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INSTALLATION GUIDE

BioStation 2

English

Version 1.32

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Safety Instructions

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

⚠Warning

Violation of the instructions may cause serious injury or death.

Installation Instructions

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

- This can cause a fire or electric shock.

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

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

Install the product in a dry place.

- Moisture can cause product damage or electric shock.

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

- This can cause product damage or electric shock.

Have qualified service professionals install or repair the product.

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

Operating Instructions

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

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

⚠Caution

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

Installation Instructions

Protect the power cord from being walked on or pinched.

- This can cause product damage or injury.

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

- This can cause a product failure.

Only use a DC 12V power adapter that provides a current of at least 500mA.

- This device does not work if the proper power source is not used.

After all the cables are properly installed, apply the liquid silicone underneath and above the cables within the groove approximately 10mm wide. The cable cover must be installed to ensure the IP65 rating.

- Non-proper installation of the cable cover may cause device malfunction or damage from water and dust.

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 BioStation 2 respectively.

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

Operating Instructions

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

- This can cause a failure.

Keep the password secret from others and change it periodically.

- Failure to do so may lead to an illegal intrusion.

Do not press the buttons on the product with excessive force or with a sharp tool.

- This can cause a failure.

Be careful not to contaminate or damage the fingerprint sensor with a dirty hand or materials.

- This can decrease performance or cause failure to read a fingerprint.

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

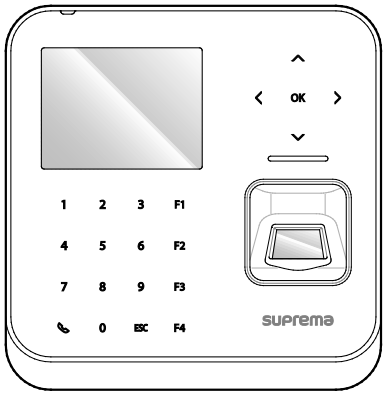
- This can cause a product failure.

BioStation 2 uses the capacitive button. If there is much moisture (humidity) like a rainy weather or on the product, wipe with a soft and dry cloth.

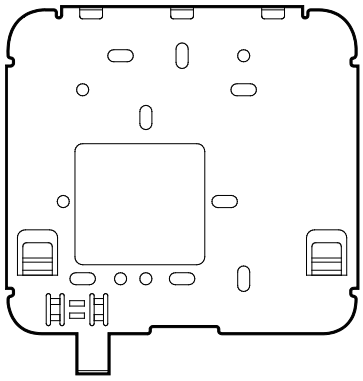
There is a risk of fire if batteries are replaced by an incorrect type.
Dispose of batteries in accordance with local and national disposal regulations.

Getting Started

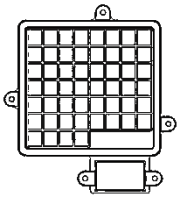
Components



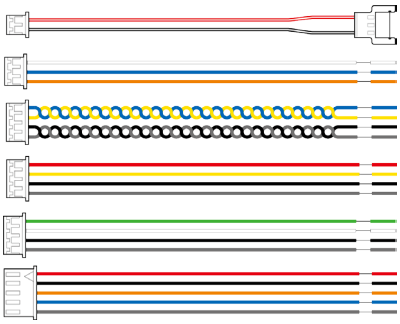
BioStation 2



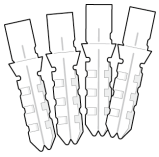
Wall bracket



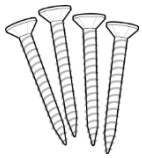
Cable cover



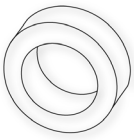
Connector cables
(1x2-pin, 1x -pin3, 3x4-ping, 1x5-pin)



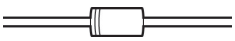
PVC anchors
(4)



Fixing screws
(4)

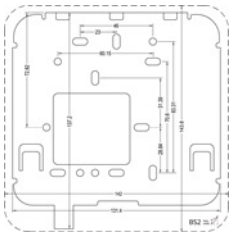


Ferrite core
(1)

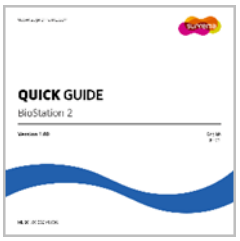


Diode
(1)

Allen Key
(For bracket)



Drilling Template

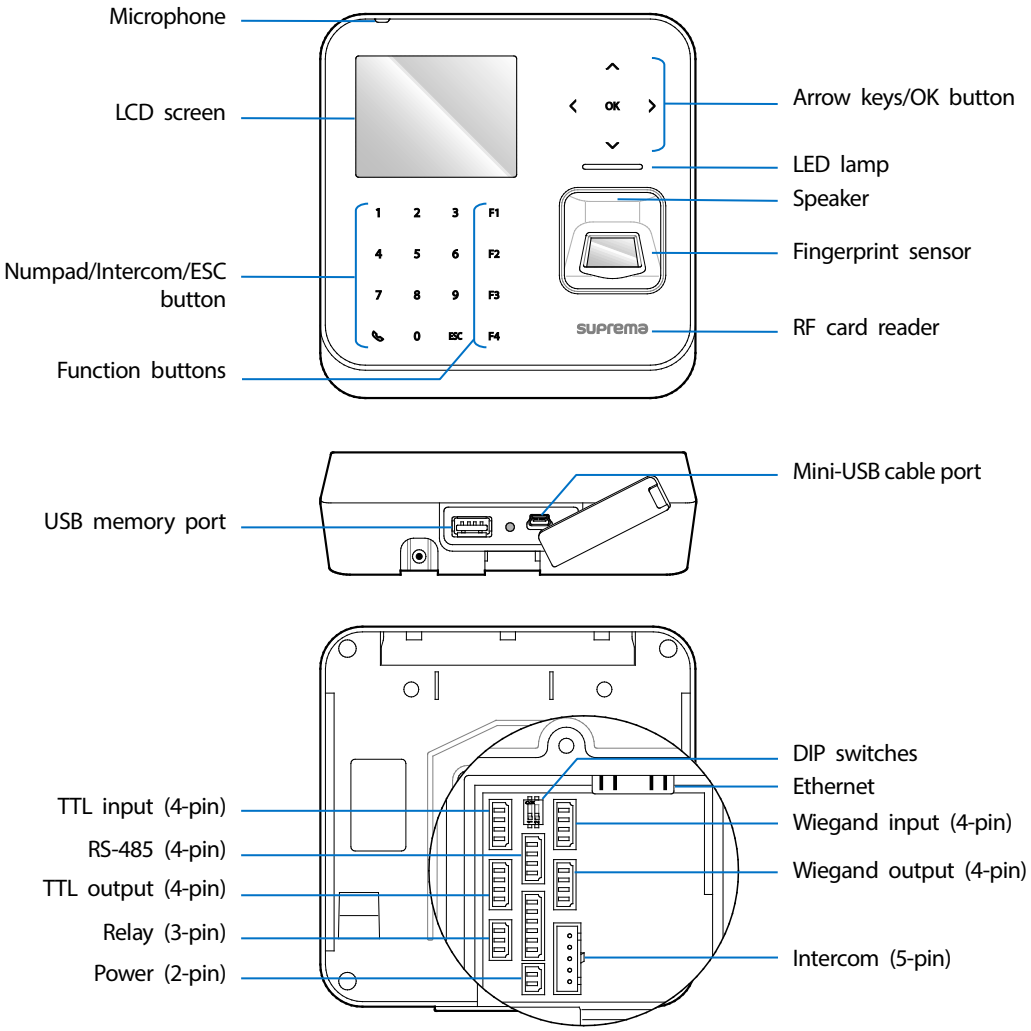


Quick Guide

Note

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

Parts



Name	Description
Microphone	Transmits the user's voice to the intercom.
LCD screen	Displays various information or settings.
Numpad/Intercom/ESC button	• **1** to **9**: Enters numbers/characters or selects a menu item. • : Connects to the intercom. • **ESC**: Opens the menu, moves back to the previous screen, or cancels input
Function buttons	Serves as T&A function key or selects a sub-menu item.
Arrow keys/OK button	• : Changes the character type. • : Changes the character type or selects a T&A event. • : Deletes numbers/characters. • : Inserts symbols or configures an item. • **OK**: Selects an item or saves the settings.
Speaker	Makes a sound.
LED lamp	Shows the status of the product with different colors.
Fingerprint sensor	Reads fingerprints.
RF card reader	Reads RF cards.

USB memory port	Connects a USB memory stick.
Mini-USB cable port	To be supported later.
TTL input (4-pin)	Connects a TTL input/output cable.
RS-485 (4-pin)	Connects an RS-485 cable.
TTL output (4-pin)	Connects a TTL input/output cable.
Relay (3-pin)	Connects a relay cable.
Power (2-pin)	Connects the power cable.
DIP switch	Turns on the termination resistor for the RS-485 interface • To use the termination resistor, set DIP switch 1 to ON.
Ethernet	Connects an Ethernet cable.
Wiegand input (4-pin)	Connects a Wiegand input/output cable.
Wiegand output (4-pin)	Connects a Wiegand input/output cable.
Intercom (5-pin)	Connects the intercom cable.

Cables and Connectors

Power

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/output

Pin	Name	Color
1	TTL IN0 / OUT0	Red
2	TTL IN1 / OUT1	Yellow
3	TTL GND	Black
4	SH GND	Gray

Wiegand input/output

Pin	Name	Color
1	WG IN0 / OUT0	Green
2	WG IN1 / OUT1	White
3	WG GND	Black
4	SH GND	Gray

Intercom

Pin	Name	Color
1	INPH +VDC	Red
2	INPH GND	Black
3	INPH AUD	Orange
4	INPH DTA	Blue
5	SH GND	Gray

How to Enroll a Fingerprint

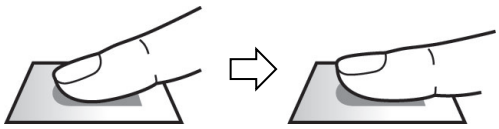
Correct fingerprint enrollment is critical in improving fingerprint recognition. BioStation 2 is loaded with powerful fingerprint algorithm which is capable of recognizing a fingerprint even when the angle or position of the finger on the reader is not optimal. Nevertheless, enrolling a fingerprint with the following instructions can improve the recognition performance.

Choose Ideal Fingers to Enroll

- Each person can enroll up to ten fingerprints. If a finger is injured or scratched, it is recommended to use another finger.
- If the fingerprint recognition fails, you can enroll the same finger multiple times, which will improves the recognition performance.
- If a finger is injured or the fingerprint is not clear, please enroll a different finger.
- The index finger and middle finger are preferred for enrolling fingerprints. Other fingers may have a lower recognition rate because those fingers tend to have difficulty being placed at the center of the fingerprint sensor.

How to Enroll Fingerprints

1 When enrolling a fingerprint, the "Scan 1st finger" message will appear on the LCD screen. Place a finger on the fingerprint sensor, and then press softly in order to improve the recognition.



2 After a beep sounds, you will be notified to scan again then remove your finger and place it again to scan.
(You are required to scan the same finger twice for enrollment.)

Notes

Precautions for enrolling fingerprints

Enrolling fingerprints is the most important procedure because this device uses enrolled fingerprints to compare them with a scanned fingerprint. Please ensure the following when enrolling fingerprints:

- Place the finger firmly on the fingerprint sensor for it to be read completely.
- The center of the fingerprint should be placed at the center of the fingerprint sensor.
- If a finger is injured or the fingerprint is not clear, please enroll another finger.
- Follow the instructions on the screen and place the finger correctly without movement when the finger is read.
- Place your finger to completely cover the sensor with maximum surface.

When the fingerprint recognition fails

BioStation 2 can read fingerprints regardless of the change in seasons or condition of the fingers. However, the external environment or the finger's position can affect the recognition performance.

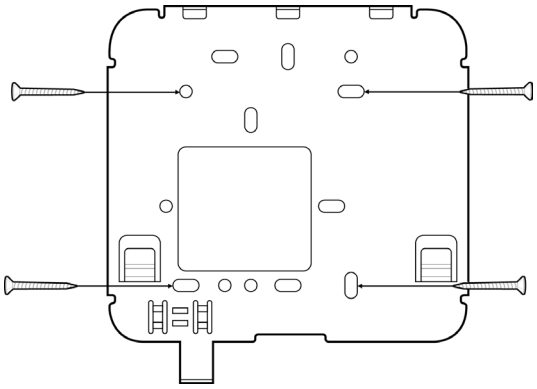
If the fingerprint recognition fails, the following actions are recommended.

- If there is water or sweat on the finger, please wipe it off before scanning the finger.
- If the finger is too dry, please blow softly on the fingertip before scanning the finger.
- If the finger is injured, please enroll another finger.
- If the fingerprint recognition failure persists, please follow '**Precautions for enrolling fingerprints**' to re-enroll the fingerprint.

Installation

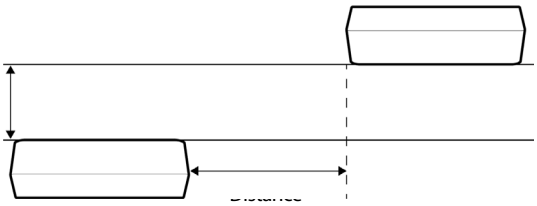
Mounting the Bracket and Product

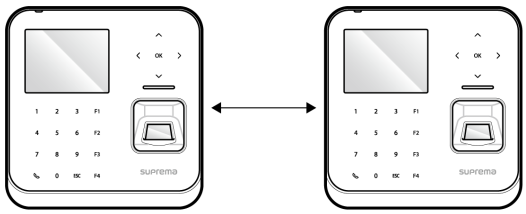
1 Using the included drilling template, set the installation position. Mount the bracket firmly onto the surface using the mounting screws where the BioStation 2 is to be installed.



Note

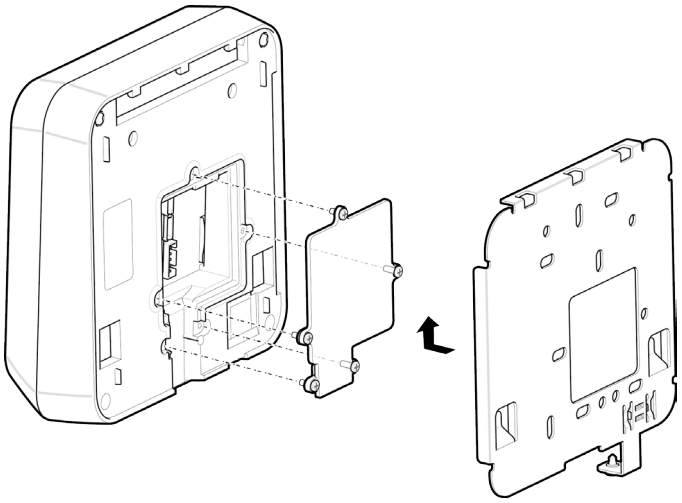
- If installing BioStation L2 on a concrete wall, drill holes, insert PVC anchors, and fix them with fixing screws.
- To avoid RF interference, a minimum separation distance must be maintained.





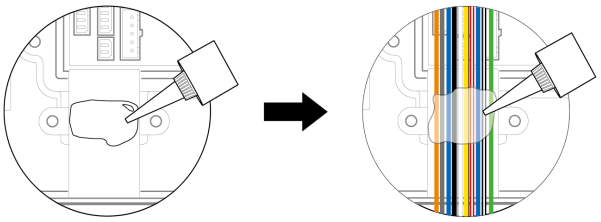
Wall thickness	Distance
100 mm	400 mm
120 mm	350 mm
150 mm	300 mm

2 Assemble the cable cover with the BioStation 2 and then attach the device onto the mounted bracket.

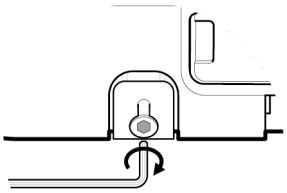


Note

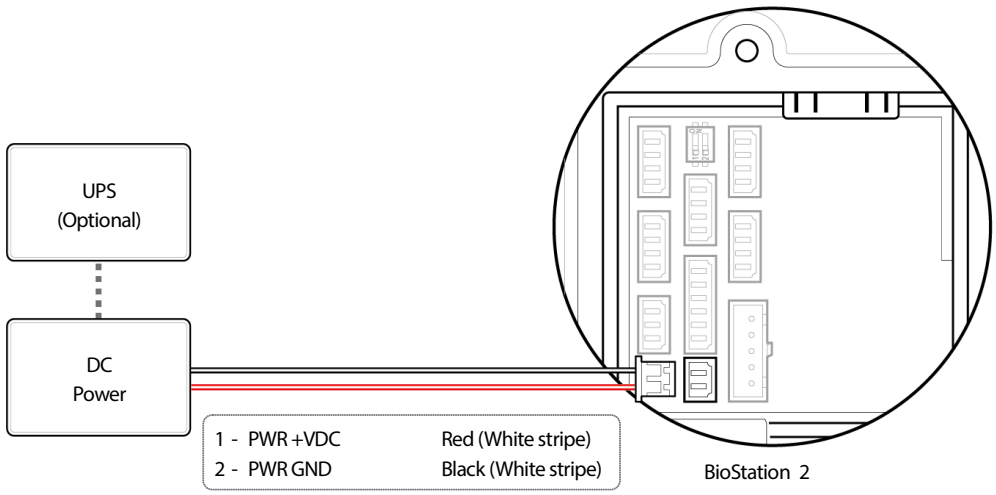
- If the cable cover is not assembled, waterproof/dustproof performance will not be guaranteed.
- To ensure the IP65 rating, apply the liquid silicone underneath and above the cables within the groove approximately 10mm. Then, assemble the cable cover. The IP65 rating means that the BioStation 2 is totally dust proof and resistant to lower pressure water jets.



3 Assemble the BioStation 2 with the bracket by using the hex socket head screws on the bottom of the BioStation 2 with the allen key.



Connecting to Power



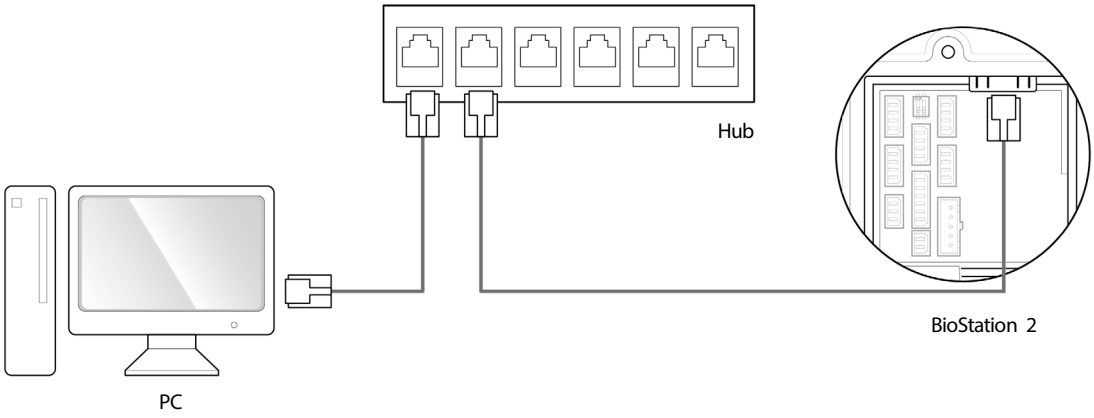
Note

- Use a power adapter that has a DC 12 V (± 10%) output with the minimum current of 1,500 mA. It is recommended to use a power adapter with the IEC/EN 60950-1 certification. If the power adapter is shared by other devices, the power adapter should provide a current more than the sum of the power consumption of all devices connected to the adapter.
- 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.
- DO NOT connect the device to the DC power supply(or adapter) and PoE power supply at the same time.

Connecting to a Network

Ethernet Connection

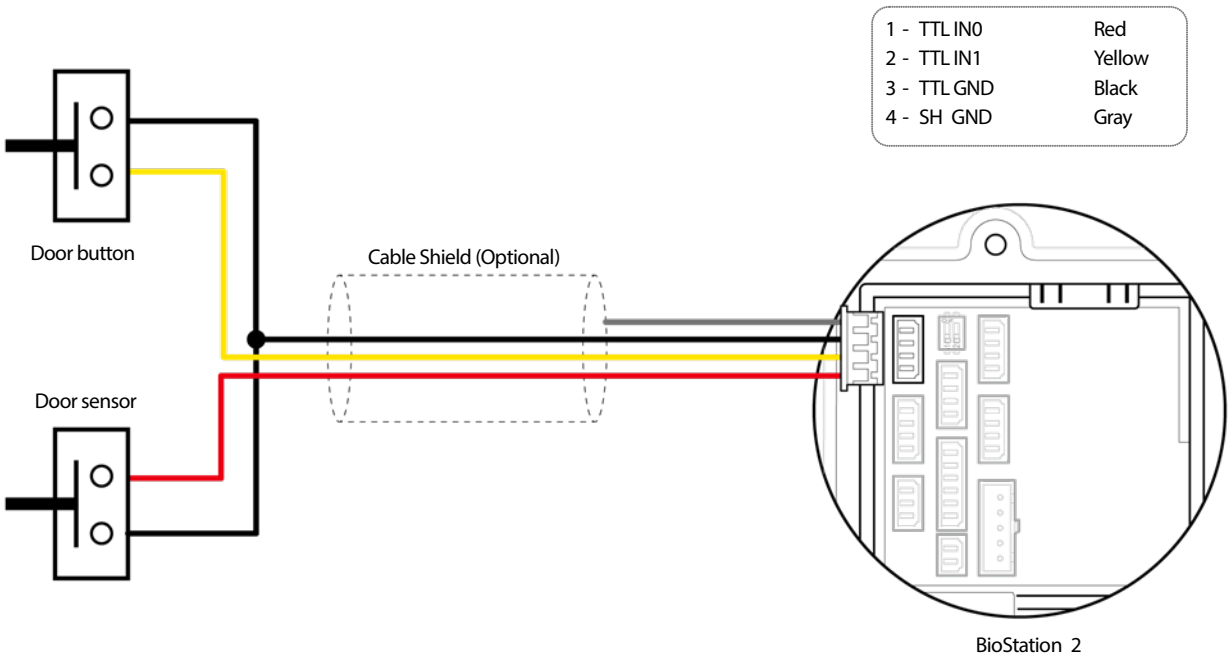
Connecting to a PC through a hub
A normal CAT-5 UTP cable can be used to connect to a hub.



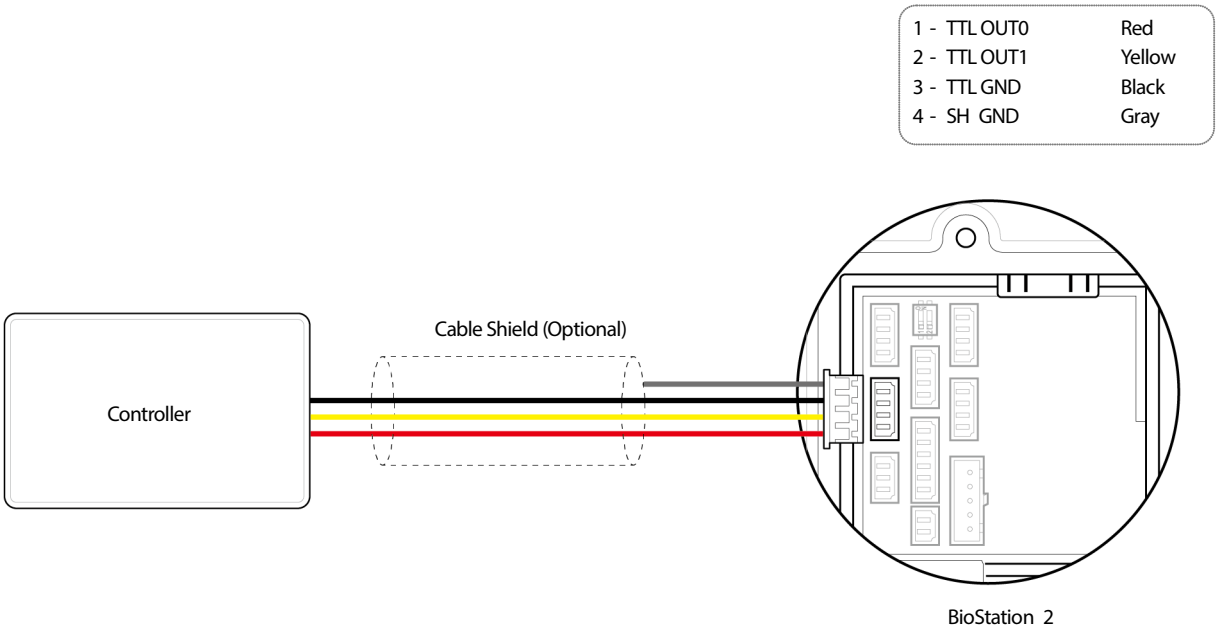
Connecting to a PC directly
BioStation 2 can be connected directly to a PC by using a normal straight type CAT-5 UTP cable because it supports an automatic MDI/MDIX function.

Connecting to TTL Input and Output

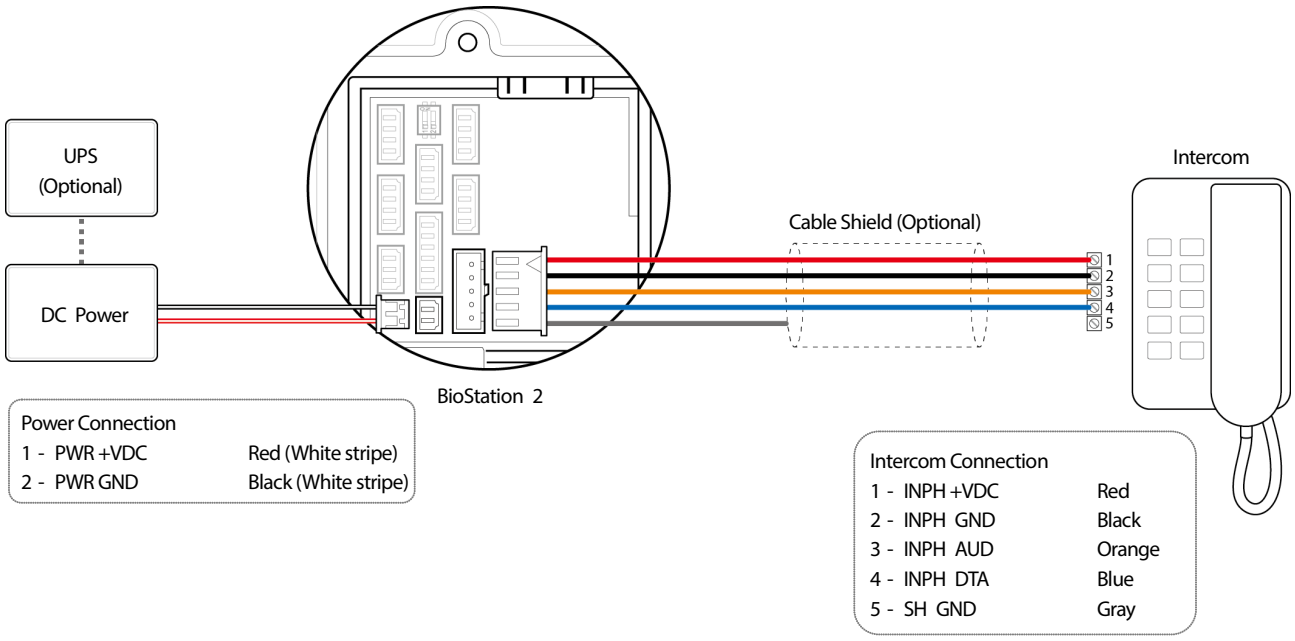
TTL input connection



TTL output connection



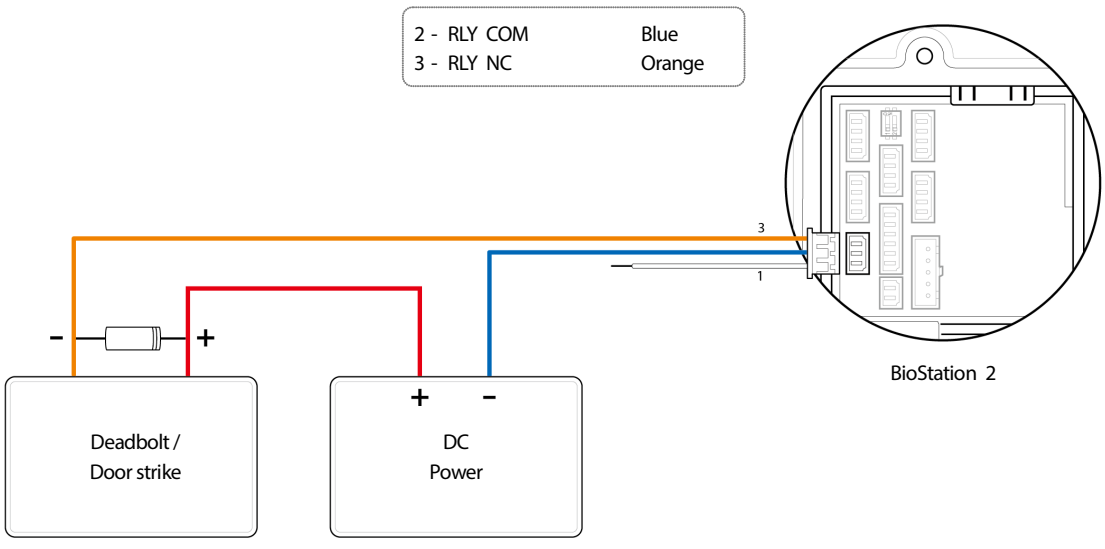
Connecting to an Intercom



Connecting to a Relay

Fail Safe Lock

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

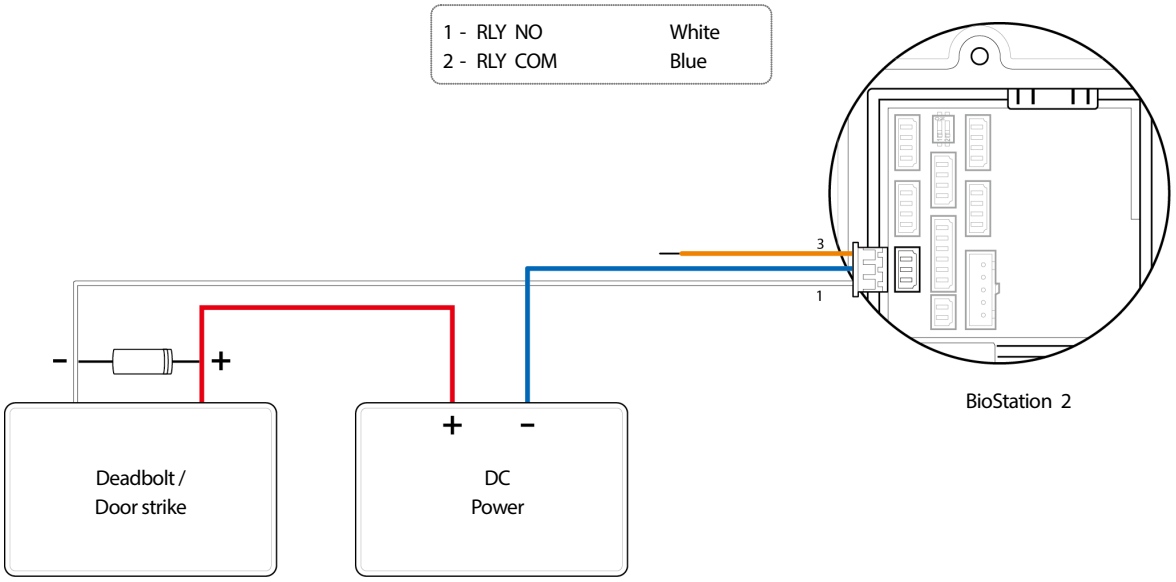


Note

- Install a diode at both ends of the wire at the door lock as shown in the figure to protect the relay from the reverse current induced when the door lock operates.
- Make sure that the direction of the installed diode is correct.
- Install a diode close to the door lock.
- Use a separate power source for the BioStation 2 from the door lock.

Fail Secure Lock

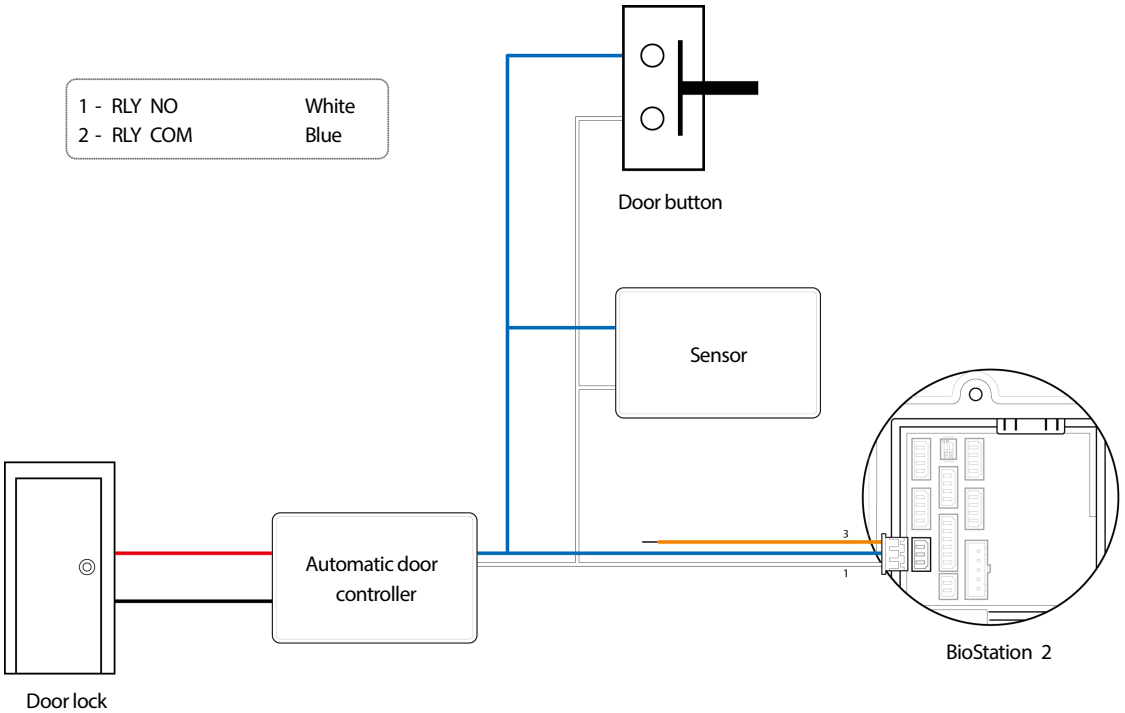
To use the fail secure lock, connect N/O terminal as shown below. Normally, there is no current flowing through the relay and the door is opened when the relay is activated by the current. The door is locked when there is a blackout or power failure caused by external conditions.



Note

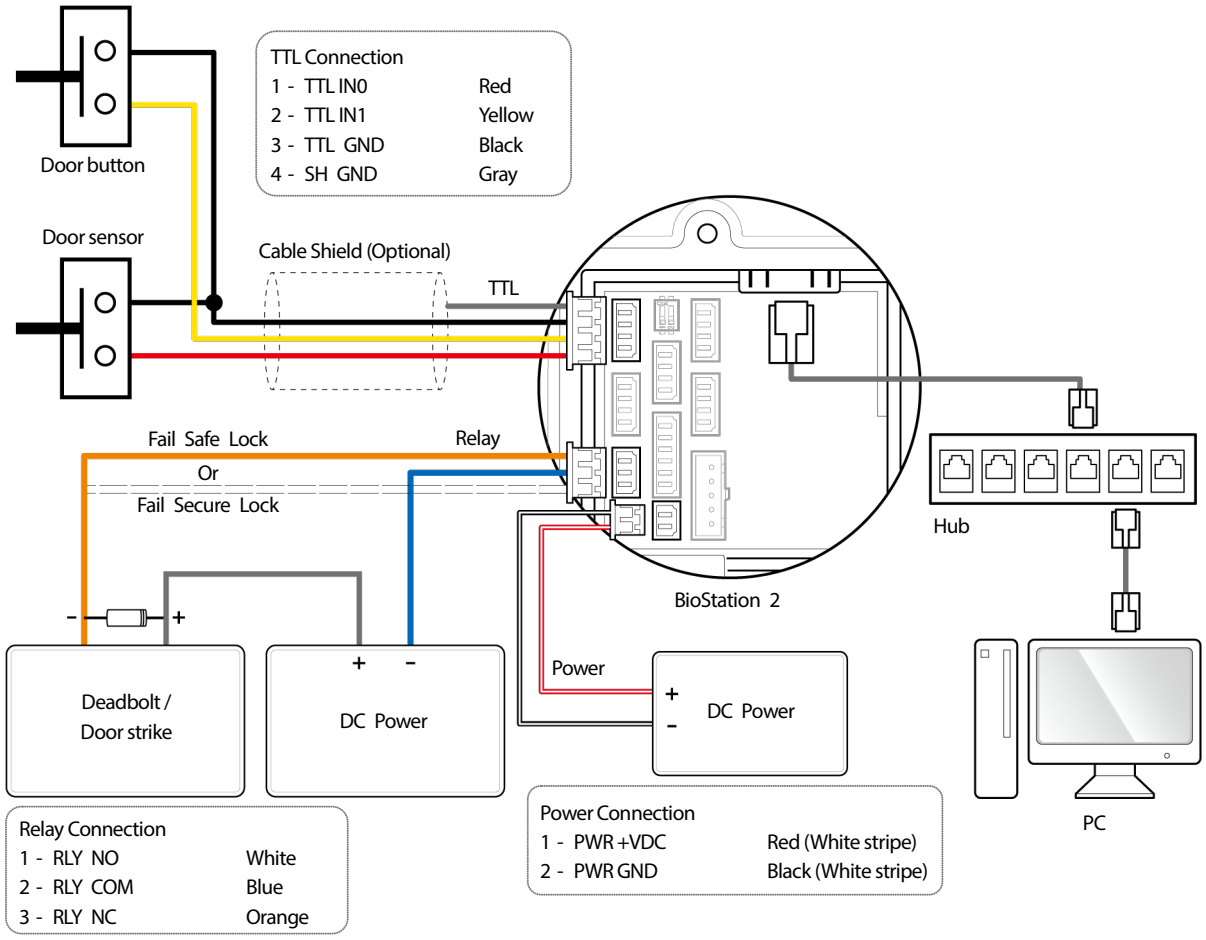
- Install a diode at both ends of the wire at the door lock as shown in the figure to protect the relay from the reverse current induced when the door lock operates.
- Make sure that the direction of the installed diode is correct.
- Install a diode close to the door lock.
- Use a separate power source for the BioStation 2 from the door lock.

Connecting to an Automatic door



Connecting as a standalone

BioStation 2 can be connected directly to a door lock, a door button, and a door sensor without any additional I/O device.



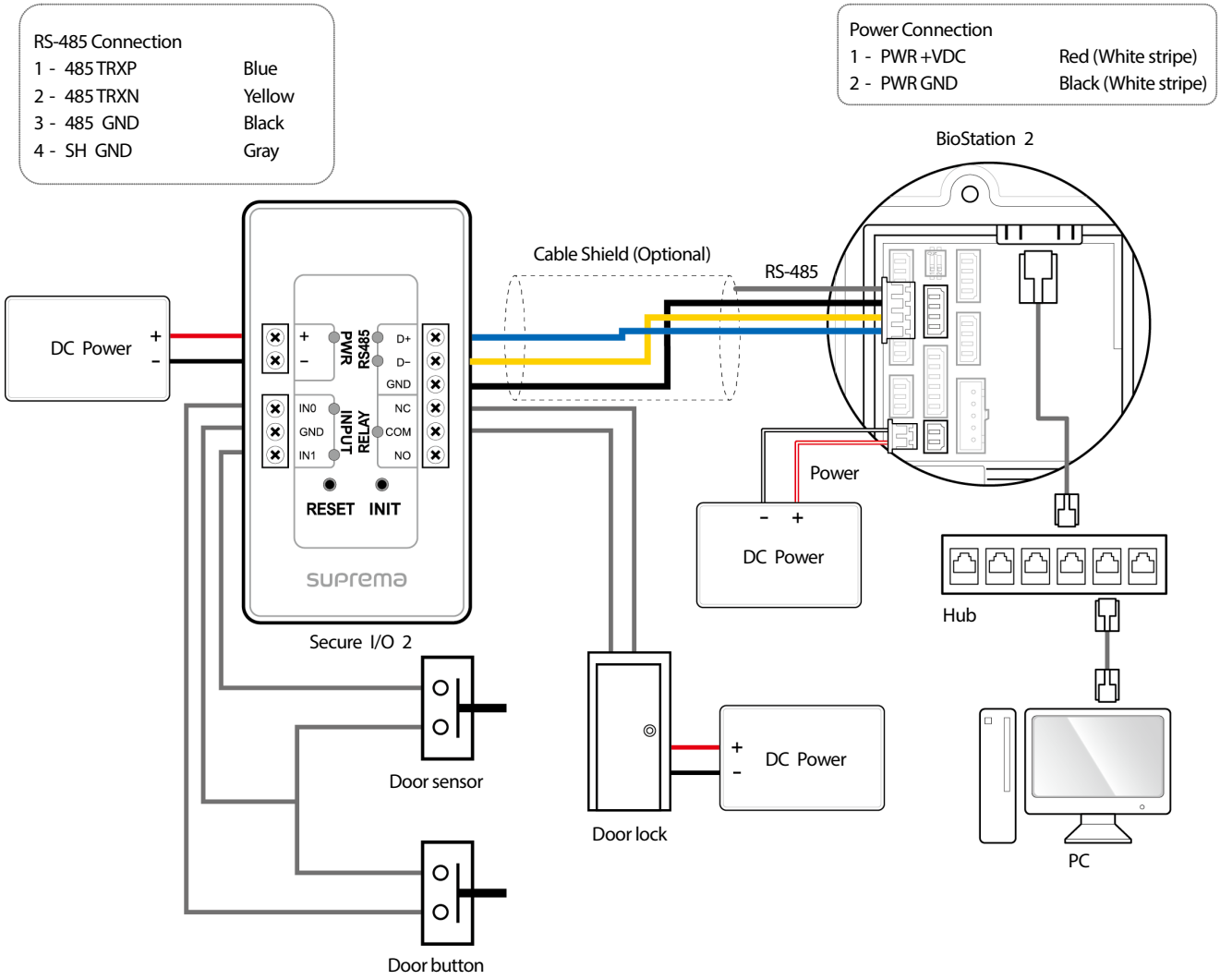
Note

- You can use the master device as a multi-door controller with the slave devices that are connected by the RS485 interface. The slave devices will be used as dummy readers in this setting, and the authentication is performed on the master device.
- When Xpass is used as a master device, only the card authentication is available.
- The maximum number of slave devices can vary depending upon authentication methods, number of users, and number of devices. Additionally, the number of slave devices will directly affect fingerprint authentication speed.
- A master device can control up to 31 slave devices. RS485 connection bandwidth restricts maximum number of the slave devices to 7 when using the fingerprint authentication mode.
- For more details, contact Suprema technical support team at support@supremainc.com.

Connecting to Secure I/O 2

BioStation2 can be connected to the Secure I/O 2 using a RS-485 connection. Secure I/O 2 will prevent unauthorized entry by maintaining system status independent from connection to the BioStation 2.

- RS-485 should be AWG24 and twisted pair. The maximum length is 1.2 km.
- Connect a termination resistor (120Ω) to both ends of a RS-485 daisy chain connection. It should be installed at both ends of the daisy chain. If it is installed in the middle of the chain, the quality of communication will be deteriorated because it reduces the signal level. If the termination resistor of the BioStation 2 is required, set the #1 DIP switch to ON.



Note

- You can use the master device as a multi-door controller with the slave devices that are connected by the RS485 interface. The slave devices will be used as dummy readers in this setting, and the authentication is performed on the master device.
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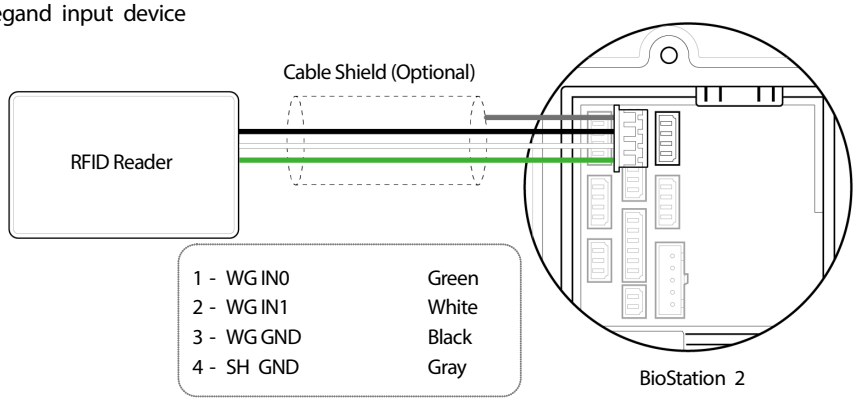
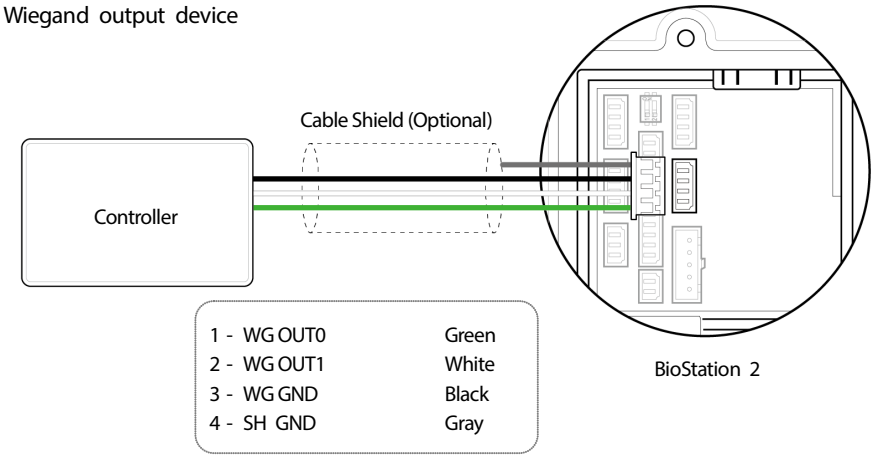
- For more details, contact Suprema technical support team at support@supremainc.com.

Connecting as a Wiegand device

Using as a Wiegand input device



Using as a Wiegand output device



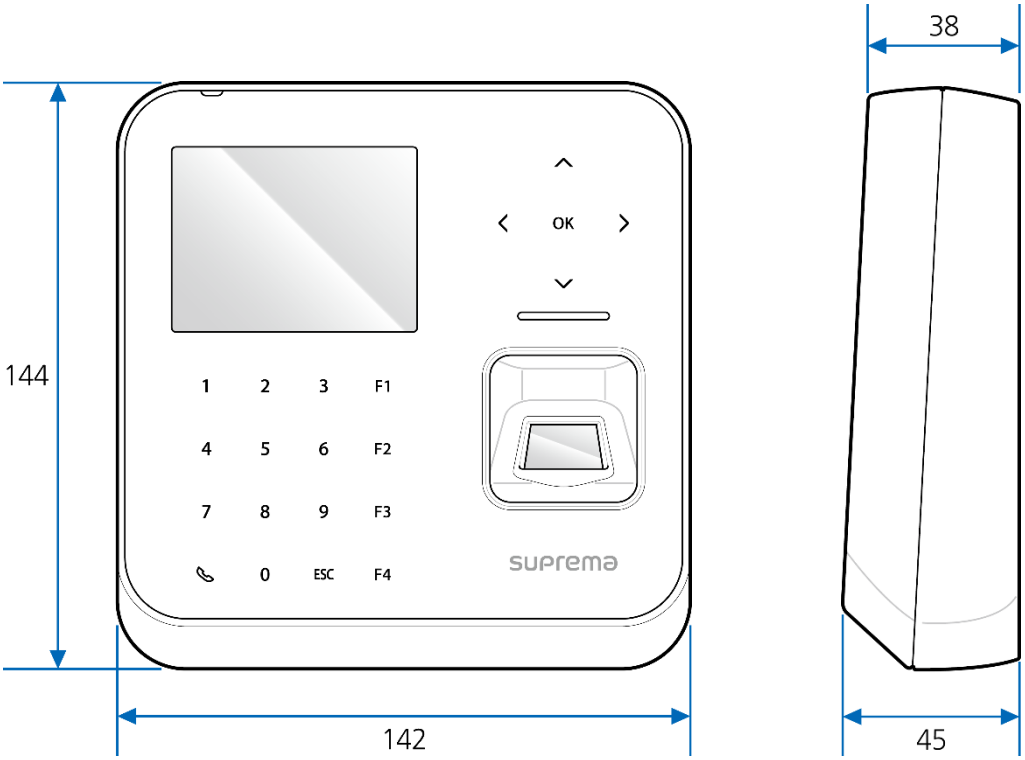
Product Specifications

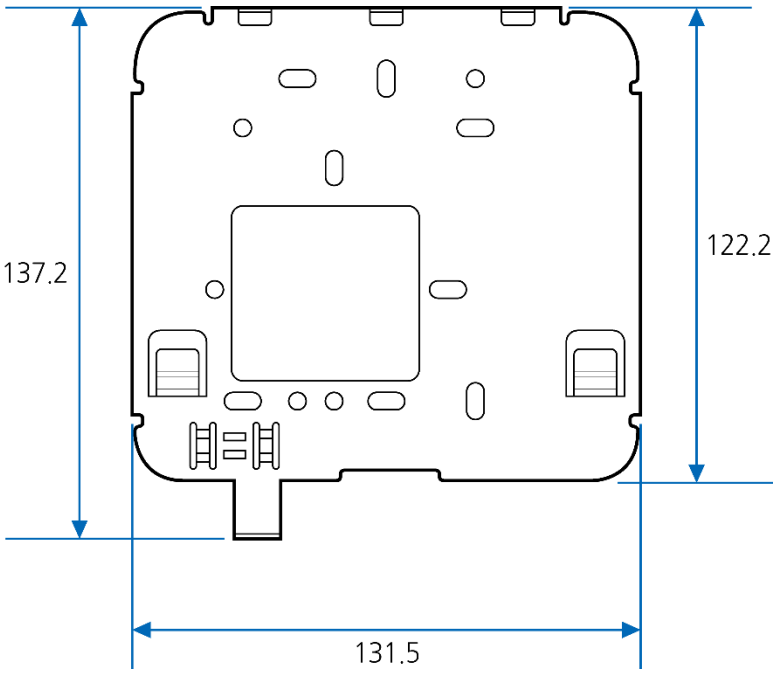
Category	Feature	Specification
Main	Biometric	Fingerprint
	IP Rating	IP 65
	RF Option*	• BS2-OMPW: 13.56Mhz MIFARE, MIFARE Plus, DESFire/EV1, FeliCa, NFC • BS2-OIPW: 13.56MHz MIFARE, MIFARE Plus, DESFire/EV1, FeliCa, iCLASS SE/SR, NFC • BS2-OHPW: 125kHz HID Prox • BS2-OEPW: 125kHz EM
Capacity	Max. User (1:1)	500,000
	Max. User (1:N)	20,000
	Max. Template (1:1)	1,000,000
	Max. Template (1:N)	40,000
	Max. Text Log	3,000,000
Interface	Wi-Fi	Yes
	TCP/IP	Yes
	RS-485	1ch Host or Slave (Selectable)
	RS-232	Yes
	Wiegand	1ch Input, 1ch Output
	TTL Input	2ch Inputs, 2ch Outputs
	Relay	1 Relay
	USB	USB 2.0 (Host)
Relay	Voltage	Max. 24VDC
	Current	0.5A, Max. 1.A
Hardware	CPU	1.0 GHz
	Memory	8GB Flash + 256 MB RAM
	LCD	2.8" QVGA Color LCD
	LED	Multi-Color
	Sound	16-bit Hi-Fi
	Operating Temp.	-20°C ~ 50°C
	Tamper	Yes
	Power	9V ~ 18V
	PoE	Optional
	Dimensions (W x H x D mm)	142 x 144 x 45(38)
	Certificates	CE, FCC, KC, RoHS, REACH, WEEE

* For detailed information on our supported card list, contact Suprema technical support team at support@supremainc.com.

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.
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.

Appendix

Disclaimers

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