MD-W11

Wireless Access Control Door Interface

Installation Manual

MD-W11N

MD-W11F

MD-W11BP

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 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.
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- 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

1.1 Overview

The MD-W11 Wireless Access Control Door Interface is a quick and inexpensive solution for connecting remote door devices, such as readers, locks, and Request-for-Exit (REX) buttons to an access control unit.

The MD-W11 consists of two units per door – one located near the controller (the Near Unit) and the other near the door (the Far Unit) (Figure 1).

Figure 1: MD-W11 Interface

Near Unit **Far Unit** **Battery Pack**

The Near Unit is connected to a Rosslare door controller (such as AC-215, AC-225, or AC-525). The Far Unit is connected to proximity card readers or keypads (such as AY-K12 and AY-Q64B).

When a card is read or a code is entered by keypad, the Far Unit transmits the information to the Near Unit. The Near Unit, attached to the controller, determines whether or not to open the door. The controller then sends the message to the Near Unit, which transmits it to the Far Unit, and if authorized, the door is opened.

Caution

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

1.2 Features

The MD-W11 Wireless Access Control Door Interface includes:

- Bi-directional RF data communication
- Supports PIN codes and card formats, such as Wiegand 26-Bit, Wiegand 32-Bit, and Wiegand 6-Bit Rosslare formats (see Section 2.1).
- Lock and door relay commands
- Tamper, door monitor, and REX messages between the controller and the interface unit
- Rolling code to increase security
- Four different RF channels to prevent collisions
- Built-in charger for up to 12 VDC, 7 Ah backup battery on the Far Unit
- Transfers proximity card information and LED control, reader tamper, lock relay commands, REX, and door monitor events between the coupled units.
- Optional MD-W11BP battery pack housing with space for 12 VDC, 800 mAh, sealed lead-acid battery.
- Suitable for indoor use.
- Available in 869 MHz (H) and 433.92 MHz (G) bands
- The Near Unit is powered from the controller's power supply. The Far Unit is powered by a local wall transformer. A built-in charger provides battery backup.

2. Technical Specifications

Electrical Characteristics	
Input Voltage	Far Unit: 12–24 AC, 15–24 VDC
	Near Unit: 13.8 VDC from the controller's power supply or wall adapter
Battery Charger	12 V sealed Lead-Acid, up to 7 Ah (Far Unit)
Input Current	Standby: 70 mAh
	Max: 160 mA
Maximum Range:	Open field: 300 m (985 ft)
(with external antenna)	Range depends on RF related environmental conditions.
Response Time	Up to 500 ms with Rosslare's AC-215 controller and reader
	Response time depends on RF link quality, number of doors used, and controller and reader response time.
Output Relays	Far Unit: One 5 A Form C relay
	Near Unit: Two 1A Form C relays
Output Types	Far Unit: LED CTRL – open collector
	Near Unit: STAM, SPV, LBAT, AC, TMP – open collector
Communications	Bi-directional RF, narrow band
	Fast anti-collision, rolling code protocol with data protection
	Available in 4 bands (see Section 4.2)
Data Transfer	Reader formats (based on the card and keypad transmission formats listed below), lock commands, REX, door monitor, LED control and reader tamper inputs
Supervisory & Alerts	Full supervision over the remote unit. Alert outputs at the Near Unit for supervision failure, system tamper, reader tamper, low battery and power failure.

Environmental Characteristics	
Operating Environment	Indoor use
Operating Temperature Range	-10°C to 50°C (14°F to 122°F)
Operating Humidity Range	0 to 95% (non-condensing)
Dimensions	
H x W x D	Near/Far Units: 13 x 8.7 x 3.2 cm (5.1 x 3.42 x 1.26 in.)
	Battery Pack: 12.8 x 6.9 x 3.4 cm (5.04 x 2.72 x 1.34 in.)
Weight	Near/Far Units: 155 g (5.5 oz)
	Battery Pack (with battery): 433 g (15.3 oz)

2.1 Supported Card Transmission Formats

- Wiegand 26-Bit (default)
- Wiegand 26-Bit with Facility Code Output
- Wiegand 32-Bit
- Wiegand 32-Bit Reverse Output
- Wiegand 34-Bit
- Wiegand 40-Bit

2.2 Supported Keypad Transmission Formats

- Single Key, Wiegand 6-Bit (Rosslare format, default)
- Single Key, Wiegand 6-Bit with Nibble and Parity bits
- Single Key, Wiegand 8-Bit, Nibble Complemented
- 4 Keys Binary, Wiegand 26-Bit
- 1 to 5 Keys, Wiegand 26-Bit
- 6 Keys BCD and Parity Bits, Wiegand 26-Bit

2.3 Available Models

- MD-W11NHR (869 MHz)
- MD-W11FHR (869 MHz)
- MD-W11NGR (433 MHz)
- MD-W11FGR (433 MHz)
- MD-W11BP

3. Installation and Wiring

The Near and Far Units of the MD-W11 are installed and wired as explained in this chapter.

3.1 The Installation Kit

The installation kit of the MD-W11 interface includes:

- MD-W11N Near Unit

  The Near Unit sends the controller the proximity card ID or keypad code as though it were a local reader. Following controller code/ID verification, the lock relay receives a command (transmitted to the Far Unit) to open the door.

- MD-W11F Far Unit

  The Far Unit is connected to a proximity card reader and/or keypad, and controls the door lock relay.

- MD-W11BP Battery Pack

  The battery pack is mounted only on the MD-W11 Far Unit side (see Section 3.7).

The MD-W11N and the MD-W11F are connected to the controller and the door components (lock, door monitor, reader). Both units are transceivers; the Near Unit receives the data transmitted from the reader and sends it to the controller. If authorized, the controller sends authorization to the Near Unit, which transmits authorization to the Far Unit. The Far Unit then opens the door.

The wireless access control door interface transfers the data between the controller input, the outputs, and the door components (such as lock, reader, door monitor, and exit button) transparent, as if the door components were connected directly to the controller.

3.2 General Installation Requirements

The installation kit includes:

- One drilling template (label /sticker)
- One security spline key
- One security hex screw
- Four mounting screws
- Four wall plugs
- Fixed external antenna (G Model)

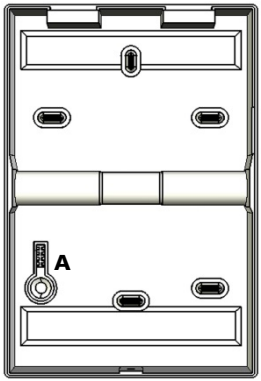
3.3 Installing the MD-W11N Unit

The Near Unit can be connected to a standard Rosslare controller, such as the AC-225.

To install the Near Unit:

1. Use the spline key to remove the case security screw from the back of the unit (Figure 2).

Figure 2: MD-W11 Back Cover



2. Use the drilling template to determine where to drill holes in the wall.
3. Use the hardware to mount the back plate on the wall.

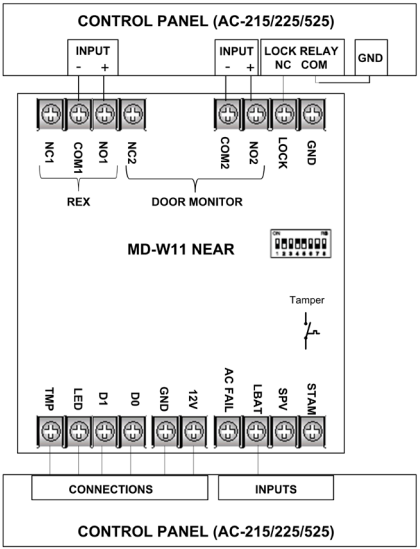
> Note: We highly recommend using the bottom left mounting hole, as it is acts as a back tamper when a person attempts to dislodge the unit from the wall (see Figure 2 marked with **A**).

4. Wire the unit as instructed in Section 3.4.

3.4 Wiring the MD-W11N Unit

Wire the following terminals between the controller's input and output to the MD-W11N Near Unit, as shown in Figure 3:

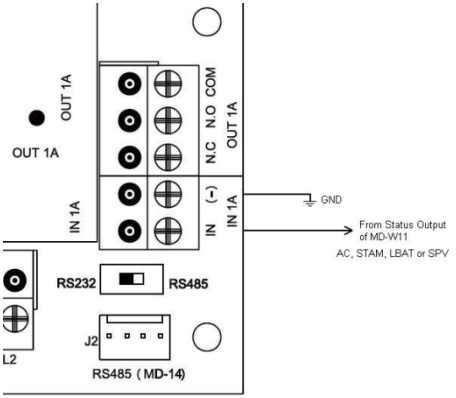
Figure 3: Near Unit Wiring Diagram



- Power supply connections (+12V and GND)
- STAM – System tamper
- SPV – Supervision failure (Far Unit has supervision failure)
- LBAT – Low battery (Far Unit has low battery)
- AC Fail – Far Unit has power failure
- D0 – Data 0
- D1 – Data 1
- LED – Reader LED control
- TMP – Far Reader tamper
- LOCK – Connection for lock input
- Relay 1 REX (output)
- Relay 2-Door monitor (output)

- System Tamper (STAM), Supervision Failure (SPV), Low Battery (LBAT), AC FAIL (AC) are outputs that can be connected to any input of AC-225. In AxTraxNG, this input should be configured accordingly (using Panel Links).
- If either the far reader, the near reader, or both have been tampered with, the STAM status changes, and retains this status until both readers have been closed.

Figure 4: Sample Wiring Detail



Note

Figure 4 shows sample input connections to any inputs, and is relevant to AC-215/225/525.

The relevant input can be configured to result in the required outcome, using AxTrax and Panel Links.

Note

- The connection between the REX Input and Relay 1 is always COM+ N.O. or COM+N.C. so that only two lines connect to this pair.
- The connection between the Door Monitor Input and Relay 2 is always COM+N.O. or COM+N.C. so that only two lines connect to this pair.

3.5 Installing the MD-W11F Unit

The Far Unit can be connected to a standard Rosslare reader, such as the AY-K12. The optional battery box can then be attached to the wall next to the Far Unit.

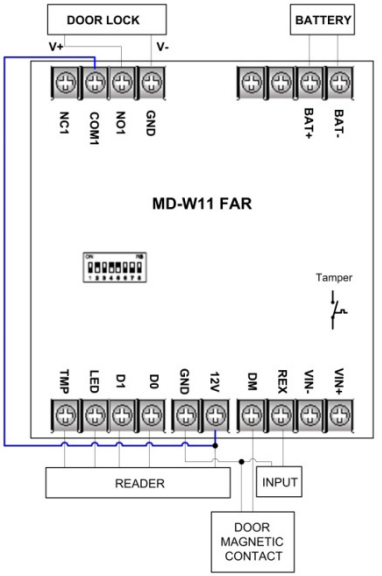
To install the Far Unit:

1. Attach the battery box to the wall with two screws.
2. Insert the wires from the reader and from the battery to the hole in the side of the Far Unit box.
3. Attach the side of the unit box to the wall with four screws.
4. Attach the wires to the PCB.
5. Cover both the battery and the Far Unit boxes.
6. Tighten the screws on the bottom of both boxes so that they remain closed.
7. Wire the unit as instructed in Section 3.6.

3.6 Wiring the MD-W11F Unit

Wire the following terminals between the controller's input and output to the Far Unit, as shown in Figure 5:

Figure 5: Far Unit Wiring Diagram



- 12–24 VAC or 15–24 VDC to the VIN+ and VIN-
- Optional backup battery that connects to BAT+ and BAT-
- 12 V and GND power output for the reader
- Data 0 Wiegand (D0) (input)
- Data 1 Wiegand (D1) (input)
- LED – Reader LED control (output)

- TMP – Input for receiving reader tamper alert
- Normally Open (NO)/Normally Closed (NC) and COM of 5A Form C relay to the door's lock
- REX – Optional input for REX
- DM – Optional input for door monitor contact

3.7 Installing the MD-W11BP Battery Pack

Only install the MD-W11BP battery pack in the MD-W11 Far Unit.

To install the battery pack:

1. Use the spline key to remove the security screw from the bottom of the case and open the unit.
2. Use the drilling template to locate where to drill holes in the wall.
3. Use the hardware provided to mount the back plate on the wall.
4. Wire the battery pack as described in Section 3.8.

Note: The battery pack comes with a battery installed. The size of the case is compatible with Rosslare's BT-05 12 VDC/800 mA SLA rechargeable battery.

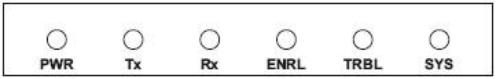
3.8 Wiring the MD-W11BP Battery Pack

In the Far Unit only, connect the Red (+) and Black (GND) to MDW11F Bat (+) and Bat (-) (Figure 5)

3.9 Indications on the Near and Far Units

Figure 6 shows the six LEDs (that indicate the unit's current status) on the display panel of each unit.

Figure 6: LED Display Panel



- PWR – Power ON
- Tx – Sending transmission

- Rx – Receiving transmission
- ENRL – Enrolling
- TRBL – Trouble
- SYS – System OK

3.10 Installer Recommendations

To install the MD-W11 units most efficiently, place the Near and Far Units facing each other, rather than placing them at a 90° angle to one another.

Both transmission and reception are improved if the Near and Far Units have the same polarity.

In addition:

- Do not place any of the MD-W11 units next to an air conditioner, heater, blower, or an engine that generates a magnetic field.
- Do not place any unit next to an electronic device that transmits RF or next to an access control reader or device.
- Assure that metal fixtures and furnishings (such as doors or closets) are not in line with the Near and Far Units.
- Assure that the Near and Far Units are at the same approximate height, preferably above head level.

4. Enrollment

Prevent loss of transmission data by enrolling each pair of Near and Far Units.

4.1 Enrolling the Units

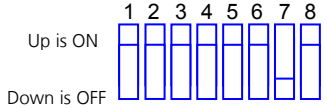
One unit cannot recognize the unique ID of another unit unless both units are enrolled so that they can work together.

4.2 DIP Switches

The DIP switches on both units are set as shown in Table 1.

Table 1: DIP Switch Settings

DIP Switches 1–4	Not used	Must be in the ON position
DIP Switch 5	OFF or ON	Used to set the channel
DIP Switch 6	OFF or ON	Used to set the channel
DIP Switch 7	Enrolling	Normal mode – ON Enrolling mode – OFF
DIP Switch 8	Not used	Must be in the ON position



Note

Only handle the DIP switches when the power is off.

Set the unit channels with DIP Switches 5 and 6 as shown in Table 2.

Table 2: Unit Channels Setting

DIP Switch 5	DIP Switch 6	Channel H Model	Channel G Model
ON	ON	869.50 MHz	433.60 MHz
ON	OFF	868.45 MHz	433.40 MHz
OFF	ON	868.30 MHz	433.20 MHz
OFF	OFF	868.15 MHz	433.00 MHz

Note DIP Switches 5 and 6 must be synchronized in the Far and Near Units.

Choose the same channel for both units.

If the LEDs flash, the DIP switches have not been set properly. In that case, first re-set the DIP switches and then power the unit off and on.

Note Only handle the DIP switches when the power is OFF.

4.2.1 Near and Far Unit Modes

The current unit mode is indicated by a steady or blinking LED. The three modes (Normal, Enrolling, and Trouble) of the Near and Far Units are described in detail below.

4.2.1.1 Normal Mode

The Normal mode is "idle," and the LEDs behave as follows:

- PWR – Power ON (steady)
- Tx – Sending transmission (blinking when sending)
- Rx – Receiving transmission (blinking when receiving)
- SYS – System OK (blinking)

Note If SYS LED is not blinking, it indicates a serious error.

A blinking TRBL LED indicates that there is trouble. Refer to Section 4.2.1.3 for a list of possible problems.

4.2.1.2 Enrolling Mode

Enrolling mode is used for retention of transmitted data.

To set the Enrolling mode:

1. Set DIP Switch 7 on both units (Near and Far) to Off.
2. Power up both units.
3. PWR LED is steady and ENRL LED is blinking.
4. The Far Unit sends its ID to the Near Unit and the TX LED blinks when transmitting.
5. The Near Unit receives an ID and sends it to the Far Unit.
6. The Far Unit receives the Near Unit's ID and ENRL LED is lit steadily.
7. Set DIP Switch 7 on both units (Near and Far) to ON (normal mode).

4.2.1.3 Trouble Mode

The MD-W11 Far module detects the following troubles:

- Reader tamper
- Far module tamper
- Low battery
- AC Fail
- RF device failure/problem
- Incorrect DIP switch setting

Following detection of any of the said problems or failures, the Far module behaves as shown in the following table:

Problem	Activity
Reader Tamper	Sends trouble and problem to the Near module
Far Module Tamper	Sends trouble and problem to the Near module
Low Battery	Sends trouble and problem to the Near module (Trouble LED turns on)
AC Fail	Sends trouble and problem to the Near module (Trouble LED turns on)
RF Device Failure/Problem	Trouble LED flashes at a fast rate (after power on)
Incorrect DIP Switch Setting	All LEDs flash at a slow rate (after power on)

The MD-W11 Near module detects following troubles:

- Near module tamper
- Supervision fail
- RF device failure/problem
- Incorrect DIP Switch setting

Following detection of any of the said problems or failures, the Near module behaves as shown in the following table:

Problem Name	Activity
Near Module Tamper	Activates Near Unit's tamper output
Supervision Failure	Activates Near Unit's supervision output (Trouble LED turns on)
RF Device Failure/Problem	Trouble LED flashes at a fast rate (after power on)
Incorrect DIP Switch Setting	All LEDs flash at a slow rate (after power on)

5. Operational Information

The units should be no more than 300 meters from one another in an open field.

The Far Unit has one DIP switch with eight buttons, the default for all of which is On. The end user only uses Button #7 to enroll the Near and Far Units. When the user turns Button #7 to Off, the Near Unit recognizes the Far Unit so the units work with each other.

The Far Unit can also be attached to a REX button, a door monitor to indicate whether a door is open or closed, and a tamper to check whether the cover was opened. These indications are transmitted from the Far Unit to the Near Unit, which then sends them to the controller.

The proximity reader reads card information and sends it from the Far Unit to the Near Unit and to the controller to determine which door to open. If applicable, the controller sends authorization to open the door to the Near Unit, which transmits the authorization to the Far Unit, and the door is opened.

A. 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.

B. Limited Warranty

The full ROSSLARE Limited Warranty Statement is available 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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