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 N01
   Wire GND to photocell C-1
4. Align photocell to reflector
5. Adjust sensitivity

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

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.
Photocell (Thru-Beam) CLOSING Direction  
Single Gate Operator

**Transmitter (TX)**

- Set DIP-switches on receiver.
- Install jumper on receiver.
- Wire Matrix III 12VDC OUT power to receiver.
- Wire PHOTO CLS NC to receiver photocell NC. Wire Matrix III GND to receiver photocell COM.
- Wire 12V Matrix III power to transmitter.
- Align photocells.
- Adjust sensitivity on receiver.

**Receiver (RX)**

- Green LED
- Sensitivity Adjustment: If the photocell does not respond to an obstruction, lower the sensitivity by turning adjustment counter-clockwise.
- DIP-switches: 1, 2, 3 are OFF. Switch 4 is ON. If trouble occurs, try turning switch 4 OFF.
- Jumper MUST be on Com-NC. Power must be cycled when switches are changed.

**IMPORTANT:** Photocells MUST be aligned 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.

**Photo CLS NC - Normally Closed**

**OPEN ONLY NC**

**PHOTO CLS NC**

**OPEN/CLS NC**

**12VDC OUT**

**GND**

**UL SENSOR 10K**

**OPEN ONLY 10K**

**CLS ONLY 10K**

**OPEN/CLS 10K**

**12VDC OUT**

**GND**

**GND - Common**

**12VDC OUT** Polarit does NOT matter

**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)

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

**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

**For 10K Resistor E3K Photocell wiring see next page**

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

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**UL325-2018**

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

CLOSING Direction

Photocell (Reflector)

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

**Installation Steps:**
1. Set switch to “LIGHT ON”
2. Wire 12V power to photocell
3. Wire PHOTO CLS NC to photocell NO2
4. Wire GND to photocell C2
5. Align photocell to reflector
6. Adjust sensitivity

**For 10K Resistor E3K Photocell wiring see next page**

**NOTE:** Do NOT connect to NC2 #4.
Polarity does **NOT** matter

C-1 NO1 NC1

LIGHT ON

SENSITIVITY

Min Max

DARK ON

Power

Set switch to “LIGHT ON”

24 to 240 VAC

24 to 240 VDC

C-1 2 3

NC1

Sensitivity Adjustment:

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

OK to use 12VDC

**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.

Installation Steps:

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

UL 325-2018 Label on packaging

UL 2018 Label on packaging
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)**
   The green LED on the transmitter will quickly flash 2x every two seconds

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

4. 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.

5. 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
   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>
<thead>
<tr>
<th>Problem Condition</th>
<th>Normal LED</th>
<th>Solution(s) for Problem Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>“BATTERY INPUT ERROR” LED is ON</strong></td>
<td>1</td>
<td>• “BATTERY Plug” not plugged in to “BATTERY IN” port.</td>
</tr>
<tr>
<td><strong>“BATTERY IN USE” LED is ON</strong></td>
<td>OFF</td>
<td>• AC power is lost, operator is in battery back-up mode.</td>
</tr>
<tr>
<td><strong>“BATTERY VOLTAGE (E 1/2 F)” LEDs, only “E” is ON.</strong></td>
<td>OFF</td>
<td>• Battery is very LOW. Check if AC power ON/OFF switch is ON. If so, check AC power.</td>
</tr>
<tr>
<td><strong>“REPLACE BATTERY” LED is on.</strong></td>
<td>OFF</td>
<td>• Battery needs to be replaced if BATTERY TEST fails and “REPLACE BATTERY” LED is ON.</td>
</tr>
<tr>
<td><strong>“BATTERY IN USE” and “POWER” LED are FLASHING</strong></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 40</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 40</td>
<td>• Check wiring between PRIMARY RS485 (+, gnd) and SECONDARY RS485 (+,-, gnd) terminals, connect [(+) to (+)], [(+) to (-)] and [GND to GND].</td>
</tr>
<tr>
<td><strong>“UL Entrap” LED is ON</strong></td>
<td>ON 37</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><strong>“ERD” LED is FLASHING</strong></td>
<td>ON 6</td>
<td>• An ERD event may have occurred. Check for gate obstruction.</td>
</tr>
<tr>
<td><strong>“PHOTO CLS” LED is ON</strong></td>
<td>OFF</td>
<td>• ERD sensitivity is too high for application. Re-adjust ERD setting, (see ).</td>
</tr>
<tr>
<td><strong>“CLS ONLY 10K” LED is ON</strong></td>
<td>OFF 30/34</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><strong>“PHOTO CLS” LED is flashing</strong></td>
<td>OFF 30/34</td>
<td>• Photocell on PHOTO CLS or CLS ONLY 10K inputs (photocell or edge) may be misaligned with reflector.</td>
</tr>
<tr>
<td><strong>“CLS ONLY 10K” LED is flashing</strong></td>
<td>OFF 30/34</td>
<td>• Sensor on PHOTO CLS or CLS ONLY 10K inputs (photocell or edge) may be wired properly, (see ).</td>
</tr>
<tr>
<td><strong>“OPEN ONLY” LED is ON</strong></td>
<td>OFF 29/33</td>
<td>• Sensor on OPEN ONLY input (photocell or edge) may have detected an obstruction while cycling gate.</td>
</tr>
<tr>
<td><strong>“OPEN ONLY” LED is FLASHING</strong></td>
<td>OFF 29/33</td>
<td>• Photocell on OPEN ONLY input is misaligned with reflector.</td>
</tr>
<tr>
<td><strong>“MAX SENSE” LED is ON</strong></td>
<td>OFF 7</td>
<td>• MOST sensitive setting for ERD entrapment detection. Select a less sensitive setting (recommend level 10 thru 16).</td>
</tr>
<tr>
<td><strong>“MANUAL RELEASE/RESET” LED is ON but manual release is not working</strong></td>
<td>OFF 9/41</td>
<td>• Connected external device to MANUAL RELEASE input is not working, check wiring, replace device.</td>
</tr>
<tr>
<td><strong>“OBD PORT” LED is FLASHING</strong></td>
<td>OFF 10</td>
<td>• Up to 8000 event history and error codes are being downloaded to connected flash drive. Up to 5 min.</td>
</tr>
<tr>
<td><strong>“PROGRAM” LED is FLASHING</strong></td>
<td>OFF 11</td>
<td>• Program button has been pressed and programming mode is active. Press button again to leave programming mode.</td>
</tr>
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</table>

Table continued on next page
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<tr>
<td>&quot;ID PLUG&quot; LED is FLASHING and board beeping</td>
<td>OFF 12</td>
<td>Insert ID PLUG module that is tethered to chassis into “ID PLUG” connector.</td>
</tr>
<tr>
<td>&quot;SOLAR MODE&quot; LED is ON</td>
<td>OFF 13</td>
<td>Operator is being powered by solar panel ONLY.</td>
</tr>
<tr>
<td>&quot;OPEN/CLS&quot; LED is ON</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>&quot;OPEN/CLS&quot; LED is FLASHING</td>
<td>OFF 31</td>
<td>Photocell on OPEN/CLS input is misaligned with reflector.</td>
</tr>
<tr>
<td>&quot;OPEN/CLS&quot; LED is ON</td>
<td>OFF 31</td>
<td>Sensor on OPEN/CLS input (photocell or edge) may not be wired properly, (see 5).</td>
</tr>
<tr>
<td>&quot;MOTOR OVERLOAD&quot; LED is ON</td>
<td>OFF 8</td>
<td>Sensor is NOT a N.C. monitored sensor that is UL325 2018 compliant.</td>
</tr>
<tr>
<td>&quot;EXIT&quot; LOOP LED is FLASHING or constantly ON</td>
<td>OFF 15</td>
<td>Sensor on OPEN/CLS input (photocell or edge) may need to be re-learned.</td>
</tr>
<tr>
<td>&quot;SAFETY&quot; LOOP LED is FLASHING or constantly ON</td>
<td>OFF 17</td>
<td>Photocell on OPEN/CLS input is misaligned with reflector.</td>
</tr>
<tr>
<td>&quot;GATE DISABLE&quot; LED is ON</td>
<td>OFF 35</td>
<td>Sensor on OPEN/CLS input may not be wired properly, (see 5).</td>
</tr>
<tr>
<td>&quot;MAG LOCK&quot; LED is FLASHING</td>
<td>OFF 28</td>
<td>Sensor on OPEN/CLS input may not be wired properly, (see 5).</td>
</tr>
<tr>
<td>&quot;GATE TAMPER&quot; LED is FLASHING</td>
<td>OFF 34</td>
<td>Sensor on OPEN/CLS input may not be wired properly, (see 5).</td>
</tr>
<tr>
<td>&quot;12VDC&quot; LED is OFF. &quot;24VDC&quot; LED is OFF</td>
<td>ON 18 or 19</td>
<td>Sensor on OPEN/CLS input may not be wired properly, (see 5).</td>
</tr>
<tr>
<td>&quot;SLIDER LIMIT&quot; LED is ON</td>
<td>OFF 21</td>
<td>Sensor on OPEN/CLS input may not be wired properly, (see 5).</td>
</tr>
<tr>
<td>&quot;ON/OFF BATTERY&quot; LED is OFF</td>
<td>ON 22</td>
<td>Sensor on OPEN/CLS input may not be wired properly, (see 5).</td>
</tr>
<tr>
<td>&quot;QUICK CLOSE&quot; LED is ON</td>
<td>OFF 23</td>
<td>Sensor on OPEN/CLS input may not be wired properly, (see 5).</td>
</tr>
<tr>
<td>&quot;GATE SPEED&quot; LEDs are ON but gate moves slowly.</td>
<td>ON 42</td>
<td>Sensor on OPEN/CLS input may not be wired properly, (see 5).</td>
</tr>
</tbody>
</table>

NOTE: RENO loop detector LED’s flash as default, but function normally (ignore the flashing).