

# INSTALLATION GUIDE

BioSpirit

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English

**Version 1.0**



# Contents

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# Safety Instructions

Please read the following instructions carefully before using the product. This information is important for ensuring the safety of the user and for preventing damage to the user's property.

## Warning

Violation of the instructions may cause serious injury or death.

### Installation Instructions

**Do not install the product in direct sunlight or in a location that is damp or dusty.**

- This can cause a fire or electric shock.

**Do not install the product near any heat source such as electric heaters.**

- This can cause a fire from overheat or electric shock.

**Install the product in a dry place.**

- Moisture can cause product damage or electric shock.

**Install the product in a place where there is no electromagnetic interference.**

- This can cause product damage or electric shock.

**Have qualified service professionals install or repair the product.**

- Otherwise, it can cause a fire, electric shock, or injury.
- If the product is damaged due to a user's unauthorized installation or dismantling of the product, a service fee will be charged for repair.

### Operating Instructions

**Be careful not to spill any liquid such as water, drinks, or chemicals inside the product.**

- This can cause fire, electric shock, or product damage.

## Caution

Ignoring these instructions may result in minor injuries or damage to the product.

### Installation Instructions

**Protect the power cord from being walked on or pinched.**

- This can cause product damage or injury.

**Keep the product away from strong magnetic objects such as magnets, TVs, monitors (especially CRT monitors), or speakers.**

- This can cause a product failure.

**Use a separate power supply for Secure I/O 2, electric lock and BioEntry Plus respectively. If connecting and using the power supply to these devices together, the devices may malfunction.**

### Operating Instructions

**Do not drop the product or subject it to shock or impact during use.**

- This can cause a product failure.

**Clean the product with a soft, dry cloth. Do not use alcohol, benzene, or water.**

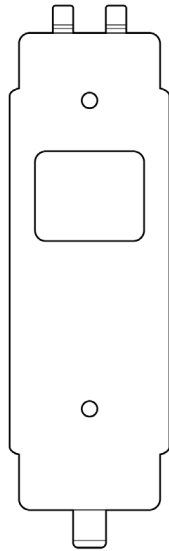
- This can cause a product failure.

# Getting Started

## Components



BioSpirit



Bracket



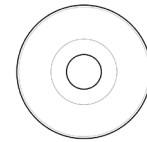
Mounting screws for  
bracket (2 pcs)



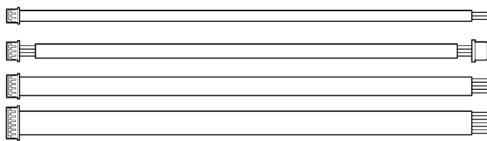
Mounting screws for  
product  
(2 pcs)



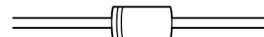
Hex wrench



Software CD



3-pin, 4-pin, 5-pin, 7-pin cables  
(1 pc for each)



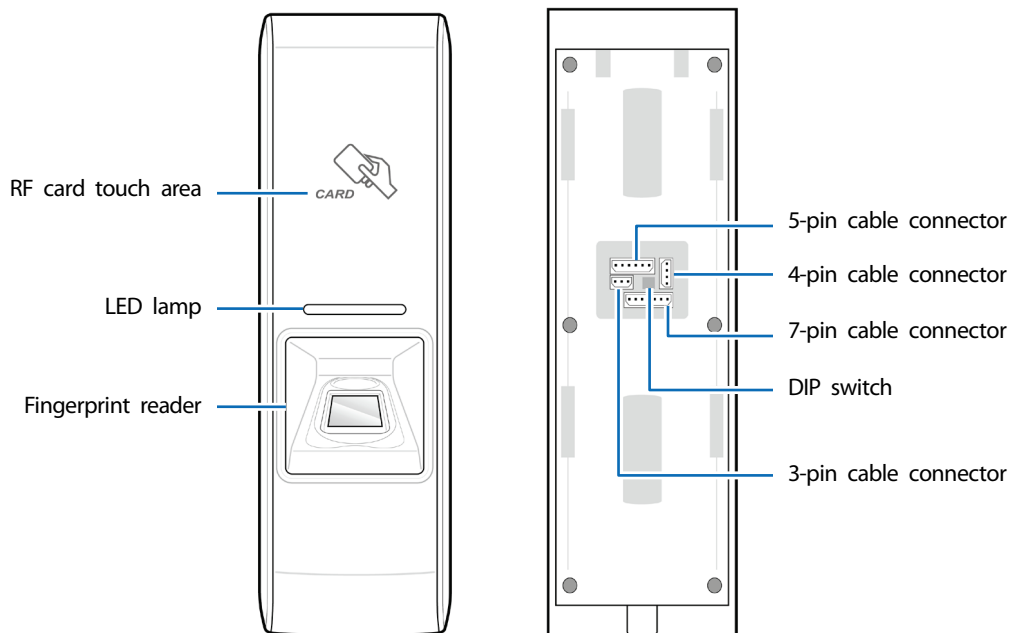
Diode

### Note

The components may differ depending on where the product is installed.

## Features

### Part names and features



Name	Feature
<b>RF card touch area</b>	Reads RF cards for entering and exiting.
<b>LED lamp</b>	<ul style="list-style-type: none"> <li>• Green: Authentication success</li> <li>• Red: Authentication failure</li> <li>• Pink: Processing</li> <li>• Blue and sky-blue alternate flashing every 2 seconds: Normal operation</li> <li>• Red and pink alternate flashing every 2 seconds: The device is locked.</li> <li>• Blue and red alternate flashing every 2 seconds: The clock has been reset due to an empty internal battery. (The clock needs to be reconfigured.)</li> <li>• Blue and yellow alternate flashing every 2 seconds: The dynamic IP address has not been received properly.</li> <li>• Red flashes every 2 seconds: Failure to reset. Contact the manufacturer.</li> <li>• Yellow flashes every 2 seconds: Waiting for an input.</li> </ul>
<b>Fingerprint reader</b>	Reads fingerprints placed on it for entering and exiting.
<b>5-pin cable connector</b>	Connects power and RS-485.
<b>4-pin cable connector</b>	Connects an Ethernet cable.
<b>7-pin cable connector</b>	Connects the switch inputs and relay outputs.
<b>DIP switch</b>	Sets the RS-485 termination resistor and resets the network settings. <ul style="list-style-type: none"> <li>• <b>1:</b> If the termination resistor of BioEntry Plus is required, set to ON.</li> <li>• <b>2:</b> Resets the network settings to the default. For details, refer to the <b>Resetting Network Setting</b>.</li> </ul>
<b>3-pin cable connector</b>	Selects between Wiegand input and output.

## Cables and connectors

### Power and RS-485



Pin	Name	Color
1	PWR +VDC	Red
2	PWR GND	Black
3	485 GND	Gray
4	485 TRXP	Blue
5	485 TRXN	Yellow

### TCP/IP



Pin	Name	Color	RJ45 Pin number
1	ENET TXP	Yellow	6
2	ENET TXN	Green	3
3	ENET RXP	Red	2
4	ENET RXN	Black	1

### Wiegand input/output (switchable)



Pin	Name	Color
1	WG D0	Green
2	WG D1	White
3	WG GND	Black

### Digital input and Relay output



Pin	Name	Color
1	TTL IN0	Yellow
2	TTL GND	Black
3	TTL IN1	Green
4	TTL GND	Black
5	RLY NC	Orange
6	RLY COM	Blue
7	RLY NO	White

## How to Scan a Fingerprint

Register a fingerprint correctly to improve the recognition rate of the fingerprint. BioEntry Plus can read a fingerprint even when the angle or position of the finger has changed. If you register a fingerprint with the following instructions, the recognition rate can be improved.

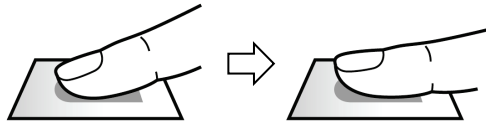
### Choosing a finger for registration

- Each person can register up to 10 fingerprints. If some fingers were injured or used to carry something, they should not be used.
- If a fingerprint is not well scanned, the fingerprint can be registered twice, which improves the recognition rate.
- If a finger is injured or the fingerprint is not clear, please use another finger for registering.
- The index finger or middle finger is preferred for registering a fingerprint. The other fingers may show a lower recognition rate because those fingers tend to have difficulty being placed at the center of the fingerprint reader.



### How to register a fingerprint

- 1 Place a finger on the fingerprint reader, and then press softly in order to improve the recognition.



- 2 After a beep sounds, scan the finger again.  
(The finger should be scanned twice for registering.)

#### Note

##### Precautions for registering a fingerprint

Registering a finger is the most important procedure because this device uses the registered fingerprint to compare it with a fingerprint that the device tries to read. Please ensure the following when registering a fingerprint:

- Place a finger firmly on the fingerprint reader for it to be read completely.
- The center of the fingerprint should be placed at the center of the fingerprint reader.
- If a finger is injured or the fingerprint is not clear, please use another finger for registering.
- Do not move when a finger is being scanned.
- If a finger is lifted up, not placed at the center, or only part of the finger is placed on the fingerprint reader, the finger may not register.



##### Precautions for reading a fingerprint

BioSpirit can read fingerprints regardless of the change in seasons or condition of the fingers. However, the external environment or the finger's placement can affect the recognition rate.

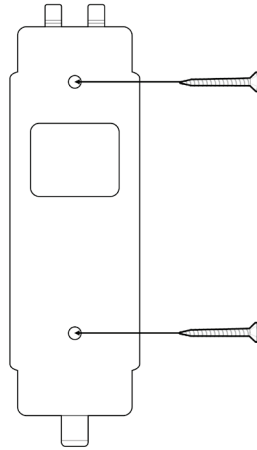
If a fingerprint is not well read, the following actions are recommended.

- If there is water or sweat on the finger, please wipe it off before placing the finger.
- If the finger is too dry, please blow softly on the fingertip before placing the finger.
- If the finger is injured, please register another finger.
- The fingerprint that is registered on the first attempt tends to be placed incorrectly. So, register a fingerprint multiple times according to **'Precautions for registering a fingerprint'**.

# Installation

## Mounting the Bracket and Product

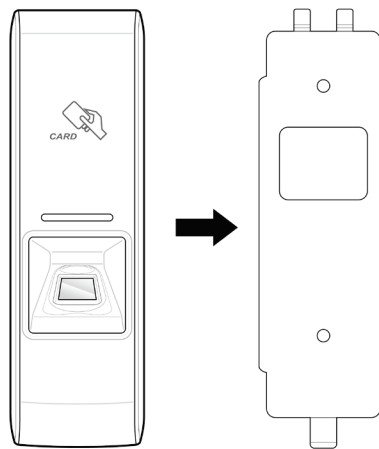
- 1 With the mounting screws for the bracket, mount the bracket firmly onto the surface where BioSpirit is to be installed.



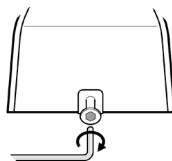
### Note

If BioSpirit should be installed onto a concrete wall, make a hole with a drill, and then insert a PVC anchor into the hole before screwing the mounting screw.

- 2 Attach BioSpirit onto the mounted bracket.

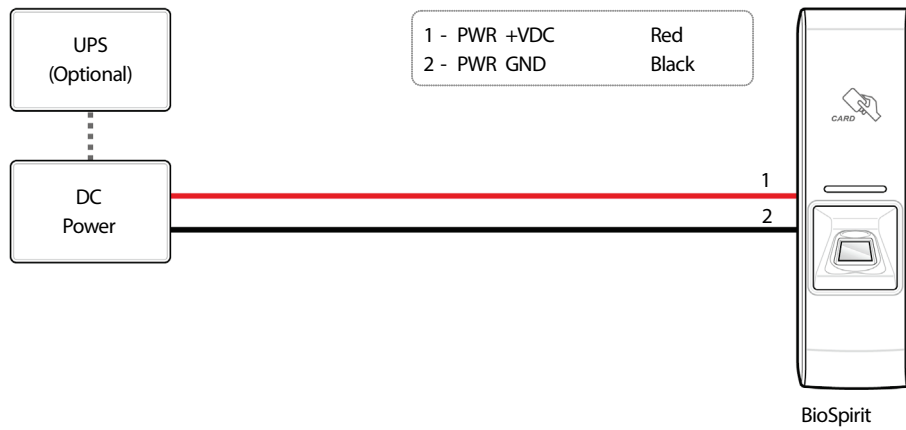


- 3 Assemble BioSpirit with the bracket by fastening the star head screw on the bottom of BioSpirit with a star wrench.





## Connecting to Power



### Note

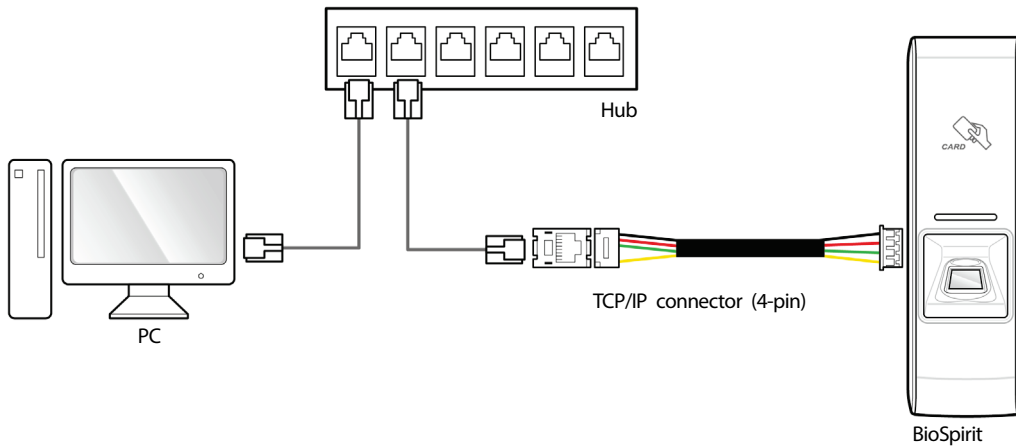
- Use a power adapter that has a DC 12 V ( $\pm 10\%$ ) specification of with the minimum current of 1,500 mA and has IEC/EN 60950-1 certification. If the power adapter is shared by other devices, the power adapter should provide a current more than the sum of the power consumption from this device (1,500 mA) and other devices.
- Use a separate power supply for Secure I/O 2, electric lock and BioSpirit respectively. If connecting and using the power supply to these devices together, the devices may malfunction.

## Connecting to a Network

### TCP/IP

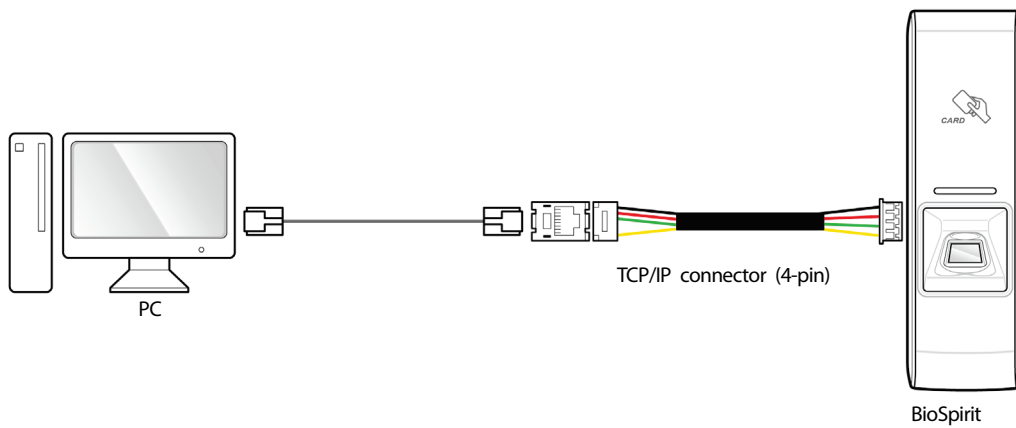
#### LAN connection (connecting to a hub)

A normal CAT-5 cable can be used to connect to a hub.



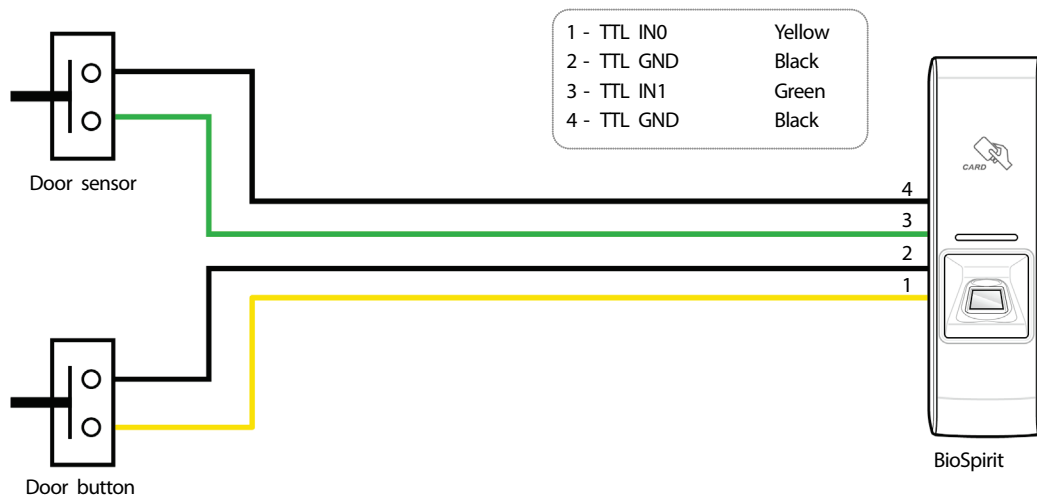
#### LAN connection (connecting directly to a PC)

BioSpirit can be connected directly to a PC by using a normal straight type CAT-5 cable because it supports an automatic MDI/MDIX function.

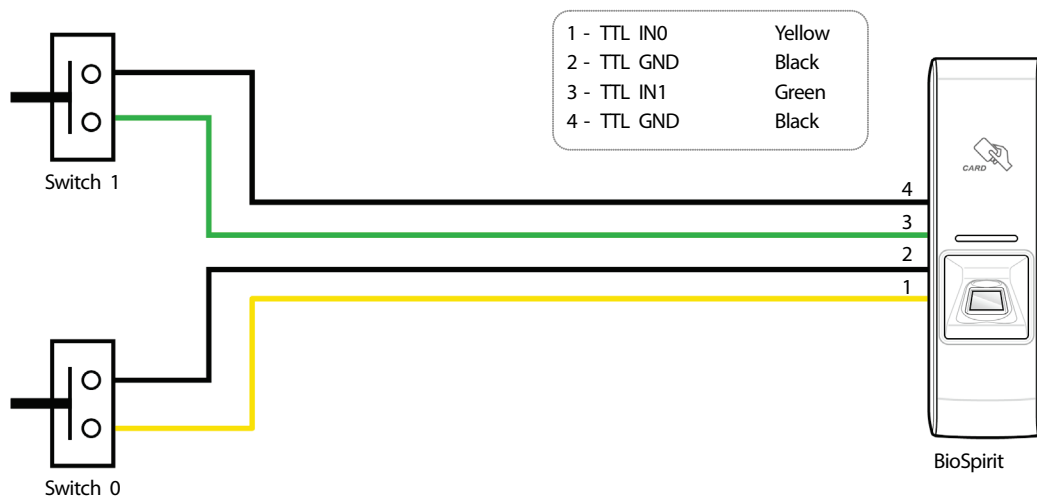


## Connecting to an Door button/Door sensor

### Digital input connection (Door button, Door sensor)



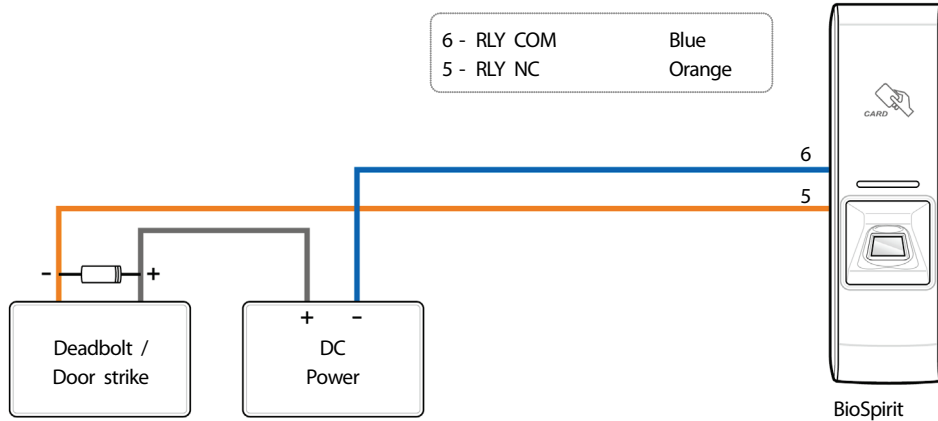
### Digital input connection (Alarm, Emergency switch)



## Connecting to a Relay

### Fail Safe Lock

To use fail safe lock, connect N/C terminal as shown below. Normally, there is a current flowing through the relay and the door is opened when the relay is activated by blocking current flows. The door is opened when there is a blackout or power failure caused by external conditions.

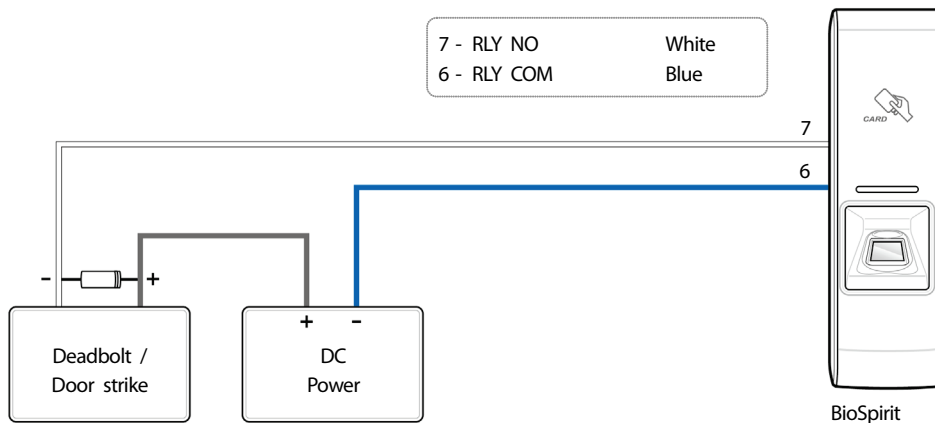


#### Note

- Install the diode at both ends of the wire for the door lock device as shown in the figure to protect the relay from being damaged by the reverse current induced when the door lock device operates.
- Make sure that the direction of the installed diode is correct.
- Install the diode close to the door lock device.
- Use a separate power source for BioSpirit from the door lock device.

### Fail Secure Lock

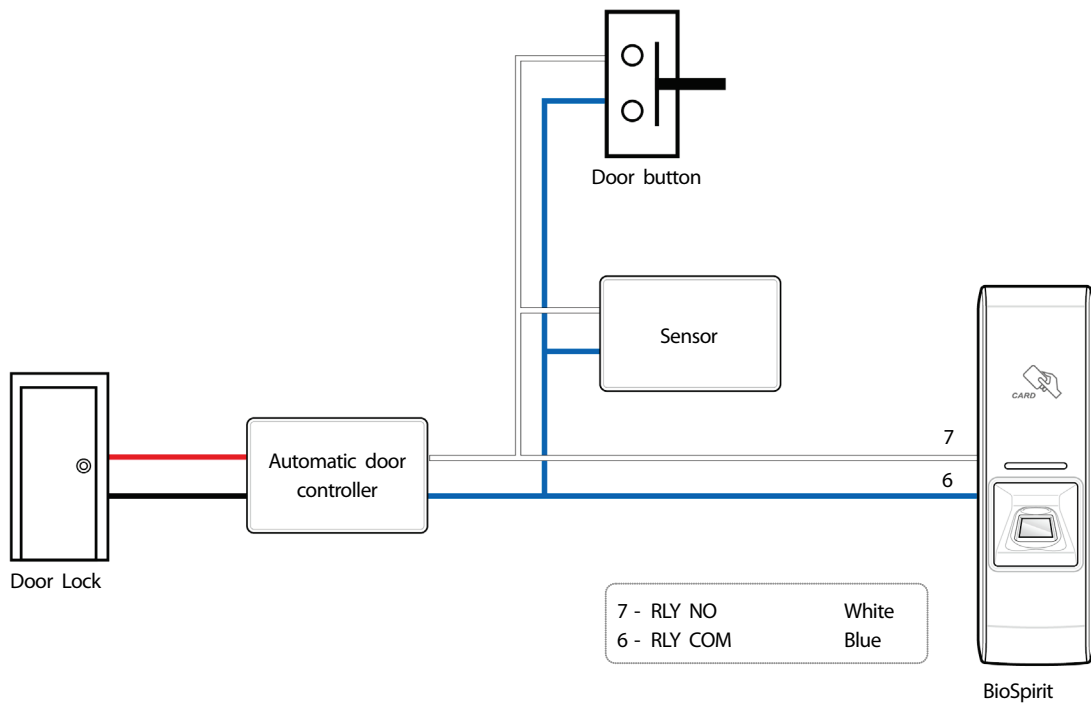
To use fail secure lock, connect N/O terminal as shown below. Normally, there is no current flowing through the relay and the door is opened when the relay is activated by a current flows. The door is locked when there is a blackout or power failure caused by external conditions.



#### Note

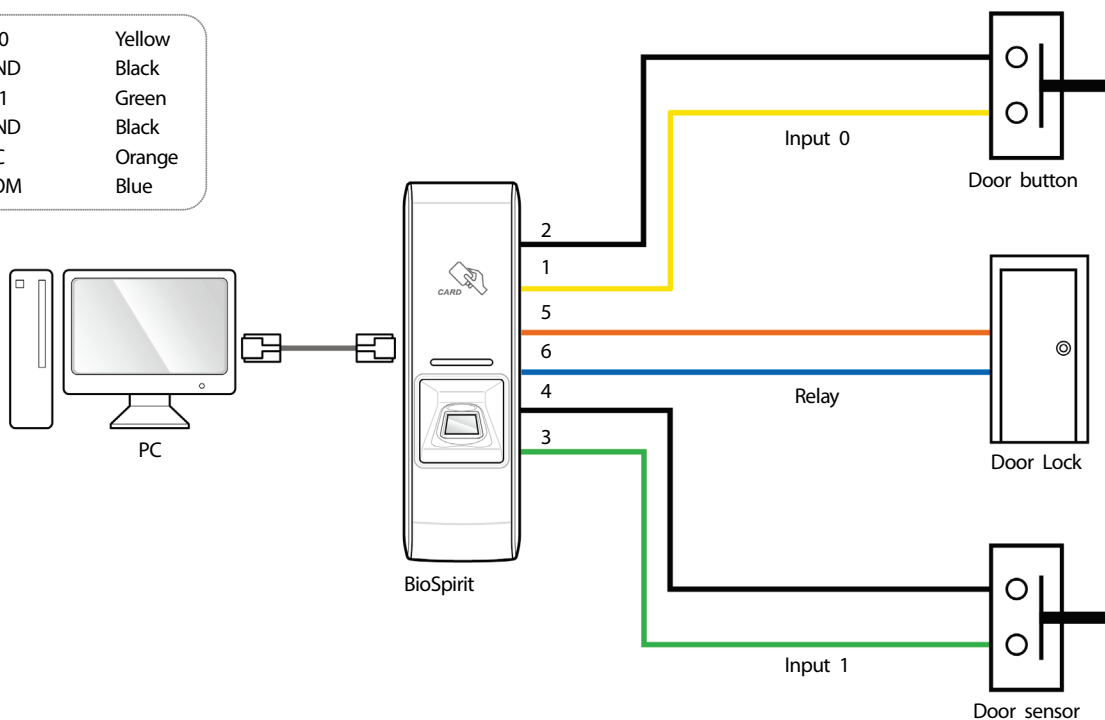
- Install the diode at both ends of the wire for the door lock device as shown in the figure to protect the relay from being damaged by the reverse current induced when the door lock device operates.
- Make sure that the direction of the installed diode is correct.
- Install the diode close to the door lock device.
- Use a separate power source for BioSpirit from the door lock device.

### Connecting to an Automatic door



### Connecting as a standalone

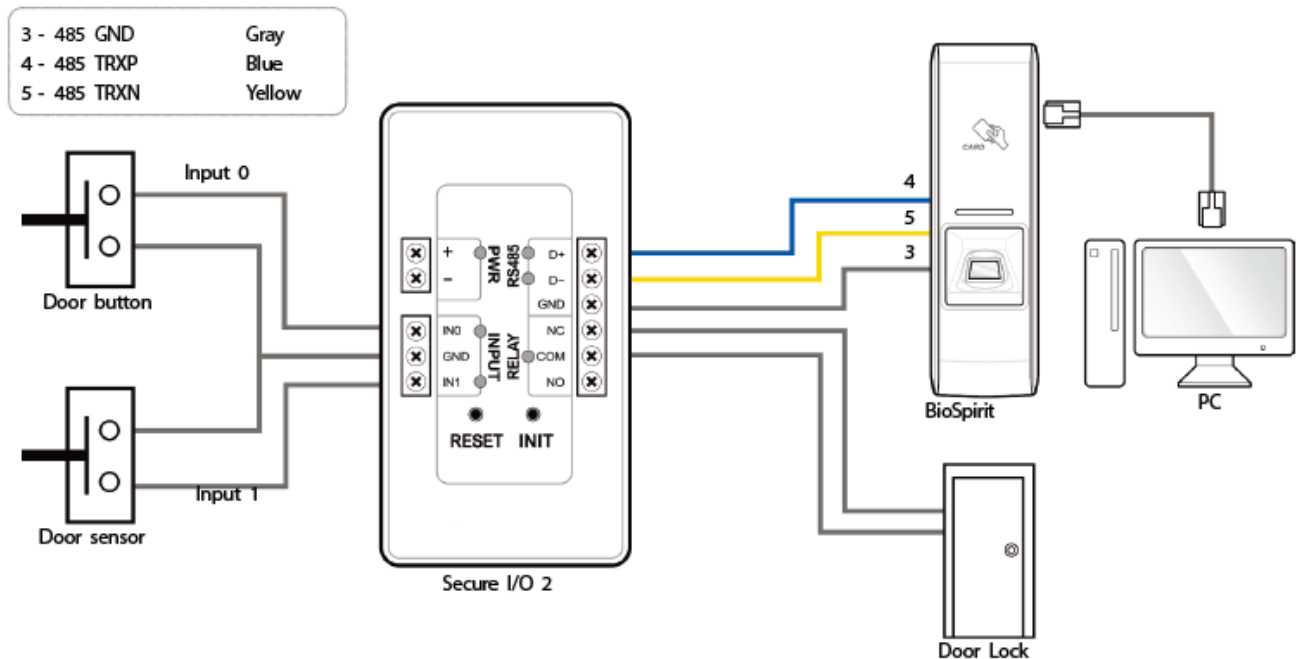
- |             |        |
|-------------|--------|
| 1 - TTL IN0 | Yellow |
| 2 - TTL GND | Black  |
| 3 - TTL IN1 | Green  |
| 4 - TTL GND | Black  |
| 5 - RLY NC  | Orange |
| 6 - RLY COM | Blue   |



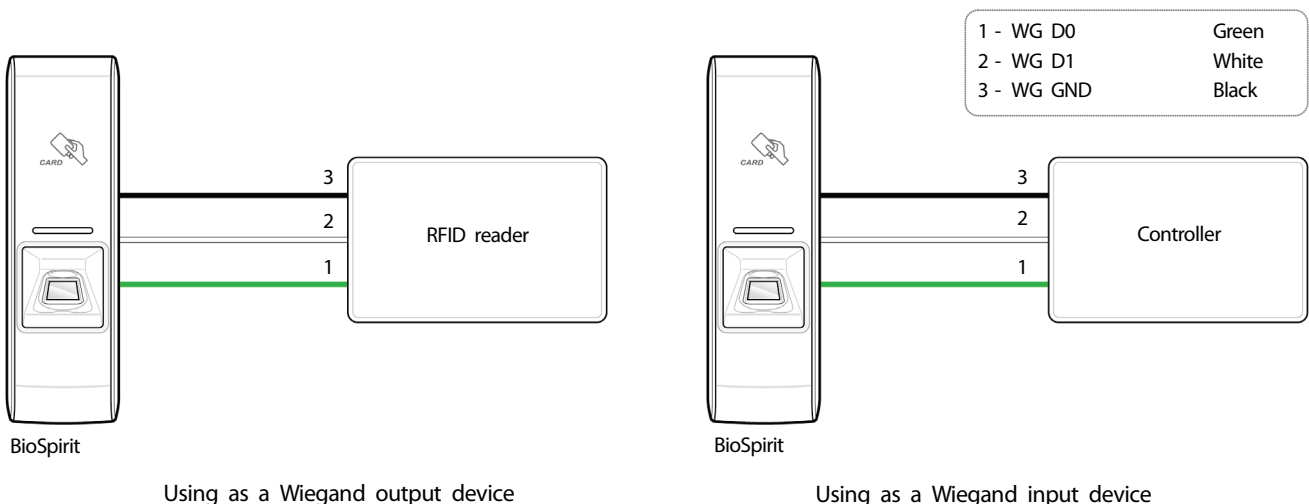
## Connecting to Secure I/O 2

Refer to the following figure for connecting.

- RS-485 should be AWG24, twisted pair, and maximum length is 1.2 km.
- Connect a termination resistor (120Ω) to both ends of a RS-485 daisy chain connection. It should be installed at both ends of the daisy chain. If it is installed in the middle of the chain, the performance in communicating will deteriorate because it reduces the signal level. If the termination resistor of BioEntry Plus is required, set the #1 DIP switch to ON.
- Up to 32 devices can be connected via daisy chain (1 master device and 31 other devices).



## Connecting as a Wiegand device



## Resetting Network Settings

- 1** Turn the power off.
- 2** Set DIP switch #2 to ON (right position).
- 3** After turning on and then connect the device with default values.
  - TCP/IP address: 192.168.0.1
  - Server mode: Not checked
  - RS-485: PC connection, 115200 bps
- 4** Change the TCP/IP address or RS-485 information.
- 5** Set DIP switch #2 to OFF (left position).
- 6** Turn the power off later on and then check the network setting is properly.

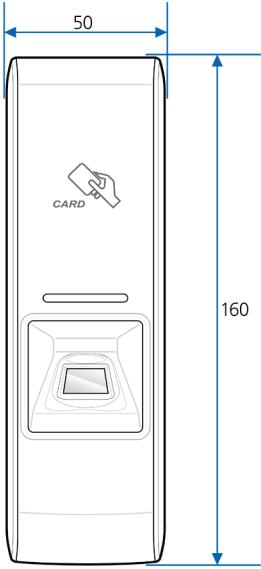
## Product Specifications

Category	Feature	Specification
Main	Biometric	Fingerprint
	RF Card	125KHz EM, 125KHz HID Prox, 13.56MHz Mifare/DESFire, 13.56MHz iCLASS
	Multi-Controller	Yes
Capacity	Max. User (1:1)	5,000
	Max. User (1:N)	5,000
	Max. Template (1:1)	10,000
	Max. Template (1:N)	10,000
	Max. Text Log	50,000
Interface	TCP/IP	Yes
	RS-485	1ch Host or Slave (Selectable)
	Wiegand	1ch In or Out (Selectable)
	TTL Input	2 Inputs
	Relay	1 Relay
Relay	Voltage	Max. 24VDC
	Current	Typ. 0.5A, Max. 1.0A
Hardware	CPU	533MHz DSP
	Memory	8MB RAM + 8MB Flash
	LED	Multi-Color
	Sound	Multi-tone Buzzer
	Operating Temp.	-20°C ~ 50°C
	Tamper	Yes
	Power	12VDC
	Dimensions (W x H x D mm)	50 x 160 x 37
	Certification	CE, FCC, RoHS

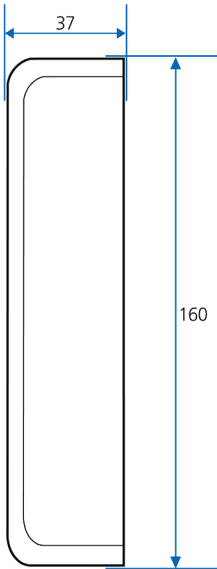


### Dimensions

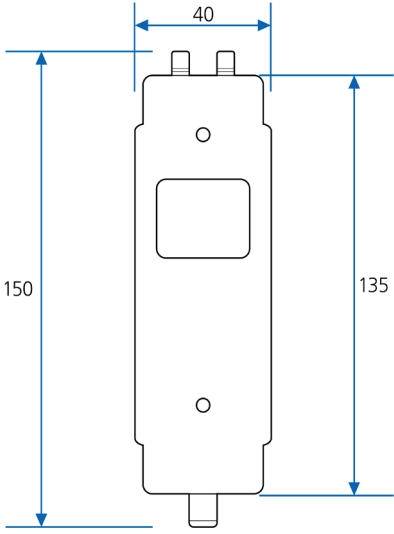
(Unit: mm)



Front view



Side view



Bracket

## FCC Compliance Information

THIS DEVICE COMPLIES WITH PART 15 OF THE FCC RULES.

Operation is subject to the following two conditions:

- (1) This device may not cause harmful interference, and
- (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, 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 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.

Modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment under FCC rules.

# Appendix

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