**COMMONLY USED SAFETY SENSORS**

**Installation Steps:**

1. Set switch to “LIGHT ON”
2. Wire 12V power to photocell
3. Wire **PHOTO CLS NC** to photocell **NO1**
   Wire **GND** to photocell **C-1**
4. Align photocell to reflector
5. Adjust sensitivity

**IMPORTANT:** Photocell **MUST** be powered by **MATRIX III** or it will **NOT** be MONITORED.

**NOTE:** To meet the UL 325 2018 standard, Type B1 Non-Contact sensor entrapment protection device **MUST** be MONITORED by the gate operator.

**IMPORTANT:** Photocell **MUST** be in alignment with reflector or fault will occur.

---

**OMRON E3K-R10K4**

**Photocell (Reflector)**

**CLOSING Direction**

**NOTE:** DO NOT use 10K Resistor included with photocell.

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**EMX IRB-RET**

**Photocell (Reflector)**

**CLOSING Direction**

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**IMPORTANT:** Photocell **MUST** be powered by **MATRIX III** or it will **NOT** be MONITORED.

**NOTE:** To meet the UL 325 2018 standard, Type B1 Non-Contact sensor entrapment protection device **MUST** be MONITORED by the gate operator.

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**Installation Steps:**

1. Set DIP-switches
2. Remove jumpers JP-5 and JP-6
3. Wire 12V power to photocell (VRX)
4. Wire **PHOTO CLS NC** to photocell **NC** (Energized)
   Wire **Matrix III GND** to photocell **COM** (Energized)
5. Align photocell to reflector
6. Adjust sensitivity

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**IMPORTANT:** If photocell does **NOT** function using VRX power input, connect power to VTX input instead.
Photocell (Thru-Beam) CLOSING Direction
Single Gate Operator

**Installation Steps:**
1. Set DIP-switches on receiver.
2. Install jumper on receiver.
3. Wire Matrix III 12VDC OUT power to receiver.
4. Wire PHOTO CLS NC to receiver photocell NC.
   Wire Matrix III GND to receiver photocell COM.
5. Wire 12V Matrix III power to transmitter.
6. Align photocells.
7. Adjust sensitivity on receiver.

**DIP-switches:**
1, 2, 3 are OFF.
Switch 4 is ON if trouble occurs, try turning switch 4 OFF.

**Sensitivity Adjustment:**
If the photocell does not respond to an obstruction, lower the sensitivity by turning adjustment counter-clockwise.

**Jumper:**
MUST be on Com-NC.

**Green LED:**
To PHOTO CLS NC and 12VDC OUT Input

**IMPORTANT:** Photocells MUST be in alignment or fault will occur. Green LED will remain ON receiver when in proper alignment.

**IMPORTANT:** Photocells MUST be powered by Matrix III or they will NOT be MONITORED.

**NOTE:** To meet the UL 325 2018 standard, Type B1 Non-Contact sensor entrapment protection device MUST be MONITORED by the gate operator.
**UL325-2016**

**NORMALLY CLOSED (NC) Wiring to E3K Photocell**

**CLOSING Direction Photocell (Reflector)**

**Installation Steps:**
1. Set switch to “LIGHT ON”
2. Wire 12V power to photocell
3. Wire PHOTO CLS NC to photocell NO1
4. Wire GND to photocell C-1
5. Align photocell to reflector
6. Adjust sensitivity

**NOTE:** To meet the UL 325 2016 standard, Type B1 Non-Contact sensor entrapment protection device MUST be MONITORED by the gate operator.

**IMPORTANT:**
- DO NOT use 10K Resistor included with photocell.

**For 10K Resistor E3K Photocell wiring see next page**
**Polarity does NOT matter**

**C-1 NO1 NC1 LIGHT ON**

**Sensitivity Adjustment:**
If the photocell does not respond to an obstruction, lower the sensitivity by turning adjustment counter-clockwise.

**Power Set switch to “LIGHT ON”**
24 to 240 VAC
24 to 240 VDC

**Installation Steps:**
1. Set switch to “LIGHT ON”
2. Wire 12V power to photocell
3. Wire OPEN ONLY 10K to photocell NC1
   Wire GND to photocell C-1
4. Align photocell to reflector
5. Adjust sensitivity

**NOTE:** To meet the UL 325 2018 standard, Type B1 Non-Contact sensor entrapment protection device MUST be MONITORED by the gate operator.

**UL325-2018**

**10K Resistor wiring to E3K Photocell**

**OPENING Direction Photocell (Reflector)**

**OK to use 12VDC**

**UL 2018 Label on packaging**

****NEW!!!****

E3K with Built-In Resistor to comply with UL325-2018 Requirements

**Please consult enclosed wiring diagrams and operator instruction manual**

NOTE: To meet the UL 325 2018 standard, Type B1 Non–Contact sensor entrapment protection device MUST be MONITORED by the gate operator.
1. WIRE WEL-200R OPEN & CLOSE RELAYS TO MATRIX III 10K SENSOR INPUTS

2. INSERT BOTH JUMPERS IN 10K POSITION
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.

NOTE: 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)
After initialization, the system status LED will flash on/off once every 2 seconds

**STEPS**

1. Set each channel to the desired OPEN/CLOSE direction function using the MODE dip switch
   If a DIP switch is in the OPEN position, then that channel will trigger the OPEN Relay on receiver. Otherwise, it will trigger the CLOSE Relay.

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

3. The green LED on the transmitter will quickly flash 2x every two seconds

4. Install a properly terminated edge to the transmitter (8.2k or 10k termination)

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.

6. On the transmitter, hold down the connection switch (next to the terminal block)
   The LED on the transmitter will begin flashing rapidly after ~4 seconds

7. Upon successful connection, the LED will flash once every two seconds
   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 steps above.

**TESTING**

Without activating the edge, observe the channel status LED, it should be OFF.

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.

If the channel does not exhibit this behavior, double check the edge wiring/termination and transmitter batteries.
## Matrix III LED Troubleshooting

### Table of LED Conditions

<table>
<thead>
<tr>
<th>Matrix III LED</th>
<th>Normal LED</th>
<th>Solution(s) for Problem Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;BATTERY IN ERROR&quot; LED is ON</td>
<td>ON 1</td>
<td>• &quot;BATTERY Plug&quot; not plugged in to &quot;BATTERY IN&quot; port.</td>
</tr>
<tr>
<td>&quot;BATTERY IN USE&quot; LED is ON</td>
<td>OFF 0</td>
<td>• AC power is lost, operator input is battery back-up mode.</td>
</tr>
<tr>
<td>&quot;BATTERY VOLTAGE&quot; (E 1/2 F) LEDS, only &quot;E&quot; is ON.</td>
<td>OFF 0</td>
<td>• Battery is very LOW. Check if AC power is ON. If so, check AC power.</td>
</tr>
<tr>
<td>&quot;REPLACE BATTERY&quot; LED is ON</td>
<td>OFF 0</td>
<td>• Battery needs to be replaced if BATTERY TEST fails and &quot;REPLACE BATTERY&quot; LED is ON.</td>
</tr>
<tr>
<td>&quot;BATTERY IN USE&quot; and &quot;POWER&quot; LED are FLASHING</td>
<td>OFF / ON 2 / 5</td>
<td>• Battery not plugged in to BATTERY INPUT port.</td>
</tr>
<tr>
<td>PRIMARY Matrix III “LINK OK” LED is OFF</td>
<td>ON 0</td>
<td>• Check if limit sensors are plugged into PRIMARY MATRIX III “SLIDER LIMIT” input.</td>
</tr>
<tr>
<td>SECONDARY Matrix III “LINK OK” LED is OFF</td>
<td>ON 0</td>
<td>• Check wiring between PRIMARY RS485 (+, -) and SECONDARY RS485 (+, -) terminals.</td>
</tr>
<tr>
<td>&quot;UL Entrap&quot; LED is ON</td>
<td>ON 0</td>
<td>• An entrapment event has occurred, check if an entrapment sensor was triggered (see if PHOTO CLS, OPEN ONLY, or OPEN/CLS LEDs are on).</td>
</tr>
<tr>
<td>&quot;ERD&quot; LED is FLASHING</td>
<td>ON 0</td>
<td>• An ERD event may have occurred. Check for gate obstruction.</td>
</tr>
<tr>
<td>&quot;PHOTO CLS&quot; LED is ON</td>
<td>ON 0</td>
<td>• ERD sensitivity is too high for application. Re-adjust ERD setting. (see LED 36).</td>
</tr>
<tr>
<td>&quot;CLS ONLY 10K&quot; LED is ON</td>
<td>OFF 0</td>
<td>• Sensor on PHOTO CLS or CLS ONLY 10K inputs (photocell or edge) may have detected an obstruction while closing gate.</td>
</tr>
<tr>
<td>&quot;PHOTO CLS&quot; LED is flashing</td>
<td>OFF 0</td>
<td>• Photocell on PHOTO CLS may be misaligned with reflector.</td>
</tr>
<tr>
<td>&quot;CLS ONLY 10K&quot; LED is flashing</td>
<td>OFF 0</td>
<td>• Sensor on PHOTO CLS or CLS ONLY 10K inputs (photocell or edge) may be wired properly, but may not detect an obstruction (see LED 30).</td>
</tr>
<tr>
<td>&quot;OPEN ONLY&quot; LED is ON</td>
<td>OFF 0</td>
<td>• Sensor on OPEN ONLY input (photocell or edge) may have detected an obstruction while cycling gate.</td>
</tr>
<tr>
<td>&quot;OPEN ONLY&quot; LED is FLASHING</td>
<td>OFF 0</td>
<td>• Photocell on OPEN ONLY input is misaligned with reflector.</td>
</tr>
<tr>
<td>&quot;MAX SENSE&quot; LED is ON</td>
<td>OFF 0</td>
<td>• Sensor on OPEN ONLY input (photocell or edge) may not be wired properly, but may detect an obstruction.</td>
</tr>
<tr>
<td>&quot;MANUAL RELEASE/RESET&quot; LED is ON but manual release is not working</td>
<td>OFF 0</td>
<td>• Sensor is not a N.C. monitored sensor that is UL325 201 compliant.</td>
</tr>
<tr>
<td>&quot;OBD PORT&quot; LED is FLASHING</td>
<td>OFF 0</td>
<td>• Sensor might need to be re-learned.</td>
</tr>
<tr>
<td>&quot;PROGRAM&quot; LED is FLASHING</td>
<td>OFF 0</td>
<td>• Sensor is damaged or malfunctioning.</td>
</tr>
<tr>
<td>&quot;PROGRAM&quot; LED is ON</td>
<td>OFF 0</td>
<td>• Sensor might need to be re-learned.</td>
</tr>
<tr>
<td>&quot;CLS ONLY 10K&quot; LED is ON</td>
<td>OFF 0</td>
<td>• Sensor is damaged or malfunctioning.</td>
</tr>
<tr>
<td>&quot;OPEN ONLY&quot; LED is ON</td>
<td>OFF 0</td>
<td>• Sensor is not a N.C. monitored sensor that is UL325 201 compliant.</td>
</tr>
<tr>
<td>&quot;OPEN ONLY&quot; LED is FLASHING</td>
<td>OFF 0</td>
<td>• Photocell on OPEN ONLY input (photocell or edge) may not be wired properly, but may detect an obstruction.</td>
</tr>
<tr>
<td>&quot;MAX SENSE&quot; LED is ON</td>
<td>OFF 0</td>
<td>• Sensor on OPEN ONLY input (photocell or edge) may be wired properly, but may not detect an obstruction.</td>
</tr>
</tbody>
</table>

### Table Continued

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<th>Solution(s) for Problem Condition</th>
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<tr>
<td>&quot;OPEN ONLY&quot; LED is ON</td>
<td>OFF 0</td>
<td>• Sensor on OPEN ONLY input (photocell or edge) may have detected an obstruction while cycling gate.</td>
</tr>
<tr>
<td>&quot;OPEN ONLY&quot; LED is FLASHING</td>
<td>OFF 0</td>
<td>• Photocell on OPEN ONLY input is misaligned with reflector.</td>
</tr>
<tr>
<td>&quot;MAX SENSE&quot; LED is ON</td>
<td>OFF 0</td>
<td>• Sensor on OPEN ONLY input (photocell or edge) may not be wired properly, but may detect an obstruction.</td>
</tr>
<tr>
<td>&quot;MANUAL RELEASE/RESET&quot; LED is ON but manual release is not working</td>
<td>OFF 0</td>
<td>• Sensor is not a N.C. monitored sensor that is UL325 201 compliant.</td>
</tr>
<tr>
<td>&quot;OBD PORT&quot; LED is FLASHING</td>
<td>OFF 0</td>
<td>• Sensor on OPEN ONLY is damaged or malfunctioning.</td>
</tr>
<tr>
<td>&quot;PROGRAM&quot; LED is FLASHING</td>
<td>OFF 0</td>
<td>• Sensor might need to be re-learned.</td>
</tr>
</tbody>
</table>

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**Table continued on next page**
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<tr>
<th>Problem Condition</th>
<th>Normal LED</th>
<th>Solution(s) for Problem Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“ID PLUG” LED is FLASHING and board beeping</strong></td>
<td>OFF 12</td>
<td>- Insert ID PLUG module that is tethered to chassis into “ID PLUG” connector.</td>
</tr>
<tr>
<td><strong>“SOLAR MODE” LED is ON</strong></td>
<td>OFF 13</td>
<td>- Operator is being powered by solar panel ONLY.</td>
</tr>
<tr>
<td><strong>“OPEN/CLS” LED is ON</strong></td>
<td>OFF 31</td>
<td>- Sensor on OPEN/CLS input (photocell or edge) may have detected an obstruction while opening or closing gate.</td>
</tr>
<tr>
<td><strong>“OPEN/CLS” LED is FLASHING</strong></td>
<td>OFF 8</td>
<td>- Photocell on OPEN/CLS input is misaligned with reflector. - Sensor on OPEN/CLS input (photocell or edge) may not be wired properly, (see 5). - Sensor is NOT a N.C. monitored sensor that is UL325 2018 compliant. - Sensor on OPEN/CLS is damaged or malfunctioning. - Sensor might need to be re-learned.</td>
</tr>
<tr>
<td><strong>“MOTOR OVERLOAD” LED is ON</strong></td>
<td>OFF 15</td>
<td>- Sensor on OPEN/CLS input is misaligned with reflector. - Sensor on OPEN/CLS input (photocell or edge) may not be wired properly, (see 5). - Sensor is NOT a N.C. monitored sensor that is UL325 2018 compliant. - Sensor on OPEN/CLS is damaged or malfunctioning. - Sensor might need to be re-learned.</td>
</tr>
<tr>
<td><strong>“EXIT” LOOP LED is FLASHING or constantly ON</strong></td>
<td>OFF 17</td>
<td>- Loop fault condition: Check if EXIT loop wires are connected into to loop input connector properly. - Check if loop detector is inserted properly in Loop Rack slot. - Set unique loop detector frequency for each loop detector used. - Loop Detector might be defective. Replace defective loop detector. NOTE: RENO loop detector LED’s flash as default, but function normally (ignore the flashing).</td>
</tr>
<tr>
<td><strong>“SAFETY” LOOP LED is FLASHING or constantly ON</strong></td>
<td>OFF 18 or 19</td>
<td>- Loop fault condition: check if SAFETY loop wires are connected into to loop input connector properly. - Check if SAFETY loops are wired in series. - Check if loop detector is inserted properly in Loop Rack slot. - Set unique loop detector frequency for each loop detector used. - Loop Detector might be defective. Replace defective loop detector. NOTE: RENO loop detector LED’s flash as default, but function normally (ignore the flashing).</td>
</tr>
<tr>
<td><strong>“GATE DISABLE” LED is ON</strong></td>
<td>OFF 35</td>
<td>- Check if “Gate Shut-off” switch is ON, Turn it OFF. If it is OFF, cycle the switch (ON then OFF). - Check if the chain is dropped. If so, gate is disabled for safety. Re-install chain and cycle the “Gate Shut-off” switch (ON then OFF) to enable operator. - Check if an external device is triggering GATE DISABLE input. Disconnect devices individually to determine possible false triggering of GATE DISABLE.</td>
</tr>
<tr>
<td><strong>“MAG LOCK” LED is FLASHING</strong></td>
<td>OFF 28</td>
<td>- Maglock power is lost. Check if maglock power transformer is wired properly or needs to be replaced. - Switch is set to delay but no maglock is connected. Set switch to OFF</td>
</tr>
<tr>
<td><strong>“GATE TAMPER” LED is FLASHING</strong></td>
<td>OFF 34</td>
<td>- Gate was manually moved off of its CLOSED position causing Tamper Relay to trigger for few seconds.</td>
</tr>
<tr>
<td><strong>“12VDC” LED is OFF. “24VDC” LED is OFF</strong></td>
<td>ON 18 or 19</td>
<td>- Check for a short in wiring to connected device. DO NOT power external keypads or telephone entry to this port (only use for radio receiver / photocell).</td>
</tr>
<tr>
<td><strong>“SLIDER LIMIT” LED is ON</strong></td>
<td>OFF 21</td>
<td>- Only ON if factory installed plug is plugged in. Re-install plug into SWING LIMIT connection for swing gate operator.</td>
</tr>
<tr>
<td><strong>“ON/OFF BATTERY” LED is OFF</strong></td>
<td>ON 22</td>
<td>- Batteries are turned OFF. Turn toroid box AC POWER switch ON and batteries automatically turn ON.</td>
</tr>
<tr>
<td><strong>“QUICK CLOSE” LED is ON</strong></td>
<td>OFF 23</td>
<td>- Quick Close feature is turned ON. If this feature is not desired, turn quick close OFF.</td>
</tr>
<tr>
<td><strong>“GATE SPEED” LEDs are ON but gate moves slowly.</strong></td>
<td>ON 42</td>
<td>- Check if OPEN and CLOSE Limits have been learned. Refer to “Learn Gate Positions” (see 7). - ONLY Maximum settings will turn LEDs ON. All other settings, LEDs remain OFF.</td>
</tr>
</tbody>
</table>
Transmitter Solutions iGaze RE Wireless Edge Transceiver Wiring Diagram

**QUICK START GUIDE**
Below is the most common installation

**DIPO SWITCH LEGEND:**

- Dip switch = red

**RCOO900** (receiver) - 10kΩ output on both relay 1 and relay 2.

1. **Test Polarity**
2. **Buzzer OFF**
3. **Frequency**
4. **Out1 10kΩ**
5. **Out2 10kΩ**

**DIP SWITCHES 5 & 6 MUST BE ON FOR 10K PORT**

**WIRE TO 'NO' OF RELAY OPEN**
**WIRE TO 'NO' OF RELAY CLOSE**

**Test C1, Test C2, Test NC1, Test NC2**

**TCOO900 TRANSMITTER**

**OPEN**
**CLS NC**
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.

MOUNT THE TCOO900 AS HIGH AS POSSIBLE AND IN SUCH WAY AS THERE ARE NO OBSTACLES IN THE DIRECTION OF THE RCOO900 AND IN SUCH A WAY AS THE MAXIMUM DISTANCE BETWEEN THE TWO DEVICES IS LESS THAN 60 FEET (MAX 20 METERS / 60 FEET).

WARNING: install the TCOO900 at a minimum height of 8” from the ground. Keep the installation area clean of debris which can effect the normal operation of the system.

NOTE: Transmitter Solutions is not responsible for any damage caused by an improper, incorrect, or unintended use of the product.

For pairing Transmitter and Receiver, please refer to the Transmitter Solutions manual.