WEL-200™

WIRELESS EDGE LINK

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Copyright Notice

Cautions and Warnings

1. *Read and follow all operating and Installation instructions.*
2. *Always follow gate operator manufacturer installation instructions regarding installation of type B2 devices to the operator.*
3. *Disable the gate so it is unable to move.*

Refer servicing to qualified service personnel.

IMPORTANT:
This product is an accessory or part of a system. Always read and follow the manufacturer's instructions for the equipment before connecting this product. Comply with all applicable codes and safety regulations. Failure to do so may result in damage, injury or death.

Regulatory Information

FCC ID: 0A3MRF89XAM9A

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.

UL File: E315703

The WEL-200 is designed for use with Entrapment Protection Type B2 devices per the 2016 UL325 standard. This system meets the UL325 requirements for N.C., 10K resistive, 4-wire pulsed monitoring methods.

Specifications

	WEL-200R	WEL-200T
Operating Range	Up to 200 ft. (line of sight)	
Response Time	100ms	
Power/Fault Indicator	Red power LED/green channel LED	Green transmit/status LED
Channel Status Indicator	Green LED	NA
Channel mode selection switch	Assign each channel to OPEN/CLOSE function	NA
Outputs	• OPEN direction relay: Form C contacts (NO, COM, NC) • CLOSE direction relay: Form C contacts (NO, COM, NC) • OPEN direction pulsed: Open collector transistor output (opto-isolated) • CLOSE direction pulsed: Open collector transistor output (opto-isolated)	NA
Resistive termination	10K ohm across NO contact (jumper selectable)	NA
Power protection	Thermal fuse, MOV	Thermal fuse
Environmental Rating	NEMA 4X	
Power Supply	12-24 VAC/VDC	3-3.6 VDC (2x AA batteries) (ANSI 15-LF, IEC-FR14505 (FR6))
Battery life	NA	2 years at 25°C
Current Draw	50 mA	NA
Operating Temperature	-40°...60°C (-40°...140°F)	
Dimensions (L x W x H)	140mm (5.5") x 34mm (1.3") x 90mm (3.5")	180mm (7.0") x 32mm (1.3") x 67mm (2.6")
Weight	200g (7 oz.)	170g (6 oz.)
Connections	12 terminals (18-26AWG)	2 terminals (18-26AWG)

Figure 1 - WEL-200T (transmitter)

Figure 2 - WEL-200R (receiver)

The EMX WEL-200 system provides a complete wireless solution for interfacing sensing edges with gate and door operators, while ensuring compliance with 2016 UL325 monitoring standards. Each transmitter can run for up to two years on two AA lithium batteries. The receiver connects with up to four transmitters, with separate relay and pulse outputs for open and close edge functionality.

With enhanced diagnostic features, the WEL-200R will make installation and maintenance easy and reliable. Feedback is provided for all fault modes, including edge open and short conditions, low battery, and failed transmitters.

Receiver

1. **Channel assignment switches**

   - Assigns a wireless transmitter to the specified channel

2. **Channel status indicators**

   - Indicates current status of each channel

3. **Wireless transceiver module**

   - Wireless radio used to communicate with transmitters

4. **Not used**

5. **Open/close direction assignment switch**

   - Assigns channel to either open or close direction output function

6. **Power indicator**

   - On constantly when receiver is powered up

7. **Status indicator**

   - Shows current system status

8. **"Close" direction relay termination jumper**

   - Terminates the COM/NO terminals with a 10k resistor when jumper is placed in the lower position

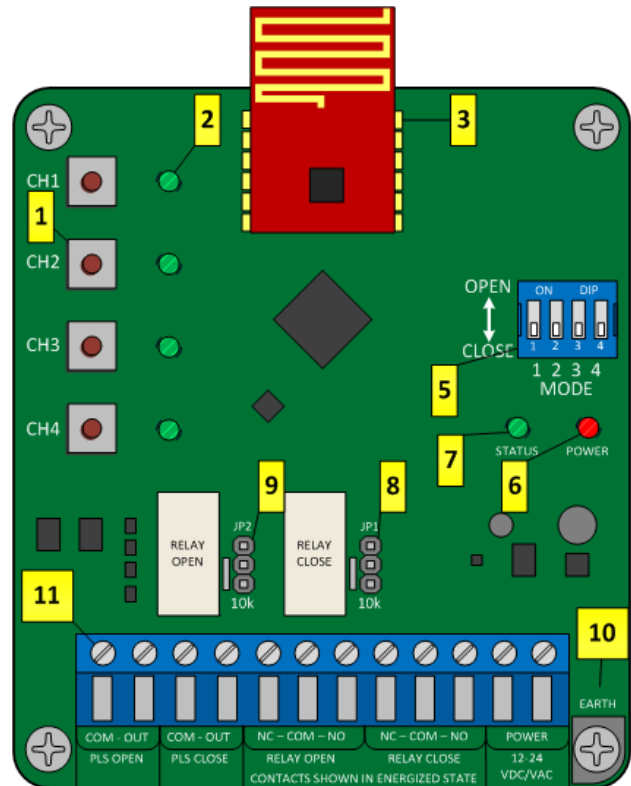9. **"Open" direction relay termination jumper**

   - Terminates the COM/NO terminals with a 10k resistor when jumper is placed in the lower position

10. **Earth ground**

    - Connection point for earth ground

11. **Terminal block**

    - Receiver I/O (see Table 1 in **Connections**)

Transmitter

1. Batteries

- Use two AA lithium batteries, 1.5V (ANSI 15-LF, IEC-FR14505 (FR6)) for the best performance and longest life. Observe polarity indication on the battery holder.
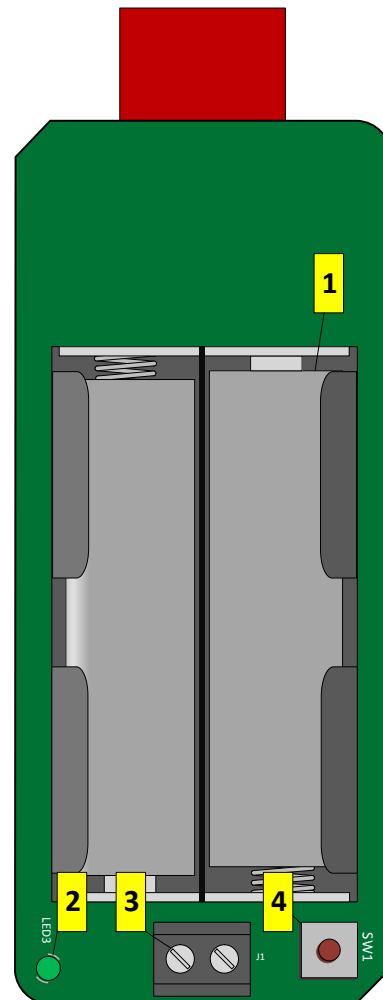
2. Transmitter status LED

- Blinks twice every two seconds if not connected, once if connected
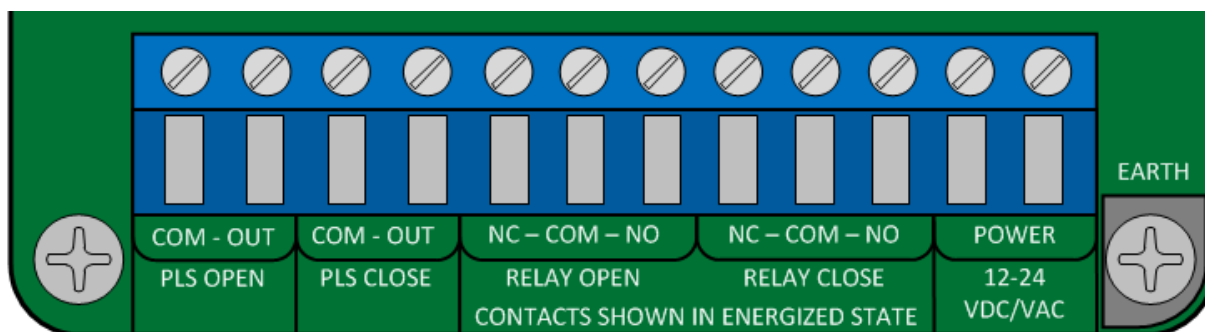- Blinks once every second when edge is activated

3. Terminal block

- Interface for safety edge

4. Connection switch

- Connects/disconnects transmitter from receiver

Connections

Table 1: RECEIVER CONNECTIONS

Terminal	Function	Description
1	PLS OPEN COM	Signal common connection for OPEN direction
2	PLS OPEN OUT	Pulsed output for OPEN direction (300/0 Hz)
3	PLS CLOSE COM	Signal common connection for CLOSE direction
4	PLS CLOSE OUT	Pulsed output for CLOSE direction (300/0 Hz)
5	RELAY OPEN NC	Normally closed connection for OPEN direction
6	RELAY OPEN COM	Common connection for OPEN direction
7	RELAY OPEN NO	Normally open connection for OPEN direction
8	RELAY CLOSE NC	Normally closed connection for CLOSE direction
9	RELAY CLOSE COM	Common connection for CLOSE direction
10	RELAY CLOSE NO	Normally open connection for CLOSE direction
11/12	POWER	12-24 VDC/VAC power input (non-polarized)
EARTH	EARTH	Earth ground connection

1. Receiver Installation

The receiver enclosure can be mounted to the exterior of an operator using four (4) #8 machine screws, washers, lock washers, and nuts. Ideally, it should be placed in direct line-of-sight with the transmitters, with no obstructions between the WEL-200R and the WEL-200T.

1. Mount the receiver.
2. Determine the monitoring method required by the operator.
3. Remove the cover. If the monitoring method is using relay contacts, then set the internal DIP switch settings for each channel to either OPEN or CLOSE direction relay function depending on the location of each edge.
4. For 10K resistive monitoring, place the jumper in the 10K position for both OPEN and CLOSE direction relays.
5. Pulse outputs are available for open collector pulse type monitoring.
6. Wire the appropriate output to the operator.
7. Connect the power to power terminals.

2. Connecting

Connecting is a two step process. First, on the receiver, press and hold the channel assignment switch until the green status LED begins rapidly flashing, then release; this will clear any existing assignment for that particular channel. Hold down the connection switch on the transmitter. If it is not currently connected to a receiver, it will begin flashing rapidly until successfully connecting. Detailed instructions are given below.

2.1. Apply 12-24 VDC/VAC to the **WEL-200R (receiver)**, wait for initialization to complete[1]

    2.1.1. If there are no existing connections, the **receiver's** status LED will blink rapidly while it is finding a clean operating frequency (this can last a few seconds)

    2.1.2. After initialization, the system status LED will flash on/off once every 2 seconds

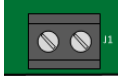**2.2.** Set channel to the desired OPEN/CLOSE direction function using the MODE dip switch

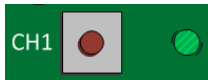**2.3.** Install 2 AA Lithium batteries in the **WEL-200T (transmitter)**

    2.3.1. The green LED on the transmitter will quickly flash 2x every two seconds
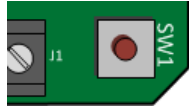
2.4. Install a properly terminated edge to the *transmitter* (8.2k or 10k termination)

2.5. On the *receiver*, hold down the desired channel assignment switch until all four channel LED's activate and the system status LED begins flashing rapidly, then release the switch.[2]

2.6. On the *transmitter*, hold down the connection switch (next to the terminal block)[3]

    2.6.1. The LED on the *transmitter* will begin flashing rapidly after ~4 seconds

    2.6.2. Upon successful connection, the LED will flash once every two seconds

    2.6.3. If the *transmitter* fails to connect, it will return to its initial state, with the LED flashing twice every two seconds. If this occurs, repeat step 2.6. If the transmitter will not connect, proceed to the troubleshooting section.
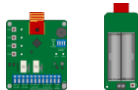
2.7. Testing
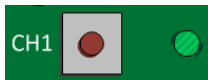
    2.7.1. Without activating the edge, observe the channel status LED, it should be OFF.

    2.7.2. When the edge is activated, the *receiver* channel status LED will turn on and the corresponding OPEN/CLOSE direction output will activate. The *transmitter* status LED will blink once every *second* when the edge is activated.

    2.7.3. If the channel does not exhibit this behavior, double check the edge wiring/termination and transmitter batteries.

Notes

1. If channel 1 and 4 switches are pressed simultaneously during power up, the receiver will perform a factory reset and clear all programmed channels.

2. Channel assignment mode will exit under the following conditions:

    a. Successful connection to a transmitter

    b. 60 second timeout

    c. User selected exit

   i. Pressing channel 1 and 4 switches simultaneously for more than 2 seconds

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

Troubleshooting

Under normal operation, the WEL-200R **STATUS** indicator LED will flash once every two seconds. This is referred to as a cycle (one second on/one second off). Any fault that occurs will cause the associated open/close output to change state. Output state refers to the output assigned to the channel via the OPEN/CLOSE switch on the receiver. The main faults indicated by each channel LED are as follows:

| Channel LED Diagnostics			
Symptom	**Possible cause**	**Solution**	**Output state**
LED is on, regardless of edge state	Edge resistance is below normal, edge wires are shorted	Make sure the edge is terminated with the proper termination resistance (3k to 12k), check wires for damage	Relay NO/COM connected; pulse output: 0 Hz*
LED flashes 2x per cycle (0.25 seconds on, 0.25 seconds off)	Edge resistance above normal, improper connection, damaged wires	Make sure the edge is terminated with the proper termination resistance (3k to 12k)	Relay NO/COM connected; pulse output: 0 Hz*
LED flashes 3x per cycle	Transmitter batteries low	Replace batteries with type listed in specifications	Relay NO/COM connected; pulse output: 0 Hz*
LED flashes 2x (0.5 seconds on, 0.5 seconds off)	Transmitter batteries are discharged; transmitter is damaged/inoperable	Replace batteries with type listed in specifications; replace transmitter	Relay NO/COM connected; pulse output: 0 Hz*

The system status LED (next to the power LED) can be used to compare the flashes. The LED for an unassigned channel will flash at the same rate as the status LED.

System status/unassigned channel indicator
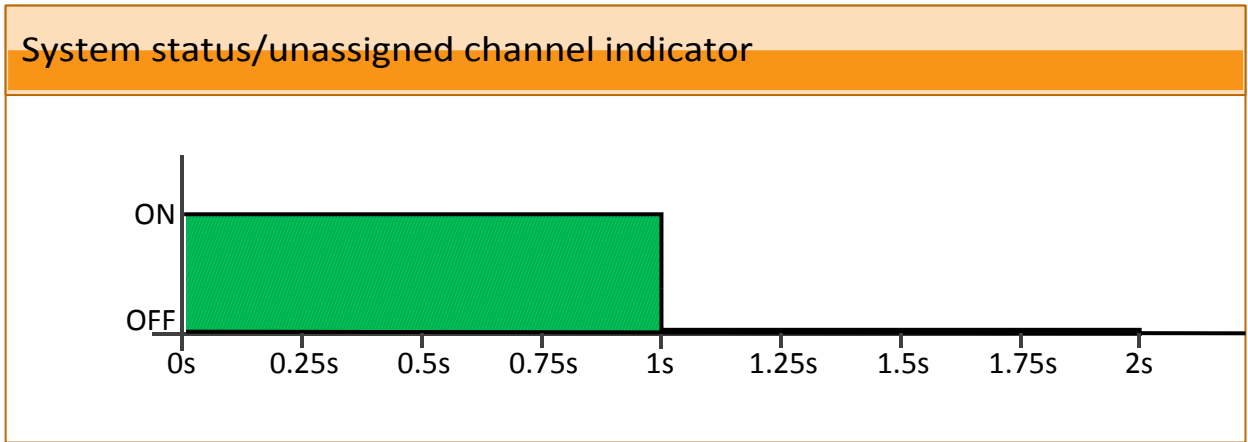
When channel assignment mode is entered, the active channel's LED will turn on for 0.25 seconds, once per cycle.

Pending channel connection
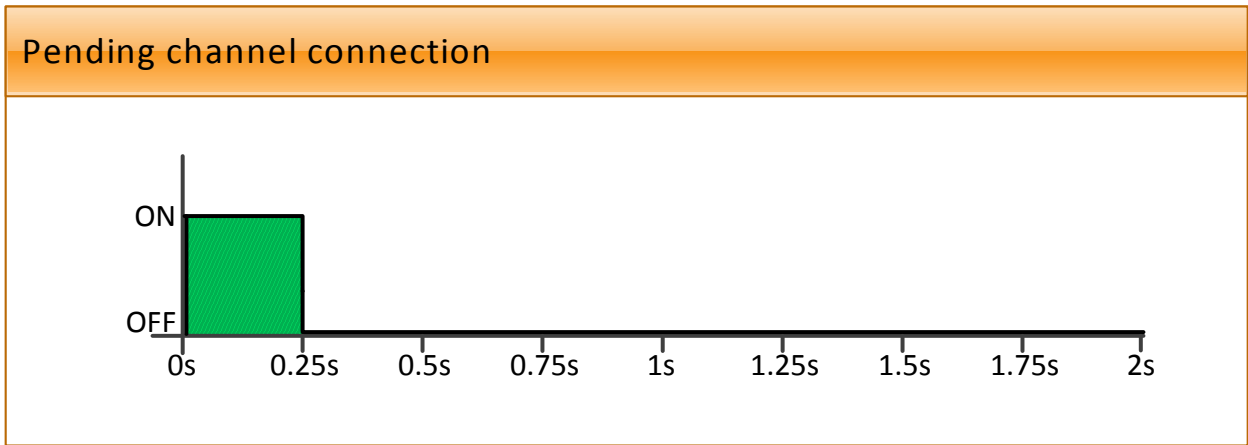
If the edge resistance is above normal, due to lack of/improper termination or cable damage, the offending channel's LED will turn on for 0.25 seconds, 2x per cycle.
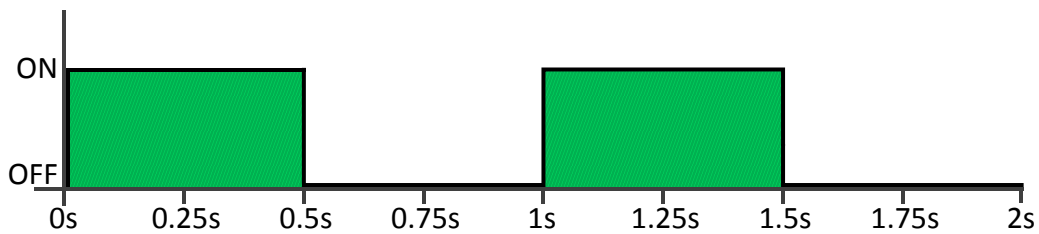
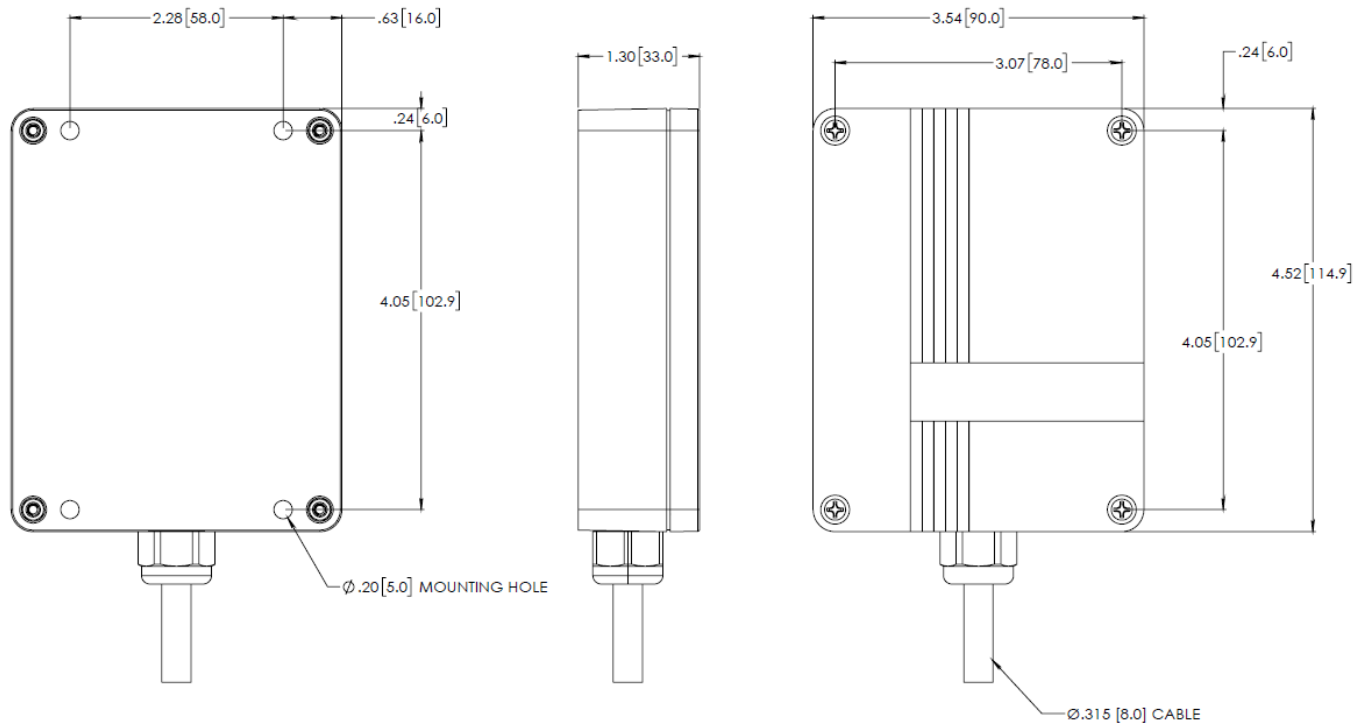**Edge resistance above normal**
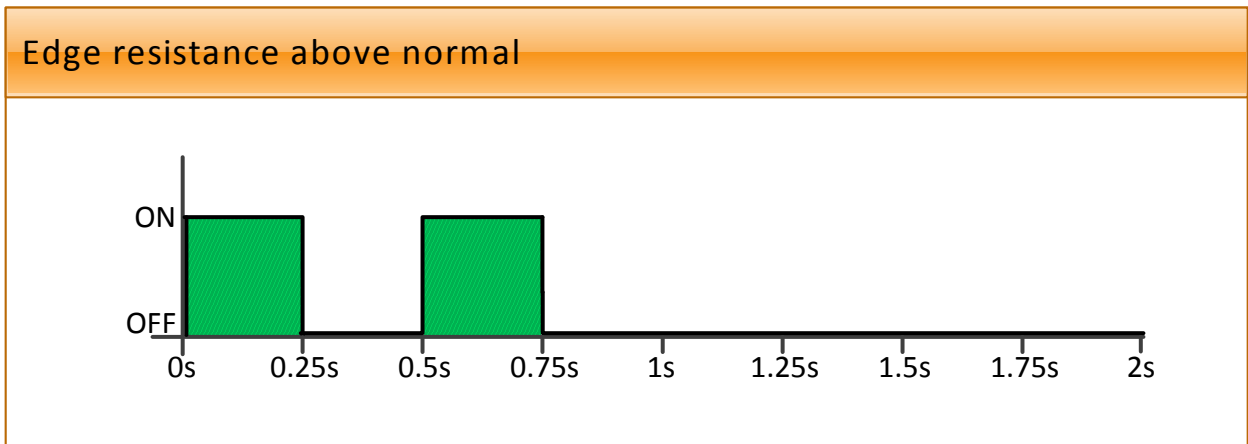
Transmitter battery low
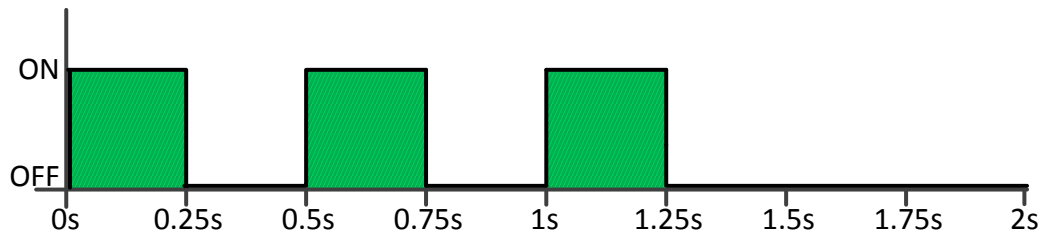
If the transmitter batteries fall below their ideal operating voltage (2.7 Volts), the LED for its assigned channel will turn on for 0.25 seconds, 3x per cycle.
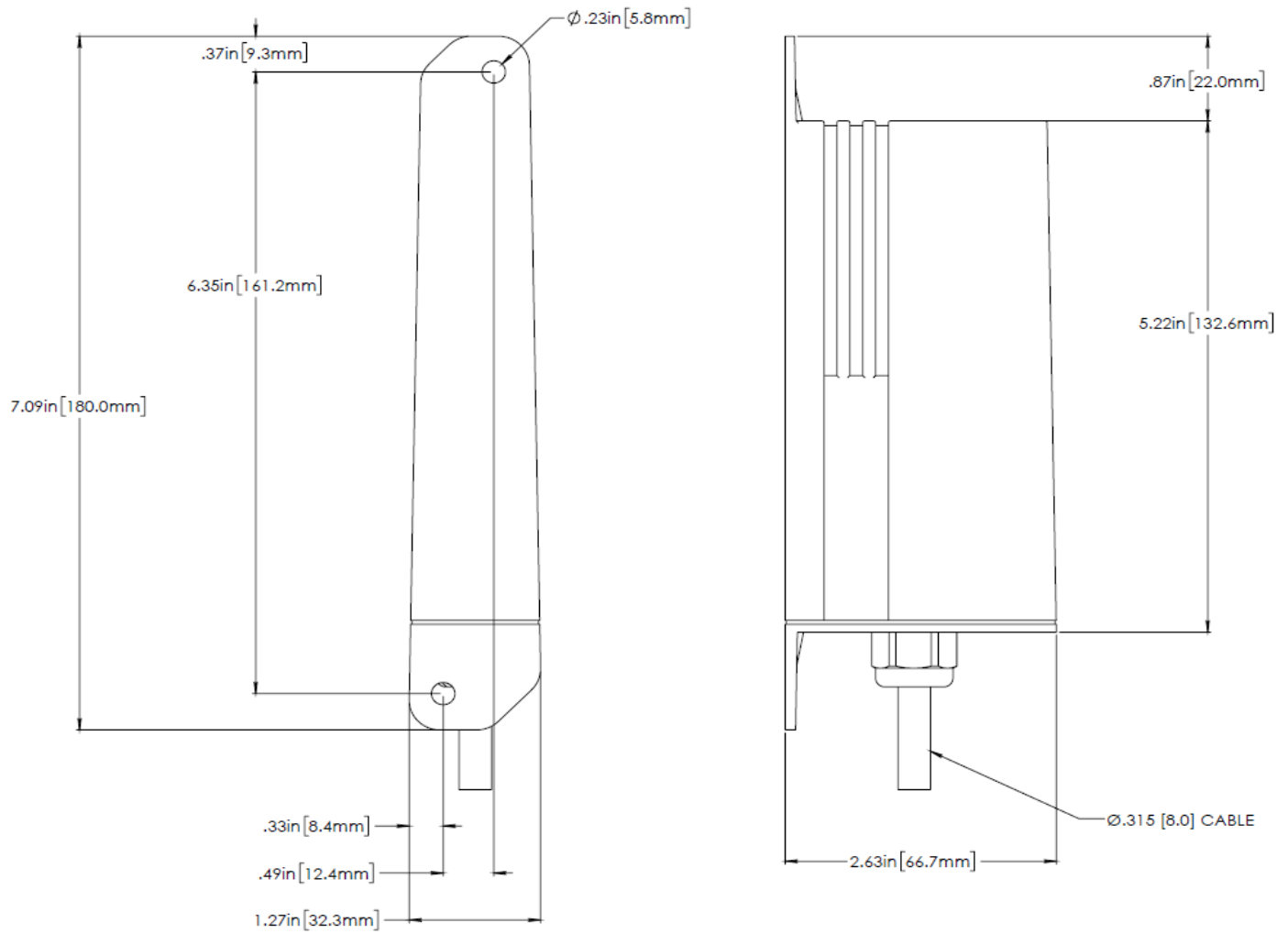
Transmitter is inactive

Ordering Information

WEL-200K   Wireless edge link kit, 1 transmitter and 1receiver
WEL-200T   Wireless edge link transmitter
WEL-200R   Wireless edge link receiver

Warranty

EMX Industries Incorporated warrants all products to be free of defects in materials and workmanship for a period of two years under normal use and service from the date of sale to our customer. This warranty does not cover normal wear and tear, abuse, misuse, overloading, altered products, damage caused by incorrect connections, lightning damage, or use other than intended design.

There is no warranty of merchantability. There are no warranties expressed or implied or any affirmation of fact or representation except as set forth herein.

EMX Industries Inc. sole responsibility and liability, and the purchaser's exclusive remedy shall be limited to the repair or replacement at EMX Industries option of a part or parts found not conforming to the warranty. In no event shall EMX Industries Inc. be liable for damages, including but not limited to damages resulting from non-conformity, defect in material or workmanship.

Effective date: January 1st, 2002

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