

BioEntry W2

# INSTALLATION GUIDE

Version 1.29  
English

EN 101.00.BEW2 V1.29A

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# Safety Instructions

Observe the following instructions to use the product safely and prevent any risk of injury or property damage.

## Warning

Noncompliance of instructions could lead to serious injury or death.

### Installation

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

- A fire or electric shock may occur.

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

- A fire or electric shock may occur due to overheating.

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

- Otherwise, a product damage or electric shock may occur due to moisture.

**Install the product in a place with no electromagnetic interference.**

- Otherwise, a product damage or electric shock may occur.

**The user should not install or repair the product independently.**

- A fire, electric shock, or personal injury may occur.
- If the product has been damaged due to independent installation or repair of the product by the user, free A/S service will not be provided.

### Operation

**Do not allow liquids such as water, beverages, or chemicals get into the product.**

- A fire, electric shock, or product damage may occur.

## Caution

Noncompliance of instructions could lead to minor injury or product damage.

### Installation

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

- Product damage or physical injury may occur.

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

- A product failure may occur.

**If installing the product outside where the product is completely exposed, it is recommended to install the product together with the enclosure.**

**Use a separate power supply for Secure I/O 2, electric lock and BioEntry W2 respectively.**

- If connecting and using the power supply to these devices together, the devices may malfunction.

**When installing a number of devices, allow a space between the devices for installation.**

- Otherwise, one device may affect the RF performance of other devices, resulting in malfunction.

## Operation

**Do not drop the product or apply an impact to the product.**

- A product failure may occur.

**Be careful not to contaminate or damage the fingerprint contact unit with a dirty hand or foreign substances.**

- Deterioration in fingerprint authentication performance and a product failure may occur.

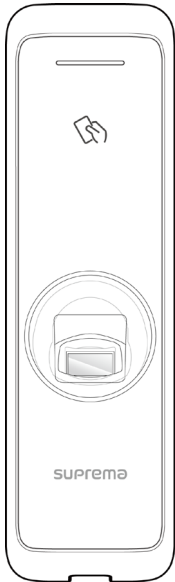
**When cleaning the product, wipe the product with a soft and dry cloth and no water, benzene or alcohol.**

- Otherwise, a product failure may occur.

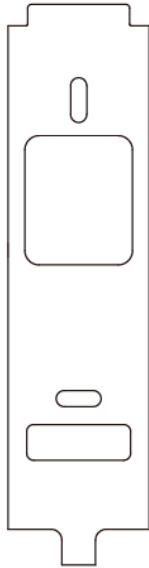
Electronic Access Control Systems, would be invalidated through the use of any add-on, expansion, memory or other module manufactured or supplied by the manufacturer or manufacturer's representative.

# Introduction

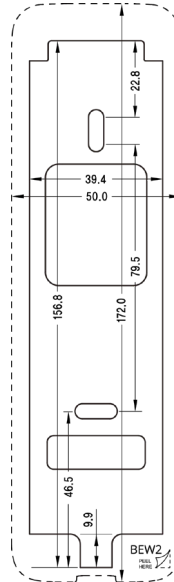
## Components



BioEntry W2



Wall Bracket



Drilling Template



PVC Anchor  
(2 EA)



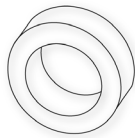
Fixing Screw  
(2 EA)



Bracket Fixing Screw  
(Star Shaped)



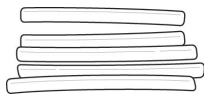
120 Ω resistor



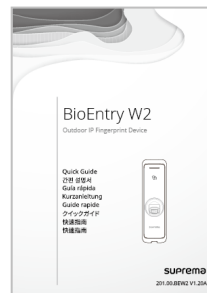
Ferrite Core



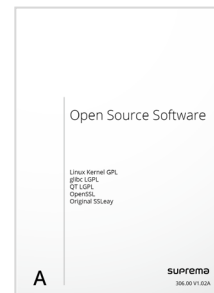
Diode  
(1 EA)



Shrink Tubes



Quick Guide

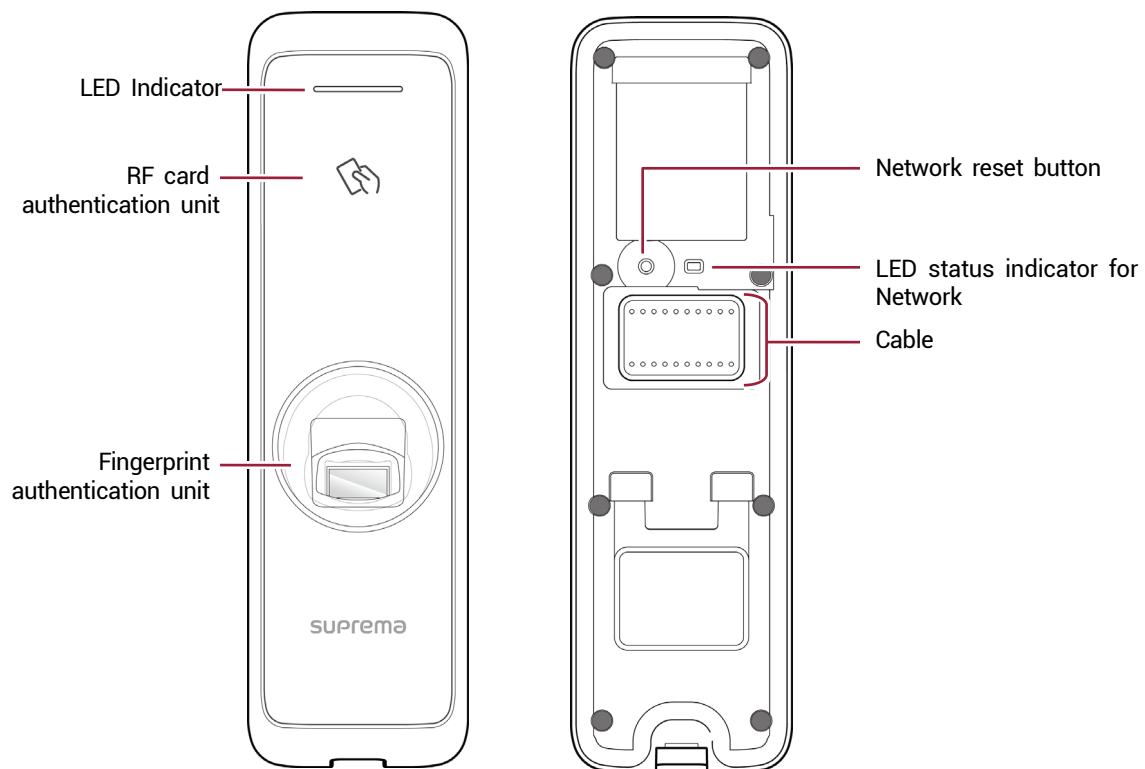


Open Source Software Guide

### NOTE

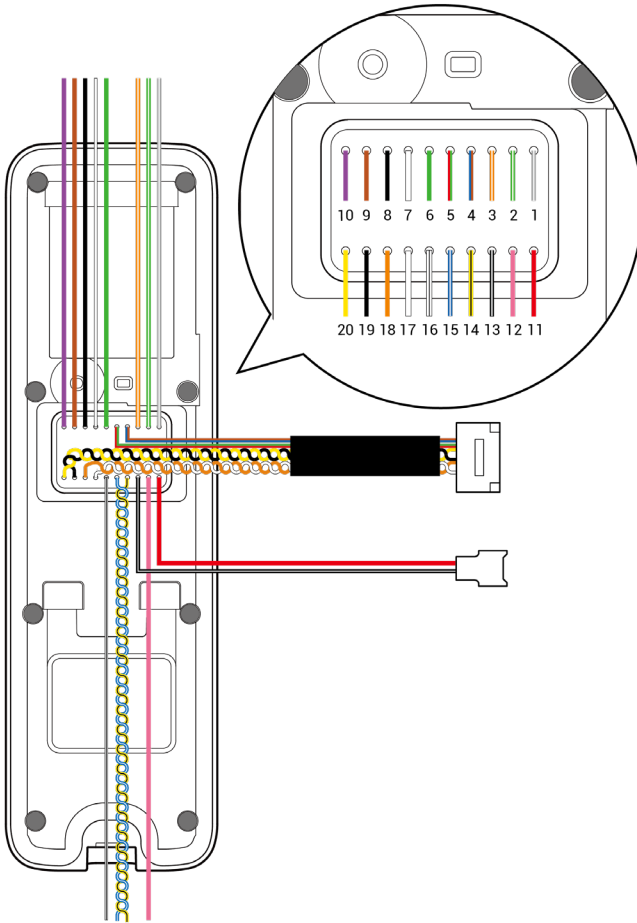
- Components may vary according to the installation environment.

## Name and function of each part



Name	Feature
<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> <li>• Green/White blinking: Connecting with the Airfob Pass (BLE) application of Suprema</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>Cable</b>	<ul style="list-style-type: none"> <li>• TTL input cable</li> <li>• Wiegand input or output cable</li> <li>• Power cable</li> <li>• RS485 cable</li> <li>• Ethernet connector</li> <li>• Relay output cable</li> </ul>
<b>LED lamp for Network</b>	Shows the status of the network connection.
<b>Reset button</b>	<ul style="list-style-type: none"> <li>• Resets the network configuration. For details, refer to the <b>Resetting Network Setting</b>.</li> <li>• Deletes all data and certificate on the device and reset the settings. For details, refer to the <b>Restoring the Factory Defaults</b>.</li> </ul>

## Cables and connectors



Pin	Name	Color
1	RLY NO	Gray (White stripe)
2	RLY COM	Green (White stripe)
3	RLY NC	Orange (White stripe)
4	VB2	Blue
		Brown
5	VB1	Red
		Green
6	WG D0	Green
7	WG D1	White
8	WG GND	Black
9	TTL IN 1	Brown
10	TTL IN 0	Purple
11	PWR +VDC	Red
12	Not Connected	Pink
13	PWR GND	Black (White stripe)
14	485 TRXN	Yellow (Black stripe)
15	485 TRXP	Blue (White stripe)
16	485 GND	White (Black stripe)
17	ENET TXP	White
18	ENET TXN	Orange
19	ENET RXP	Black
20	ENET RXN	Yellow

**NOTE**

- There are several conductors of size of AWG 26 and they shall be covered by a common jacket or the equivalent when field wiring; and the lead shall not be spliced to a conductor larger than 18 AWG (0.82 mm<sup>2</sup>).

## How to enroll a fingerprint

In order to improve the fingerprint authentication rate, register the fingerprint correctly. BioEntry W2 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.

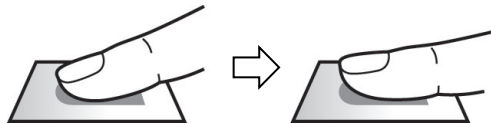
### Selecting a finger for fingerprint input

- 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).

#### NOTE

##### 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 has decreased or the angle of finger has warped, fingerprint authentication may not be performed.



##### When the fingerprint recognition fails

BioEntry W2 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.

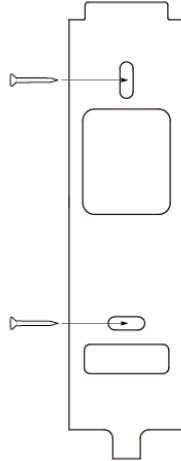
- If the finger is smeared with water or sweat, dry off the finger and then scan the finger.
- If the finger is too dry, blow your breath on the fingertips and then scan the finger.
- If the finger has a cut, register the fingerprint of another finger.
- The initially registered fingerprint often may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



# Installation

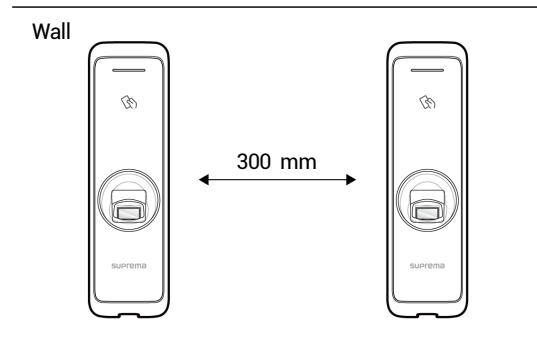
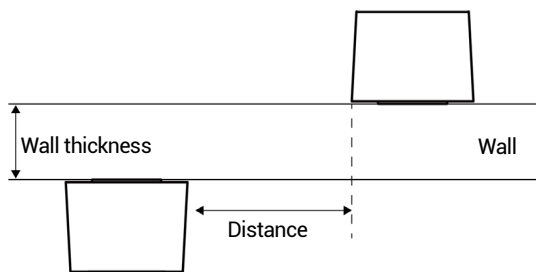
## Fixing the bracket and the product

- 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 W2 will be installed.



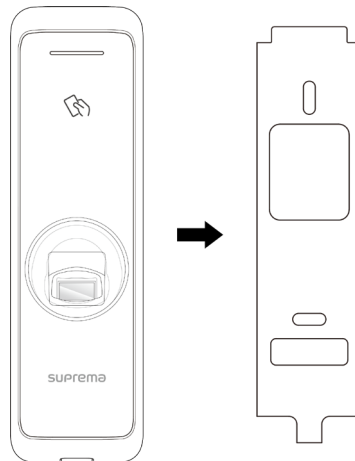
**NOTE**

- If installing BioEntry W2 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.
- It is for indoor use and the installation height is less than 2M.

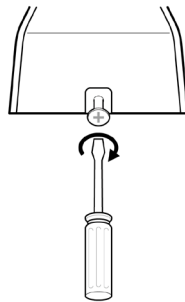


Wall thickness	Distance
100 mm	270 mm
120 mm	250 mm
150 mm	170 mm

**2** Install BioEntry W2 onto the fixed bracket.



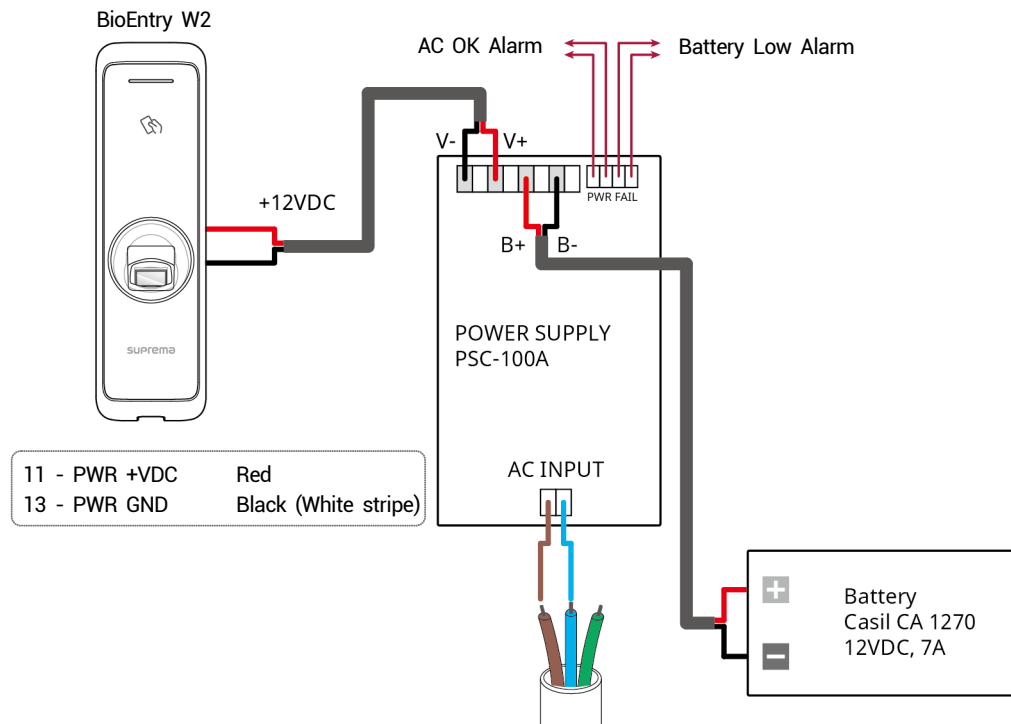
**3** Assemble BioEntry W2 with the bracket by rotating the product fixing screw.



**NOTE**

- When assembling the product with the bracket, you can use the included bracket fixing screw(Star Shaped) instead of the product fixing screw for enhanced security.

## Power supply connection



### NOTE

- Listed Class 2 power unit shall be recommended to use.
- The unit is powered by external Listed Class 2 power supply with 12VDC or by Listed to UL 294B PoE power source.
- For ULC S319 compliance, connect PSC-100A power supply and Casil CA 1270 battery.
- Use a power supply adaptor of DC 12 V ( $\pm 10\%$ ) with a minimum of 1,500 mA which has obtained the approval of IEC/EN 60950-1. If you wish to connect and use another device to the power supply adaptor, you should use an adaptor with a current capacity which is the same or larger than the total power consumption required for the terminal and another device.
- Use a separate power supply for Secure I/O 2, the electric lock, and the BioEntry W2 respectively. If connecting and using the power supply to these devices together, the devices may malfunction.
- DO NOT connect the device to the DC power supply(or adaptor) and PoE power supply at the same time.
- The alarm signal is sent out through AC OK and Battery Low pins in the relay contact type.

Function	Description	Relay Status
AC OK	AC power is on	Short
	AC power is off	Open
Battery Low	The voltage of battery is under 11 V	Short
	The voltage of battery is above 11 V	Open

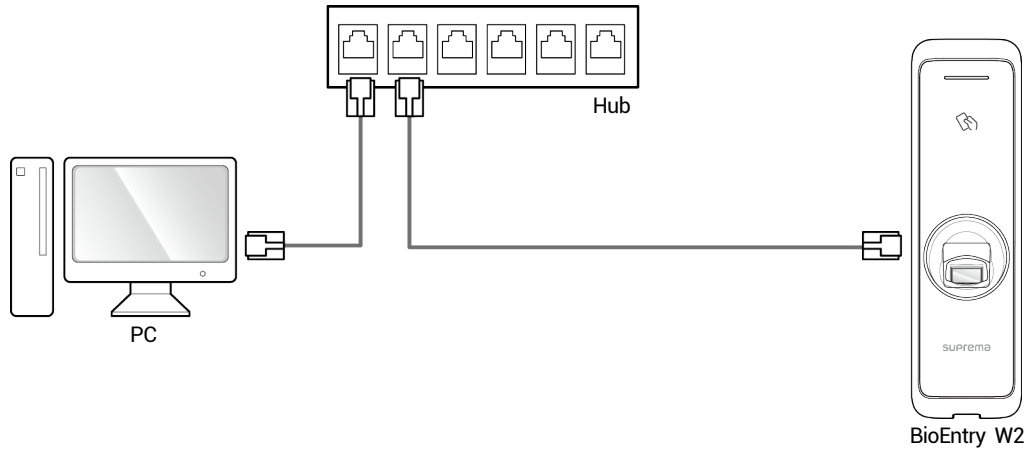
- An external voltage source is required for the alarm signal function. The maximum applied voltage is 30 V and the maximum sink current is 1 A.
- Statement indicating that "The PoE Power Source needs to comply with National Electrical Code, ANSI/NFPA 70, Article 725.121, Power Sources for Class 2 and Class 3 Circuits".
- Category 5e cabling is the minimum performance category recommended. The performance category utilized should match the transmission speed required at the installation site.
- The minimum conductor gauge permitted to connect between the PSE or power injector and the PD shall be 26 AWG (0.13 mm<sup>2</sup>) for patch cords; 24 AWG (0.21 mm<sup>2</sup>) for horizontal or riser cable.
- When the product is powered via PoE, it must be either UL 294B or UL 294 7th Ed. compliant source.
- Compliance with IEEE 802.3 (at or af) specifications shall not be verified as part of these requirements.

## Network connection

### TCP/IP

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

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

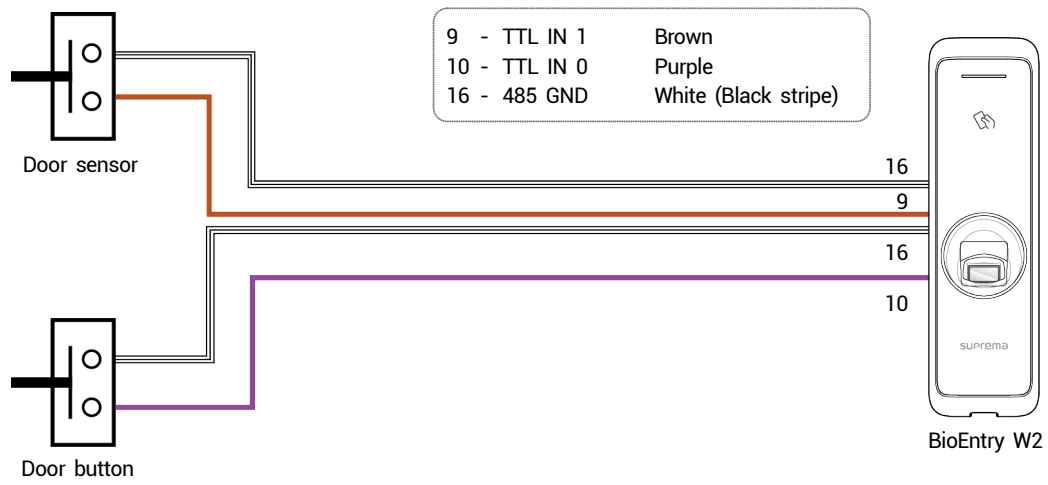


#### LAN connection (connecting to a PC directly)

BioEntry W2 has an automatic MDI/MDIX function so that it can be connected to a PC directly using a normal straight type CAT-5 cable, not a cross cable.



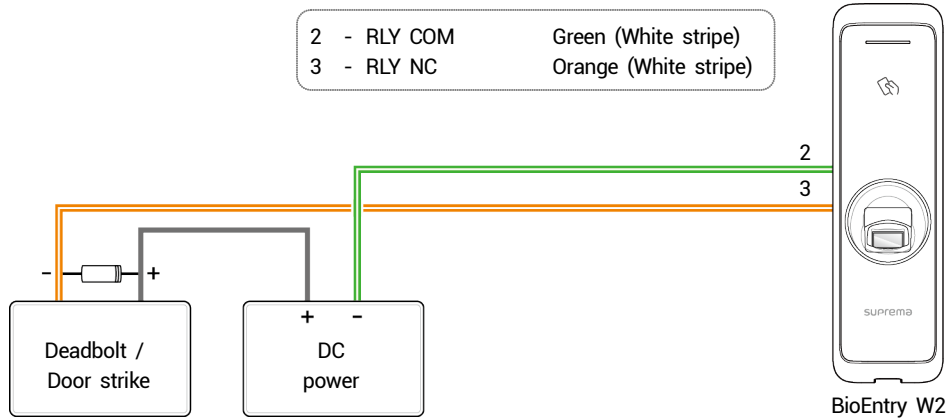
## TTL input connection



## 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.

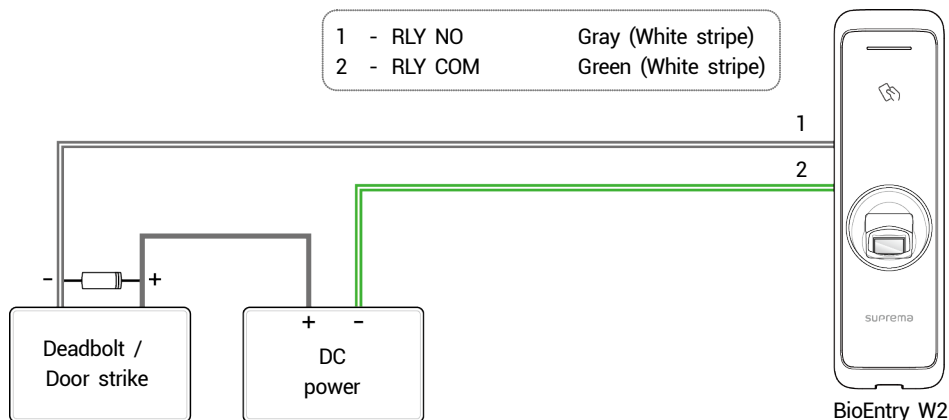


#### NOTE

- 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 W2 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

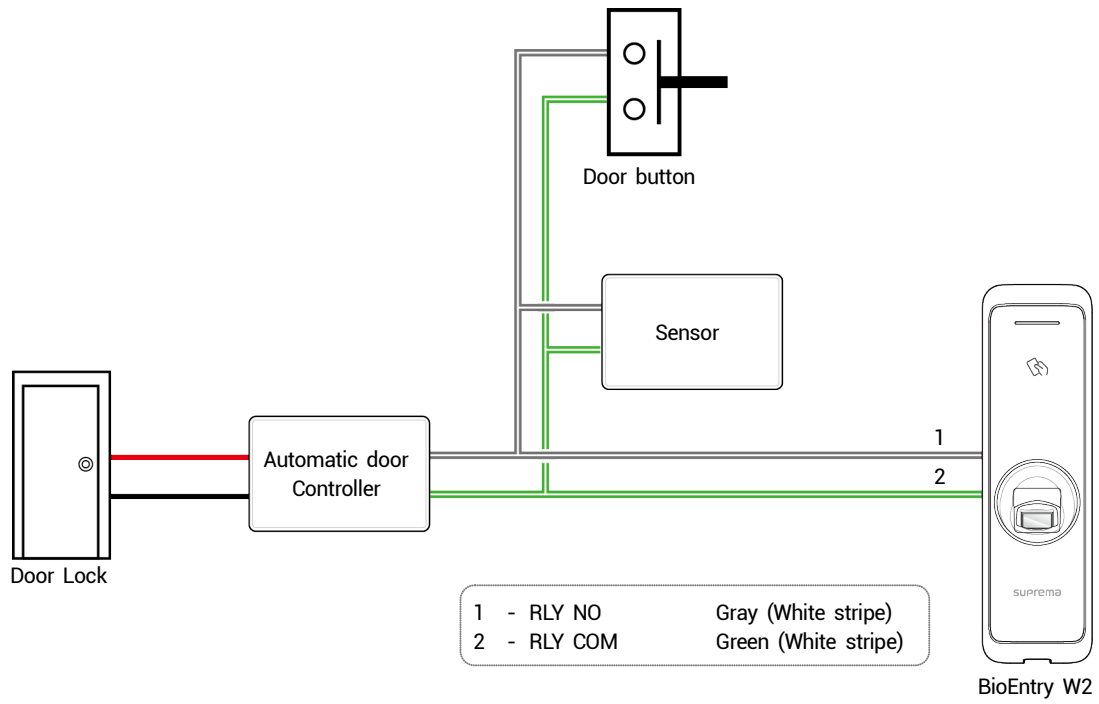
In order to use the Fail Secure Lock, connect N/O relay as shown in the figure below. There is normally no current flowing through the relay for the Fail Secure Lock. When the current flow is activated by the relay, the door will open. If the power supply to the product is cut off due to a power failure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



#### NOTE

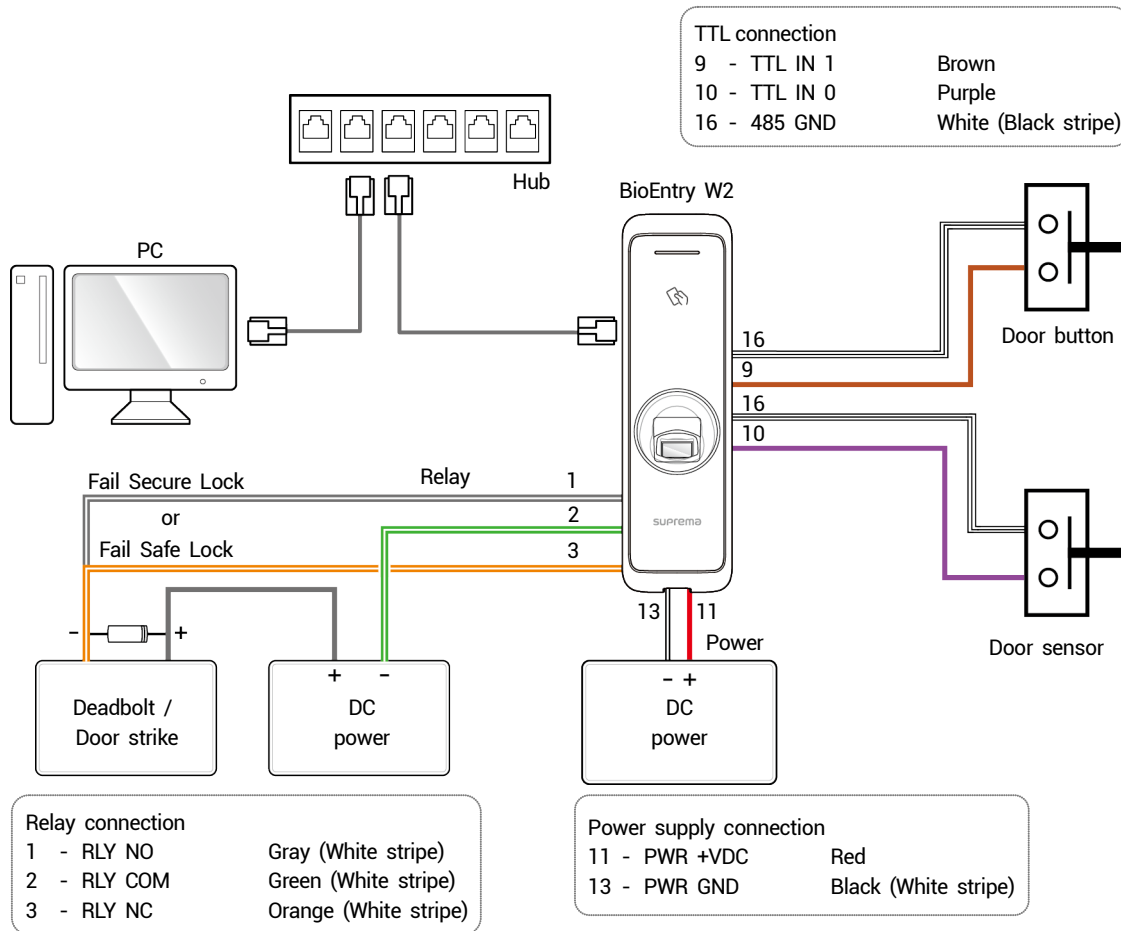
- Install a diode at both sides of the door lock wire as shown in the figure to protect the relay from the reverse current, which occurs when the door lock operates.
- Take caution of the installation direction of the diode. Install the diode close to the door lock.
- Use a separate power supply for BioEntry W2 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.

Automatic door connection



## Connecting as a standalone

BioEntry W2 can be connected to the door lock, door button, and door sensor directly without connecting a separate I/O device.



### NOTE

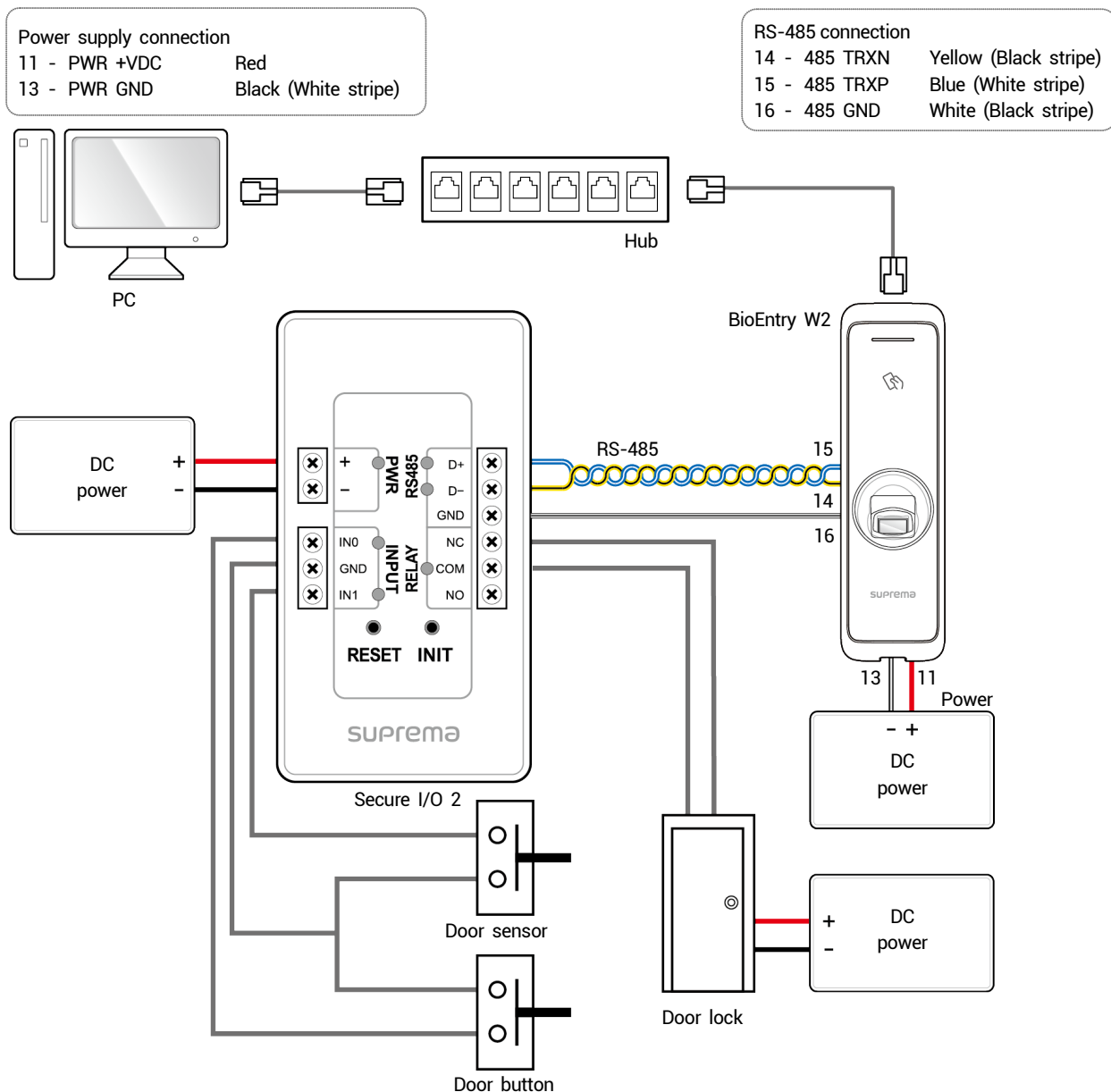
- BioEntry W2 can be used as a multi-door controller with the slave devices with the RS485 cable. The slave devices are used as dummy readers and authentication is performed in the master device.
- If Xpass is connected to the master device, only card authentication can be used.
- The maximum number 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 ([support.supremainc.com](mailto:support.supremainc.com)).



## Connecting to Secure I/O 2

Secure I/O 2 is an I/O device, can be connected to BioEntry W2 with the RS-485 cable. Security can be maintained even if the connection between BioEntry W2 and Secure I/O 2 has been lost or the power supply to BioEntry W2 has been shut off due to external factors.

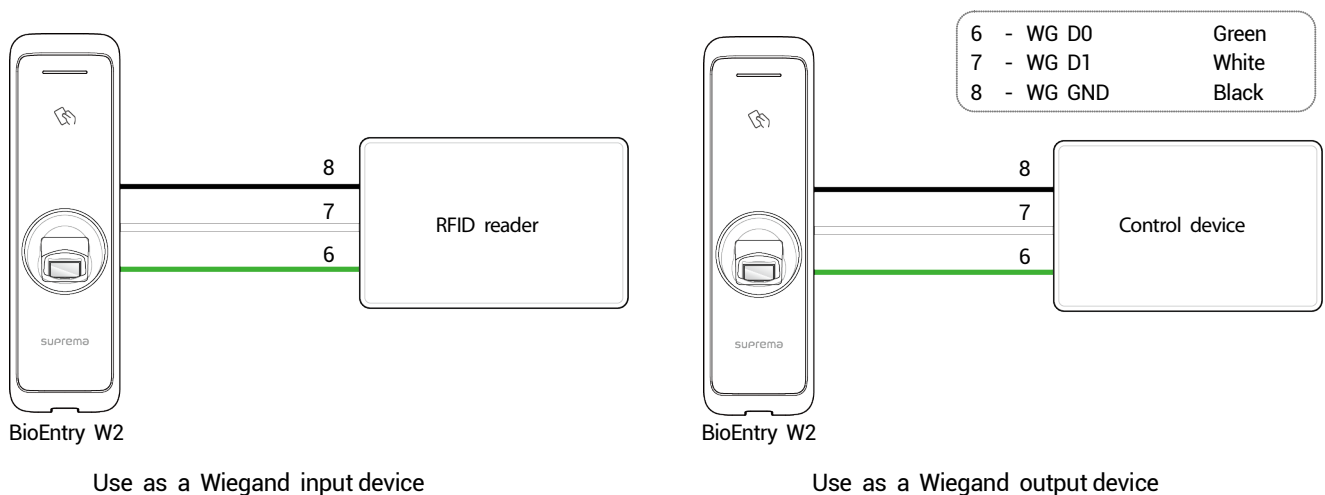
- Use an AWG24 twisted pair with a maximum length of 1.2 km for the RS-485 cable.
- If connecting with a RS-485 daisy chain, connect the termination resistor (120 Ω) to both ends of the daisy chain connection. If connected to the middle line, the signal level becomes smaller and the communication performance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



### NOTE

- BioEntry W2 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 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.
- Access control system configuration with connection to Secure I/O 2 is not Listed to UL 294.
- For more information, contact the Suprema technical support team ([support.supremainc.com](mailto:support.supremainc.com)).

## Wiegand connection



## 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.

### NOTE

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

# Product specifications

Category	Feature	Specification
Credential	Biometric	Fingerprint
	RF Option	<ul style="list-style-type: none"> <li>BEW2-OHPB: 125kHz EM, HID Prox &amp; 13.56MHz MIFARE, MIFARE Plus, DESFire EV1/EV2, FeliCa</li> <li>BEW2-ODPB: 125kHz EM &amp; 13.56MHz MIFARE, MIFARE Plus, DESFire EV1/EV2, FeliCa</li> <li>BEW2-OAPB: 125kHz EM, HID Prox &amp; 13.56MHz MIFARE, MIFARE Plus, DESFire EV1/EV2, FeliCa, iCLASS SE/SR/Seos</li> </ul>
	NFC	<ul style="list-style-type: none"> <li>Supported</li> </ul>
	BLE	<ul style="list-style-type: none"> <li>Supported</li> </ul>
	RF read range *	MIFARE/DESFire/EM/HID Prox/iCLASS : 50 mm, FeliCa: 30 mm
	General	CPU
Memory		2GB Flash + 256 MB RAM
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 mm x 172 mm x 43.5 mm (Bottom) / 38.2 mm (Top)
Weight		Device: 251g Bracket: 43g (Including washer and bolt)
IP rating		IPx0
IK rating		IK09
Certificates		CE, FCC, KC, RoHS, REACH, WEEE
Fingerprint	Image dimension	272 x 320 pixels
	Image bit depth	8bit, 256 grayscale
	Resolution	500 dpi
	Template	SUPREMA / ISO 19794-2 / ANSI 378
	Extractor / Matcher	MINEX certified and compliant
	LFD	Supported
Capacity	Max. User (1:1)	500,000
	Max. User (1:N)	100,000
	Max. Template (1:1)	1,000,000 (Two templates per finger)
	Max. Template (1:N)	200,000 (Two templates per finger)
	Max. Text Log	1,000,000
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
	PoE	Supported (Power over Ethernet 44 VDC Max 12 W, IEEE 802.3af)
	Tamper	Supported
Electrical	Power	Voltage: DC 12 V, Current: Max. 600 mA * Use 12VDC, 1.5A power supply.
	Switch input VIH	Min. 3 V Max. 5 V
	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	More than 4.8 V
	Wiegand output VOL	Less than 0.2 V
	Wiegand output Pull-up resistance	Internally pulled up with 1 k $\Omega$
	Relay	Voltage: Max. 30VDC Current: 1A

\* DESFire EV2 cards are supported by having backward compatibility of DESFire EV1 cards. CSN and smart card functions are compatible with BioEntry W2.

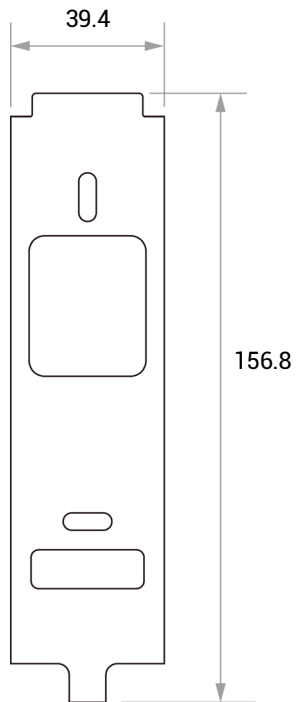
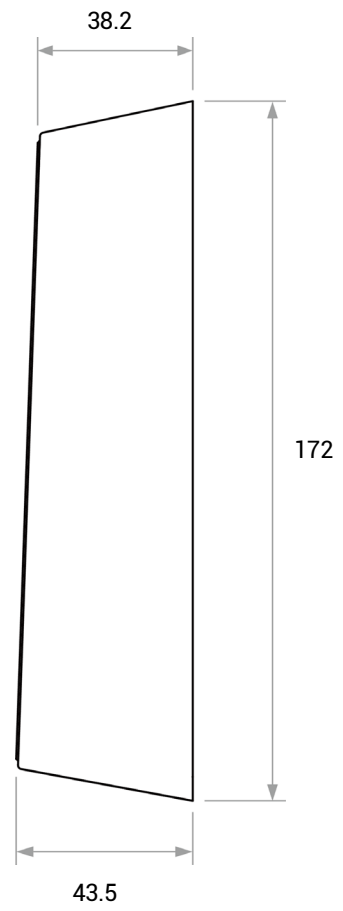
\* RF read range will vary depending on the installation environment.

\* Access control feature (UL294 specification)

Destructive attack - level2, Line security - level2, Endurance - level1, Standby power- level1

## Dimensions

(Unit: 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.

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.

This appliance and its antenna must not be co-located or operation in conjunction with any other antenna or transmitter.

## EU Declaration of Conformity (CE)

This product is CE marked according to the provisions of the Radio Equipment Directive (RED) 2014/53/EU. Hereby, Suprema Inc. declares that this product is in compliance with the essential requirements and other relevant provisions of Radio Equipment Directive (RED) 2014/53/EU.

- NFC Frequency: 13.56 MHz
- RFID Frequency: 13.56 MHz + 125 kHz


For more information, contact us at the following contact information.

Suprema Inc.

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This device meet the EU requirements on the limitation of exposure of the general public to electromagnetic fields by way of health protection.

### Frequency Range

2402 ~ 2480 MHz (BT BLE)

13.56 MHz(NFC)

125kHz (RFID)

### Output Power

-6.84 dBm EIRP (BT BLE)

-2.2 dBμA/m (NFC)

-5.4 dBμA/m (RFID)

# Appendices

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## Warning & Safety Information

### Safety Symbols



#### **Warning**

- When encountering this symbol in the manual, you must follow these recommendations to avoid irreparable damage to your car, system or connected devices or to avoid accidents with injuries or death.

### IC Information

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions:  
 (1) this device may not cause interference, and  
 (2) this device must accept any interference, including interference

Le present appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :  
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 (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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

### FCC notification to users

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 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 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, the user is encouraged to try to correct the interference by consulting with a dealer or an experienced technician for technical assistance.

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# Appendix

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