

# BioEntry R2

## INSTALLATION GUIDE

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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 adaptors, 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 only a power supply adaptor of D.C 12 V and 1,500 mA or higher.**

- If the right power supply is not used, the product may malfunction.

**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.**



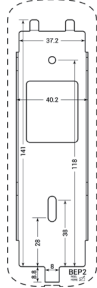
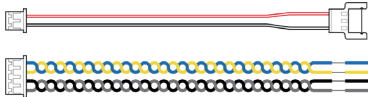




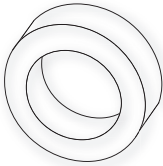
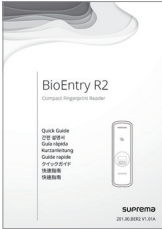

- The product may malfunction.

### **RTC battery**

Discard the battery according to the appropriate regional or international waste regulations. Discard the battery according to the appropriate regional or international waste regulations.

# Introduction

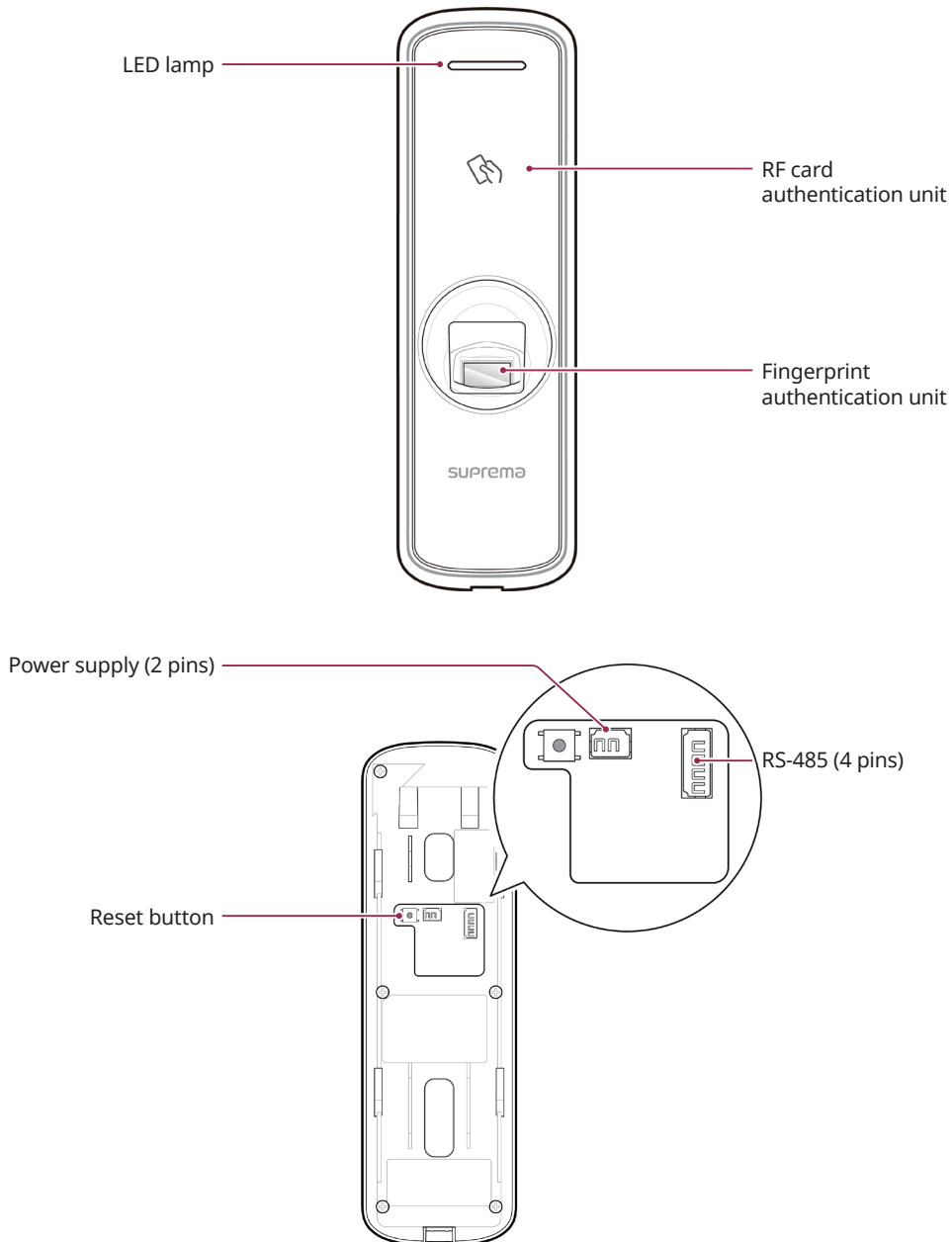
## Components

		
<p><b>BioEntry R2</b></p>	<p><b>Wall Bracket</b></p>	<p><b>Drilling Template</b></p>
		
<p><b>Cables</b></p>		<p><b>Diode</b></p>
		
<p><b>PVC Anchor x2</b></p>	<p><b>Fixing Screw x2</b></p>	<p><b>120 Ω resistor</b></p>
		
<p><b>Ferrite Core</b></p>	<p><b>Quick Guide</b></p>	<p><b>Open Source Software Guide</b></p>



Components may vary according to the installation environment.

## Name and function of each part



Name	Description
LED lamp	Indicates the operational status of the product with the color of the LED lamp.
RF card authentication unit	Reads RF cards for entering and exiting.
Fingerprint authentication unit	Reads fingerprints placed on it for entering and exiting.
Power supply (2 pins)	Connect the power supply cable.
RS-485 (4 pins)	Connect the RS-485 cable.
Reset button	Initialize the device.

## Cables and connectors

### Power supply



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

### RS-485



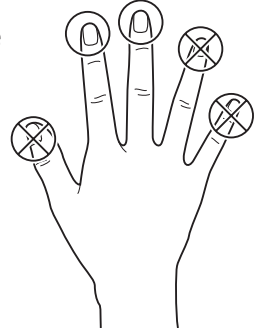
Pin	Name	Color
1	485 TRXP	Blue
2	485 TRXN	Yellow
3	485 GND	Black
4	SH GND	Gray

## How to enroll a fingerprint

In order to improve the fingerprint authentication rate, register the fingerprint correctly. BioEntry R2 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.

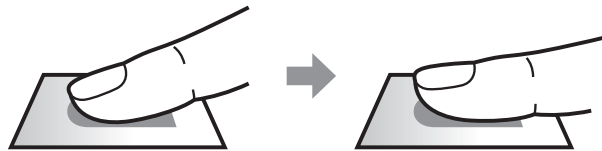
### Selecting a finger for fingerprint input

- 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 R2 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.

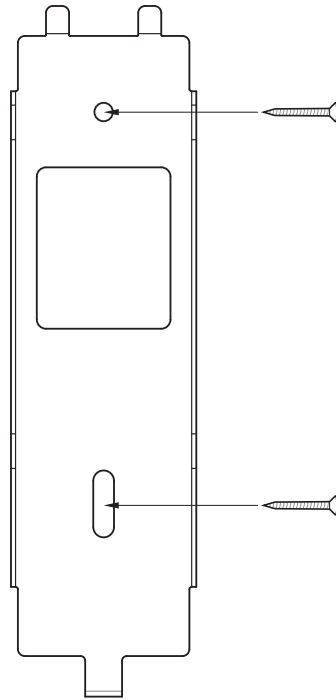
- If the finger is smeared with water or sweat, dry off the finger and then scan the finger.
- If the finger is too dry, blow your breath on the fingertips and then scan the finger.
- If the finger has a cut, register the fingerprint of another finger.
- The initially enrolled fingerprint often may have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



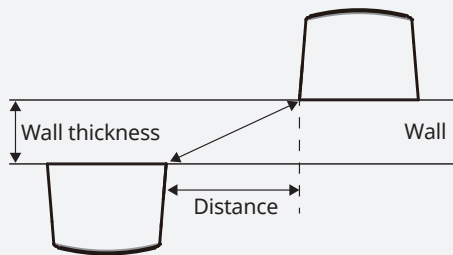
# Installation

## 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 R2 will be installed.

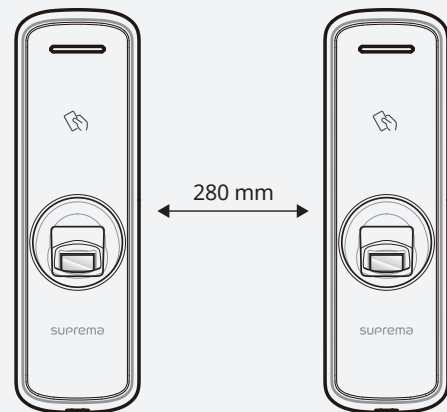


- If installing BioEntry R2 on a concrete wall, drill holes, insert PVC anchors, and fix them with fixing screws.
- To avoid RF interference, a minimum separation distance must be maintained.

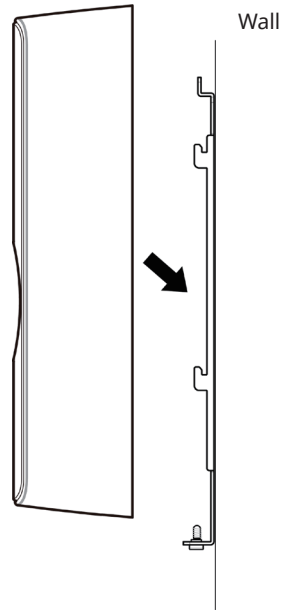


Wall thickness	Distance
100 mm	250 mm
120 mm	250 mm
150 mm	180 mm

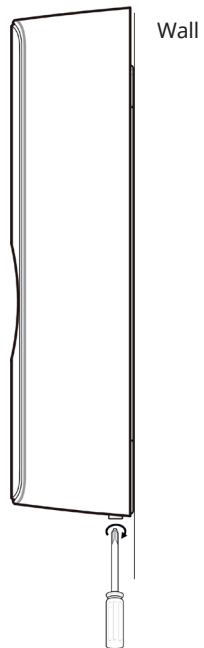
Wall



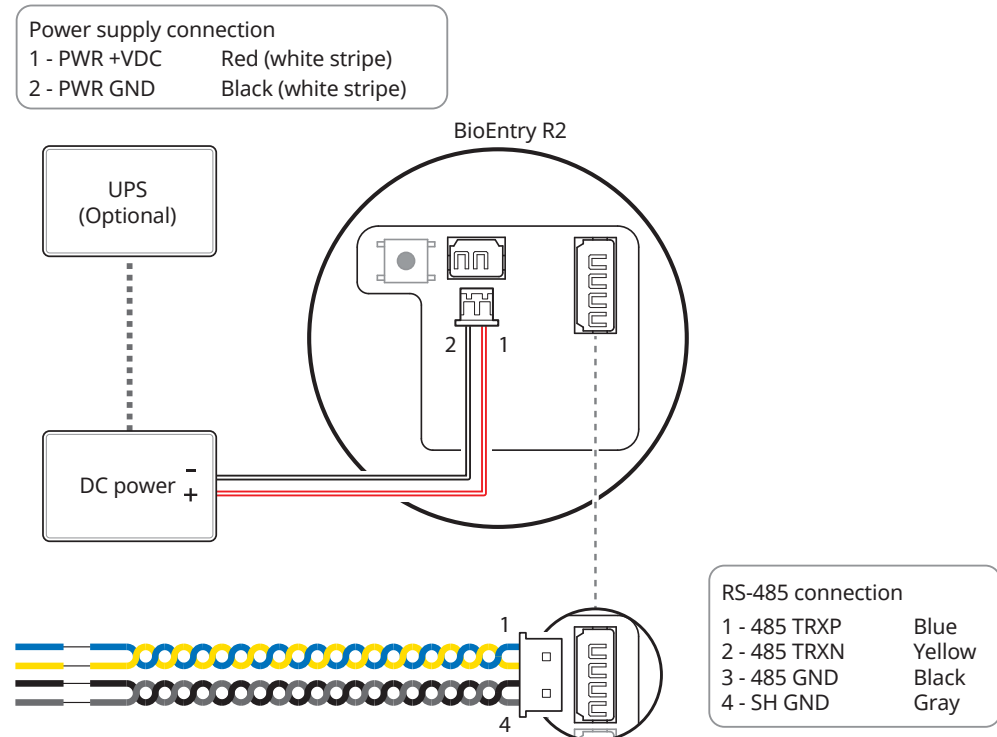
**2** Install BioEntry R2 onto the fixed bracket.



**3** Connect BioEntry R2 to the bracket by rotating the product fixing screw.



## Power supply connection



- 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 R2 respectively. If connecting and using the power supply to these devices together, the devices may malfunction.
- 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  $\Omega$ ) 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.
- If Xpass is connected to the master device, only card authentication can be used.

## Resetting the RS-485 connection

- 1 Turn the power on.
- 2 Press and hold the reset button for more than a second. The device LED displays green.
- 3 The RS-485 connection is reset once you hear a beep sound.



Reset the RS-485 connection of BioEntry R2 if you want to disconnect the RS-485 connection with a master device and reconnect it to another master device.

## Resetting the baud rate of RS-485

- 1 Turn the power on.
- 2 Press and hold the reset button for more than 2 seconds. When the device change to setup mode, the green LED is blinking.
- 3 Depending on the number of times the reset button was pressed, the baud rate changes. You can recognize the baud rate according to the LED color.

The number of times	Baud Rate	LED Color
1	9600	Cyan
2	19200	Blue
3	38400	Magenta
4	57600	White
5	115200	Red

- 4 The LED blinks for 5 seconds with the color set as the above. The baud rate is set once you hear a beep sound.



If you do not press the reset button after changing to the setup mode, the baud rate is set to 115200.

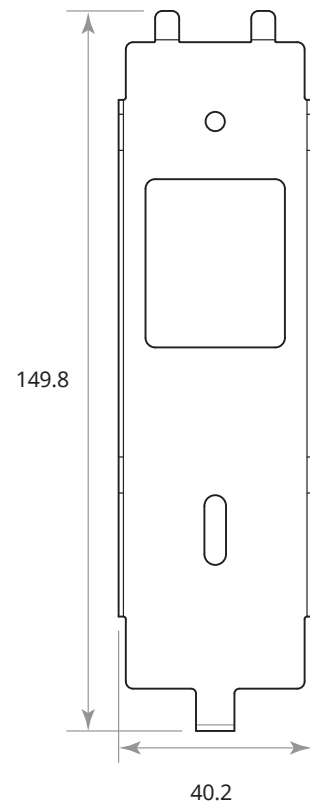
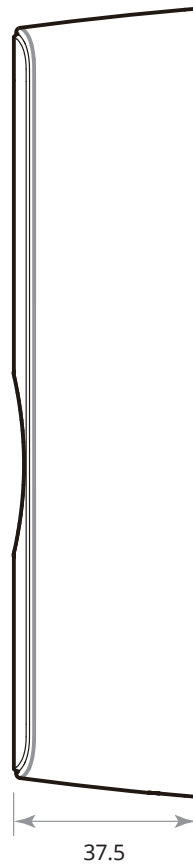
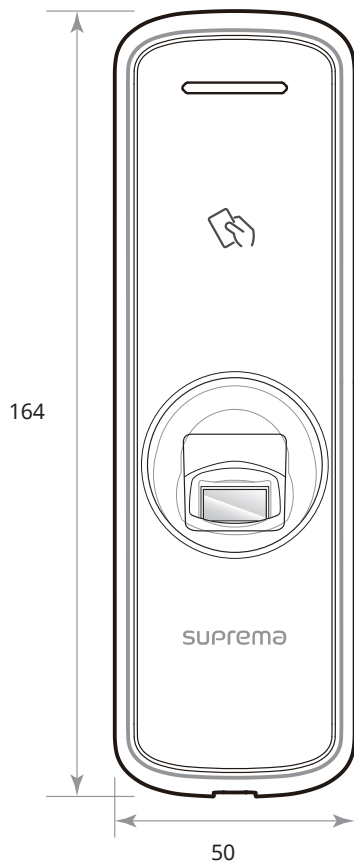
# Product specifications

Category	Feature	Specification
Credential	Biometric	Fingerprint
	LF card option	EM
	HF card option	MIFARE, MIFARE Plus, DESFire/EV1, FeliCa
	NFC card	Supported
	RF read range*	MIFARE/DESFire/EM/HID Prox/iCLASS: 50 mm, FeliCa: 30 mm
General	CPU	1.0 GHz
	Memory	32 MB Flash + 32 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 x 164 x 37.5 (mm)
	Weight	<ul style="list-style-type: none"> <li>• Device: 158 g</li> <li>• Bracket (Including washer and bolt): 39 g</li> </ul>
	Certificates	CE, FCC, KC, 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
Interface	RS-485	1 ch Slave
	Tamper	Supported
Electrical	Power	Voltage: DC 12 V, Current: Max. 600 mA * Use 12 VDC, 1.5 A power supply.

\* 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 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.
- A minimum separation distance of 20 cm must be maintained between the antenna and the person for this appliance to satisfy the RF exposure requirements.

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Version 3, 29 June 2007

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