

# BioEntry P2

## INSTALLATION GUIDE

Version 1.06  
English  
EN 101.00.BEP2 V1.06A

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# Safety instructions

Please read this safety instructions before you use the product to prevent injury to yourself and others and to prevent property damage. The term 'product' in this manual refers to the product and any items provided with the product.

## Instructional icons



**Warning:** This symbol indicates situations that could result in death or severe injury.



**Caution:** This symbol indicates situations that may result in moderate injury or property damage.



**Note:** This symbol indicates notes or additional information.



## Warning

### Installation

**Do not install or repair the product arbitrarily.**

- This may result in electric shock, fire, or product damage.
- Damages caused by any modifications or failure to follow installation instructions can void your manufacturer's warranty.

**Do not install the product in a place with direct sunlight, moisture, dust, soot, or a gas leak.**

- This may result in electric shock or fire.

**Do not install the product in a location with heat from an electric heater.**

- This may result in fire due to overheating.

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

- Humidity and liquids may result in electric shock or product damage.

**Do not install the product in a location where it will be affected by radio frequencies.**

- This may result in fire or product damage.

### Operation

**Keep the product dry.**

- Humidity and liquids may result in electric shock, fire, or product damage.

**Do not use damaged power supply adapters, plugs, or loose electrical sockets.**

- Unsecured connections may cause electric shock or fire.

**Do not bend or damage the power cord.**

- This may result in electric shock or fire.



## Caution

### Installation

**Do not install the product under direct sunlight or UV light.**

- This may result in product damage, malfunction, discoloration, or deformation.

**Do not install the power supply cable in a location where people pass by.**

- This may result in injury or product damage.

**Do not install the product near magnetic objects, such as a magnet, TV, monitor (especially CRT), or speaker.**

- The product may malfunction.

**Keep the minimum distance between products when installing multiple products.**

- The product may be affected by radio frequencies emitted by other products and the product may malfunction.

**Use the IEC/EN 62368-1 approved power adapter that supports higher power consumption than the product. It is highly recommended to use the power adapter sold by Suprema.**

- If the right power supply is not used, the product may malfunction.
- Refer to the **Power** in the product specifications for maximum current consumption specifications.

**Use a separate power supply for the Secure I/O 2, electric lock, and the product.**

- If connecting and using the same power supply, the product may malfunction.

### Operation

**Do not drop the product or cause impacts to the product.**

- The product may malfunction.

**Do not disconnect the power supply while upgrading the firmware of the product.**

- The product may malfunction.

**Do not disclose the password to others and change it regularly.**

- This may result in illegal intrusion.

**Do not press buttons on the product by force or do not press them with a sharp tool.**

- The product may malfunction.

**Do not store your product in very hot or very cold places. It is recommended to use your product at temperatures from -20 °C to 50 °C.**

- The product may malfunction.

**When cleaning the product, mind the following.**

- Wipe the product with a clean and dry towel.
- If you need to sanitize the product, moisten the cloth or the wipe with a proper amount of rubbing alcohol and gently clean all exposed surfaces including fingerprint sensor. Use rubbing alcohol (containing 70% Isopropyl alcohol) and a clean, non-abrasive cloth like lens wipe.
- Do not apply liquid directly to the surface of the product.

**Do not use the product for anything other than its intended use.**


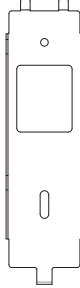
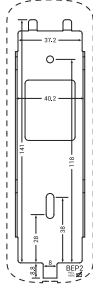
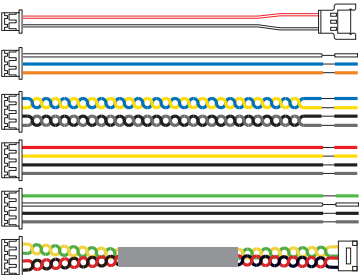
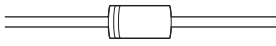

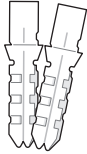
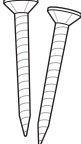



- The product may malfunction.

### **RTC Battery**

Use of an unapproved or incorrect type of battery may result in a risk of explosion. Discard the battery according to the appropriate regional or international waste regulations.

# Introduction

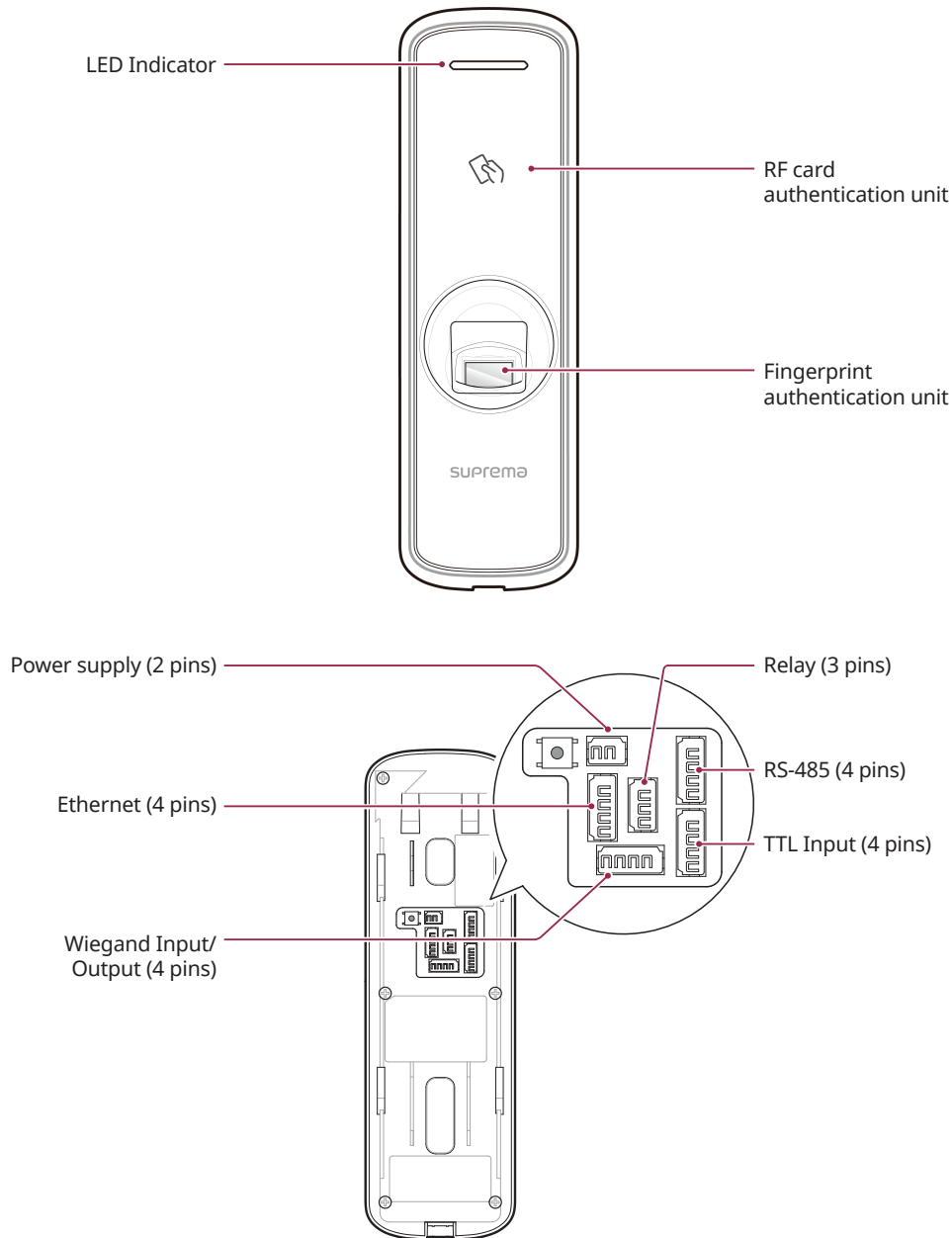
## Components

|                                                                                     |                                                                                     |                                                                                      |                                                                                       |
|-------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
|    |    |   |                                                                                       |
| <p><b>BioEntry P2</b></p>                                                           | <p><b>Wall Bracket</b></p>                                                          | <p><b>Drilling Template</b></p>                                                      |                                                                                       |
|   |    |    |   |
| <p><b>Connection Cables</b></p>                                                     | <p><b>Diode</b></p>                                                                 | <p><b>120 Ω Resistor</b></p>                                                         | <p><b>PVC Anchor x2</b></p>                                                           |
|  |  |  |  |
| <p><b>Fixing Screw x2</b></p>                                                       | <p><b>Bracket Fixing Screw<br/>(Star Shaped)</b></p>                                | <p><b>Quick Guide</b></p>                                                            | <p><b>Open Source Software<br/>Guide</b></p>                                          |



Components may vary according to the installation environment.

## Name and function of each part



| Name                                   | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|----------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>LED Indicator</b>                   | <p>Indicates the operational status of the device with the color of the LED.</p> <ul style="list-style-type: none"> <li>• Green solid: Authentication success</li> <li>• Red solid: Authentication failure</li> <li>• Blue/Sky blue blinking: Normal operation</li> <li>• Blue/Green blinking: The IP address has not been received properly when using DHCP</li> <li>• Blue/Green blinking: When initializing network settings</li> <li>• Green blinking: Waiting for an input</li> </ul> |
| <b>RF card authentication unit</b>     | Reads RF cards for entering and exiting.                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Fingerprint authentication unit</b> | Reads fingerprints placed on it for entering and exiting.                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Power supply (2 pins)</b>           | Connect the power supply cable.                                                                                                                                                                                                                                                                                                                                                                                                                                                            |

|                               |                                             |
|-------------------------------|---------------------------------------------|
| Relay (3 pins)                | Connect the relay cable.                    |
| Ethernet (4 pins)             | Connect the Ethernet cable.                 |
| RS-485 (4 pins)               | Connect the RS-485 cable.                   |
| TTL Input (4 pins)            | Connect the TTL input cable.                |
| Wiegand input/output (4 pins) | Connect the Wiegand input and output cable. |

## Cables and connectors

### Power supply



| Pin | Name     | Color                |
|-----|----------|----------------------|
| 1   | PWR +VDC | Red (white stripe)   |
| 2   | PWR GND  | Black (white stripe) |

### Relay



| Pin | Name    | Color  |
|-----|---------|--------|
| 1   | RLY NO  | White  |
| 2   | RLY COM | Blue   |
| 3   | RLY NC  | Orange |

### RS-485



| Pin | Name     | Color  |
|-----|----------|--------|
| 1   | 485 TRXP | Blue   |
| 2   | 485 TRXN | Yellow |
| 3   | 485 GND  | Black  |
| 4   | SH GND   | Gray   |

## TTL Input



| Pin | Name    | Color  |
|-----|---------|--------|
| 1   | TTL IN0 | Red    |
| 2   | TTL IN1 | Yellow |
| 3   | TTL GND | Black  |
| 4   | SH GND  | Gray   |

## Wiegand Input or Output



| Pin | Name   | Color |
|-----|--------|-------|
| 1   | WG D0  | Green |
| 2   | WG D1  | White |
| 3   | WG GND | Black |
| 4   | SH GND | Gray  |

## Ethernet



| Pin | Name     | Color  |
|-----|----------|--------|
| 1   | ENET RXN | Yellow |
| 2   | ENET RXP | Green  |
| 3   | ENET TXN | Red    |
| 4   | ENET TXP | Black  |

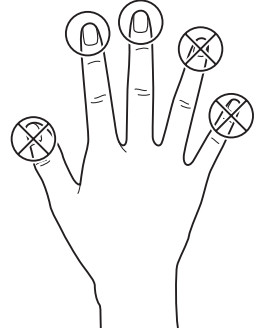


## How to enroll a fingerprint

In order to improve the fingerprint authentication rate, register the fingerprint correctly. BioEntry P2 can recognize a fingerprint even if the angle and position of a user's fingerprint input change. If you register the fingerprint with attention to the following matters, the authentication rate can be improved.

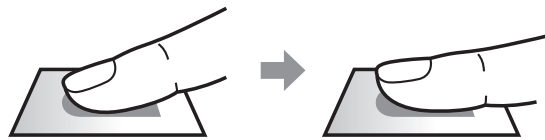
### Selecting a finger for fingerprint input

- In preparation for the case that the fingerprint of a specific finger cannot be used, for example if the user is lifting a load with one hand or a finger gets hurt, up to 10 fingerprints for each user can be registered.
- In the case of a user whose fingerprint cannot be recognized well, the authentication rate can be improved by enrolling the same finger twice repeatedly.
- If a finger has a cut or the fingerprint is blurry, select another finger for the fingerprint.
- It is recommended to use the index finger or the middle finger when scanning the fingerprint. The authentication rate can be reduced if it is difficult to place another finger at the center of fingerprint sensor accurately.



### Fingerprint enroll method

- 1 Place the finger with the fingerprint to be registered on the fingerprint authentication unit and press the finger gently for better authentication.



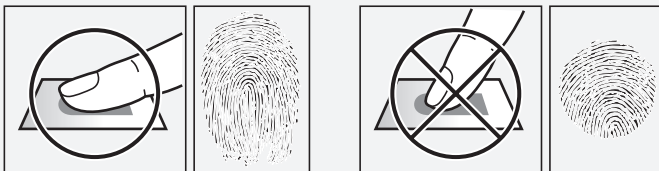
- 2 After a beep sounds, scan the fingerprint of the registered finger again. (scan the fingerprint of a finger to be registered twice)



#### Cautions for enrolling a fingerprint

When a fingerprint is recognized, it is compared with the initially registered fingerprint, so the initial fingerprint enroll is the most important. Pay attention to the following matters when enrolling the fingerprint.

- Place the finger deep enough to contact with the sensor completely.
- Place the center of the fingerprint in the center of the sensor.
- If a finger has a cut or the fingerprint is blurry, select another finger for the fingerprint.
- Scan the fingerprint correctly without moving according to the instruction on the screen.
- If you make the finger upright so that the contact area with the sensor is decreased or the angle of finger is warped, fingerprint authentication may not be performed.



#### When the fingerprint recognition fails

BioEntry P2 can recognize a fingerprint regardless of a change of season or finger condition. However, the authentication rate may vary according to the external environment or fingerprint input method.

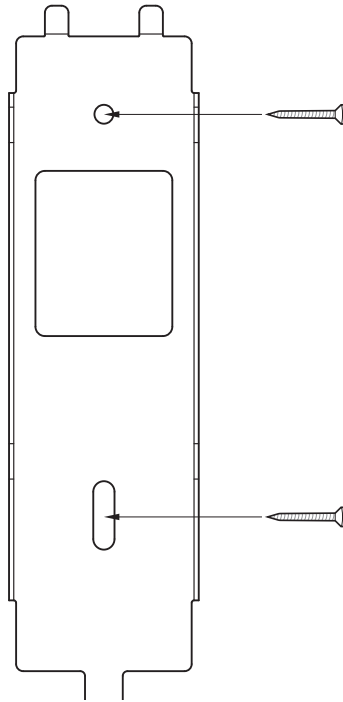
If the fingerprint authentication cannot be done smoothly, it is recommended to take the following measures.

- If the finger is smeared with water or sweat, dry off the finger and then scan the finger.
- If the finger is too dry, blow your breath on the fingertips and then scan the finger.
- If the finger has a cut, register the fingerprint of another finger.
- The initially enrolled fingerprint often may have not been scanned correctly, so enroll the fingerprint again according to 'Cautions for enrolling a fingerprint'.

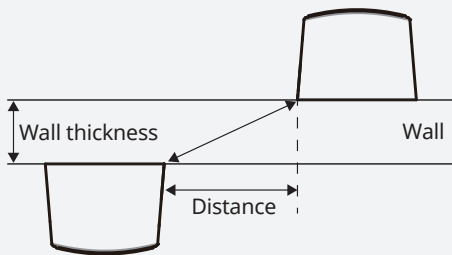
# Installation

## Fixing the bracket and the product

- 1 Determine the correct position to install the bracket using the provided drilling template. Fix the bracket firmly using fixing screws through the bracket to the position where BioEntry P2 will be installed.

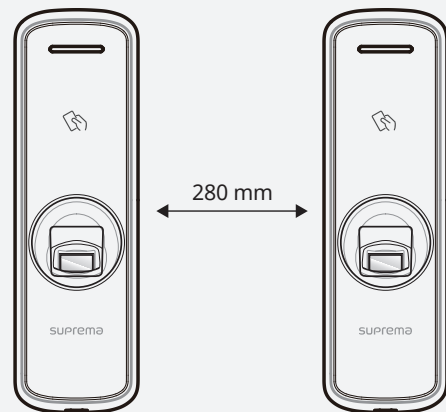


- If installing BioEntry P2 on a concrete wall, drill holes, insert PVC anchors, and fix them with fixing screws.
- To avoid RF interference, a minimum separation distance must be maintained.

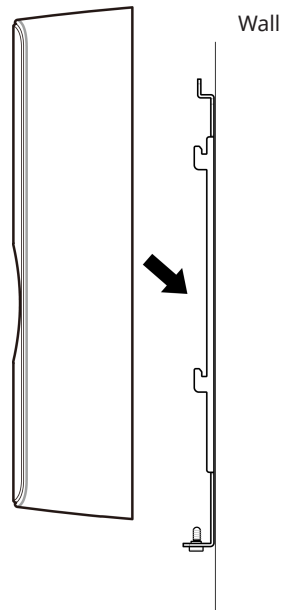


| Wall thickness | Distance |
|----------------|----------|
| 100 mm         | 250 mm   |
| 120 mm         | 250 mm   |
| 150 mm         | 180 mm   |

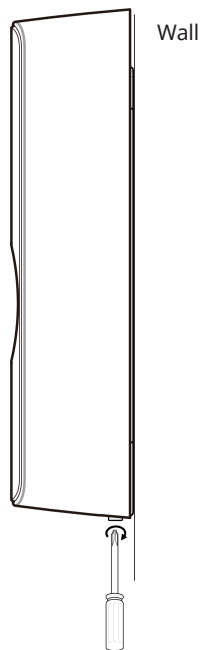
Wall



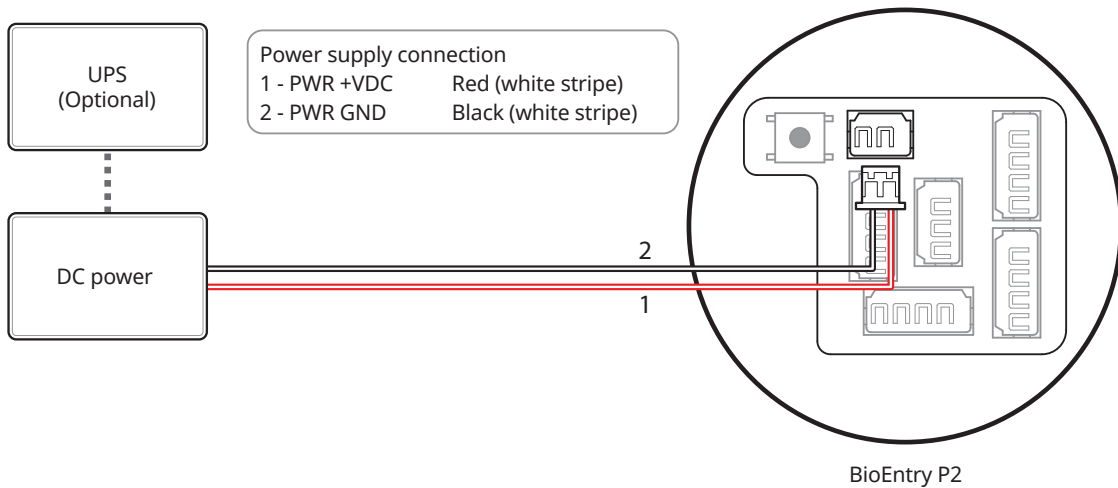
**2** Install BioEntry P2 onto the fixed bracket.



**3** Connect BioEntry P2 to the bracket by rotating the product fixing screw.



## Power supply connection



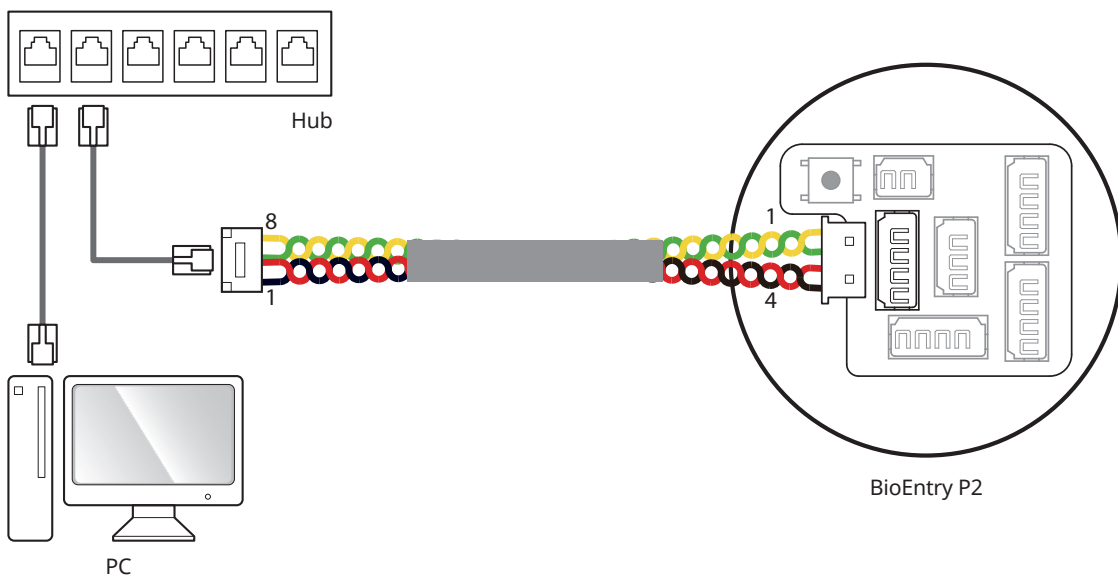
- Use the IEC/EN 62368-1 approved power adapter that supports higher power consumption than the product. If you wish to connect and use another device to the power supply adapter, you should use an adapter with a current capacity which is the same or larger than the total power consumption required for the terminal and another device.
  - Refer to the **Power** in the product specifications for maximum current consumption specifications.
- DO NOT extend the length of power cable when using the power adapter.
- Use a separate power supply for Secure I/O 2, the electric lock, and the BioEntry P2 respectively. If connecting and using the power supply to these devices together, the devices may malfunction.

## Network connection

### TCP/IP

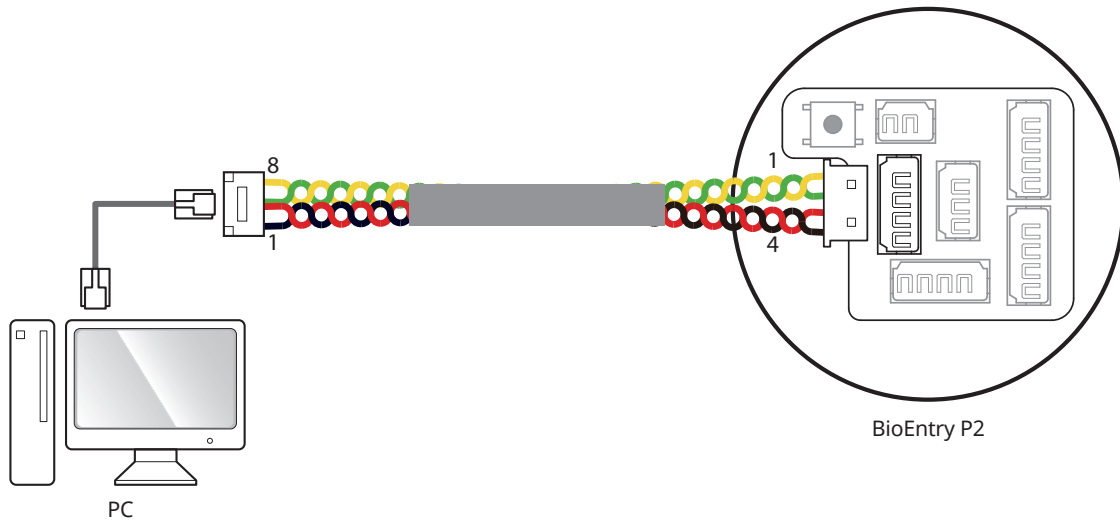
#### LAN connection (connecting to a hub)

You can connect the product to a hub using a general type CAT-5e cable.

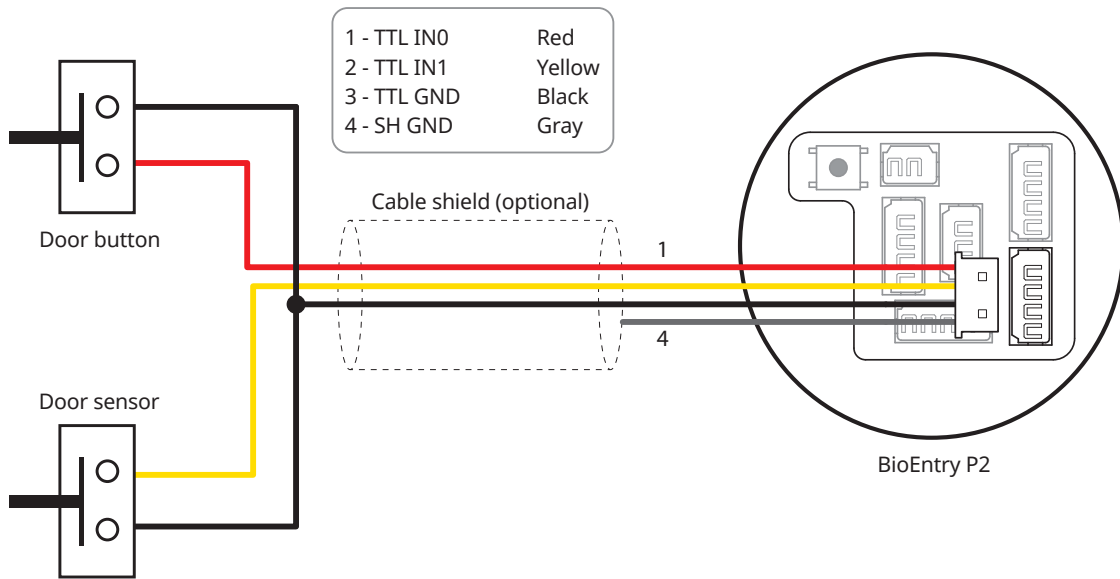


**LAN connection (connecting to a PC directly)**

BioEntry P2 has an automatic MDI/MDIX function so that it can be connected to a PC directly using a normal straight type CAT-5e cable, not a cross cable.



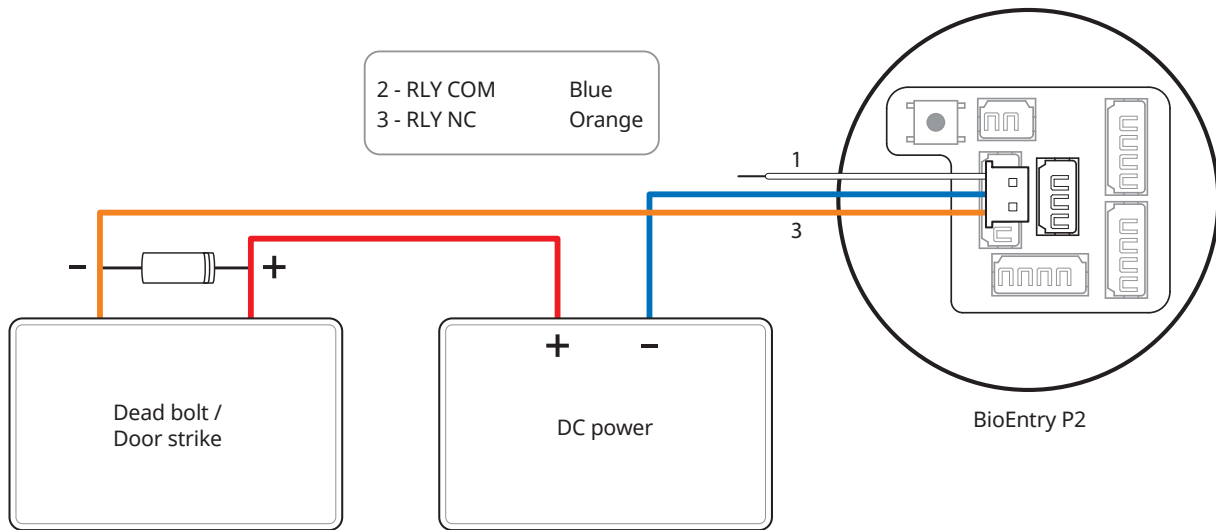
**TTL input connection**



## Relay connection

### Fail Safe Lock

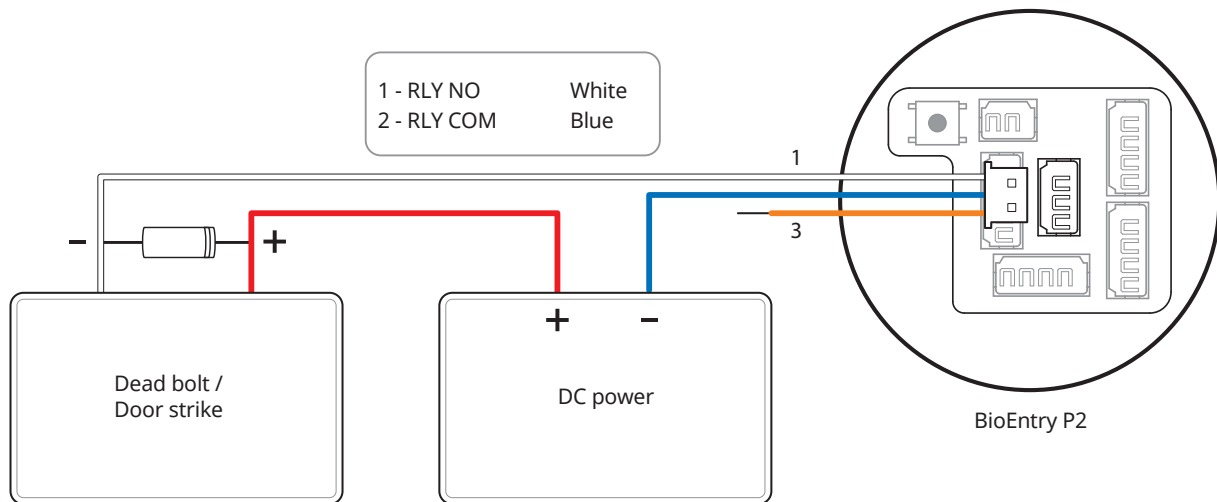
In order to use the Fail Safe Lock, connect N/C relay as shown in the figure below. There is normally a current flowing through the relay for the Fail Safe Lock. When the relay is activated, blocking the current flow, the door will open. If the power supply to the product is cut off due to a power failure or an external factor, the door will open.



- Install a diode at both sides of the door lock wire as shown in the figure to protect the relay from the reverse current, which occurs when the door lock operates.
- Take caution of the installation direction of the diode. Install the diode close to the door lock.
- Use a separate power supply for BioEntry P2 and the door lock.
- Suprema's standalone intelligent readers contain internal relays that can directly lock/unlock doors without external controllers for added convenience. For access control applications in need of security, however, it is NOT recommended to use the internal relay of a reader to prevent any tampering attacks which can potentially trigger the door unlock. For such applications, it is highly recommended to use a separate relay unit for a lock control such as Suprema's Secure I/O 2, DM-20 or CoreStation installed at a secure side of a door.

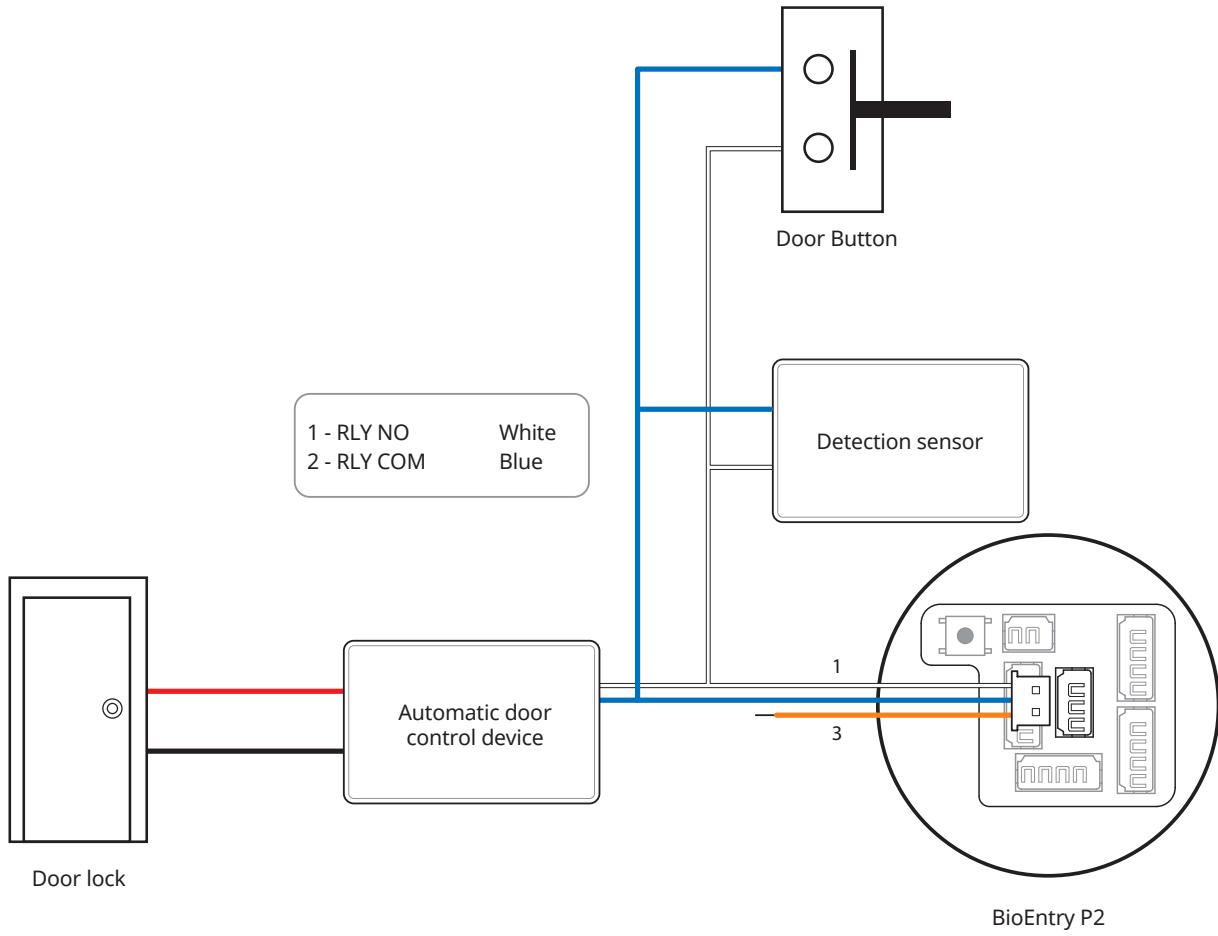
## Fail Secure Lock

In order to use the Fail Secure Lock, connect N/O relay as shown in the figure below. There is normally no current flowing through the relay for the Fail Secure Lock. When the current flow is activated by the relay, the door will open. If the power supply to the product is cut off due to a power failure or an external factor, the door will lock.



- Install a diode at both sides of the door lock wire as shown in the figure to protect the relay from the reverse current, which occurs when the door lock operates.
- Take caution of the installation direction of the diode. Install the diode close to the door lock.
- Use a separate power supply for BioEntry P2 and the door lock.
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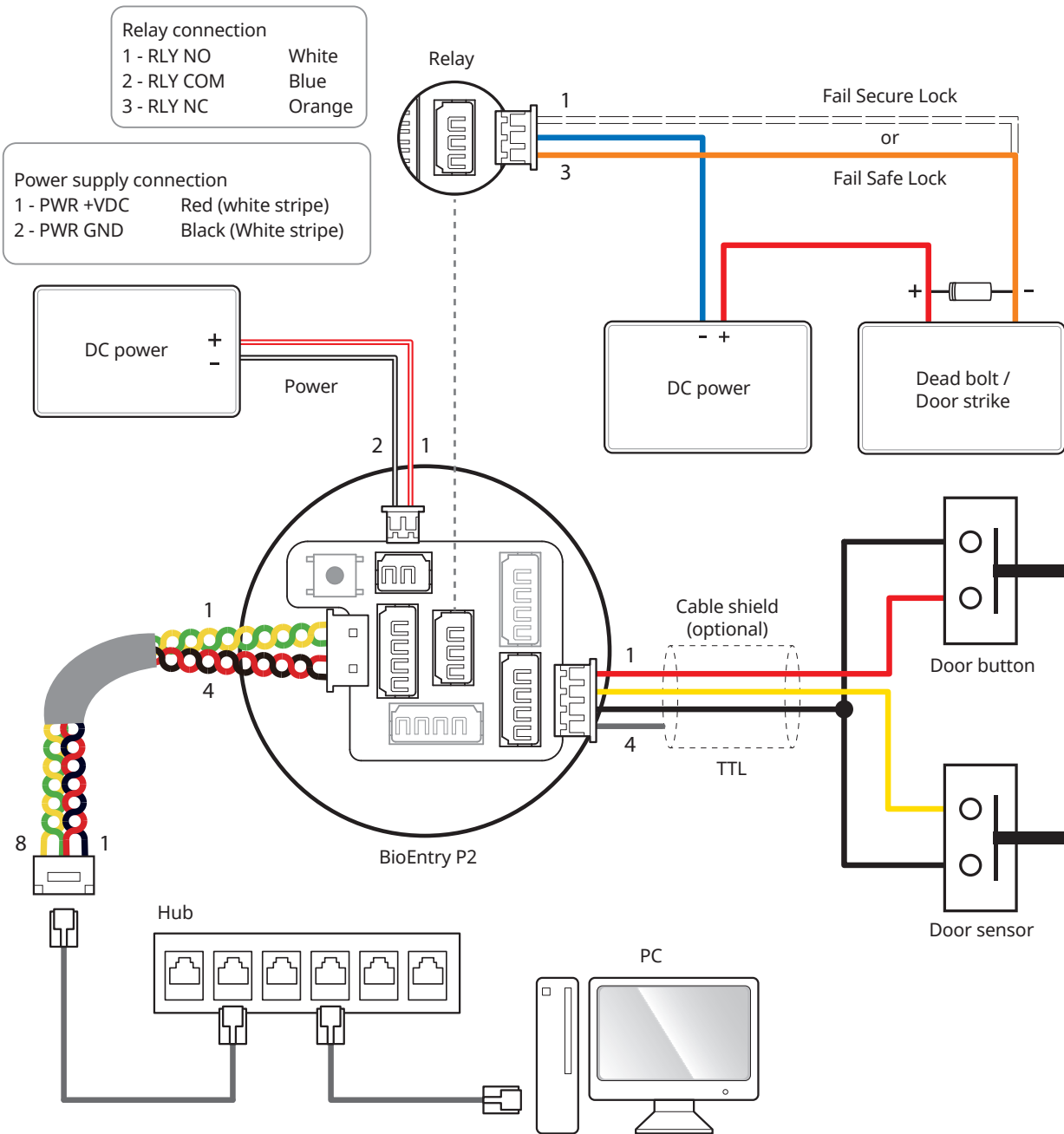
### Automatic door connection





## Connecting as a standalone

BioEntry P2 can be connected to the door lock, door button, and door sensor directly without connecting a separate I/O device.

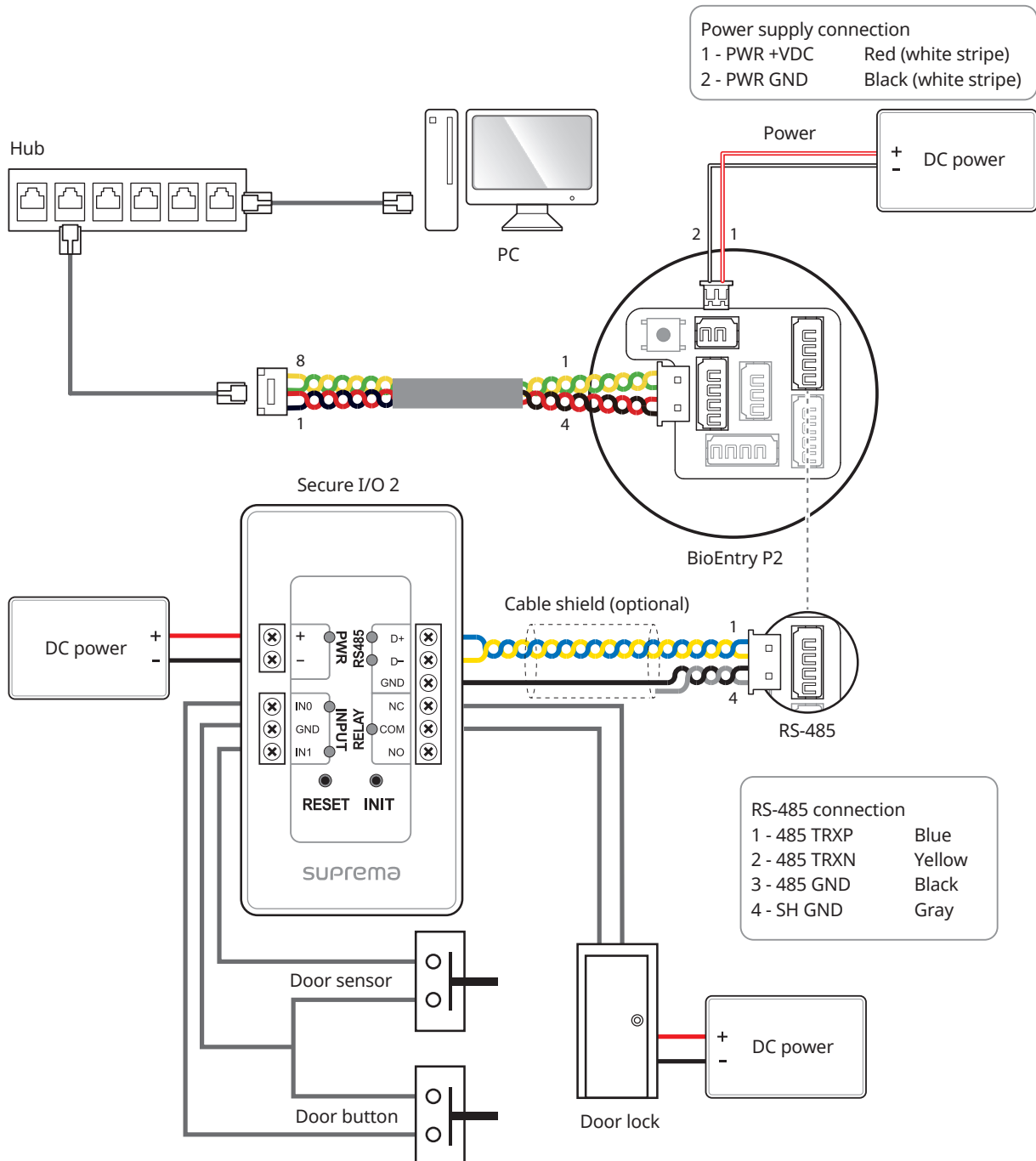


- BioEntry P2 can be used as a multi-door controller with the slave devices with the RS485 cable. The slave devices are used as dummy readers and authentication is performed in the master device.
- If Xpass or XPass 2 is connected to the master device, only card authentication can be used.
- The maximum number of slave devices available to connect varies according to the authentication method, number of users, and number of devices. Also note that the number of slave devices affects the fingerprint authentication speed.
- A master device can control 31 slave devices. The bandwidth of RS485 allows for up to 7 fingerprint authentication devices to be connected.
- Suprema's standalone intelligent readers contain internal relays that can directly lock/unlock doors without external controllers for added convenience. For access control applications in need of security, however, it is NOT recommended to use the internal relay of a reader to prevent any tampering attacks which can potentially trigger the door unlock. For such applications, it is highly recommended to use a separate relay unit for a lock control such as Suprema's Secure I/O 2, DM-20 or CoreStation installed at a secure side of a door.
- For more information, contact the Suprema technical support team (<https://support.supremainc.com>).

## Connecting to Secure I/O 2

Secure I/O 2 is an I/O device, can be connected to BioEntry P2 with the RS-485 cable. Security can be maintained even if the connection between BioEntry P2 and Secure I/O 2 has been lost or the power supply to BioEntry P2 has been shut off due to external factors.

- Use an AWG24 twisted pair with a maximum length of 1.2 km for the RS-485 cable.
- If connecting with a RS-485 daisy chain, connect the termination resistor (120 Ω) to both ends of the daisy chain connection. If connected to the middle line, the signal level becomes smaller and the communication performance will deteriorate. Make sure to connect it to both ends of the daisy chain connection.

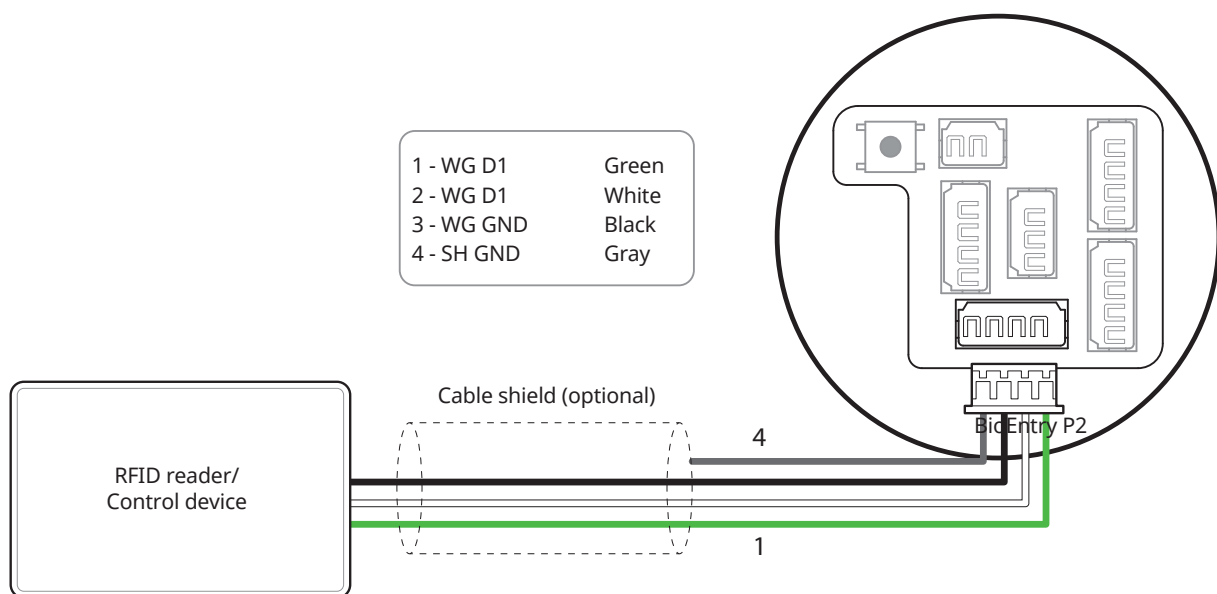




- BioEntry P2 can be used as a multi-door controller with the slave devices with the RS485 cable. The slave devices are used as dummy readers and authentication is performed in the master device.
- If Xpass or XPass 2 is connected to the master device, only card authentication can be used.
- The maximum number of slave devices available to connect varies according to the authentication method, number of users, and number of devices. Also note that the number of slave devices affects the fingerprint authentication speed.
- A master device can control 31 slave devices. The bandwidth of RS485 allows for up to 7 fingerprint authentication devices to be connected.
- For more information, contact the Suprema technical support team (<https://support.supremainc.com>).

## Wiegand connection

Use as a Wiegand input/output device.



## Resetting Network Settings

- 1 Turn the power on.
- 2 Press the network reset button on the rear of device until the device restart automatically.
- 3 Connect the device with default values.
  - TCP/IP address: DHCP address assignment (If DHCP address assignment is failed, 169.254.x.x will be set.)
  - Server mode: Disabled
  - RS-485: Default, 115200 bps
- 4 Change the TCP/IP address or RS-485 information.
- 5 Turn the power off later on and then check the network setting is properly.

## Restoring the Factory Defaults

This will delete all data and root certificate on the device and reset the settings.

- 1 Turn the power on.
- 2 Press the reset button three times quickly.
- 3 When the green LED is blinking, press the reset button again.



If there is no root certificate on the device, you cannot restore the factory defaults.

# Product specifications

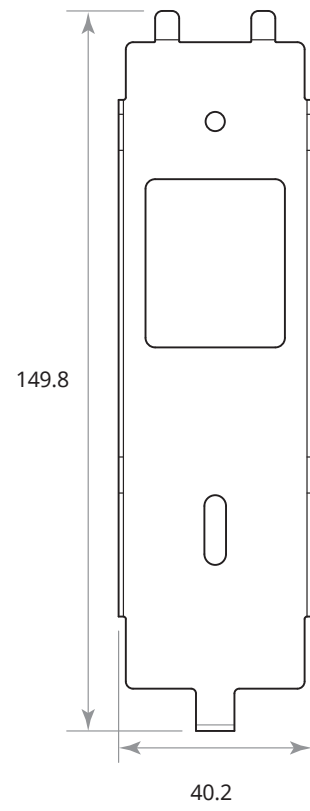
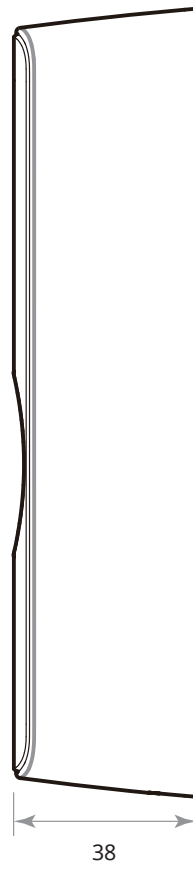
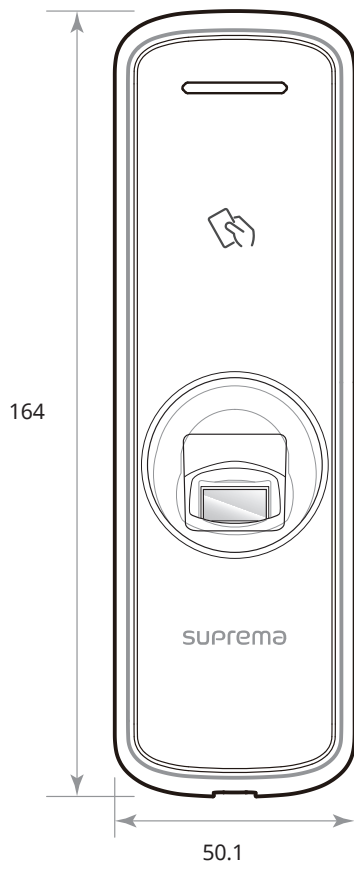
| Category     | Feature                                                | Specification                                                                                                          |                                                                                             |
|--------------|--------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------|
|              |                                                        | BEP2-OD                                                                                                                | BEP2-OA                                                                                     |
| Credential   | Biometric                                              | Fingerprint                                                                                                            |                                                                                             |
|              | LF card option                                         | EM                                                                                                                     | EM, HID Prox                                                                                |
|              | HF card option                                         | MIFARE, MIFARE Plus, DESFire, DESFire EV1/EV2/EV3 <sup>1)</sup> , FeliCa                                               | MIFARE, MIFARE Plus, DESFire, DESFire EV1/EV2/EV3 <sup>1)</sup> , FeliCa, iCLASS SE/SR/Seos |
|              | NFC card                                               | Supported                                                                                                              |                                                                                             |
|              | RF read range <sup>2)</sup>                            | MIFARE/DESFire/EM/HID Prox/iCLASS : 50 mm, FeliCa: 30 mm                                                               |                                                                                             |
| General      | CPU                                                    | 1.0 GHz                                                                                                                |                                                                                             |
|              | Memory                                                 | 8 GB Flash + 64 MB RAM                                                                                                 |                                                                                             |
|              | Crypto chip                                            | Supported                                                                                                              |                                                                                             |
|              | LED                                                    | Multi-color                                                                                                            |                                                                                             |
|              | Sound                                                  | Multi-tone Buzzer                                                                                                      |                                                                                             |
|              | Operating temperature                                  | -20 °C ~ 50 °C                                                                                                         |                                                                                             |
|              | Storage temperature                                    | -40 °C ~ 70 °C                                                                                                         |                                                                                             |
|              | Operating humidity                                     | 0 % ~ 80 %, non-condensing                                                                                             |                                                                                             |
|              | Storage humidity                                       | 0 % ~ 90 %, non-condensing                                                                                             |                                                                                             |
|              | Dimension (W x H x D)                                  | 50.1 x 164 x 38 (mm)                                                                                                   |                                                                                             |
|              | Weight                                                 | <ul style="list-style-type: none"> <li>• Device: 162 g</li> <li>• Bracket (Including washer and bolt): 39 g</li> </ul> |                                                                                             |
| Certificates | CE, UKCA, KC, FCC, RCM, BIS, ANATEL, RoHS, REACH, WEEE |                                                                                                                        |                                                                                             |
| Fingerprint  | Image dimension                                        | 272 x 320 pixels                                                                                                       |                                                                                             |
|              | Image bit depth                                        | 8 bit, 256 grayscale                                                                                                   |                                                                                             |
|              | Resolution                                             | 500 dpi                                                                                                                |                                                                                             |
|              | Template                                               | SUPREMA / ISO19794-2 / ANSI-378                                                                                        |                                                                                             |
|              | Extractor                                              | MINEX certified and compliant                                                                                          |                                                                                             |
| Capacity     | Max. User                                              | 10,000                                                                                                                 |                                                                                             |
|              | Max. Credential (1:N)                                  | Fingerprint: 10,000                                                                                                    |                                                                                             |
|              | Max. Credential (1:1)                                  | <ul style="list-style-type: none"> <li>• Fingerprint: 10,000</li> <li>• Card: 10,000</li> </ul>                        |                                                                                             |
|              | Max. Text Log                                          | 1,000,000                                                                                                              |                                                                                             |
|              | Max. Image Log                                         | Not supported                                                                                                          |                                                                                             |
| Interface    | Ethernet                                               | Supported (10/100 Mbps, auto MDI/MDI-X)                                                                                |                                                                                             |
|              | RS-485                                                 | 1ch Master / Slave (Selectable)                                                                                        |                                                                                             |
|              | Wiegand                                                | 1ch Input / Output (Selectable)                                                                                        |                                                                                             |
|              | TTL Input                                              | 2ch Input                                                                                                              |                                                                                             |
|              | Relay                                                  | 1 Relay                                                                                                                |                                                                                             |
|              | Tamper                                                 | Supported                                                                                                              |                                                                                             |

| Category   | Feature                           | Specification                                                                                  |         |
|------------|-----------------------------------|------------------------------------------------------------------------------------------------|---------|
|            |                                   | BEP2-OD                                                                                        | BEP2-OA |
| Electrical | Power                             | <ul style="list-style-type: none"> <li>Voltage: 12 Vdc</li> <li>Current: Max. 0.2 A</li> </ul> |         |
|            | Switch input VIH                  | <ul style="list-style-type: none"> <li>Min.: 3 V</li> <li>Max.: 5 V</li> </ul>                 |         |
|            | Switch input VIL                  | Max.: 1 V                                                                                      |         |
|            | Switch Pull-up resistance         | 4.7 k $\Omega$ (The input ports are pulled up with 4.7 k $\Omega$ .)                           |         |
|            | Wiegand output VOH                | Min. 4.8 V                                                                                     |         |
|            | Wiegand output VOL                | Max. 0.2 V                                                                                     |         |
|            | Wiegand output Pull-up resistance | Internally pulled up with 1 k $\Omega$                                                         |         |
|            | Relay                             | 1 A @ 30 VDC Resistive load                                                                    |         |

- 1) DESFire EV2/EV3 cards are supported by having backward compatibility of DESFire EV1 cards. CSN and smart card functions are compatible with BioEntry P2.
- 2) RF read range will vary depending on installation environment.

## Dimensions

(Unit: mm)

\* The tolerance is  $\pm 0.3$  mm.

# 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.



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 commercial environment. 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. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20 cm between the radiator and your body. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.



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Version 3, 29 June 2007

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