize the cable using the fixing guide before plugging in the power adapter.

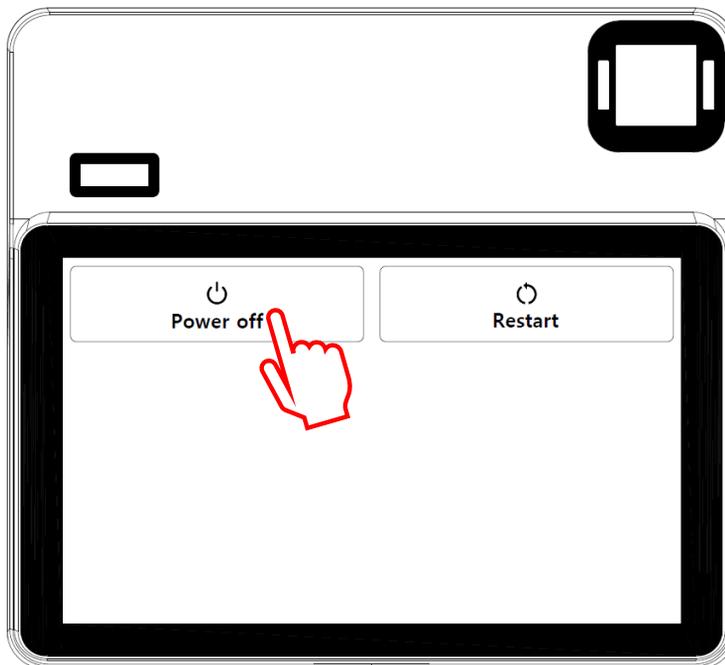


Press the Power Button on the side of the device to turn it on.

(12) Power Off POS



Press and hold the Power Button on the side of the device briefly (for 2 seconds).

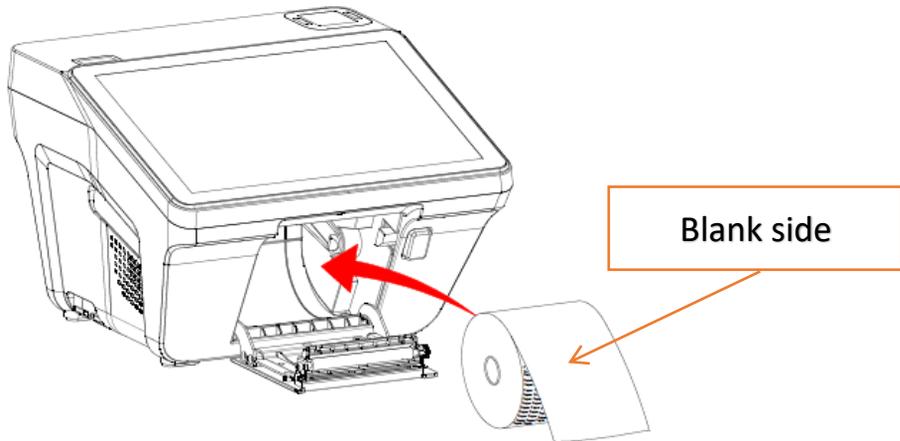


On the top of the screen, tap "Power Off" from the options "Power Off" and "Power Reset" to turn off the device.

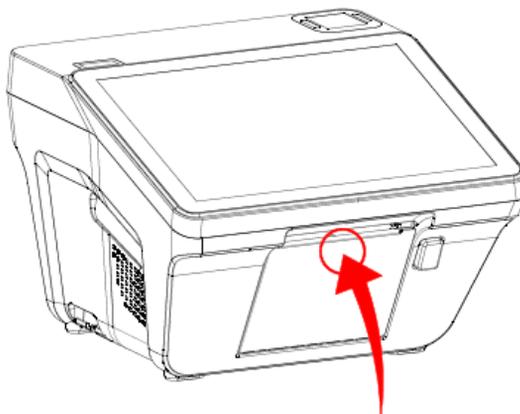
(13) Printer Paper Reload



When you press the printer lever, the printer cover will lower to the bottom.

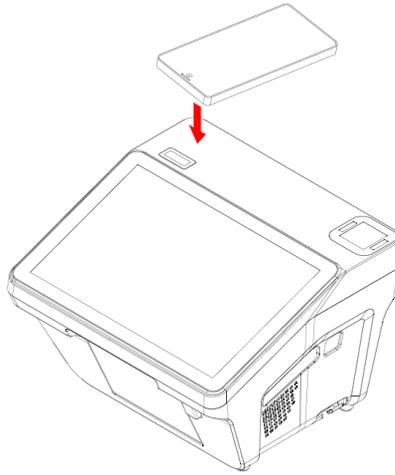


Insert the paper with the non-printed side facing up, following the direction of the arrow, and then close the printer cover.



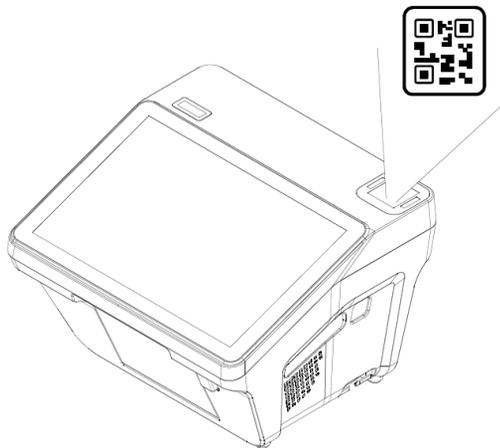
Insert the paper with the non-printed side facing up, following the direction of the arrow, and then close the printer cover.

(14) NFC Reader



1. When you place an NFC card or smartphone on the NFC reader, it will be read automatically.
2. Do not remove the NFC card or smartphone until the NFC reading is complete.

(15) Barcode Reader



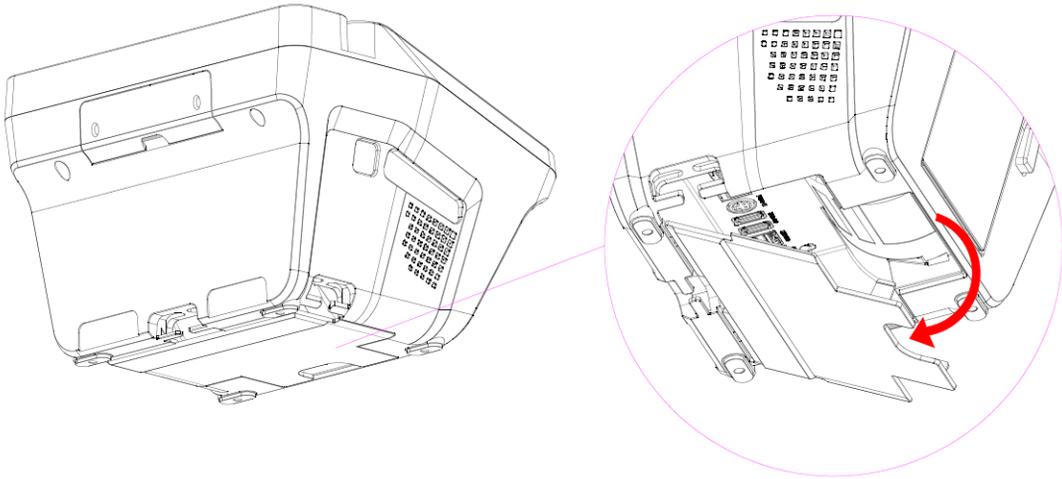
1. When scanning the QR code with a smartphone, set the screen brightness to the maximum.
2. Place the QR code at a certain distance from the reader window, and it will be automatically read.
3. Do not remove the QR code until the reading is complete.

2. RAYPOS Module POS System Separation

(1) Separating LCD monitor module

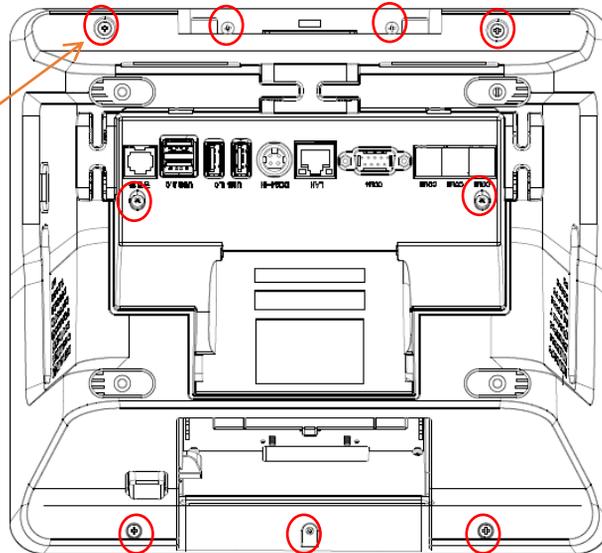
- Warning : Completely remove power cable when opening main unit or installing optional devices.

LCD monitor module



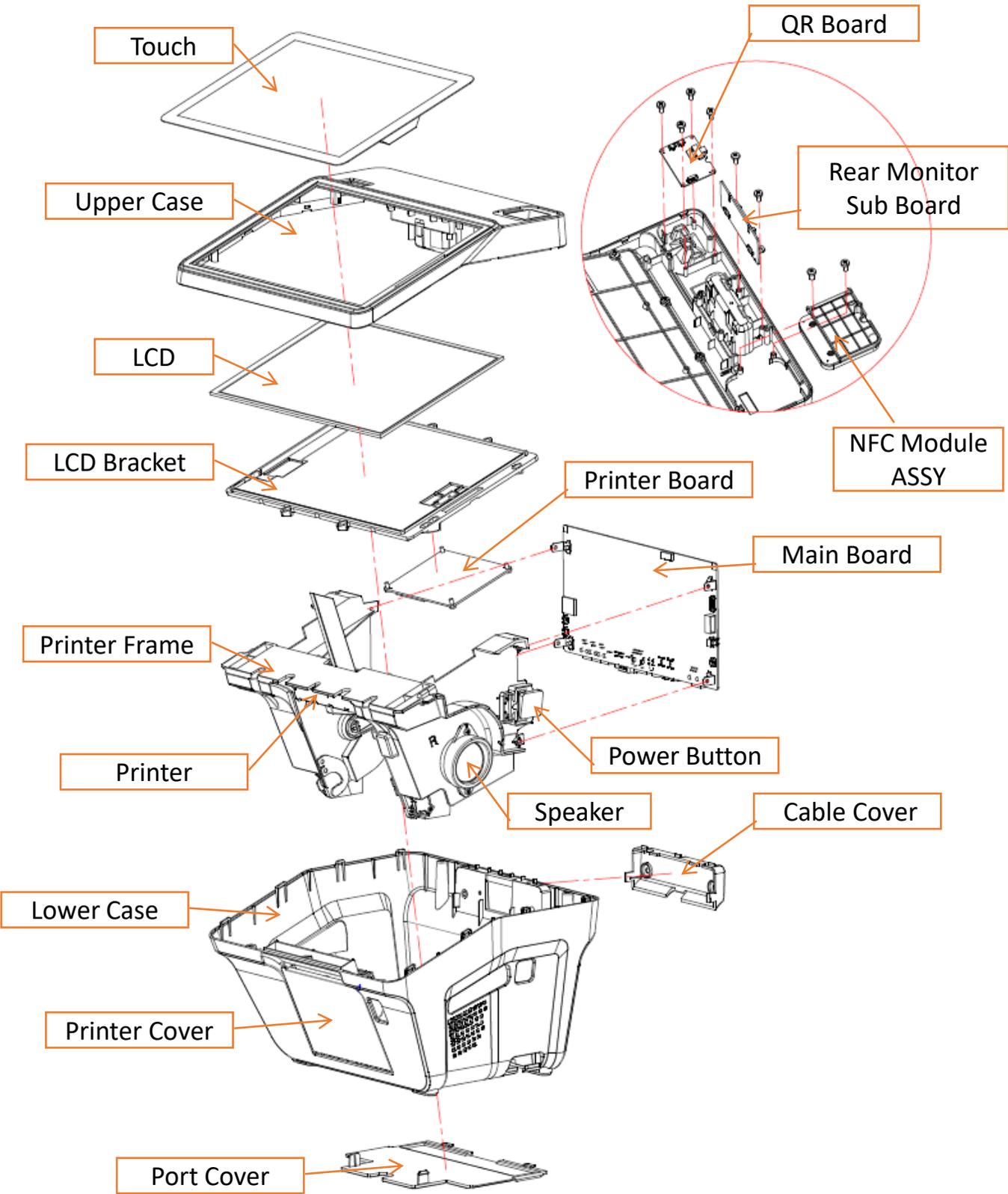
Please hold the handle groove on the port cover at the bottom of the Mini POS and open it in the direction of the arrow.

Tapping Screw
Pan Head 3 x 8mm
* 9 EA



As shown in the picture, please remove the screws from the bottom of the Mini POS.

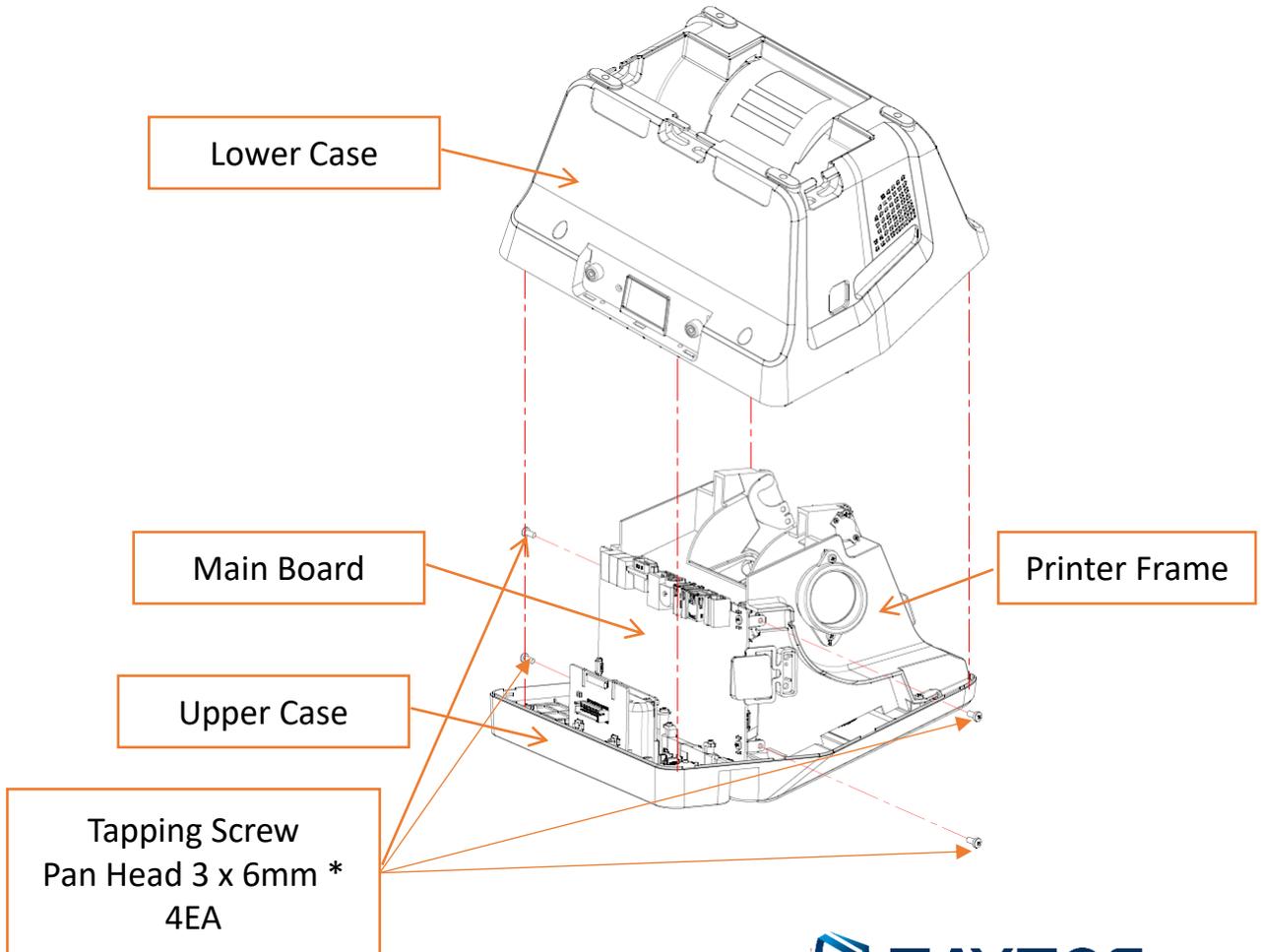
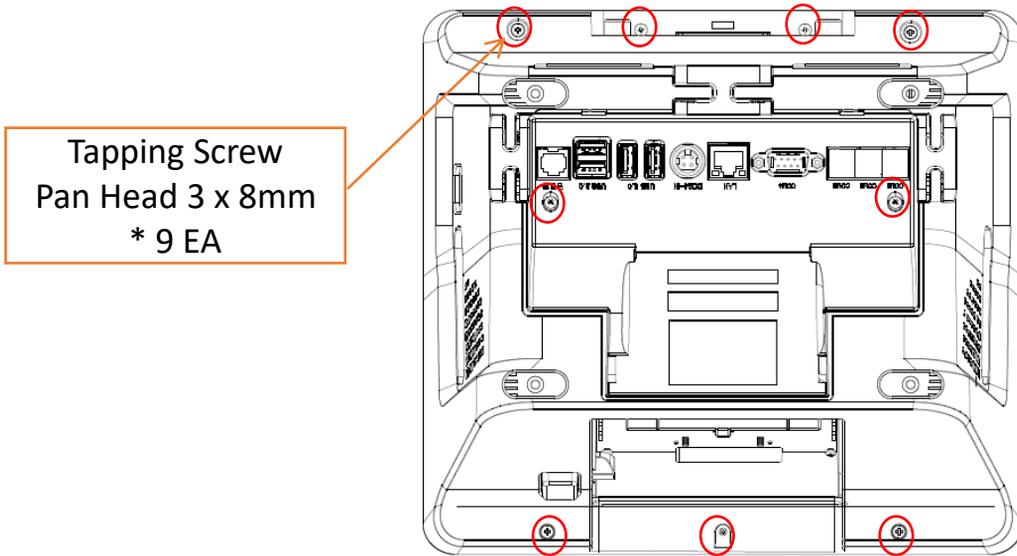
LCD monitor module



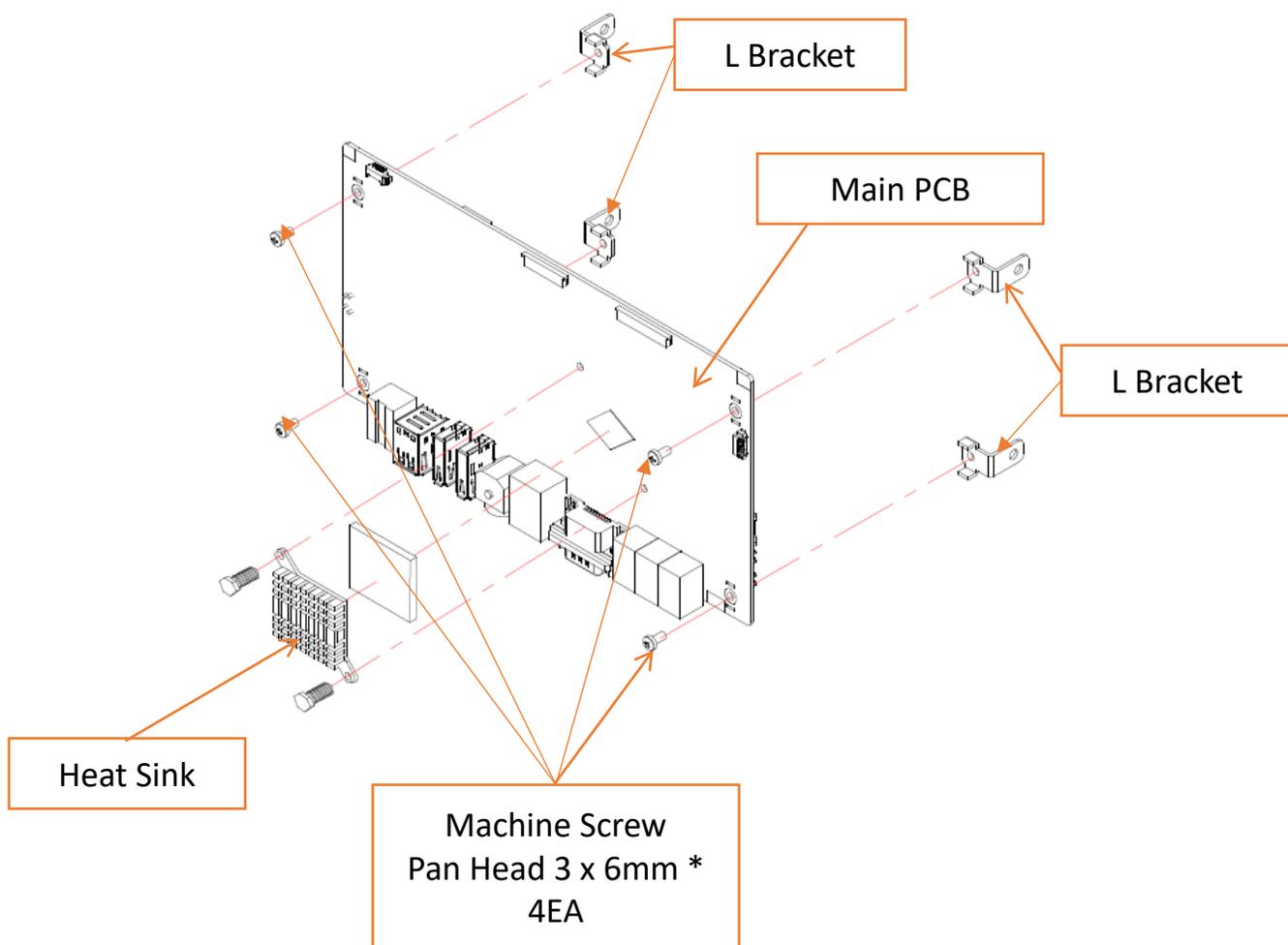
(2) Separating Mother board

- Warning : Completely remove power cable when opening main unit or installing

Mother Board



Mother Board



3. Motherboard

(1) Motherboard Overview

This includes description of the jumper and connectors on the motherboard.

Warning

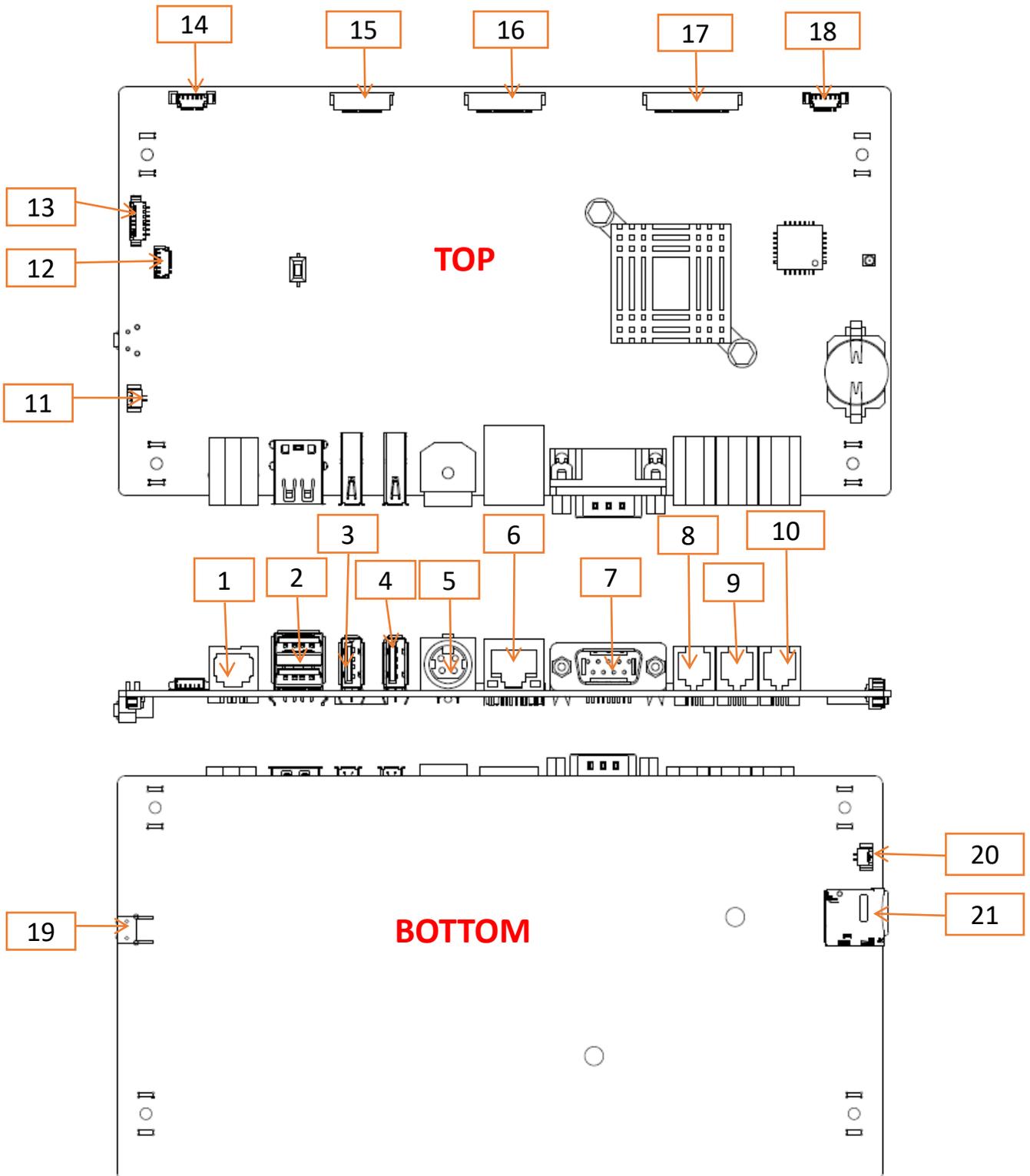
Take note of the following precautions before you install motherboard components or change any motherboard settings.

1. Unplug the power cord from the wall socket before touching any component.
2. Before handling components, use a grounded wrist strap or touch a safely grounded object or a metal object, such as the power supply case, to avoid damaging them due to static electricity.
3. Hold components by the edges to avoid touching the ICs on them.
4. Whenever you uninstall any component, place it on a grounded antistatic pad or in the bag that came with the component.
5. Before you install or remove any component, ensure that the ATX power
6. Supply is switched off or the power cord is detached from the power supply. Failure to do so may cause serious damage to the components or result in electric shock.

(2) Motherboard Layout

This includes description of the jumpers and connectors on the motherboard.

Motherboard view



This includes description of the jumpers and connectors on the motherboard.

1. Ethernet Connector
2. USB 2.0 Connector
3. USB 3.0 Connector
4. USB 3.0 Connector
5. Main Power Connector
6. Ethernet Connector
7. Serial Connector
8. Serial Connector
9. Serial Connector
10. Serial Connector
11. Speaker Right Connector
12. Print Power Connector
13. Main Display Touch Connector
14. QR Connector
15. Print Controller Connector
16. Secondary LCD Connector
17. Main LCD Connector
18. NFC(NR-100) Reader Connector
19. Power Switch
20. Speaker Left Connector
21. SD Card

4. Troubleshooting

(1) Network Issues

Symptom	Corrective Procedure
Cannot access LAN	• Check if hub or switch is working correctly
	• Check RJ45 cable connection
	• Check if LAN LEDs are on/off
	• Reinstall LAN card
	• Replace motherboard

(2) USB Issues

Symptom	Corrective Procedure
USB port doesn't work	• Check Windows device manager for device recognition
	• Check USB device status and connection
	• Erase and re-install USB driver
	• Change USB device

(3) LCD Issues

Symptom	Corrective Procedure
LCD backlight doesn't work	• Check LCD cable connection
	• Check inverter cable connection
	• Replace inverter cable
	• Change LCD panel

(4) Touch-screen Issues

Symptom	Corrective Procedure
Touch-screen doesn't detect touch operations	• Check touch-screen cable connection
	• Check motherboard and LCD cable connection
	• Check BIOS set-up

(5) Power & Booting Issues

Symptom	Corrective Procedure
System switches off abruptly and system does not load	• Check A/C cable connection
	• Check motherboard power connection
	• Check power button cable connection
	• Change power adaptor unit

5. Maintenance

Safety Warning

RAYPOS will not be held responsible for repairs conducted via USER providers other than those officially specified by the seller.

General Guidelines

1. Always disconnect the unit from the power outlet.
2. Disconnect all cables from the POS main unit before attempting repair.
3. Keep all components in the static-proof packaging provided until ready for installation.
4. If the device still is not functioning after repair, please turn off the POS unit and contact the customer USER center at RAYPOS website [www.rayposww.com] for technical consultation.
5. We recommend that power supply unit (PSU) checks and monitor repairs only be performed at a certified USER center.