Quick Install Guide for

MEGATRON Swing Gate Operator

CONFORMS TO UL STD 325
UL CLASS - I, II, III, IV
CERTIFIED TO CAN/CSA STD
C22.2 NO. 247

SAFETY SENSORS REQUIRED

Residential / Commercial
Brushless DC
Swing Gate Operators
Made in USA

www.max.us.com

Version 10
Quick Install Guide

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MegaTron Specifications

UL 325 Class of Operation - Class I, II, III, IV
Gate Type - Vehicular Swing Gate
Input AC Power/Amps - Switchable: 115VAC / 6 Amp, 1 phase
or 230VAC / 2 Amp, 1 phase
Motor - 24VDC Brushless (equivalent to 1 HP AC motor)
Operating Temperature: -4°F to 158°F (-20°C to 70°C)
Cycles per Hour AC Input Power - Continuous
Battery Back-Up Cycles (BC-7 Battery Module-7 Amp/Hr
Batteries fully charged): - Approximately 450 cycles

NOTE: The number of gate cycles using ONLY battery back-up power will vary depending on the weight of the gate, the gate length, the operating condition of the gate hardware, temperature and the amount of charge the batteries have at the beginning of the battery power only operation.

Max Gate Weight / Length:
- MAX Megatron 1400 and 1400HP - 1400lbs @ 15 ft or 1200 lbs @ 20 ft
- MAX Megatron 2200 and 2200HP - 2200lbs @ 15 ft or 1500 lbs @ 20 ft
- MAX Megatron 2200 PLUS and 2200HP PLUS - 2500lbs @ 15 ft or 1800 lbs @ 20 ft
- MAX Megatron FAST - 1200lbs @ 12 ft gate per operator
- MAX Megatron FAST PLUS - 1600lbs @ 12 ft gate per operator

NOTE: The MAX Megatron FAST and FAST PLUS are ONLY available for installation on bi-parting gates (dual operators). A single gate operator CANNOT be used.

90° Opening Time:
- MAX Megatron 1400/1400HP/2200/2200HP/2200 PLUS/2200HP PLUS - 16 selectable speeds from approximately 11.5 sec to 20 sec depending on the weight and length of the gate.
- MAX Megatron FAST and FAST PLUS - 16 selectable speeds from approximately 6 sec to 14 sec depending on the weight and length of the dual gates.

Entrapment Protection:
- UL 325 Type A Inherent (ERD sensor)
- Inputs for NORMALLY CLOSED (N.C.) UL 325 Type B1 (photo cell) and Type B2 (sensing edge)
For detailed installation instructions and COMPLETE information about ALL the available options & features for the MAX Megatron, please refer to the MAX Megatron Installation and Owners manual.

### Calculations MUST be followed:

- **A** should be at least 1/4 the gate length.  
  **NOTE:** Uphill or heavy gates - **A** should be at least 1/3 the gate length.  
- **B** 15” minimum for open gate clearance (2” thick gate).  
- **C** distance “A” minus 17 inches (A - 17 = C).  

**Arm Restrictions**
- 71” **MAX** length for arms.  
- Long arm should be 90° from gate when OPEN.  
- Arms should **NOT** be completely straight when CLOSED.  

See **2** **ARM POSITION** on next page.

**UL 325 2016 Standard**

**ONE** Entrapment protection sensor **MUST** installed or operator will **NOT** function. It **MUST** be **MONITORED** and **NORMALLY CLOSED** (N.C.).

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**Models:**
- 1400/2200/FAST = 25”  
- 1400HP/2200HP = 33.5”  
- 1400/2200/FAST = 19”  
- 1400HP/2200HP = 27.5”
Install arms using these guidelines:

**Arm in OPEN Position**

- Ideal long arm position is 90° from open gate.

**Arm in CLOSE Position**

- Gate Closed

**IMPORTANT: DO NOT** allow positive stop on long arm to touch short arm in closed position. Leave about a 1/4” gap.

**Re-Attach Arm to Operator:**

Limit pin **MUST** fit into slot in bottom of release handle clamp **directly under the arm** when re-attaching arm to operator.

**DO NOT** over tighten bolt

When satisfied with gate open and closed positions, **weld completely around arm tubing and gate bracket.**
**IMPORTANT:** Handle MUST be HORIZONTAL when FIRMLY in secure position.

**YES**

**NO**

**Adjustment:**

**IMPORTANT:** Tighten the adjustment bolt until NO SLIPPAGE occurs when handle is in the SECURE HORIZONTAL position.

**Test for Arm Slippage:** When Release Handle Clamp is in the SECURE HORIZONTAL position, Pull the end of gate. NO slippage should occur. If it does, re-adjust bolt.

**Re-Attach Arm to Operator:**

Limit pin MUST fit into slot in bottom of release handle clamp directly under the arm when re-attaching arm to operator.

**NOTE:** Limit rings that have been previously set will automatically re-align the gate’s open and close position after release handle clamp has been re-attached and secured. No re-adjustment is necessary.

**IMPORTANT:** The arm MUST NOT slip when the gate is cycling or the gate OPEN and CLOSE limit positions will NOT be LEARNED. Gate speed will remain slow if gate positions are NOT learned.
Wire input AC power wire to the MAX Megatron Toroid box. Choose either 115V or 230V setting on input AC power selector switch.

**CAUTION:** Make sure circuit breaker is OFF from incoming AC input wire BEFORE wiring!

### Input AC Power Options

**Single Phase 115VAC Only**

![115VAC](Image)

Set to 115V

115 OR 230VAC Power Wire

**Single Phase 230VAC Only**

![230VAC](Image)

Set to 230V

115V/230VAC Power Wire

### Turn Power ON

**DO NOT CYCLE OPERATOR!**

LEDs should light up on operator. Battery power automatically turns ON.

### Turn ALL Power OFF

1. **Turn OFF** POWER Switch on MAX Toroid Box. Battery power will remain ON.
2. **WAIT** for 15 seconds.
3. **Press and HOLD** (approx. 5 seconds) the RED ON/OFF BATTERY button until MAX BC-7 LEDs turn ON, then release button. LEDs will turn OFF. (Up to 30 sec.)

**IMPORTANT:** This procedure must be followed whenever ALL power must be turned OFF on operator.
Operator MUST be Properly GROUNDED

**IMPORTANT:** Operator MUST be grounded in lightning prone areas or warranty will be **VOIDED!**

**WARNING:**
connect chassis to ground rod for lightning protection

Proper grounding of this gate operator is a requirement for LIGHTNING PROTECTION in lightning prone areas. To be effective, ground connections should be made with a minimum 12 AWG, 600 volt insulated wire to a ground point within 3 feet of the gate operator. The ground point must be at an electrical panel, a metallic cold water pipe that runs in the earth, or a grounding rod.

**NOTE:** Consult city codes for AC line wiring. Beware of existing underground services.

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**SET OPENING DIRECTION AND ID PLUG**

ID plug **MUST** be plugged in.

Dual Gate Operators **NOTE:** Secondary operator will automatically be set to the opposite opening direction as the primary gate operator.

**ID Plug Error:** If ID plug is **NOT** plugged in, board will constantly beep and operator will **NOT** function.

**NOTE:** See manual for more information about Matrix 1 settings.
Adjust Limit Switches:

Make sure power is ON. Manually Release Arm.

1. Move gate to CLOSED position.
2. Loosen closed limit ring screw.
3. Rotate closed limit ring until closed LED lights.
4. **TIGHTEN CLOSED** limit ring screw leaving NO gap.
5. Move gate to OPEN position.
7. Rotate open limit ring until open LED lights.
8. **TIGHTEN OPEN** limit ring screw leaving NO gap.

**IMPORTANT:** Manually Secure Arm

**IMPORTANT:** LEDs **MUST** light up when gate reaches OPEN and CLOSE positions or operator **WILL NOT** learn gate positions. If gate positions are not learned, gate cycling speed will **remain SLOW** during normal operation.

**CAUTION**

Make sure OPEN/CLOSE limit rings are tightened after adjustment or slippage could occur.

**“Fine Tune” Limit Rings Adjustment**

Push and **HOLD** the JOG LEFT or JOG RIGHT buttons accordingly on the MAX MC-200 motor controller to move the gate (release the button to stop gate). Re-adjust limit ring positions as desired.
Typical Wiring For:
Normally Closed (N.C.) Photo Cell to EDGE 1

IMPORTANT: Photocells MUST be in alignment or fault will occur.

IMPORTANT: Sensing devices MUST be powered by MC-200 or they will NOT be MONITORED.

Entracept Protection Device Locations:

CLOSING Direction Photocell ONLY

IMPORTANT: Entrapment Protection Photocells MUST be Monitored Normally Closed Type.

Dual Gate Operators NOTE: Connect CLOSING Direction photocell to the PRIMARY gate operator’s MC-200.

Continued on next page.
After the OPEN and CLOSED limit rings have been set, the arm is SECURE and at least ONE entrapment sensor has been installed, put the gate in the CLOSED position:

1. Push OPEN button to cycle gate to open position. Operator cycles slowly while learning position.

2. Then push CLOSE button to cycle gate to closed position. Operator cycles slowly while learning position.

After gate positions have been learned, the gate will cycle at the speed set on matrix 1 "GATE SPEED" setting.
The ERD Sensor - Electronic Reversing Device (Type A) MUST be adjusted for the OPEN and CLOSE gate cycles.

When the gate encounters an obstruction during the CLOSE cycle, it will reverse to the open position and PAUSE the gate. An input command (press remote button or exit loop) is needed BEFORE the gate will reset and close again.

When the gate encounters an obstruction during the OPEN cycle, it will reverse approximately 6 inches and PAUSE the gate. An input command (press remote button or exit loop) is needed BEFORE the gate will reset and open again.

For the ERD Sensitivity to function correctly:
- THE RELEASE HANDLE CLAMP MUST NOT SLIP when the gate encounters an obstruction.
- Limit switches must be learned BEFORE adjusting the ERD Sensitivity.

**Typical Settings:**

Position 12:  
- Typical gate setting.

Position 15:  
- Heavy gate setting.  
- Long gate setting.

Position 16:  
- Uphill gate setting.  
- High wind area gate setting.

**IMPORTANT:** When satisfied with ERD adjustment, cycle the gate 3 or 4 times to make sure that the ERD sensor does not falsely trigger during normal gate operation. Re-adjust if this happens.

16 sensitivity setting positions. NO mechanical hard stop for knob.

**Adjusting ERD:**

A. Turn knob until blue LED lights up. Maximum sensitivity reached, Position 1 - Too sensitive for most gates.

B. Turn knob counter-clockwise to reduce gate sensitivity while testing ERD until desired results are attained. (LED remains OFF for all but position 1)

If alarm sounds while adjusting ERD, press STOP BUTTON on Matrix 1 to shut-off alarm.

**LOOPS & LOOP DETECTORS**

In-Ground Loops Connections

Safety Loops Wired in series

NOTE: See manual for more information about loops and loop detectors.

Connectors

External Loop Detectors

NOTE: DO NOT select the PULSED output option for Loop Detectors.

Plug-In Loop Detectors

NOTE: DO NOT set Loop Detectors to HIGH sensitivity to avoid false trigger.
Battery Back-Up Mode

LEAVE OPEN - After a power failure and battery power is drained, the next open command, gate will remain OPEN. Gate will automatically close after AC power is restored if timer is ON.

LEAVE CLOSED - After a power failure and battery power is drained, gate will remain CLOSED. See manual for more information about opening a CLOSED gate during a power failure (emergency open device, manual open, etc).

OPEN 1 TIME - After a power failure, gate automatically opens and REMAINS OPEN. When power is restored, gate will automatically close.

Anti Tailgate

Set to OFF
See manual before enabling this feature.

Close Timer

1st click clockwise - Knob at MIN position: 1/2 sec...
2nd click clockwise: 1 sec...
3rd click: 4 sec...
4th click: 8 sec... etc up to 60 sec. MAX. See manual for more info.

Gate Speed

Set to MAX
See manual for more info.

Maglock Delay

Set to OFF
See manual before enabling this feature.

Maglock Option

Maglock MUST be connected as shown when used.

MAGLOCK DELAY:
You MUST select a time delay when using a maglock. Maglock power disengages 1.5 sec or 2 sec before gate starts opening.

MAGLOCK LED (Monitors Maglock):
ON - Locked  OFF - Unlocked  Flashing - Problem with Maglock Power.

Dual Gate Operators using Maglock:
Primary gate opens FIRST. Install maglock accordingly to account for this.

NOTE: See manual for more info.
AC input power to EACH gate operator.

Entrapment protection (CLOSE photocell) to PRIMARY GATE OPERATOR MC-200.
- Jumper any UNUSED entrapment protection inputs to GND on BOTH MC-200s or a fault will occur.
- See manual if installing more entrapment protection devices than just a CLOSE photocell.

Opening device to the PRIMARY GATE OPERATOR.

Matrix 1 Open Left - Open Right set for the PRIMARY GATE OPERATOR opening direction.
(Secondary operator automatically set to opposite opening direction)

OPTIONAL - In-ground loop wires to the PRIMARY GATE OPERATOR.

NOTE: The Alarm Shut-Off is located on the Primary gate operator ONLY. There is NO alarm shut-off button on the secondary gate operator.
1. Plug MAX USB flash drive into OBD port of Matrix 1. OBD LED will flash while file is downloading. Remove flash drive after LED stops flashing (up to 5 minutes to download).

2. Plug flash drive into any computer USB port OR smart phone using a USB phone adapter. The most recent 1000 events can be viewed. No special software required.

Troubleshoot EDGE 1 entrapment protection sensor:

1. Press and HOLD the STOP button & then the OPEN button together on Matrix 1 until beeping is heard, learn mode begins.
   **NOTE**: DO NOT press the OPEN button before the STOP button or learn mode will NOT function.

2. EDGE 1 LED should be ON MC-200 if an entrapment sensor is detected. If EDGE 1 LED is NOT on, wiring to photocell is bad, photocell is out of alignment, photocell is wired wrong, photocell is bad, or sensor is NOT normally closed (N.C.), etc.

3. Press STOP button again within 5 min. to end learn mode, beeping stops.
   **NOTE**: If STOP button is not pressed within 5 min. learn mode automatically end after 5 min.
Use this table to help with troubleshooting AND operator LED troubleshooting on the next 4 pages.
Refer to MAX Megatron manual for more information.

<table>
<thead>
<tr>
<th>Gate Symptom</th>
<th>Solutions (what to check)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gate beeps but will not open or close for any command given.</td>
<td>- Check GATE SHUTOFF switch, it should be OFF. Turn switch ON then OFF again, possible chain drop event and switch needs to be recycled. GATE DISABLE LED should be OFF.</td>
</tr>
<tr>
<td>Gate moves slowly.</td>
<td>- Check if OPEN and CLOSE Limits have been learned. Refer to Learn Gate Positions section and learn limits.</td>
</tr>
<tr>
<td></td>
<td>- Check if GATE SPEED rotary dial is set to MAX position (LED on).</td>
</tr>
<tr>
<td></td>
<td>- Check if OPEN and CLOSE Limit Rings are secured tight. If rings are not tightened, they will slip on collar.</td>
</tr>
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<td>- Check if Clamp is tight using red handle. Use adjustment bolt indicated on handle to make adjustments.</td>
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<td>- Check if guide pin on limit ring collar is aligned to fit in clamp guide slot.</td>
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<td>- Check if positive stop on long arm is touching short arm in closed position. If so, re-adjust close limit ring such that there is a min 1/4 inch gap for positive stop.</td>
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<td>- Gate may be too heavy for operator (check manual for maximum gate weight for your model operator).</td>
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<tr>
<td>Gate beeps when opening and closing.</td>
<td>- Operator may be in battery back up mode, check if Mode 1 switch is ON on the back of Matrix 1.</td>
</tr>
<tr>
<td></td>
<td>- Check if “Gate in Motion” Alarm feature is ON (“Mode 0” switch is on back of Matrix 1 and set to “ON”).</td>
</tr>
<tr>
<td>Gate does NOT open.</td>
<td>- Check if Power LEDs are ON on both Matrix 1 and MC-200. Check if “MOTOR ON-LINE” LED and “LIMIT SWITCH ON-LINE” LED are both ON on Matrix 1.</td>
</tr>
<tr>
<td></td>
<td>- Check if PRIMARY GATE “open RIGHT / open LEFT” switch is set properly.</td>
</tr>
<tr>
<td></td>
<td>- Check if GATE DISABLE LED is ON. If so, check if GATE DISABLE input is active.</td>
</tr>
<tr>
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<td>- Check if “EDGE 2” LED or “PHOTOCELL” LED is ON or BLINKING on MC-200. If so, check entrapment sensor wiring or missing jumper.</td>
</tr>
<tr>
<td></td>
<td>- Check if “BATTERY IN USE” LED is ON. If so, battery may be too low and gate is kept closed (BATTERY BACK-UP MODE switch set to “Leave Closed”).</td>
</tr>
<tr>
<td>Gate does NOT close.</td>
<td>- Check if Power LEDs are ON on both Matrix 1 and MC-200. Check if “MOTOR ON-LINE” LED and “LIMIT SWITCH ON-LINE” LED are both ON on Matrix 1.</td>
</tr>
<tr>
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<td>- Check “EDGE 1” LED is ON on MC-200. If so, check entrapment sensor wiring and alignment.</td>
</tr>
<tr>
<td></td>
<td>- Check if any loops are active, check SAFETY LOOP, CENTER LOOP or EXIT LOOP LED is ON.</td>
</tr>
<tr>
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<td>- Check if any open command inputs are active (check if LED is ON on the matrix 1 for: RADIO, FIRE DEPT, MAX OPEN, STRIKE, KEYPAD/RDR, PHOTOCELL). Check device connected to the input that LED light is turned ON.</td>
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<td>- Check if PRIMARY GATE “open RIGHT / open LEFT” switch is set properly.</td>
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<td>- If “EDGE 2” LED or “PHOTOCELL” LED is ON on MC-200. If so, check entrapment sensor wiring or missing jumper.</td>
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<td>- If “BATTERY IN USE” LED is ON and BATTERY BACK-UP MODE switch = “Leave Open”, then battery may be too low and gate is kept OPEN.</td>
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<tr>
<td>Gate stops prematurely and beeps, moves in opposite direction.</td>
<td>- Check if Power LEDs are ON on both Matrix 1 and MC-200. Check if “MOTOR ON-LINE” LED and “LIMIT SWITCH ON-LINE” LED are both ON on Matrix 1.</td>
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<td>Gate will stop before reaching desired limit setting.</td>
<td>- Check if any open command inputs are active (check if LED is ON on the matrix 1 for: RADIO, FIRE DEPT, MAX OPEN, STRIKE, KEYPAD/RDR, PHOTOCELL). Check device connected to the input that LED light is turned ON.</td>
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<td>- Check if “EDGE 2” LED is ON, entrapment sensor is triggered or jumper on connector is broken.</td>
</tr>
<tr>
<td>Gate stops abruptly while in motion.</td>
<td>- Gate Open and Close Limits have not been learned properly. Relearn limit positions using jog RT and jog LT.</td>
</tr>
<tr>
<td></td>
<td>- Check if Clamp is on collar guide pin and is mounted securely on output shaft.</td>
</tr>
<tr>
<td></td>
<td>- Check if PARTIAL OPEN feature is turned ON. Re-learn partial open position or turn off feature.</td>
</tr>
<tr>
<td></td>
<td>- Only for OPENING gate (not during closing cycle): Check if PARTIAL OPEN feature is turned ON. Relearn partial open position or turn off PARTIAL OPEN feature.</td>
</tr>
<tr>
<td>Gate re-opens while closing</td>
<td>- Check if “Gate in Motion” Alarm feature is ON (“Mode 0” switch is on back of Matrix 1 and set to “ON”).</td>
</tr>
<tr>
<td>Gate does not learn new magnet positions.</td>
<td>- Check GATE SHUTOFF switch, it should be OFF. Turn switch ON then OFF again, possible chain drop event and switch needs to be recycled. GATE DISABLE LED should be OFF.</td>
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<td>- Check if OPEN and CLOSE Limits have been learned. Refer to Learn Gate Positions section and learn limits.</td>
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<td>- Check if GATE SPEED rotary dial is set to MAX position (LED on).</td>
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<td>- Check if Clamp is tight using red handle. Use adjustment bolt indicated on handle to make adjustments.</td>
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<td>- Gate may be too heavy for operator (check manual for maximum gate weight for your model operator).</td>
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<td></td>
<td>- Arm elbow and gate bracket bolts are too tight, loosen bolts. Gate hinges may be too tight.</td>
</tr>
<tr>
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<td>- Check if “PHOTOCELL” LED is ON on MC-200. If so, check entrapment sensor wiring or missing jumper.</td>
</tr>
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<td>- Check if Clamp is on collar guide pin and is mounted securely on output shaft.</td>
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<td>- Check if GATE DISABLE LED is ON. If so, check if GATE DISABLE input is active.</td>
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### Matrix 1 LED Troubleshooting

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<th>Normal LED</th>
<th>Solution(s) for Problem Condition</th>
</tr>
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<tbody>
<tr>
<td>&quot;ID PLUG&quot; LED is FLASHING on Matrix 1 and board beeping</td>
<td>OFF</td>
<td>• Insert ID PLUG module that is tethered to chassis into &quot;ID PLUG&quot; connector of Matrix 1.</td>
</tr>
<tr>
<td>&quot;POWER&quot; LED is OFF</td>
<td>ON</td>
<td>• Check if AC POWER ON/OFF SWITCH is ON.</td>
</tr>
<tr>
<td>&quot;BATTERY IN USE&quot; LED is ON</td>
<td>OFF</td>
<td>• AC power is lost, operator is in battery back-up mode.</td>
</tr>
<tr>
<td>&quot;BATTERY IN USE&quot; and &quot;POWER&quot; LED are FLASHING</td>
<td>OFF / ON</td>
<td>• Battery not plugged in to BATTERY IN port on battery charger (BC-7 module)</td>
</tr>
<tr>
<td>PRIMARY &quot;MOTOR ON-LINE&quot; LED is OFF</td>
<td>ON</td>
<td>• Check wiring between Matrix 1 RS485 (+,-, gnd) and PRIMARY MC-200 RS485 (+,-, gnd) terminals, connect [(+) to (+)], [(-) to (-)] and [GND to GND].</td>
</tr>
<tr>
<td>SECONDARY &quot;MOTOR ON-LINE&quot; LED is OFF</td>
<td>ON</td>
<td>• Check wiring between Matrix 1 RS485 (+,-, gnd) and SECONDARY MC-200 RS485 (+,-, gnd) terminals, connect [(+) to (+)], [(-) to (-)] and [GND to GND].</td>
</tr>
<tr>
<td>PRIMARY &quot;LIMIT SWITCH ON-LINE&quot; LED is OFF</td>
<td>ON</td>
<td>• Check if limit switch box is plugged into PRIMARY MC-200 &quot;LIMIT SWITCH&quot; input on back and MC-200 is powered ON.</td>
</tr>
<tr>
<td>SECONDARY &quot;LIMIT SWITCH ON-LINE&quot; LED is OFF</td>
<td>ON</td>
<td>• Check if limit switch box is plugged into SECONDARY MC-200 &quot;LIMIT SWITCH&quot; input on back and MC-200 is powered ON.</td>
</tr>
<tr>
<td>&quot;UL Entrap&quot; LED is ON</td>
<td>OFF</td>
<td>• An entrapment event has occurred, check if an entrapment sensor was triggered (see if EDGE 1, EDGE 2, or PHOTOCELL LED is on).</td>
</tr>
<tr>
<td>&quot;REVERSE SENSITIVITY&quot; LED is FLASHING</td>
<td>OFF</td>
<td>• An ERD event may have occurred. Check for gate obstruction.</td>
</tr>
<tr>
<td>&quot;EDGE 1&quot; LED is ON</td>
<td>OFF</td>
<td>• Sensor on EDGE 1 input (photocell or edge) may have detected an obstruction while closing gate.</td>
</tr>
<tr>
<td>&quot;EDGE 1&quot; LED is flashing</td>
<td>OFF</td>
<td>• Photocell on EDGE 1 input is misaligned with reflector.</td>
</tr>
<tr>
<td>&quot;EDGE 2&quot; LED is ON</td>
<td>OFF</td>
<td>• Jumper between EDGE 2 and GND is missing or broken (jumper is required if a sensor is not present).</td>
</tr>
<tr>
<td>&quot;EDGE 2&quot; LED is FLASHING</td>
<td>OFF</td>
<td>• Sensor on EDGE 2 input (photocell or edge) may have detected an obstruction while cycling gate.</td>
</tr>
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Table continued on next page
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<tr>
<td>“PHOTOCELL” LED is ON</td>
<td>OFF 12</td>
<td>Jumper between PHOTOCELL and GND is missing or broken (jumper is required if a sensor is not present).</td>
</tr>
<tr>
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<td></td>
<td>Sensor on PHOTOCELL input (photocell or edge) may have detected an obstruction while opening or closing gate.</td>
</tr>
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<td>“PHOTOCELL” LED is FLASHING</td>
<td>OFF 12</td>
<td>Photocell on PHOTOCELL input is misaligned with reflector.</td>
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<td></td>
<td></td>
<td>Sensor on PHOTOCELL input (photocell or edge) may not be wired properly, (see 3).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor is NOT a N.C. monitored sensor that is UL325 2016 compliant.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor on PHOTOCELL is damaged or malfunctioning.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Sensor might need to be re-learned.</td>
</tr>
<tr>
<td>“MOTOR OVERLOAD” LED is ON</td>
<td>OFF 18</td>
<td>Check if gate is binding against catch post or bracket in opened or closed position.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check if gate moves manually with low resistance throughout its full range of motion.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check if hinges are operational and well greased.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check if operator is positioned properly relative to the gate hinge. (see 1).</td>
</tr>
<tr>
<td>“NO LIMIT SW / CLAMP SLIPPING” LED is ON</td>
<td>OFF 19</td>
<td>Gate may be too heavy for operator (check manual for maximum gate capacity).</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check if OPEN / CLOSE limit rings are tightened.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check that clamp is tight on output shaft of operator.</td>
</tr>
<tr>
<td>“EXIT” LOOP LED is FLASHING or constantly ON</td>
<td>OFF 1</td>
<td>Loop fault condition: Check if EXIT loop wires are connected into loop input connector properly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check if loop detector is inserted properly in Matrix 1 slot.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Set unique loop detector frequency for each loop detector used.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loop Detector might be defective. Replace defective loop detector.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOTE: RENO loop detector LED’s flash as default, but function normally (ignore the flashing).</td>
</tr>
<tr>
<td>“SAFETY” LOOP LED is FLASHING or constantly ON</td>
<td>OFF 3</td>
<td>Loop fault condition: check if SAFETY loop wires are connected into loop input connector properly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check if loop detector is inserted properly in Matrix 1 slot.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Set unique loop detector frequency for each loop detector used.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loop Detector might be defective. Replace defective loop detector.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOTE: RENO loop detector LED’s flash as default, but function normally (ignore the flashing).</td>
</tr>
<tr>
<td>“CENTER” LOOP LED is FLASHING or constantly ON</td>
<td>OFF 2</td>
<td>Loop fault condition: check if CENTER loop wires are connected into loop input connector properly.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check if CENTER loops are wired in series.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Check if loop detector is inserted properly in Matrix 1 slot.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Set unique loop detector frequency for each loop detector used.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Loop Detector might be defective. Replace defective loop detector.</td>
</tr>
<tr>
<td></td>
<td></td>
<td>NOTE: RENO loop detector LED’s flash as default, but function normally (ignore the flashing).</td>
</tr>
<tr>
<td>“GATE DISABLE” LED is ON</td>
<td>OFF 22</td>
<td>Gate was manually moved off of its CLOSED position causing Tamper Relay to trigger for few seconds.</td>
</tr>
<tr>
<td>“MAG LOCK” LED is FLASHING</td>
<td>OFF 10</td>
<td>Maglock power is lost. Check if maglock power transformer is wired properly to Matrix 1 or needs to be replaced.</td>
</tr>
<tr>
<td>“GATE TAMPER” LED is FLASHING</td>
<td>OFF 11</td>
<td>Gate was manually moved off of its CLOSED position causing Tamper Relay to trigger for few seconds.</td>
</tr>
<tr>
<td>“12VDC” LED is OFF. “24VDC” LED is OFF</td>
<td>ON 4 or 5</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>
</tbody>
</table>
### MC-200 LED Troubleshooting

#### Normal LED

<table>
<thead>
<tr>
<th>MC-200 LED Problem Condition</th>
<th>Normal LED</th>
<th>Solution(s) for Problem Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>&quot;POWER&quot; LED is OFF</td>
<td>ON 6</td>
<td>• Check if AC POWER ON/OFF SWITCH (on MAX toroid box) is ON.</td>
</tr>
<tr>
<td>&quot;MATRIX ON-LINE&quot; LED is OFF</td>
<td>ON 4</td>
<td>• Check if power cable is plugged into back of MC-200 &quot;Power In&quot; input.</td>
</tr>
<tr>
<td>&quot;Limit SW ON-LINE&quot; LED is OFF</td>
<td>ON 1</td>
<td>• Check if limit switch box is plugged into MC-200 &quot;LIMIT SWITCH&quot; input on back.</td>
</tr>
<tr>
<td>&quot;MOTOR OVERLOAD&quot; LED is ON</td>
<td>OFF 7</td>
<td>• Check if AC POWER ON/OFF SWITCH (on MAX toroid box) is OFF.</td>
</tr>
<tr>
<td>&quot;UL Entrap&quot; LED is ON</td>
<td>OFF 7</td>
<td>• An entrapment event has occurred, check an entrapment sensor was triggered (see if ERD, EDGE 1, EDGE 2, or PHOTOCELL LED is on).</td>
</tr>
<tr>
<td>&quot;ERD&quot; LED is ON</td>
<td>OFF 2</td>
<td>• An ERD event may have occurred. Check for gate obstruction.</td>
</tr>
<tr>
<td>&quot;EDGE 1&quot; LED is ON</td>
<td>OFF 9</td>
<td>• ERD sensitivity is too high for application. Re-adjust ERD setting on MC-200, (see 5).</td>
</tr>
<tr>
<td>&quot;EDGE 1&quot; LED is flashing</td>
<td>OFF 9</td>
<td>• Sensor on EDGE 1 input (photocell or edge) may have detected an obstruction while closing the gate.</td>
</tr>
<tr>
<td>&quot;EDGE 2&quot; LED is ON</td>
<td>OFF 10</td>
<td>• Jumper between EDGE 2 and GND is missing or broken (jumper is required if a sensor is not present).</td>
</tr>
<tr>
<td>&quot;EDGE 2&quot; LED is FLASHING</td>
<td>OFF 10</td>
<td>• Sensor on EDGE 2 input (photocell or edge) may have detected an obstruction while opening or closing the gate.</td>
</tr>
<tr>
<td>&quot;PhotoCell&quot; LED is ON</td>
<td>OFF 8</td>
<td>• Jumper between PHOTOCELL and GND is missing or broken (jumper is required if a sensor is not present).</td>
</tr>
<tr>
<td>&quot;PhotoCell&quot; LED is FLASHING</td>
<td>OFF 8</td>
<td>• Sensor on PHOTOCELL input (photocell or edge) may have detected an obstruction while opening or closing gate.</td>
</tr>
<tr>
<td>&quot;MAX&quot; LED is ON</td>
<td>OFF 3</td>
<td>• Most sensitive setting for ERD entrapment detection. Select a less sensitive setting (recommend level 1 thru 16).</td>
</tr>
</tbody>
</table>

#### Jumper UNUSED Entrapment Inputs to GND or a fault will occur.

Example: Inputs 2 & 3 are NOT used and MUST be jumpered to GND.

#### 12 Volt Power Extension Terminal

12V power for entrapment protection sensor (see 3).

#### Entrapment Inputs

- Motor Overload
- ERD
- MAX LED
- Edge 1: MONITORED CLOSE ONLY
- Edge 2: LEARNED MONITORED OPEN/CLOSE
- Photo Cell: LEARNED MONITORED OPEN/CLOSE
- Matrix On-Line
- Limit Switch On-Line
- Power
- UL Entrapment
- PhotoCell
- Edge 1
- Edge 2

#### Example:

Example: Inputs 2 & 3 are NOT used and MUST be jumpered to GND.

Example: 12V power for entrapment protection sensor (see 3).

Example: Jumper UNUSED Entrapment Inputs to GND or a fault will occur.
**To Turn OFF ALL POWER:**

1. Turn OFF AC POWER switch on MAX Toroid. Battery power remains ON.
2. Press and HOLD ON/OFF BATTERY button on MAX BC-7 until 4 LEDs turn ON, release button.
3. WAIT for ALL LEDs to turn OFF. Up to 30 sec.

---

### BC-7 LED Problem Condition

<table>
<thead>
<tr>
<th>Problem Condition</th>
<th>Normal LED</th>
<th>Solution(s) for Problem Condition</th>
</tr>
</thead>
<tbody>
<tr>
<td>“BATTERY VOLTAGE (E 1/2 F)” LEDs, only “E” is ON. “BATTERY IN ERROR” LED is ON.</td>
<td>1 OFF 3</td>
<td>• Battery is very LOW. Check if AC power ON/OFF switch is ON. If so, check AC power. • “BATTERY Plug” not plugged in to “BATTERY IN” port on battery module (see below).</td>
</tr>
<tr>
<td>“REPLACE BATTERY” LED is ON.</td>
<td>OFF 2</td>
<td>• Battery needs to be replaced if BATTERY TEST fails and “REPLACE BATTERY” LED is ON.</td>
</tr>
</tbody>
</table>

---

**POWER/SOLAR IN Port:**
MAX Megatron Toroid box connection.

**POWER IN / Battery Pack Ports:**
Back of MAX MC-200 motor controller connections.

**Battery IN Error LED:** Lights when there is a battery connection problem. Make sure battery plug #1 is plugged into BATTERY IN port or there is no damaged or loose wires.

**TEST Battery Button:** Press to show amount of battery power available when using battery power ONLY (Battery voltage LEDs will light respectively).

**Replace Battery LED:** Replace battery when lit.

**ON/OFF Battery Button:**
**IMPORTANT:** Battery power automatically turns ON when MAX Megatron Toroid Box AC POWER Switch is turned ON.

To turn OFF ALL POWER to operator:
1. Turn OFF AC POWER Switch on MAX Megatron Toroid Box. Battery power remains ON.
2. WAIT for 15 seconds.
3. Press and HOLD (approx. 5 seconds) the RED ON/OFF BATTERY button until MAX BC-7 LEDs turn ON, then release button. LEDs will turn OFF. (Up to 30 sec.)
NOTE: To meet the UL 325 2016 standard, Type B1 Non-Contact sensor entrapment protection device MUST be MONITORED by the gate operator.

**OMRON E3K-R10K4**

Photocell (Reflector) CLOSING Direction

NOTE: To meet the UL 325 2016 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.

**EMX IRB-RET**

Photocell (Reflector) CLOSING Direction

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

**IMPORTANT:** Photocell MUST be powered by MAX MC-200 or it will NOT be MONITORED.

**Installation Steps:**
1. Set DIP-switches
2. Remove jumpers JP-5 and JP-6
3. Wire 12V power to photocell (VRX)
4. Wire MC-200 EDGE 1 to photocell NC (Energized) Wire MC-200 GND to photocell COM (Energized)
5. Align photocell to reflector
6. Adjust sensitivity

**OMRON E3K-R10K4**

Photocell (Reflector) CLOSING Direction

NOTE: To meet the UL 325 2016 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.
Jumper UNUSED Entrapment Protection Inputs to GND or a fault will occur.

**IMPORTANT:** Photocells MUST be powered by MC-200 or they will NOT be MONITORED.

**PWR 12V**
- Polarity does NOT matter

**MC-200**
- MAX
- DIP-switches:
  1. 1, 2, 3 are OFF.
  2. Switch 4 is ON
  3. If trouble occurs, try turning switch 4 OFF.

**NOTE:** Power must be cycled when switches are changed.

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

**Green LED**
- Remains ON for each detected sensor on MC-200. LEDs Will be ON for BOTH MC-200s when dual operators are used.

**Transmitter (TX)**
- **Installation Steps:**
  1. Set DIP-switches on receiver.
  2. Install jumper on receiver.
  3. Wire 12V MC-200 power to receiver.
  4. Wire MC-200 EDGE 1 to receiver photocell NC.
  5. Wire 12V MC-200 power to transmitter.
  6. Align photocells.
  7. Adjust sensitivity on receiver.

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

**NOTE:** To meet the UL 325 2016 standard, Type B1 Non-Contact sensor entrapment protection device MUST be MONITORED by the gate operator.
**Photocell (Thru-Beam) CLOSING Direction**

**Dual Gate Operators**

---

**Installation Steps:**
1. Set DIP-switches on receiver.
2. Install jumper on receiver.
3. Wire 12V Primary MC-200 power to **receiver**.
4. Wire Primary MC-200 **EDGE 1** to receiver photocell **NC**.
   - Wire Primary MC-200 **GND** to receiver photocell **COM**.
5. Wire 24V Secondary MC-200 power to **transmitter**.
6. Align photocells.
7. Adjust sensitivity on receiver.

**Important:** Photocells **MUST** be powered by MC-200s or they **WILL** **NOT** be monitored.

**Sensitivity Adjustment:**
- If the IRB-MON 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**.
- **NOTE:** Power must be cycled when switches are changed.

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

**Power must be cycled when switches are changed.**

---

**NOTE:** To meet the UL 325 2016 standard, Type B1 Non-Contact sensor entrapment protection device **MUST** be MONITORED by the gate operator.
Use PRIMARY MC-200 when dual operators are used.

Use Miller Gate Link if desired.

See Max operator manual to program the MAX MC-200 to “Learn” Edge 2 MONITORED by the MAX gate operator.

Installation Steps:

1. Set Both DIP-switches to “R” on receiver
2. Wire 12V power to receiver, polarity does not matter
3. Wire MC-200 EDGE 1 to receiver CH 1-P/N.C.
   Wire MC-200 GND to receiver CH 1-COM
4. Wire MC-200 EDGE 2 to receiver CH 2-P/N.C.
   Wire MC-200 GND to receiver CH 2 - COM
5. Install antenna on receiver
6. Install batteries in transmitters
7. Wire Channel 1 Transmitter to CLOSING Edge ONLY
8. Wire Channel 2 Transmitter to OPENING Edge
9. Program Channel 1 and 2 on MGL-RX20 receiver
10. Program MAX MC-200 to “LEARN” Edge 2

NOTE: Edge 2 will function without being “Learned” but will NOT be MONITORED by the MAX gate operator.

Example: Input 3 is NOT used and MUST be jumpered to GND.

Installation Steps:

1. Install antenna on receiver
2. Wire 10K Edges to PWR 12V and GND
3. Wiring 10K edges to either input 2 or 3
4. Wire photo cell to input 1 or 2
5. Wire 10K Open sensing edge to input 3
6. Wire 10K Closing edge to input 4
7. Wire Reversing edge to input 5
8. Wire Matrix 1 to input 6
9. Wire Matrix 2 to input 7
10. Set Both DIP-switches (Channel 1 & 2) to “R” DO NOT set to “P” Pulsed

NOTE: Edge 1 - CLOSING direction ONLY
   Edge 2 - “Learned” Open/Close direction
   See installation steps #10 note below.

CLOSING 10K sensing edge connected to Channel 1 (Edge 1).
OPENING 10K sensing edge connected to Channel 2 (Edge 2).
Channel 1 & 2 transmitters MUST be programmed by receiver. See below and Miller Edge Gate Link MGL-K20 instruction sheet for more info.

Both DIP-switches (Channel 1 & 2) to “R” DO NOT set to “P” Pulsed

Gate Link Receiver/Transmitter Programming:

1. Make sure receiver and transmitters have power.
2. Green power LED stays ON; CH 1 red LED will be blinking on receiver.
3. To enter Learn mode, press the CH 1 Learn button for 1 sec. The red led remains ON and the amber status LED will blink.
4. Activate the transmitting edge, the red and amber LEDs will alternately blink rapidly on receiver. Then the red LED will go out and the amber LED will remain ON.
5. Channel 1 is now programmed. Repeat steps for Channel 2.
6. To start over or erase programming, press and hold both LEARN buttons for 3 seconds. The LEDs will blink rapidly and then go into “fault” mode. Repeat the programming steps above.

NOTE: Use Miller Gate Link MGL-RX20 Receiver

Wire 10K Edges

Test Button

Mount on Gate’s CLOSING side.

A GEM-104 module is NOT needed for the sensing edge when using a gate link transmitter.

Mount on Gate’s OPENING side.

An MGL-TX20 transmitter is needed for each channel of the receiver.

Example: Input 3 is NOT used and MUST be jumpered to GND.

NOTE: Edge 2 will function without being “Learned” but will NOT be MONITORED by the MAX gate operator.

See Max operator manual to program the MAX MC-200 to “Learn” Edge 2 if desired.
Residential / Commercial
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Swing Gate Operators
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