SAMSUNG TECHWIN

RFID Reader

User Manual

SSA-R2000V

SAMSUNG

RFID Reader

User Manual

safety information

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 -30°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.

safety information

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 model is an elegant-looking proximity reader that is featured by the capacitive touch-sensing keypad. The back-lighted keypad is useful especially for night operation, and its epoxy adhesion and aluminium case relieve you of worries about the rain or any other challenging weather conditions. This model permits user access through authentication of the presented proximity card and personal identification number using the keypad. With its red, green and orange indicators as well as the Piezo buzzer, this model is guaranteed to make a stable and correct operation.

◆ **125 KHz Proximity / PIN Reader**
◆ **PSK Modulation**
◆ **26 bit Wiegand/RS-232 Data Output**
◆ **8 Bit Burst Output Format supported**
◆ **Numeric Keypad with Backlighting for Night Operation**
◆ **Control of External LED Indicators**
◆ **Control of External Buzzer**
◆ **Tamper Switch**
◆ **Reverse Polarity Protection**
◆ **Weatherproof and Dustproof**

WHAT'S INCLUDED

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

 Product	 3.5 x 40mm Screws (x4) 3.5 x 25mm Screws (x4) 6 x 30mm Plastic Anchor (x4	 CD Manual
 Quick Guide	 3mm Hex Wrench (x1)	

AT A GLANCE

Front/Rear
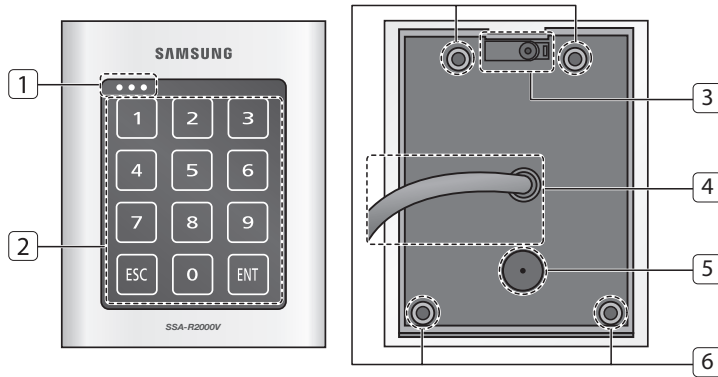
1	**LED**	Displays the status of the system operation.
2	**Keypad**	Used to enter the ID/password.
3	**Tamper Switch**	A tamper switch to detect falling from the wall.
4	**Connection Cable**	Used to connect to the power source or I/O cable.
5	**Buzzer**	Piezo buzzer.
6	**Fixing Hole**	Fixing hole for wall-mounting.

product introduction

CABLE COLOR SCHEME

Item	Cable Color	Signal Line	Description
Power	Red	DC +12V	Power (+12V)
	Black	GND	Earth-grounding for power
Output	Green	WIK_DATA0	Wiegand Data 0 Output Port
	White	WIK_DATA1	Wiegand Data 1 Output Port
	Purple	TX_OUT	RS-232 Output Terminal
	Orange	RS-232 GND	RS-232 Grounding Terminal
Not used	Brown	NC	Not used.
Input	Yellow	Green LED Control	Green LED Control Input Terminal
	Gray	Orange LED Control	Orange LED Control Input Terminal
	Blue	Buzzer Control	BUZZER Control Input Port
Tamper	Pink	Tamper COM	COM Port of Tamper Switch
	Light yellow	Tamper NC	NC Port of Tamper Switch

CABLE SELECTION

Item		Cable Type
1	Power (DC12V)	Belden #9409, 18 AWG 2 Conductor, Unshielded
2	Card/PIN data (Wiegand) Control Signal (LED,BUZZER) TAMPER	Belden #9512, 22 AWG 4 Conductor, Shielded
		Belden #9514, 22 AWG 8 Conductor, Shielded
3	RS-232 Cable	Belden #9829, 24 AWG 2-twisted pair, Shielded

installation and external connection

INSTALLATION

1. See [Figure 1] to drill 6-32" holes and 1/2" holes (totally 4) into the wall.
2. Tighten the four screws to secure the product to the wall.
3. With the provided 3mm hex wrench, fix the outer case to the product.
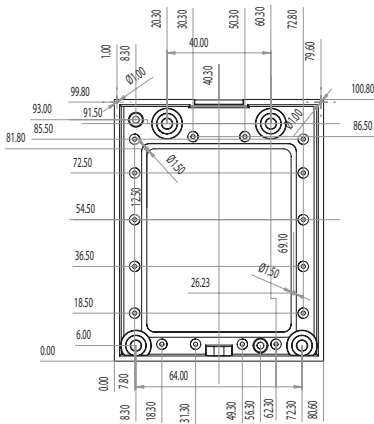
[Figure 1]

[Figure 2]

installation and external connection

PRECAUTIONS ON INSTALLATION

IF INSTALLING ON A METAL WALL

If you install the reader on a metal wall, the read range may be reduced.
To avoid this problem, it is recommended to insert the spacer between the metal wall and the reader as shown below.

Metal Wall

Spacer
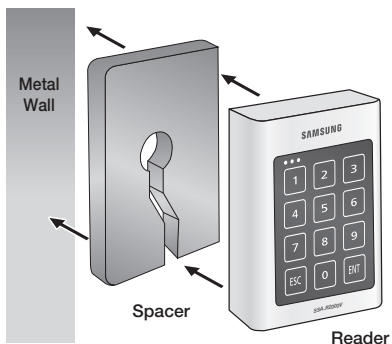
Reader

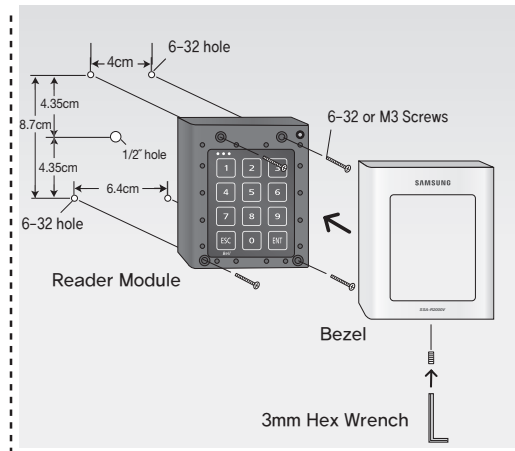### IF INSTALLING MORE THAN ONE READER SIDE BY SIDE OR FRONT AND BACK

If you install more than one reader side by side or front and back, the read range may be reduced. In this case, if you present a card to one reader, the other reader may recognize the same card, meaning both readers read the same card simultaneously.
To avoid this problem, keep at least 20cm of space between the two readers.

Minimum 20cm

#Reader 2

#Reader 1

<Front and Back>

#Reader 1

Minimum 20cm

#Reader 2

<Side by Side>
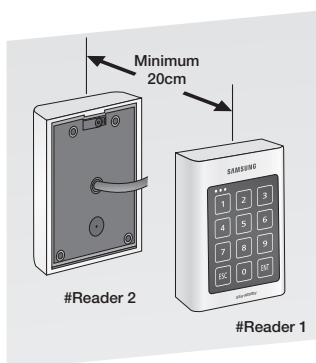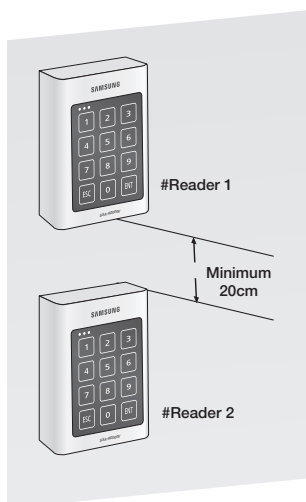
EXTERNAL CONNECTION

WIRING DIAGRAM

SSA-R2000V

CONTROLLER	Wiegand Data 0 Out	Green
	Wiegand Data 1 Out	White
	Tamper Switch Out(NC)	Light yellow
	Tamper Switch Out(COM)	Pink
	Buzzer Control In	Blue
	LED Control In(Green)	Yellow
	LED Control In(Orange)	Gray

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RS-232(TX)
Purple

RS-232(GND)
Orange

PC

SSA-R2000V

Red   Black

DC +12V   GND

POWER

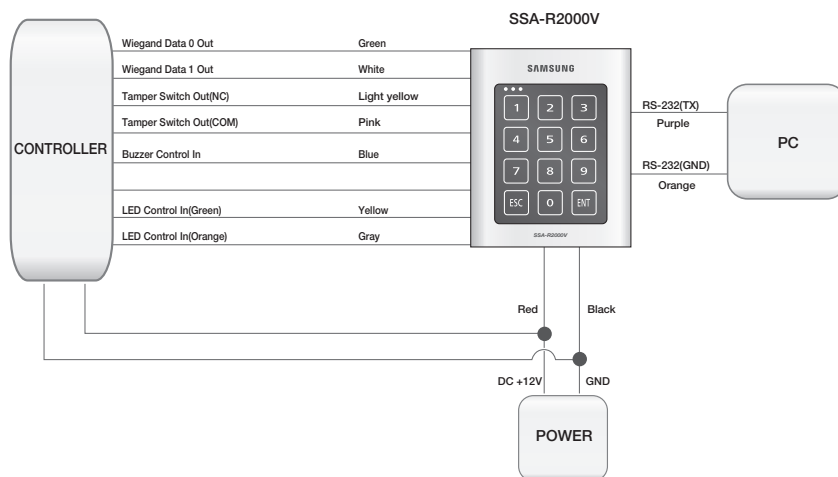| Category	Cable Wiring
Power Supply Unit	Connect the DC+12V to the red line.
	Connect GND to the black line.
Wiegand Connection	Connect the green line of the product to the Wiegand D0 input port of the controller.
	Connect the white line of the product to the Wiegand D1 input port of the controller.
LED Control	Enables you to turn on or off the LED indicators. To control the green indicator, connect the yellow line; to control the orange indicator, connect the blue line with white stripes, to the output port of the controller. (see page 12)
Buzzer Control	Enables you to turn on or off the buzzer. To control the buzzer, connect the blue line to the controller's output (relay). (see page 12)
Tamper Control	Connect the COM port (Pink line) of the product's tamper switch to GND; connect the NC port (Light yellow) of the tamper switch to the input port of the controller.
RS-232 Connection	Connect to the COM port of the PC. (Connect pin 2 of the DB-9 connector to the purple line; connect the orange line to pin #5 of the DB-9 connector)

initialization

BASIC OPERATIONS

Initial State (when the power is supplied)

When you apply power to the product, it will sound beep three times before entering Standby with the red indicator turned on.

Using the card

Present the card to the product until you hear a beep and the green indicator turns on. The reader keeps the green indicator turned on while transferring the card data to the controller. When it is done, the green indicator turns off and for receiving the next card, the red indicator stays ON.
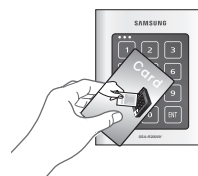
Using the keypad

Hold down the keypad until you hear a beep. The reader transfers the keypad data to the controller.
As soon as you press the keypad, the orange indicator turns on, followed by the reader transferring the keypad data to the controller. Then, only the red indicator turns on.

LED Control

You can control both green and orange indicators at will.
To control the green indicator, connect the green-indicator control line (yellow) to NO of the controller relay output, and connect COM to GND. Set I/O of the controller; now you can control turning on/off the indicator.
You can turn on/off the indicators according to the I/O settings of the controller, which can be applied to various situations. For more information about the I/O settings of the controller, refer to the user manual of the controller.
To control the orange indicator, connect the gray line to NO of the controller.

Buzzer Control

Connect the buzzer control input line (blue) 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 beeps. If the product continues to beep, it means that the buzzer control is working properly.
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 make various modifications according to the different 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.
Card reading is not available while the buzzer control is sounding the buzzer.

Tamper Control

You can set the signal that you want to output if the device is dismantled forcibly.
Connect the COM port (Pink line) of the product's tamper switch to GND; connect the NC port (Light yellow) of the tamper switch to the input port of the controller. If the tamper of the reader operates, the controller produces an input signal and generates the corresponding output depending on the controller setting.

output format

WIEGAND OUTPUT

Timing Diagram

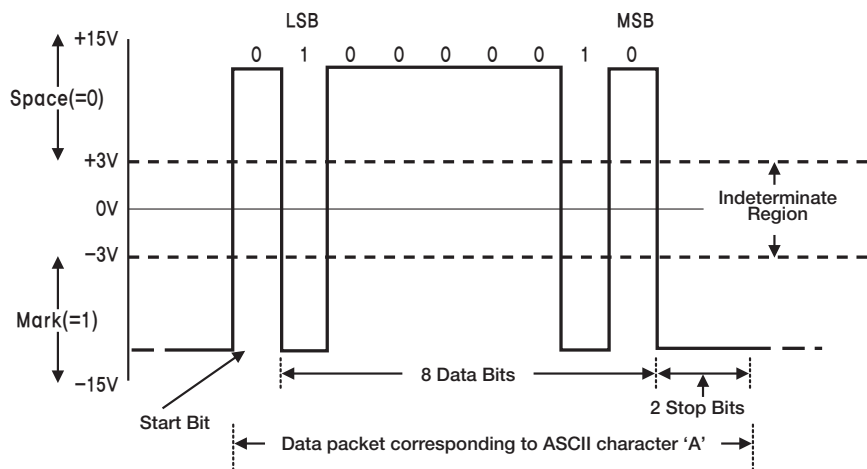| LOGIC | | 0 | 1 | 1 | | 1 | 0 | 0 | |
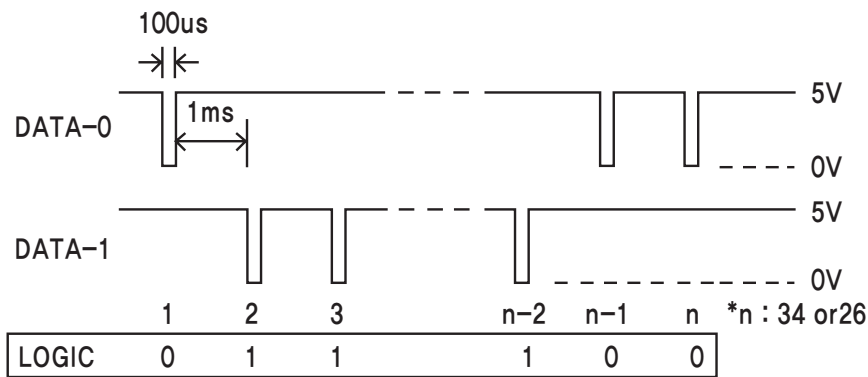
Data Type (26-bit)

- Bit 1 : Even Parity (bit 2 ~ bit 13)
- Bit 2 ~ 9 : Facility Code (000 ~ 255)
- Bit 10 ~ 25 : ID Number (00000 ~ 65,535)
- Bit 26 : Odd Parity (bit 14 ~ bit 25)

output format

RS-232 OUTPUT

Output Waveform

Data Type

START (0X02H)	DATA (8 Char)	END (0x03H)	LRC
START(0X02H)	DATA (1~8 Char)	END (0x03H)	LRC

■ Check the following settings:
  Baud Rate : 9600bps
  Data Bit : 8
  Parity Bit : None
  Stop Bit : 1

■ LRC : This is the result of XOR operation of each byte from Start to End.

8 BIT BURST OUTPUT FORMAT

8Bit Burst Output Format

Keypads	Binary	Hexa	Keypads	Binary	Hexa
0	11110000	F0	**6**	10010110	**96**
1	11100001	E1	**7**	10000111	**87**
2	11010010	D2	**8**	01111000	**78**
3	11000011	C3	**9**	01101001	**69**
4	10110100	B4	**ESC**	01011010	**5A**
5	10100101	A5	**ENT**	01001011	**4B**

troubleshooting

TROUBLESHOOTING

If the product does not function properly, please see the below for trouble shooting.

PROBLEM	SOLUTION

My card is not read properly.	1) Check the rated voltage specified in the user manual and the catalog.
	2) Ensure that the card must comply with the PSK (125KHz) format provided by Samsung.
	  - Cards of 13.56MHz format can not be used.
	    (Contact the card retailer regarding the card format.)
	3) If the problem persists, contact the nearest customer service for your assistance.

When I turn on the product, it sounds a beep with dimly turned on indicator.	1) Ensure that you are using a larger-capacity adaptor than specified in the user manual or the catalog, which should cover the rated current consumption of the reader. If you are using multiple readers that are connected to one adaptor, make sure that the adaptor should be large enough to cover the current consumption multiplied by the reader count. 2) Even with a large adaptor enough to supply adequate power, if the power cable is not a dedicated line (such as communication line or UPT cable), or if it's so long to cause power loss, you'd better replace it with a dedicated line or reinforce it. 3) If the problem persists, contact the nearest customer service for your assistance.
The read range (R/R) of the card differs each time the product reads the card.	1) The characteristics of a card are determined by the nature of the coils used and in the manufacturing process engaged by the card manufacturer. So what you do first is to check that the cards in use are made by the same manufacturer. If you are using cards from different card makers, the read range (R/R) differs by the card, which is the result of normal operation. 2) If you encounter a different read range for each card that is made by the same manufacturer, please contact the nearest customer service.

product specifications

PRODUCT SPECIFICATIONS

Item	SSA-R2000V
Power / Current	DC 12V / Max.230mA
Reading Time (Card)	30ms
Input Port	2 ea : External LED Control, External Buzzer Control
Output Port	26bit Wiegand, 8bit Burst for PIN (Selectable)
LED Indicator	3 LED Indicators (Red, Green and Orange)
Beeper	Piezo Buzzer
Keypad	12 Key Touch Keypad with Back Lighting
Operating Temperature	-30°C to +50°C
Operating Humidity	10% to 90% Relative Humidity Non-Condensing
Color / Material	Silver with Black/ Polycarbonate & Aluminum Die casting
Dimension (W x H x D(mm))	87.0 x 109.0 x 25.0
Weight	350± 10g

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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