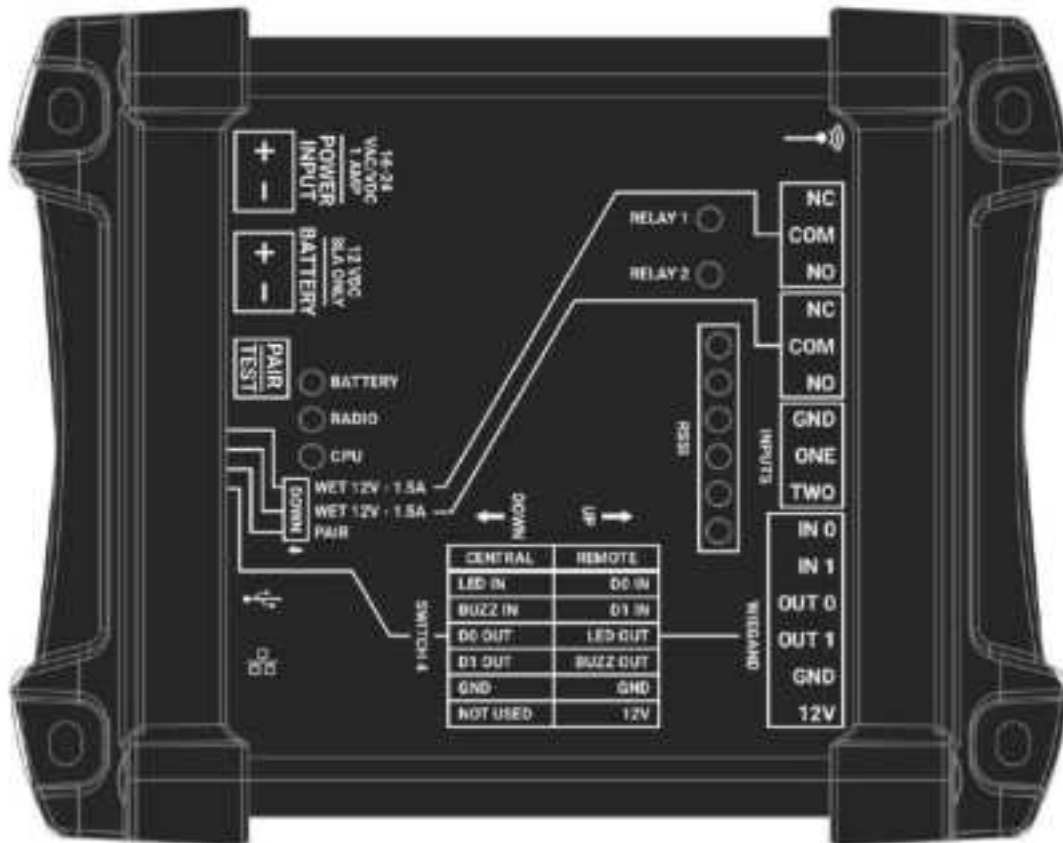


ÆtherRF

# Wiegand Wave User Guide

Revision 1.6



Primary	16-24 VAC/VDC
Battery	12 VDC (if included)
Protocol	Wiegand
Relays	Two NO/NC relays (dry or 12VDC wet)
Inputs	Two contact-closure inputs (triggering relays on the paired unit)
Range	TBD (currently in testing)

# Quick Start

## Configure and pair units

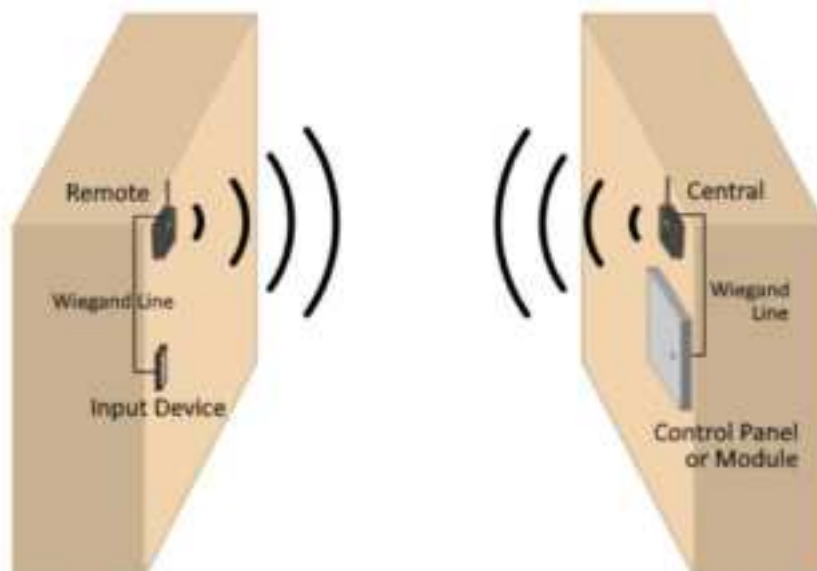
1. Before mounting, connect both units to temporary power.
2. Set dip switch 4 down for the Central unit, up for the Remote unit.
3. Set dip switch 3 down to engage pairing mode on both units.
4. Hold the Pair/Test button on the Remote unit until LEDs illuminate 3 times.
5. Repeat for the Central unit.
6. Briefly press Pair/Test button on the Remote and Central units to complete pairing.
7. When all six RSSI LEDs light up, set dip switch 3 up on both units.
8. Disconnect from temporary power.

## Mount and wire units

1. Install each unit in a high, dry, unobstructed location.
2. Connect 16-24VAC/VDC power to the red terminal block on each unit.
3. Confirm pairing by verifying that the RSSI LEDs illuminate on both units.
4. Remote: connect access readers to the green Wiegand terminal blocks.
5. Central: connect access panel to the green Wiegand terminal blocks.

## Test connection

1. Press Pair/Test and confirm blinking LEDs on both units.
2. Test fob on access reader (when connected to a central access control panel) to ensure everything is working.



# Overview

The Wiegand Wave transmits wireless signals (including Wiegand access codes and two contact inputs for controlling two relays) between remote Wiegand interface devices and a central access control module or panel. This allows the access system to operate as if hardwired without programming or user interaction.

Setup requires two Wiegand Wave units configured as “Remote” and “Central”:

- **Remote:** Connects to input devices like card readers or door position sensors and sends these signals to the Central unit. The Remote unit will trigger the corresponding outputs to door strikes or similar devices after the Central unit responds.
- **Central:** Receives wireless signals from the Remote unit and connects to an access control panel or module, acting as if it were receiving inputs directly from physical wiring, and sends the corresponding action back to the remote device to trigger a door strike or similar device.

## Mounting

Mount the unit in an area where the antenna has a mostly-unobstructed airway towards its paired unit, preferably high and near an exterior wall or window if mounted indoors. The unit will require power and a Wiegand connection.

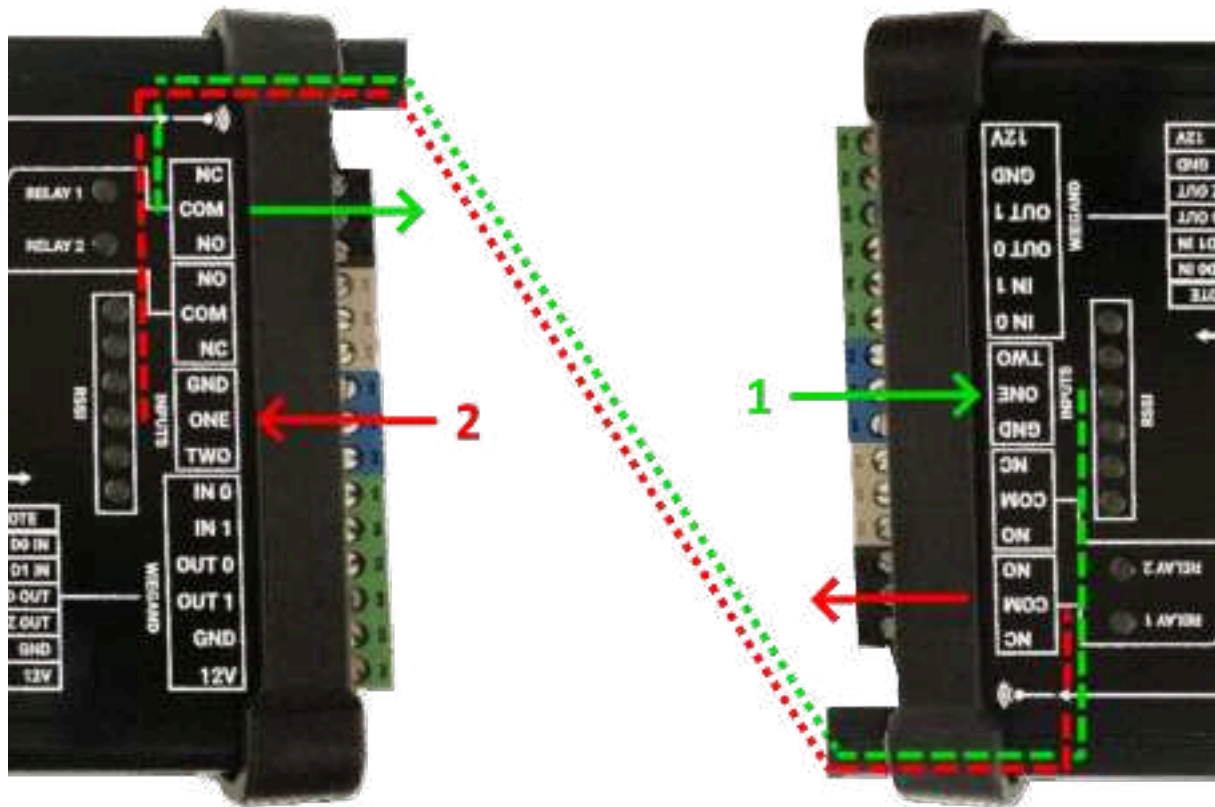
 **The Wiegand Wave is NOT water resistant.**

# Wiring



TERMINALS	REMOTE	CENTRAL
<b>Power (red)</b>	Connect 16-24VAC/VDC to the red terminal block. When connected properly, the CPU power LED will illuminate.	
<b>Battery (orange)</b>	<p>If installing a backup battery, connect the battery to the orange terminal block to provide backup power in the event of a power outage.</p> <p><b>⚠ Use 12VDC sealed lead acid battery ONLY</b></p>	
<b>Wiegand (green)</b>	Attach the reader to the 12V, GND, IN0 (D0), and IN1 (D1) terminals on the green terminal block. Unit should turn on once connected to 12V and GND. Optional reader LED and buzzer	Connect the Access Control panel using the GND, OUT0 (D0), and OUT1 (D1) terminals on the green terminal block.

	control.	
<b>Relay Outputs (black/white)</b>	<p>Connect devices like door strikes or gate controllers to either relay 1 or 2. Can be configured for “wet” or “dry” operation.</p> <p>The remote relay outputs are wirelessly connected to the Central relay inputs.</p>	<p>If applicable, connect relay 1 or 2 to a door position sensor or similar device on the access control panel. Can be configured for “wet” or “dry” operation.</p> <p>The Central relay outputs are wirelessly connected to the Remote relay inputs.</p>
<b>Relay Inputs (blue)</b>	<p>Optionally, connect a REX button or door sensor to inputs One and/or Two, and GND.</p> <p>The remote relay inputs are wirelessly connected to the Central relay outputs.</p>	<p>Connect the door-open signal from the access control panel to input One or Two and GND, similar to how you would connect it to a door strike or gate controller relay.</p> <p>The Central relay inputs are wirelessly connected to the remote relay outputs.</p>



*(Central Unit)*

*(Remote Unit)*

The image above shows the interaction between the inputs and relays. A contact closure input on one unit will trigger the corresponding relay on the paired unit.

In this scenario, a door position input triggers the Input One on the Remote unit, shown in green. This wirelessly signals the Central unit's Relay One to activate. This could be connected to a position sensor input on the access control module or panel for monitoring the state of the door. If a card scan is approved, the access control module or panel would respond with a contact closure to the Central Input One, shown in red. The Central unit then signals Relay One to activate on the Remote unit, which opens the door.

# Configuration

The units are configured through the blue DIP switch block near the orange Battery terminals.



The switches allow you to configure the unit for Remote or Central operation, enable pairing mode, or set relays to be Wet or Dry. Dry relays act as simple switches that open or close a circuit without supplying power. Wet relays provide a 12VDC (1.5A Max) output to directly power devices when activated.

SWITCH	UP POSITION	DOWN POSITION
Switch 1 (Relay 1)	Dry	Wet
Switch 2 (Relay 2)	Dry	Wet
Switch 3 (Pairing)	Normal mode	Pairing mode
Switch 4 (Role)	Remote	Central

# Pairing

Perform the following steps to pair the Remote and Central units. It's recommended to have them in close proximity for pairing, but not required.

1. Move DIP switch 3 to the up (normal mode) position on both units.
2. Press and hold the green Pair/Test button on the Remote unit for 10 seconds, or until the six RSSI LED indicators illuminate three times.
3. Repeat the previous step for the Central unit.
4. Move DIP switch 3 to the down (pairing mode) position on both units. Ensure one unit is set to Central (switch 4 down) and the other set to Remote (switch 4 up).
5. Briefly press the green Pair/Test button on the Central unit. RSSI lights will count up until all six are lit on both units, indicating pairing is complete.
6. Move DIP switch 3 back to the up (normal mode) position on both units.

Once successfully configured and paired, the units will communicate every 30 seconds. The RSSI LEDs will indicate signal strength between the two units.



# Testing

For a quick connection test, briefly press the green Pair/Test button. The RSSI LEDs on both units will strobe if successful.



For further testing, connect a Weigand reader to the Remote unit, the reader should turn on during this test. Swipe a fob on the reader and look for the following:

- The RSSI lights should illuminate, indicating the signal strength.
- The Radio Power LED should illuminate briefly, indicating that a message was sent or received.
- The Central unit should output a Wiegand code that matches the fob swiped on the reader.
- If wired correctly to an access control panel, the Central unit will trigger the relay input and the corresponding relay output on the Remote unit will illuminate to indicate a successful door open.

Repeat this test with the devices mounted in their desired locations.


After mounting, check the signal strength on the RSSI LED indicators. You may want to adjust the mounting location and antenna orientation if the signal strength is poor or if the response is inconsistent.

 **A green RSSI LED is required for reliable operation**

# FCC Regulatory Statement

FCC ID:2BGQ6WW100: 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.

 **IMPORTANT!** Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment.

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, 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.

## FCC Radiation Exposure Statement

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with minimum distance 20cm between the radiator and your body.

This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter. The antennas used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter.

## FCC Caution

To assure continued compliance, any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this equipment. (Example - use only shielded interface cables when connecting to computer or peripheral devices).