

# RAY90

## 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 User manual are listed below.

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

## Copyright

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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 RAY90 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 cleaning the terminal, turn off the power and wipe it with a dry cloth. Do not use organic solvents such as thinner.
4. Do not install the terminal near items with strong magnetic fields, such as TVs, audio equipment, fluorescent light ballasts, or speakers.
5. If the terminal malfunctions or does not operate correctly, please contact your service center.
6. Do not install the terminal on a sloped surface or in places with severe vibrations.
7. Do not disassemble or modify the terminal.
8. Use only standard adapters and cables.

## Specification

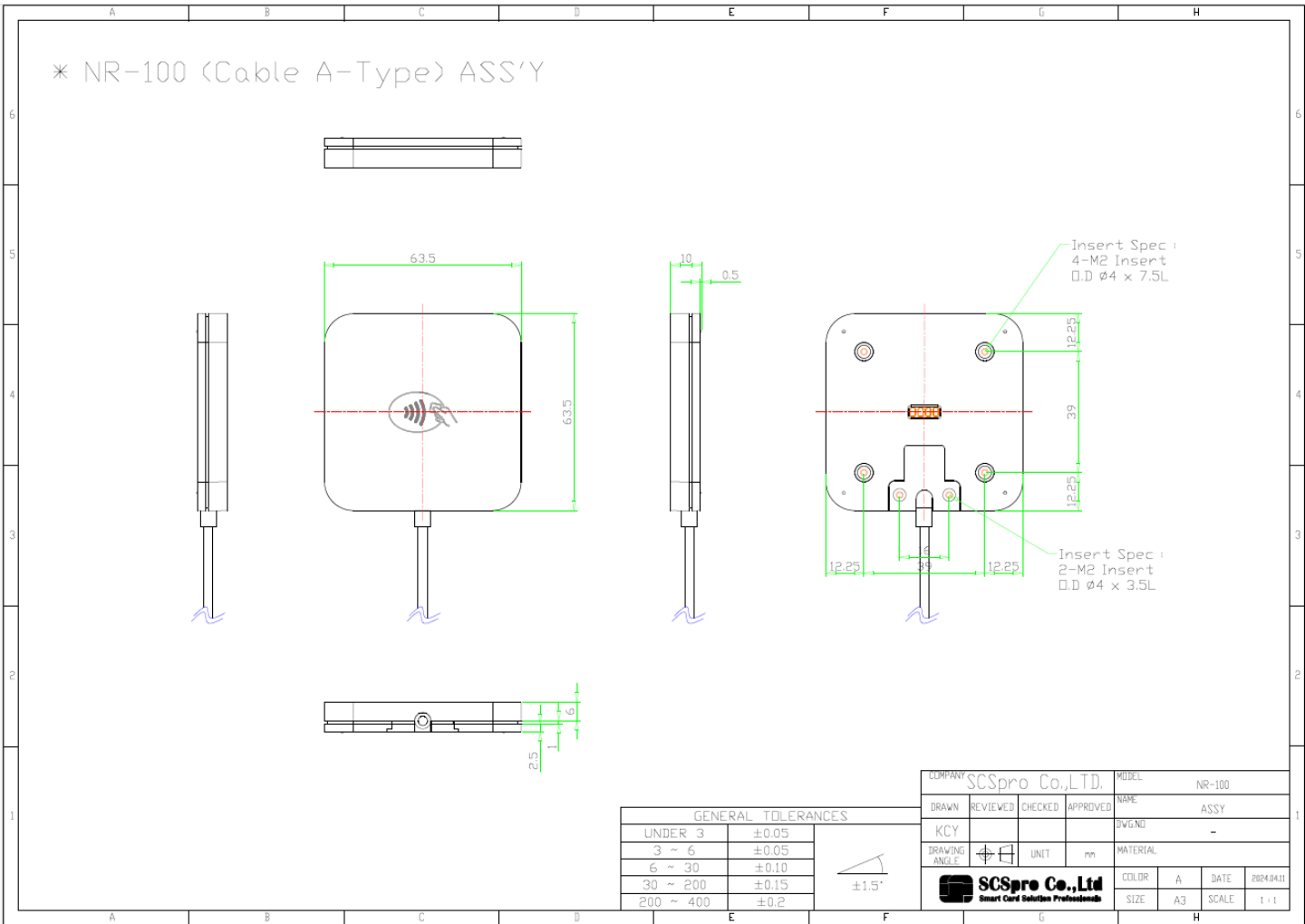
RAY90		
Processor		ARMv7-M core, 204Mhz
OS		F/W
Memory		Flash 1Mbyte, Ext. 1Mbyte / SRAM 1Mbyte
I/O	Peripheral Port	5 PIN Wire Cable(RS232) [CAT/Y-Serial/USB To Serial]
	Contact Port	4 PIN Gold Plate Terminal(RS232)
Sound		Buzzer
Operating Temperature		0°C to +50°C
Power		5V/500mA
Dimension (W x H x D)		63.5mm X 63.5mm X 9.5mm
Certification		EMV Contactless L1, L2(MCL, VCL, AMEX, JCB, CUP)
Contactless		ISO14443 Type A, Type B, Mifare, Felica

## Specification - option

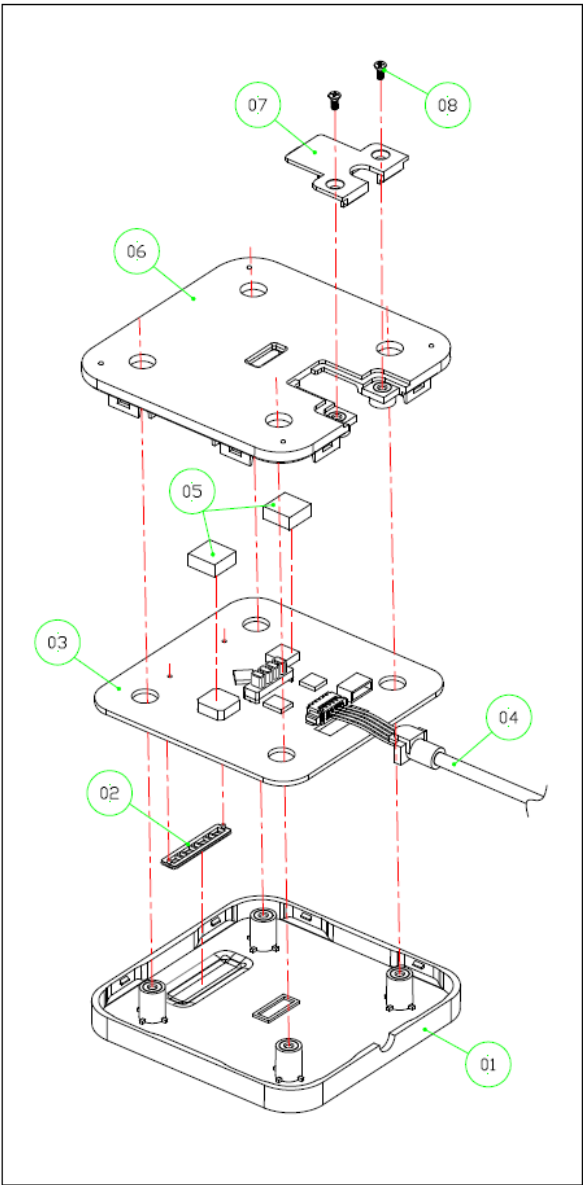
Option1 : Cradle	
Dimension (W x H x D)	80.23mm X 69.23mm X 44.75mm



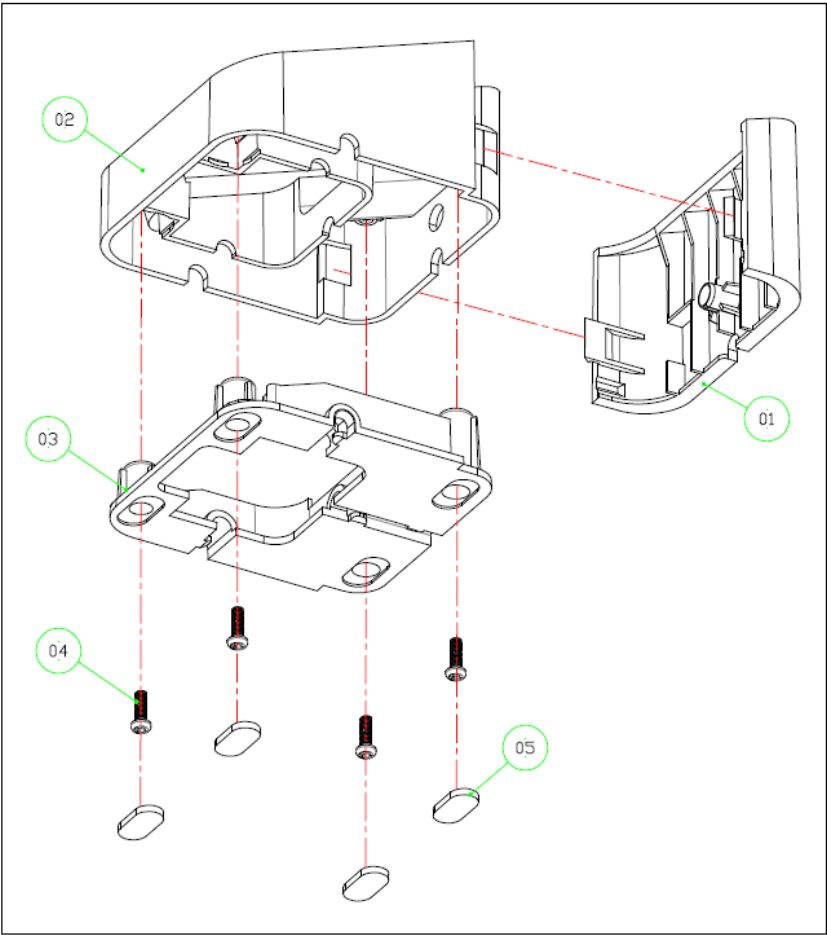
Specification – Outside size



**Specification – Module Exploded view**




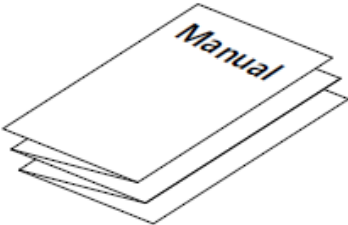
**Specification – Body Exploded view**

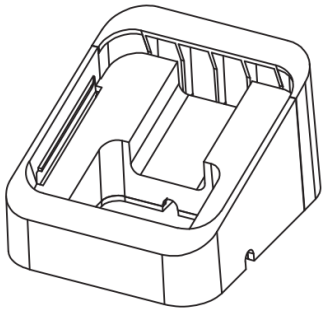
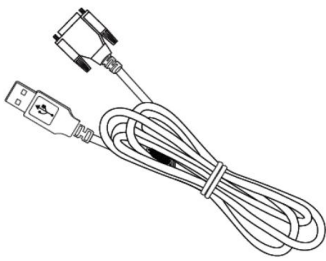
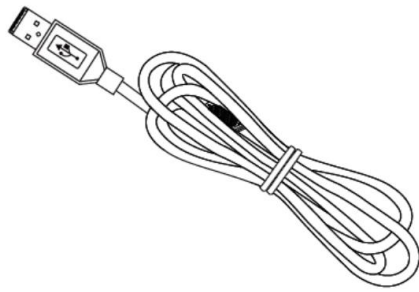
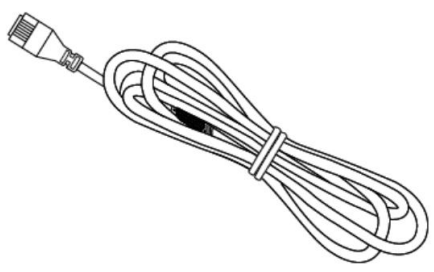


# 1. Product Overview

## (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](http://www.rayposww.com)

RAYPOS Main Unit	Installation Guide
	

Option: Cradle	
	
Option : Y-Serial Cable	Option : USB Cable
	
Option : CAT Cable	
	

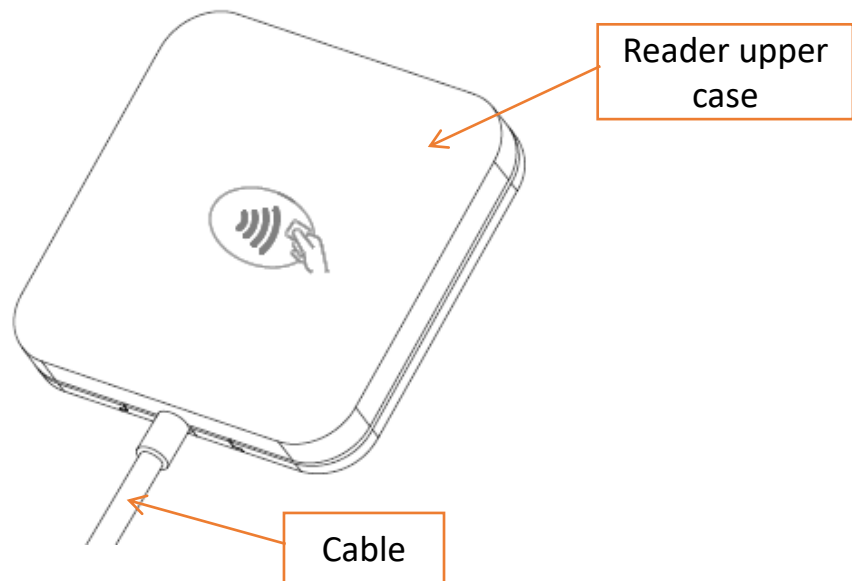
## **(2) Product Outline**

- Each part of product may differ depending on the specific POS model.
- Model-specific data sheets are provided on our website at [www.RAYPOS.com](http://www.RAYPOS.com)

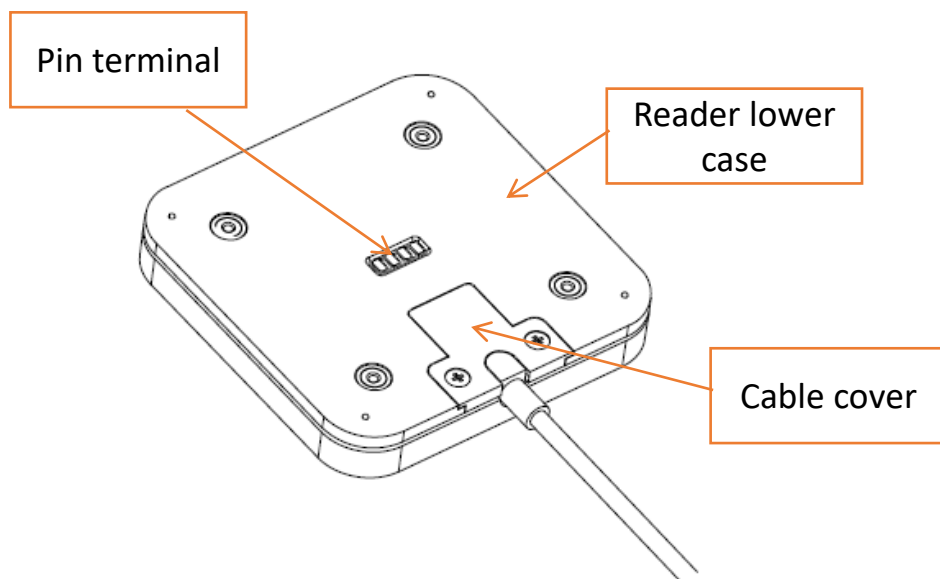
### (3) Configuration

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

Front view



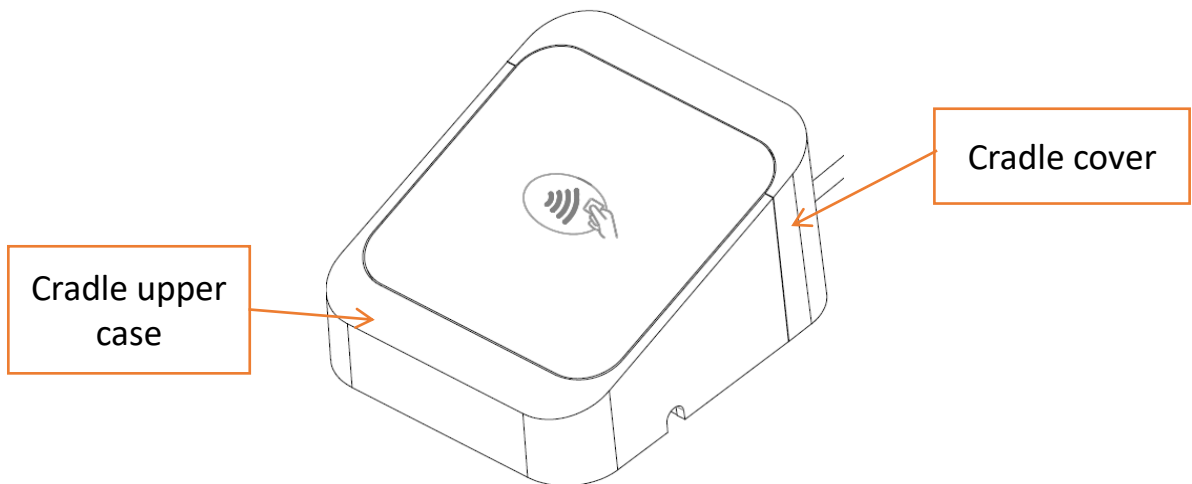
Rear view



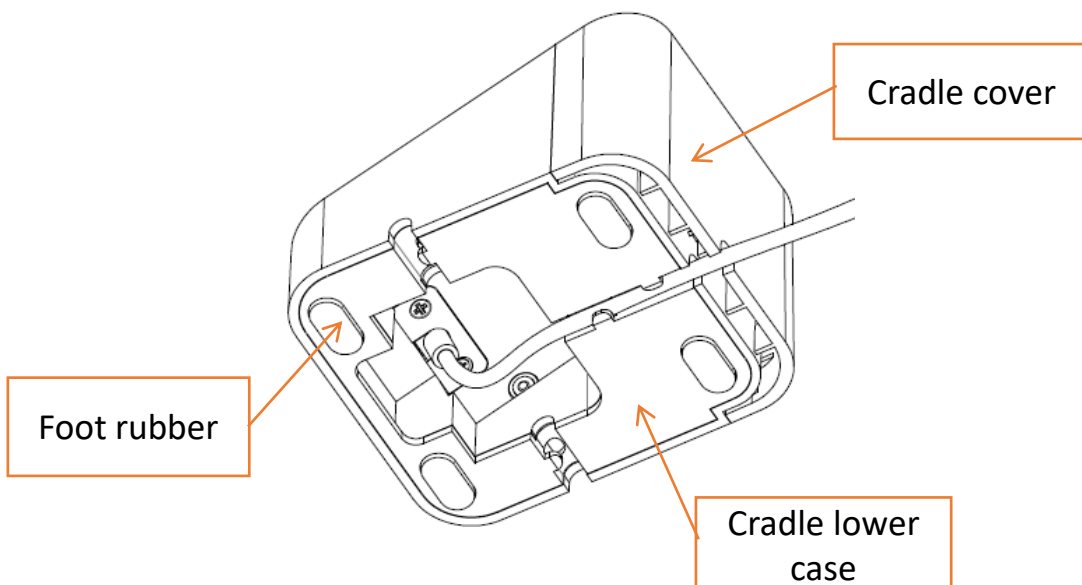
## (4) Cradle Configuration

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

Front view



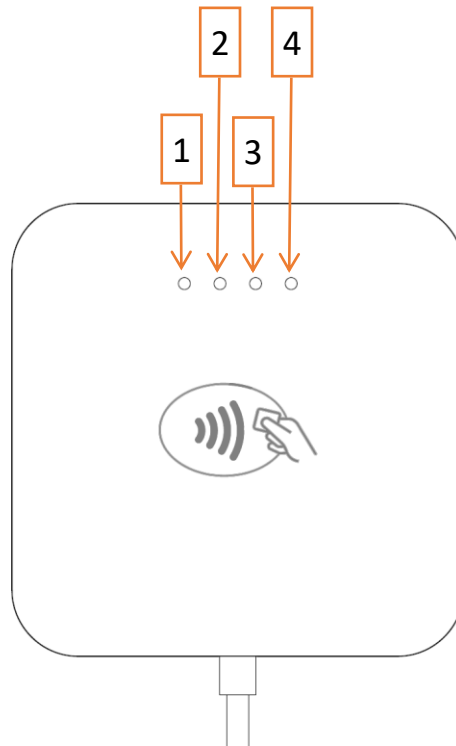
Rear view





## (5) LED Lights

### LED Light Detail

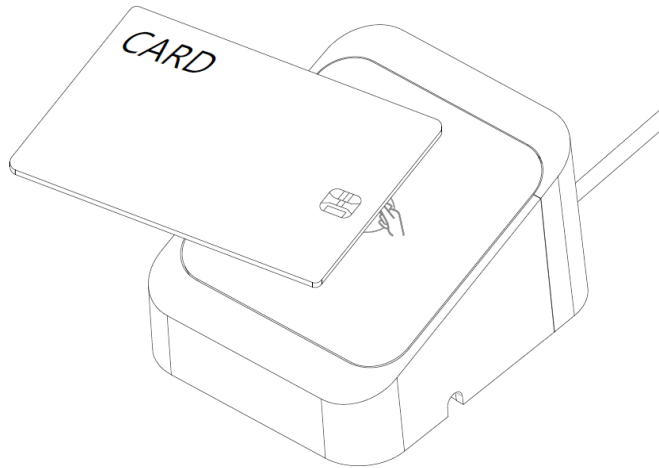


- ① Blue: Waiting for card detection
- ② Yellow: Card detection in progress
- ③ Green: Card detection complete
- ④ Red: Processing failed.

## (6) Payment Instruction

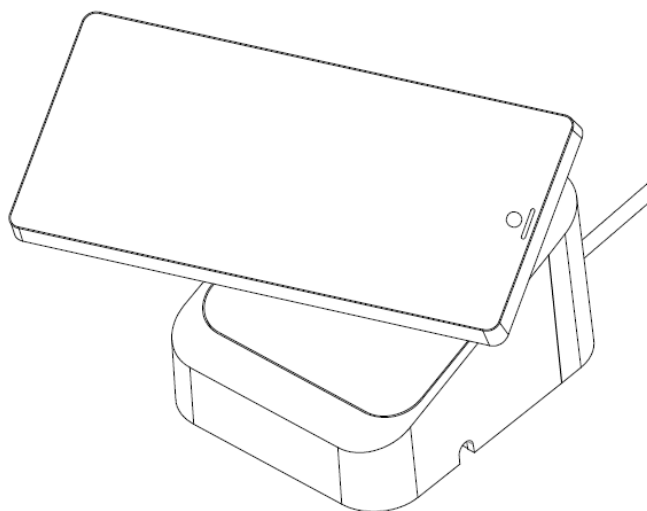
### NFC payment instruction

1. Place the card on the NFC reader.
2. Do not remove the card until the transaction is complete.



### Apple Pay payment instruction

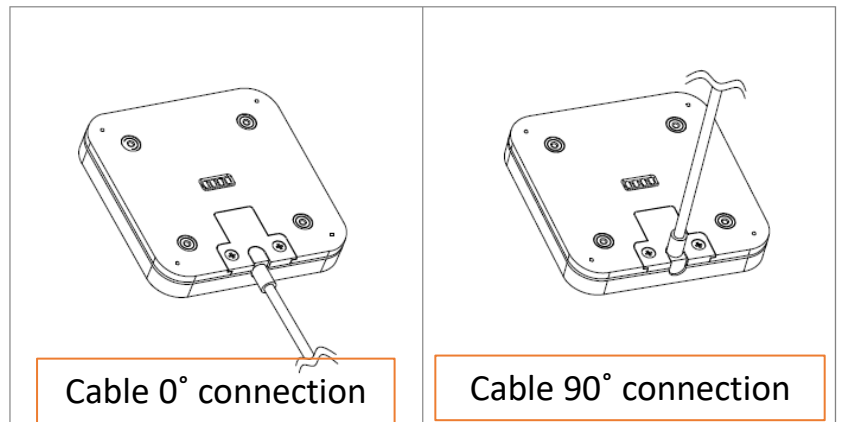
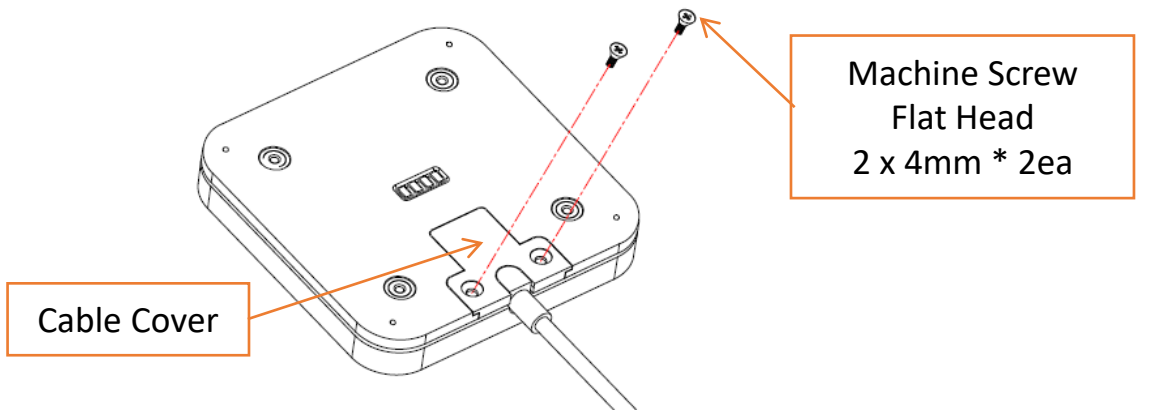
1. After activating Apple Pay on your mobile, place it on the mobile NFC reader.
2. Do not remove your mobile until the payment is completed.



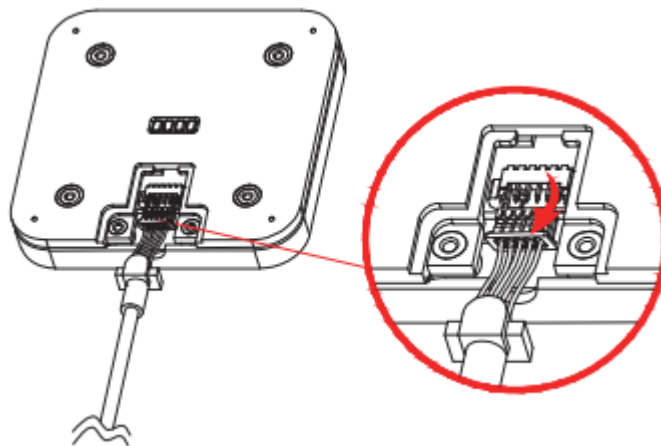
## 2. Installation Instruction

### (1) Cable Connection

1. Please remove the two screws securing the cable cover on the back of the reader.

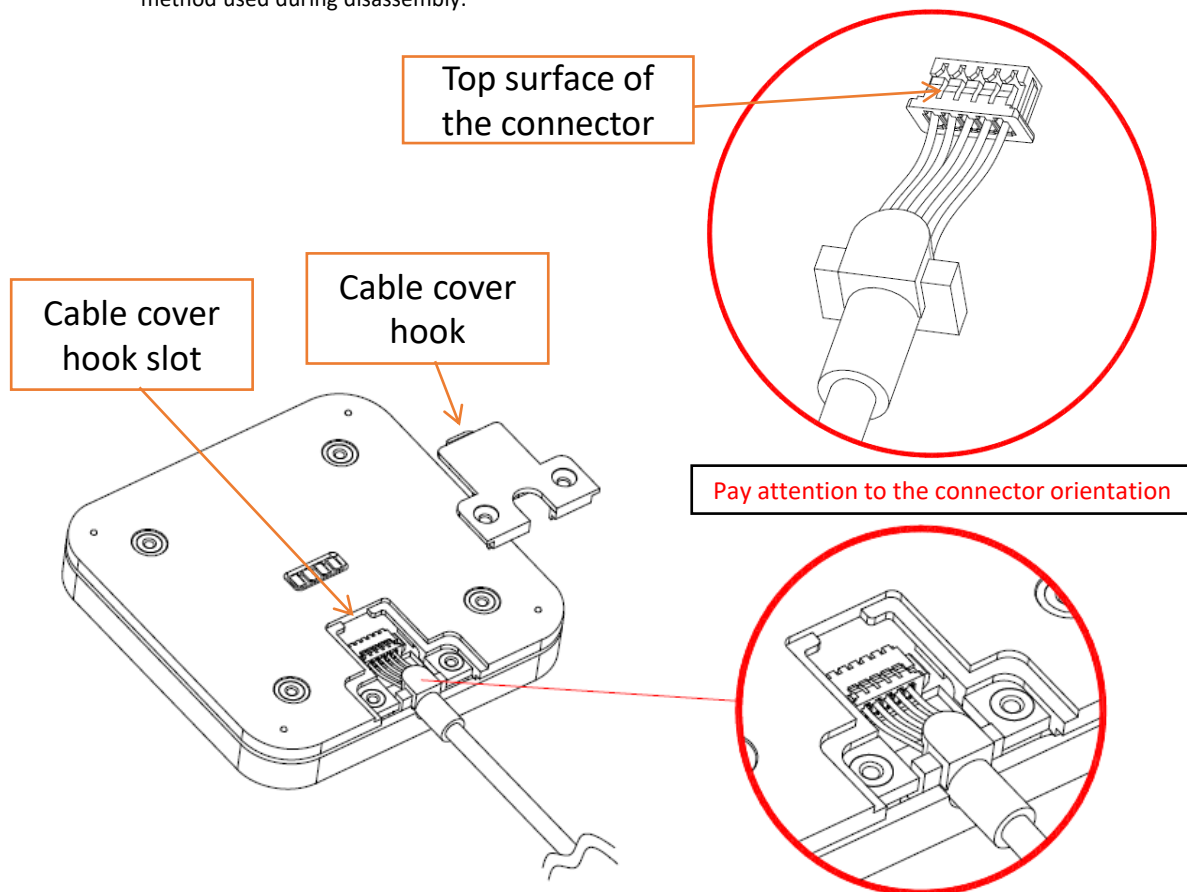


2. After removing the cable cover, disconnect the connector by pulling it in the direction indicated by the arrow. (Caution: Pulling the connector with excessive force may damage or sever the cable.)

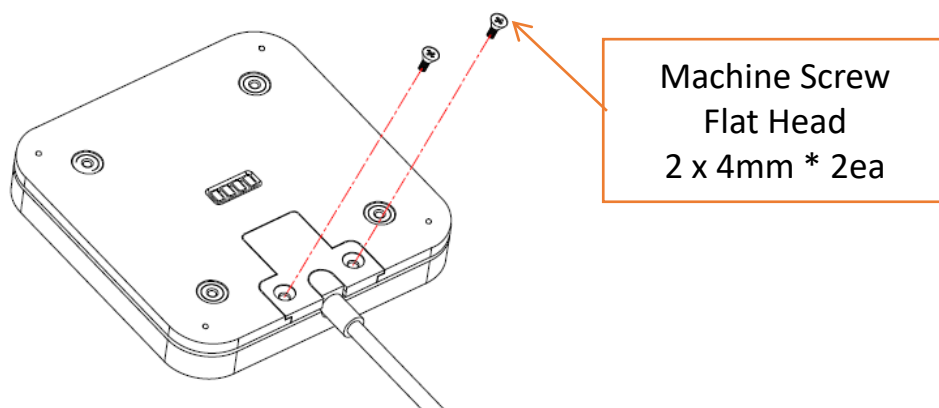


## (2) Cable Connection

3. To assemble, insert the connector by gently pushing it in the correct direction, following the same method used during disassembly.

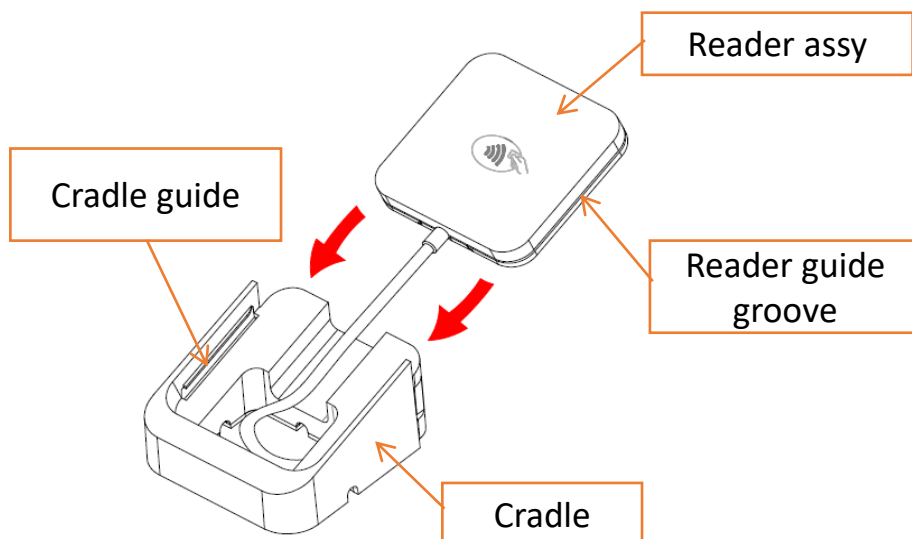


4. Align the cable cover with the hook slots, then secure it by fastening the two screws.

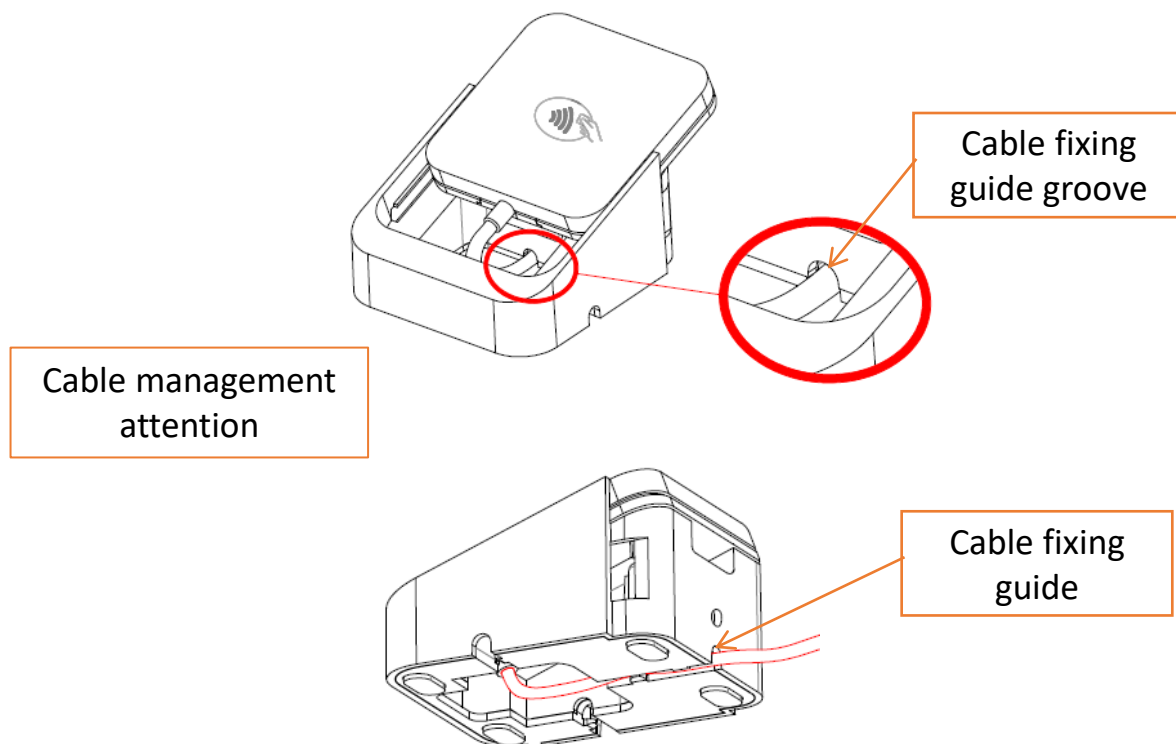


### (3) Cradle Installation

1. Align the guide groove of the reader with the cradle guide and slide it into place.

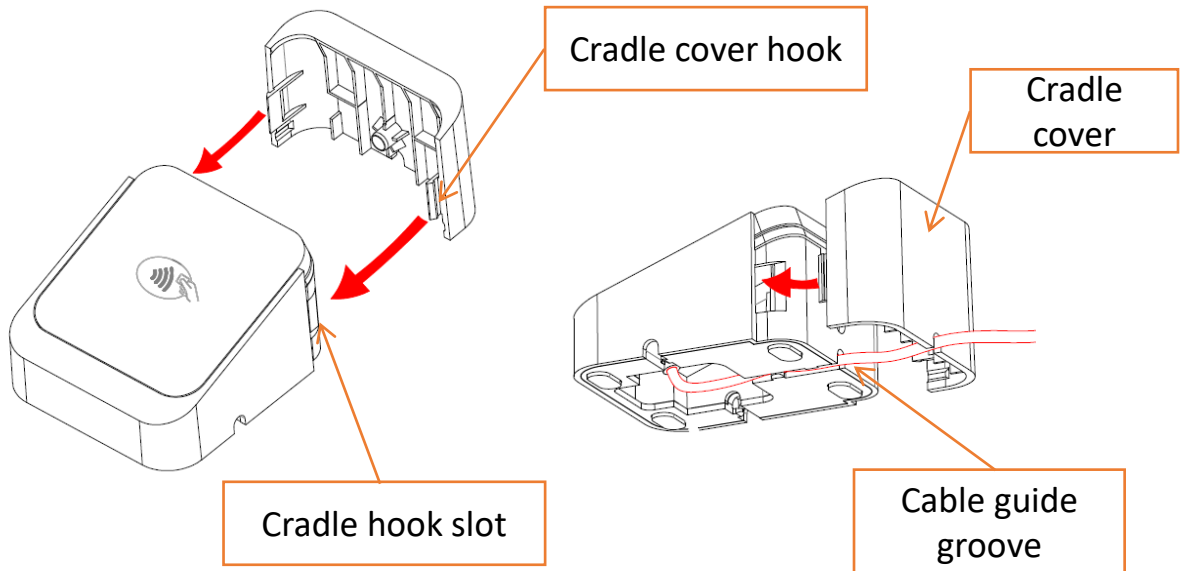


2. When mounting the reader, secure the cable in the cable fixing guide groove to organize the cable neatly, then ensure it is fully mounted.

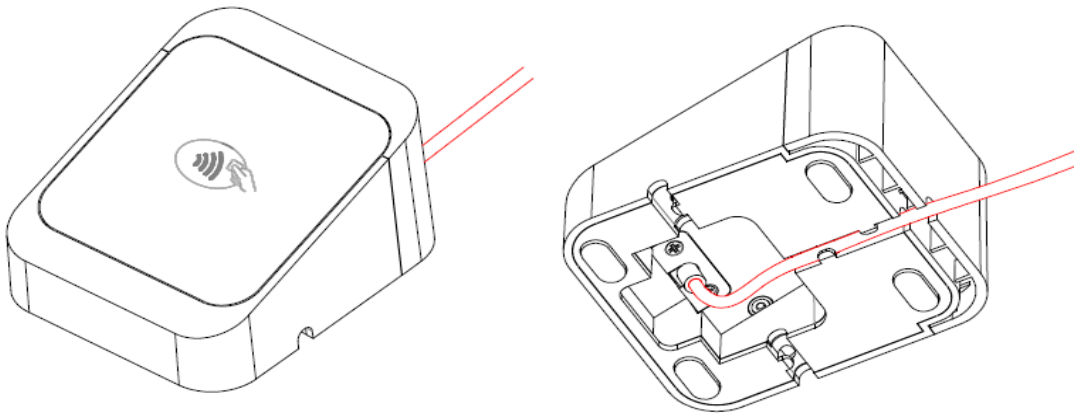


## (4) Cradle Installation

3. Align the guide groove of the reader with the cradle guide and slide it into place.



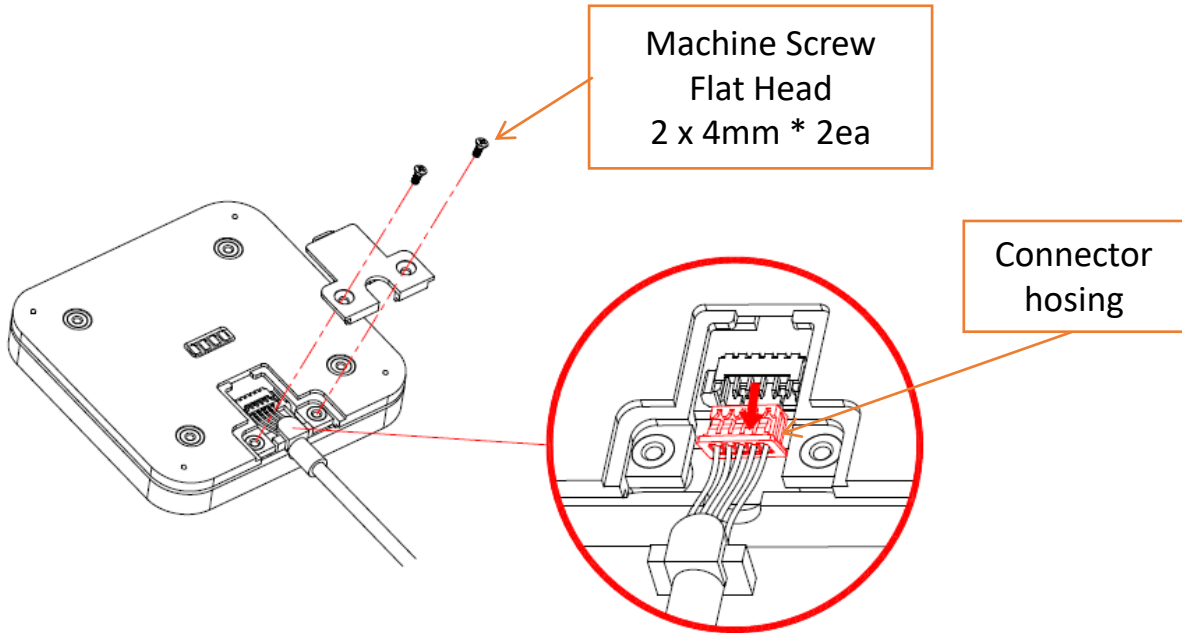
4. Refer to the diagram to double-check that the installation is correctly completed.



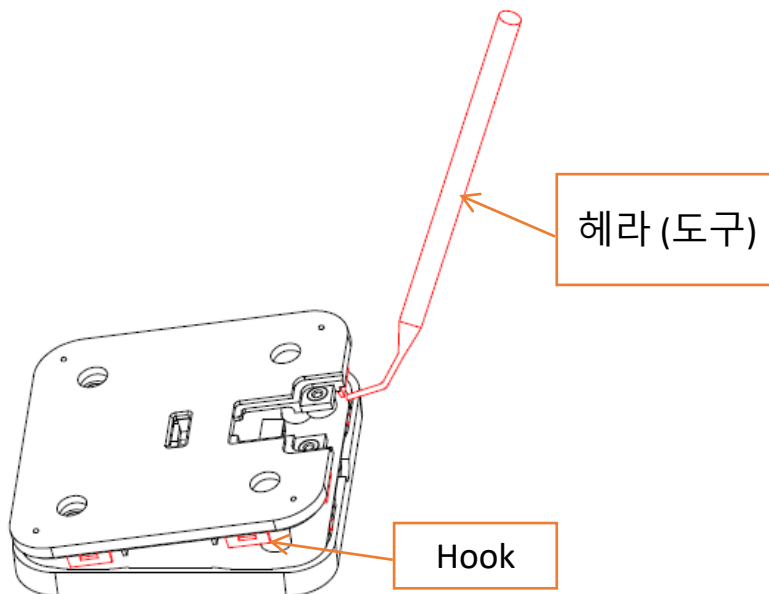
## (5) Separating Mother board

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

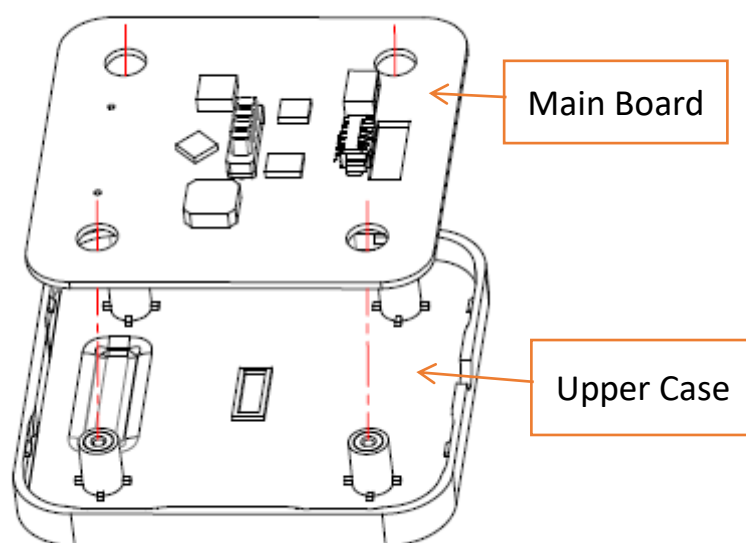
Mother Board



1. 스크류 2개를 해체 후 커넥터를 화살표 방향으로 분리하여 주십시오. (커넥터 분리 시 Wire가 아닌 하우징을 잡고 분리하여 주세요.)



2. 헤라(도구)를 활용하여 Reader Lower 측면에 있는 hook를 풀어 해체하여 주십시오.





## 3. Motherboard

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### (1) Motherboard Overview

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

#### Warning

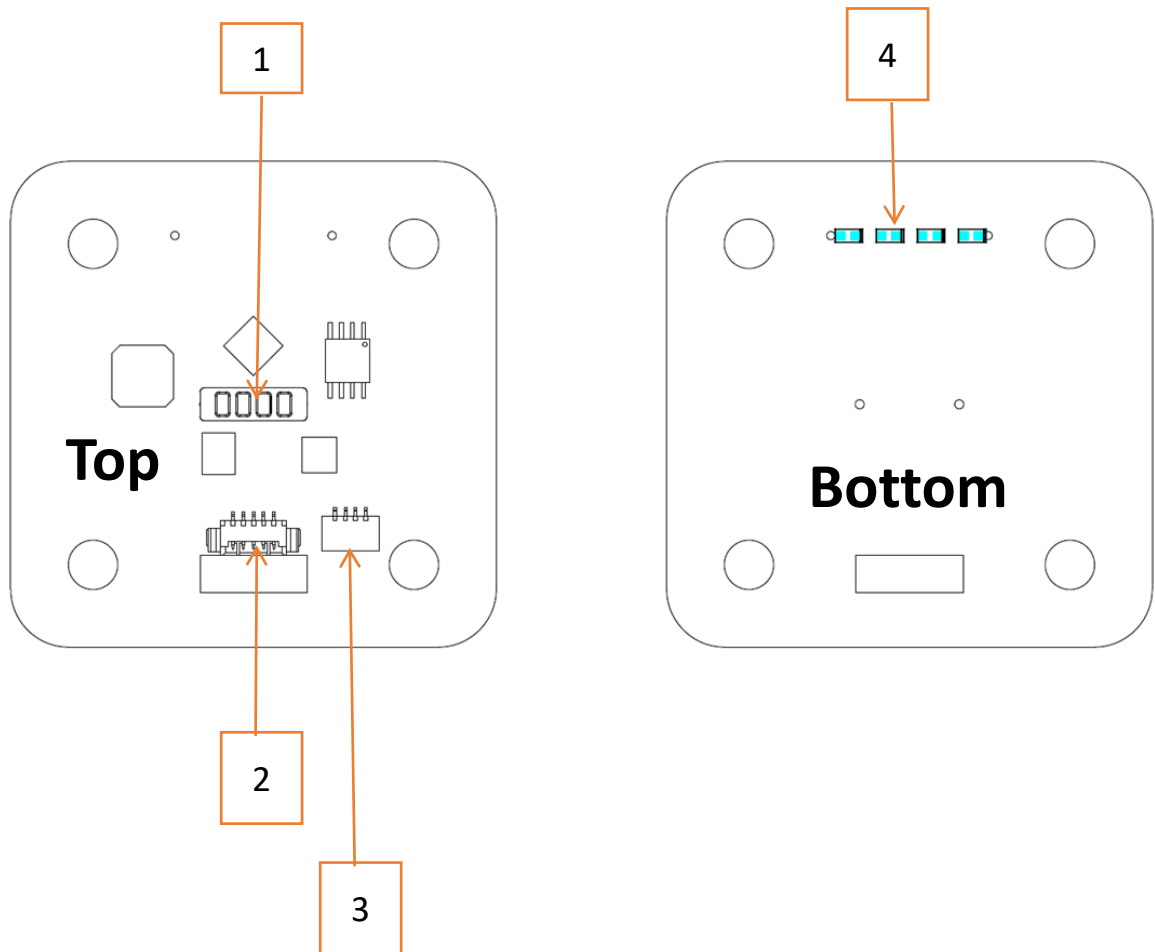
Take note of the following precautions before you install motherboard components or change any motherboard settings.

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



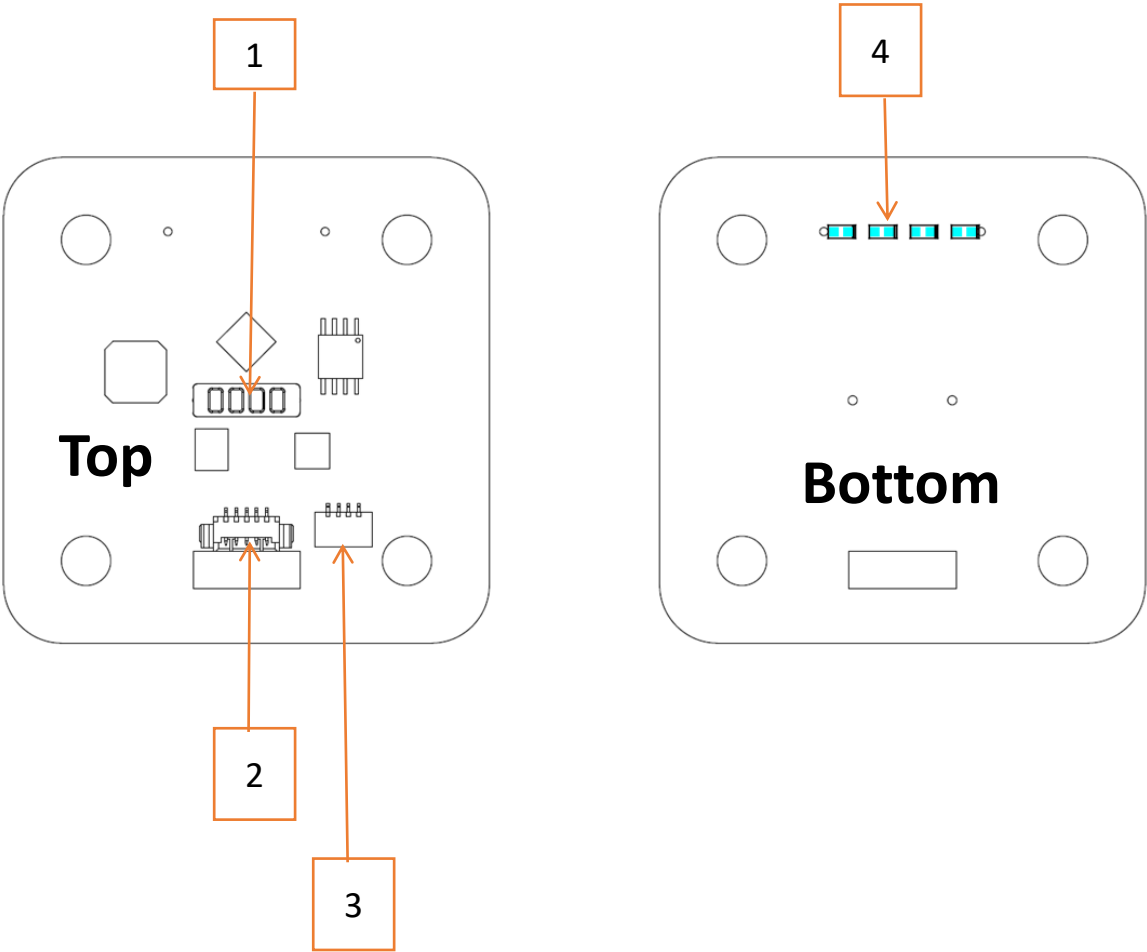
This includes description of the jumpers and connectors on the motherboard.

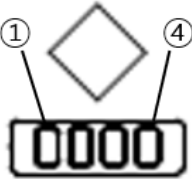
1. 4PIN Gold Plate Terminal(RS232)
2. 5PIN Wire Connector(RS232)
3. 4PIN Wire Connector [Console Port] (RS232)
4. Status LED (Blue, Yellow, Green, Red)

**(3) PINASIGN**

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

Motherboard view

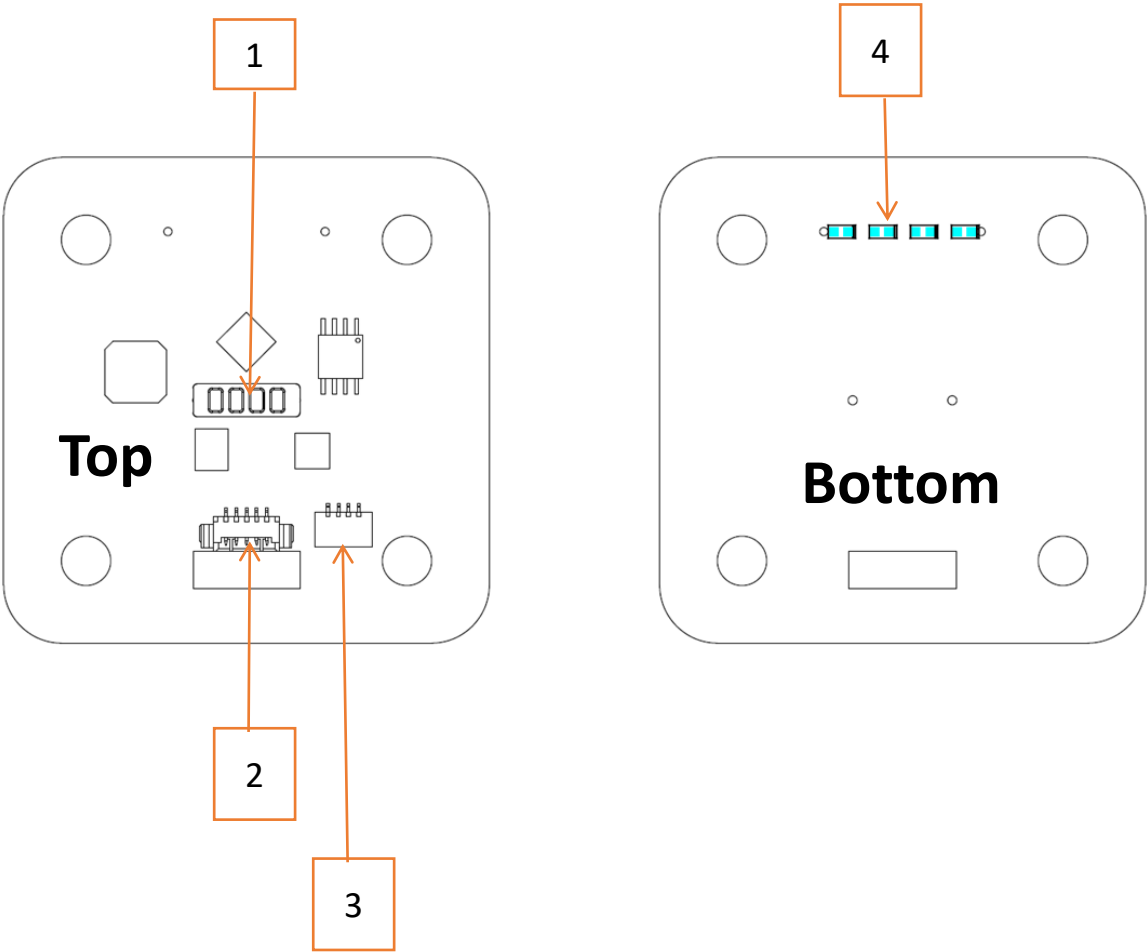


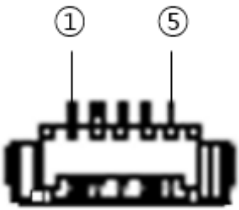
4PIN Gold Plate Terminal(RS232) Specification				
	Pin	I/O	Name	FUNCTION
	1	P	VCC(DC +5V)	Power
	2	O	TXD	Transmit Data
	3	I	RXD	Receive Data
	4	P	GND	Ground

**(4) PINASIGN**

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

Motherboard view

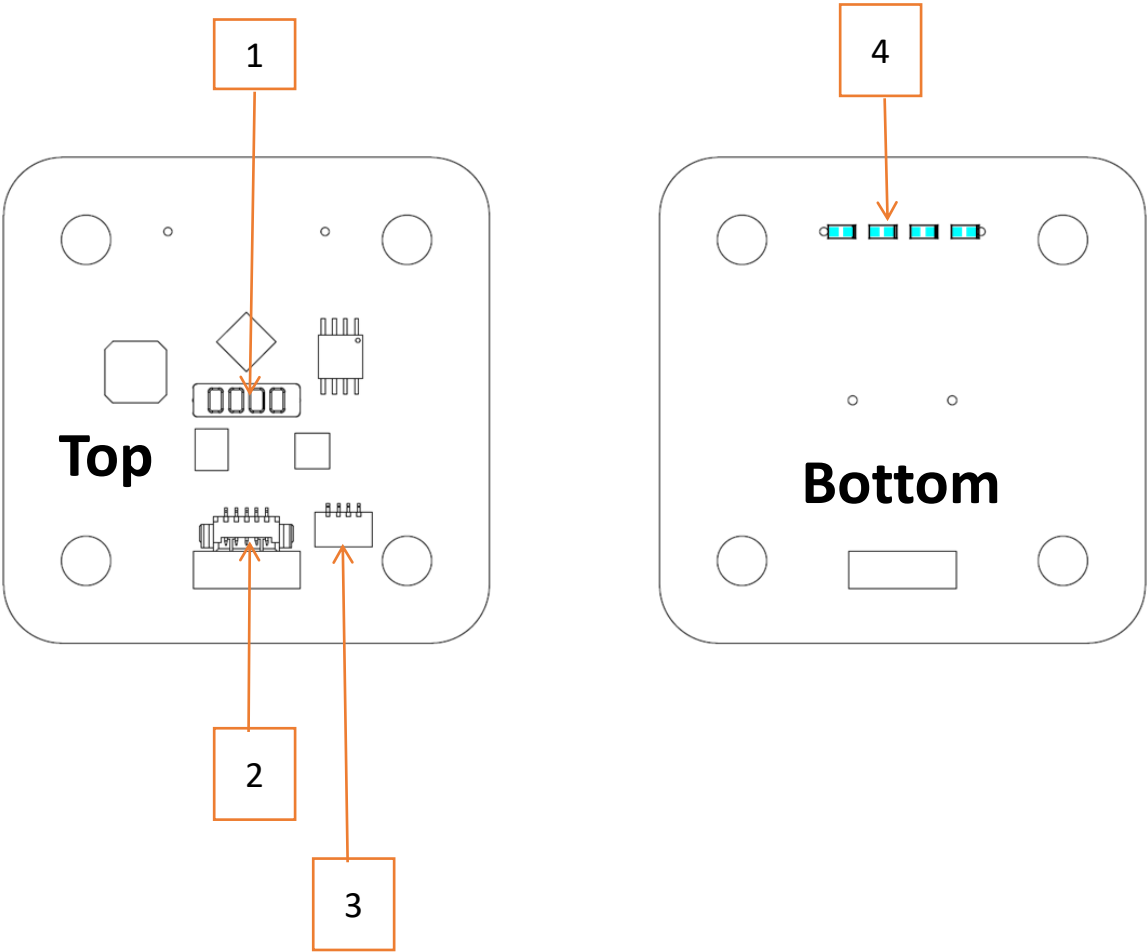


5PIN Wire Connector(RS232) Specification				
	Pin	I/O	Name	FUNCTION
	1	P	VCC(DC +5V)	Power
	2	O	TXD	Transmit Data
	3	I	RXD	Receive Data
	4	P	GND	Ground
	5	P	GND	Ground

**(5) PINASIGN**

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

Motherboard view

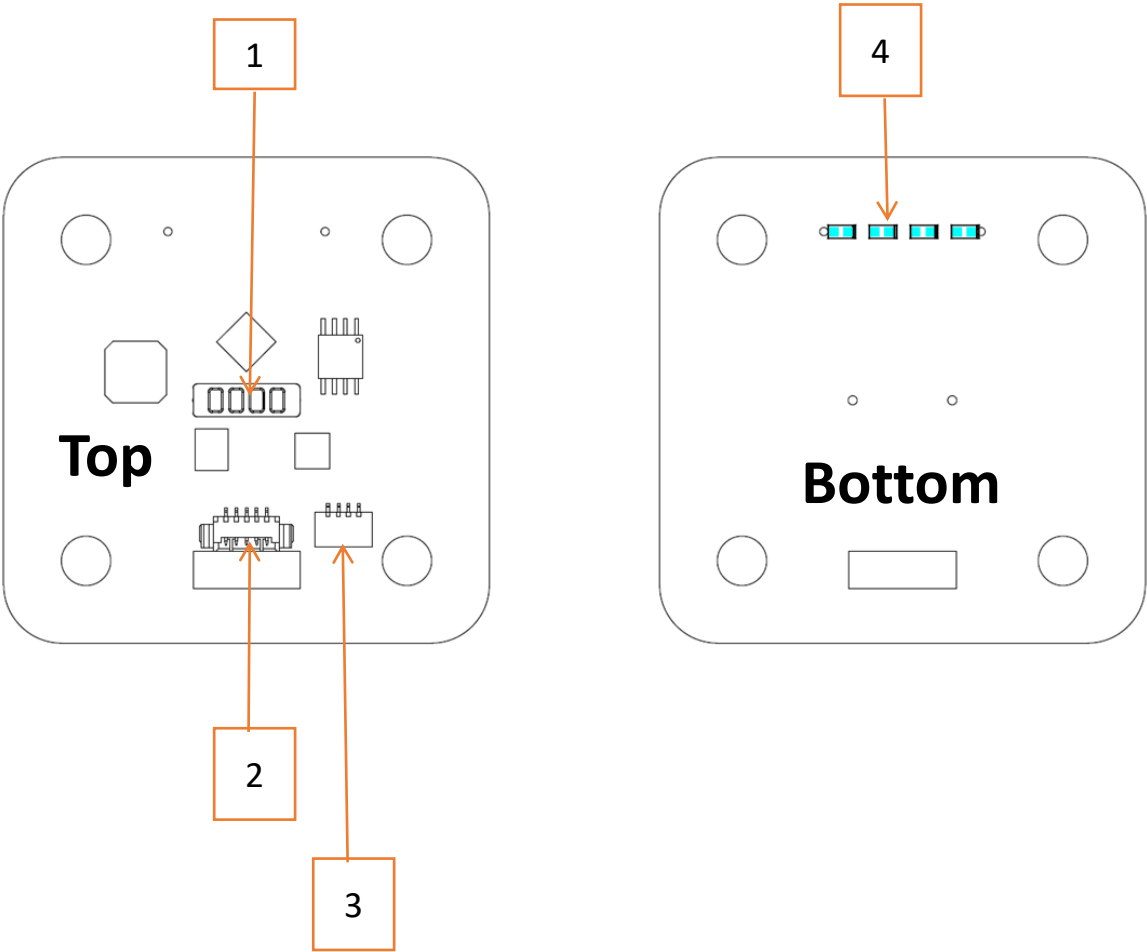



4PIN Wire Connector [Console Port/RS232] Specification					
	Pin	I/O	Name	FUNCTION	
	1	P	VCC(DC +5V)	Power	
	2	O	TXD	Transmit Data	
	3	I	RXD	Receive Data	
	4	P	GND	Ground	

**(6) PINASIGN**

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

Motherboard view



Status LED Specification				
	Pin	I/O	Name	FUNCTION
	4-1	P	LED1	Blue
	4-2	P	LED2	Yellow
	4-3	P	LED3	Green
	4-4	P	LED4	Red

## 4. Troubleshooting

### (1) NFC Issues

Symptom	Corrective Procedure
NFC 인식 되지 않을 때	• NFC 인식 위치의 LED 점등 확인
	• 지원 가능한 카드인지 확인
	• 모바일 카드 모드 설정 확인
	• NFC Reader 케이블 연결 확인

### (2) Booting Issues

Symptom	Corrective Procedure
RE-booting during system	• 5PIN Wire Cable 연결상태 확인(케이블 끊어짐, 접촉불량)
	• 4PIN Gold Plate Terminal 상태 확인(단자 이물질, 파손 등)

## 5. Maintenance

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### 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](http://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.