

BioStation 3

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

When using a high-capacity power supply, please pay special attention to avoid miswiring.

- Miswiring may result in serious fire, electric shock, or product damage.

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.

Install the product in a well-ventilated and cool place away from direct sunlight to prevent overheating when installing it outside.

Do not place the product inside the sealed enclosure when installing it outside.

- It increases the internal temperature of the enclosure and this may result in electric shock, fire, or malfunction.

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

Please read this manual before installing the product to ensure a safe and correct installation.

When wiring the power cable and other cables, make sure to connect them with the power turned off for all devices involved.

- The product may malfunction.

Before connecting power to the product, double-check the manual to ensure that the wiring is correct, then connect the power.

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.

Do not connect and use the power supply and Power over Ethernet (PoE) simultaneously.

- The product may malfunction.

Make sure that the cable cover is completely closed after connecting it to the product to maintain the water-resistant and dust-resistant features (IP65 rating). It is recommended to use the enclosure if the product is installed outside.

- The product may malfunction if the water-resistant and dust-resistant features are damaged.



Caution

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(touch pad) 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. 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.


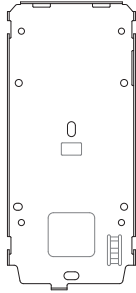
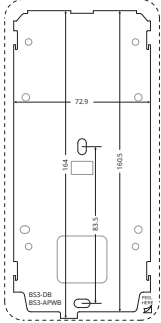
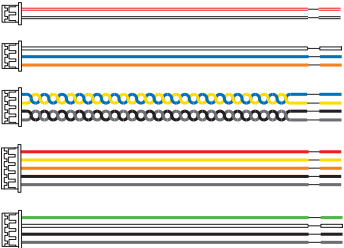






- The product may malfunction.

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

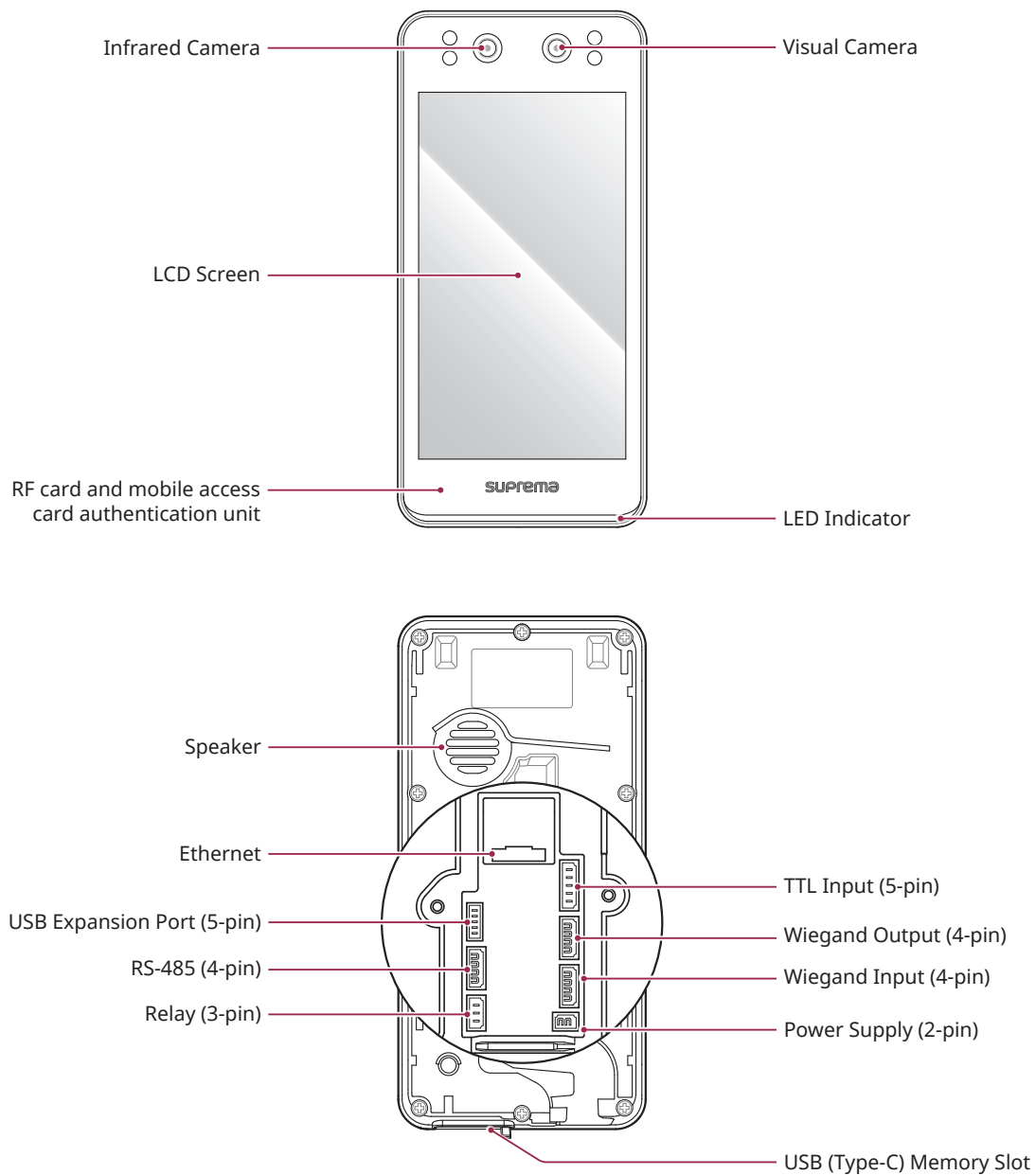
Components

			
<p>BioStation 3</p>	<p>Wall Bracket</p>	<p>Drilling Template</p>	
			
<p>Connection Cables</p>	<p>Diode</p>	<p>120 Ω Resistor</p>	
			
<p>PVC Anchors x2</p>	<p>Fixing Screws x2</p>	<p>Bracket Fixing Screw (Star Shaped)</p>	<p>Quick Guide</p>



- Components may vary according to the installation environment.
- 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.
- For more details regarding the product, visit the Suprema website (<https://www.supremainc.com>) and refer to the user guide.

Name and Function of Each Part



Name	Description
Infrared Camera	Capture the infrared face image.
Visual Camera	Capture an actual face image.
LCD Screen	Provides a UI for operation.
RF card and mobile access card authentication unit	Part to scan a RFID card or mobile access card for entrance.

Name	Description
LED Indicator	Indicates the operational status of the device with the color of the LED. <ul style="list-style-type: none"> • Green: Authentication success. • Red: Authentication failure. • Blue: Normal operation. • Blue/Green blinking: <ul style="list-style-type: none"> – Fails to receive an IP address when DHCP is enabled. – Disconnection with the master device when in Slave mode. • Red/Purple blinking: Device is locked. • Yellow blinking: Waiting for an input.
Speaker	Delivers sound.
Ethernet	Connect the Ethernet cable.
TTL Input (5-pin)	Connect the TTL input cable.
USB Expansion Port (5-pin)	Connect other accessory products.
Wiegand Output (4-pin)	Connect the Wiegand Output cable.
Wiegand Input (4-pin)	Connect the Wiegand Input cable.
RS-485 (4-pin)	Connect the RS-485 cable.
Relay (3-pin)	Connect the Relay cable.
Power Supply (2-pin)	Connects the power supply cable.
USB (Type-C) Memory Slot	Connects the USB memory.

Cables and connectors

Power supply



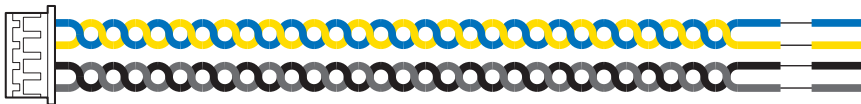
Pin	Name	Color
1	PWR +VDC	Red (white stripe)
2	PWR GND	Black (white stripe)

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	Grey

TTL Input



Pin	Name	Color
1	TTL IN0	Red
2	TTL IN1	Yellow
3	TTL IN2	Orange
4	TTL GND	Black
5	SH GND	Grey

Wiegand Input



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

Wiegand Output



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

Correct Face Enrollment and Authentication Method

Cautions for enrolling a faces

- When enrolling a face, maintain a distance of 60–100 cm between the device and the face.
- Do not change your face expression.
- Do not wear masks, hats, or eye patches.
- Do not enroll a face wearing a mask. It may increase the False Acceptance Rate (FAR) if both faces with and without a mask are enrolled.
- Do not raise head up or lower head.
- Do not wear thick makeup.
- Do not close your eyes.
- Make sure that both of your shoulders correctly appear on the screen.
- Stand still and enroll your face by staring at the screen.
- Be careful not to display two faces on the screen. Enroll one person at a time.
- If you do not follow the instructions on the screen, the face enrollment may take longer or may fail.

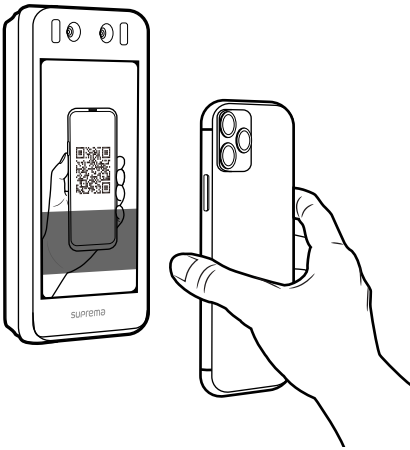
Cautions for authenticating a face

- Ensure that the face appears in the center of the device's screen. When the guideline is displayed, follow the instructions shown on the screen to authenticate the face.
- If a part of the face is covered with a hat, a mask, an eye patch, or sunglasses authentication may fail. Do not cover the face; allow the device to recognize both the eyebrows and the face.
- Authenticate your face at a distance of 60–100 cm from the device.
- Make sure that both of your shoulders correctly appear on the screen. Authentication may fail if your shoulders are not at the same height. Stand still, and then authenticate your face.

Note for QR Code Usage and Device License

How to scan a QR code

You can issue a QR code to a user and use it as an authentication method. Scan the QR code properly by following the instructions on the screen to increase the recognition rate.



- Keep 30-40 cm of distance between the device's camera and the QR code.
- Position the QR code in the center of the scan screen of the device.
- When authenticating with the QR code downloaded to your smartphone, adjust the brightness of your smartphone so that the device can read the QR code clearly.
- If do not follow the instructions on the screen, it may take a long time to scan the QR code, or it may fail.

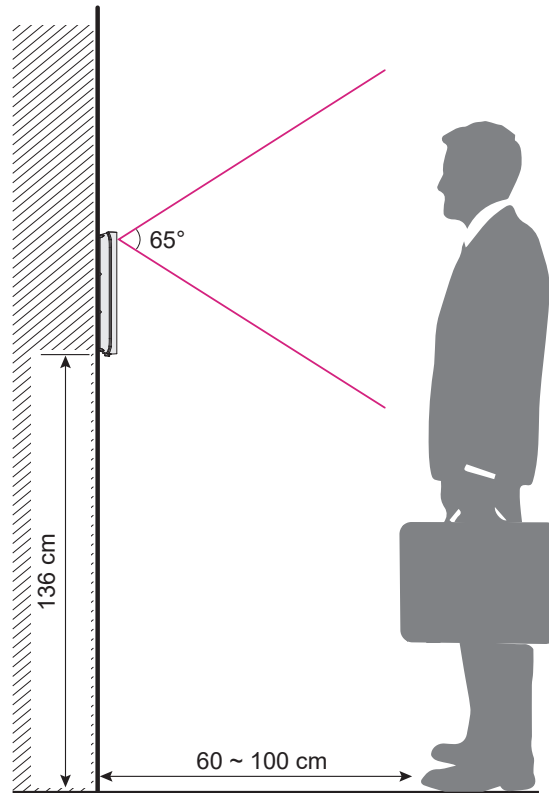
Notes for Device License

- Using the QR Code authentication requires a separate device license. Contact the place of purchase to issue a device license.
- The device license file is an encrypted file and cannot be modified arbitrarily.
- Device licenses are issued based on device ID. If the device ID is changed in an unusual way, the warranty service for the license is not provided.

Installation

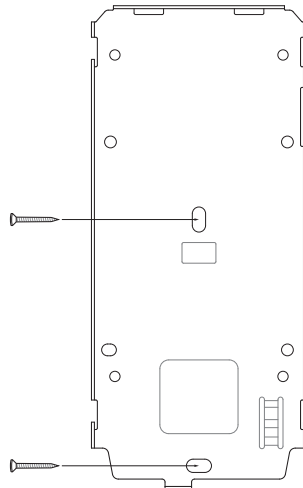
Fixing the Bracket and the Product

- 1 Determine the correct position to install the bracket using the provided drilling template.

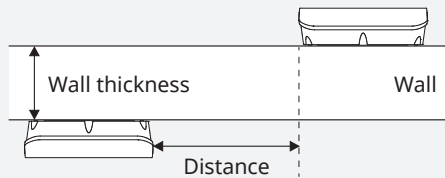


- The optimal height for installing device is 136 cm.
- Install the device where it does not reach the direct sunlight or UV light.
- Adjust the installation position so that the face is not exposed to direct sunlight when a user tries to authenticate.

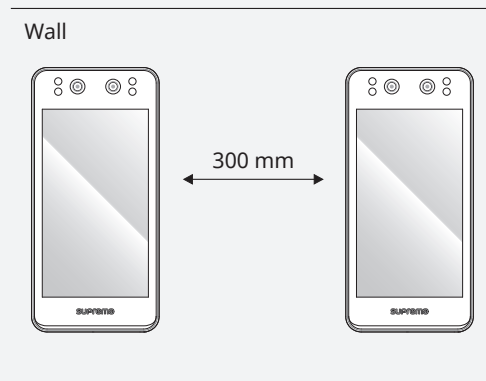
2 Fix the bracket firmly using fixing screws through the bracket to the position where BioStation 3 will be installed.



- If installing BioStation 3 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.

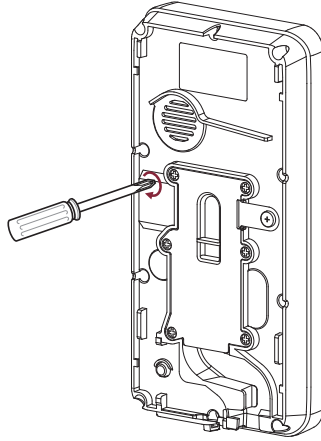


Wall thickness	Distance
100 mm	200 mm
120 mm	180 mm
150 mm	150 mm



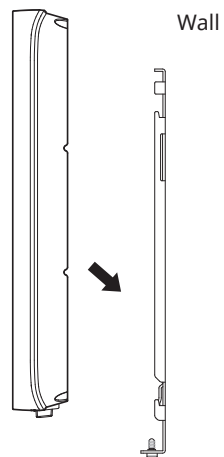
- When using a mobile access card, install devices maintaining a minimum distance of 1 m between devices to avoid BLE interference.

- 3 After assembling the cable cover, fix it firmly using the six screws on the cover.

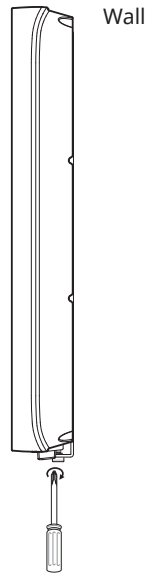


Make sure that the cable cover is completely closed after connecting it to the product to maintain the water-resistant and dust-resistant features (IP65 rating).

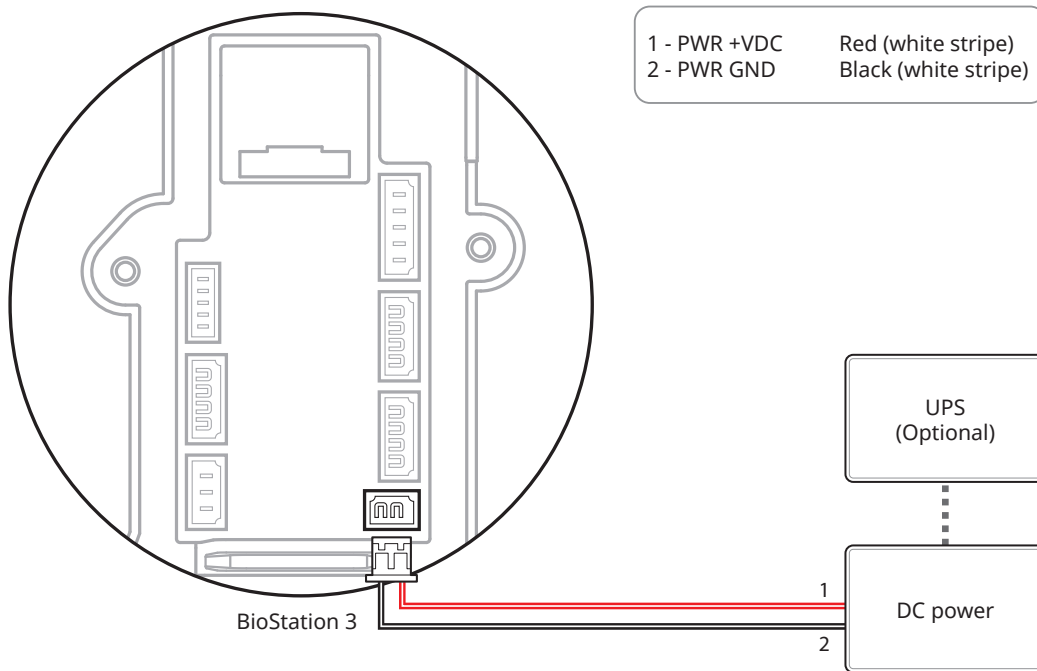
- 4 Install BioStation 3 onto the fixed bracket.



- 5 Connect BioStation 3 to the bracket by rotating the product fixing screw of BioStation 3.



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.
- Use a separate power supply for Secure I/O 2, the electric lock, and the product respectively. If connecting and using the power supply to these devices together, the devices may malfunction.
- When connecting the power supply, be aware of the distance between BioStation 3 and the power supply. The BioStation 3 should be connected as close as possible to the power supply so that the length of the connecting cable is kept to a minimum. If cable connections are made improperly it may cause the device to malfunction. It is recommended to use a 16 AWG or 18 AWG cable if the BioStation 3 is far from the power supply. The connection distance may differ depending on the standard of the cable used and the installation environment. BioStation 3 supports both DC 24 V and DC 12 V power, so check the maximum length according to the cable specification to ensure that the unit is properly powered.

Cable standard	Max. extended length	
	DC 24 V	DC 12 V
16 AWG	150 m	50 m
18 AWG	136 m	30 m
20 AWG	90 m	20 m

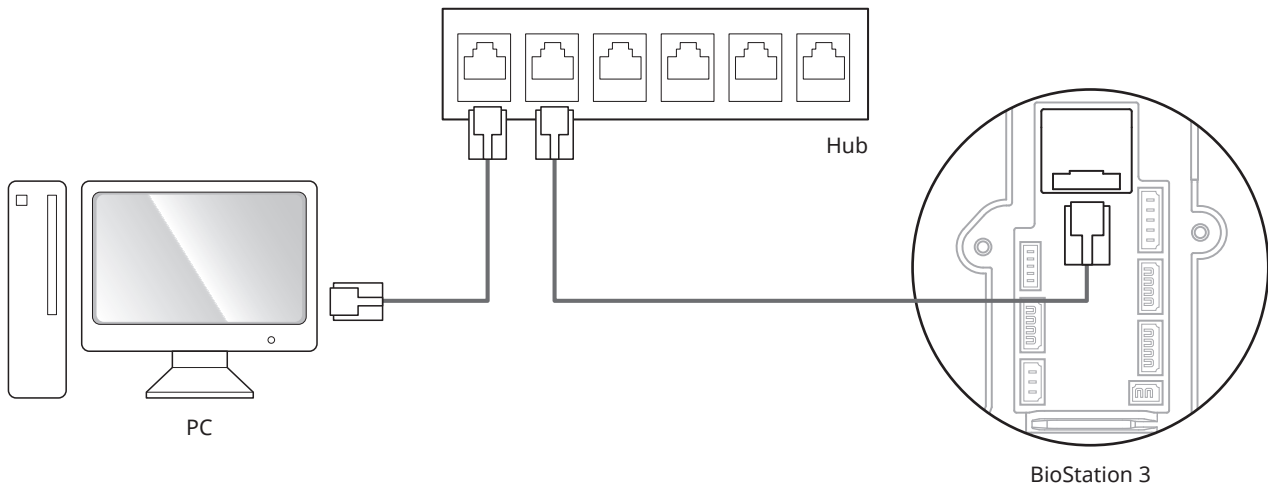
- DO NOT extend the length of power cable when using the power adapter.
- DO NOT use the CAT5 UTP 2-Wire for power supply purpose.

Network Connection

TCP/IP

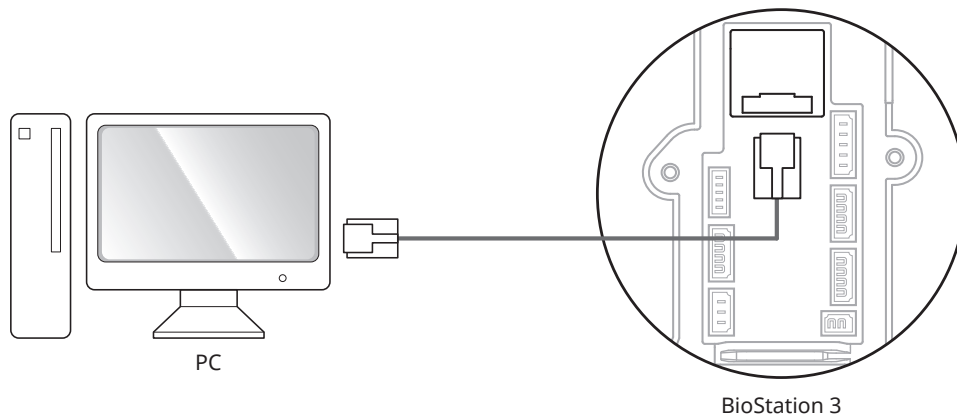
LAN connection (connecting to a hub)

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



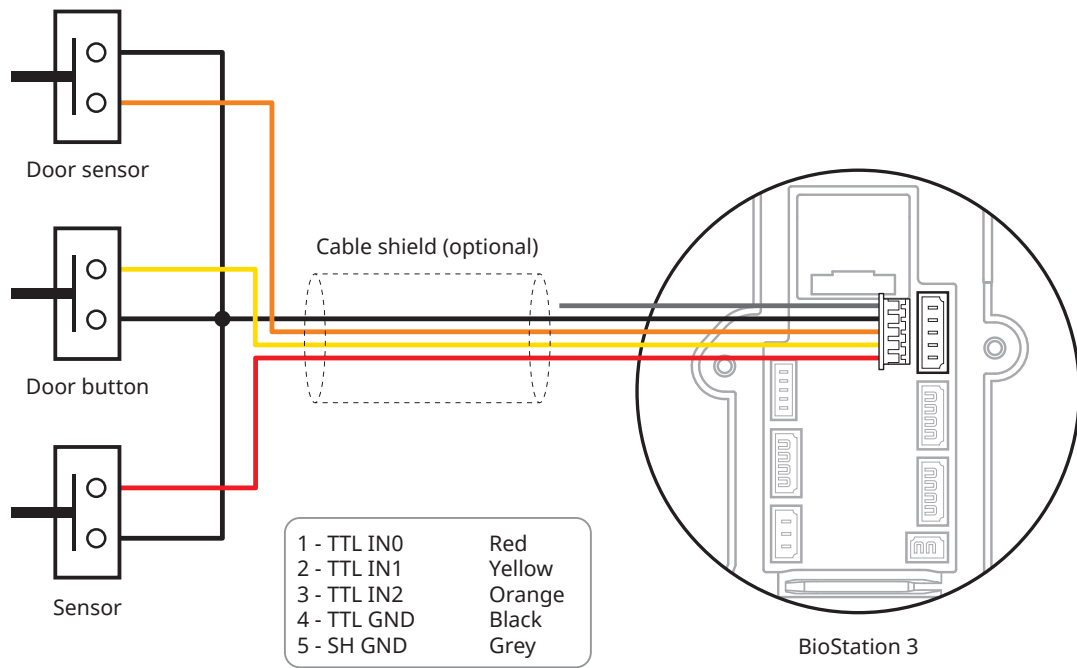
LAN connection (connecting to a PC directly)

BioStation 3 has an automatic MDI/MDIX function so that it can be connected to a PC directly using a normal straight type CAT-5 cable or a cross cable.



- When you use a gigabit network switch, please see below information.
 - Use a Cat5e UTP(Unshielded Twisted Pair) cable.
 - Use all 4 pairs (8 lines) of cable for network connection.
 - DO NOT use the pair of cable for other purpose.

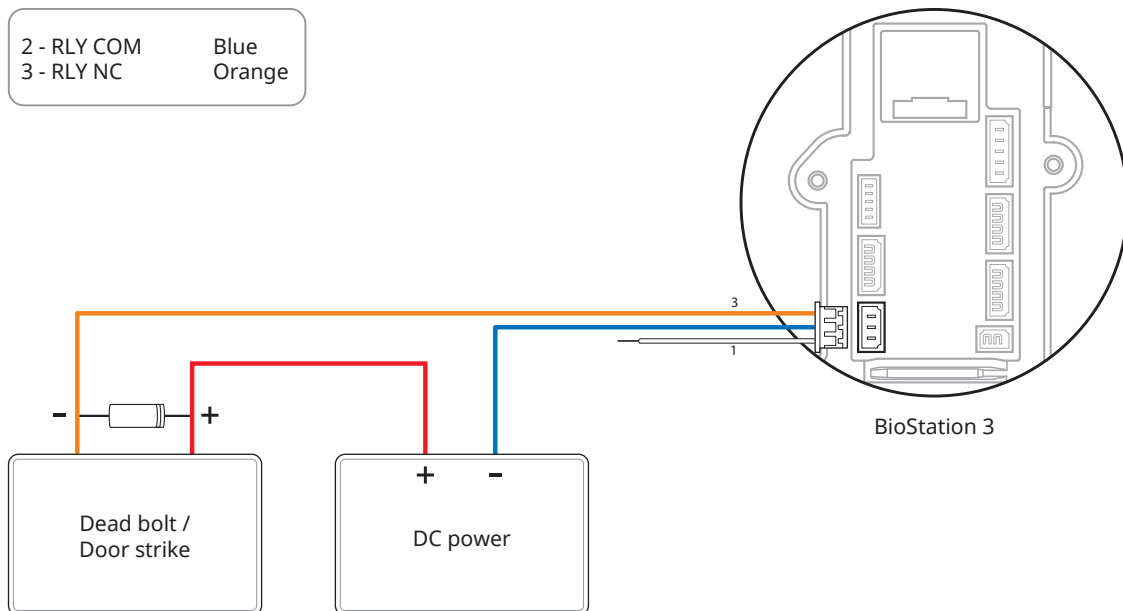
TTL Input Connection



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.



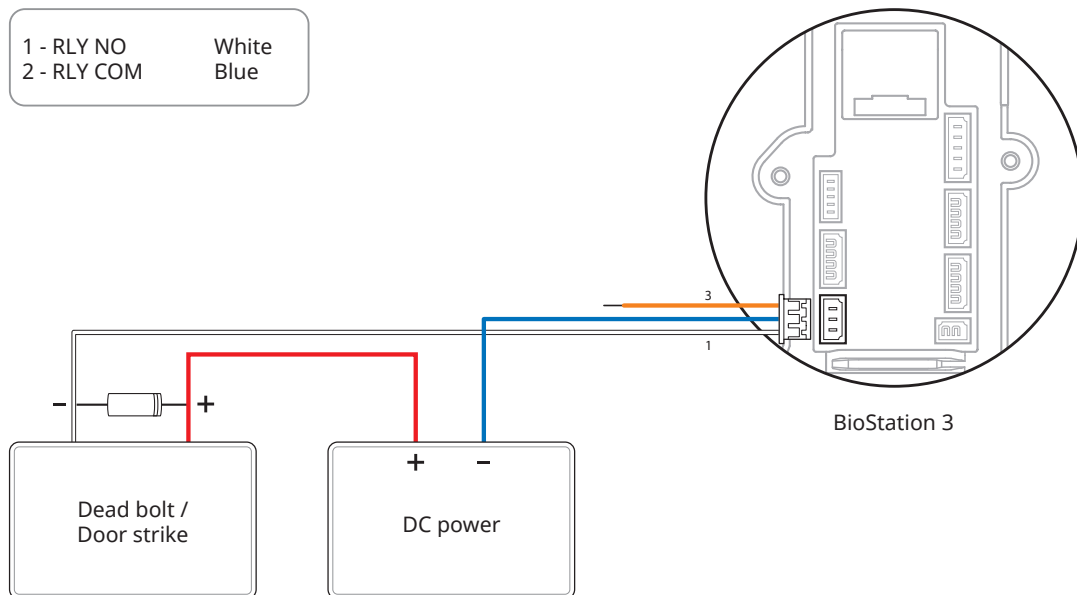
- Install a diode at both sides of the door lock wire as shown in the figure to protect the relay from the reverse current, which occurs when the door lock operates.
- Use a separate power supply for BioStation 3 and the door lock.
- Suprema's standalone intelligent readers contain internal relays that 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.



Take caution of the installation direction of the diode. Install the diode close to the door lock.

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.

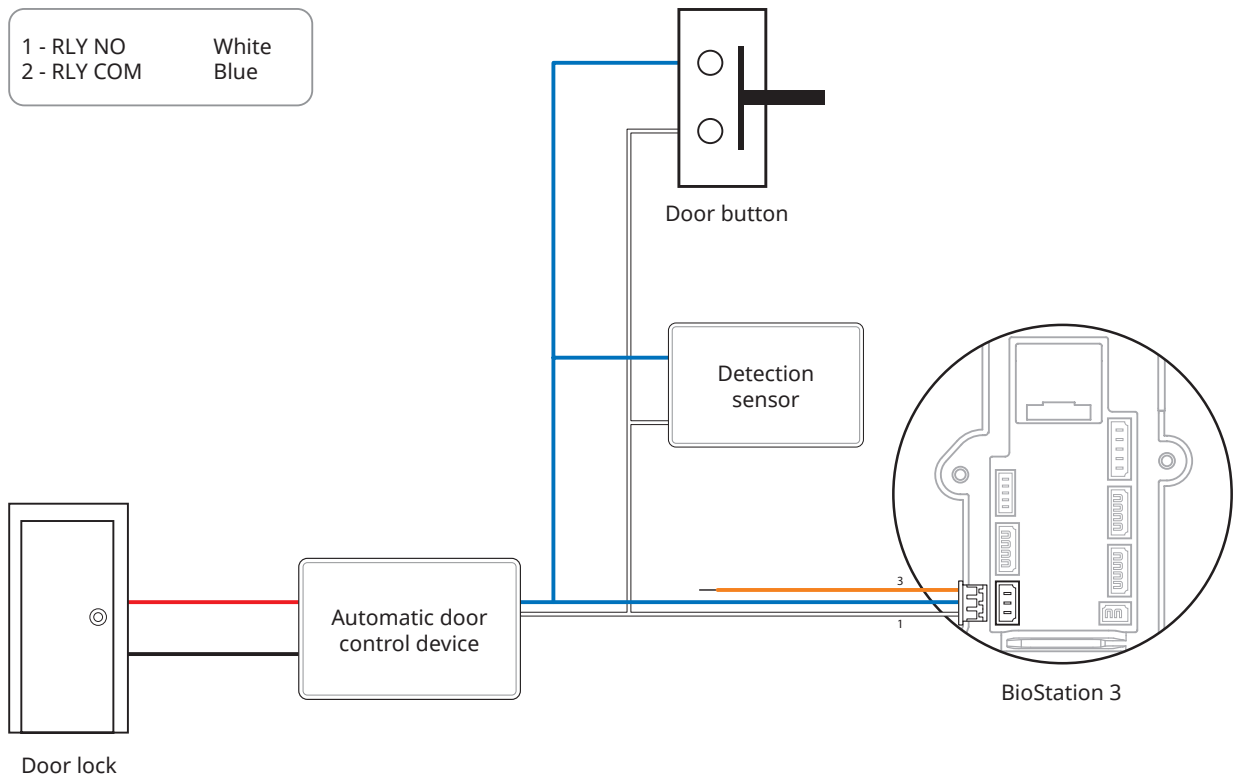


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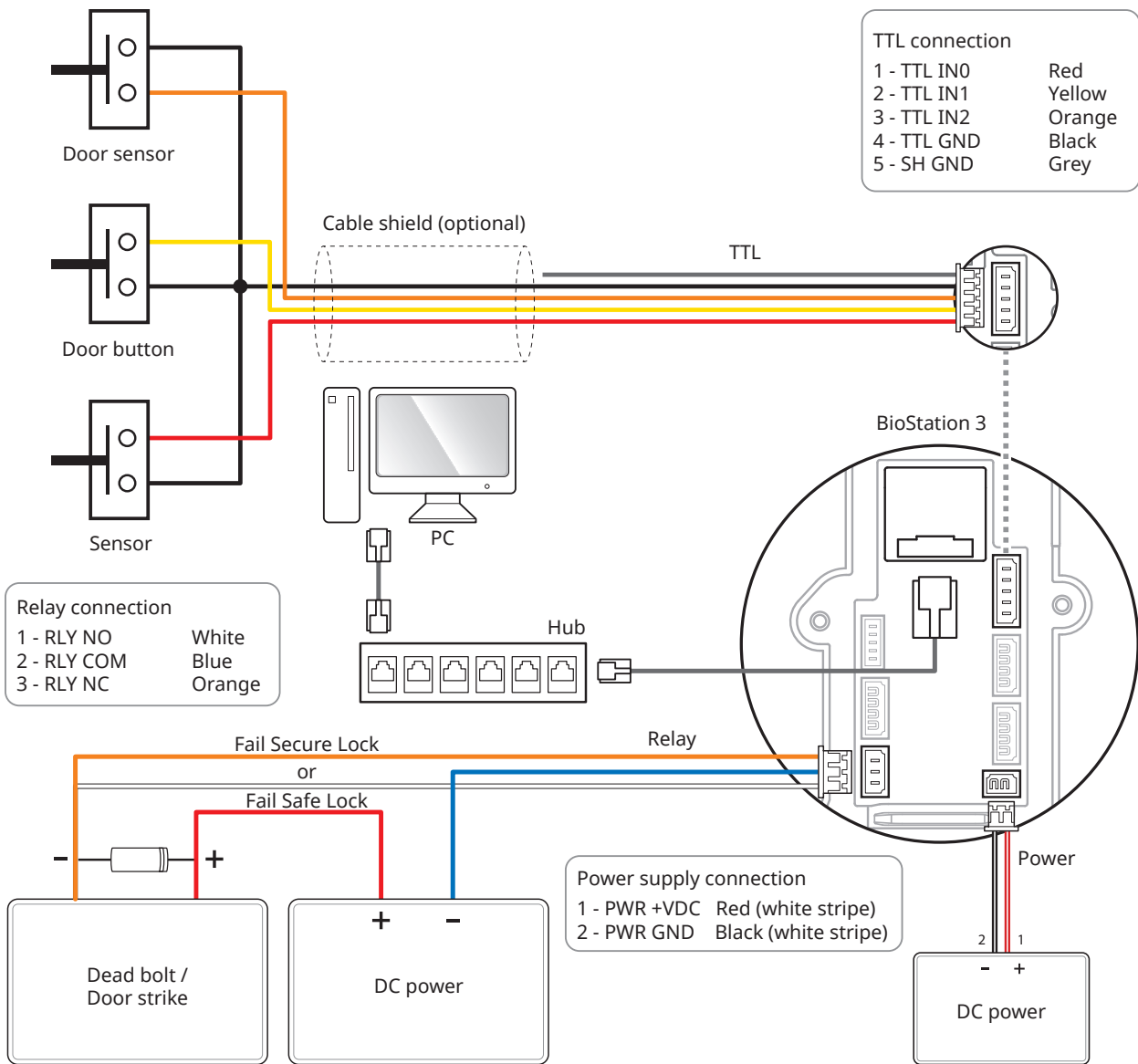
Take caution of the installation direction of the diode. Install the diode close to the door lock.

Automatic door connection



Connecting as a Standalone

BioStation 3 can be connected to the door lock, door button, and door sensor directly without connecting a separate I/O device.



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.

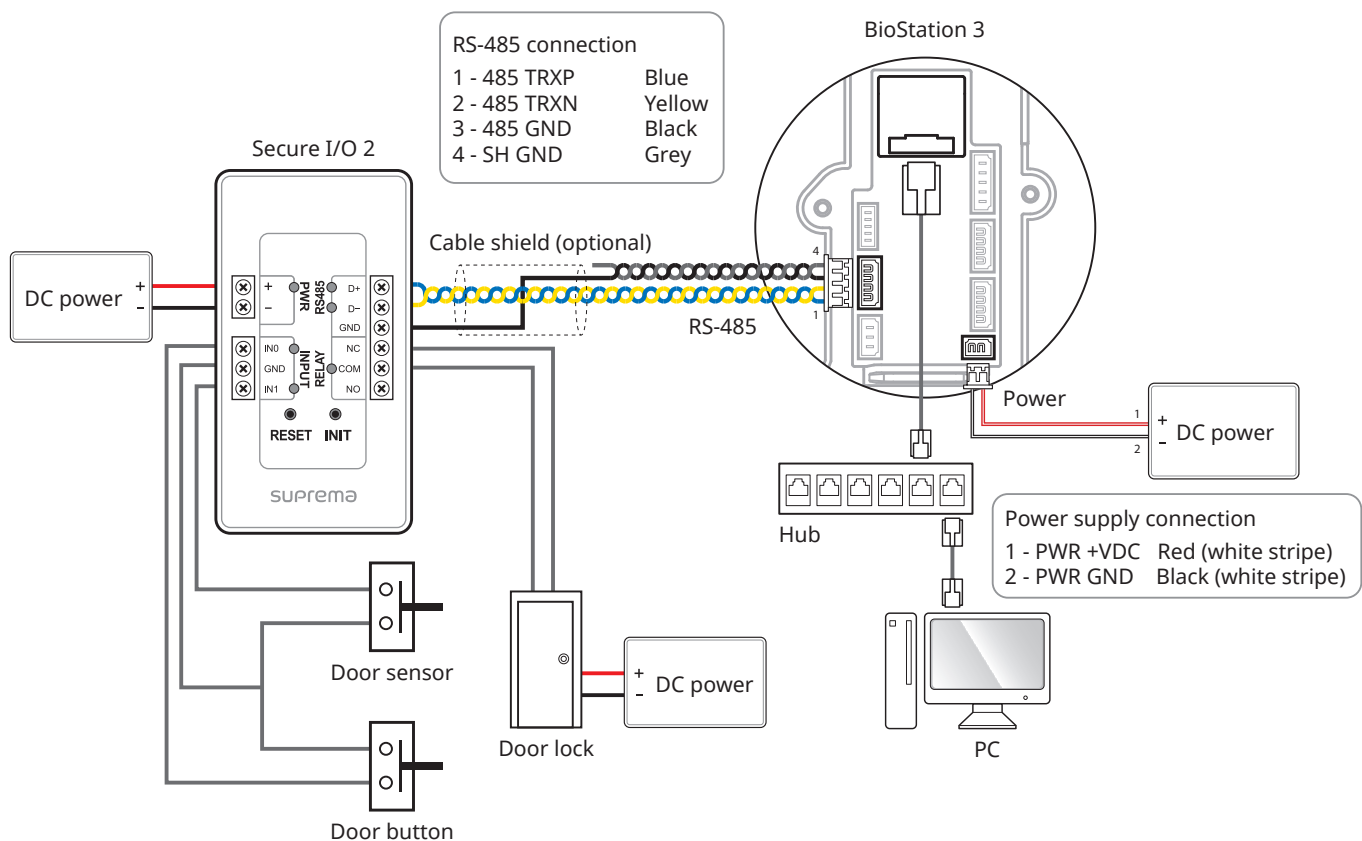


- BioStation 3 can be used as a multi-door controller with the slave devices with the RS-485 cable. The slave devices are used as dummy readers and authentication is performed in the master device.
- If a fingerprint authentication device is configured as a slave device in BioStation 3, you cannot add another BioStation 3 as a slave device.
- If the fingerprint authentication device is the master device, BioStation 3 cannot be added as a slave device.
- When you connect BioStation 3 as a slave device while BioStation 3 is the master device, only one BioStation 3 can be added as a slave device.
- When BioStation 3 is the master device and another BioStation 3 is connected to it as a slave device, you can connect one additional Secure I/O 2 and DM-20 each.
- When BioStation 3 is the master device and another BioStation 3 is connected to it as a slave device, you cannot connect additional OM-120.
- 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 authentication speed.
- A master device can control 31 slave devices. The bandwidth of RS-485 allows for up to 7 fingerprint authentication devices to be connected.
- 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 BioStation 3 with the RS-485 cable. Security can be maintained even if the connection between BioStation 3 and Secure I/O 2 has been lost or the power supply to BioStation 3 has been shut off due to external factors.

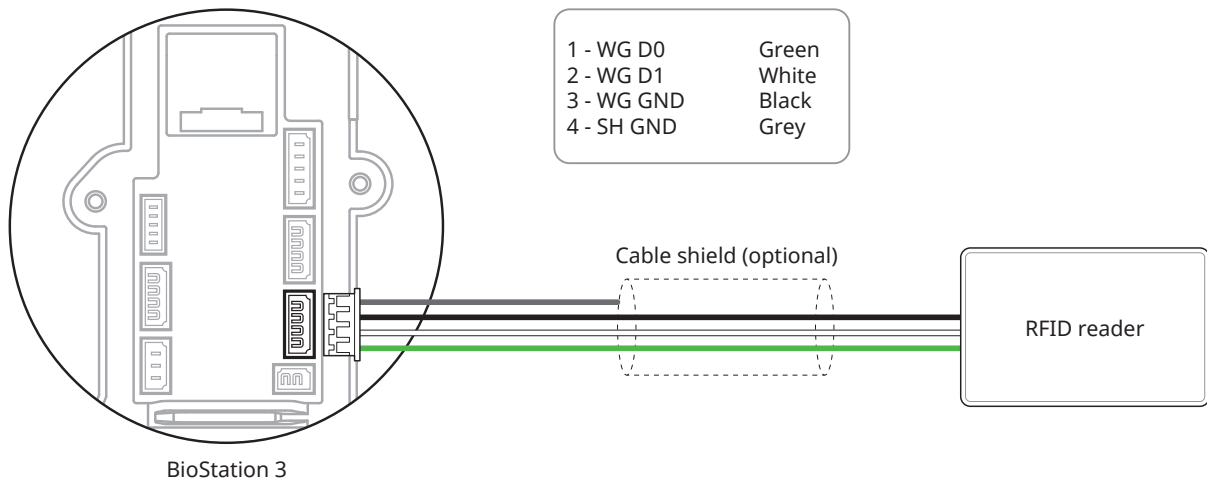
- Use an AWG24 twisted pair with a maximum length of 1.2 km for the RS-485 cable.
- If connecting with a RS-485 daisy chain, connect the termination resistor (120 Ω) to both ends of the daisy chain connection. If connected to the middle line, the signal level becomes smaller and the communication performance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



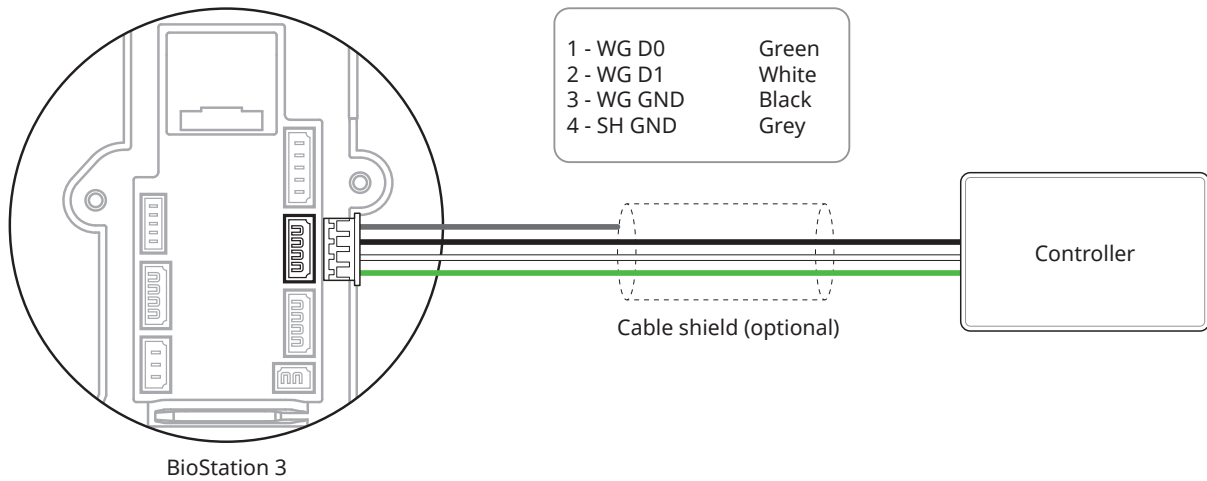
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- If the fingerprint authentication device is the master device, BioStation 3 cannot be added as a slave device.
- When you connect BioStation 3 as a slave device while BioStation 3 is the master device, only one BioStation 3 can be added as a slave device.
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- For more information, contact the Suprema technical support team (<https://support.supremainc.com>).

Wiegand Connection

Used as a Wiegand input device



Used as a Wiegand output device



Product Specifications

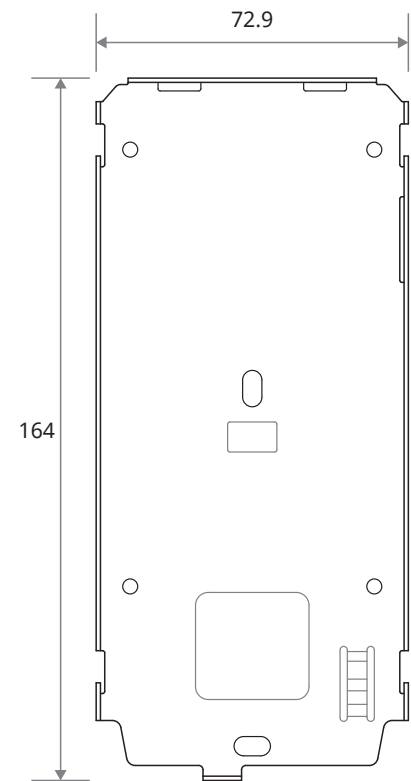
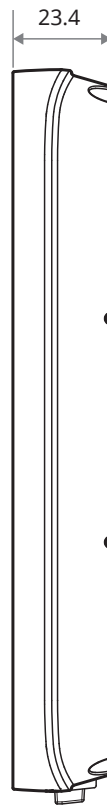
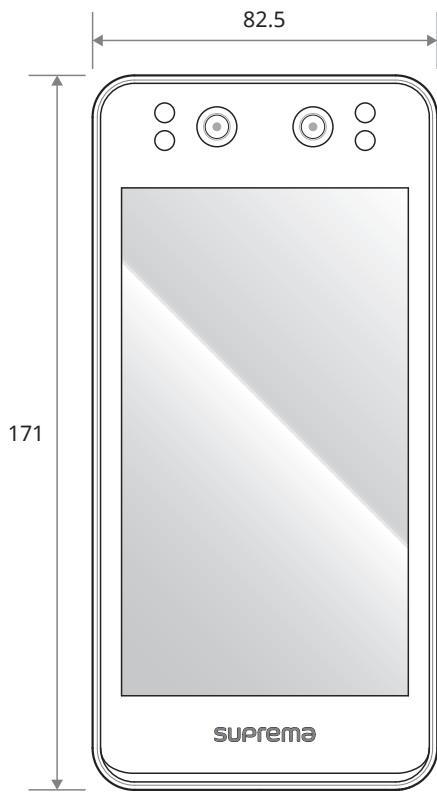
Category	Feature	Specifications
Credentials	Biometric	Face
	RF Card	<ul style="list-style-type: none"> • BS3-DB: 125kHz EM & 13.56MHz MIFARE, MIFARE Plus, DESFire, DESFire EV1/EV2/EV3¹⁾, FeliCa • BS3-APWB: 125kHz EM, HID Prox & 13.56MHz MIFARE, MIFARE Plus, DESFire, DESFire EV1/EV2/EV3¹⁾, FeliCa, iCLASS SE/SR/Seos
	RF Read Range ²⁾	EM/HID Prox/MIFARE/DESFire/HID iCLASS: 30 mm, FeliCa: 15 mm
	Mobile	NFC, BLE
	Scramble Keypad (PIN)	Supported
	QR/Barcode ³⁾	Supported ⁴⁾
General	CPU	1.5 GHz Quad Core
	Memory	32 GB Flash + 4 GB RAM
	Crypto Chip	Supported
	LCD Type	5.5" IPS color LCD
	LCD Resolution	720 x 1280 pixels
	Sound	16 bit
	Operating Temperature	-20 °C ~ 50 °C
	Storage Temperature	-40 °C ~ 70 °C
	Operating Humidity	0 % ~ 80 %, non-condensing
	Storage Humidity	0 % ~ 90 %, non-condensing
	Camera	2 MP 2 EA
	Dimensions (W x H x D)	82.5 x 171 x 23.4 (mm)
	Weight	<ul style="list-style-type: none"> • Device <ul style="list-style-type: none"> – BS3-DB: 370 g – BS3-APWB: 380 g • Bracket: 90 g (Including washers and bolts)
	IP Rating	IP65
IK Rating	IK06	
Certifications	CE, UKCA, KC, FCC, IC, RCM, BIS, SIG, RoHS, REACH, WEEE, MIC, TELEC	
Face	Authentication Distance ⁵⁾	0.3 ~ 1.0 m
	Authentication Height	1.4 ~ 1.9 m
	Matching Speed	Within 0.2 seconds
	Live Face Detection	Supported
Capacity	Max. User	100,000 ⁶⁾
	Max. Credentials (1:N)	<ul style="list-style-type: none"> • Fingerprint: 100,000⁷⁾ • Face: 50,000
	Max. Credentials (1:1)	<ul style="list-style-type: none"> • Fingerprint: 100,000⁷⁾ • Face: 100,000 • Card: 100,000 • PIN: 100,000
	Max. Text Logs	5,000,000
	Max. Image Logs	50,000

Category	Feature	Specifications
Interfaces	Ethernet	Supported (10/100/1000 Mbps, auto MDI/MDI-X)
	Wi-Fi	<ul style="list-style-type: none"> • BS3-DB: Not supported • BS3-APWB: Supported (802.11 b/ g/ n 2.4 GHz)
	RS-485	1 ch Master / Slave (Selectable)
	RS-485 Communication Protocol	OSDP V2 compliant
	Wiegand	1 ch Input, 1 ch Output
	TTL Input	3 ch Inputs
	Relay	1 Relay
	PoE+	<ul style="list-style-type: none"> • BS3-DB: Not supported • BS3-APWB: Supported (IEEE 802.3at compliant)
	Intercom	Supported
	RTSP	Supported
	USB	USB 2.0 (Host)
	USB Expansion Port	Supported
	Tamper	Supported
	Electrical	Power
<ul style="list-style-type: none"> • Voltage: 24 Vdc • Current: Max. 0.65 A 		
Switch Input VIH		<ul style="list-style-type: none"> • Min.: 3 V • Max.: 5 V
Switch Input VIL		Max.: 1 V
Switch Pull-up Resistance		4.7 k Ω (The input ports are pulled up with 4.7 k Ω)
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 Ω
Relay	2 A @ 30 VDC Resistive load 1 A @ 30 VDC Inductive load	

- 1) DESFire EV2/EV3 cards are supported by having backward compatibility of DESFire EV1 cards. CSN and smart card functions are compatible with BioStation 3.
- 2) RF read range will vary depending on installation environment.
- 3) Supports QR/Barcodes composed of up to 32 ASCII code strings.
- 4) Requires a separate license.
- 5) The minimum face authentication distance shown is the default setting for the product, and the recommended face authentication distance is 0.6 to 1.0 m.
- 6) The number of users registered without having any credential data.
- 7) If a device with a fingerprint sensor is connected as a slave, the slave device can be used for fingerprint authentication.

Dimensions

(Unit: mm)





Regulatory Information

Regulatory & Licenses

Licenses, Regulatory Information, certifications, and compliance marks specific to BioStation 3 are available from the device.

- CE / UKCA / KC / FCC / IC / RCM / BIS / MIC / TELEC

- 1 Press  and authenticate with the Admin level credential.
- 2 You can view **Regulatory & Licenses** press the  on the upper right corner of **DASHBOARD**.



If the administrator has not been designated, the **DASHBOARD** screen will be displayed when you press .

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.

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.

- Bluetooth transmit power: -0.1 dBm
- Bluetooth frequency: 2402–2480 MHz
- NFC frequency: 13.56 MHz
- RFID frequency: 13.56 MHz + 125 kHz

For more information, please contact us via the contact details below.

Suprema Inc.

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Version 3, 29 June 2007

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