AY-E20

Ultra-Slim Mullion
Proximity Reader
Installation and User Manual

ROSSLARE
SECURITY PRODUCTS

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Notice and Disclaimer

This manual's sole purpose is to assist installers and/or users in the safe and efficient installation and usage of the system and/or product, and/or software described herein.

BEFORE ATTEMPTING TO INSTALL AND/OR USE THE SYSTEM, THE INSTALLER AND THE USER MUST READ THIS MANUAL AND BECOME FAMILIAR WITH ALL SAFETY REQUIREMENTS AND OPERATING PROCEDURES.

- The system must not be used for purposes other than those for which it was designed.

- The use of the software associated with the system and/or product, if applicable, is subject to the terms of the license provided as part of the purchase documents.

- ROSSLARE exclusive warranty and liability is limited to the warranty and liability statement provided in an appendix at the end of this document.

- This manual describes the maximum configuration of the system with the maximum number of functions, including future options. Therefore, not all functions described in this manual may be available in the specific system and/or product configuration you purchased.

- Incorrect operation or installation, or failure of the user to effectively maintain the system, relieves the manufacturer (and seller) from all or any responsibility for consequent noncompliance, damage, or injury.

- The text, images and graphics contained in the manual are for the purpose of illustration and reference only.

- All data contained herein subject to change without prior notice.

- In no event shall manufacturer be liable for any special, direct, indirect, incidental, consequential, exemplary or punitive damages (including, without limitation, any and all damages from business interruption, loss of profits or revenue, cost of capital or loss of use of any property or capital or injury).

- All graphics in this manual are for reference only, some deviation between the image(s) and the actual product may occur.

- All wiring diagrams are intended for reference only, the photograph or graphic of the PCB(s) are intended for clearer illustration and understanding of the product and may differ from the actual PCB(s).

1.   Introduction

The AY-E20 is an ultra-slim, multi-format RFID proximity card reader that is installed for use with access control systems. The unit is vandal resistant and water resistant, suitable for indoor or outdoor mounting.

1.1   Key Features

The key features for the AY-E20 are:

- Ultra-slim flush-mount design on flat surface
- Fully-potted, waterproof construction for outdoor use
- Built-in 125 kHz ASK EM proximity card reader
- Selectable card transmission formats: Wiegand 26-Bit, Clock & Data, or serial RS-232 output
- Optical back tamper sensor
- Bi-color LED control
- Buzzer control
- Card read/hold control
- Mounting template for easier installation
- Installation kit
- Limited lifetime warranty

1.2   Box Content

Before beginning, verify that all of the following is in the box. If anything is missing, please report the discrepancy to your nearest Rosslare office.

- One AY-E20 unit
- Installation kit and mounting template
- Installation and operating instruction

1.3   Ancillary Equipment

The following equipment is required to complete your installation:

- Compatible host controller (not supplied) – UL listed access control unit (such as model AC-215U or AC-225U)

Rosslare accessories can be found on www.rosslaresecurity.com.

2.   Technical Specifications

Electrical Characteristics

Power Supply Type	Linear type (recommended)
Input Voltage	5 to 16 VDC
Input Current Standby	40 mA @ 12 VDC
Max Input Current	100 mA @16 VDC
Tamper Output	Open collector, active low, 16 mA max sink current
Cable Distance to Host Controller	Up to 150 m (500 ft) using an 18-AWG cable
Proximity Card Read Range*	3.5 cm (1.4 in.)
Proximity Card Modulation	ASK at 125 kHz
Proximity Card Compatibility	EM cards
Card Transmit Format	Wiegand 26-Bit, Clock & Data, or Serial RS-232
LED Indicators	One tri-colored LED

Environmental Characteristics

Operating Temp. Range	-31°C to 63°C (-25°F to 145°F)
Operating Humidity Range	0 to 95% (non-condensing)
Outdoor Usage	Weather-resistant, meets IP-68, epoxy potted, suitable for outdoor use

Physical Characteristics

Size (H x W x D)	155 x 45 x 8 mm (6.1 x 1.8 x 0.3 in.)
Weight	135 g (4.8 oz)

*   Measured using a Rosslare proximity card or equivalent. Range also depends on electrical environment and proximity to metal.

3. Installation

> Installation of an RFID reader adjacent to metallic surfaces
> might alter the reader's specifications. To diminish this
> interference, use a plastic spacer when mounting the reader.
> *Note*

3.1 Mounting the AY-E20

Before starting, select the location to mount the AY-E20. This location should be at shoulder height.

To mount the AY-E20:

1. For wall mounting, use the included mounting template as a guide for drilling holes and mounting screws (see Figure 1).

   For US Gang Box mounting, no drilling is necessary. Simply screw the AY-E20 to its mounting location or US gang box.

Figure 1: Drilling and Mounting Template
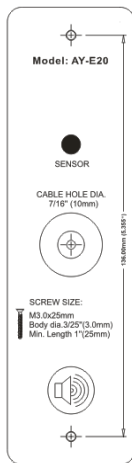
2. Drill a hole for the cable. If mounting on metal, place a grommet or electrical tape around the edge of the hole.

3. Route the interface cable from the AY-E20 to the controller.

> Note
> • A linear type power supply is recommended.
> • Card readers are to be used with control panels whose power supply is UL Listed Class 2 or equivalent.

3.2   Wiring the AY-E20

The unit is supplied with a 46-cm (18") pigtail, having a 10-conductor cable.

To connect the unit to the controller:

1. Prepare the unit's cable by cutting the cable jacket back 3.2 cm (1¼") and stripping the wire 1.3 cm (½").

2. Prepare the controller cable by cutting the cable jacket back 3.2 cm (1¼") and stripping the wire 1.3 cm (½").

3. Splice the unit's pigtail wires to the corresponding controller wires and cover each connection. Refer to the wire color table below.

Table 1: Wiring Color Guide

Wire Color	Weigand Output Mode	Clock & Data Output Mode	Serial (RS-232) Output Mode
Red	+DC	+DC	+DC
Black	Ground	Ground	Ground
Green	Data 0	Data	Tx (RS-232)
White	Data 1	Clock	-
Orange	Green LED	Green LED	Green LED
Brown	Red LED	Red LED	Red LED
Yellow	Buzzer	Buzzer	Buzzer
Blue	Hold	Hold	Hold

Wire Color	Weigand Output Mode	Clock & Data Output Mode	Serial (RS-232) Output Mode
Purple	Tamper	Tamper	Tamper
Grey	Open Input	Connect to GND	Connect to +DC

4. If the tamper output is used, connect the purple wire to the correct input on the controller.

5. Trim and cover all unused conductors.

4.   Operational Instructions

The AY-E20, once connected to standard access controller, functions as a reader. This is indicated by one beep immediately after power-on or reset.

4.1   Testing the AY-E20 and Card Reading

The AY-E20 should be tested after wiring it to the controller.

To test the AY-E20:

1. Power up the AY-E20. The LED and beeper activate one time. This indicates that the AY-E20 is working properly.

2. Present the appropriate type of proximity card to the AY-E20. The LED momentarily flashes green and a short beep is emitted. This indicates that the card was read properly by the AY-E20.

3. Once the card's data has been processed by the controller, the controller can then switch the LED on the AY-E20 to green. Refer to the relevant controller instruction manual for more information on controlling LED behavior via the controller.

4.2   Card Transmission Format Selection

The card transmission format can be controlled as follows:

- 26-Bit Wiegand – The grey wire should be an open circuit
- Clock & Data – The grey wire should be grounded
- Serial RS-232 – The grey wire should be held to +DC (VIN)

4.3   Tri-Color LED Color Control

The tri-color LED color can be controlled using the orange and brown wires.

- If the orange wire is held to ground, the LED lights green
- If the brown wire is held to ground, the LED lights red
- If both the brown and orange wires are grounded, the LED lights amber

▪ If the orange and brown wires are not used (open), the LED remains red continuously and flashes green momentarily when successfully reading a card

4.4   Buzzer Control

The buzzer can be controlled using the yellow wire:

▪ If the yellow wire grounded, the buzzer sounds
▪ If the yellow wire is not used (open), the buzzer beeps only when a card is read successfully

4.5   Card Read/Hold Control

The reading of cards can be disabled using the blue wire:

▪ If the blue wire is grounded, the reader ignores all cards placed in its field
▪ If the blue wire is not used (open), the reader reads all compatible cards normally

4.6   Tamper Output

The AY-E20 has an optical tamper sensor. When the sensor detects light, the tamper output is an open collector; when the sensor does not detect light, the tamper output is grounded.

A.   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.

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