



# Instruction Manual

(For green circuit boards)

The WEL-200 is a complete wireless solution for interfacing sensing edges to gate and door operators, while ensuring compliance with UL325 monitoring standards. **The WEL-200 Transmitter (per page 4, step 6) requires the edge (sold separately) to have a built-in resistor with a value between 4K - 12K ohms. Non-resistive edges DO NOT work with this system.** Each receiver can connect with up to four transmitters with separate relay and pulse outputs for open and close edge functionality. Each transmitter can run for up to two years on two AA lithium batteries. With enhanced diagnostic features, installation and maintenance for the WEL-200 is easy and reliable. Feedback is provided for all fault modes, including edge open, short conditions, low battery and failed transmitters.

## Specifications

	Receiver (WEL-200R)	Transmitter (WEL-200T)
Operating Range	200 ft (line of sight)	
Operating Frequency	915 MHz	
Response Time	100 ms	
Operating Temperature	-40° to 140°F (-40 to 60°C)	
Power	12-24 VDC/AC	2 AA lithium batteries ~ 2 year life
Current Draw	50 mA	N/A
Surge Protection	Thermal fuse, MOV	Thermal fuse
Outputs	300 Hz pulsed, relay, or relay with selectable 10K ohm resistor across normally open contact	N/A
Edge Resistance Range	-	4K - 12K Ohms
Dimensions	5.5" (140 mm) x 1.3" (34 mm) x 3.5" (90 mm)	7" (180 mm) x 1.3" (32 mm) x 2.6" (67 mm)
Connections	12 terminals	2 terminals

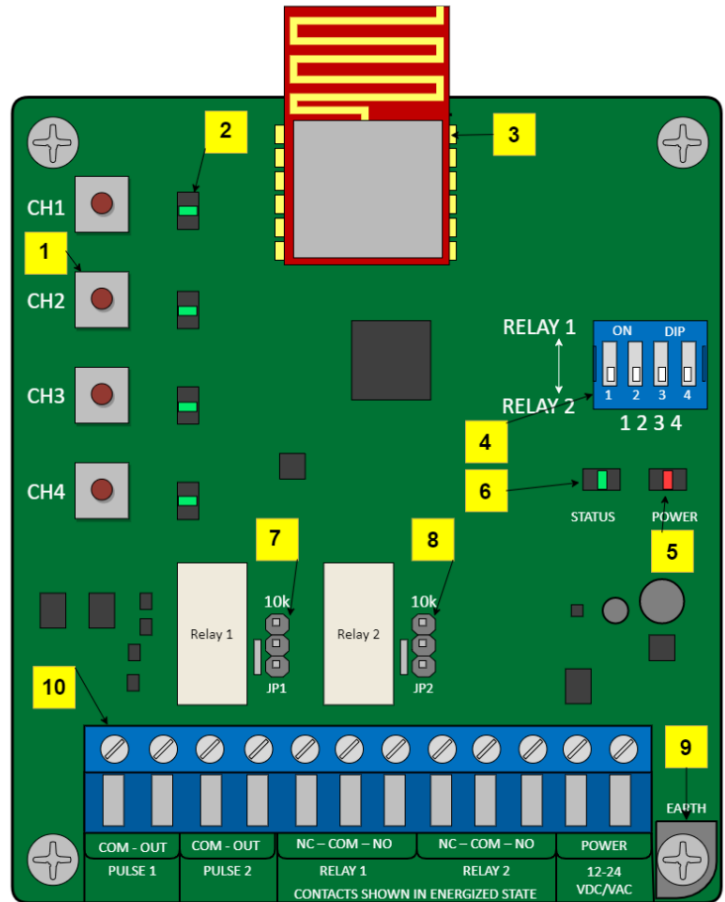
## Ordering Information

- WEL-200K Wireless edge link kit, includes WEL-200R, WEL-200T, 2 cable grip inserts and 2 AA lithium batteries
- WEL-200R Wireless edge link receiver
- WEL-200T Wireless edge link transmitter

# Receiver Connections

1. **Channel assignment buttons**
2. **Channel status LEDs**
  - Off when connected to transmitter with edge sensor
  - On when connected to transmitter with shorted edge sensor
  - Flashes in sync with system LED when no transmitter is connected to channel
3. **Radio**
4. **DIP switch**
  - Assigns each channel to Relay 1 or Relay 2
5. **Power LED**
  - Red when power is on
6. **System Status LED**
  - Flashes green when operating correctly
7. **Relay 1 10K Jumper**
8. **Relay 2 10K Jumper**
9. **Earth ground**
10. **Terminal block**
  - For connections to operator
  - See table below for terminal descriptions

## WEL-200 Receiver



Terminal	Description
PULSE 1 COM	Pulse common connection for channels assigned to Relay 1 on DIP switch
PULSE 1 OUT	Pulse output for channels assigned to Relay 1 (300/0 Hz)
PULSE 2 COM	Pulse common connection for channels assigned to Relay 2 on DIP switch
PULSE 2 OUT	Pulse output for channels assigned to Relay 2 (300/0 Hz)
RELAY 1 NC	Normally closed relay connection for channel assigned to Relay 1 on DIP switch
RELAY 1 COM	Common relay connection for channels assigned to Relay 1
RELAY 1 NO	Normally open relay connection for channels assigned to Relay 1
RELAY 2 NC	Normally closed relay connection for channel assigned to Relay 2 on DIP switch
RELAY 2 COM	Common relay connection for channels assigned to Relay 2
RELAY 2 NO	Normally open relay connection for channels assigned to Relay 2
POWER	12-24 VDC/AC power input (non-polarized)
EARTH	Earth ground connection

# Installation

## Connecting the Receiver

1. Mount the receiver to the exterior of the operator using four #8 machine screws, washers, lock washers and nuts. Open the cover to expose the mounting holes. Place the receiver in direct line of sight with all edge transmitters. Mount the receiver with the sealing nut facing down to prevent water from entering the housing.



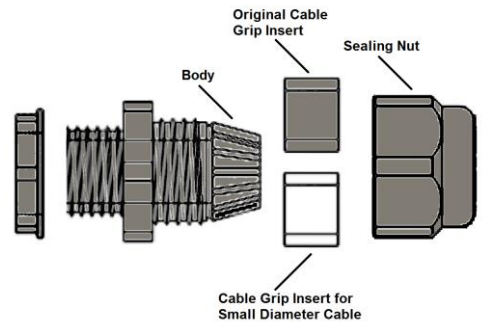
**TIP:**

Extend the top of the receiver approximately 1" above the top edge of the operator housing, or on the side that is in line of sight of all transmitters.

2. Pass the operator wires through the sealing nut, cable grip, and body into the receiver housing.

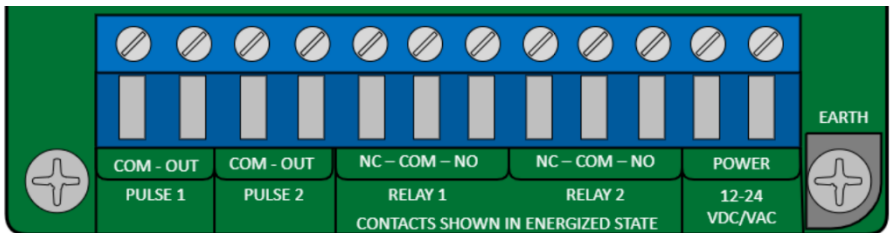
**TIP:**

- Cables for the original cable grip insert must be 0.181-0.321" (4.6-7.9 mm) in diameter to maintain a proper watertight seal.
- For smaller cables, replace the original cable grip insert with a white insert by removing it from inside the body.
- To maintain a watertight seal, 1.) only use round cables 2.) mount the receiver with the sealing nut facing down



3. Connect the operator wires to the terminal block, per one of the monitoring methods below and according to the instructions provided by the operator manufacturer.

**Connect power wires last.**

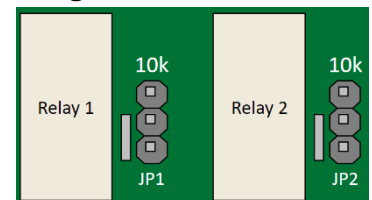


### Pulse Monitoring

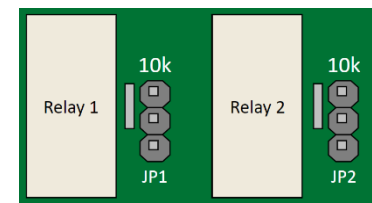
- For channels assigned to Relay 1, connect the operator common to terminal 1 and operator output to terminal 2.
- For channels assigned to Relay 2, connect the operator common to terminal 3 and operator output to terminal 4.

### 10K or NC Relay Monitoring

- For channels assigned to Relay 1, connect the operator normally closed to terminal 5, common to terminal 6 and normally open to terminal 7.
- For channels assigned Relay 2, connect the operator normally closed to terminal 8, common to terminal 9 and normally open to terminal 10.
- For **10K** resistive monitoring, place the jumper on the receiver in the 10K position (bottom two pins) as shown. This places a 10K resistance across the NO relay contacts.
- For **NC**, move the jumper on the receiver to the top two pins.

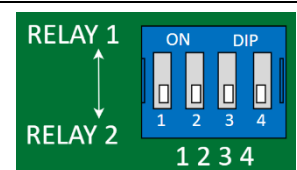


### 10K position



### NC position

4. On the DIP switch indicate which channels will output through Relay 1 and Relay 2 terminals. The DIP switch in the image shows all four channels outputting through Relay 2 terminals.



## Connecting the Transmitter

5. Mount the transmitter near the edge sensor, using two #8 machine screws, washers, lock washer and nuts. Pass the edge sensor wires through the sealing nut as in step 2. Mount the transmitter with the sealing nut facing down to prevent water from entering the housing.

6. Connect the resistor equipped edge sensor wires to the transmitter terminal block (#3 on image). Insert batteries. The LED (#2 on image) will quickly flash 2x every two seconds.

**TIP:**

- **Never connect more than one edge sensor to a single transmitter.**
- **The edge sensor must have a resistance between 4K - 12K ohms.**
- The transmitter's LED flashing three times per second indicates that the batteries are low (less than 2.7 V) and need to be replaced.

7. On the receiver, the system status LED will flash rapidly while it is finding a clean operating frequency (this can last a few seconds). Once completed, the system status LED will flash on/off every 2 seconds. Initialization is now complete.

**TIP:**

To perform a factory reset of the receiver, press 1 and 4 channel assignment buttons simultaneously while disconnecting and reconnecting power. This will clear all programmed channels.

8. To enter channel assignment mode, on the receiver, hold down the desired channel assignment button until the systems status LED begins flashing rapidly, then release the button.

To exit channel assignment mode, press channel 1 and 4 assignment buttons simultaneously for more than 2 seconds or wait 60 seconds.

9. On the transmitter, hold down the connection button for ~4 seconds (#4 on image) until its LED begins flashing rapidly and upon successful connection, the LED flashes once every two seconds. If the transmitter fails to connect, it will return to its initial state, with the LED flashing 2x every 2 seconds. If this occurs, repeat this step. If the transmitter continues to fail to connect, proceed to the troubleshooting section.

**TIP:**

To remove a connection from the transmitter, hold down the connection button. The LED will turn on solid for several seconds, and then flash twice every 2 seconds when disconnected.

10. Test the connection. Without activating the edge sensor, observe the channel status LEDs on the receiver. They should be off for any channel connected to a transmitter. Activate the edge sensor being tested. On the receiver, the channel status LED for the tested edge's channel should turn on. On the transmitter, the LED should flash once every second while the edge sensor is activated. If the channel does not exhibit this behavior, double check the edge sensor wiring, termination and transmitter batteries.

11. Repeat steps 5 through 10 for each additional transmitter. Never connect more than one edge sensor to a single transmitter.



## Troubleshooting

Symptom	Possible cause	Solution
Receiver channel status LED is on, regardless of edge sensor state	Edge sensor's resistance is too low  Edge wires are shorted	<ol style="list-style-type: none"> <li>1. Disconnect edge sensor from transmitter.</li> <li>2. Connect a digital multimeter, set to read ohms and connect to edge leads. The meter should read between 4K and 12K.</li> <li>3. If the meter reads outside of this range the edge sensor is defective. Replace the edge sensor.</li> </ol>
Receiver channel status LED flashes 2x then pauses every second	Edge sensor resistance above 12K  Improper connection to edge sensor  Damaged wires	<ol style="list-style-type: none"> <li>1. Disconnect edge sensor from transmitter.</li> <li>2. Connect a digital multimeter, set to read ohms and connect to edge leads. The meter should read between 4K and 12K. If the meter reads outside this range the edge sensor is defective. Replace edge sensor.</li> <li>3. Press on the edge sensor and confirm resistance drops to zero.</li> </ol>
Receiver channel status LED flashes once per second	Transmitter not connected to receiver	Repeat step 9 in transmitter installation
Receiver channel status LED flashes 0.5 seconds on, 0.5 seconds off  Transmitter LED off	Transmitter batteries are discharged  Transmitter is damaged	Replace batteries with two AA lithium batteries 1.5V (in cold weather, battery life can be reduced)  If new batteries are installed in transmitter and transmitter LED does not light, replace transmitter
Receiver channel status LED flashes 3x per second	Transmitter batteries are low (less than 2.7V)	Replace batteries with two AA lithium batteries 1.5V

## Warranty

EMX Industries, Inc. products have a warranty against defects in materials and workmanship for a period of two years from date of sale to our customer.