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<td>OpenSSL License</td>
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<tr>
<td>Original SSLeay License</td>
<td>46</td>
</tr>
</tbody>
</table>
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

<table>
<thead>
<tr>
<th>Icon</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>!</td>
<td><strong>Warning</strong>: This symbol indicates situations that could result in death or severe injury.</td>
</tr>
<tr>
<td>⚠️</td>
<td><strong>Caution</strong>: This symbol indicates situations that may result in moderate injury or property damage.</td>
</tr>
<tr>
<td>📩</td>
<td><strong>Note</strong>: This symbol indicates notes or additional information.</td>
</tr>
</tbody>
</table>

**Warning**

**Installation**

Do not install or repair the product arbitrarily.

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

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

- This may result in electric shock or fire.

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

- This may result in fire due to overheating.

Install the product in a dry location.

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

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

- This may result in fire or product damage.

**Operation**

Keep the product dry.

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

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

- Unsecured connections may cause electric shock or fire.

Do not bend or damage the power cord.

- This may result in electric shock or fire.
Caution

Installation

Do not install the product under direct sunlight or UV light.
• This may result in product damage, malfunction, discoloration, or deformation.

Do not install the power supply cable in a location where people pass by.
• This may result in injury or product damage.

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

Keep the minimum distance between products when installing multiple products.
• The product may be affected by radio frequencies emitted by other products and the product may malfunction.

Use the IEC/EN 62368-1 approved power adapter that supports higher power consumption than the product. It is highly recommended to use the power adapter sold by Suprema.
• If the right power supply is not used, the product may malfunction.
• Refer to the Power in the product specifications for maximum current consumption specifications.

Use a separate power supply for the Secure I/O 2, electric lock, and the product.
• If connecting and using the same power supply, the product may malfunction.

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.
Safety instructions

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 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.

BioStation 2 uses capacitive buttons and screen. If the environment is moist from wet weather or the product surface is smeared with a lot of water, wipe off the product with a dry towel before using it.

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

<table>
<thead>
<tr>
<th>BioStation 2</th>
<th>Wall Bracket</th>
<th>Drilling Template</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="BioStation 2" /></td>
<td><img src="image" alt="Wall Bracket" /></td>
<td><img src="image" alt="Drilling Template" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Cables</th>
<th>Cable Cover</th>
<th>Diode</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Cables" /></td>
<td><img src="image" alt="Cable Cover" /></td>
<td><img src="image" alt="Diode" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>PVC Anchor x4</th>
<th>Fixing Screw x4</th>
<th>Bracket Fixing Screw (Star Shaped)</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="PVC Anchor" /></td>
<td><img src="image" alt="Fixing Screw" /></td>
<td><img src="image" alt="Bracket Fixing Screw" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Ferrite Core</th>
<th>Quick Guide</th>
<th>Open Source Software Guide</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image" alt="Ferrite Core" /></td>
<td><img src="image" alt="Quick Guide" /></td>
<td><img src="image" alt="Open Source Software Guide" /></td>
</tr>
</tbody>
</table>

- 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

<table>
<thead>
<tr>
<th>Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Microphone</td>
<td>Delivers the voice of the user when the interphone is connected.</td>
</tr>
<tr>
<td>LCD screen</td>
<td>Provides UI for operation.</td>
</tr>
<tr>
<td>Numpad/Intercom/ESC button</td>
<td>• 1 ~ 9: Enters numbers/characters or selects a menu item.</td>
</tr>
<tr>
<td></td>
<td>• 📝: Connects to the intercom.</td>
</tr>
<tr>
<td></td>
<td>• ESC: Opens the menu, moves back to the previous screen, or cancels input</td>
</tr>
<tr>
<td>Function buttons</td>
<td>Serves as T&amp;A function key or selects a sub-menu item.</td>
</tr>
<tr>
<td>Arrow keys/OK button</td>
<td>• ∧: Changes the character type.</td>
</tr>
<tr>
<td></td>
<td>• ∨: Changes the character type or selects a T&amp;A event.</td>
</tr>
<tr>
<td></td>
<td>• ◀: Deletes numbers/characters.</td>
</tr>
<tr>
<td></td>
<td>• ▶: Inserts symbols or configures an item.</td>
</tr>
<tr>
<td></td>
<td>• OK: Selects an item or saves the settings.</td>
</tr>
<tr>
<td>Speaker</td>
<td>Delivers sound.</td>
</tr>
<tr>
<td>LED lamp</td>
<td>Indicates the operational status of the product with the color of the LED lamp.</td>
</tr>
<tr>
<td>Fingerprint authentication unit</td>
<td>Part to scan the fingerprint for entrance.</td>
</tr>
</tbody>
</table>

![Diagram of the device with labeled parts]
RF card and mobile access card authentication unit
- Part to scan a RFID card or mobile access card for entrance.

USB memory slot
- Connects USB memory.

Mini USB cable slot
- Will be supported in the future.

TTL input (4 pins)
- Connects the TTL input/output cable.

RS-485 (4 pins)
- Connects the RS-485 cable.

TTL output (4 pins)
- Connects the TTL input/output cable.

Relay (3 pins)
- Connects the relay cable.

Power (2 pins)
- 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 the Ethernet cable.

Wiegand input (4 pins)
- Connects the Wiegand input/output cable.

Wiegand output (4 pins)
- Connects the Wiegand input/output cable.

Intercom (5-pin)
- Connects the intercom cable.

### Cables and connectors

#### Power

![Power cable diagram]

<table>
<thead>
<tr>
<th>PIN</th>
<th>Name</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>PWR +VDC</td>
<td>Red (white stripe)</td>
</tr>
<tr>
<td>2</td>
<td>PWR GND</td>
<td>Black (white stripe)</td>
</tr>
</tbody>
</table>

#### Relay

![Relay cable diagram]

<table>
<thead>
<tr>
<th>PIN</th>
<th>Name</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>RLY NO</td>
<td>White</td>
</tr>
<tr>
<td>2</td>
<td>RLY COM</td>
<td>Blue</td>
</tr>
<tr>
<td>3</td>
<td>RLY NC</td>
<td>Orange</td>
</tr>
</tbody>
</table>
### RS-485

<table>
<thead>
<tr>
<th>PIN</th>
<th>Name</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>485 TRXP</td>
<td>Blue</td>
</tr>
<tr>
<td>2</td>
<td>485 TRXN</td>
<td>Yellow</td>
</tr>
<tr>
<td>3</td>
<td>485 GND</td>
<td>Black</td>
</tr>
<tr>
<td>4</td>
<td>SH GND</td>
<td>Gray</td>
</tr>
</tbody>
</table>

### TTL input/output

<table>
<thead>
<tr>
<th>PIN</th>
<th>Name</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>TTL IN0 / OUT0</td>
<td>Red</td>
</tr>
<tr>
<td>2</td>
<td>TTL IN1 / OUT1</td>
<td>Yellow</td>
</tr>
<tr>
<td>3</td>
<td>TTL GND</td>
<td>Black</td>
</tr>
<tr>
<td>4</td>
<td>SH GND</td>
<td>Gray</td>
</tr>
</tbody>
</table>

### Wiegand input/output

<table>
<thead>
<tr>
<th>PIN</th>
<th>Name</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WG IN0 / OUT0</td>
<td>Green</td>
</tr>
<tr>
<td>2</td>
<td>WG IN1 / OUT1</td>
<td>White</td>
</tr>
<tr>
<td>3</td>
<td>WG GND</td>
<td>Black</td>
</tr>
<tr>
<td>4</td>
<td>SH GND</td>
<td>Gray</td>
</tr>
</tbody>
</table>
# Intercom

<table>
<thead>
<tr>
<th>PIN</th>
<th>Name</th>
<th>Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>INPH +VDC</td>
<td>Red</td>
</tr>
<tr>
<td>2</td>
<td>INPH GND</td>
<td>Black</td>
</tr>
<tr>
<td>3</td>
<td>INPH AUD</td>
<td>Orange</td>
</tr>
<tr>
<td>4</td>
<td>INPH DTA</td>
<td>Blue</td>
</tr>
<tr>
<td>5</td>
<td>SH GND</td>
<td>Gray</td>
</tr>
</tbody>
</table>
How to enroll a fingerprint

In order to improve the fingerprint authentication rate, register the fingerprint correctly. BioStation 2 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. When a message saying “Scan Finger” is displayed on the LCD screen for enrolling the fingerprint, place the finger with the fingerprint you wish to enroll on the fingerprint authentication unit and press the finger gently for better authentication.

2. When the re-input screen is displayed after a beep sound, scan the fingerprint of the enrolled finger again. (scan the fingerprint of a finger to be enrolled 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

BioStation 2 can recognize a fingerprint regardless of a change in 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’.
Admin Menu

All Menus

1. Press the **ESC** and authenticate with the Admin level credential.
2. Select the desired menu.

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

Quick Menu

1. Press and hold the **ESC** button for more than one second and then release the button. Next, authenticate as an administrator.
2. Select the desired menu.

If the administrator has not been designated, the quick menu screen will be displayed when you press and hold the **ESC** and then release.
Registering user information

The user information including credentials can be registered.

1. Press the ESC and authenticate with the Admin level credential.
2. Select USER → Add User, then press OK.

3. Select an item then press the > button. Press OK after configuring the item to register the user information.
   - **ID**: Enter a number between 1 and 429467295 to register as the user ID. If User ID Type set to Alphanumeric, a combination of alphanumeric characters and symbols (_, -) can be used for the ID. Up to 32 characters can be input.
   - **Name**: Enters the user name with the number buttons. Press the ▲ / ▼ buttons to switch between letters and numbers. Press F1/F2 to show more letters.
   - **PIN**: Enters a PIN. Enter the PIN and press OK. Enter the PIN again to confirm it, then press the OK button. PIN numbers must be 4 to 16 digits to prevent leaking of the PIN.
   - **Fingerprint**: Enrolls fingerprints for user authentication. After scanning the fingerprint of the registered finger, the same finger should be scanned one more time. Press the ESC button if you do not want to enroll a fingerprint.
   - **Card**: Registers cards for user authentication. Scan the cards that you want to assign to users. Press the ESC button if you do not want to register another card.
   - **User Level**: Select the level you wish to assign to a user.

   ![](image)

   The available menus vary depending on the selected user level.
   - **None**: Indicates the level for normal users who cannot use the menu.
   - **Administrator**: The user can use all menus.
   - **Configuration**: The user can use AUTHENTICATION, DISPLAY & SOUND, DEVICE, NETWORK, and EVENT LOG menus.
   - **User Mgmt**: The user can use USER and EVENT LOG menus.

   - **Start Date**: Sets the start date for the user account. Press the number buttons to enter the date. Use the < button to delete the date. Use the > button to enter a separator.
   - **Expiration Date**: Sets the end date for the user account. Press the number buttons to enter the date. Use the < button to delete the date. Use the > button to enter a separator.
   - **Security Level**: Sets the security level for 1:1 Authentication.
   - **Duress**: Select this option to add the fingerprint as a duress fingerprint. When threatened by someone to open the door, the user can authenticate using this fingerprint to send an alarm signal to BioStar 2.
   - **Private Auth Mode**: Change the authentication method according to the user. Select a desired item and press the << / >> buttons to change the settings.
Modifying User Information

User Management or Administrator can modify the registered user information. A fingerprint or card can be added, and PIN and level can be modified.

1. Press the ESC and authenticate with the Admin level credential.

2. Select USER → Search User and press OK.

3. Select a search method and press the button. You can search for users by ID, Name, Fingerprint, or Card.
   - If you press OK without selecting a search method, a list of all users will be displayed.

4. Select the user you want to edit and press F2. Edit the information by referring to Registering user information.
   - Press F3 and then the OK button to delete a user.

Access Group can be registered in BioStar 2. For detailed contents regarding registering an access group, refer to the BioStar 2 Administrator Manual.

Delete All Users

You can delete all registered users at once.

1. Press ESC and authenticate with the Admin level credential.

2. Select USER → Delete User, then press OK.

3. When you press OK, all registered users will be deleted.
View User Usage

You can see the number of registered users, fingerprints and cards at a glance.

1. Press ESC and authenticate with the Admin level credential.
2. Select USER → User Usage, then press OK.

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>User</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>500,000</td>
</tr>
<tr>
<td>Finger</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>500,000</td>
</tr>
<tr>
<td>Card</td>
<td>0</td>
</tr>
<tr>
<td></td>
<td>500,000</td>
</tr>
</tbody>
</table>
Authentication

Finger
You can set the schedule to be used for each authentication method using a fingerprint.

1 Press ESC and authenticate with the Admin level credential.

2 Select AUTHENTICATION → Finger, then press OK.

3 Select an item and press the \(</\rangle\) buttons to set a schedule.
   - : Mode to use a fingerprint only
   - + : Mode to authenticate with a fingerprint and then enter PIN

4 To save settings, press OK.

   - A schedule can be set in BioStar 2. If there is no set schedule, only Always can be selected.
   - For detailed contents regarding setting a schedule, refer to BioStar 2 Administrator Guide.

Card
You can set the schedule to be used for each authentication method using a card.

1 Press ESC and authenticate with the Admin level credential.

2 Select AUTHENTICATION → Card, then press OK.

3 Select an item and press the \(</\rangle\) buttons to set a schedule.
   - : Mode to use a card only
   - + : Mode to authenticate with a card and then authenticate with a fingerprint
   - + : Mode to authenticate with a card and then enter PIN
Authentication

- 🔴 + 🟢 / 🟣: Mode to authenticate with a card and then authenticate with a fingerprint or enter PIN
- 🔴 + 🔵 + 🟣: Mode to authenticate with a card and then use both fingerprint authentication and PIN input.

4 To save settings, press OK.

- A schedule can be set in BioStar 2. If there is no set schedule, only Always can be selected.
- For detailed contents regarding setting a schedule, refer to BioStar 2 Administrator Guide.

ID

You can set the schedule to be used for each authentication method using ID.

1 Press ESC and authenticate with the Admin level credential.

2 Select AUTHENTICATION → ID, then press OK.

3 Select an item and press < / > buttons to set a schedule.
- 🔴 + 🟢: Mode to enter ID and then authenticate with a fingerprint
- 🔴 + 🔵: Mode to enter ID and then enter PIN
- 🔴 + 🟢 / 🟣: Mode to enter ID and then authenticate with a fingerprint or enter PIN
- 🔴 + 🔵 + 🟣: Mode to enter ID and then use both fingerprint authentication and PIN input

4 To save settings, press OK.

- A schedule can be set in BioStar 2. If there is no set schedule, only Always can be selected.
- For detailed contents regarding setting a schedule, refer to BioStar 2 Administrator Guide.
T&A Mode
You can set how to register T&A Mode.

1 Press ESC and authenticate with the Admin level credential.

2 Select AUTHENTICATION → T&A Mode, then press OK.

3 Select an item and press < /> buttons to set a schedule.
   - **T&A Mode**: Set the method to use T&A mode.
   - **T&A Event**: View the set T&A event.
   - **T&A Required**: Set to require a user to select a T&A event when authenticating. If Use is set, you can set to require a user to select a T&A event when authenticating.

4 To save settings, press OK.
**Fingerprint**
You can change settings regarding the fingerprint authentication.

1. Press ESC and authenticate with the Admin level credential.
2. Select **AUTHENTICATION → Fingerprint**, then press **OK**.

   ![Fingerprint Table]

   - **Security Level**: Set the security level for 1:N authentication.
   - **Matching Timeout**: Set the fingerprint matching timeout. If the authentication is not completed during a set time, the authentication will fail.
   - **View Image**: Set to view the original image when scanning the fingerprint.
   - **Sensor Sensitivity**: Set the sensitivity of the fingerprint authentication sensor. To obtain more precise fingerprint information by increasing the sensor sensitivity, set the sensor sensitivity higher.
   - **1:N Fast Mode**: Set the fingerprint authentication speed. If you select **Auto**, the authentication speed will be set according to all fingerprint templates enrolled on the device.
   - **Template Format**: Set the fingerprint template format. **SUPREMA** is set as the default, and if you change the template format, all fingerprints saved previously cannot be used. Use caution when changing the Template Format.

   Change the template format after deleting the fingerprint information of all users. If the fingerprint information of a user has been enrolled, the template format cannot be changed.

   - **Sensor Mode**: When **Auto On** is set, the fingerprint sensor recognizes a user's fingerprint and turns on. When **Always On** is set, the sensor is always on.
   - **Advanced Enrollment**: Inspect the quality of a scanned fingerprint in order to save high quality fingerprint information. When **Use** is set and the quality of the fingerprint is low, it notifies such information to the user and helps the user scan the fingerprint correctly.
   - **Duplicate Check**: When registering fingerprints, you can check duplicates.

3. Select an item and press the `< />` buttons to change the settings.

4. To save settings, press **OK**.
Display & Sound

You can change the display and sound settings of the device.

1. Press ESC and authenticate with the Admin level credential.

2. Select DISPLAY & SOUND, then press OK.

3. Select an item and press the < / > buttons to change the settings.
   - **Theme**: Changes the style of the home screen.
   - **Background**: Select items to be displayed in the background of the home screen.
   - **Server Private Msg.**: Set whether to use a Private Message, which will be displayed on the screen when the user authenticates. You can set the Server Private Msg. by using the BioStar 2 API. If you have not set it on the server, the device does not display a message when authentication is successful even if Server Private Msg. is enabled on the device.
   - **Backlight Timeout**: Set the time (second) to turn off the lighting of LCD screen.
   - **Menu Timeout**: Set the time (sec) for the menu screen to disappear automatically. If there is no button input during a set time, the screen will return to the home screen.
   - **Msg Timeout**: Set the time (sec) for a setting complete message or information message to disappear automatically.
   - **Language**: Set the language you wish to use.
   - **Voice Instruction**: Set to use the voice instruction instead of alarm sounds.
   - **Volume**: Set the volume.

4. To save settings, press OK.
Device

Date & Time

You can set date and time. Set the date and time accurately in order to collect accurate log data.

1. Press ESC and authenticate with the Admin level credential.
2. Select DEVICE → Date & Time, then press OK.

<table>
<thead>
<tr>
<th>Date &amp; Time</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Date</td>
<td>2015/03/03</td>
</tr>
<tr>
<td>Time</td>
<td>15:29:59</td>
</tr>
<tr>
<td>Time Zone</td>
<td>UTC +9:00</td>
</tr>
<tr>
<td>Time Sync</td>
<td>Disabled</td>
</tr>
<tr>
<td>Date Format</td>
<td>YYYY/MM/DD</td>
</tr>
<tr>
<td>Time Format</td>
<td>24-Hour</td>
</tr>
</tbody>
</table>

3. Select an item and press the < / > buttons to change the settings.
   - **Date**: Check the current date. To modify it directly, set Disabled for Time Sync.
   - **Time**: Check the current time. To modify it directly, set Disabled for Time Sync.
   - **Time Zone**: Set the time reference of the current location.
   - **Time Sync**: Synchronize the server and the time. If you wish to synchronize the server and the time, enable Time Sync.
   - **Date Format**: Set the date format. You can select among YYYY/MM/DD, MM/DD/YYYY, and DD/MM/YYYY.
   - **Time Format**: Set the time format. You can select either 24-Hour or AM/PM.

   Press the number buttons to enter the date and time. Use the < button to delete the values entered. Use the > button to enter a separator.

Daylight Saving Time

You can use the device by applying daylight saving time. Set the start and end time correctly.

1. Press ESC and authenticate with the Admin level credential.
2. Select DEVICE → Daylight Saving Time, then press OK.
3. Select an item and press the < / > buttons to change the settings.
4. To save settings, press OK.
**User ID Type**

You can set the type of user ID to be registered on the device to a combination of alphabetic characters, numbers, and symbols (_,-)._  

1. Press ESC and authenticate with the Admin level credential.  
2. Select **DEVICE → User ID Type**, then press **OK**.  
3. Press the ⟵/ ⟶ buttons to change the settings.  
4. To save settings, press **OK**.  

**USB Memory**

Connect USB Memory and import user information to the device or export log and user information from the device. Upgrade the firmware.  

1. Press ESC and authenticate with the Admin level credential.  
2. Select **DEVICE → USB Memory**, then press **OK**.  
3. Select the desired item and change the setting.  
   - **Export**: Select information which you want to export to the connected USB memory. Select the desired item and press **OK**.  
   - **FW Upgrade**: If firmware files are saved in the connected USB memory, press **OK** to upgrade the firmware.  

**Warning**: Do not disconnect the power supply while upgrading the firmware of the device. The device may malfunction.  

**Note**: The type of supported USB memory is as follows. If you use a different type of USB memory, the function may not operate normally.  
- Samsung Electronics: SUM-LSB 8GB, SUM-PSB 8GB, SUM-PSB 16GB, SUM-BSG 32GB  
- LG Electronics: XTICK J3 WINDY 8GB, SMART USB MU1 White 8GB, MU 1 USB 32GB, MU28GBC 32GB, XTICK MOBY J1 16GB
Device

- SanDisk: Cruzer 16GB, Cruzer Blade CZ50 4GB, Cruzer Blade CZ50 32GB, CZ48 Ultra USB 3.0 64GB, CZ80 USB3.0 64GB, CZ52 64GB, Cruzer Glide Z60 128GB, Cruzer Force CZ71 32GB
- Sony: Micro Vault Click 8GB, MicroVault CLICK 16GB, USM-SA1 32GB
- Transcend: JetFlash 760 8GB, JetFlash 760 32GB, JetFlash 500 8GB
- Memorette: MINI500 8GB
- A-DATA: S102 PRO 8GB

Restart Device

You can restart the device.

1. Press ESC and authenticate with the Admin level credential.
2. Select DEVICE → Restart Device, then press OK.

3. To restart the device, press OK. To return to the previous screen, press ESC.

Restore Default

Device settings, network settings, and operator levels will be reset.

1. Press ESC and authenticate with the Admin level credential.
2. Select DEVICE → Restore Default, then press OK.
   - Reset All Settings: You can reset all settings stored on the device. Press OK to reset all device settings. To cancel, press ESC.
   - Reset without Network Settings: You can reset all settings except network settings. Press OK to reset all settings except network settings. To cancel, press ESC.
   - Factory Default: You can delete all the information saved in the device and the root certificate and restore default settings.
   - Delete the Root Certificate: You can delete the root certificate saved in the device.

3. If you proceed to restore the defaults, the device will restart.

- When you reset, the operator level will be reset as well. After resetting, make sure to set the operator level again.
- Language setting will not change after resetting.
- Factory Default menu can be used when the root certificate is saved in the device.
- Delete the Root Certificate menu can be used only when the root certificate is saved in the device and Administrator has been designated.
Relay

You can set the open time and the input port of the exit button in the device. This option is useful when the device is used as a standalone.

1. Press ESC and authenticate with the Admin level credential.
2. Select DEVICE → Relay, then press OK.
   - Relay: You can set whether relay is enabled or not. To set the open time and the input port of the exit button, set to Enabled.
   - Open Time: Set the duration for the door to remain open when standard user authentication has been carried out.
   - Exit Button: Select the input port where the exit button is connected.
3. To save settings, press OK.

Intercom

You can select whether or not to use the intercom.

1. Press ESC and authenticate with the Admin level credential.
2. Select DEVICE → Interphone, then press OK.
3. When the intercom is connected, press the </> buttons to select Enabled.
4. To save settings, press OK.

Secure Tamper

When the tamper is turned on, you can set to delete the entire user, the entire log, and the security key.

1. Press ESC and authenticate with the Admin level credential.
2. Select DEVICE → Secure Tamper, then change the settings by pressing </ >.
3. To save settings, press OK.
Device Info

You can view the model name, device ID, serial number, firmware version of device ID, and MAC address.

1 Press ESC and authenticate with the Admin level credential.
2 Select DEVICE → Device Info, then press OK.
   • You can view the information including Model Name, Device ID, HW, FW, Kernel, MAC, and WiFi MAC.
3 Check the device information and press OK.

Memory Info

View the status of memory usage.

1 Press ESC and authenticate with the Admin level credential.
2 Select DEVICE → Memory Info, then press OK.
3 Check the memory information and press OK.
Network

TCP/IP Settings

You can change the network settings of the device.

1. Press ESC and authenticate with the Admin level credential.
2. Select NETWORK → TCP/IP, then press OK.
3. Press the </> buttons to select a Type then select an item. You can select Ethernet or Wireless.

- **PORT**: Enter the port number of the device.
- **DHCP**: Set whether to use DHCP. If DHCP setting is disabled, the user can modify PORT, IP Address, Gateway, and Subnet Mask.
- **IP Address**: View the IP address of the device. To modify, disable DHCP setting.
- **Gateway**: View the gateway of the device. To modify, disable DHCP setting.
- **Subnet Mask**: View the subnet mask of the device. To modify, disable DHCP setting.
- **AP Search**: Select the AP to connect to.
- **Encryption**: Shows the encryption method of the AP.
- **Password**: Enter the AP login password.
- **PORT**: Enter the port number of the device.
- **DHCP**: Set whether to use DHCP. If DHCP setting is disabled, the user can modify the IP Address.
- **IP Address**: Enter the IP address of the device.

4. To save settings, press OK.

   - Press the number buttons to enter the IP address, gateway address, and subnet mask address. Use the button to delete the values entered. Use the button to enter a separator.
   - To use Wireless, you need a wireless router. For more information on installing and configuring the wireless router, see the manual of the wireless router.
Server Settings

1. Press ESC and authenticate with the Admin level credential.

2. Select NETWORK → Server, then press OK.

<table>
<thead>
<tr>
<th>Connection Mode</th>
<th>Server &gt; Device</th>
</tr>
</thead>
<tbody>
<tr>
<td>Server URL</td>
<td></td>
</tr>
<tr>
<td>Server IP</td>
<td>0.0.0.0</td>
</tr>
<tr>
<td>Server Port</td>
<td>51212</td>
</tr>
</tbody>
</table>

3. Select an item and change the settings.
   - **Connection Mode**: When you select Device > Server, you can send a connection signal from the device to a server with the input information directly. When you select Server > Device, Server IP and Server Port cannot be entered.
   - **Server URL**: You can enter the BioStar 2 server’s URL instead of Server IP.
   - **Server IP**: Enter the IP of the PC where BioStar 2 is installed.
   - **Server Port**: Enter the port of the PC on which BioStar 2 is installed.

4. To save settings, press OK.

   Press the number buttons to enter the values for Server IP and Server Port. Use the < button to delete the values entered. Use the > button to enter a separator.

RS-485 Settings

RS-485

1. Press ESC and authenticate with the Admin level credential.

2. Select NETWORK → RS-485, then press OK.

<table>
<thead>
<tr>
<th>Mode</th>
<th>Default</th>
</tr>
</thead>
<tbody>
<tr>
<td>Baud Rate</td>
<td>115200</td>
</tr>
</tbody>
</table>

3. Select an item and press the < / > buttons to change the settings.
   - **Mode**: Select the RS-485 mode.
   - **Baud Rate**: Select the desired baud rate.

4. To save settings, press OK.
Event Log

Search Log

You can set a condition and search a log.

1. Press ESC and authenticate with the Admin level credential.
2. Select EVENT LOG → Search, then press OK.

   ![Search Log](image)

   - **Start Date**: 2015.3.3
   - **Start Time**: 00:00:00
   - **End Date**: 2015.3.3
   - **End Time**: 23:59:59
   - **Event**: All
   - **T&A Event**: All
   - **User ID**: 

3. Select an item and press the < / > buttons to change the condition. When you press OK, a log that matches the set condition will be displayed on the screen.

4. To return to the previous screen, press ESC.

Delete All Logs

You can delete all saved logs.

1. Press ESC and authenticate with the Admin level credential.
2. Select EVENT LOG → Delete All, then press OK.

   ![Delete All Logs](image)

3. To delete all logs, press OK. To return to the previous screen, press Cancel.
View Log Usage
You can check the status of log usage.

1 Press ESC and authenticate with the Admin level credential.

2 Select EVENT LOG → Log Usage, then press OK.

3 Press OK after checking the log usage.
## Troubleshooting

This troubleshooting provides information to solve unexpected issues that you may encounter when using the device.

<table>
<thead>
<tr>
<th>Category</th>
<th>Problem</th>
<th>Solution</th>
</tr>
</thead>
</table>
| Power    | The power is being supplied but the device does not operate.           | • If the terminal and the bracket are far away from each other, the device may not operate due to the temper switch.  
• Check the adapter or the power cable.                          |
| PIN      | I lost my PIN.                                                         | • For a normal user PIN, request it from the administrator and enter it again.                     
• If you have lost the Admin PIN, contact the installation company. |
| PIN      | I entered my PIN and pressed the OK button, but I still cannot open the door. | • Check if you have entered the registered PIN correctly.                                        
• Check if you have changed the PIN recently.                      
• If you cannot remember the PIN, request it from the administrator and enter it again. |
| Fingerprint | The fingerprint has been enrolled but fingerprint authentication cannot be done smoothly and errors occur frequently. | • Check How to enroll a fingerprint and enroll the fingerprint again.                           
• If your fingerprint has a cut, the device may recognize your fingerprint as someone else's fingerprint.  
• If there are a large number of enrolled fingerprints, change Matching Timeout and try again.  
• The authentication rate may vary for each fingerprint due to different characteristics. Enroll the fingerprint of another finger. |
| Fingerprint | Suddenly fingerprint authentication cannot be done.                    | • Check if the finger or the fingerprint sensor is smeared with sweat, water or dust, and wipe the finger or the fingerprint sensor clean.  
• Wipe your finger and the fingerprint sensor with a dry towel and then try again.  
• If the fingerprint of your finger is too dry, blow on the fingerprint and then try again. |
| Fingerprint | The fingerprint sensor does not turn on.                               | • When Sensor Mode is set to Auto On, the sensor will only turn on when you place finger on the fingerprint sensor. If you want to keep the fingerprint sensor on, go to AUTHENTICATION > Fingerprint > Sensor Mode and then select Always On. |
| Door Lock | The door cannot be locked when I close the door.                      | • The electric lock may be malfunctioning. Have an inspection through the installation company.   |
| Time     | Suddenly the time has become incorrect.                                | • BioStation 2 is equipped with a built-in battery but if power is not supplied for a long time, the built-in battery may die, causing the time to become incorrect. You can correct the time by referring to Date & Time. |
| Admin Access | I lost my Admin PIN, so I cannot access the Admin mode.             | • The administrator grants an access permission in BioStation 2, so only the administrator can access the Admin menu.  
• If you have lost the Admin PIN, contact the installation company. |
## Product specifications

<table>
<thead>
<tr>
<th>Category</th>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Credential</td>
<td>Biometric</td>
<td>Fingerprint</td>
</tr>
<tr>
<td></td>
<td>RF Option</td>
<td>• <strong>BS2-OMPW</strong>: 13.56MHz MIFARE, MIFARE Plus, DESFire, DESFire EV1/ EV2/EV3(^1), FeliCa, NFC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>BS2-OIPW</strong>: 13.56MHz iCLASS SE/SR/Seos, NFC</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>BS2-OHPW</strong>: 125kHz HID Prox</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• <strong>BS2-OEPW</strong>: 125kHz EM</td>
</tr>
<tr>
<td></td>
<td>RF read range(^2)</td>
<td>EM/HID Prox/MIFARE/DESFire: 50 mm, FeliCa: 30 mm</td>
</tr>
<tr>
<td></td>
<td>Mobile</td>
<td>NFC (BS2-OMPW, BS2-OIPW)</td>
</tr>
<tr>
<td>General</td>
<td>CPU</td>
<td>1.0 GHz</td>
</tr>
<tr>
<td></td>
<td>Memory</td>
<td>8 GB Flash + 256 MB RAM</td>
</tr>
<tr>
<td></td>
<td>Crypto chip</td>
<td>Supported</td>
</tr>
<tr>
<td></td>
<td>LCD type</td>
<td>2.8” color TFT LCD</td>
</tr>
<tr>
<td></td>
<td>LCD resolution</td>
<td>320 x 240</td>
</tr>
<tr>
<td></td>
<td>LED</td>
<td>Multiple colors</td>
</tr>
<tr>
<td></td>
<td>Sound</td>
<td>16-bit</td>
</tr>
<tr>
<td></td>
<td>Operating temperature</td>
<td>-20 °C – 50 °C</td>
</tr>
<tr>
<td></td>
<td>Storage temperature</td>
<td>-40 °C – 70 °C</td>
</tr>
<tr>
<td></td>
<td>Operating humidity</td>
<td>0 % – 80 %, non-condensing</td>
</tr>
<tr>
<td></td>
<td>Storage humidity</td>
<td>0 % – 90 %, non-condensing</td>
</tr>
<tr>
<td></td>
<td>Dimension (W x H x D)</td>
<td>142 x 144 x 45 (Bottom) / 38 (Top) (mm)</td>
</tr>
</tbody>
</table>
|                | Weight        | • Device: 440 g  
• Bracket (Including washer and bolt): 130 g                              |
|                | IP Rating      | IP65                                                                          |
|                | Certificates  | CE, UKCA, KC, FCC, BIS, RoHS, REACH, WEEE                                     |
| Fingerprint    | Image dimension | 272 x 320 pixels                                                             |
|                | Image bit depth | 8bit, 256 grayscale                                                           |
|                | Resolution    | 500 dpi                                                                       |
|                | Template      | SUPREMA / ISO19794-2 / ANSI-378                                              |
|                | Extractor / Matcher | MINEX certified and compliant                                                 |
| Capacity       | Max. User     | 500,000\(^3\)                                                               |
|                | Max. Credential (1:N) | Fingerprint: 20,000                                                          |
|                | Max. Credential (1:1) | • Fingerprint: 500,000  
• Card: 500,000  
• PIN: 500,000                  |
|                | Max. Text Log | 3,000,000                                                                     |
### Interface

<table>
<thead>
<tr>
<th>Category</th>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wi-Fi</td>
<td>Supported</td>
<td></td>
</tr>
<tr>
<td>Ethernet</td>
<td>Supported (10/100 Mbps, auto MDI/MDI-X)</td>
<td></td>
</tr>
<tr>
<td>RS-485</td>
<td>1ch Host or Slave (Selectable)</td>
<td></td>
</tr>
<tr>
<td>Wiegand</td>
<td>1ch Input, 1ch Output</td>
<td></td>
</tr>
<tr>
<td>TTL input</td>
<td>2ch Input</td>
<td></td>
</tr>
<tr>
<td>TTL output</td>
<td>2ch Output</td>
<td></td>
</tr>
<tr>
<td>Relay</td>
<td>1 Relay</td>
<td></td>
</tr>
<tr>
<td>USB</td>
<td>USB 2.0 (Host)</td>
<td></td>
</tr>
<tr>
<td>PoE</td>
<td>Supported (IEEE 802.3af compliant)</td>
<td></td>
</tr>
<tr>
<td>Intercom</td>
<td>Supported</td>
<td></td>
</tr>
<tr>
<td>Tamper</td>
<td>Supported</td>
<td></td>
</tr>
</tbody>
</table>

### Electrical

<table>
<thead>
<tr>
<th>Power</th>
<th>Voltage: 12 Vdc</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Current: Max. 0.8 A</td>
</tr>
<tr>
<td>Switch input VIH</td>
<td>Min.: 3 V</td>
</tr>
<tr>
<td></td>
<td>Max.: 5 V</td>
</tr>
<tr>
<td>Switch input VIL</td>
<td>Max.: 1 V</td>
</tr>
<tr>
<td>Switch Pull-up resistance</td>
<td>4.7 kΩ (The input pots are pulled up with 4.7 kΩ.)</td>
</tr>
<tr>
<td>Wiegand output VOH</td>
<td>More than 4.8 V</td>
</tr>
<tr>
<td>Wiegand output VOL</td>
<td>Less than 0.2 V</td>
</tr>
<tr>
<td>Wiegand output Pull-up resistance</td>
<td>Internally pulled up with 1 kΩ</td>
</tr>
<tr>
<td>Relay</td>
<td>2 A @ 30 VDC Resistive load</td>
</tr>
<tr>
<td></td>
<td>1 A @ 30 VDC Inductive load</td>
</tr>
</tbody>
</table>

1) DESFire EV2/EV3 cards are supported by having backward compatibility of DESFire EV1 cards. CSN and smart card functions are compatible with BioStation 2.

2) RF read range will vary depending on installation environment.

3) The number of users registered without having any credential data.
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.

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.

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

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

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Appendices

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Appendices

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