Quick Install Guide for

MAX 1700FS

Fail Safe Slide 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 Slide Gate Operator

Made in USA

C ETL US LISTED
Intertek
4009963

MAXIMUM MAX CONTROLS

Version 3

www.max.us.com

TABLE OF CONTENTS

MAX 1700FS SPECIFICATIONS

UL 325 Class of Operation - Class I, II, III, IV

Gate Type - Vehicular Slide Gate

Max Gate Length - 50 ft

Max Gate Weight:

1700 lbs Level Gate; Not recommended for Inclined Gate

Opening Time - Selectable speed control (MAX - 12 inch per second)

Cycles per Hour AC Power - Continuous

Battery Back-Up Cycles (Batteries fully charged) - Approximately 100 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, temperature and the amount of charge the batteries have at the beginning of the battery power only operation.

Input AC Power/Amps - Switchable: 115VAC / 6 Amp, 1 phase
or 230VAC / 2 Amp, 1 phase

Motor:

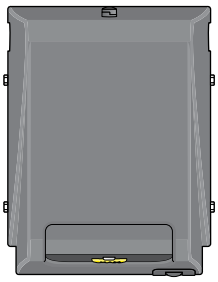
1 HP 24VDC Brushless (6 million cycles)

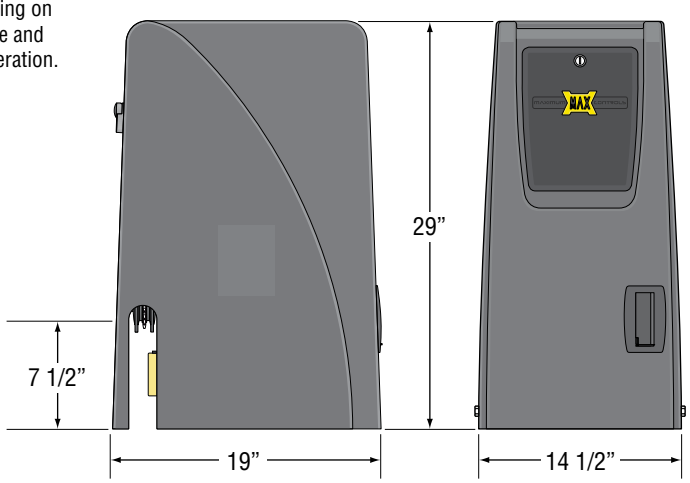
Chain Size - #40

Operating Temperature: -4°F to 158°F (-20°C to 70°C)

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)





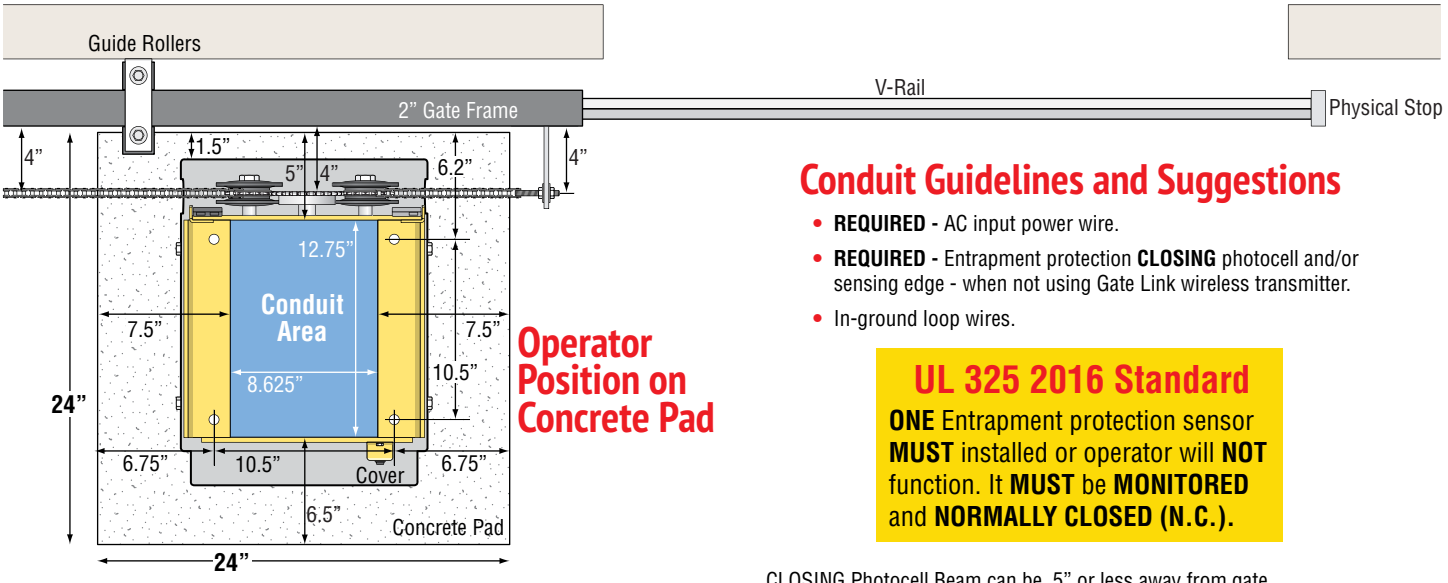
Quick Install Guide for MAX 1700FS Slider

www.max.us.com

The MAX 1700FS is a Fail Safe slide gate operator. The gate can be pushed open manually when the MANUAL RELEASE switch is turned ON. See page 10 for more information about this feature.

1 OPERATOR PLACEMENT (STANDARD)

The gate must be properly installed and work freely in both directions prior to installation of the gate operator.



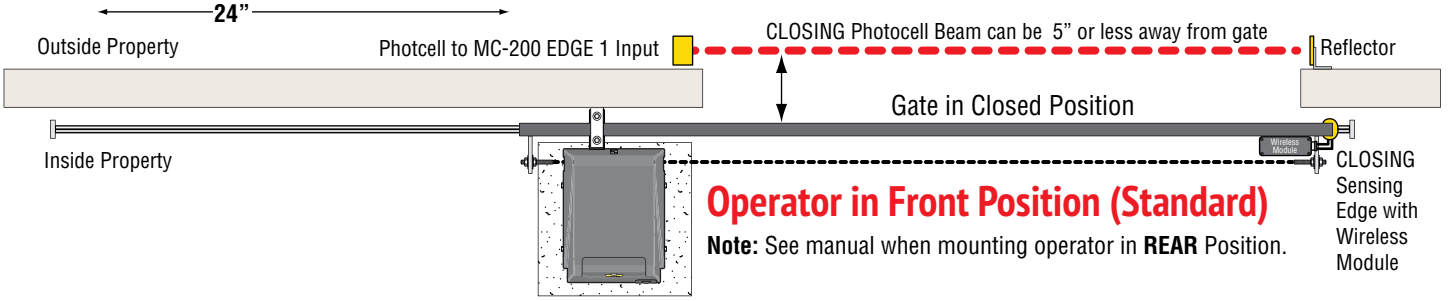
Operator Position on Concrete Pad

Conduit Guidelines and Suggestions

- **REQUIRED -** AC input power wire.
- **REQUIRED -** Entrapment protection **CLOSING** photocell and/or sensing edge - when not using Gate Link wireless transmitter.
- In-ground loop wires.

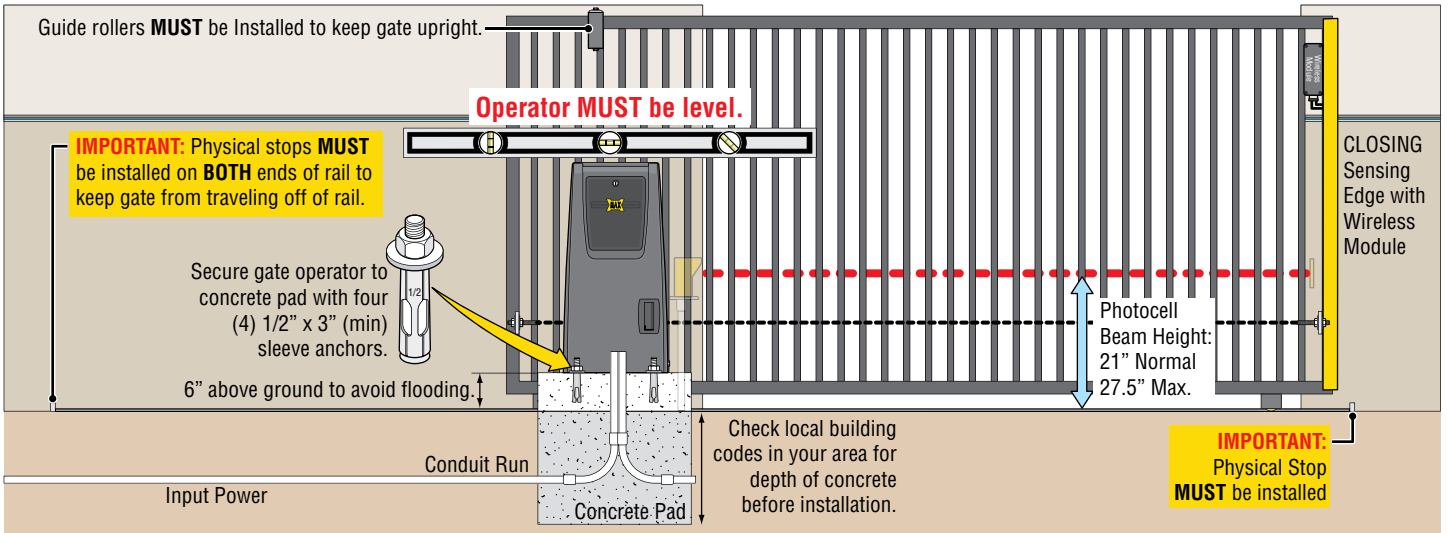
UL 325 2016 Standard

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



Operator in Front Position (Standard)

Note: See manual when mounting operator in **REAR** Position.



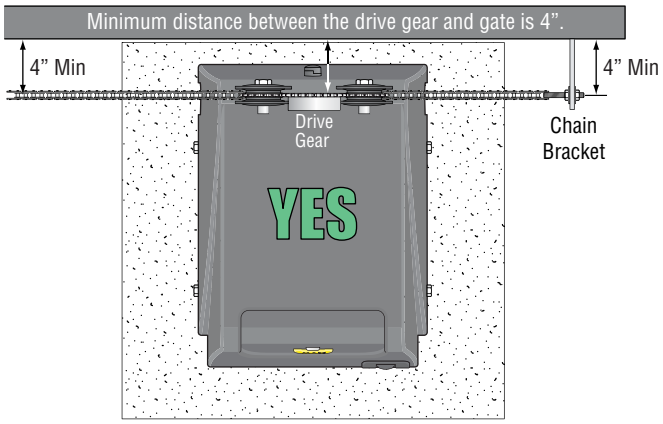
Concrete Depth Note: The heavier the gate, the deeper the concrete pad should be. At least **two feet** recommended for heavier gate.

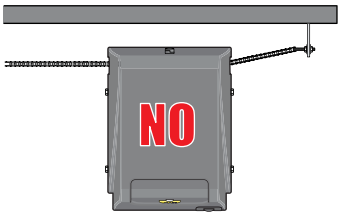
2 CONNECT CHAIN TO GATE

Top View of Operator

NOTE: 25 ft of #40 nickel plated chain included.

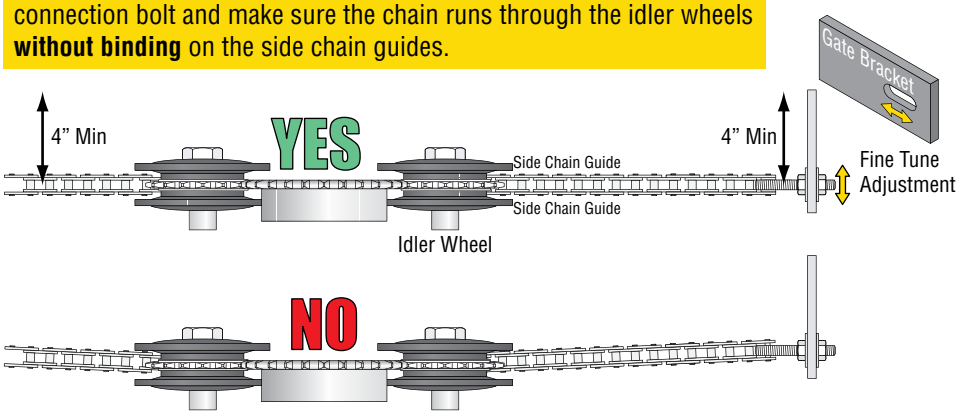
IMPORTANT: Physical stops **MUST** be installed on **BOTH** ends of gate rail to keep gate from traveling off of rail.

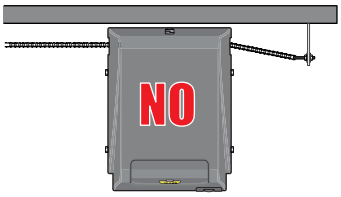




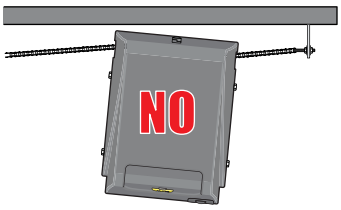
Operator is too far from gate.
Chain is NOT parallel to gate.

IMPORTANT: Operator and chain **MUST** be parallel to gate or the idler wheels could fail. Use the "Fine Tune" adjustment on the gate bracket connection bolt and make sure the chain runs through the idler wheels **without binding** on the side chain guides.



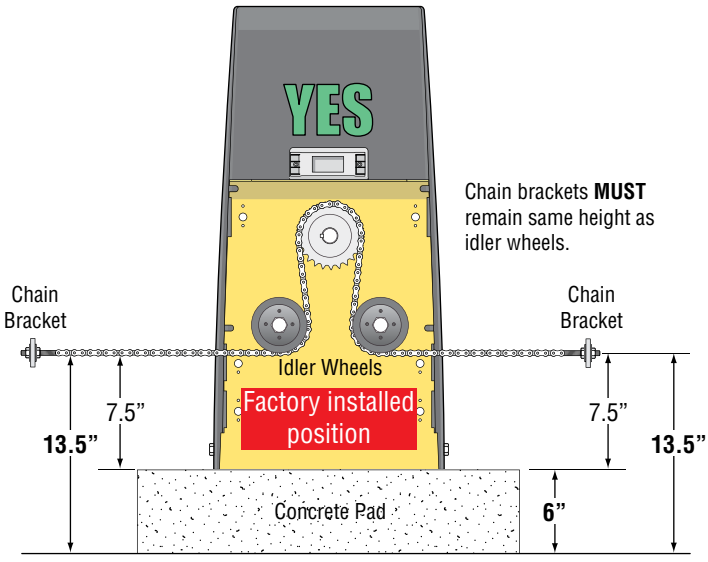


Operator is too close to gate.
Chain is NOT parallel to gate.

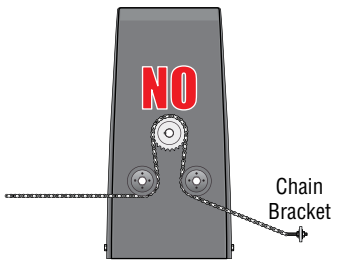


Operator is NOT parallel to gate.
Chain is NOT parallel to gate.

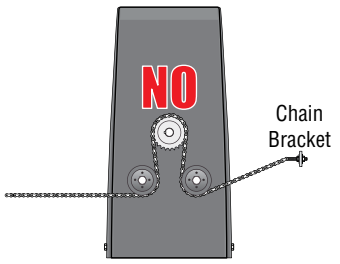
Back View of Operator



NOTE: The chain should sag no more than one (1) inch per 10 feet of travel. **Do not over tighten the chain.**



DO NOT mount chain bracket too low on gate.



DO NOT mount chain bracket too high on gate.

Operator in Front Position (Standard)

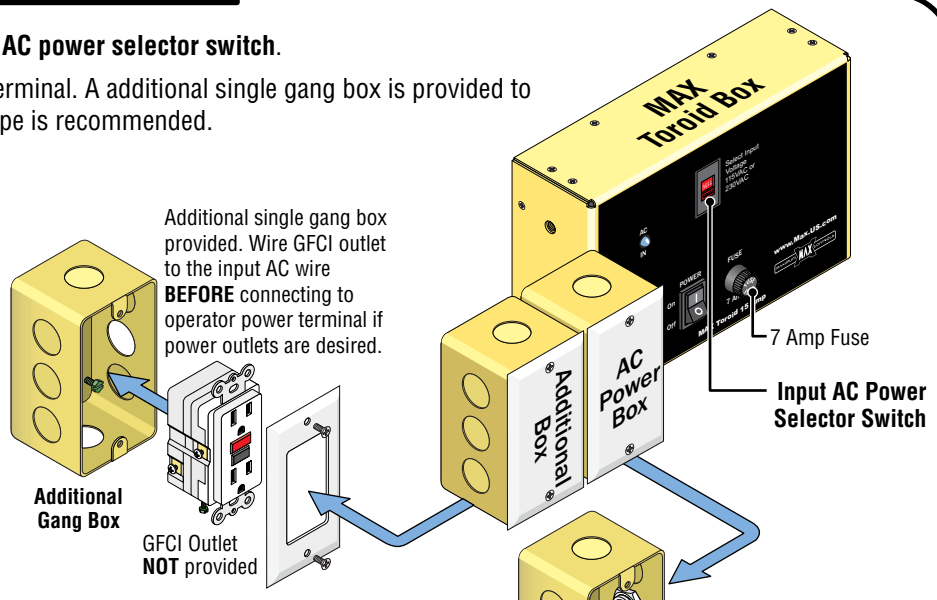
Note: See manual when Connecting chain with operator mounted in **REAR** Position.

3 AC INPUT POWER

Choose either **115V** or **230V** setting on input **AC power selector switch**.

Wire desired input AC power wire to power terminal. A additional single gang box is provided to install power outlets if desired. GFCI outlet type is recommended.

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



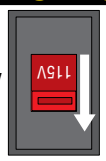
Input AC Power Options

CAUTION: If input AC power selector switch is set for **115V** but input power is actually **230 V**, 7 Amp Fuse will blow.

Single Phase 115VAC Only

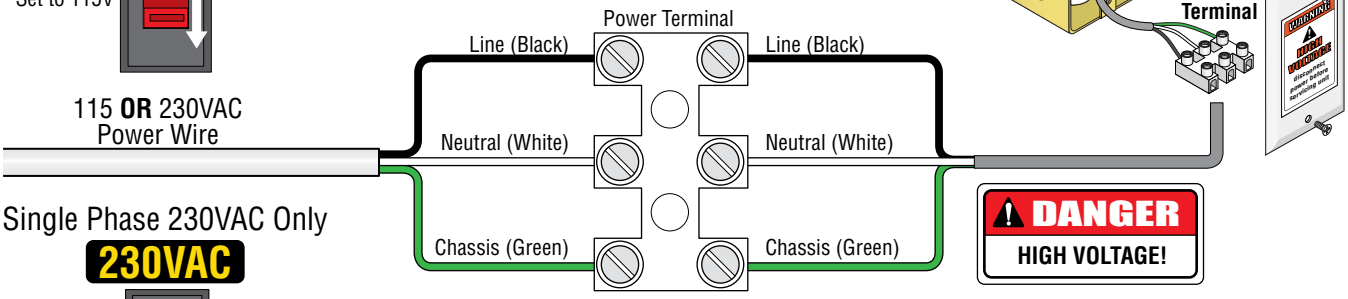
115VAC

Set to 115V



115 **OR** 230VAC Power Wire

IMPORTANT: Make sure there are **NO** exposed bare wires at the power terminal connection.

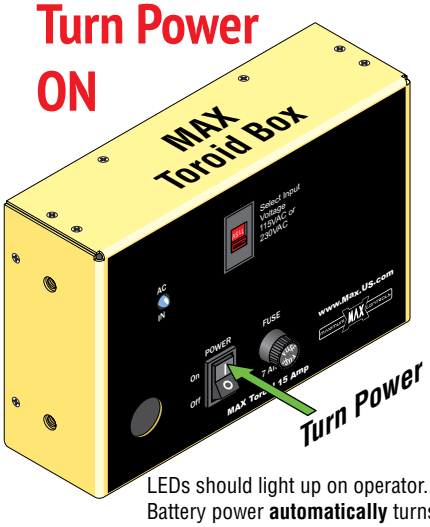


Single Phase 230VAC Only

230VAC

Set to 230V

Turn Power ON



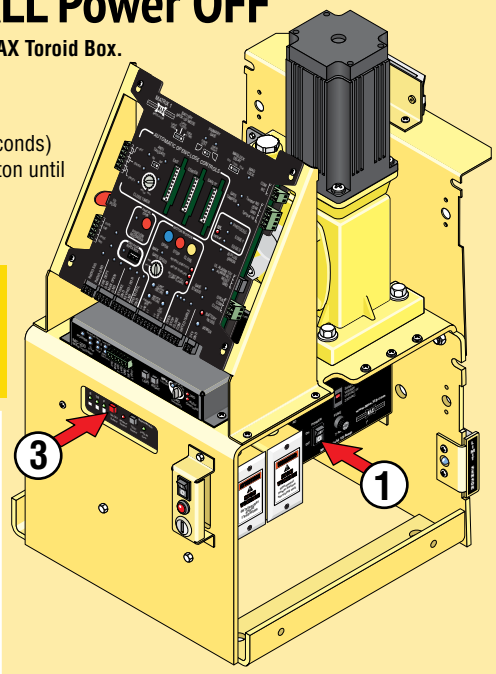
LEDs should light up on operator. Battery power **automatically** turns **ON**.

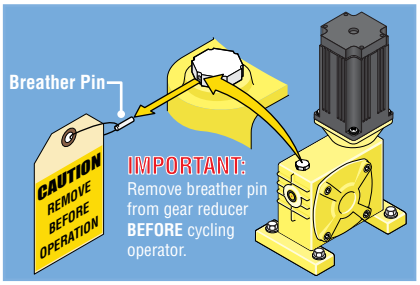
DO NOT CYCLE OPERATOR!

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.





4 GROUND OPERATOR

Operator MUST be Properly GROUNDED

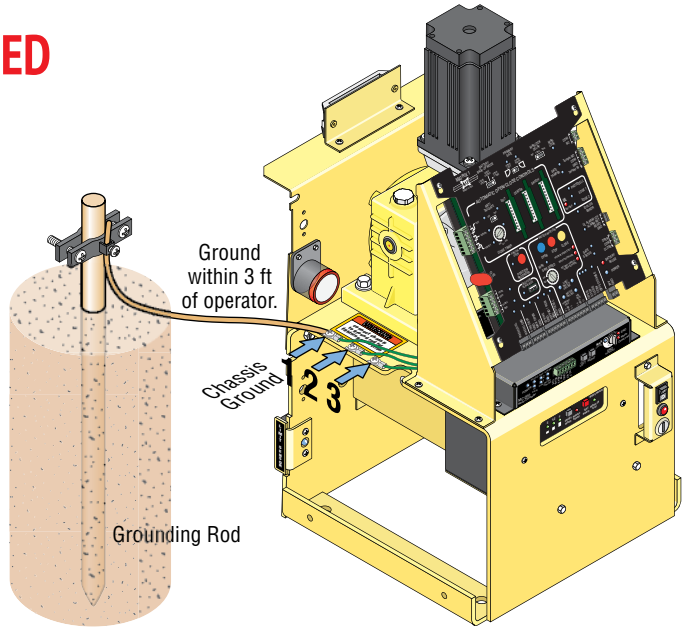
IMPORTANT: Operator MUST be grounded in lightning prone areas or warranty will be **VOIDED!**

WARNING

connect chassis to ground rod for lightning protection

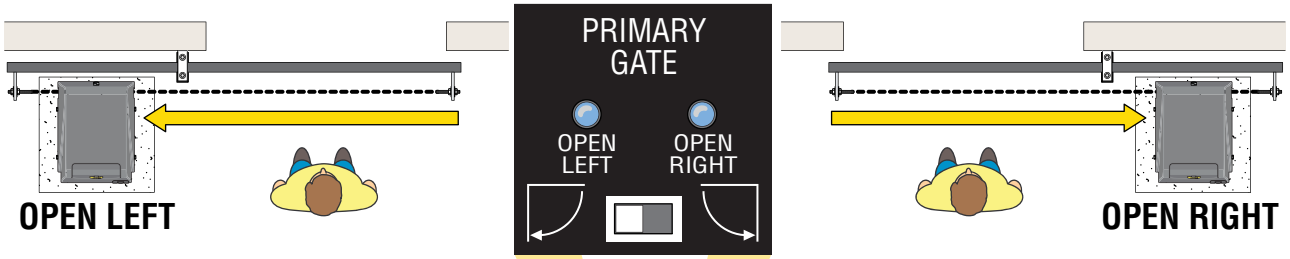
Proper grounding of this gate operator is a requirement for LIGHTNING PROTECTION in lightning prone areas. To be effective, ground connections should be made with a **minimum 12 AWG, 600 volt** insulated wire to a ground point within **3 feet of the gate operator**. The ground point must be at an **electrical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



Any of the **THREE** Chassis Grounds can be used. They are located next to the gear reducer. **DO NOT** remove any existing green ground wires.

5 SET OPENING DIRECTION AND ID PLUG

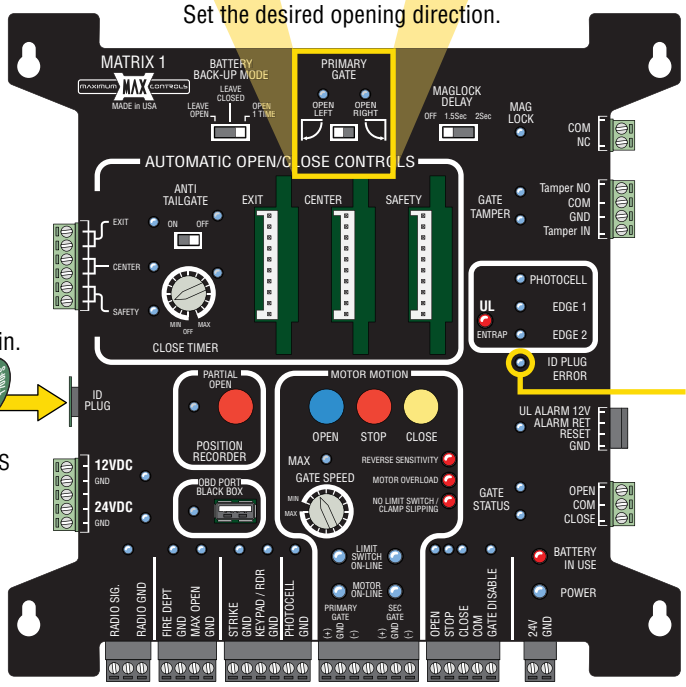


Set the desired opening direction.

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

ID plug **MUST** be plugged in.

MAX 1700FS ID Plug



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.

6 PROGRAM VIRTUAL LIMIT SENSORS

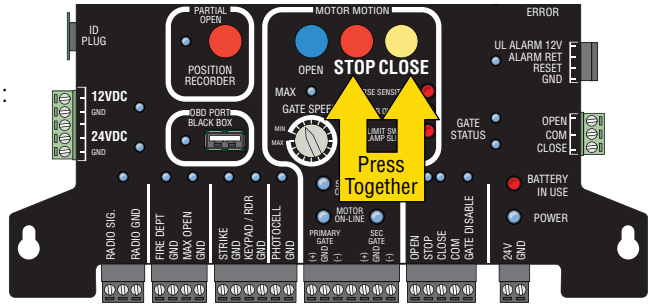
Gate operator OPEN and CLOSE buttons are disabled until virtual limits have been programmed.

If **OPEN** or **CLOSE** buttons are pressed and programming has not been done, Operator will beep and nothing will happen.

1. Erase Current Virtual Limits

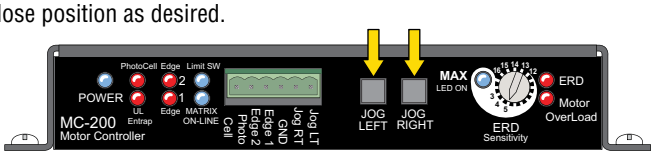
PRECAUTION to ensure removal of previous limit settings (**NO** factory setting):

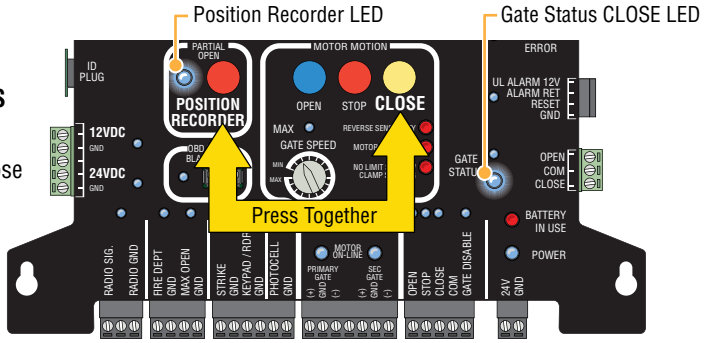
- Press and hold the **STOP** button while simultaneously pressing the **CLOSE** button.
- Hold **BOTH** buttons down until a beep is heard (approx. 5 sec).
- Release buttons. Both virtual **OPEN** and **CLOSE** limits have been erased.



2. Program Virtual CLOSE Limit

- Press and hold the **POSITION RECORDER** button while simultaneously pressing the **CLOSE** button.
- Hold **BOTH** buttons down until **POSITION RECORDER LED** and **GATE STATUS CLOSE LED** start flashing and beeping begins.
- While beeping, press **CLOSE** button again to move the gate to the general close position. Use the jog switches on the MC-200 to adjust gate to the final gate close position as desired.

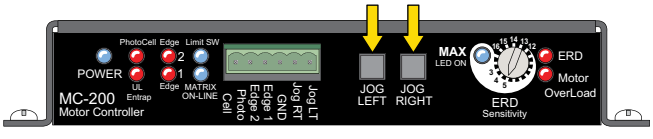


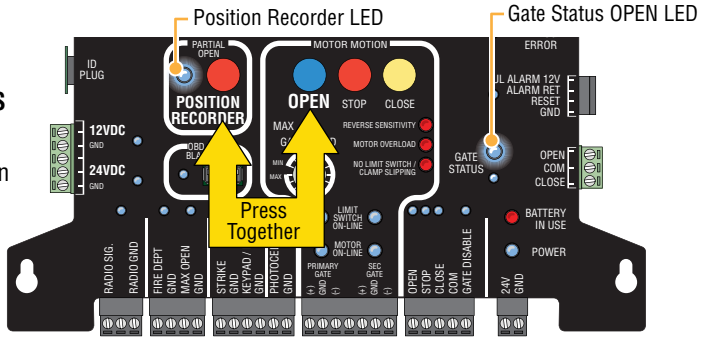


- After the final close position is chosen, press the **POSITION RECORDER** button again to record the current gate position as the virtual **CLOSE** limit. The **POSITION RECORDER LED** will turn **OFF**, the **GATE STATUS CLOSE LED** will turn **ON** and stay on and the beeping will stop. Virtual **CLOSE** limit is programmed.

3. Program Virtual OPEN Limit

- Press and hold the **POSITION RECORDER** button while simultaneously pressing the **OPEN** button.
- Hold **BOTH** buttons down until **POSITION RECORDER LED** and **GATE STATUS OPEN LED** start flashing and beeping begins.
- While beeping, press **OPEN** button again to move the gate to the general open position. Use the jog switches on the MC-200 to adjust gate to the final gate open position as desired.





- After the final open position is chosen, press the **POSITION RECORDER** button again to record the current gate position as the virtual **OPEN** limit. The **POSITION RECORDER LED** will turn **OFF**, the **GATE STATUS OPEN LED** will turn **ON** and stay on and the beeping will stop. Virtual **OPEN** limit is programmed. Push **CLOSE** button and the operator will function normally.

7 ENTRAPMENT PROTECTION WIRING

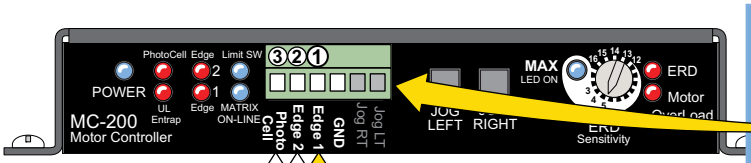


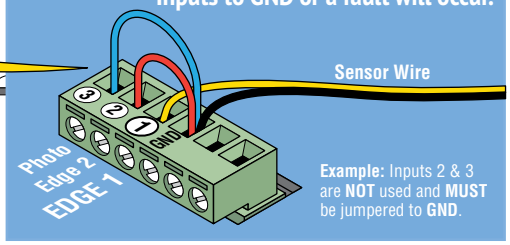
Photo Cell: LEARNED MONITORED OPEN/CLOSE

Edge 2: LEARNED MONITORED OPEN/CLOSE

EDGE 1: MONITORED CLOSE ONLY

NOTE: See manual for more information about learned monitored inputs.

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



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

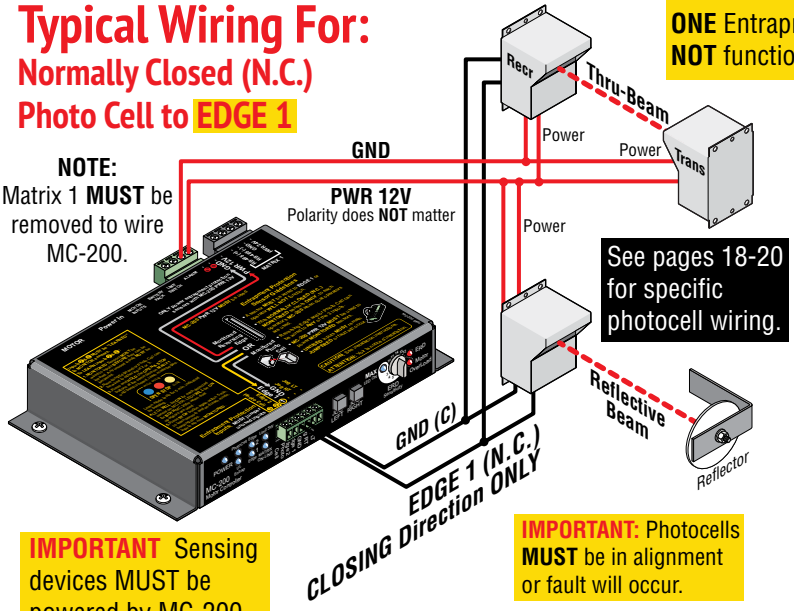
UL 325 2016 Standard

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

Typical Wiring For:

Normally Closed (N.C.) Photo Cell to EDGE 1

NOTE: Matrix 1 **MUST** be removed to wire MC-200.



See pages 18-20 for specific photocell wiring.

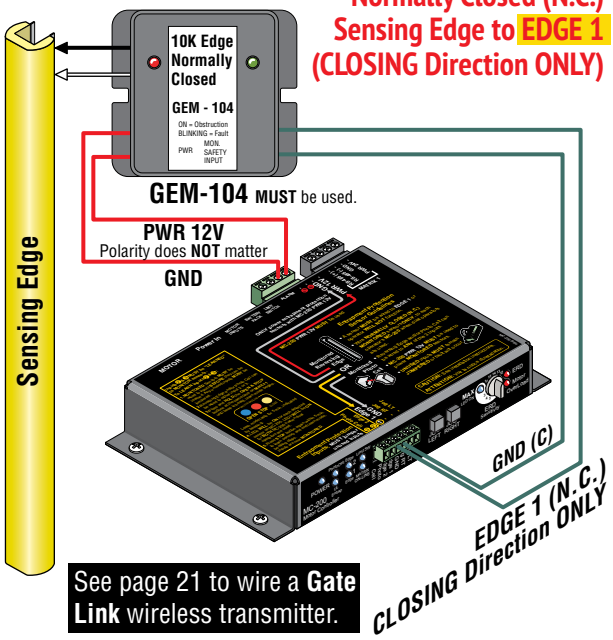
IMPORTANT Sensing devices MUST be powered by MC-200 or they will **NOT** be **MONITORED**.

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

NOTE: See manual for more information about photcell and sensing edges installation and wiring.

Typical HARDWiring For:

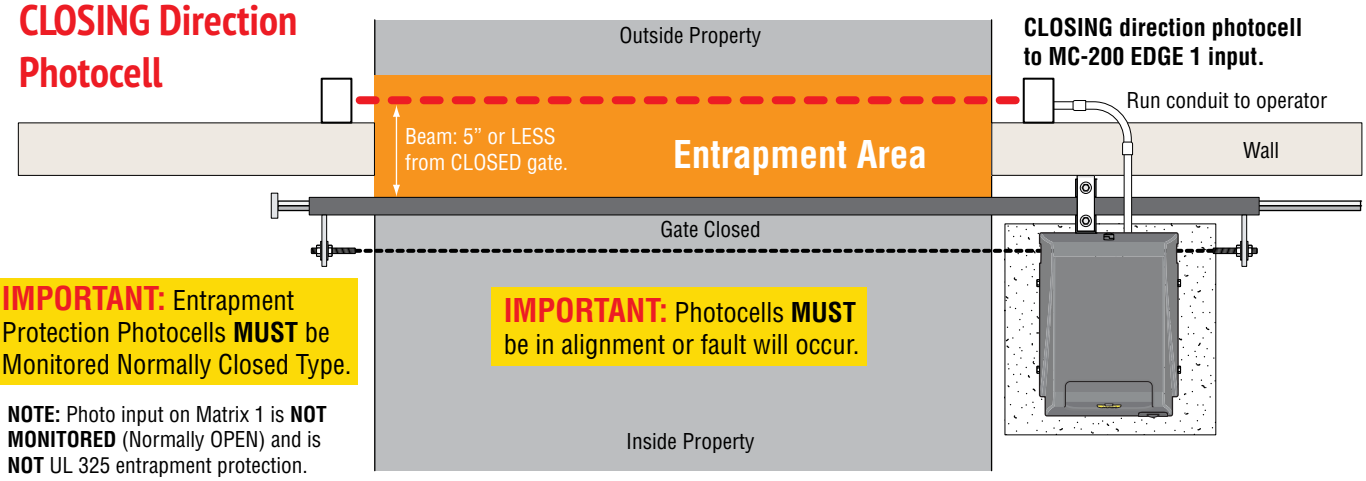
Normally Closed (N.C.) Sensing Edge to EDGE 1 (CLOSING Direction ONLY)



See page 21 to wire a **Gate Link** wireless transmitter.

Entrapment Protection Device Locations:

CLOSING Direction Photocell



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

NOTE: Photo input on Matrix 1 is **NOT MONITORED** (Normally OPEN) and is **NOT** UL 325 entrapment protection.

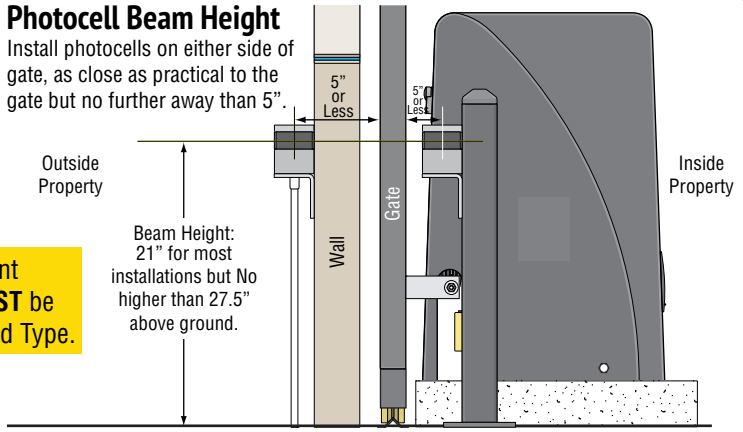
IMPORTANT: Photocells **MUST** be in alignment or fault will occur.

Continued on next page.

Entrapment Protection Device Locations:

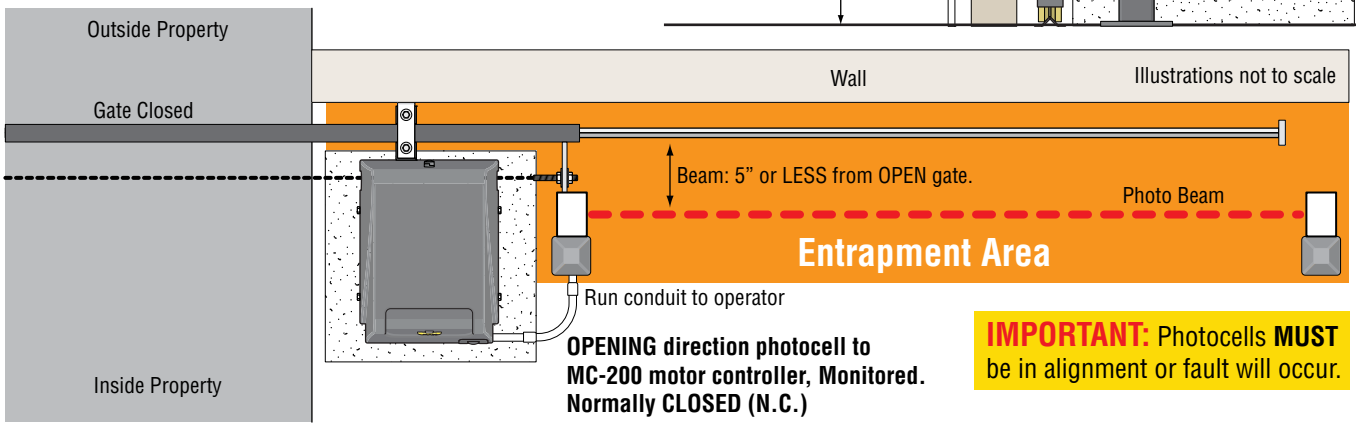
Photocell Beam Height

Install photocells on either side of gate, as close as practical to the gate but no further away than 5".



OPENING Direction Photocell

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

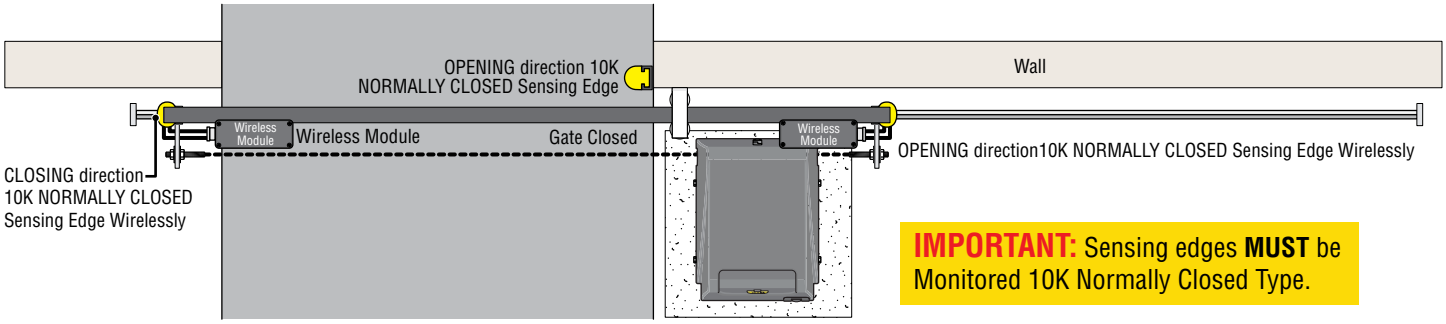


OPENING direction photocell to MC-200 motor controller, Monitored. Normally CLOSED (N.C.)

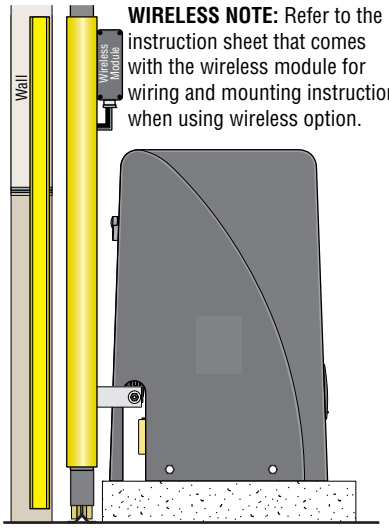
NOTE: Connect to Photo Cell input on MC-200.

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

Sensing Edges

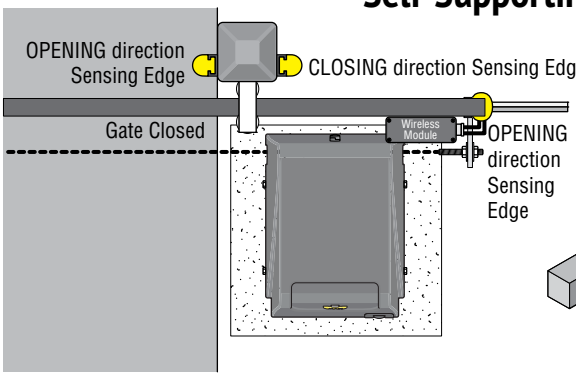


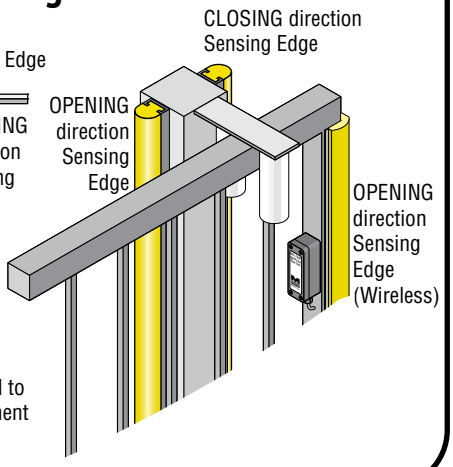
IMPORTANT: Sensing edges **MUST** be Monitored 10K Normally Closed Type.



WIRELESS NOTE: Refer to the instruction sheet that comes with the wireless module for wiring and mounting instructions when using wireless option.

Self-Supporting Post





If a self-supporting post is being used, then sensing edges need to be installed on **EACH** side of the post to protect against entrapment in the OPENING and CLOSING direction of gate travel.

8 ADJUST ERD REVERSE SENSOR

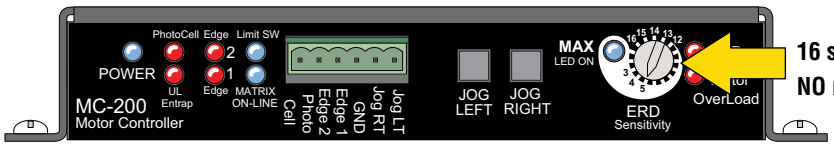
The **ERD Sensor** - **Electronic Reversing Device** (Type A) **MUST** be adjusted for the **OPEN and CLOSE gate cycles**.

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.

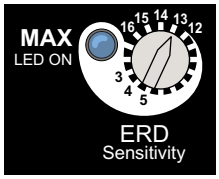
For the **ERD Sensitivity** to function correctly:

- Virtual limit sensors must be programmed **BEFORE** adjusting the ERD Sensitivity.

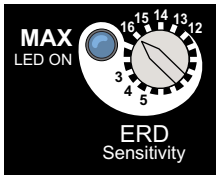


16 sensitivity setting positions.
NO mechanical hard stop for knob.

Typical Settings:



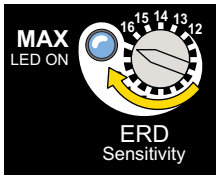
Position 13:
- Typical gate setting.



Position 16:
- Heavy gate setting.
- Long gate setting.
- Cantilever gate setting.
- High wind area gate setting.

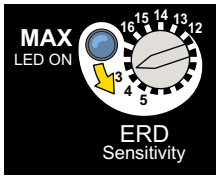
IMPORTANT: When satisfied with ERD adjustment, cycle the gate 3 or 4 times to make sure that the ERD sensor does not **falsely trigger** during normal gate operation. Re-adjust if this happens.

CAUTION: Position 16 results in gate exerting **MAXIMUM force** before reversing direction.



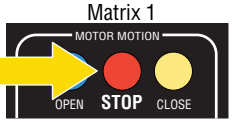
Adjusting ERD:

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



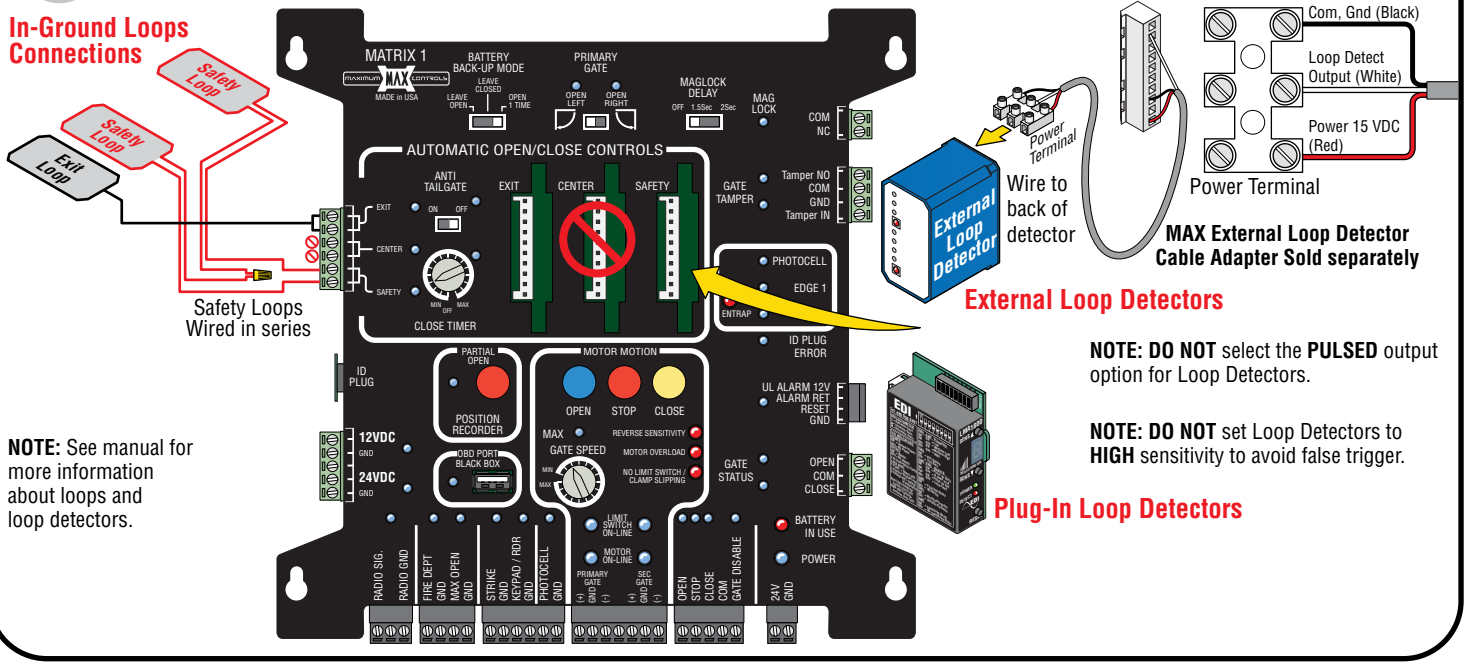
B. Turn knob **counter-clockwise** to reduce gate sensitivity while testing ERD until desired results is attained. (LED remains OFF for all but position 1)

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



9 LOOPS & LOOP DETECTORS

In-Ground Loops Connections



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

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

NOTE: DO NOT set Loop Detectors to **HIGH** sensitivity to avoid false trigger.

10 MATRIX 1 SETTINGS

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.

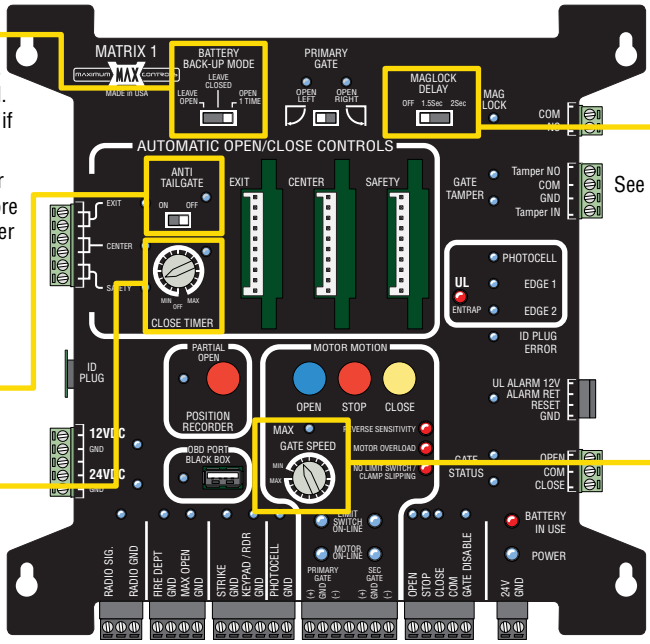
Anti Tailgate

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.



Maglock Delay

Set to OFF

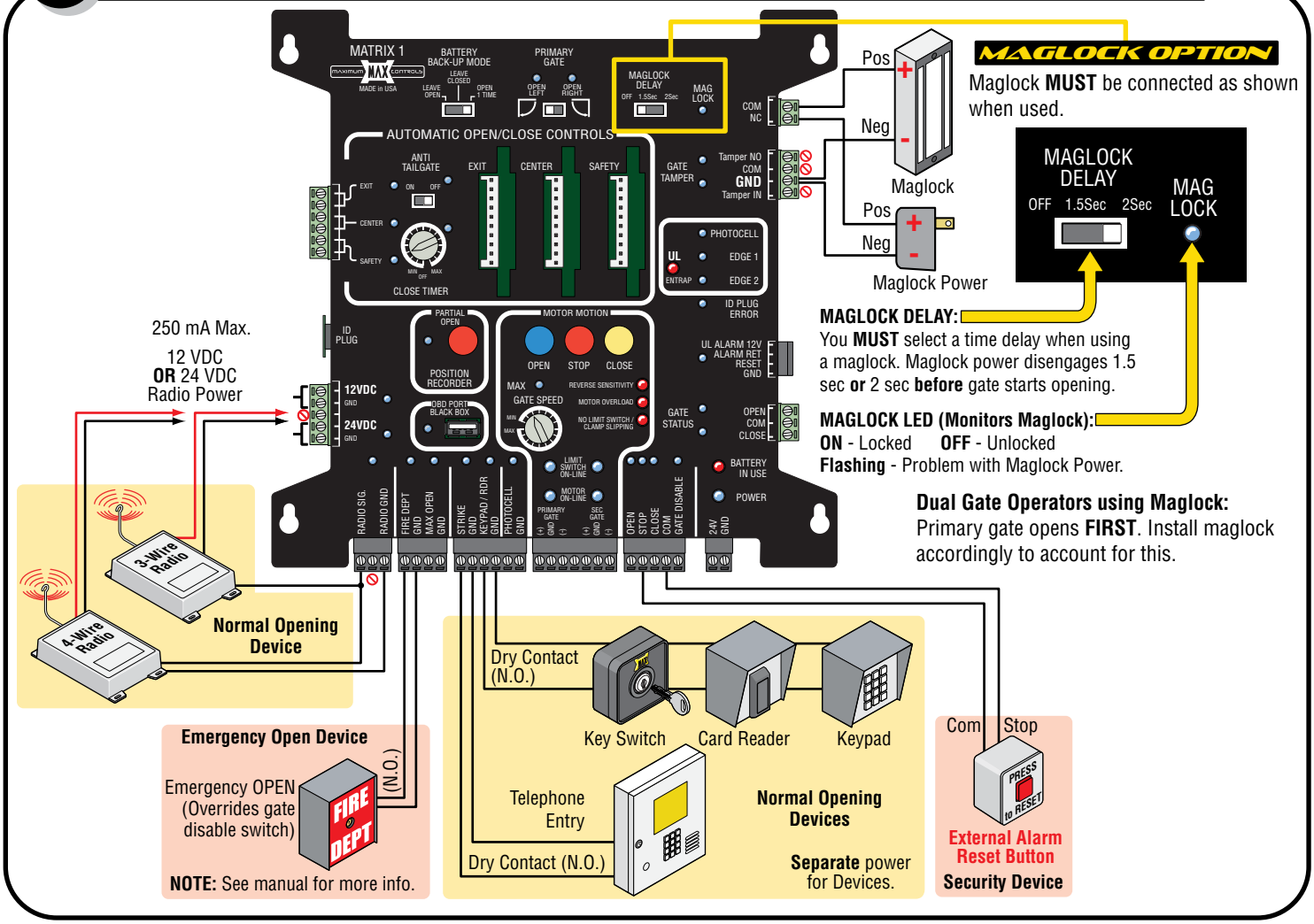
See manual before enabling this feature.

Gate Speed

Set to MAX

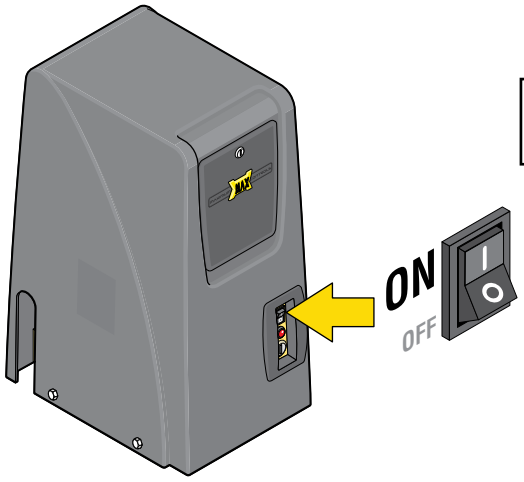
See manual for more info.

11 WIRING OPENING DEVICE OPTIONS



Local Keyed Manual Disconnect

The dynamic braking system is released for **15 minutes** when switch is turned **ON** and gate can be **manually pushed open**. After 15 minutes, the gate operator returns to normal operation. Turn this switch **OFF** after gate has been moved.

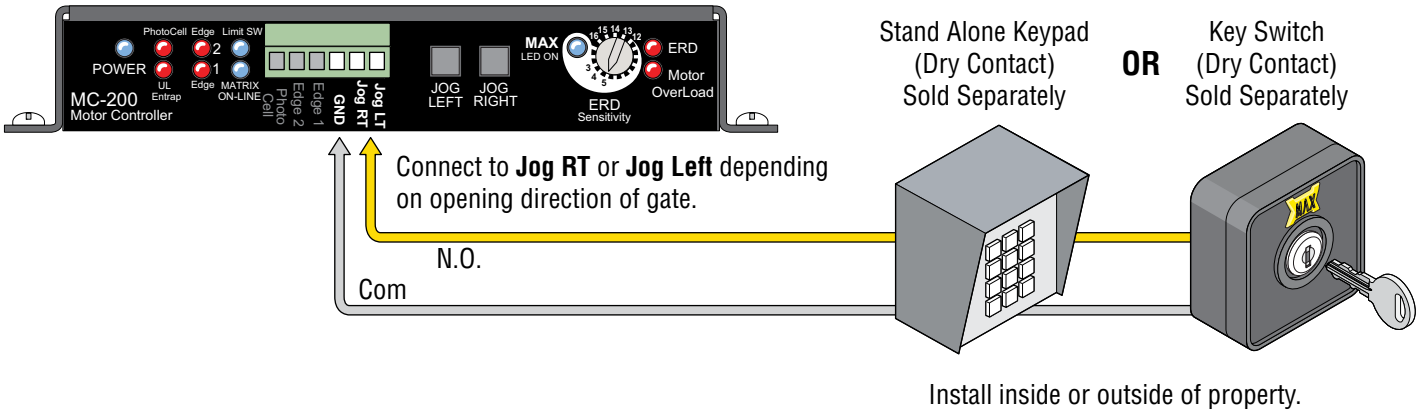


SAFETY FEATURE: If switch is **NOT** turned **ON**, the dynamic braking system, in closed position, will fight back if unauthorized manual opening is attempted.

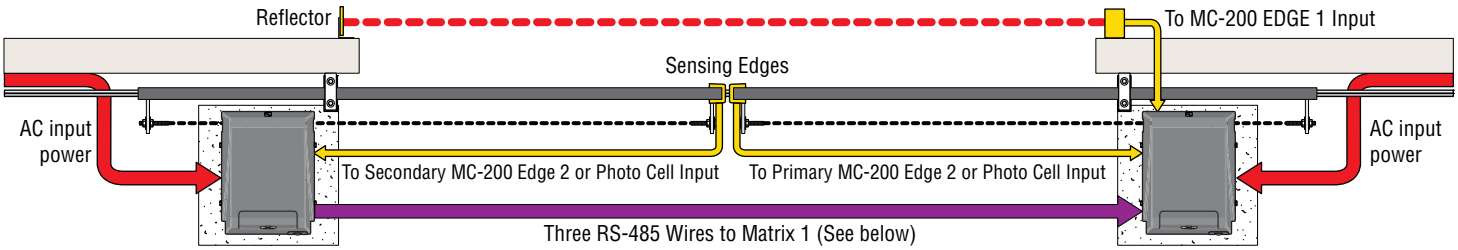
Note: If switch is **NOT** turned **OFF** after 15 minutes, gate operator returns to normal operation and will not allow gate to be pushed open again.
To re-activate the switch when left **ON** after **15 minutes**, turn switch **OFF** then back **ON** again. Gate can be manually pushed open again.

"OPTIONAL" Electronic Gate Open

Allows the gate to be electronically opened by the operator. Gate will fully open when activated by key switch or any dry contact command.



DUAL GATE OPERATORS WIRING

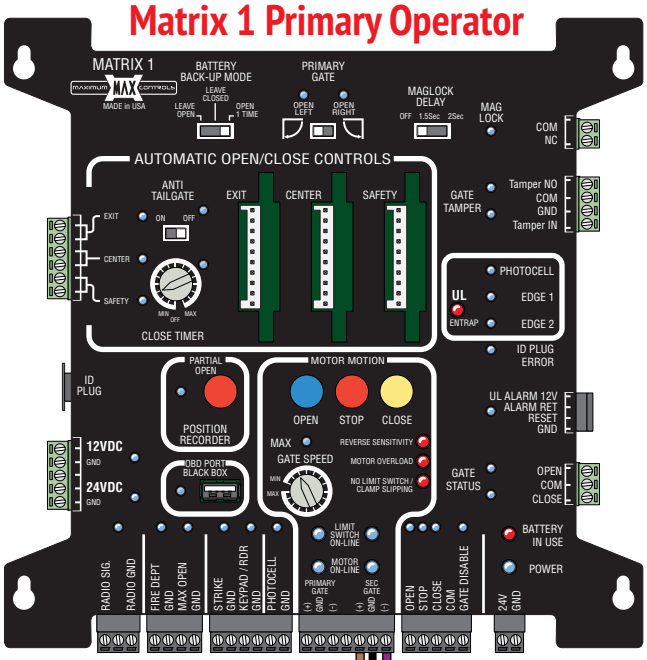


Secondary Operator
NO Matrix 1

NOTE: See Megatron manual for more information about Dual Gate Operator installation.

Primary Operator
Matrix 1

Matrix 1 Primary Operator



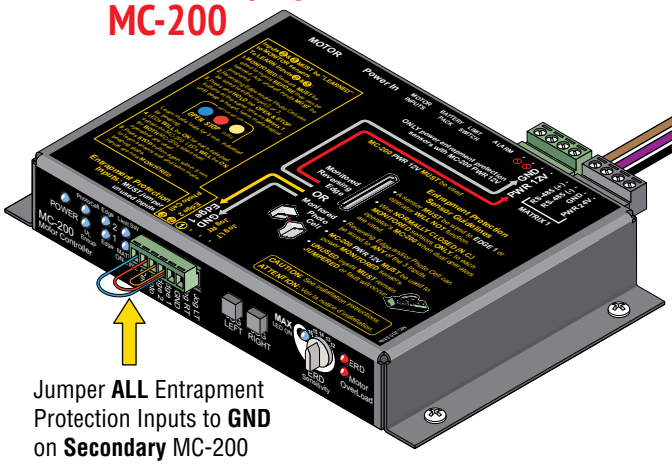
RS-485 (+) to RS-485 (+)

RS-485 (-) to RS-485 (-)

RS-485 GND to RS-485 GND

SEC GATE

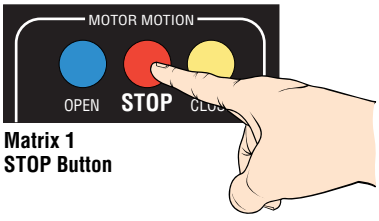
Secondary Operator MC-200



Jumper **ALL** Entrapment Protection Inputs to **GND** on **Secondary** MC-200 when **ONLY** using **CLOSE** photocell.

- 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**.

Alarm Shut-OFF



Matrix 1
STOP Button

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.

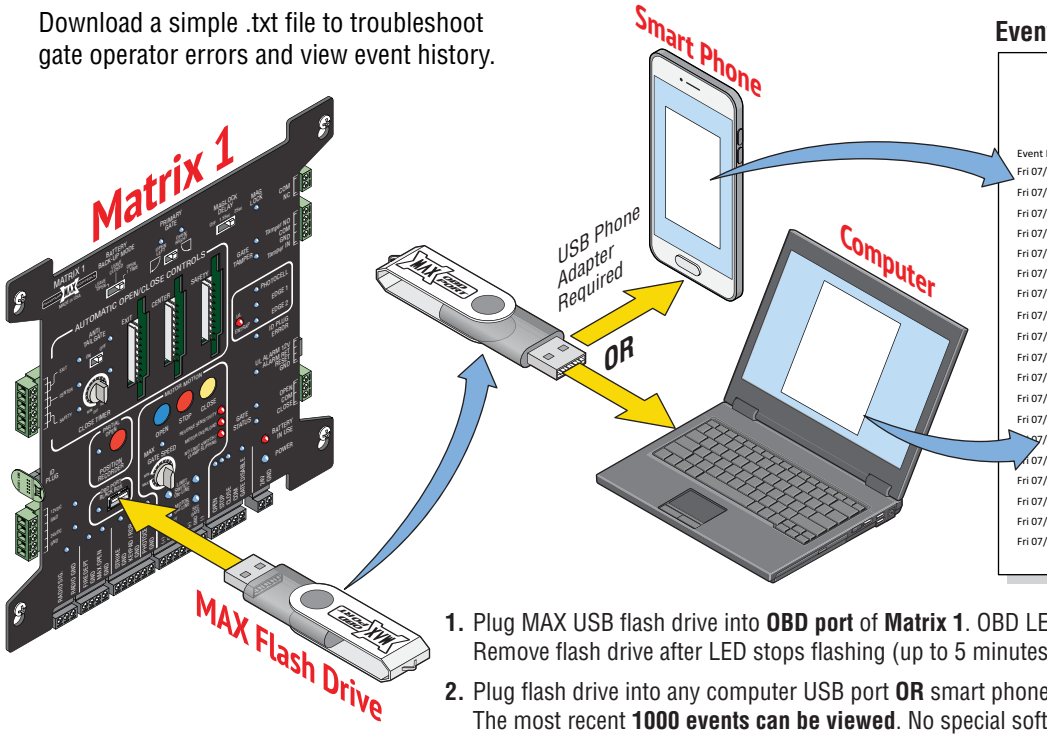
Troubleshooting

www.max.us.com

This page and the next 5 pages can help troubleshoot problems that might occur after installation is complete.

USB BLACK BOX PORT

Download a simple .txt file to troubleshoot gate operator errors and view event history.



Event History Text Document Sample

Event type clarification:

INFO: informational message only
WARNING: unusual event but doesn't cause system malfunction
ERROR: abnormal event, could cause system malfunction
ENTRAP: entrapment detection event

Event Report:

Fri 07/11/2014 10:59:41	INFO : Cycle Counter
Fri 07/11/2014 10:59:41	ENTRAP : SEC_MC: First ERD Detected
Fri 07/11/2014 10:59:37	INFO : Radio Input Deactivated
Fri 07/11/2014 10:59:36	INFO : Radio Input Activated
Fri 07/11/2014 10:58:54	INFO : PRI_MC: Fully Open Position Learned
Fri 07/11/2014 10:58:53	INFO : SEC_MC: Fully Open Position Learned
Fri 07/11/2014 10:57:40	INFO : PRI_CIO: Communication Established
Fri 07/11/2014 10:57:38	ENTRAP : PRI_MC: Photo Cell Deactivated
Fri 07/11/2014 10:57:34	ENTRAP : PRI_MC: Photo Cell Activated
Fri 07/11/2014 10:57:21	INFO : Radio Input Deactivated
Fri 07/11/2014 10:57:21	INFO : Radio Input Activated
Fri 07/11/2014 10:56:46	WARNING: PRI_MC: Tamper Reported
Fri 07/11/2014 10:56:36	INFO : SEC_MC: Fully Open Position Unknown
07/11/2014 10:56:36	INFO : PRI_MC: Fully Open Position Unknown
07/11/2014 10:56:36	WARNING: PRI_MC: Tamper Reported
Fri 07/11/2014 10:56:33	ENTRAP : PRI_MC: Photo Cell Deactivated
Fri 07/11/2014 10:56:33	ENTRAP : PRI_MC: Photo Cell Activated
Fri 07/11/2014 10:56:33	ENTRAP : PRI_MC: Photo Cell Deactivated
Fri 07/11/2014 10:56:33	ENTRAP : PRI_MC: Photo Cell Activated

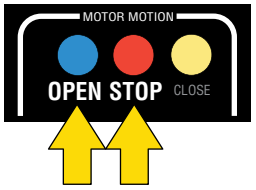
1. Plug MAX USB flash drive into **OBD port** of **Matrix 1**. OBD LED will flash while file is downloading. Remove flash drive after LED stops flashing (up to 5 minutes to download file).
2. Plug flash drive into any computer USB port **OR** smart phone using a USB phone adapter. The most recent **1000 events can be viewed**. No special software required.

TEST EDGE 1 ENTRAPMENT SENSOR

Troubleshoot **EDGE 1** entrapment protection sensor.

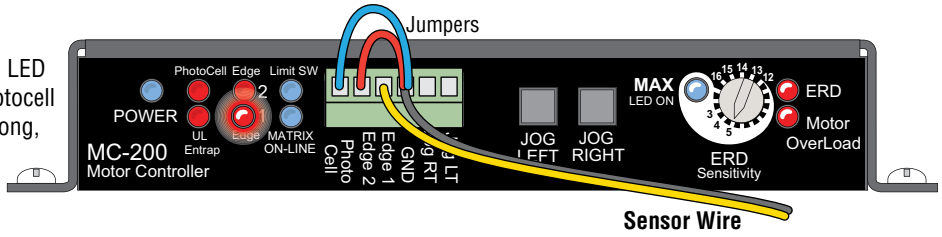
1. Press and **HOLD** the **STOP button & then the OPEN** button together on Matrix 1 until beeping is heard, learn mode begins.

   NOTE: DO NOT press the **OPEN** button before the **STOP** button or learn mode will **NOT** function.



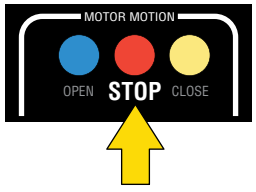
Matrix 1

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.



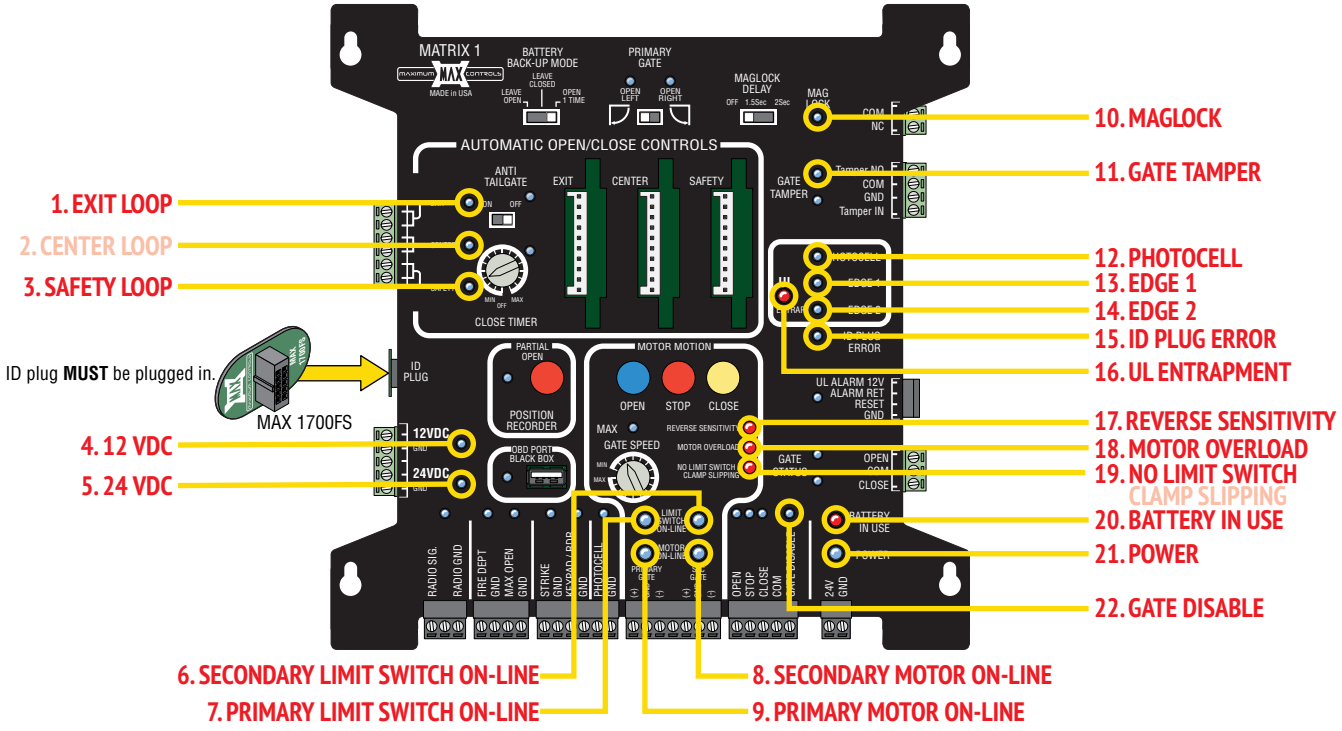
Matrix 1

GATE CYCLING TROUBLESHOOTING

Use this table to help with troubleshooting AND operator LED troubleshooting on the next 4 pages.

Gate Symptom	Solutions (what to check)
Gate beeps but will not open or close for any command given.	• 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.
Gate moves slowly.	• Check if OPEN and CLOSE Limits have been learned. Refer to Learn Gate Positions section and learn limits. • Check if GATE SPEED rotary dial is set to MAX position (LED on). • Gate may be too heavy for operator (check manual for maximum gate weight for your model operator). • Check if "BATTERY IN USE" LED is ON. If so, gate is on Battery back up mode and battery is running low.
Gate beeps when opening and closing.	• Operator may be in battery back up mode. check if Mode 1 switch is ON on the back of Matrix 1. • Check if “Gate in Motion” Alarm feature is ON (“Mode 0” switch is on back of Matrix 1 and set to “ON”).
Gate does NOT open.	• 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. • Check if PRIMARY GATE "open RIGHT / open LEFT" switch is set properly. • Check if GATE SHUTOFF switch is OFF (GATE DISABLE LED should be OFF) • Check if GATE DISABLE LED is ON. If so, check if GATE DISABLE input is active. • Check if "EDGE 2" LED or "PHOTOCELL" LED is ON or BLINKING on MC-200. If so, check entrapment sensor wiring or missing jumper. • 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“).
Gate does NOT close.	• 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. • Check if “EDGE 1“ LED is ON or BLINKING on MC-200. If so, check entrapment sensor wiring and alignment. • Check if any loops are active, check SAFETY LOOP or EXIT LOOP LED is ON. • 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. • Check if PRIMARY GATE “open RIGHT / open LEFT” switch is set properly. • Check if GATE SHUTOFF switch is OFF (GATE DISABLE LED should be OFF) • Check if GATE DISABLE LED is ON. If so, check if GATE DISABLE input is active. • If “EDGE 2“ LED or “PHOTOCELL“ LED is ON or BLINKING on MC-200. If so, check entrapment sensor wiring or missing jumper. • 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. • If “BATTERY IN USE” LED is ON and BATTERY BACK-UP MODE switch is set to “OPEN 1-TIME”, then if AC power is lost, gate will automatically open 1 time. • If “CLOSE TIMER” is OFF, then gate will not close automatically. A close command (i.e radio, close) is required to close gate. • Loop detector is defective (EXIT, or SAFETY). • Loop has a short or open. Measure loop resistance.
Gate stops prematurely and beeps, moves in opposite direction.	• If “ERD“ LED is ON, an obstruction (ERD event) is detected. If no apparent obstruction, select a less sensitive ERD setting. • If “EDGE 2“ LED is ON, entrapment sensor is triggered or jumper on connector is broken.
Gate will stop before reaching desired limit setting.	• Gate Open and Close Limits have not been learned properly. Relearn limit positions using jog RT and jog LT. • The magnet(s) are not installed in correct limit position on the chain. • 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.
Gate stops abruptly while in motion.	• If “MATRIX ON-LINE” LED or “LIMIT SWITCH ON-LINE” LED are OFF on MC-200, then check wiring between (MC-200 & Matrix 1) or (MC-200 and Limit switch box). • Check if “PHOTOCELL” LED is ON on MC-200. If so, check entrapment sensor wiring or missing jumper • Motor hall sensor cable may be compromised. Unplug cable from MC-200 “Motor Inputs” and ensure wires are not broken and are crimped properly.
Gate re-opens while closing.	• Check if closing photo cell is misaligned with reflector (check photocell on MC-200 “EDGE 1” input or Matrix 1 “Photocell” input. • Check if SAFETY LOOP is set too sensitive, then gate itself triggers SAFETY loop and reopens gate. Desensitize SAFETY LOOP detector.

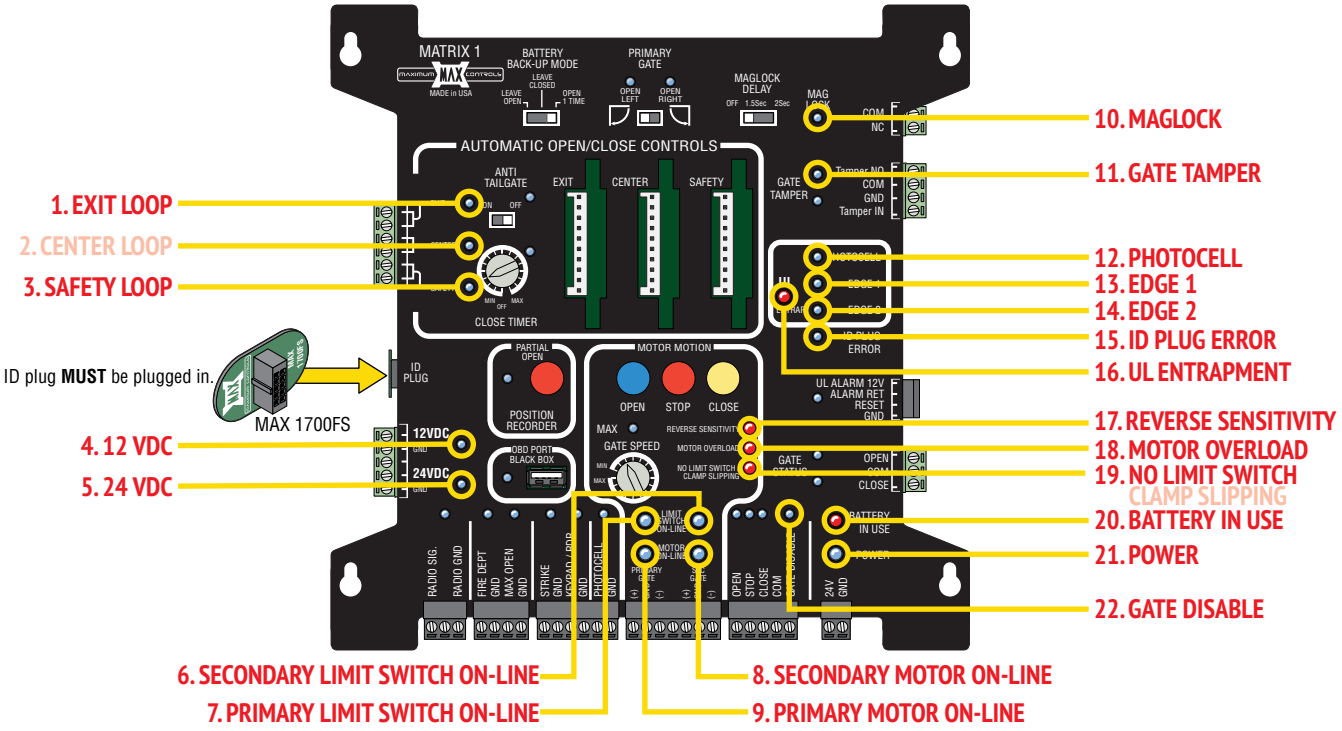
MATRIX 1 LED TROUBLESHOOTING



Matrix 1 LED Problem Condition	Normal LED	Solution(s) for Problem Condition
"ID PLUG" LED is FLASHING on Matrix 1 and board beeping	OFF 15	• Insert ID PLUG module that is tethered to chassis into "ID PLUG" connector of Matrix 1.
"POWER" LED is OFF	ON 21	• Check if AC POWER ON/OFF SWITCH is ON. • Check 24 V wiring from MC-200 PRIMARY.
"BATTERY IN USE" LED is ON	OFF 20	• AC power is lost, operator is in battery back-up mode. • Check if AC POWER ON/OFF SWITCH is ON. • Measure power input DC voltage on Matrix 1 ("24V/GND" - 2-pin black connector), (expected reading 34 VDC if AC on, 25VDC if on battery back-up).
"BATTERY IN USE" and "POWER" LED are FLASHING	OFF / ON 20 / 21	• Battery not plugged in to BATTERY IN port on battery charger (BC-7 module)
PRIMARY "MOTOR ON-LINE" LED is OFF	ON 9	• Check wiring between Matrix 1 RS485 (+,-, gnd) and PRIMARY MC-200 RS485 (+,-, gnd) terminals, connect [(+) to (+)], [(-) to (-)] and [GND to GND]
SECONDARY "MOTOR ON-LINE" LED is OFF	ON 8	• Check wiring between Matrix 1 RS485 (+,-, gnd) and SECONDARY MC-200 RS485 (+,-, gnd) terminals, connect [(+) to (+)], [(-) to (-)] and [GND to GND].
PRIMARY "LIMIT SWITCH ON-LINE" LED is OFF	ON 7	• Check if limit switch box is plugged into PRIMARY MC-200 "LIMIT SWITCH" input on back and MC-200 is powered ON.
SECONDARY "LIMIT SWITCH ON-LINE" LED is OFF	ON 6	• Check if limit switch box is plugged into SECONDARY MC-200 "LIMIT SWITCH" input on back and MC-200 is powered ON.
"UL Entrap" LED is ON	OFF 16	• An entrapment event has occurred, check if an entrapment sensor was triggered (see if EDGE 1, EDGE 2, or PHOTOCELL LED is on).
"REVERSE SENSITIVITY" LED is FLASHING	OFF 17	• An ERD event may have occurred. Check for gate obstruction. • ERD sensitivity is too high for application. Re-adjust ERD setting on MC-200, (see 8).
"EDGE 1" LED is ON	OFF 13	• Sensor on EDGE 1 input (photocell or edge) may have detected an obstruction while closing gate. • Photocell on EDGE 1 input is misaligned with reflector.
"EDGE 1" LED is flashing	OFF 13	• Sensor on EDGE 1 input (photocell or edge) may not be wired properly, (see 7). • Sensor is NOT a N.C. monitored sensor that is UL325 2016 compliant. • Sensor is damaged or malfunctioning. • Sensor might need to be re-learned.
"EDGE 2" LED is ON	OFF 14	• Jumper between EDGE 2 and GND is missing or broken (jumper is required if a sensor is not present). Sensor on EDGE 2 input (photocell or edge) may have detected an obstruction while opening or closing gate. • Photocell on EDGE 2 input is misaligned with reflector.
"EDGE 2" LED is FLASHING	OFF 14	• Sensor on EDGE 2 input (photocell or edge) may not be wired properly, (see 7). • Sensor is NOT a N.C. monitored sensor that is UL325 2016 compliant. • Sensor on EDGE 2 is damaged or malfunctioning. • Sensor might need to be re-learned.

Table continued on next page

MATRIX 1 LED CONTINUED

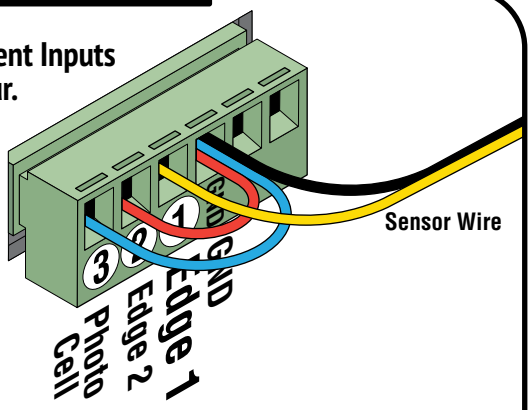


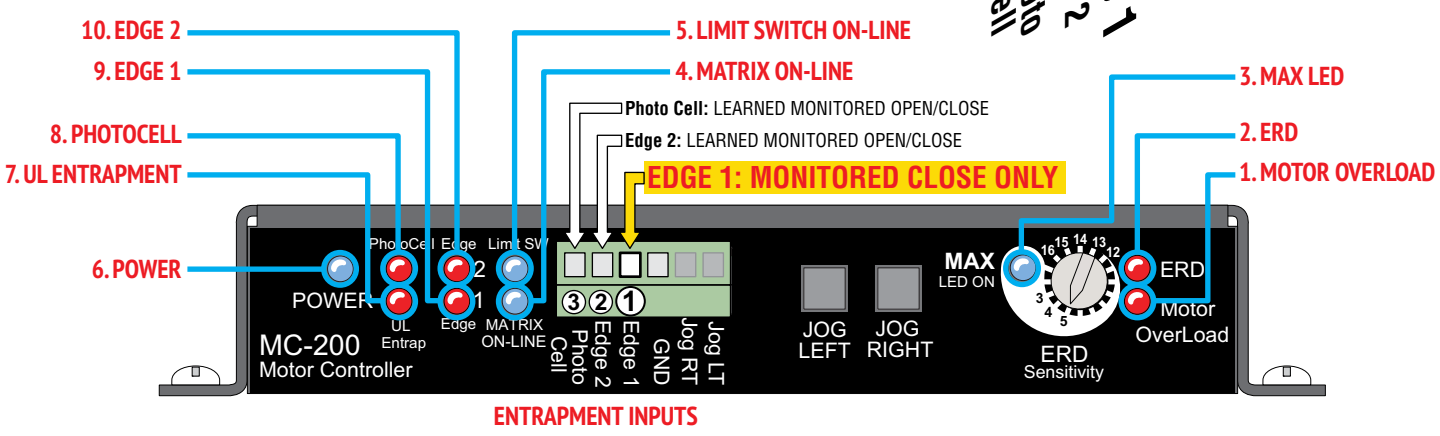
Matrix 1 LED Problem Condition	Normal LED	Solution(s) for Problem Condition
"PHOTOCELL" LED is ON	OFF 12	• Jumper between PHOTOCELL and GND is missing or broken (jumper is required if a sensor is not present). • Sensor on PHOTOCELL input (photocell or edge) may have detected an obstruction while opening or closing gate.
"PHOTOCELL" LED is FLASHING	OFF 12 OFF	• Photocell on PHOTOCELL input is misaligned with reflector. • Sensor on PHOTOCELL input (photocell or edge) may not be wired properly, (see 7). • Sensor is NOT a N.C. monitored sensor that is UL325 2016 compliant. • Sensor on PHOTOCELL is damaged or malfunctioning. • Sensor might need to be re-learned.
"MOTOR OVERLOAD" LED is ON	18	• Check if gate is binding against catch post or bracket in opened or closed position. • Check if gate moves manually with low resistance throughout its full range of motion. • Check if chain is installed inline with idle wheels in both OPEN and CLOSED positions.
"NO LIMIT SW / CLAMP SLIPPING" LED is ON	OFF 19	• Gate may be too heavy for operator (check manual for maximum gate capacity). • Check if OPEN and CLOSE magnets are still connected on chain.
"EXIT" LOOP LED is FLASHING or contstantly ON	OFF 1	• Loop fault condition: Check if EXIT loop wires are connected into to loop input connector properly. • Check if loop detector is inserted properly in Matrix 1 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).
"SAFETY" LOOP LED is FLASHING or contstantly ON	OFF 3	• 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 Matrix 1 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).
"GATE DISABLE" LED is ON	OFF 22	• 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 on Matrix 1. Disconnect devices individually to determine possible false triggering of GATE DISABLE.
"MAG LOCK" LED is FLASHING	OFF 10	• Maglock power is lost. Check if maglock power transformer is wired properly to Matrix 1 or needs to be replaced. • Switch is set to delay but no maglock is connected. Set switch to OFF
"GATE TAMPER" LED is FLASHING	OFF 11	• Gate was manually moved off of its CLOSED position causing Tamper Relay to trigger for few seconds.
"12VDC" LED is OFF. "24VDC" LED is OFF	ON 4 or 5	• 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).

MC-200 LED TROUBLESHOOTING

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

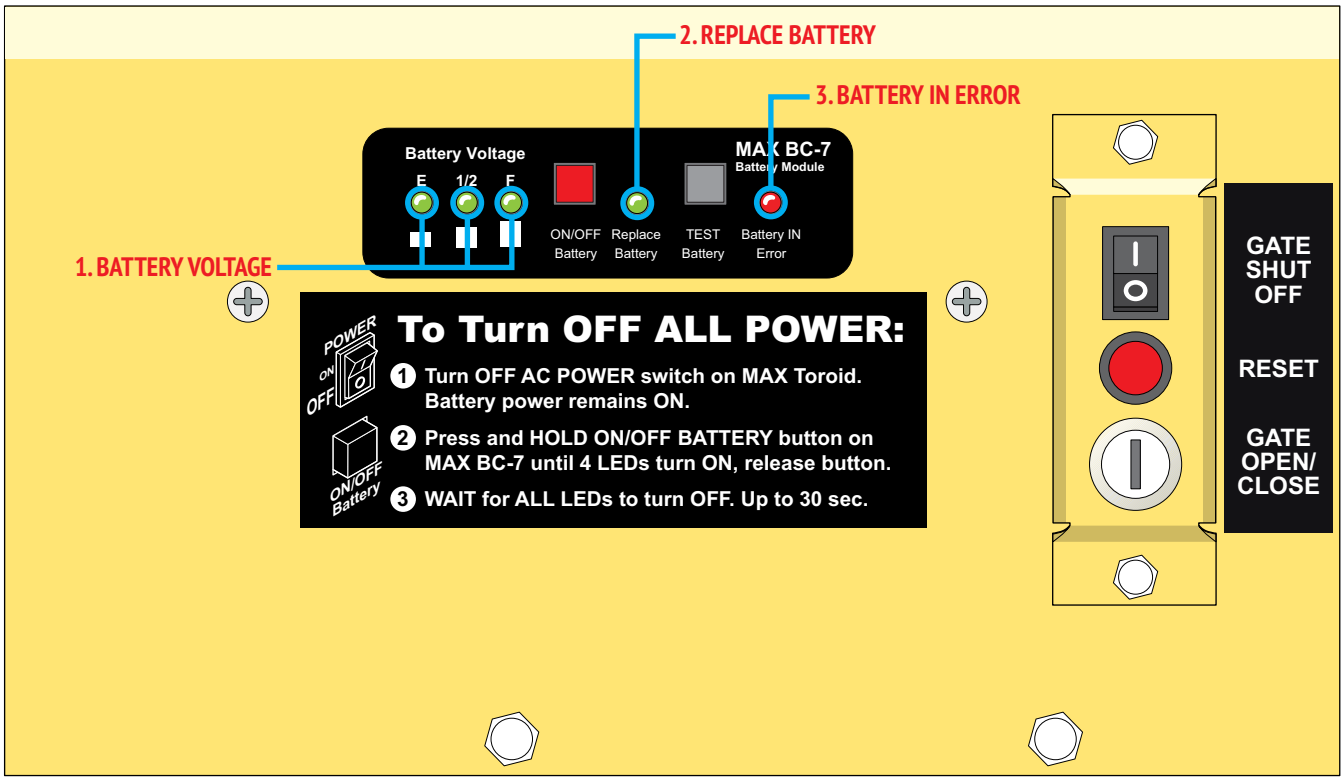
Example: Inputs 2 & 3 are **NOT** used and **MUST** be jumpered to **GND**.





MC-200 LED Problem Condition	Normal LED	Solution(s) for Problem Condition
"POWER" LED is OFF	ON 6	• Check if AC POWER ON/OFF SWITCH (on MAX toroid box) is ON. • Check if power cable is plugged into back of MC-200 "Power In" input.
"MATRIX ON-LINE" LED is OFF	ON 4	• Check wiring between Matrix 1 RS485 (+,-, gnd) and MC-200 RS485 (+,-, gnd) terminals. Connect [(+) to (+)], [(-) to (-)] and [GND to GND].
"Limit SW ON-LINE" LED is OFF	ON 5	• Check if limit switches are plugged into MC-200 "LIMIT SWITCH" input on back.
"MOTOR OVERLOAD" LED is ON	OFF 1	• Check if gate is binding against catch post or bracket in opened or closed position. • Check if gate moves manually with low resistance throughout its full range of motion. • Check if chain is installed inline with idle wheels in both OPEN and CLOSED positions. • Gate may be too heavy for operator (check manual for maximum gate weight for your model operator).
"UL Entrap" LED is ON	OFF 7	• An entrapment event has occurred, check an entrapment sensor was triggered (see if ERD, EDGE 1, EDGE 2, or PHOTOCELL LED is on).
"ERD" LED is ON	OFF 2	• An ERD event may have occurred. Check for gate obstruction. • ERD sensitivity is too high for application. Re-adjust ERD setting on MC-200, (see 9).
"EDGE 1" LED is ON	OFF 9	• Sensor on EDGE 1 input (photocell or edge) may have detected an obstruction while closing the gate. • Photocell on EDGE 1 input is misaligned with reflector.
"EDGE 1" LED is flashing	OFF 9	• Sensor on EDGE 1 input (photocell or edge) may not be wired properly, (see 7). • Sensor is NOT a N.C. monitored sensor that is UL325 2016 compliant. • Sensor is damaged or malfunctioning. • Sensor might need to be re-learned.
"EDGE 2" LED is ON	OFF 10	• Jumper between EDGE 2 and GND is missing or broken (jumper is required if a sensor is not present). • Sensor on EDGE 2 input (photocell or edge) may have detected an obstruction while opening or closing the gate. • Photocell on EDGE 2 input is misaligned with reflector.
"EDGE 2" LED is FLASHING	OFF 10	• Sensor on EDGE 2 input (photocell or edge) may not be wired properly, (see 7). • Sensor is NOT a N.C. monitored sensor that is UL325 2016 compliant. • Sensor on EDGE 2 is damaged or malfunctioning. • Sensor might need to be re-learned.
"PhotoCell" LED is ON	OFF 8	• Jumper between PHOTOCELL and GND is missing or broken (jumper is required if a sensor is not present). • Sensor on PHOTOCELL input (photocell or edge) may have detected an obstruction while opening or closing gate. • Photocell on PHOTOCELL input is misaligned with reflector.
"PhotoCell" LED is FLASHING	OFF 8	• Sensor on PHOTOCELL input (photocell or edge) may not be wired properly, (see 7). • Sensor is NOT a N.C. monitored sensor that is UL325 2016 compliant. • Sensor on PHOTOCELL is damaged or malfunctioning. • Sensor might need to be re-learned.
"MAX" LED is ON	OFF 3	• MOST sensitive setting for ERD entrapment detection. Select a less sensitive setting (recommended level 13 thru 16)

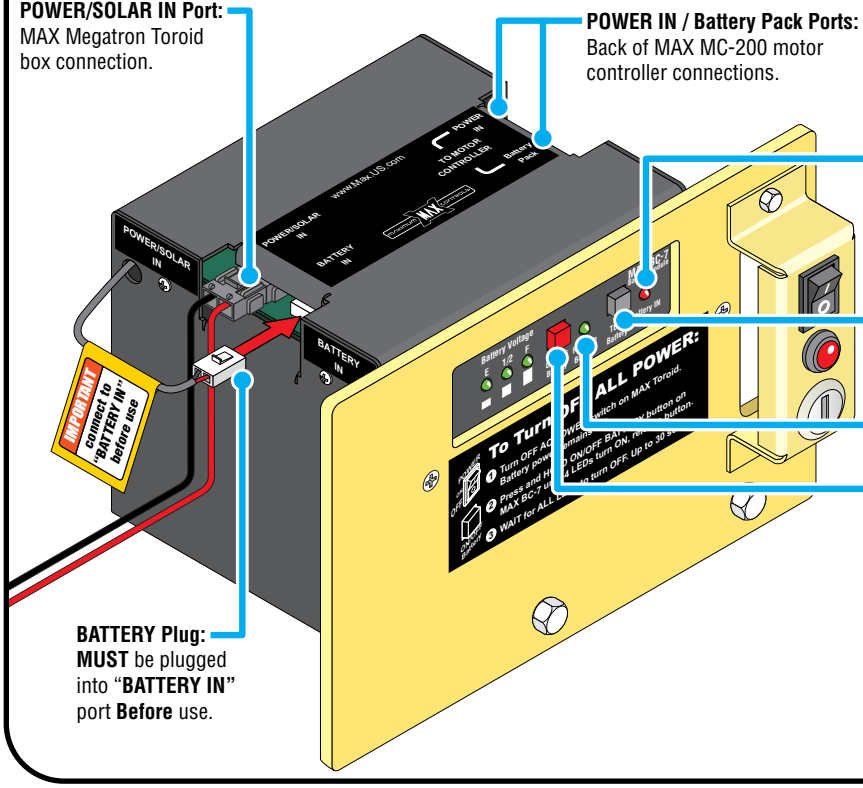
BC-7 MODULE LED TROUBLESHOOTING



BC-7 LED Problem Condition	Normal LED	Solution(s) for Problem Condition
"BATTERY VOLTAGE (E 1/2 F)" LEDs, only "E" is ON.	1	• Battery is very LOW. Check if AC power ON/OFF switch is ON. If so, check AC power.
"BATTERY IN ERROR" LED is ON.	OFF 3	• "BATTERY Plug" not plugged in to "BATTERY IN" port on battery module (see below).
"REPLACE BATTERY" LED is ON.	OFF 2	• Battery needs to be replaced if BATTERY TEST fails and "REPLACE BATTERY" LED is ON.

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

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



BATTERY Plug: **MUST** be plugged into "**BATTERY IN**" port **Before** use.

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**.

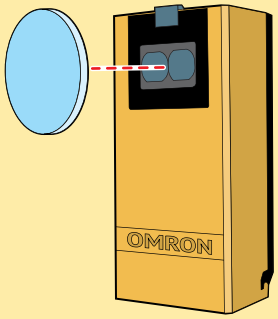
To turn OFF **ALL POWER** to operator:

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.)

Commonly used Safety Sensor Wiring

MAXIMUM MAX CONTROLS
www.max.us.com

OMRON E3K-R10K4



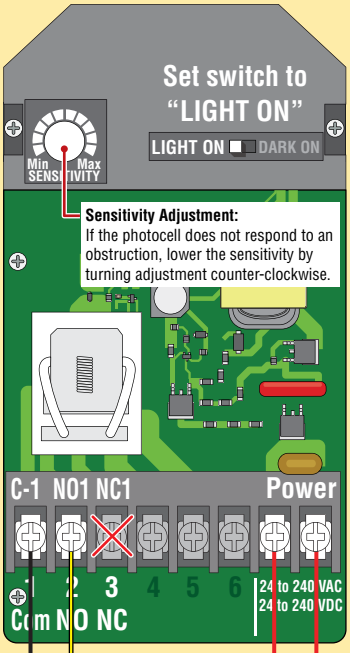
Photocell (Reflector) CLOSING Direction

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

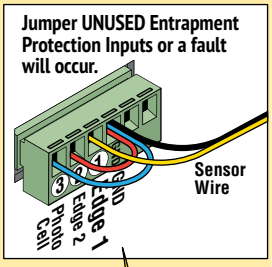
IMPORTANT: Photocell **MUST** be in alignment with reflector or fault will occur.

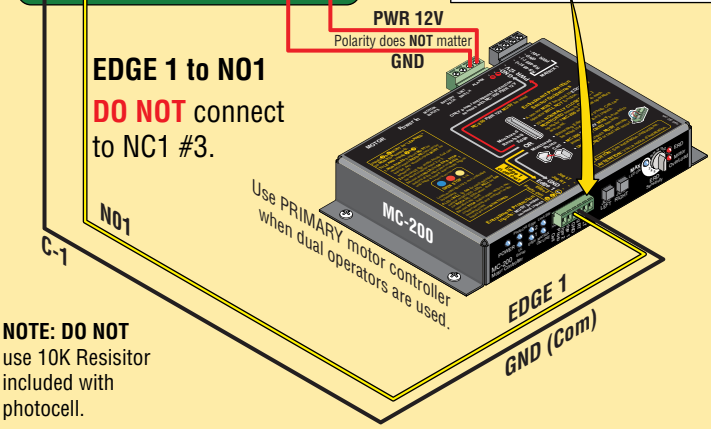
Installation Steps:

1. Set switch to "LIGHT ON"
2. Wire 12V power to photocell
3. Wire motor controller **EDGE 1** to photocell **NO1**
   Wire motor controller **GND** to photocell **C-1**
4. Align photocell to reflector
5. Adjust sensitivity



OK to use 12VDC



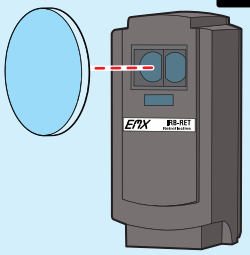


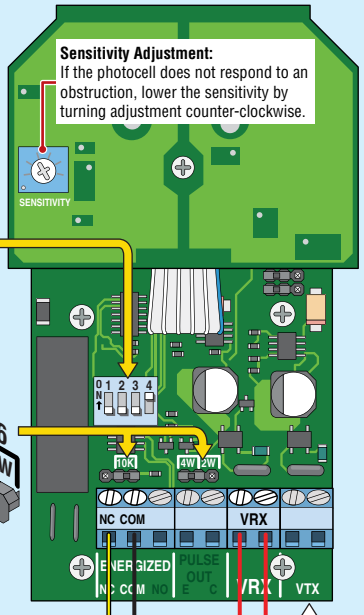
NOTE: DO NOT use 10K Resisitor included with photocell.

IMPORTANT: Photocell MUST be powered by MAX Motor Controller or it will **NOT** be **MONITORED**.

EMX IRB-RET

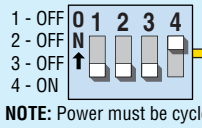
Photocell (Reflector) CLOSING Direction



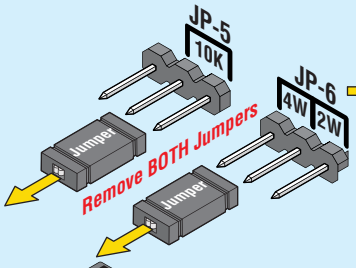


DIP-Switches

1 - OFF
2 - OFF
3 - OFF
4 - ON



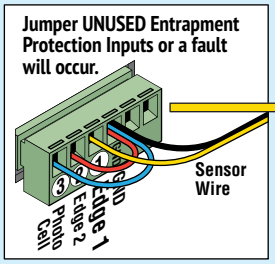
NOTE: Power must be cycled when switches are changed.

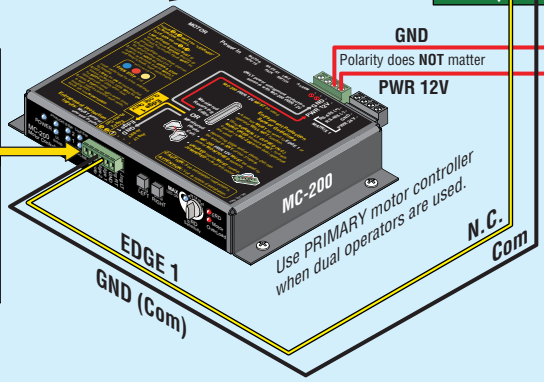


NOTE: To meet the UL 325 2016 standard, Type B1 Non-Contact sensor entrapment protection device MUST be MONITORED by the gate operator.

Installation Steps:

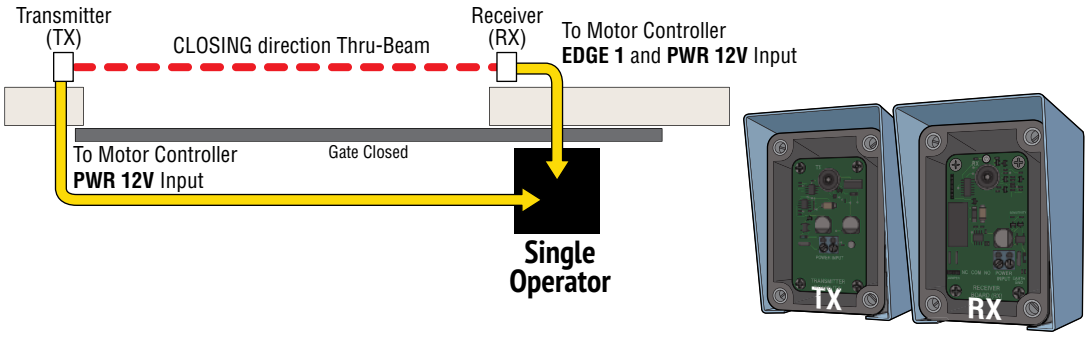
1. Set DIP-switches
2. Remove jumpers JP-5 and JP-6
3. Wire 12V power to photocell **(VRX)**
4. Wire motor controller **EDGE 1** to photocell **NC (Energized)**
   Wire motor controller **GND** to photocell **COM (Energized)**
5. Align photocell to reflector
6. Adjust sensitivity





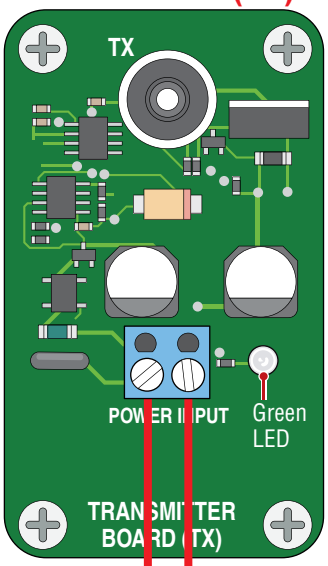
Power NOTE: If photocell does **NOT** function using **VRX** power input, connect power to **VTX** input instead.

EMX IRB-MON Photocell (Thru-Beam) CLOSING Direction Single Gate Operator



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

Transmitter (TX)



Installation Steps:

1. Set DIP-switches on receiver.
2. Install jumper on receiver.
3. Wire **12V** motor controller power to receiver.
4. Wire motor controller **EDGE 1** to receiver photocell **NC.** Wire motor controller **GND** to receiver photocell **COM.**
5. Wire **12V** motor controller power to transmitter.
6. Align photocells.
7. Adjust sensitivity on receiver.

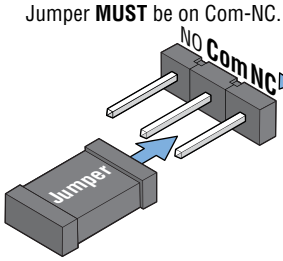
Receiver (RX)

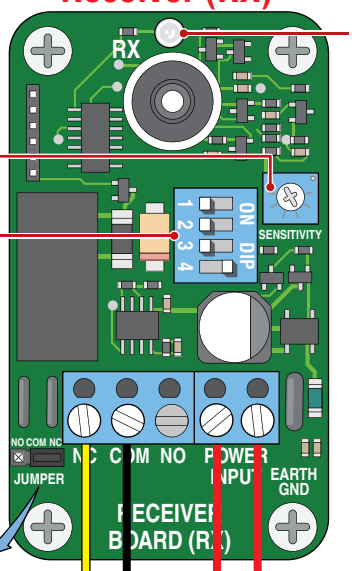
Sensitivity Adjustment: If the photocell does not respond to an obstruction, lower the sensitivity by turning adjustment counter-clockwise.

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

NOTE: Power must be cycled when switches are changed.

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





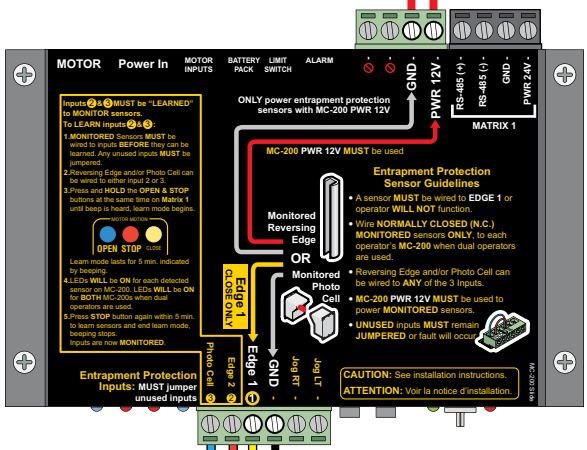
Common-GND

Normally Closed **Edge 1**

PWR 12V
Polarity does **NOT** matter

IMPORTANT: Photocells MUST be powered by Motor Controller or they will **NOT** be **MONITORED**.

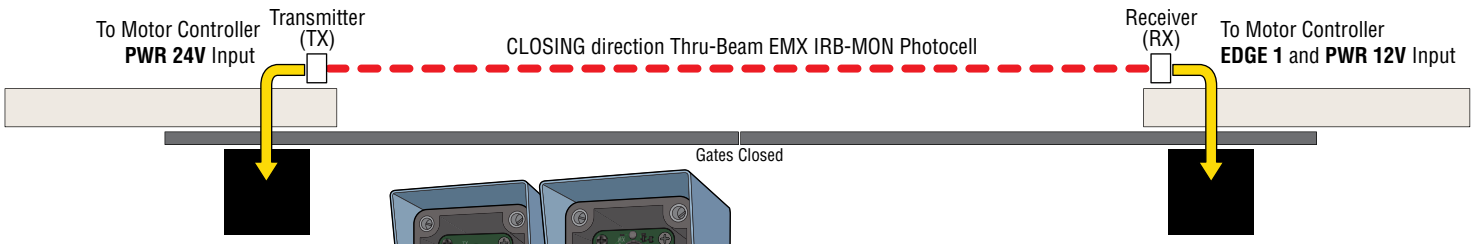
MAX
Motor Controller

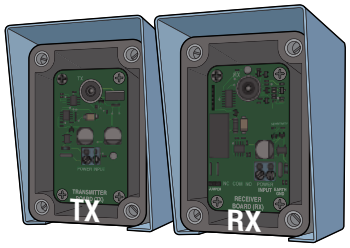


NOTE: To meet the UL 325 2016 standard, Type B1 Non-Contact sensor entrapment protection device MUST be MONITORED by the gate operator.

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

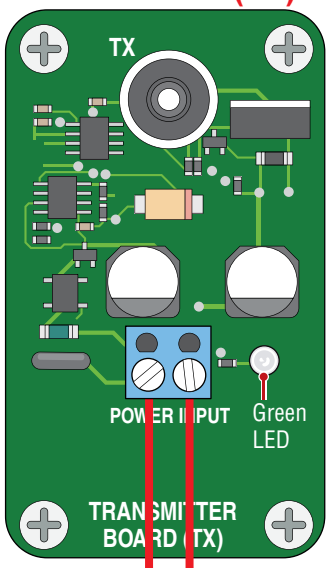
EMX IRB-MON Photocell (Thru-Beam) CLOSING Direction Dual Gate Operators





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

Transmitter (TX)



Installation Steps:

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

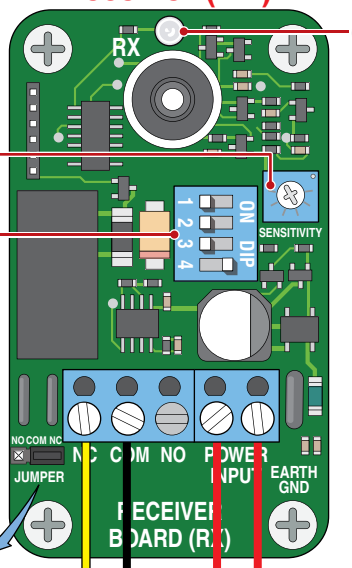
IMPORTANT: Photocells MUST be powered by Motor Controllers or they will **NOT** be **MONITORED**.

Receiver (RX)

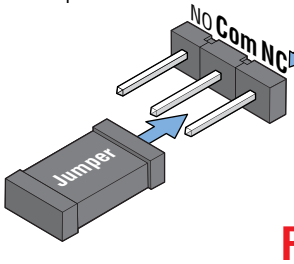
Sensitivity Adjustment: If the IRB-MON does not respond to an obstruction, lower the sensitivity by turning adjustment counter-clockwise.

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

NOTE: Power must be cycled when switches are changed.



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



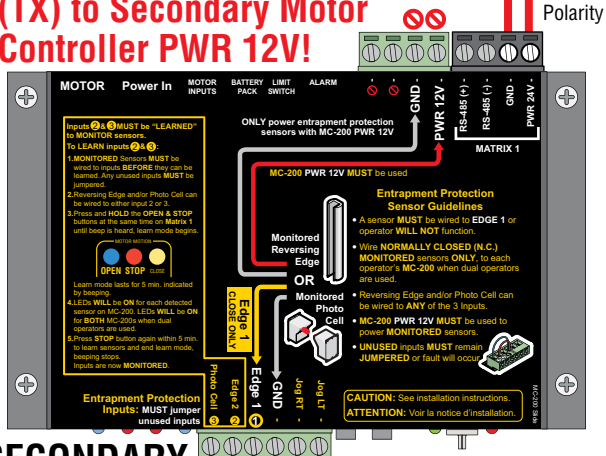
Common-GND

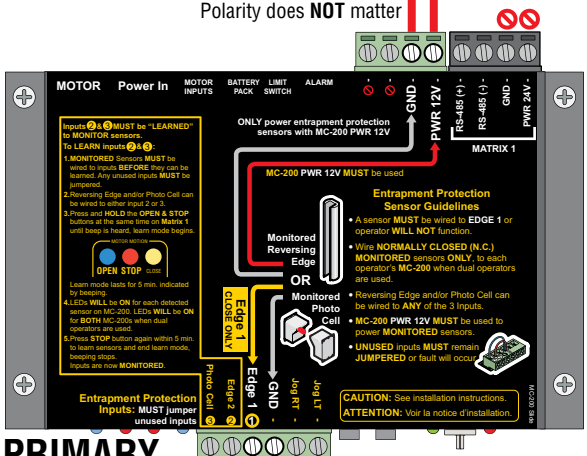
Normally Closed
Edge 1

DO NOT wire Transmitter (TX) to Secondary Motor Controller PWR 12V!

PWR 24V
Polarity does **NOT** matter

PWR 12V
Polarity does **NOT** matter





SECONDARY
Motor Controller

Jumper **ALL** Entrapment Protection Inputs to **GND**.

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

PRIMARY
Motor Controller

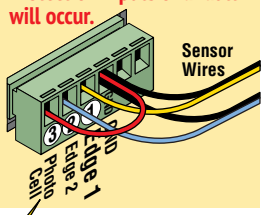
Jumper **UNUSED** Entrapment Protection Inputs to **GND** or a fault will occur.

UL 325 2016 Standard-MAX 1700FS Quick Install Rev 3

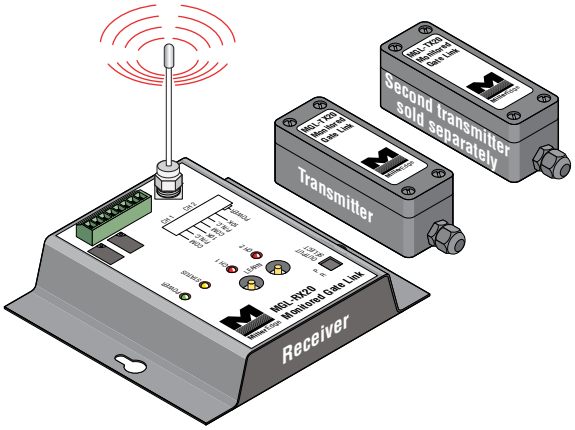
MILLER GATE LINK 2 Channel Wireless Communication

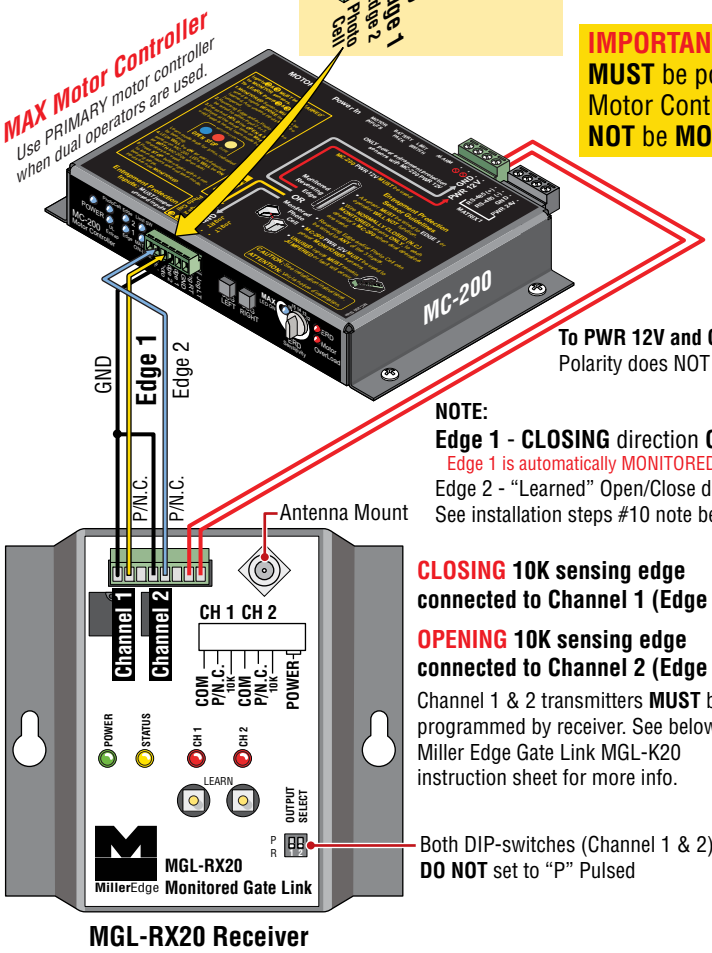
Example: Input 3 is **NOT** used and **MUST** be jumpered to **GND**.

Jumper UNUSED Entrapment Protection Inputs or a fault will occur.



IMPORTANT: Receiver **MUST** be powered by MAX Motor Controller or it will **NOT** be **MONITORED**.





MGL-RX20 Receiver

To PWR 12V and GND
Polarity does NOT matter.

NOTE:
Edge 1 - CLOSING direction **ONLY**
Edge 1 is automatically MONITORED.
Edge 2 - "Learned" Open/Close direction
See installation steps #10 note below.

CLOSING 10K sensing edge connected to Channel 1 (Edge 1).

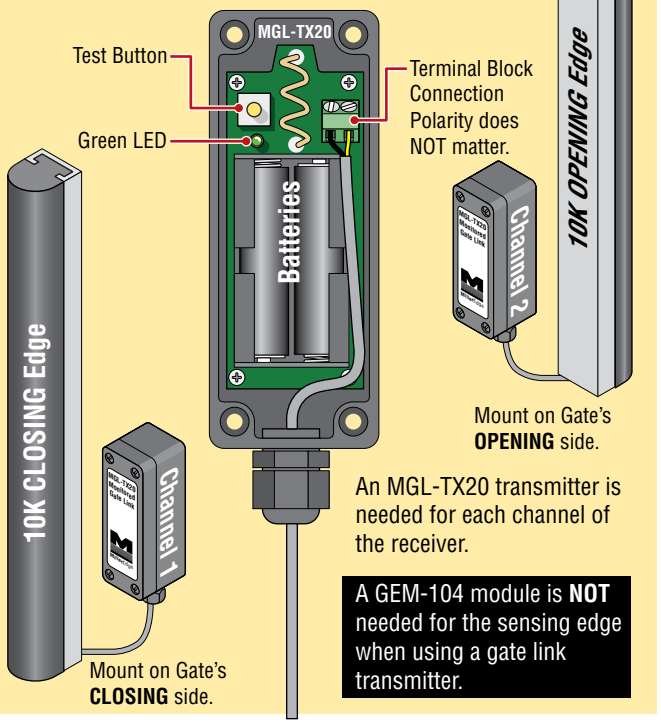
OPENING 10K sensing edge connected to Channel 2 (Edge 2).

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

Wire 10K Edges

MGL-TX20 Transmitter



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

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

Installation Steps:

1. Set Both DIP-switches to "**R**" on receiver
2. Wire 12V power to receiver, polarity does not matter
3. Wire motor controller **EDGE 1** to receiver **CH 1-P/N.C.**
   Wire motor controller **GND** to receiver **CH 1-COM**
4. Wire motor controller **EDGE 2** to receiver **CH 2-P/N.C.**
   Wire motor controller **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 motor controller to "LEARN" Edge 2

NOTE: Edge 2 will function without being "Learned" but will NOT be MONITORED by the MAX gate operator.
See your chosen Max operator manual to program the MAX motor controller to "Learn" Edge 2 if desired.

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.

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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 Slide Gate Operator

Made in USA

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10530 Lawson River Ave
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Version 3