SSA-R2010
SSA-R2020
SSA-R2040

Biometric Reader

user manual

imagine the possibilities

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www.samsungsecurity.com

SAMSUNG

safety information

CAUTION

RISK OF ELECTRIC SHOCK.
DO NOT OPEN

CAUTION: TO REDUCE THE RISK OF ELECTRIC SHOCK, DO NOT REMOVE COVER (OR BACK) NO USER SERVICEABLE PARTS INSIDE. REFER SERVICING TO QUALIFIED SERVICE PERSONNEL.

This symbol indicates that dangerous voltage consisting a risk of electric shock is present within this unit.

This exclamation point symbol is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the appliance.

WARNING

- To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

WARNING

1. Be sure to use only the standard adapter that is specified in the specification sheet. Using any other adapter could cause fire, electrical shock, or damage to the product.
2. Incorrectly connecting the power supply or replacing battery may cause explosion, fire, electric shock, or damage to the product.
3. Do not connect multiple controllers to a single adapter. Exceeding the capacity may cause abnormal heat generation or fire.
4. Securely plug the power cord into the power receptacle. Insecure connection may cause fire.
5. When installing the controller, fasten it securely and firmly. The fall of controller may cause personal injury.
6. Do not place conductive objects (e.g. screwdrivers, coins, metal parts, etc.) or containers filled with water on top of the controller. Doing so may cause personal injury due to fire, electric shock, or falling objects.
7. Do not install the unit in humid, dusty, or sooty locations. Doing so may cause fire or electric shock.
8. If any unusual smells or smoke come from the unit, stop using the product. In such case, immediately disconnect the power source and contact the service center. Continued use in such a condition may cause fire or electric shock.
9. If this product fails to operate normally, contact the nearest service center. Never disassemble or modify this product in any way. (SAMSUNG is not liable for problems caused by unauthorized modifications or attempted repair.)
10. When cleaning, do not spray water directly onto parts of the product. Doing so may cause fire or electric shock.

CAUTION

1. Do not drop objects on the product or apply strong blows to it. Keep away from a location subject to excessive vibration or magnetic interference.
2. Do not install in a location subject to high temperature (over 50°C), low temperature (below -10°C), or high humidity. Doing so may cause fire or electric shock.
3. If you want to relocate the already installed product, be sure to turn off the power and then move or reinstall it.
4. Remove the power plug from the outlet when there is a lighting storm. Neglecting to do so may cause fire or damage to the product.
5. Keep out of direct sunlight and heat radiation sources. It may cause fire.
6. Install it in a place with good ventilation.

7. Avoid aiming the controller directly towards extremely bright objects such as sun.
8. Apparatus shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on the apparatus.
9. The Mains plug is used as a disconnect device and shall stay readily operable at any time.

FCC Statement

Caution : Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

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, any 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.

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean only with dry cloth.
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong is provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/accessories specified by the manufacturer.
12. Use only with cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus.
13. Unplug this apparatus when a card is used. Use caution when moving the cart/ apparatus combination to avoid injury from tip-over.

14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as powersupply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.

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product introduction

FEATURES

This product is a fingerprint recognition reader that is compatible with the proximity reader. This product can be synchronized with the controller, and is featured by reliable fingerprint recognition, all of which enables you to perform a high level management of security and time and attendance. Integrated with the proximity reader and the fingerprint recognition functions, this product will allow access to a user only if the card number matches the fingerprint of the user. Easily installed on a doorframe or a flat wall (simply replace the existing reader, if any), this product gives you high satisfaction apart from the elegant looking appearance. The product's reliable fingerprint recognition will keep you safe from unauthorized access.

Reader Mode

RF Only Mode

- As soon as the card is authenticated, the corresponding card ID will be transferred to the controller.

RF+FINGER Mode

- As soon as the fingerprint is authenticated, the corresponding card ID will be transferred to the controller.
- For a person whose fingerprint is not registered, the product will automatically switch to RF Only mode.

Error Signal Output

If the product fails to authenticate a fingerprint or unregistered card, it will produce an error signal for 500 ms. (However, if set to the Wiegand output format) The output format is of the open collector.

Output Format of Card Number

When a fingerprint is authenticated, the corresponding card number will be transferred in 26bit/34bit Wiegand.

Master Card

Used to switch between registration/deletion mode and reader mode.

Switching Operation Mode by External Input

This product can switch between RF Only and RF +Finger, according to the input setting of the product's system mode control line (gray with red stripes).

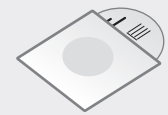
Card Number Input Format

The user ID read by the external reader or using the card or keypad will be transferred in 26bit Wiegand/34bit Wiegand.

product introduction

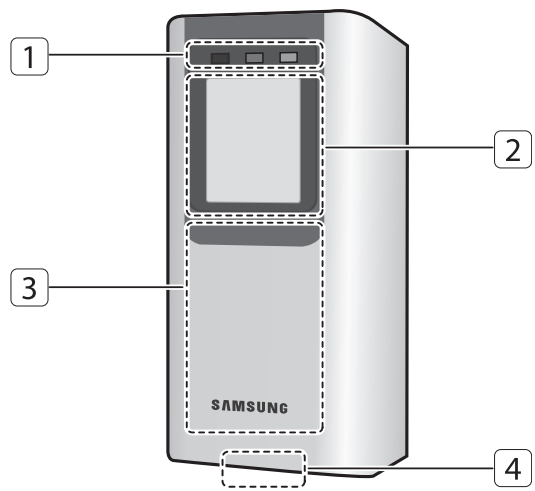
WHAT'S INCLUDED

Check if the following items are included in the product package.

Main Unit	Wall Mount	3 x 30mm Screws (x2) 3.5 x 12mm Screws (x2) 3 x 6mm Screw (x1) 6 x 30mm Plastic Anchors (x2)
		
Cables (x4)	Quick Guide	CD Manual
Master Card (x1)		

AT A GLANCE

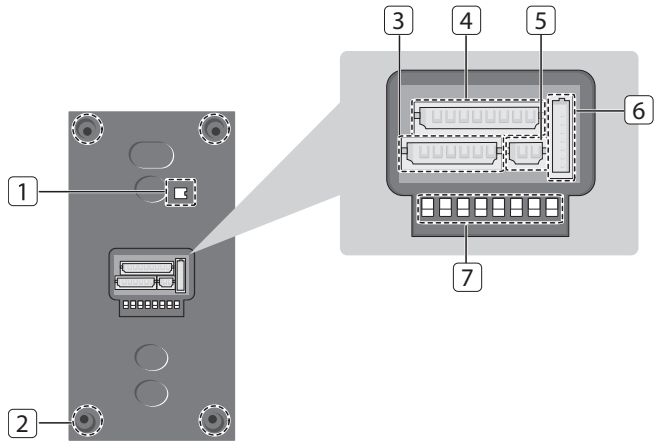
Front Panel



1	**LED**	Displays the status of the system operation.
2	**Fingerprint Sensor**	Fingerprint scanner module.
3	**Card Recognition**	Present a card to the marked area, and the product starts reading it.
4	**Speaker**	Sounds a voice comment according to the user manipulation.

product introduction

Rear Panel



1	**Tamper Switch**	Tamper switch.
2	**Fixing Screw**	Hole for a fixing screw.
3	**6-PIN Connector**	Can be connected to the Wiegand input and RS-485 communication cables.
4	**8-PIN Connector**	Can be connected to the Wiegand output and signal output cables.
5	**2-PIN Connector**	Can be connected to the power cable.
6	**RJ45 Connector**	Used in TCP/IP communications.
7	**DIP Switch**	Used to initialize the system or specify the communication addresses.

CABLE COLOR SCHEME

❖ 2-PIN Connector

I/O Pins	Signal	Cable Color
Power (+12V)	DC +12V	Red
Earth-grounding	GND (-)	Black

❖ 6-PIN Connector

I/O Pins	Signal	Cable Color
EX Input Wiegand DATA0	EX-DATA0	Pink
EX Input Wiegand DATA1	EX-DATA1	Sky Blue
NC		Brown
NC		Blue

❖ 8-PIN Connector

I/O Pins	Signal	Cable Color
Wiegand DATA 0	DATA-0	Green
Wiegand DATA 1	DATA-1	White
ERROR SIGNAL OUT	ERROR SIGNAL OUT	Orange
OK SIGNAL OUT	OK SIGNAL OUT	Orange with Black Stripes
TAMPER OUT	TAMPER OUT	Purple
EX_LED_CONTROL	EX_LED_CONTROL	Blue with White Stripes
EX_BUZZER_CONTROL	EX_BUZZER_CONTROL	White with Red Stripes
EX_SYS_CHANGE_IN	EX_SYS_CHANGE_IN	Gray with Red Stripes

❖ TCP/IP (8PIN Connector) RJ45 cable connected

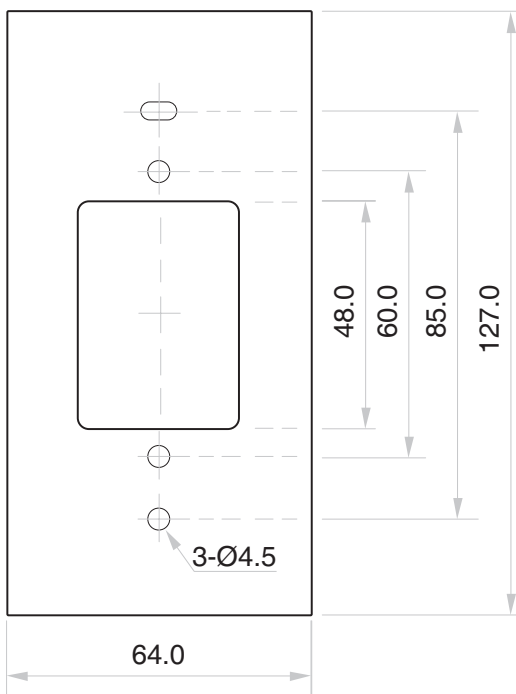
CABLE SELECTION

Item	Cable Type
1 **Power (DC12V)** **DC Power → Product**	Belden #9409, 18 AWG 2 Conductor, Unshielded (Maximum Allowable Distance : Within 3m)
2 **Wiegand I/O** **Product → Controller connected** **External Reader → Product**	Belden #9512, 22 AWG 4 Conductor, Shielded
	Belden #9514, 22 AWG 8 Conductor, Shielded
3 **Signal I/O** **Controller ↔ Product**	Belden #9512, 22 AWG 4 Conductor, Shielded
	Belden #9514, 22 AWG 8 Conductor, Shielded

installation and external connection

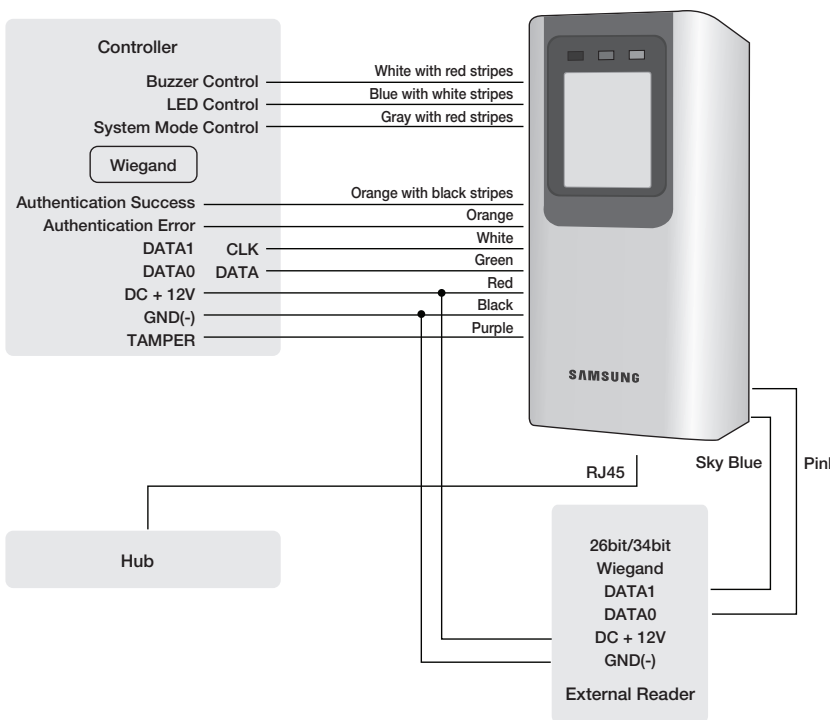
INSTALLING THE WALL MOUNT

1. Use 2 screws to fix the Wall Mount on an appropriate point.
2. Drill a hole on the center of the Wall Mount so that the cables are arranged through it.
3. Take out the cables through the center hole.
4. Connect the cables to the 4 connectors as appropriate, and use one screw to fix the Wall Mount with the product.



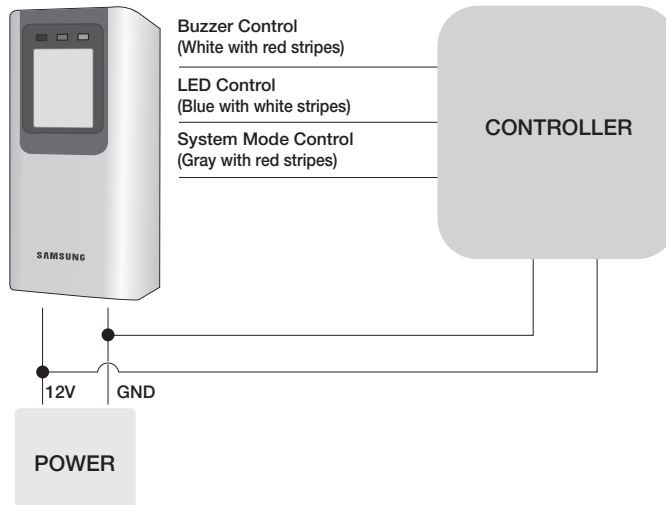
I/O CONNECTION

Overall Wiring Diagram



installation and external connection

Input Connection



- Connection of External LED control

Connect the LED control input line (blue with white stripes) to the NO port of the controller relay output, and GND to the COM port. Set I/O of the controller; now you can control turning on/off the green indicator. While the LED control is working, the green indicator stays solid.

The controller can use the I/O settings to set the LED controller so that it displays the additional LED status for authorized or unauthorized access upon user authentication. Furthermore, you can handle various situations according to the I/O settings of the controller.

For more information about the I/O settings of the controller, refer to the user manual of the controller.

- Connection of External Buzzer Control

Connect the buzzer control input line (white with red stripes) to the NO port of the controller relay output, and GND to the COM port. You can configure the I/O settings of the controller so that it sounds a beep. While the buzzer control is working, the product keeps sounding the beep.

The controller can use the I/O settings to set the buzzer control so that it sounds an additional beep for authorized or unauthorized access upon user authentication.

Furthermore, you can handle various situations according to the I/O settings of the controller.

For more information about the I/O settings of the controller, refer to the user manual of the controller.

- Connection of External System Mode Control (switching mode using external input)

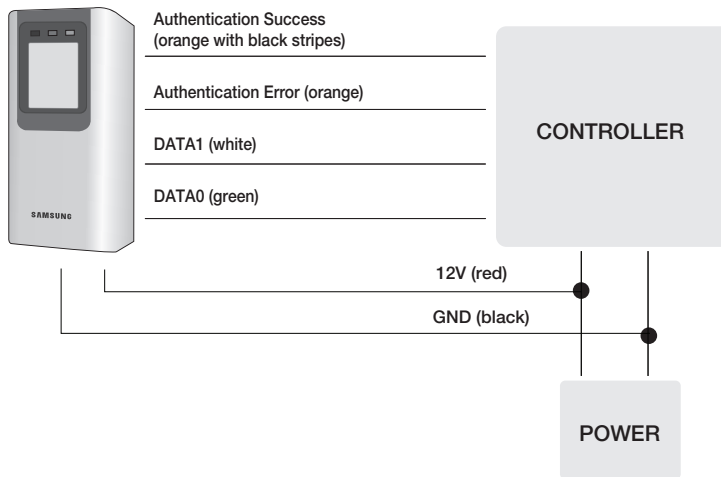
Connect the system mode control line (gray with red stripes) to the NO port of the controller relay output, and GND to the COM port. Set I/O of the controller; now you can control the system mode. While the system mode is controlled, the product works in RF only mode.

With the I/O or time schedule settings, the controller can control to switch the system operation mode for a specific timeline.

Furthermore, you can handle various situations according to the I/O settings of the controller.

For more information about the I/O settings of the controller, refer to the user manual of the controller.

Output Connection



- Wiegand DATA Output Connection

1. Connect the green line (Wiegand DATA 0) of the product to Wiegand DATA 0 of the controller.
2. Connect the white line (Wiegand DATA 1) of the product to Wiegand DATA 1 of the controller.
3. The product should be connected to GND(-) of the controller.

- Connection of Authentication Error Signal

Connect the orange line (authentication error signal) of the product to the input port of the controller.
With the I/O settings, the controller can transfer the authentication error event to the operating software program.
Furthermore, you can handle various situations according to the I/O settings of the controller.

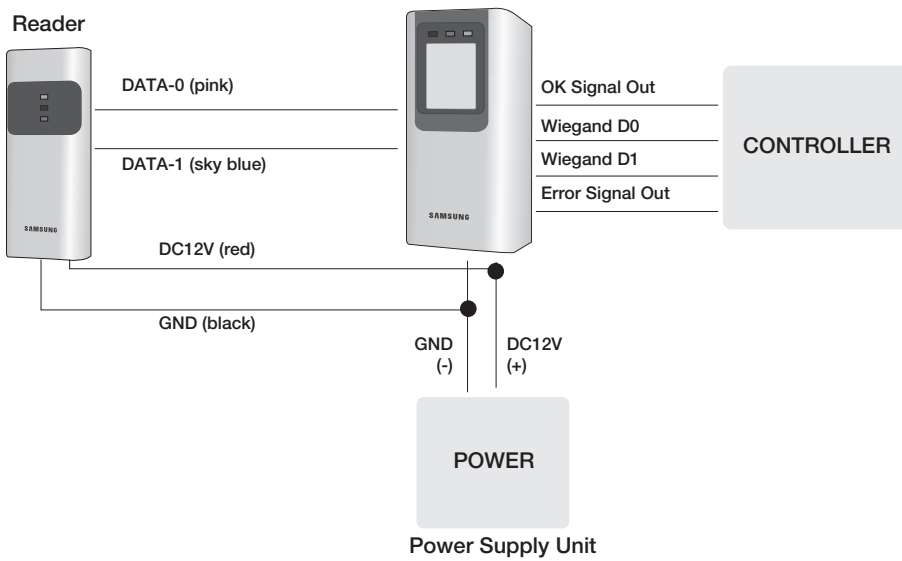
- Connection of Authentication Success Signal

Connect the orange line with black stripes (authentication success signal) of the product to the corresponding input port of the controller.
With the I/O settings, the controller can transfer the authentication success event to the operating software program.
Furthermore, you can handle various situations according to the I/O settings of the controller.

installation and external connection

CONNECTING TO THE EXTERNAL READER

External Reader Connection



1. Connect the DC 12V(+) line of the power supply unit to the plus (+) line of the reader.
2. Connect the GND(-) line of the power supply unit to the minus (-) line of the reader.
3. Connect the Wiegand DATA-0 line of the proximity reader to the pink line.
4. Connect the Wiegand DATA-1 line 1 of the proximity reader to the sky blue line
5. The product should be connected to GND(-) of the external reader.

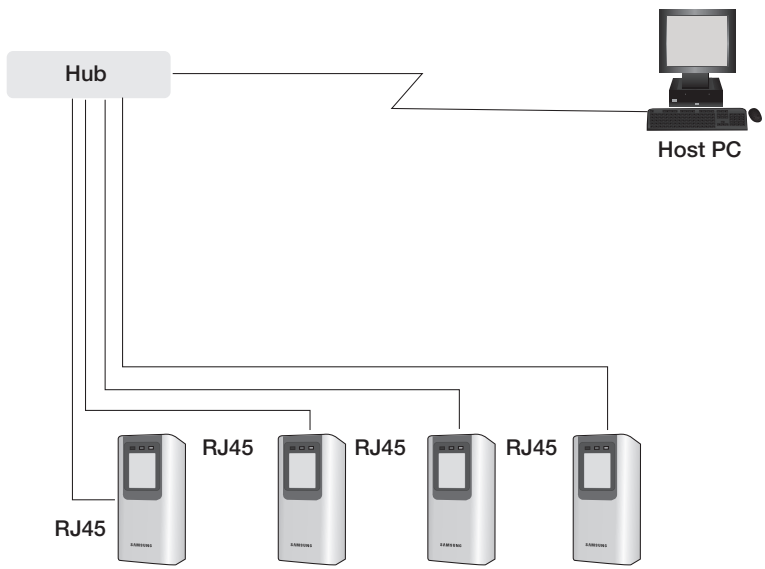
- For a list of compliant readers (external readers), see the followings:

  SSA-R2010/SSA-R2020/SSA-R2040
  - Standard 26bit Wiegand format proximity reader

  SSA-R2011 / SSA-R2021 / SSA-R2041
  - Standard 34bit Wiegand format proximity reader

TCP/IP Communication Port Connection

To enable TCP/IP communications with the host PC, you must have connected the RJ45 jack to CON4 (8-PIN connector). Please follow the steps below:



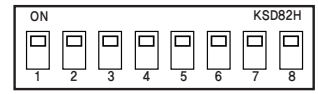
1. Connect the RJ45 jack of the product to the RJ45 plug of the network system.
2. Install and launch the application (SAMS).

Initialization

INITIALIZING THE SYSTEM USING THE DIP SWITCH

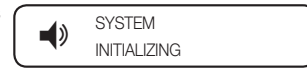
Initialize the system using the DIP switch on the rear of the product.

1. Disconnect the power supply.
2. Position the DIP switch on the rear of the product to ON (upside) and apply power to the product.

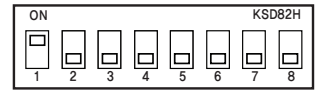


3. The product sounds a beep once with a voice message, and proceed with the hardware initialization process.

4. When the initialization is done, the product sounds a beep three times with a completion message output.
   - The product keeps sounding the beep until you change the communication address.



5. Use the DIP switch to specify the BOARD ID.
   - Refer to “Communication Address Setup”. (on page 22)



6. You must specify the communication address and register the master ID.

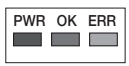
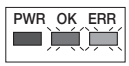
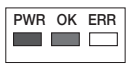
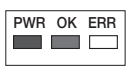
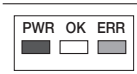
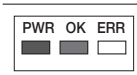
- If you initialize the hardware system, all data settings return to the factory default. (including IDs, fingerprint data, master ID, card number output format, IP)
- If you initialize the system using SAMS, all data except for the IP setting will return to the default.
- If the communication address is set to 255, the initialization process gets started immediately.

DISPLAY AND OPERATION STATUS OF READER/REGISTER

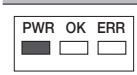
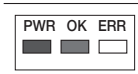
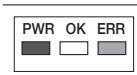
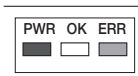
LED ON : ■ LED OFF : □ LED Blinking : ▣

LED	Beep	Voice Message	Description
	1 BEEP	WELCOME TO ACCESS CONTROL SYSTEM	The product is in the boot process after it turned on.
	X	SYSTEM INITIALIZED	Restores registered user cards and other system settings to the default.

❖ REGISTRATION MODE

LED	Beep	Voice Message	Description
	X	MASTER ID REGISTRATION MODE	The first card read by the product after it is Initialized will be registered as the master card.
	X	REGISTRATION AND DELETION MODE, SCAN YOUR CARD	You can register or remove the user card.
	3 BEEPS	ID REGISTERED	The user card is registered successfully.
	3 BEEPS	FINGERPRINT REGISTERED	The user card/fingerprint is registered successfully.
	2 BEEPS	FINGERPRINT REGISTRATION FAILED, PLEASE TRY AGAIN	Failed to register the user card/fingerprint.
	4 BEEPS	ID DELETED	The user card/fingerprint is deleted successfully.

❖ READER MODE

LED	Beep	Voice Message	Description
	X	READER MODE	User card will be authenticated in normal operation mode
	1 BEEP	ACCESS GRANTED	User access is granted
	2 BEEPS	ACCESS DENIED, PLEASE TRY AGAIN	User access is denied
	2 BEEPS	ID UNREGISTERED	Unregistered user

initialization

TO REGISTER/DELETE THE MASTER ID (CARD)

The product will switch to Registration mode when presented with the master card in Reader mode.
The product will switch to Reader mode when presented with the master card in Registration mode.

1. If you want to register a new master card, initialize the system before proceeding.
   Refer to “Initializing the system using the DIP switch”. (on page 20)

2. When the initialization is completed, the product outputs a voice message with the green and orange indicators turned on, then present the master card.

   WELCOME TO ACCESS CONTROL SYSTEM

   MASTER ID REGISTRATION MODE

3. When you present the card to the product (beep once when it is read), it will beep three times with a voice message output.

   REGISTRATION AND DELETION MODE, SCAN YOUR CARD

4. The blinking green and orange indicators indicate that the product switches to Master mode.
   - Then, register normal users if you want to.

5. To exit Master mode, present the master card to the product again. You will hear the following voice message:
   - When the green and orange indicators are all turned off, the product is in Reader mode.

   READER MODE

▪ For the master card, no fingerprint registration is required.

COMMUNICATION ADDRESS SETUP

You can upload or download the user fingerprint using SAMS. You can also change the settings of the product to apply to different situations.
The Board ID is a device address based on which the SW application recognizes the device. For this purpose, the Board ID should be unique.
You can specify up to 255 different BOARD IDs from “000” to “254”.

1. Use the DIP switch on the rear panel to specify the BOARD ID.

2. The DIP switch on the rear panel is assigned in binary code respectively, starting from the leftmost. In other words, the first DIP switch has the value of “1”, the second one with “2”, and the third is “4”. According to this way of calculation, the eighth switch has the value of “128”.

3. Move down the DIP switch to OFF, and move it up to the corresponding value.
   - The value of the board ID is the sum of all values of the DIP switches whose positions are upward. For instance, if the first, third, fourth, seventh and eighth DIP switches are positioned upward, the board ID will be “205”.

▪ The default address is set to “000”.
▪ For serial communication, each product in the same loop should have a unique communication address.
▪ The default baud rate is set to 57600 bps.

READER MODE AND AUTHENTICATION

Reader Mode

1. In Reader mode, any recognized user ID or status will be transmitted to the controller.
2. If the user ID and fingerprint are authenticated, the corresponding card ID will be displayed.
3. If they are not authenticated, an error signal will be output.

How to get authenticated if set to RF Only mode or if registered in RF Only mode

1. Present the registered card to the reader.
2. When the card is authenticated successfully, you will hear a long beep with the green indicator turned on.
3. The user ID will be displayed according to the specified output format.

How to get authenticated if set to RF+ Finger mode and registered in RF+ Finger mode

1. Present the registered card to the reader.
2. When the card is recognized, the red lamp on the scanner turns on.
3. Place the registered fingerprint on the scanner.
4. When the fingerprint is authenticated successfully, you will hear a long beep with the green indicator turned on, and the user ID will be displayed according to the specified output format.
5. If the fingerprint is denied, you will hear a beep twice with the orage indicator blinking twice, and the fingerprint error signal (Low Active) will be output for 500ms.

If the card is not registered

1. If you will hear a beep twice with the orange indicator blinking twice when presenting the card to the reader, this indicates that the card is unregistered or already deleted.
2. For an unregistered card or denied fingerprint, the reader will output the fingerprint error signal (Low Active) for 500ms.

User Management

REGISTERING THE ID

1. Check if the green and orange indicators are all turned off when the reader turns on.
2. Present the master card to the reader. You will hear the following voice message with the green and orange indicators blinking.

3. Present a user card to the reader. (You will hear a beep once when the card is read) if you want to register the card alone, do not register the fingerprint yet and just wait after a voice message of "PUT YOUR FINGER".
   - You will hear a voice message of "ID Registered" with a beep three times before registration of the card ID is completed .

4. Repeat step 3 above if you want to register another user.
5. When the user registration is completed, present the master card to exit the registration mode.

TO REGISTER THE ID CARD ALONG WITH THE FINGERPRINT

1. Check if the green and orange indicators are all turned off when the reader turns on.
2. Present the master card to the reader. You will hear the following voice message with the green and orange indicators blinking.

3. Present a user card to the reader. Upon the voice message of "PUT YOUR FINGER", Place the fingerprint on the scanner.

4. Upon the voice message of "REMOVED FINGER", release the fingerprint from the scanner; present the fingerprint on the scanner again when hearing "PUT YOUR FINGER AGAIN".

5. The user registration is completed when you hear the corresponding message with a beep twice.

6. Repeat steps 3 through 5 above if you want to register another user.
7. When the user registration is completed, present the master card to exit the registration mode.

TO DELETE ID

1. Check if the green and orange indicators are all turned off when the reader turns on.

2. Present the master card to the reader. You will hear the following voice message with the green and orange indicators blinking.

3. Present a registered user card to the reader. When you hear the following message with a beep four times, the user is deleted successfully.

- When the ID is deleted, the fingerprint data will be deleted too.

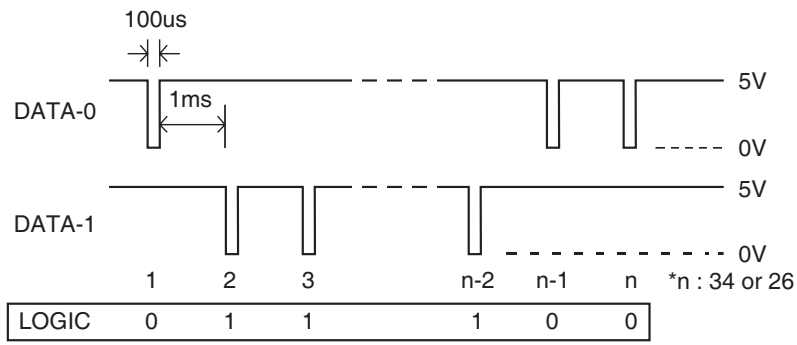
4. Repeat step 3 above if you want to delete another user.

5. When the ID deletion is completed, present the master card to exit the registration mode.

Output Format

WIEGAND OUTPUT (DEFAULT)

Timing Diagram



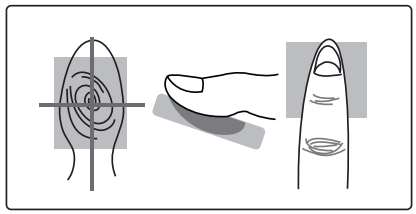
Data Type (26-bit /34-bit)

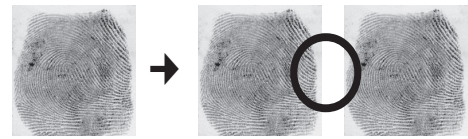
- Even parity bits from Bit 2 to Bit 13 / Bit 2 to Bit 17
- Bit 2 to Bit25 / Bit 2 to Bit33 : 3-byte ID number / 4-byte ID number
- Bit 26 / Bit 34 : Odd parity bits from Bit 14 to Bit 25 / Bit 18 to Bit 33

Other Information

HOW TO REGISTER THE FINGERPRINT

Correct Fingerprint Registration

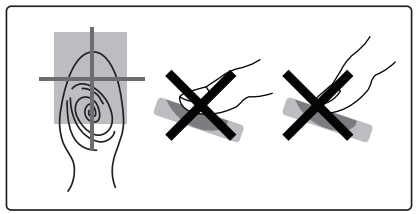




Fingerprint scanning

Successful 1:1/1:N Authentication

Incorrect Fingerprint Registration



Fingerprint Scanning

1:1/1:N Authentication Error

In case of failures of fingerprint recognition

- Moist Fingerprint
- Dry Fingerprint
- Stained Fingerprint
- Scarred Fingerprint

Dry Fingerprint

Moist Fingerprint

Stained Fingerprint

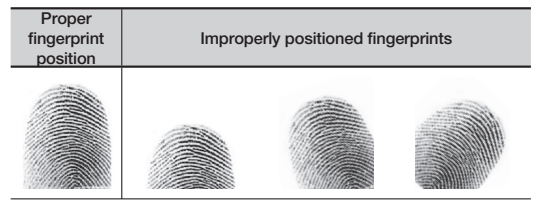
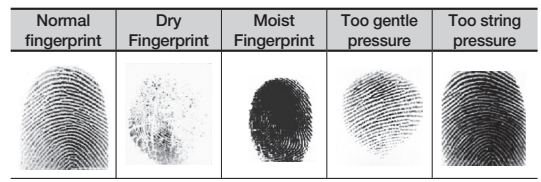
How to manage fingerprints

Follow the instructions below to increase the rate of successful authentication of the fingerprint.

- For a dry fingerprint, put force to present the fingerprint to the scanner.
- For a moist fingerprint, gently present the fingerprint to the scanner.
- Keep the fingerprint scanner clean all the time, especially on the surface.

TROUBLESHOOTING

If the product does not function properly, please see the below for trouble shooting. If the trouble persists, please contact the SAMSUNG Customer Service near you.

<table>
<tr><th>Problem</th><th>Action</th></tr>
<tr><td>If you fail to enter registration mode using the master card</td><td>1) Check if the master card is invalid.
Change the master card using software communications, and try to access using the changed card.
2) Refer to the user manual and initialize the hardware. (before system installation)
* Note that all existing settings will return to the factory default.
(card deleted/system initialized/master card deleted, etc)
3) If the problem persists, contact the nearest customer service for technical help.</td></tr>
<tr><td>Fingerprint registration or authentication do not work well.</td><td>1) Please check the correct fingerprint registration instruction in the user manual and try again.
 
Proper fingerprint position | Improperly positioned fingerprints
2) Check the state of the fingerprint.
 
Normal fingerprint | Dry Fingerprint | Moist Fingerprint | Too gentle pressure | Too string pressure
3) Adaptive mode will correct excessively dry or moist fingerprints as necessary when sensing them. It may take longer to sense the fingerprint in this mode, but the fingerprint recognition rate will be increased. You can configure the Adaptive settings using the software.</td></tr>
</table>

product specifications

PRODUCT SPECIFICATIONS

Item		SSA-R2010	SSA-R2020	SSA-R2040	SSA-R2011	SSA-R2021	SSA-R2041
Fingerprint Users		1,000	2,000	4,000	1,000	2,000	4,000
Fingerprint Templates Size		800Bytes for 2 Fingerprint Templates					
Power / Current		DC 12V / Max.290mA			DC 12V / Max.310mA		
Reader Port		External Reader Port 1ea : 26bit Wiegand			External Reader Port 1ea : 34bit Wiegand		
Reading Time (Card)		30ms					
Verification Time		Less than 1sec.					
Identification Time		Less than 2sec.					
Communication		TCP/IP					
Baud Rate(bps)		57,600					
Input Port		3 EA (External LED Control, External Buzzer Control, Operating Mode(RF/ RF+ Finger) Control)					
Output Port		2EA (Error- Output, OK-Output(Open Collector Output))					
		26bit Wiegand			34bit Wiegand		
LED Indicator		3 LED Indicators (Red, Green and Orange)					
Beeper		Piezo Buzzer					
Voice Output (Language)		English					
Operating Temperature		0°C to +50°C					
Operating Humidity		10% to 90% relative humidity non-condensing					
Color / Material		Silver with Black / Polycarbonate					
Dimension (W x H x D(mm))		65.0 x 128.0 x 48.5					
Weight		240g			230g		
RF Specifications	Frequency	125KHz	125KHz	125KHz	13.5610 MHz	13.5610 MHz	13.5610 MHz
	Modulation	PSK	PSK	PSK	ASK	ASK	ASK
	No. of Channels	1CH	1CH	1CH	1CH	1CH	1CH
	Output	Less than 65.80dBuA/m at a distance of 10m	Less than 65.80dBuA/m at a distance of 10m	Less than 65.80dBuA/m at a distance of 10m	Less than 47.544 mV/m at a distance of 10m	Less than 47.544 mV/m at a distance of 10m	Less than 47.544 mV/m at a distance of 10m

Correct Disposal of This Product (Waste Electrical & Electronic Equipment)

(Applicable in the European Union and other European countries with separate collection systems)

This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. charger, headset, USB cable) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.

Correct disposal of batteries in this product

(Applicable in the European Union and other European countries with separate battery return systems.)

This marking on the battery, manual or packaging indicates that the batteries in this product should not be disposed of with other household waste at the end of their working life. Where marked, the chemical symbols Hg, Cd or Pb indicate that the battery contains mercury, cadmium or lead above the reference levels in EC Directive 2006/66. If batteries are not properly disposed of, these substances can cause harm to human health or the environment.

To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle them through your local, free battery return system.

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