AY-L23 and SA-23-B2/B4

ROSSLARE
SECURITY PRODUCTS

Outdoor Long-Range RF Reader and Remote Controls
Installation and Operation Manual

1. Introduction

The AY-L23 is an outdoor long-range RF reader that acts as a receiver. It is compatible with Rosslare's SA-23 wireless remote control transmitters:

- SA-23-B2 – 2-Button Remote Control
- SA-23-B4 – 4-Button Remote Control

The AY-L23 reader and the remote controls are available in both G (433.92 MHz) and H (868.35 MHz) frequencies.

> **Note** The AY-L23 is not compatible with old remote controls such as: SA-26, SA-27, and SA-28.

When the AY-L23 receives the a command signal from a SA-23-B2/B4 wireless transmitter, the AY-L23 outputs the ID to A_DATA0,A_DATA1 or B_DATA0,B_DATA1 to the attached controller and controls the function of the relay (open drain FET) A or B according to the SA-23-B2 remote's command.

The command signal consists of 3 parts:

- ID (in Wiegand format)
- ID output to A or B Wiegand Output according to the command in SA-23-B2
- Relay Function A or B according to command in the SA-23-B2

Figure 1: AY-L23 and SA-23-B2/B4

| AY-L23 | SA-23-B2 | SA-23-B4 |

2. Technical Specifications

2.1 AY-L23

Input Voltage	7 to 24 VDC
Standby Current	26 mA (12 VDC)
Maximum Operating Current	65 mA (12 VDC)
Relay (FET, Open Drain) Current	200 mA (max voltage 40 V)
Tamper Output	Open collector, active Open, max. sink current is 16 mA
Maximum Cable Distance to Controller	152 m (500 ft.)
Wiegand Output Format	Wiegand 26-Bit, 32-Bit, 34-Bit, 40-Bit (decided by remote)
Frequencies	G: 433.92 MHz
	H: 868.35 MHz
Operating Temperature Range	-31°C to 63°C (-25°F to 145°F)
Operating Humidity Range	0 to 95% (non-condensing)
	Suitable for outdoor use (IP65)
Dimensions (L x W x D)	145 x 43 x 20 mm (5.7 x 1.7 x 0.8 in.)

2.2 SA-23-B2/B4

Input Voltage	3 V Battery (CR 2450)
Standby Current	< 1 uA
Max Operation Current	10 mA
ID Format	Programmed to Wiegand 26-Bit
Frequencies	G: 433.92 MHz (ASK)
	H: 868.35 MHz (ASK)
Operating Temp. Range	-31°C to 63°C (-25°F to 145°F)
Operating Humidity	0 to 95% (non-condensing)
Dimensions (L x W x D)	58 x 41 x 13.4 mm (2.3 x 1.6 x 0.5 in.)
Weight	AY-L23: 100.8 g (3.56 oz)
	SA-23: 21 g (0.74 oz) (without battery)

3. Mounting Instructions

Determine an appropriate mounting position for the receiver. Do not mount the receiver near any source of wireless interference or on any metal surface.

To mount the receiver:

1. Peel off the back of the self-stick mounting label template included with the unit and place at the desired mounting position.
2. Using the template as a guide, drill two holes (hole size is indicated on mounting template) for mounting the receiver to the surface.
3. Drill a 7/16" (10-mm) hole for the cable.
4. Remove the front case from the receiver.
5. Attach the receiver to the controller. (See wiring instructions)
6. Screw the receiver's rear case onto its mounting location and return the front case onto the mounted rear case.

The receiver is to be used with control panels whose power supply is UL Listed Class 2 or equivalent.

4. Wiring Instructions

To connect the receiver to the controller:

1. Prepare the receiver cable by cutting the cable jacket back 1¼ inches and strip the wires ½ inch.
2. Prepare the controller cable by cutting the cable jacket back 1¼ inches and strip the wires ½ inch.
3. Splice the receiver's pigtail wires to the corresponding controller wires and cover each connection (see Table 1).

> **Note**
> - The individual wires coming out of the receiver are color coded according to the recommended Wiegand standard.
> - When using a separate power supply for the receiver, this supply and the controller's power supply must have a common ground.
> - The cable shield wire on the receiver should be attached to an Earth ground (best) or signal ground connection at the panel or power supply end of the cable. This configuration is best for shielding the receiver cable from external interference.

Table 1: Wiring

Color	Functionality
Red	VIN (7–24 VDC)
Black	GND
Dark Green	A_Data0
White	A_Data1
Orange	A_LEDCTL (green LED)
Blue	A-OUTPUT (FET, Open Drain)
Light Green	B-DATA0
Gray	B-DATA1
Brown	B_LEDCTL (orange LED)
Yellow	B-OUTPUT (FET, Open Drain)
Purple	TAMPER

5. Operation

The AY-L23 works with any SA-23 remote and can operate two Wiegand data outputs connected to the reader's inputs at the access control panel.

> **Note**
> The AY-L23 LED is red in Operation mode.

5.1 Reader Mode

When pressing **1** on the SA-23-B2/B4, the AY-L23 sends Wiegand data-A. The LED changes to green for a short time with a beep.

When pressing **2** on the SA-23-B2, the AY-L23 sends Wiegand data-B. The LED changes to orange for a short time with a beep.

When pressing **2** on the SA-23-B4, the AY-L23 sends ID+1 on Data A line to the controller. The LED changes to green for a short time with a beep.

5.2 Controller and Reader Mode

The AY-L23 can operate two OC outputs A/B with the SA-23-B2.

To activate the output from SA-23-B2, the remote button's ID should be registered first (Section 5.3).

> **Note**
> In Controller and Reader mode, SA-23-B4 is not in use as it does not activate any output of the AY-L23.

When pressing **1** on the SA-23-B2, the AY-L23 sends Wiegand data-A and activates out-A for 5 seconds.

When pressing **2** on the SA-23-B2, the AY-L23 sends Wiegand data-B and activates out-B for 5 seconds.

5.3 Registering an ID

The AY-L23 can register up to 48 IDs with an SA-23-B2/B4.

To register an ID:

1. Connect the orange and brown wires to GND.
2. Power on at Vin and GND.
   After buzzer sounds 3 times, the LED turns green.
   The AY-L23 is now in Register mode for 15 seconds.
3. Press **1** on the SA-23-B2/B4 remote.
   - If the registration is successful, you hear 2 short beeps.
   - If the ID was previously registered, you hear 2 long beeps.
   - If the limit of IDs (48) is reached, you hear have 3 long beeps.
4. Press **2** on the SA-23-B2/B4 remote.
   - If the registration is successful, you hear 2 short beeps.
   - If the ID was previously registered, you hear 2 long beeps.
   - If the limit of IDs (48) is reached, you hear have 3 long beeps.
   Once the AY-L23 exits Register mode (after 15 seconds), you hear a long beep.

> **Note**
> For the SA-23-B4 remote, follow the same procedure to register Buttons 3 and 4 to the AY-L23.

5.4 Deleting all IDs

To delete all IDs:

1. Connect the orange wire to GND.
2. Power on at Vin and GND.
   After buzzer sounds 3 times, the LED turns orange for 2 seconds and then turns green.
   The AY-L23 is now in Delete mode for 5 seconds.
3. When the LED turns green, disconnect the orange wire from GND.
   The LED changes from green to orange.
4. Re-connect the orange wire to GND within 5 seconds.
   - If all the IDs in reader are deleted successfully, the alarm sounds 2 times and then you hear 3 short beeps.
   - If the deletions fails (times out), the reader outputs a long beep.

6. Using the SA-23

The AY-L23 is used along with either the SA-23 2-button or 4-button remote control.

The SA-23-B2 remote is programmed to:

- Button 1 – Wiegand output to A DATA0/1 with A FET(relay)ON 5S
- Button 2 – Wiegand output to B DATA0/1 with B FET(relay)ON 5S

The SA-23-B4 remote is programmed to:

- Button 1 – Wiegand output to A DATA0/1 [ID number]
- Button 2 – Wiegand output to A DATA0/1 [ID number+1]
- Button 3 – Wiegand output to A DATA0/1 [ID number+2]
- Button 4 – Wiegand output to A DATA0/1 [ID number+3]

6.1 Initial Setup

To set up the remote for use:

1. Install the battery.

   The red LED turns on for 1 second, turns off 1 second and then turns on for 1 second.

2. Check the distance range of the remote:

   - If the distance is set to long range (70 m), LED flashes on and off 0.5 seconds 3 times.
   - If the distance is set to short range (15 m), LED flashes on and off 0.1 seconds 6 times.

   > **Note** By default, the remote distance is set to 70 m.

6.2 Changing the Remote Distance Range

You can set the remote range to either 15 or 70 m.

To set the remote distance:

1. Remove the battery from the remote.
2. Press any button to reset the remote.

   > **Note** Any time you remove the battery from the SA-23, you must reset the remote control by pressing any key to discharge the internal capacitors.

3. Install the battery.
4. Press **1** and **2** together before the LED flashes for a second time.

   The remote toggles to the other remote distance range.

   - If the distance is set to long range (70 m), LED flashes on and off 0.5 seconds 3 times.
   - If the distance is set to short range (15 m), LED flashes on and off 0.1 seconds 6 times.

6.3 Changing the ID of Button 2 (for SA23-B2 only)

You can set Button 2 to transmit the same ID as Button 1 or to transmit a unique ID. By default, Buttons 1 and 2 transmit the same ID number.

To change the ID of Button 2 to be unique:

1. Remove the battery from the remote.
2. Press any button to reset the remote.
3. Press **2** and install the battery until the red LED flashes quickly 5 times for 0.1 seconds.

   Button **2** will now use transmit a unique ID (ID of Button **1** +1)

4. Close the cover.

To change the ID of Button 2 to use ID of Button 1:

1. Remove the battery from the remote.
2. Press any button to reset the remote.
3. Press **1** and install the battery until the red LED flashes quickly 5 times for 0.1 seconds.

   Button **2** will now transmit the same ID as Button **1**.

4. Close the cover.

Declaration of Conformity

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

- This device may not cause harmful interference.
- This device must accept any interference received, including interference that may cause undesired operation.

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation.

This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

Limited Warranty

The full ROSSLARE Limited Warranty Statement is available in the Quick Links section on the ROSSLARE website at www.rosslaresecurity.com.

Rosslare considers any use of this product as agreement to the Warranty Terms even if you do not review them.

Contact Information

United States and Canada
Rosslare Security Products, Inc.
Southlake, TX, USA
Toll Free: +1-866-632-1101
Local: +1-817-305-0006
Fax: +1-817-305-0069
support.na@rosslaresecurity.com

Europe
Rosslare Israel Ltd.
Rosh HaAyin, Israel
Tel: +972-3-938-6838
Fax: +972-3-938-6830
support.eu@rosslaresecurity.com

Latin America
Rosslare Latin America
Buenos Aires, Argentina
Tel: +54-11-4001-3104
support.la@rosslaresecurity.com

China
Rosslare Electronics (Shenzhen) Ltd.
Shenzhen, China
Tel: +86-755-8610-6842
Fax: +86-755-8610-6101
support.cn@rosslaresecurity.com

Asia Pacific, Middle East, Africa
Rosslare Enterprises Ltd.
Kowloon Bay, Hong Kong
Tel: +852-2795-5630
Fax: +852-2795-1508
support.apac@rosslaresecurity.com

India
Rosslare Electronics India Pvt Ltd.
Tel/Fax: +91-20-40147830
Mobile: +91-9975768824
sales.in@rosslaresecurity.com

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