

RAY50

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		

Copyright

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RAYPOS Co., Ltd. are trademarks in the South Korea and other countries.

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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 RAY50 product is an electronic device that uses precision components.

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

1. When installing the product, be careful not to place it on a slanted surface or an unstable table.
2. When installing the product, consider the weight of the RAY50 and surrounding devices, and place it on a surface that can adequately support them.
3. Install the product in a well-ventilated area.
4. Avoid using the product in high-temperature, humid locations or where it is exposed to direct sunlight.
5. Do not place objects on top of the device or spill beverages, water, etc., as this may cause malfunction or damage.
6. Do not connect the power together with devices that have high energy consumption.
7. When unplugging or plugging in the power cord, make sure the device is turned off (OFF) and handle the plug by holding the grip.
8. When cleaning the device, make sure it is turned off (OFF) and wipe it with a dry cloth; do not use organic solvents such as thinner.
9. Do not install the device near items with strong magnetism, such as TVs, audio systems, fluorescent light stabilizers, or speakers.
10. When disassembling the product, make sure the power is off (OFF), unplug the power cable from the main unit, and then proceed with disassembly.
11. When connecting the rear monitor, ensure the device is turned off.
12. If the device malfunctions or does not operate properly, please contact your distributor.
13. Do not disassemble or modify the product. Please contact the customer service center.

Installation Instructions

- Place the device securely in the desired location.
 - Plug in the power cord. (This product supports Free Voltage)
 - Turn on the power switch of the device.
1. Press the  markings on both sides of the port cover and push upwards to detach it.
 2. Hold the handle under the stand cover and pull it to remove the cover.
 3. Connect the power adapter cable following the arrows.
 4. Place the adapter into the stand base, organize the cable, and reassemble the stand cover.
 5. Plug the adapter power cord into the power outlet.
 6. Press the power switch located at the bottom right of the device's screen to start the POS system.

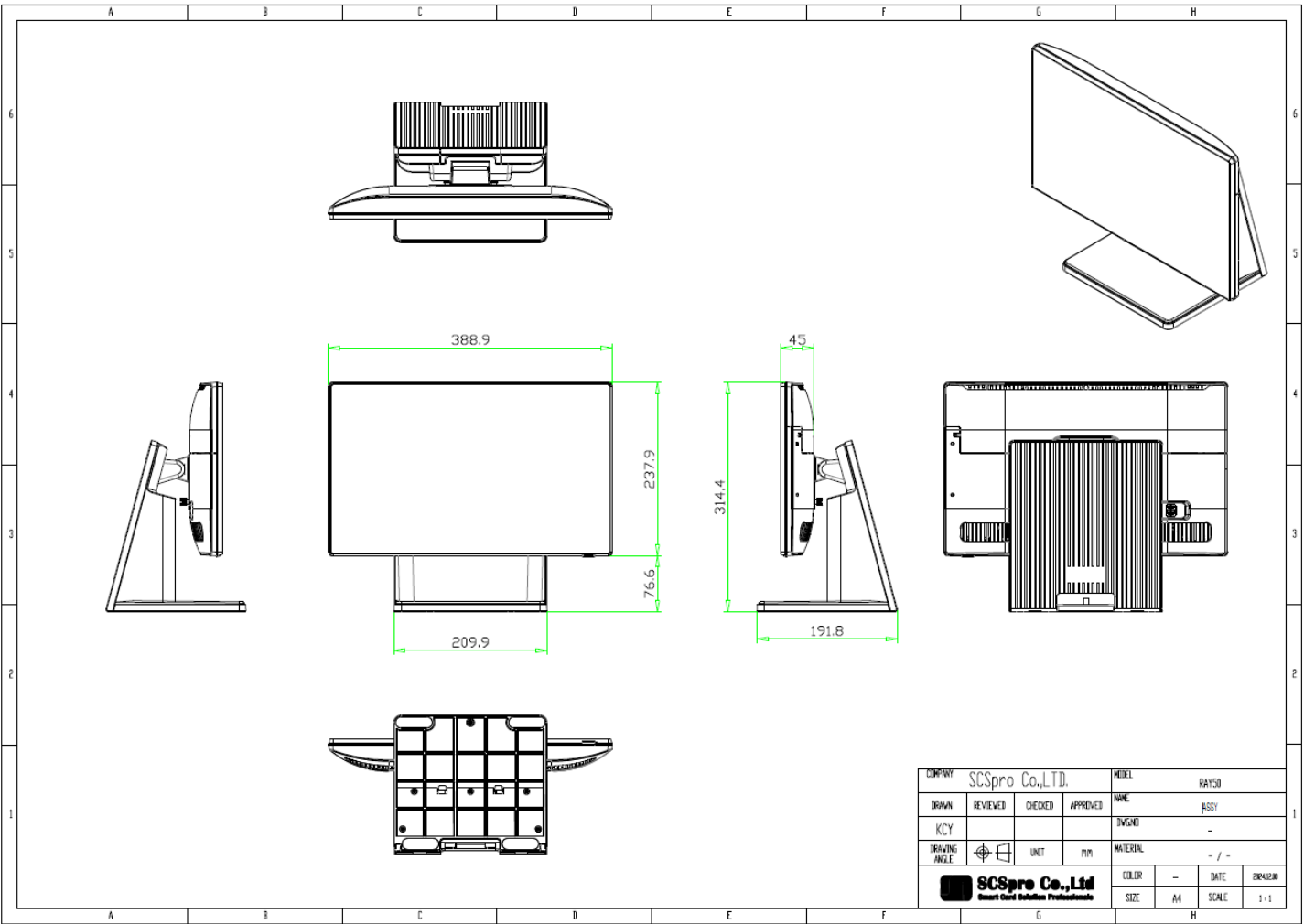
Specification

RAY50		
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	15.6", TFT Color LCD 1920 x 1080 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, USB 2.0 Host x 5
	Parallel	DSUB9 serial x 3
	LAN	RJ45 Serial x 1
	Audio	Audio Jack(3.5 ϕ) x 1
	Serial Port	RJ11 serial (6pin) x 2
	Monitor	HDMI x 1
	Power	DC Jack x 1
Sound		2W x 2 Speaker
Operating Temperature		0°C to +50°C
Power		24Vdc@2.5A
Dimension (W x D x H)		389mm x 191.9mm x 314.5mm
Certification		CE, FCC, RoHS

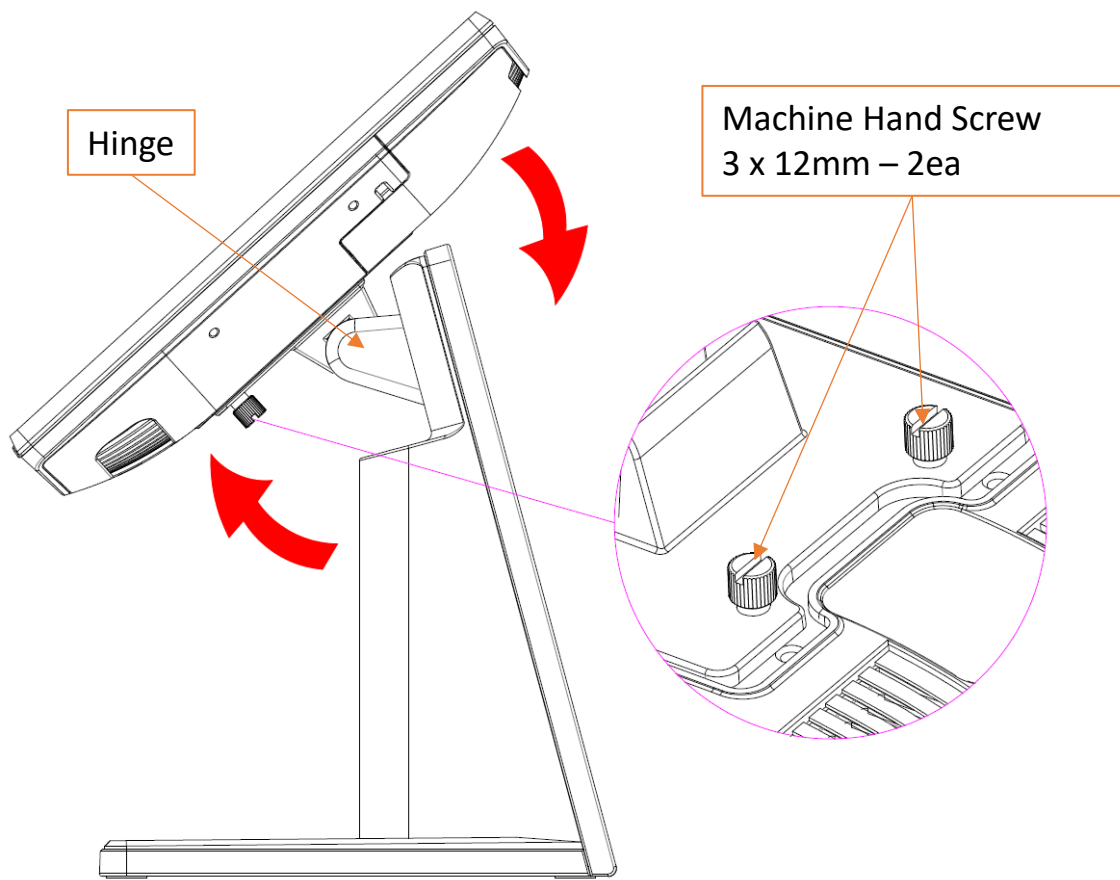
Specification - option

Option1 : RAY50D10 (Rear Monitor)		
Display	Resolution	10.1", TFT Color 1024 x 600 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
Option2 : RAY50D15 (Rear Monitor)		
Display	Resolution	15.6", TFT Color 1920 x 1080 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 96
Power		12Vdc@0.5A
Dimension (W x D x H)		389mm x 205.3mm x 334.3mm

Specification – Outside size

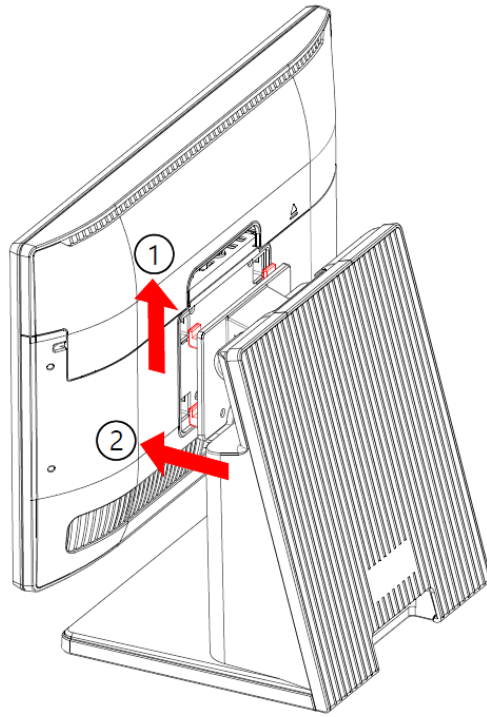


Specification – Body Exploded view

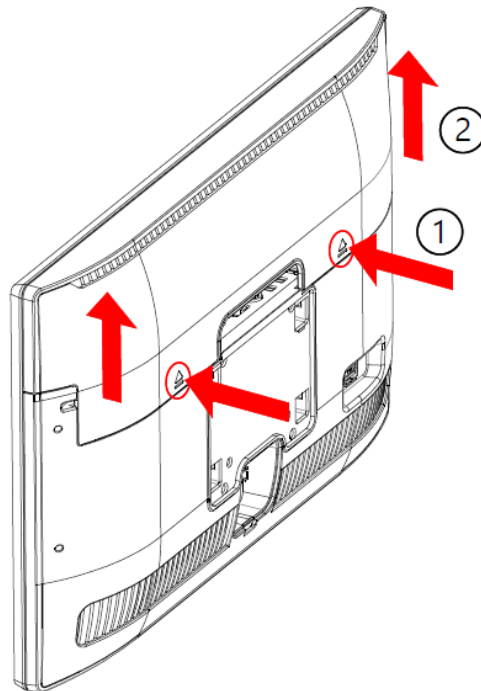


1. Please adjust the monitor (hinge) in the direction of the arrow.
2. Loosen the two machine hand screws (3 x 12mm).

Specification – Body Exploded view

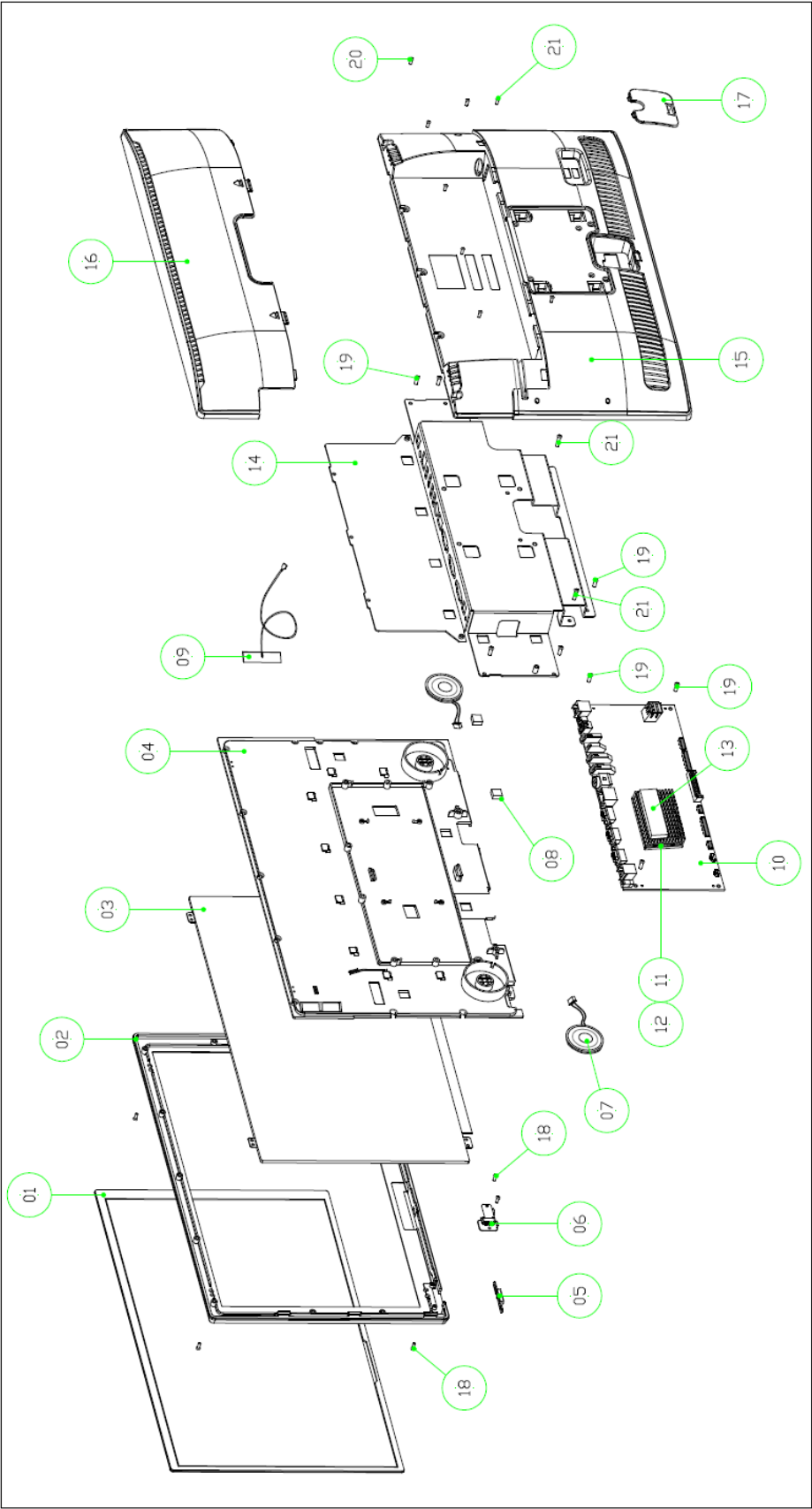


To separate the monitor from the stand, lift the monitor upward in step 1 according to the arrow, then slide it forward in step 2 to remove it.

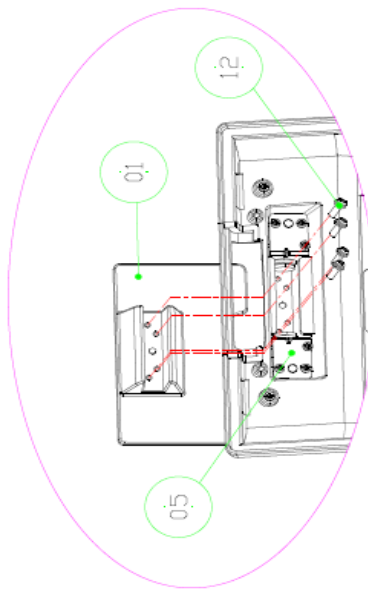
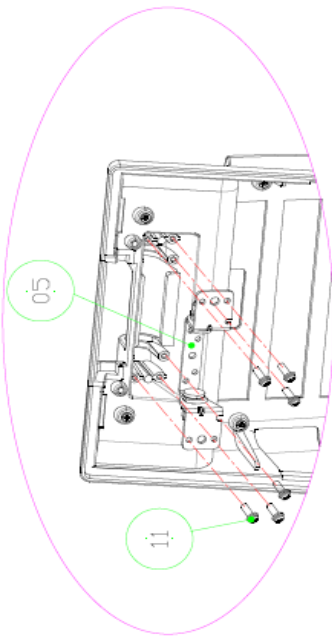
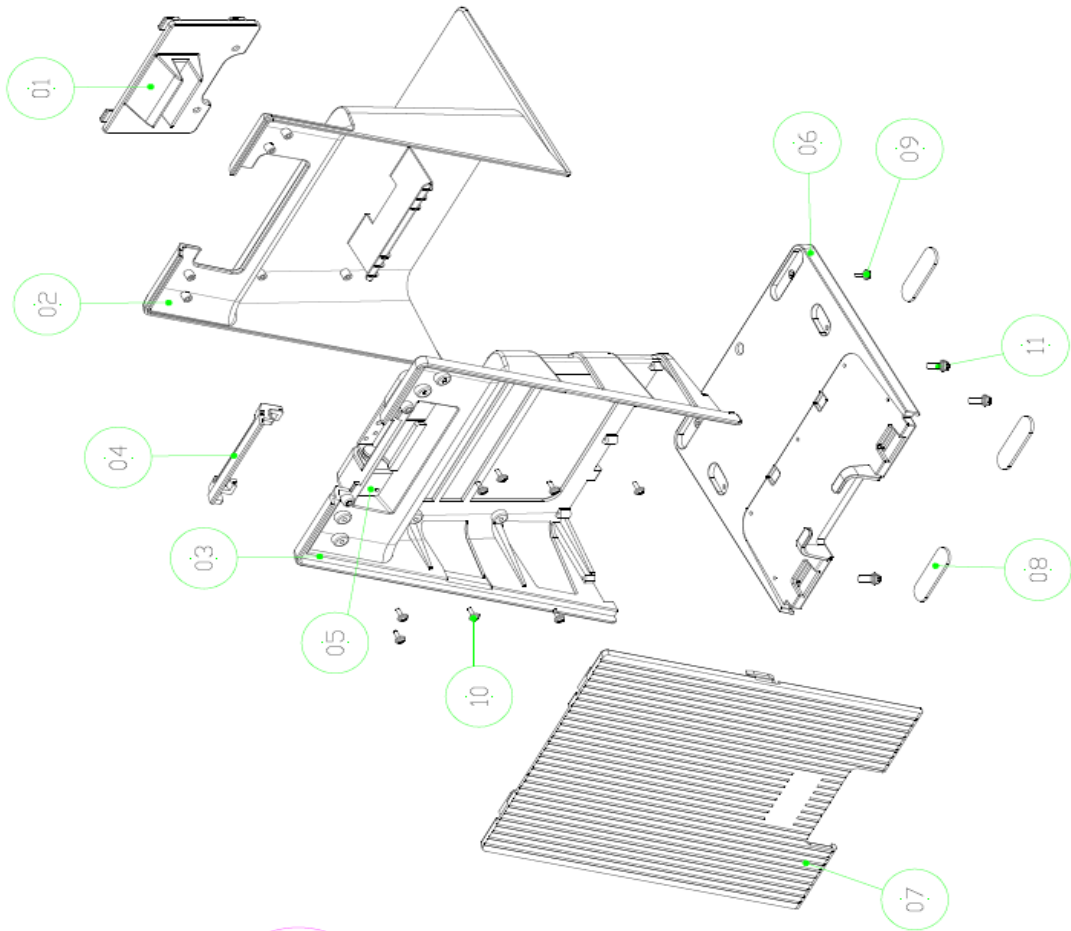


To remove the port cover, press down on the cover in step 1 as indicated by the arrow, then lift it upward in step 2 to detach it.

Specification – Monitor Explode View



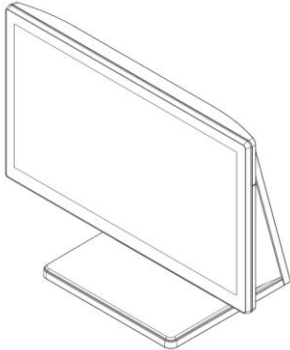
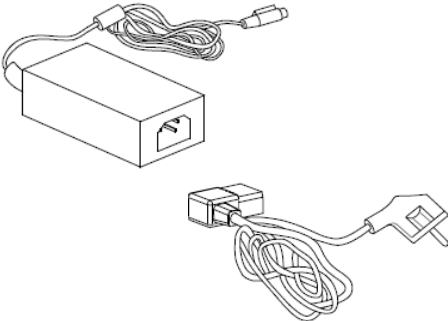
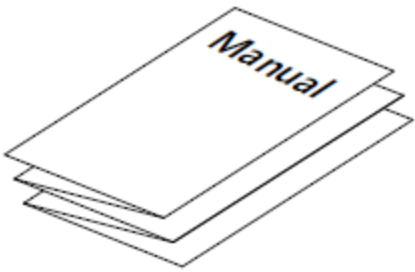
Specification – Hinge Explode View



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

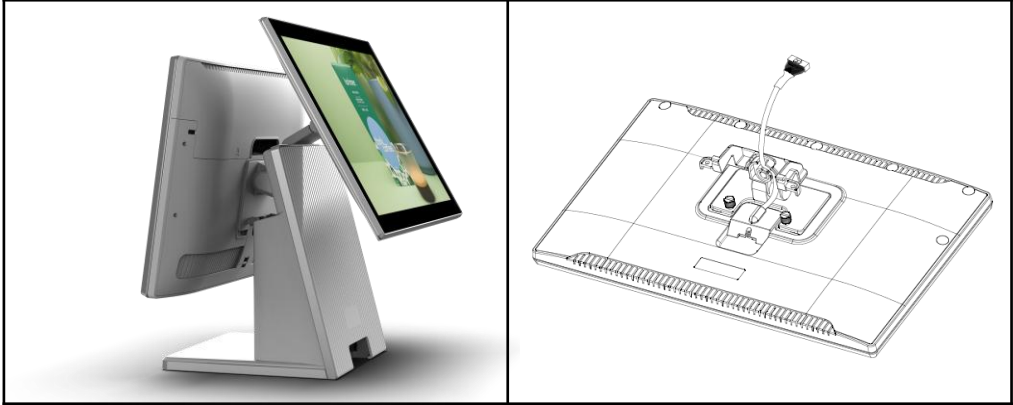
RAYPOS Main Unit	Adapter / Power cord
	
Installation Guide	
	

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

Option 1 : 2nd LCD Monitor 10.1"



Option 2 : 2nd LCD Monitor 15.6"



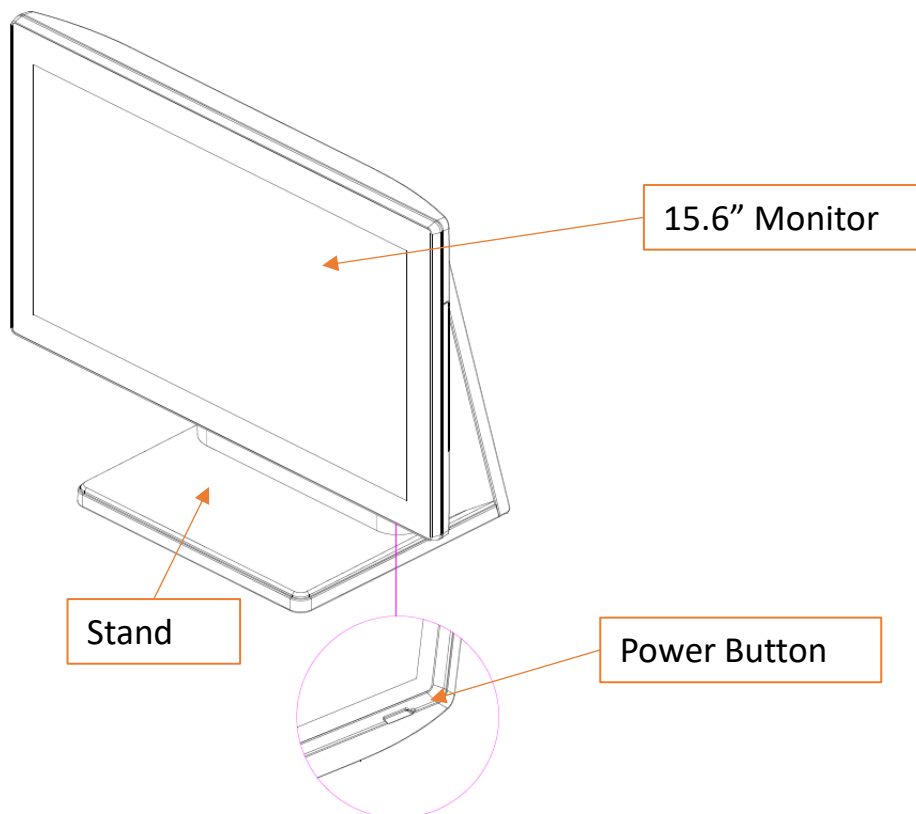
(2) Product Outline

- 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

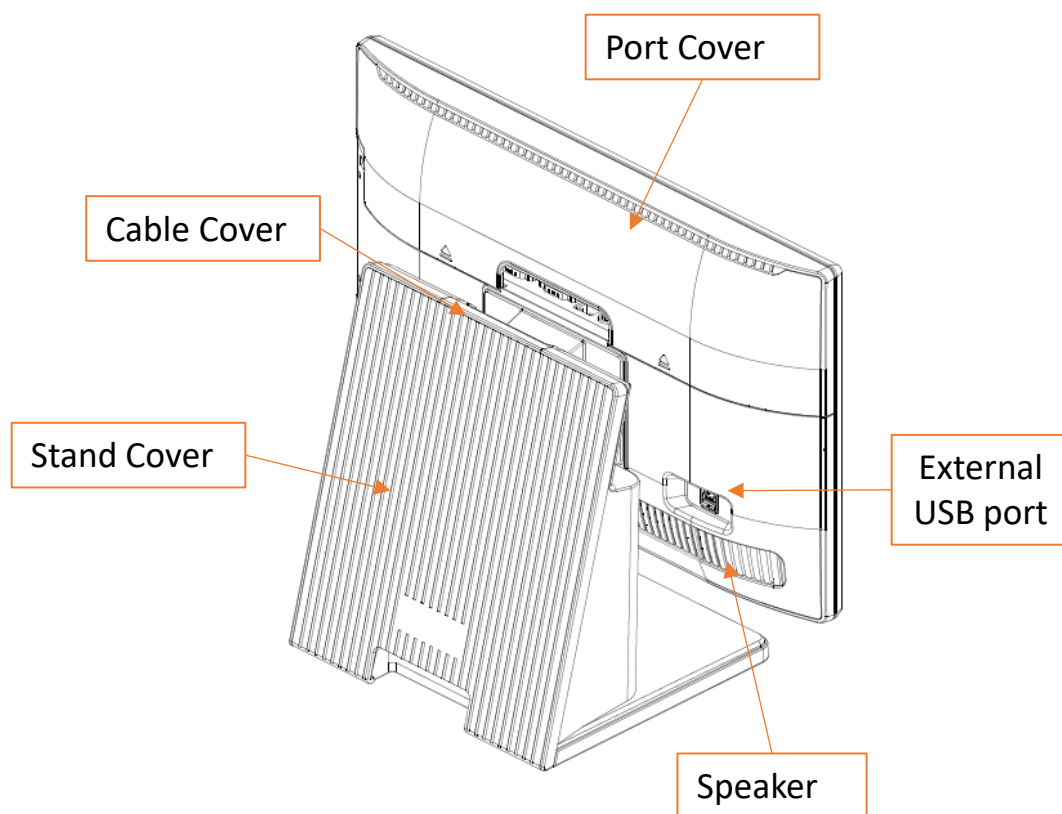
(3) Configuration

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

Front view



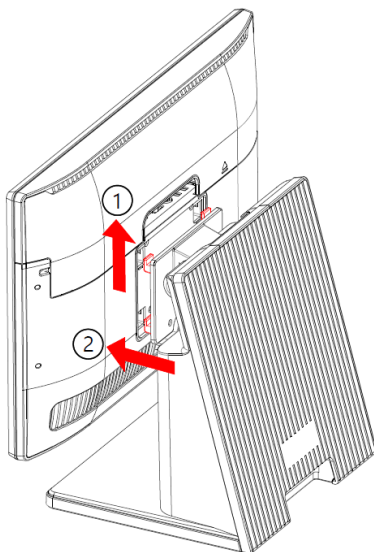
Rear view



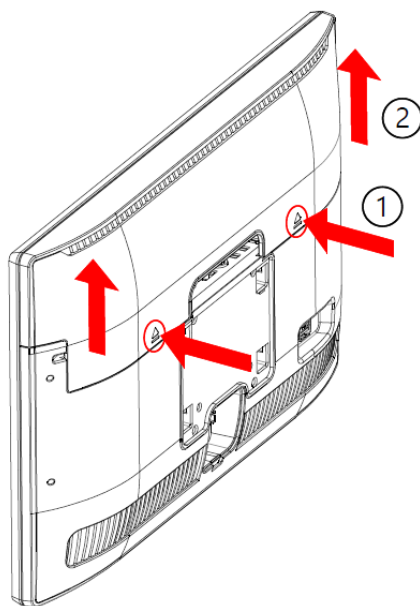
(4) I/O port : Details

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

I/O front view

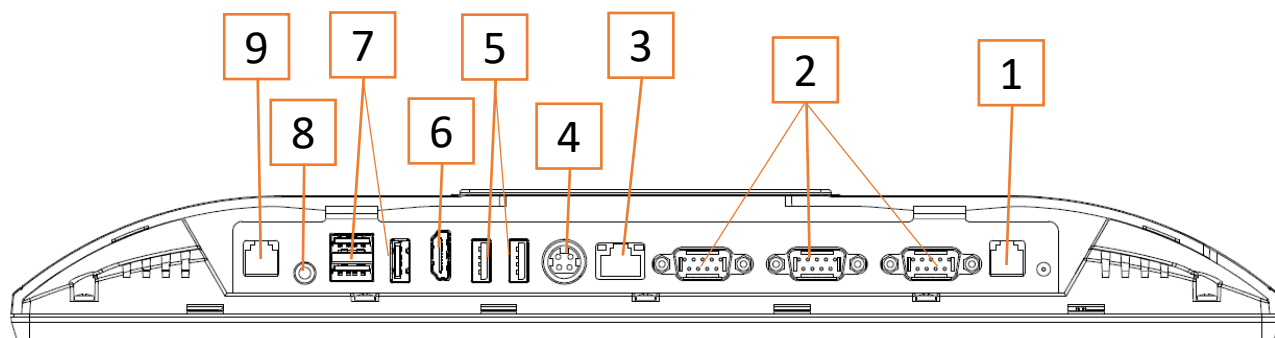


To separate the monitor from the stand, lift the monitor up first, then slide it forward to remove it.

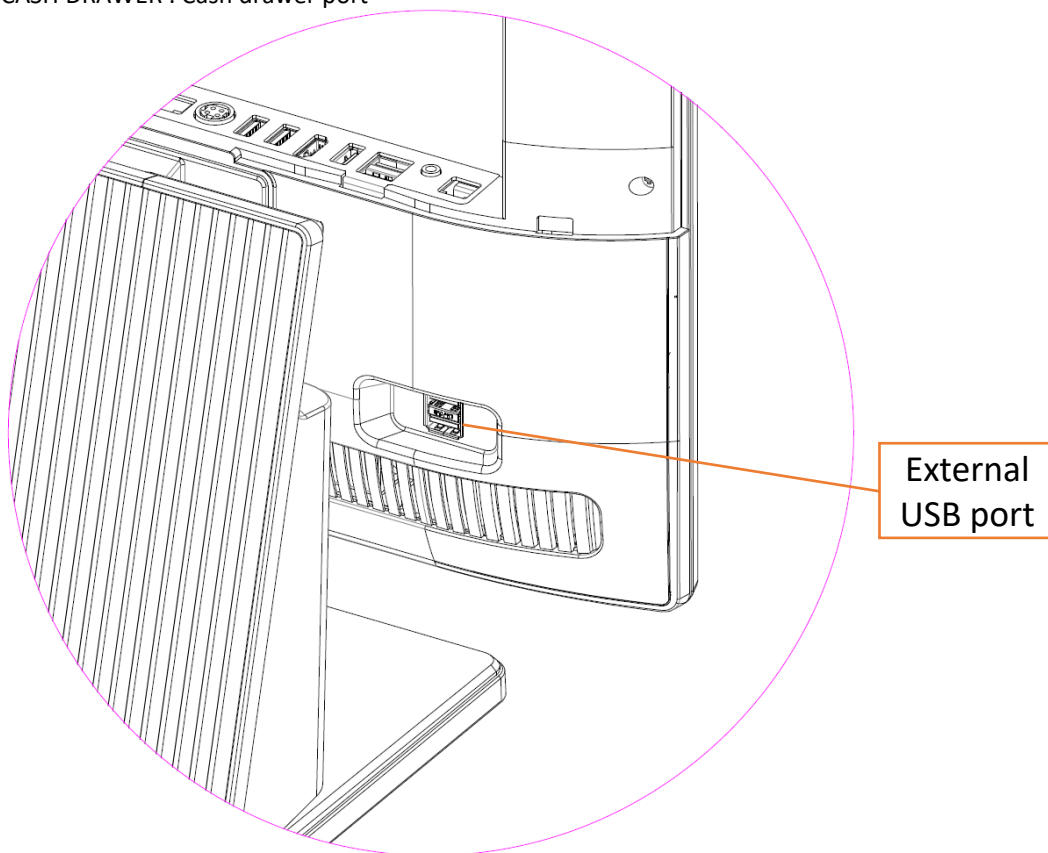


To remove the port cover, press the cover down and lift it upward in the direction indicated.

I/O Details

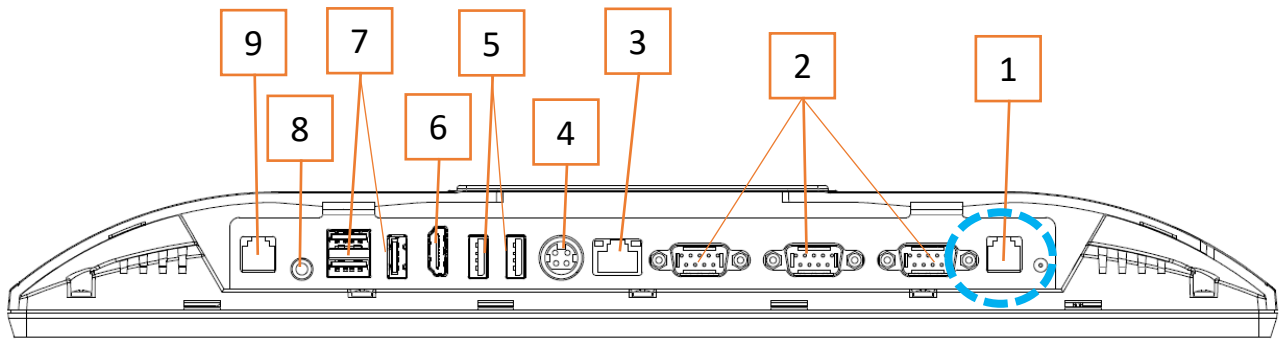


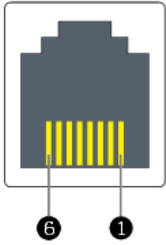
1. Serial : Serial Port (RJ11, 6Pin)
2. COM1, COM2, COM3 : Printer Connection(RS232 Serial)
3. LAN : Connection via Ethernet Port (LAN)
4. DC24V-IN : Power cable connection port
5. USB3.0 : USB3.0 connection 2ports
6. HDMI : HDMI connection port
7. USB2.0 : USB2.0 connection 3ports (+Side 2ports)
8. AUDIO OUT : Audio out connection port
9. CASH DRAWER : Cash drawer port



(5) Setting up : Serial Port (RJ11)

Connect the Serial Port on the rear of the device.



RJ11 Specification				
	Pin	I/O	Name	FUNCTION
	1	P	GND	Ground
	2	P	GND	Ground
	3	-	-	-
	4	I	RXD	Receive Data
	5	O	TXD	Transmit Data
	6	P	VCC(DC + 5V)	POWER

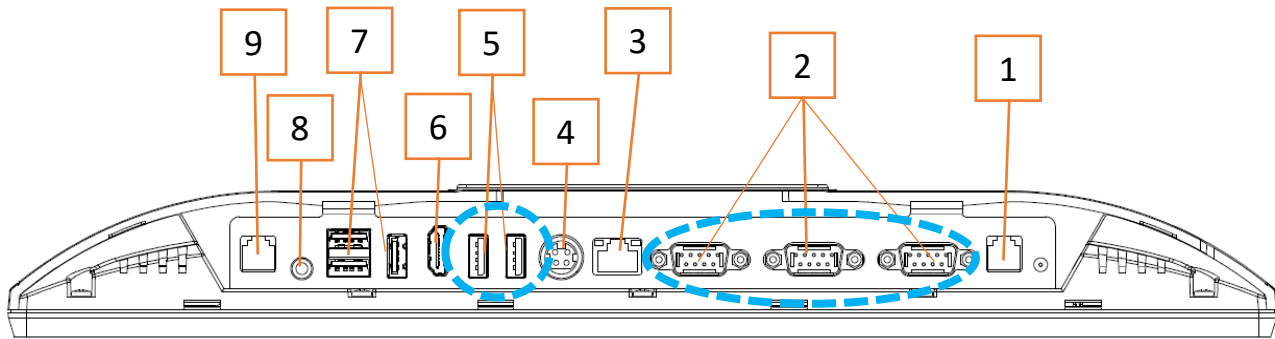
(6) Setting up : Printer Connection

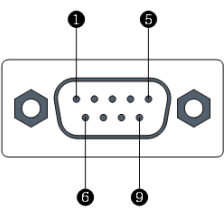
Connect printer cable to either Serial & USB port as required.

* Power control is managed via firmware. Please refer to the development documentation for details. You can download the development documentation from the website.

→ Development Documentation :

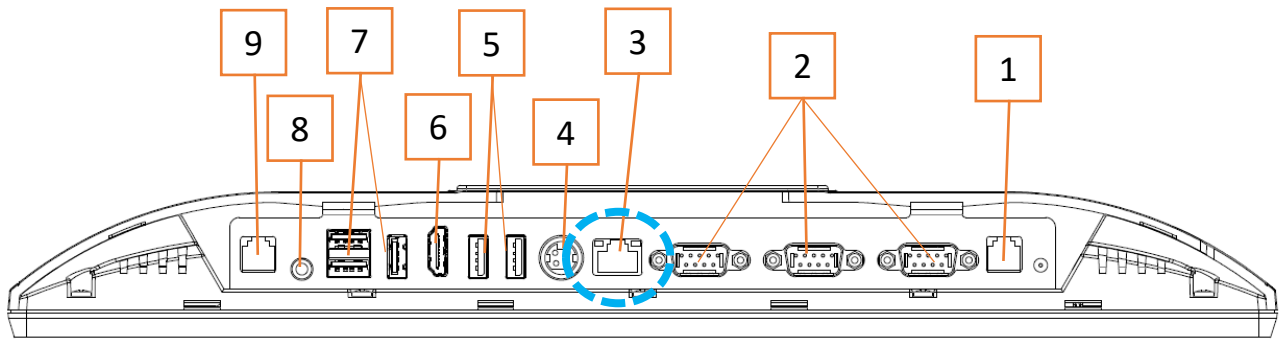
RAYPOS_RAY50_RAY70_RAY71_Development_Guide_V1eng



Serial(COM1, COM2, COM3) 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(DV5V)	Power Supply Terminal, Power On/Off control possible

(7) 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.

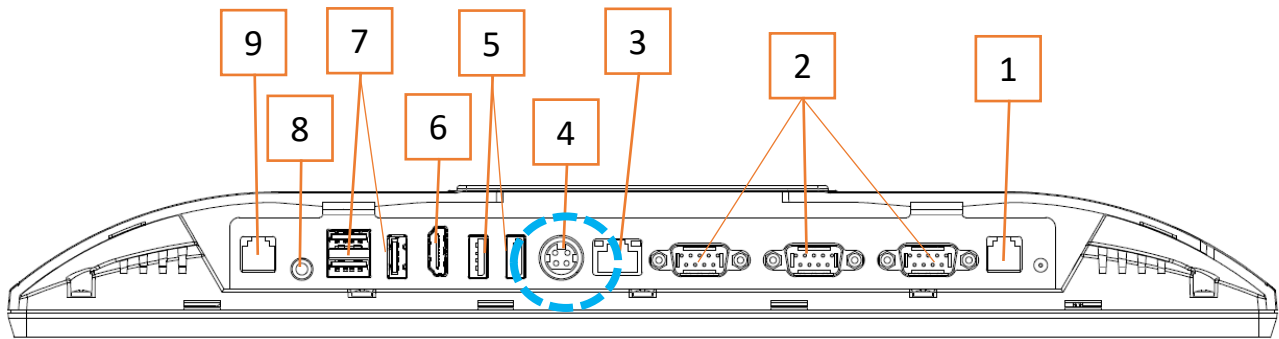



Lan port Specification				
	Pin	I/O	Name	FUNCTION
	1	O	TX+	Transmit Data+
	2	O	TX-	Transmit Data-
	3	I	RX+	Receive Data+
	4	-	-	-
	5	-	-	-
	6	I	RX-	Receive Data-
	7	-	-	-
	8	-	-	-

(8) 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 the system IO panel.

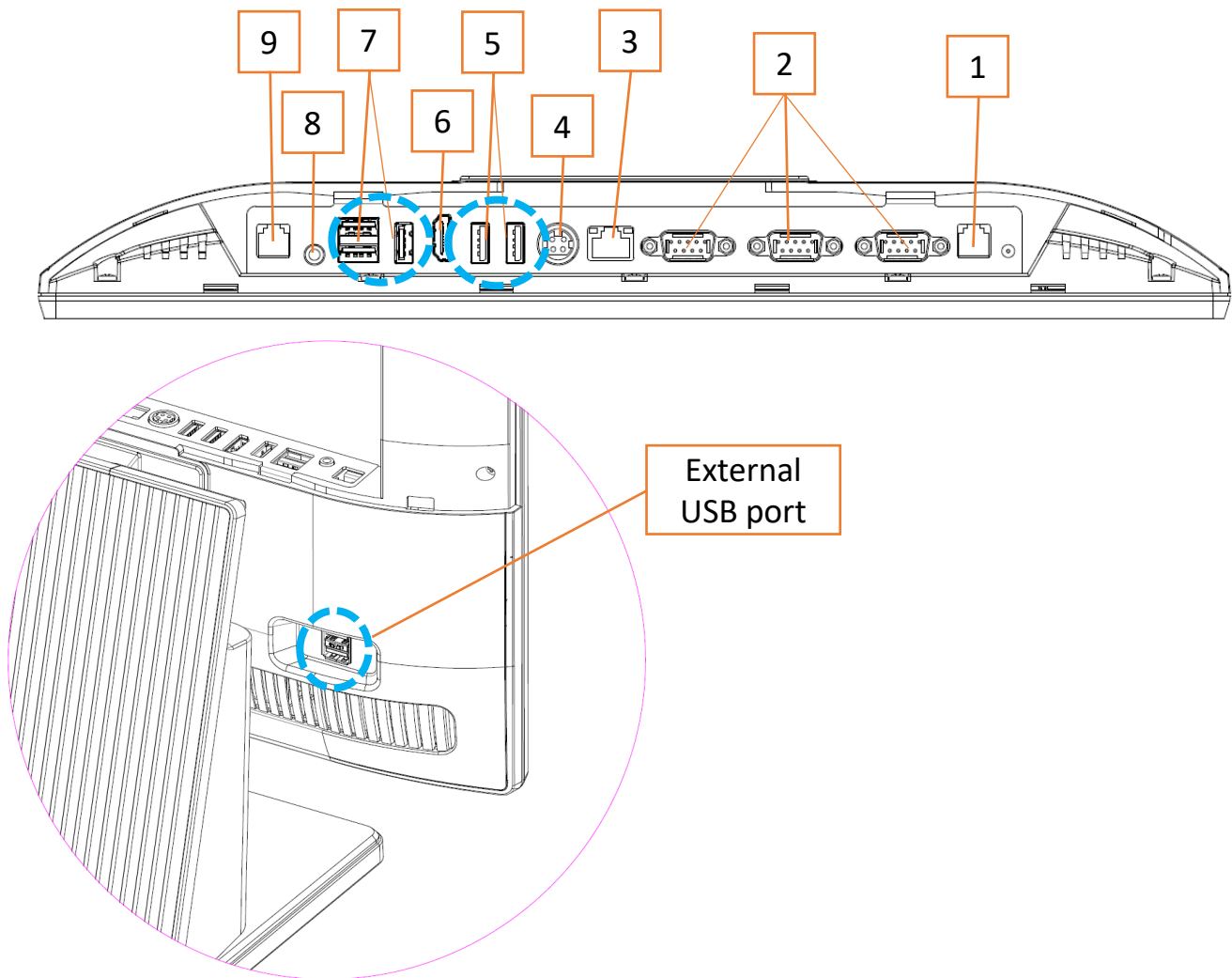
CAUTION : Do not pull on the adaptor cable! Disconnect cable by pulling the plug cap.

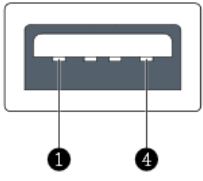


Power(Input) port/ Adapter Input Specification				
	Pin	I/O	Name	FUNCTION
	1	P	+24VDC	+DC 24V
	2	P	+24VDC	+DC 24V
	3	P	GND	Ground
	4	P	GND	Ground

(9) Setting up : USB Port Connection

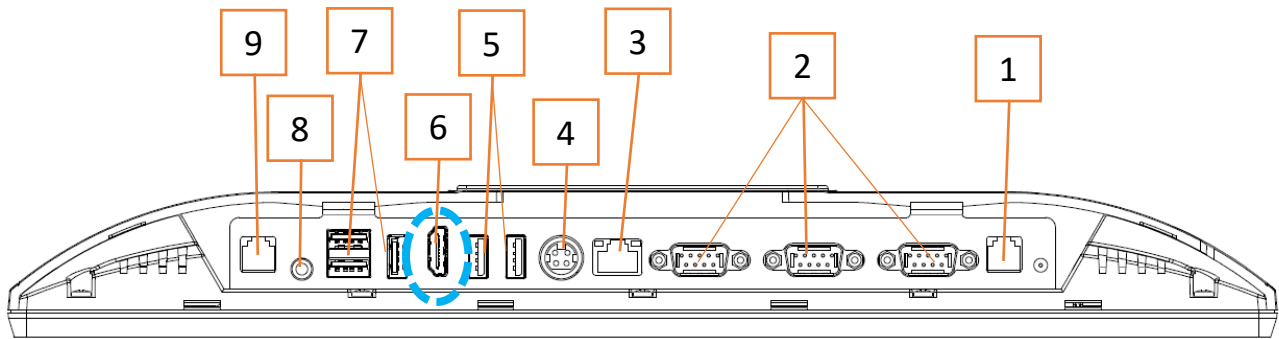
The POS unit is equipped with a total of 7 USB ports. Five are located at the rear I/O, with two supporting USB 3.0 and the remaining three supporting USB 2.0. Additionally, two USB 2.0 ports are provided at the lower rear I/O for external connections.

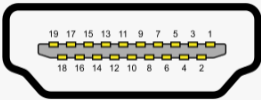


USB Port Specification				
	Pin	I/O	Name	FUNCTION
	1	P	Vsub	+5V
	2	IO	D-	Data-
	3	IO	D+	Data+
	4	P	GND	Ground

(10) Setting up : HDMI connection

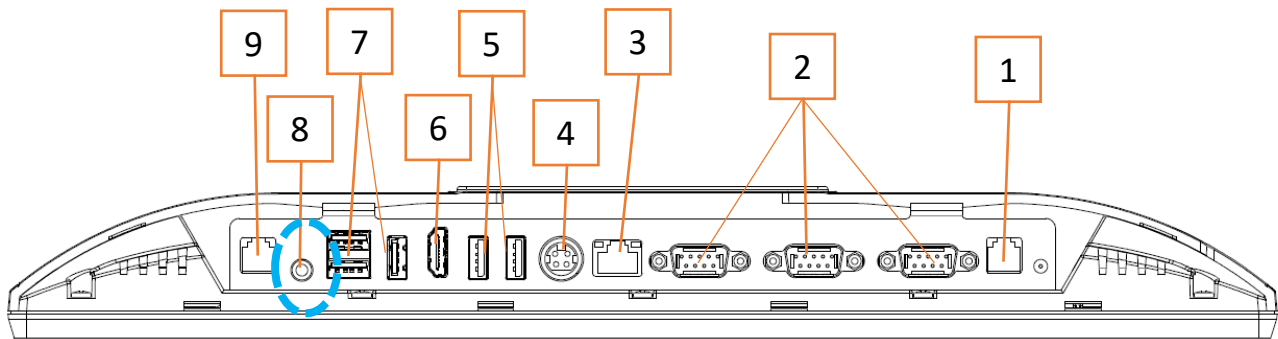
Connect the HDMI port on the rear of the device.

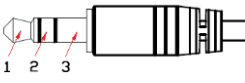


HDMI Specification				
	Pin	I/O	Name	FUNCTION
	1	O	HDMI_TX2P_PORT_F	HDMI Data TX2 +
	2	P	GND	Ground
	3	O	HDMI_TX2N_PORT_F	HDMI Data TX2 -
	4	O	HDMI_TX1P_PORT_F	HDMI Data TX1+
	5	P	GND	Ground
	6	O	HDMI_TX1N_PORT_F	HDMI Data TX1 -
	7	O	HDMI_TX0P_PORT_F	HDMI Data TX0+
	8	P	GND	Ground
	9	O	HDMI_TX0N_PORT_F	HDMI Data TX0-
	10	O	HDMI_TXCLKP_PORT_F	HDMI CLKP
	11	P	GND	Ground
	12	O	HDMI_TXCLKN_PORT_F	HDMI CLKN
	13	O	HDMI_TX_CEC_PORT	Consumer Electronics Control
	14	P	NC	NC
	15	O	HDMI_TXDDC_SCL_PORT	Data SCL(EDID)
	16	IO	HDMI_TXDDC_SDA_PORT	Data SDA(EDID)
	17	P	GND	Ground
	18	P	VCC	+5V power
	19	I	HDMI_TX_HPD_PORT	Hot Plug Detect

(11) Setting up : Audio-out connection

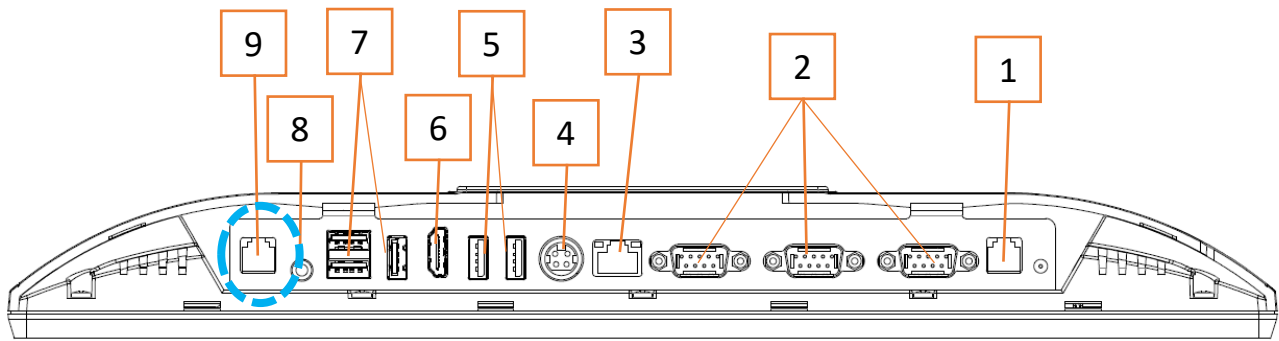
This port connects a headphone or a speaker with a 2W x 2 configuration.

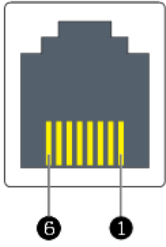


Audio Jack Specification				
	Pin	I/O	Name	FUNCTION
	1	O	HPL_OUT	Left Output
	2	O	HPR_OUT	Right Output
	3	P	GND	Power

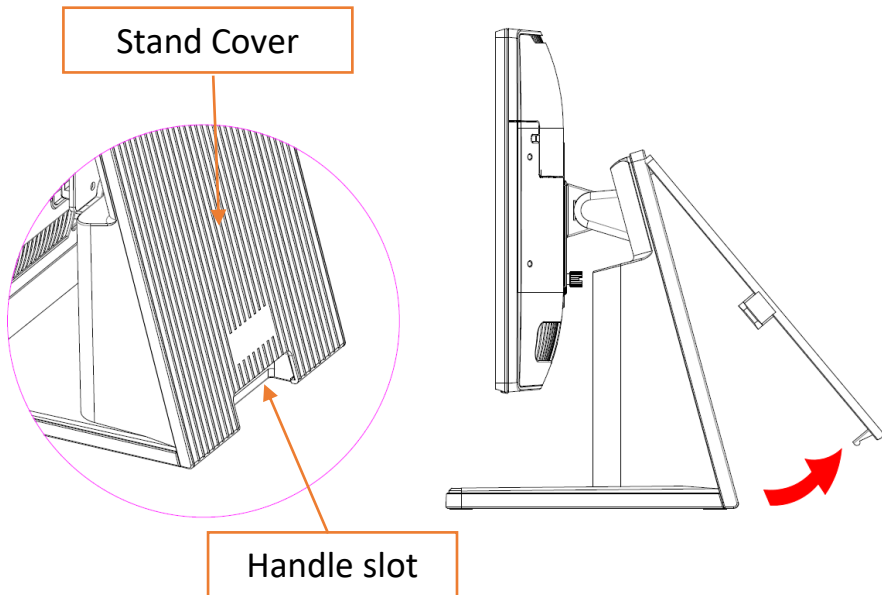
(12) Setting up : Cash Drawer connection

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

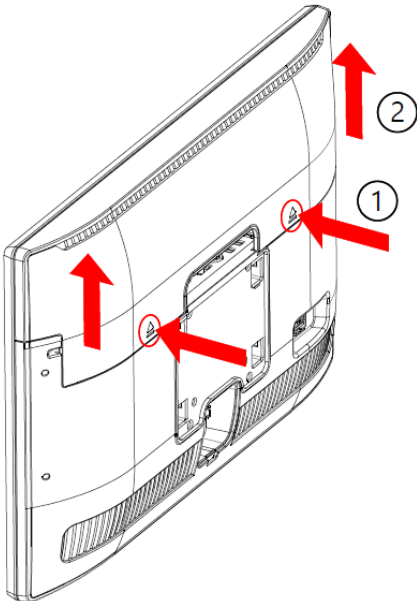


RJ11 Specification				
	Pin	I/O	Name	FUNCTION
	1	-	-	-
	2	-	GND	Ground
	3	-	-	-
	4	-	DC + 24V	Power(DC + 24V)
	5	-	-	-
	6	-	-	-

(13) Power On POS

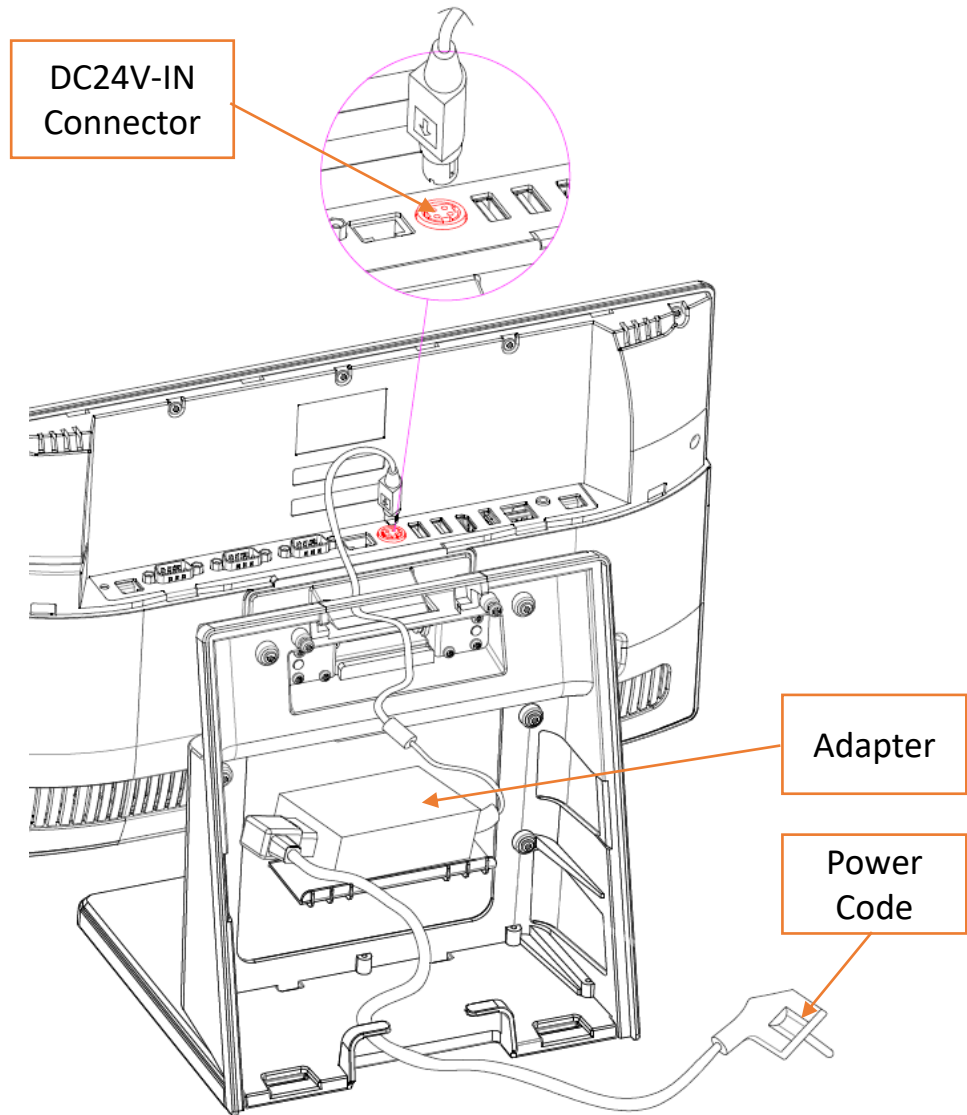


To open the stand cover, grip the handle slot and follow the arrow direction to open the cover.



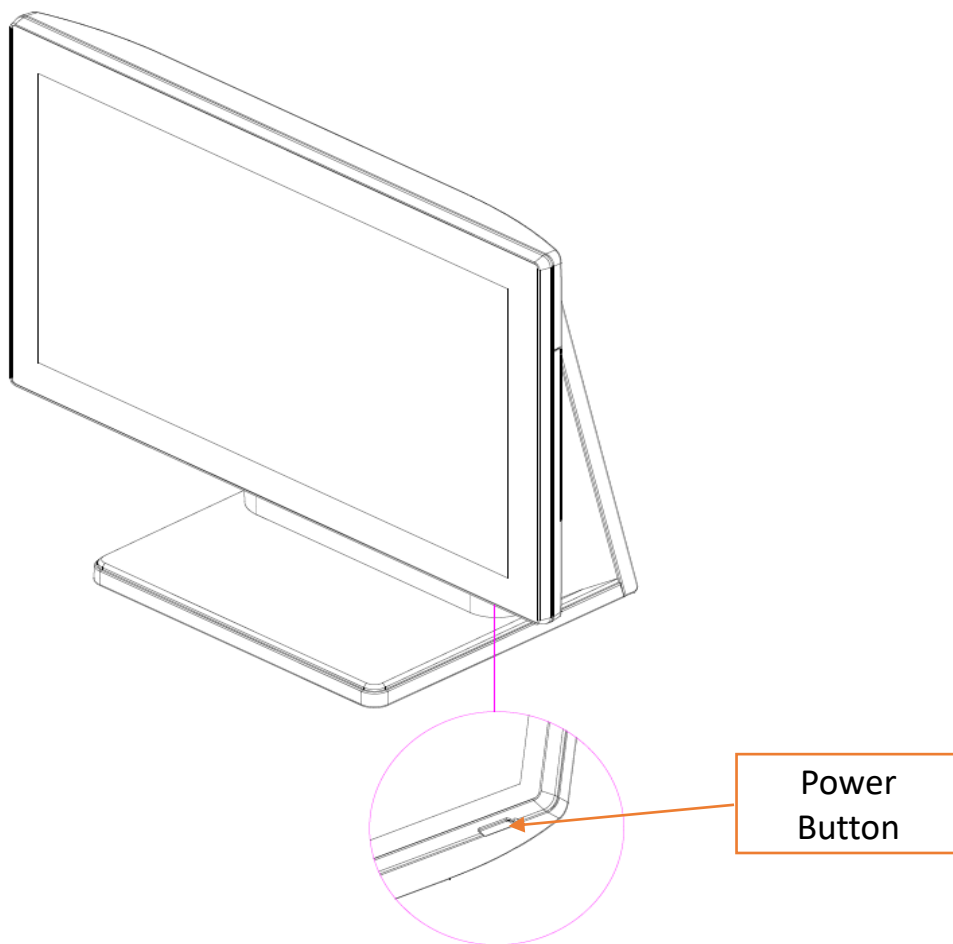
To remove the port cover, press down on the cover in step 1 and lift it upward in step 2 as indicated by the arrow.

(13) Power On POS



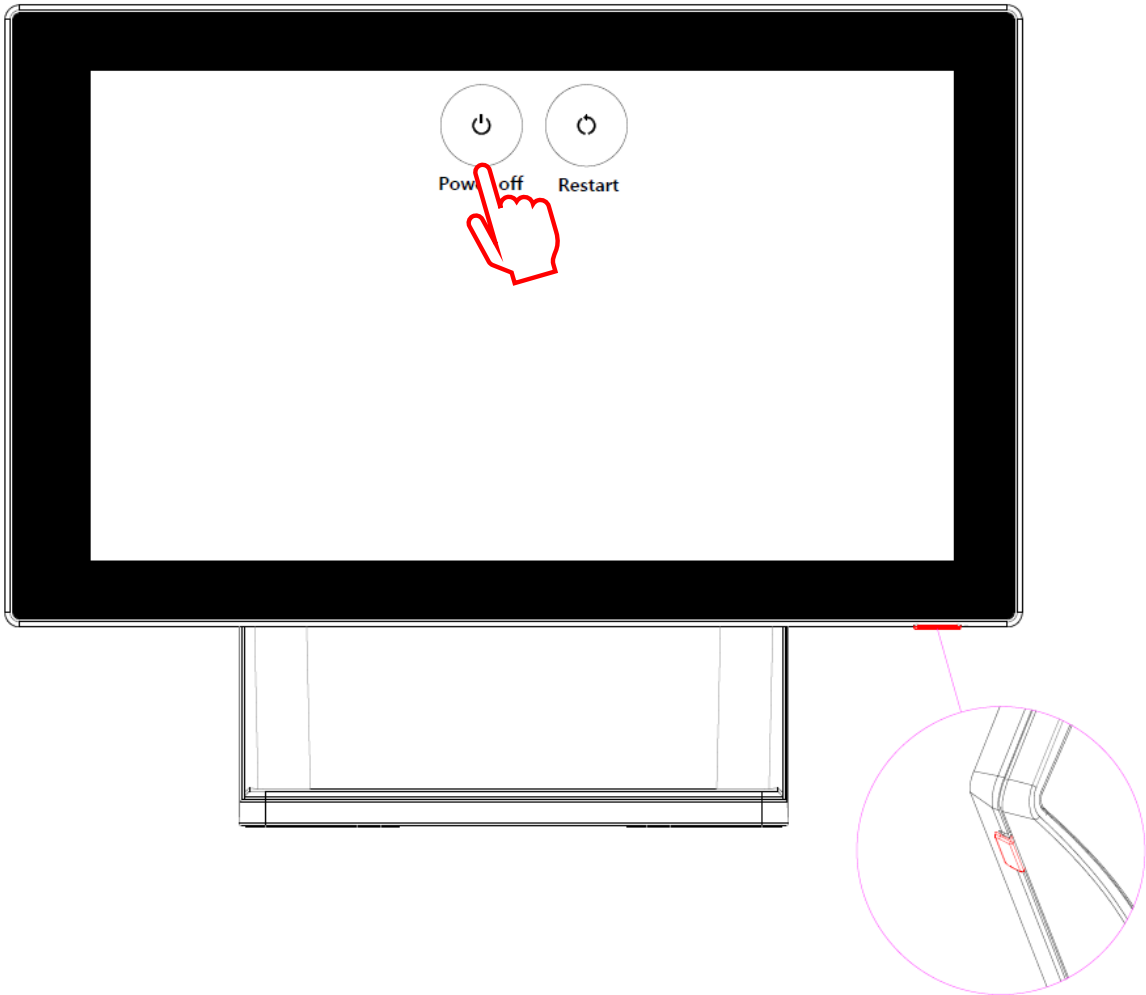
1. The main power switch is located at the back of the device.

(13) Power On POS



Press the power button located at the bottom right corner of the monitor to turn it on.
Confirm that Android loads correctly.

(14) Power Off POS



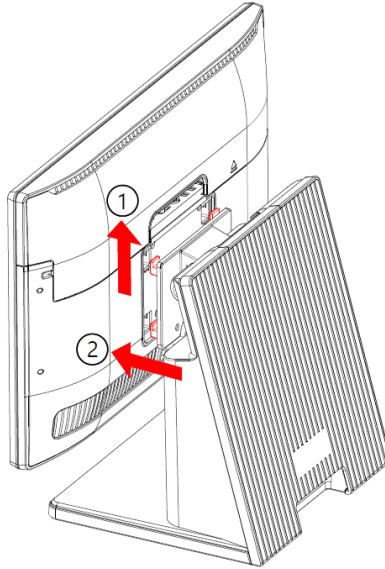
1. Press and hold the power button located at the bottom right of the monitor for a few seconds (2 seconds).
2. The options "Power Off" and "Power Reset" will appear at the top of the screen.
3. Touch "Power Off" to proceed.

2. RAYPOS Module POS System Separation

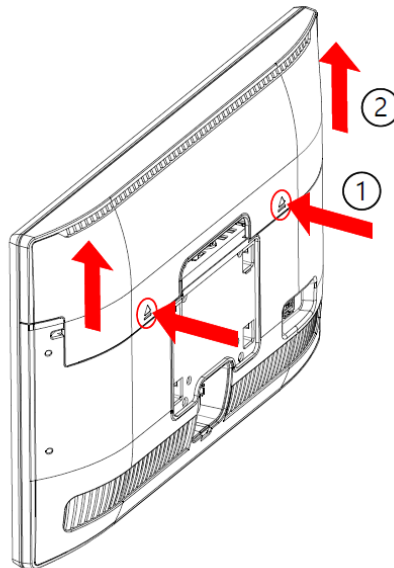
(1) Separating LCD monitor module

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

LCD monitor module



To detach the monitor from the stand, follow the arrows in order: 1. Lift the monitor upward, then 2. Push it forward to remove it.



To remove the port cover, follow the arrows in order: 1. Press the cover, then 2. Lift it upward in the indicated direction to detach it.

Tapping Bind Head Screw
3 x 8mm – 6 ea

Machine Pan Head Screw
3 x 6mm – 2 ea

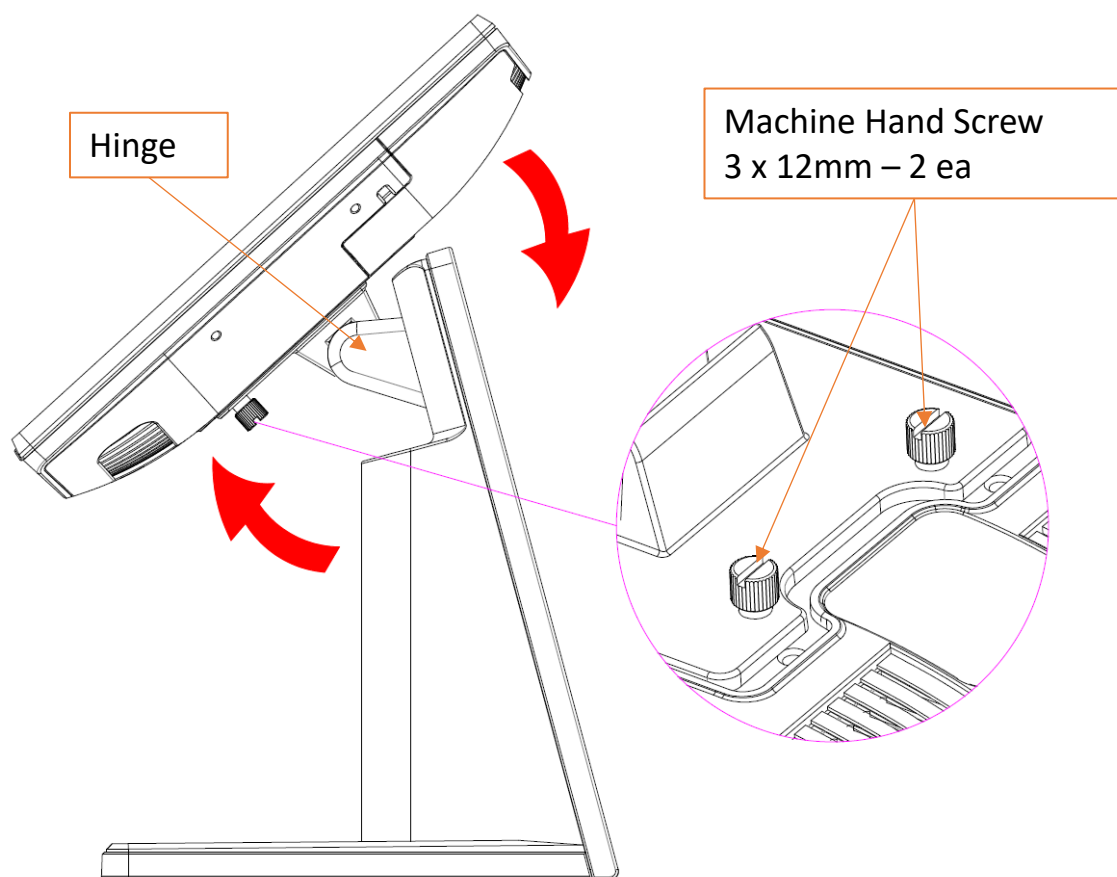
Tapping Bind Head Screw
3 x 6mm – 6 ea

Machine Pan Head Screw
3 x 6mm – 2 ea

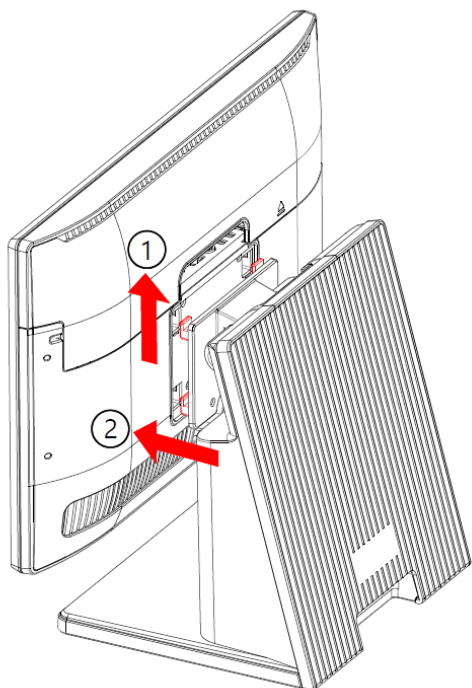
(2) Separating Hinge module

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

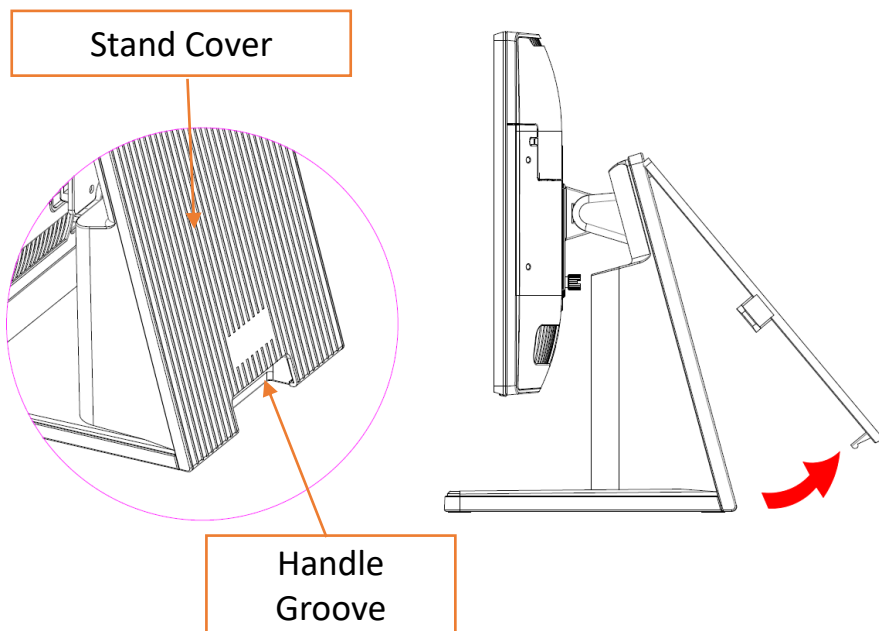
HINGE module



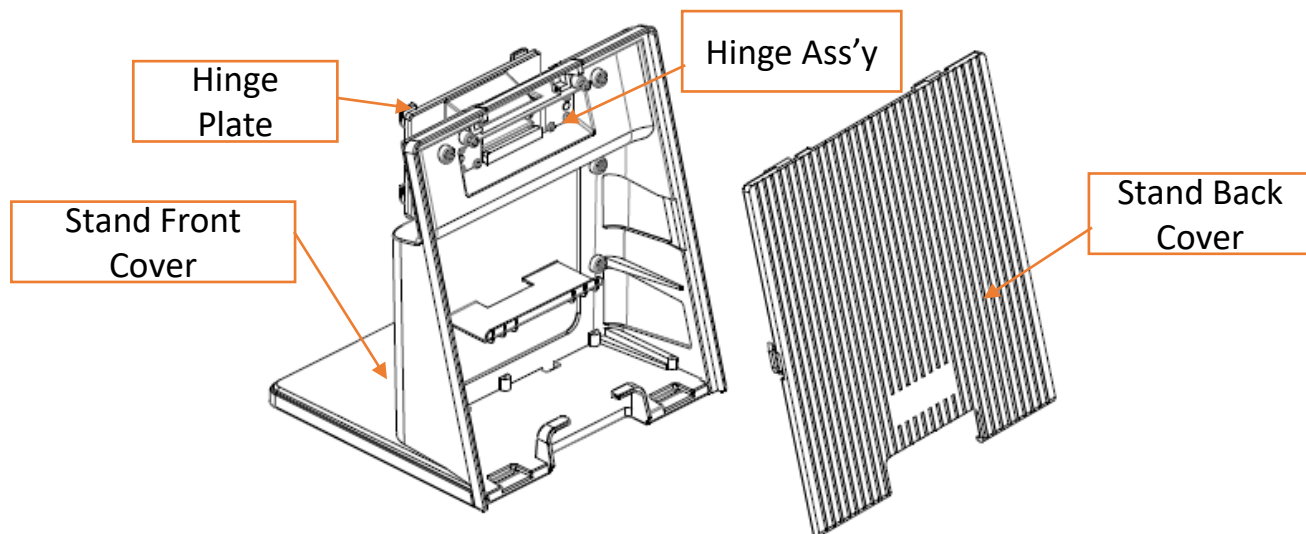
1. Adjust the monitor (hinge) in the direction of the arrow.
2. Loosen the two machine hand screws (3 x 12mm).



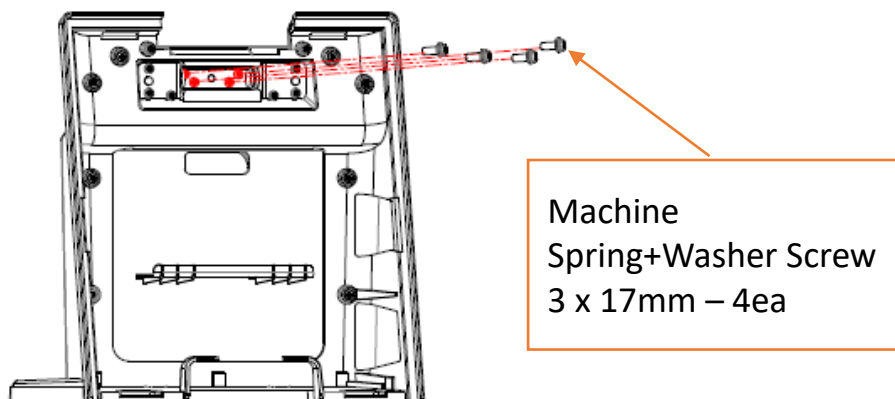
To detach the monitor from the stand, follow the arrows in order: 1. Lift the monitor upward, then 2. Push it forward to remove it.



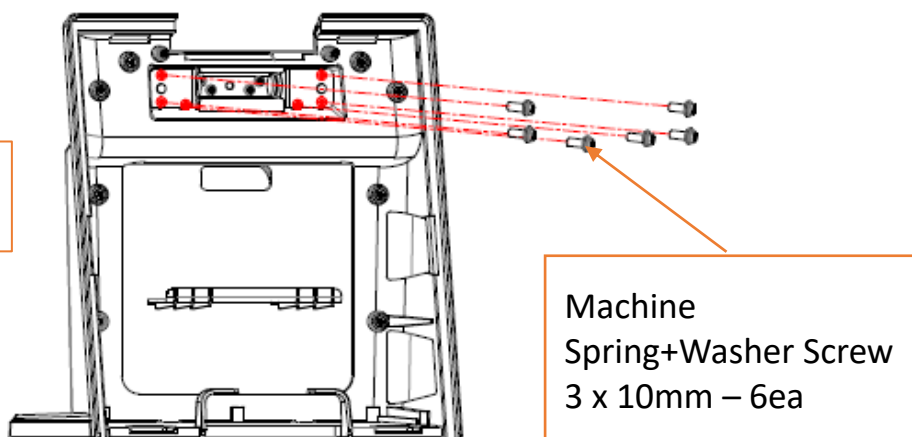
Hold the handle groove on the stand cover and open the cover in the direction of the arrow.

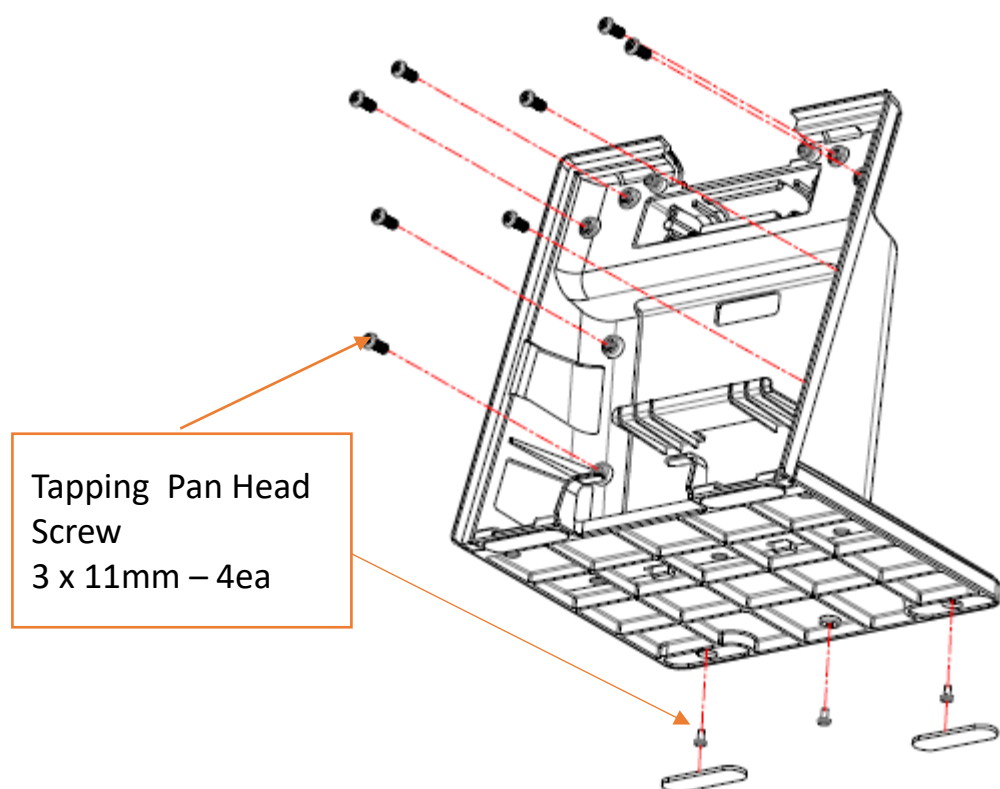


1. Hinge Plate Disassembly work



2. Hinge Plate Disassembly work

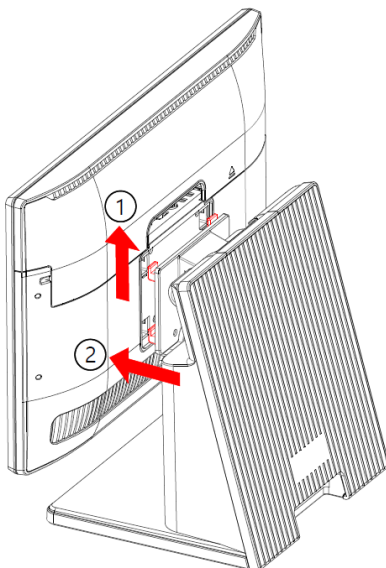




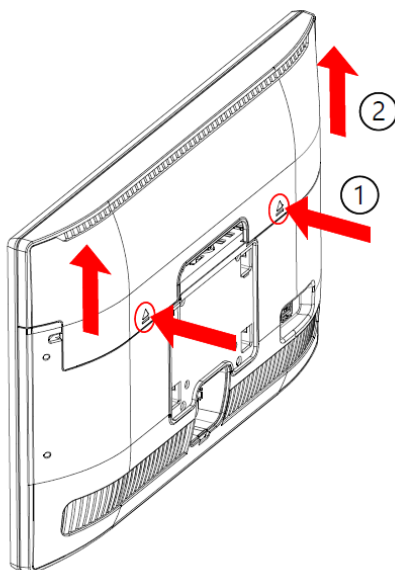
(3) Separating Mother board

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

Mother Board



To detach the monitor from the stand, follow the arrows in order: 1. Lift the monitor upward, then 2. Push it forward to remove it.



To remove the port cover, follow the arrows in order: 1. Press the cover, then 2. Lift it upward in the indicated direction to detach it.

Tapping Bind Head Screw
3 x 8mm – 6 ea

Machine Pan Head Screw
3 x 6mm – 2 ea

Tapping Bind Head Screw
3 x 6mm – 6 ea

Machine Pan Head Screw
3 x 6mm – 2 ea

3. Motherboard

(1) Motherboard Overview

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

Warning

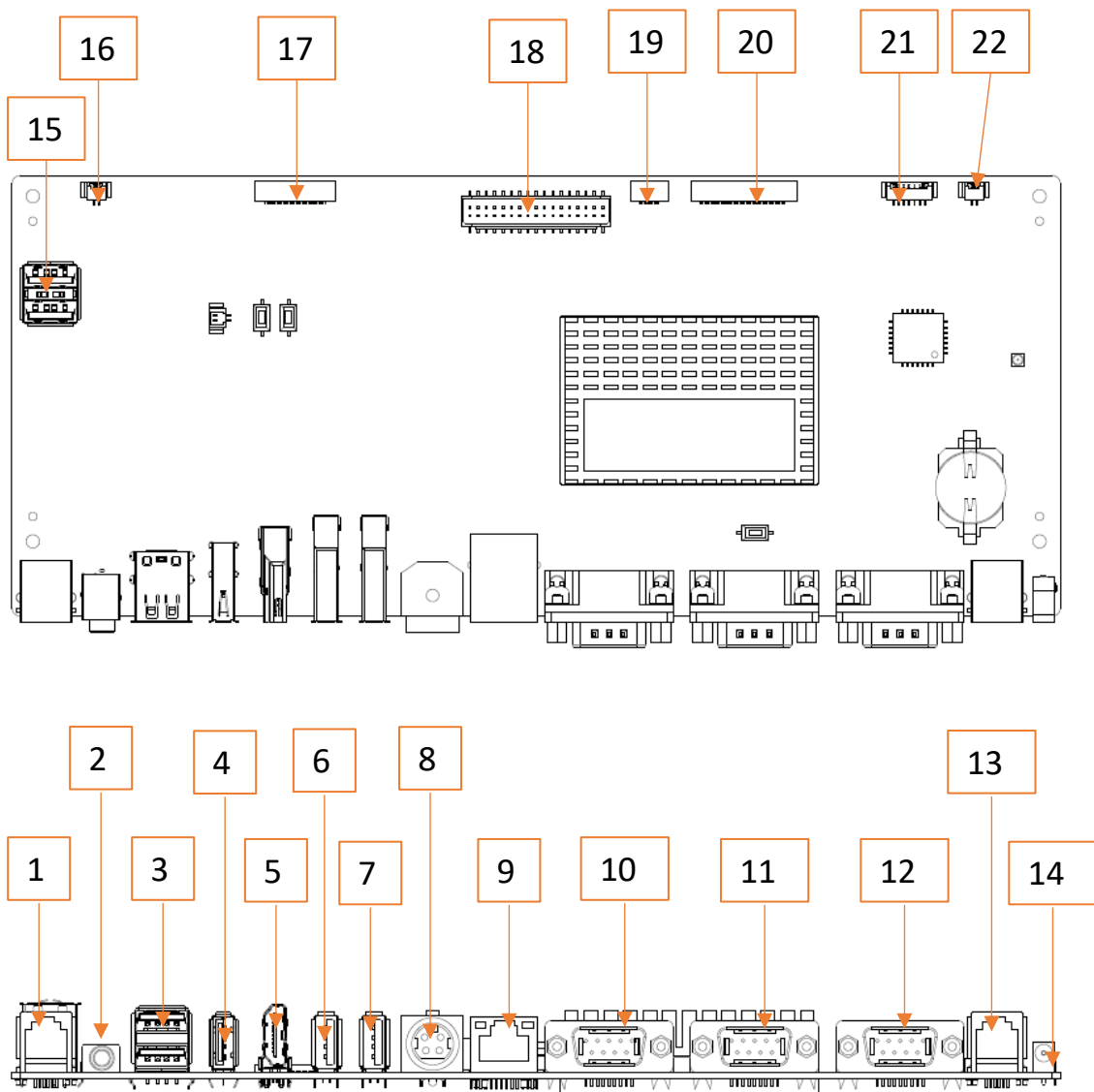
Take note of the following precautions before you install motherboard components or change any motherboard settings.

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. Cash Drawer Connector
2. Audio JACK
3. USB 2.0 Connector (Dual)
4. USB 2.0 Connector
5. HDMI Connector
6. USB 3.0 Connector
7. USB 3.0 Connector
8. Main Power Connector
9. Ethernet Connector
10. Serial Connector
11. Serial Connector
12. Serial Connector
13. Serial Port
14. NOT USE
15. USB 2.0 Connector
16. Speaker Right Connector
17. 15.6inch eDP LCD Connector
18. Secondary LCD Connector
19. Main Display Touch Connector
20. 23.8inch KIOSK LCD Connector(MIPI to Dual LVDS)
21. Power Switch Connector
22. Speaker Left Connector

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.