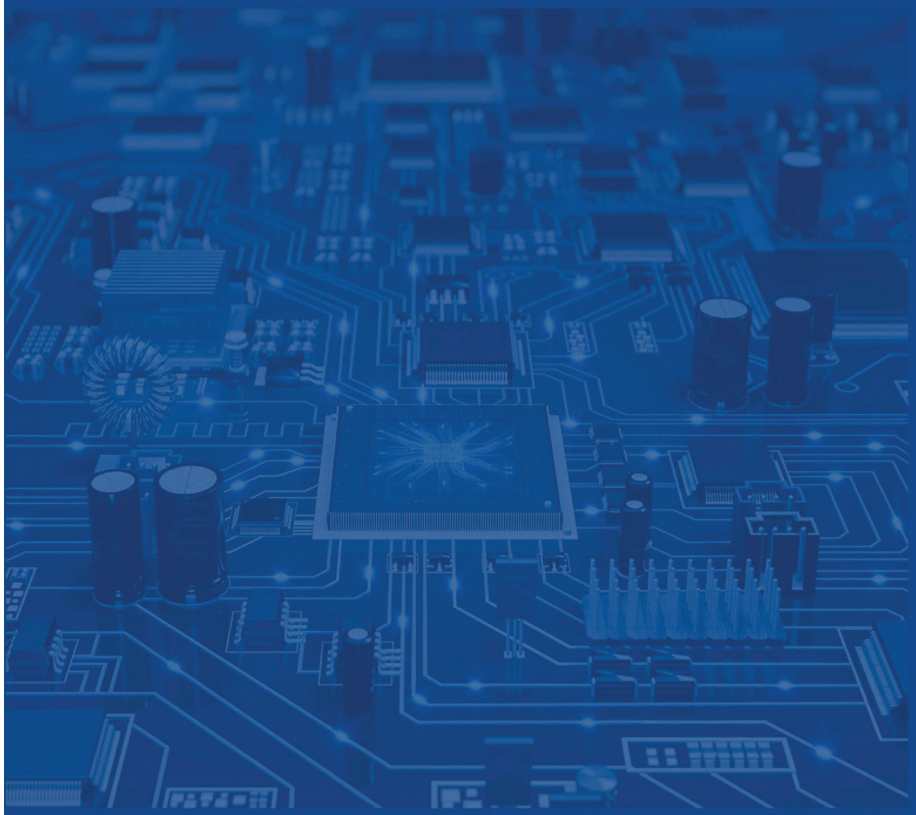
# RAM 2000 • RAM 2100
# OVERHEAD - INSTRUCTION MANUAL

# INSTRUCTION MANUAL

## HIGH TRAFFIC OVERHEAD GATE OPERATORS



**For Class I, II, III, IV Vehicular Gate Operators**

**RAM 2000/2100**
**1/2Hp & 3/4Hp, 115VAC**

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**WARNING**

ONLY A QUALIFIED, EXPERIENCED GATE TECHNICIAN SHOULD SERVICE OR INSTALL THIS OR ANY GATE OPERATOR

## IMPORTANT SAFETY INSTRUCTIONS

WARNING – To reduce the risk of injury or death:

1. READ AND FOLLOW ALL INSTRUCTIONS.

2. Never let children operate or play with gate controls. Keep the remote control away from children.

3. Always keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE.

4. Test the gate operator monthly. The gate MUST reverse on contact with a rigid object or stop when an object activates the non-contact sensors. After adjusting the force or the limit of travel, retest the gate operator. Failure to adjust and retest the gate operator properly can increase the risk of injury or death.

5. Use the emergency release only when the gate is not moving.

6. KEEP GATES PROPERLY MAINTAINED. Read the user's manual. Have a qualified service person make repairs to gate hardware.

7. The entrance is for vehicles only. Pedestrians must use separate entrance.

8. SAVE THESE INSTRUCTIONS.

# IMPORTANT SAFETY REQUIREMENTS BY UL STANDARDS

a) Install the gate operator only when:

1) The operator is appropriate for the construction of the gate and the usage Class of the gate,

2) All openings of a horizontal slide gate are guarded or screened from the bottom of the gate to a minimum of 1.83 m (6 ft) above the ground to prevent a 57.2 mm (2-1/4 inch) diameter sphere from passing through the openings anywhere in the gate, and in that portion of the adjacent fence that the gate covers in the open position,

3) All areas of the moving vertical pivot gate panel from the bottom of the gate to the top of the gate or a minimum of 1.83 m (72 in) above grade, whichever is less, that pass by a fixed stationary object, and in the area of the adjacent fence that the gate covers during the travel of the gate, shall be designed, guarded or screened to prevent a 57 mm (2-1/4 in) diameter sphere from passing through such areas.

4) All exposed pinch points are eliminated or guarded, and

5) Guarding is supplied for exposed rollers.

6) The operator instructions shall list the maximum number of open and close entrapment protection devices capable of being connected to the operator.

b) The operator is intended for installation only on gates used for vehicles. Pedestrians must be supplied with a separate access opening. The pedestrian access opening shall be designed to promote pedestrian usage. Locate the gate such that persons will not come in contact with the vehicular gate during the entire path of travel of the vehicular gate.

c) The gate must be installed in a location so that enough clearance is supplied between the gate and adjacent structures when opening and closing to reduce the risk of entrapment. Swinging gates shall not open into public access areas.

d) The gate must be properly installed and work freely in both directions prior to the installation of the gate operator. Do not over-tighten the operator clutch or pressure relief valve to compensate for an improperly installed, improperly functioning, or damaged gate.

e) For gate operators utilizing Type D protection:

1) The gate operator controls must be placed so that the user has full view of the gate area when the gate is moving,

2) The placard as required by 62.1.6 shall be placed adjacent to the controls,

3) An automatic closing device (such as a timer, loop sensor, or similar device) shall not be employed, and

4) No other activation device shall be connected.

f) Permanently mounted controls intended for user activation must be located at least 1.83 m (6ft) away from any moving part of the gate and where the user is prevented from reaching over, under, around or through the gate to operate the controls.

*Exception: Emergency access controls only accessible by authorized personnel (e.g. fire, police, EMS) may be placed at any location in the line-of-sight of the gate.*

g) The Stop and/or Reset button must be located in the line-of-sight of the gate. Activation of the reset control shall not cause the operator to start.

h) A minimum of two (2) WARNING SIGNS shall be installed, in the area of the gate. Each placard is to be visible by persons located on the side of the gate on which the placard is installed. Also see 62.1.1.

i) For gate operators utilizing a non-contact sensor in accordance with 32.1.1:

1) See instructions on the placement of non-contact sensors for each Type of application,

2) Care shall be exercised to reduce the risk of nuisance tripping, such as when a vehicle, trips the sensor while the gate is still moving, and

3) One or more non-contact sensors shall be located where the risk of entrapment or obstruction exists, such as the perimeter reachable by a moving gate or barrier.

j) For a gate operator utilizing a contact sensor in accordance with 32.1.1:

1) One or more contact sensors shall be located where the risk of entrapment or obstruction exists, such as at the leading edge, trailing edge, and postmounted both inside and outside of a vehicular horizontal slide gate.

2) One or more contact sensors shall be located at the bottom edge of a vehicular vertical lift gate.

3) One or more contact sensors shall be located at the pinch point of a vehicular vertical pivot gate.

4) A hardwired contact sensor shall be located and its wiring arranged so that the communication between the sensor and the gate operator is not subjected to mechanical damage.

5) A wireless device such as one that transmits radio frequency (RF) signals to the gate operator for entrapment protection functions shall be located where the transmission of the signals are not obstructed or impeded by building structures, natural landscaping or similar obstruction. A wireless device shall function under the intended end-use conditions.

6) One or more contact sensors shall be located on the inside and outside leading edge of a swing gate. Additionally, if the bottom edge of a swing gate is greater than 152 mm (6 in) but less than 406 mm (16 in) above the ground at any point in its arc of travel, one or more contact sensors shall be located on the bottom edge.

7) One or more contact sensors shall be located at the bottom edge of a vertical barrier (arm)

# RESPONSIBILITIES OF THE INSTALLER/GATE TECHNICIAN

*** RAMSET GATE OPERATORS SHOULD ONLY BE INSTALLED, MAINTAINED OR SERVICED BY A QUALIFIED, EXPERIENCED GATE TECHNICIAN WITH THE APPROPRIATE TRAINING.

- READ & UNDERSTAND THE INSTRUCTION MANUAL BEFORE STARTING ANY INSTALLATION
- USE THE PROPER OPERATOR. TAKE INTO CONSIDERATION:
  - CATEGORY (SLIDE, SWING OR OVERHEAD)
  - TYPE (STANDARD, UPHILL, COMPACT, CANTILEVER...ETC.)
    - All measurements and capabilities in this manual are for standard installations. All other types of installations alter and lower the capabilities and measurement of this manual.
  - GATE CLASS (I, II, III or IV) see UL gate classification section
  - GATE WEIGHT & TRAVEL
- DO NOT EXCEED THE EQUIPMENTS SPECIFICATION AND CAPABILITIES OF THE OPERATOR AND HARDWARE.
- MAKE SURE THE OPERATOR HAS A SECURE FOUNDATION (see installation specifications section)
- WHEN SERVICING A GATE OPERATOR ALWAYS PERFORM AN INSPECTION OF THE ENTIRE GATE SYSTEM (GATE, GATE OPERATOR, INSTALLATION & ELECTRICAL/WIRING) AND MAKE ANY AND ALL SUGGESTIONS, TO THE PROPERTY OWNER, TO BRING THEIR GATE SYSTEM INTO COMPLIANCE WITH ALL UL 325 AND ASTM F2200 SAFETY STANDARDS.
- A SIGNED WAIVER DOES NOT NULIFY THE INSTALLER/TECHNICIANS LIABILITY DUE TO THE FACT THAT IT HAS NO SUBSTANCE IN LITIGATION INVOLVING AN INJURED PARTY WHO DID NOT SIGN THE WAIVER.
- WHEN NECESSARY, INSTALL SURGE/LIGHTNING SUPPRESSION AND GROUND RODS.
- SAFETY IS THE PRIMARY CONCERN WHEN INSTALLING A GATE OPERATOR.
- MAKE SURE TO FOLLOW ALL UL 325 AND ASTM F2200 SAFETY CODES.
- ANY NON-AUTOMATED GATE THAT IS TO BE AUTOMATED SHALL BE UPGRADED TO CONFORM TO THE ALL ASTM F2200 STANDARDS.
- WHEN THE GATE OPERATOR REQUIRES REPLACEMENT, THE EXISTING GATE SHALL BE UPGRADED TO CONFORM TO ALL ATM F2200 STANDARDS.
- WHEN THE GATE OF AN AUTOMATED GATE SYSTEM REQUIRES REPLACEMENT, THE NEW GATE SHALL CONFORM TO ALL ASTM F2200 STANDARDS.
- ONLY USE UL 325 COMPLIANT ACCESSORIES & EQUIPMENT.
  ONLY USE THE APPROVED ENTRAPMENT PROTECTION DEVICES LISTED IN THIS MANUAL.
  MAKE SURE ALL ENTRAPMENT ZONES ARE PROTECTED BY APPROVED ENTRAPMENT PROTECTION DEVICES.
  ENTRAPMENT ZONE: LOCATIONS BETWEEN A MOVING GATE OR MOVING, EXPOSED OPERATOR COMPONENTS AND A COUNTER OPPOSING EDGE OR SURFACE WHERE ENTRAPMENT IS POSSIBLE UP TO 6 FEET ABOVE GRADE. SUCH LOCATIONS OCCUR IF DURING ANY POINT IN TRAVEL:
  - The gap between the bottom of a moving gate and the ground is greater than 4 in. and less than 16 in.; or
  - The distance between the center line of the pivot and the end of the wall, pillar, or column to which it is mounted when in the open or closed position exceeds 4 in. Any other gap between a moving gate and fixed counter opposing edges or surfaces or other fixed objects is less than 16 in. (examples are walls, curbs, berms or other immovable objects).
- APPROVED ENTRAPMENT PROTECTION DEVICES:
  - EMX NIR 50-325
  - EMX IRB-RET
  - EMX IRB-MON
  - OMRON E3K-R10K4-NR-1
  - MILLER EDGE PRIME-GUARD
  - MILLER EDGE REFLECTI-GUARD
  - SECO-LARM E931-S50RRGQ
  - SECO-LARM E936-S45RRGQ
  - ALLEN BRADLEY 42GRU-9001
  - ALLEN BRADLEY 60-2728
- NO SAFETY DEVICES SHOULD EVER BE BYPASSED, REMOVED OR OMITTED BY THE INSTALLER/TECHNICIAN.
- ALL CONTROLS MUST BE LOCATED AT LEAST 6 FEET AWAY FROM ANY PART OF THE GATE OPERATOR OR MOVING GATE AT ALL TIMES
- INTERIOR CONTROL STATIONS SHOULD BE INSTALLED SO THAT THE USER HAS A DIRECT LINE OF SIGHT TO THE GATE AREA BEING CONTROLLED.
- PHOTOCELLS/EYES SHOULD BE INSTALLED WITHIN 5 INCHES FROM THE GATE PANEL AND A MAXIMUM HEIGHT OF 27.5 INCHES.
  ALL EXPOSED PINCH POINTS ARE ELIMINATED OR GUARDED.
  ALL EXPOSED ROLLERS ARE GUARDED.
  WARNING SIGNS MUST BE PERMANENTLY AFFIXED TO THE GATE PANEL IN A HIGHLY VISIBLE PLACE THAT CAN BE EASILY SEEN FROM BOTH SIDES OF THE GATE.
  FOR PEDESTRIAN ACCESS IN THE VICINITY OF AN AUTOMATED VEHICULAR GATE, A SEPARATE PEDESTRIAN GATE SHALL BE PROVIDED.
  - THE PEDESTRIAN GATE SHALL BE INSTALLED IN A LOCATION SUCH THAT A PEDESTRIAN SHALL NOT COME IN
  - CONTACT WITH A MOVING VEHICULAR ACCESS GATE.
    A PEDESTRIAN GATE SHALL NOT BE INCORPORATED INTO AN AUTOMATED VEHICULAR GATE PANEL.
- POSITIVE STOPS SHALL BE REQUIRED TO LIMIT TRAVEL TO THE DESIGNED FULLY OPEN AND FULLY CLOSED POSITIONS. THESE STOPS SHALL BE INSTALLED AT EITHER THE TOP OF THE GATE, OR AT THE BOTTOM OF THE GATE WHERE SUCH STOPS SHALL HORIZONTALLY OR VERTICALLY PROJECT NO MORE THAN IS REQUIRED TO PERFORM THEIR INTENDED FUNCTION.
- GATES SHALL BE DESIGNED, CONSTRUCTED AND INSTALLED SUCH THAT THEIR MOVEMENT SHALL NOT BE INITIATED BY GRAVITY WHEN AN AUTOMATIC OPERATOR IS DISCONNECTED.
- ALL OPENINGS SHALL BE DESIGNED, GUARDED, OR SCREENED FROM THE BOTTOM OF THE GATE TO THE TOP OF THE GATE OR A MINIMUM OF 72" ABOVE GRADE, WHICHEVER IS LESS, TO PREVENT A 2 ¼" DIAMETER SPHERE FROM PASSING THROUGH THE OPENINGS ANYWHERE IN THE GATE, AND IN THAT PORTION OF THE ADJACENT FENCE THAT THE GATE COVERS IN THE OPEN POSITION. THE GATE PANEL SHALL INCLUDE THE ENTIRE SECTION OF THE MOVING GATE, INCLUDING ANY BACK FRAME OR COUNTERBALANCE PORTION OF THE GATE.

# IMPORTANT INFORMATION FOR THE HOMEOWNER

## WARRANTY INFORMATION:

- COMPLETELY FILL OUT AND MAIL IN (VIA CERTIFIED MAIL) YOUR WARRANTY REGISTRATION CARD WITHIN 90 DAYS OF THE INSTALLATION TO:

  RAMSET AUTOMATIC GATE SYSTEMS, INC.
  9116 DE GARMO AVE
  SUN VALLEY, CA 91352

- READ AND UNDERSTAND YOUR WARRANTY CERTIFICATE. THIS WARRANTIES THE OPERATOR ONLY.
- ASK THE TECHNICIAN WHAT HIS WARRANTY ON SERVICE IS. (LABOR IS NOT COVERED BY RAMSET'S WARRANTY)
- ALL WARRANTY ISSUES/CLAIMS MUST BE REDEEMED BY A GATE TECHNICIAN.

## BEFORE YOUR TECHNICIAN LEAVES:

- ASK YOUR TECHNICIAN ABOUT ALL OF THE FEATURES OF YOUR NEW RAMSET GATE OPERATOR.
- MAKE SURE ALL OF YOUR ACCESSORIES ARE PROPERLY FUNCTIONING (REMOTES, KEYPADS, TELEPHONE ENTRY
- SYSTEMS, EXIT LOOPS, SAFETY LOOPS, PHANTOM LOOPS, EDGE SENSORS...ETC.

  MAKE SURE THAT YOUR TECHNICIAN GIVES YOU THE FOLLOWING DOCUMENTATION THAT IS ENCLOSED WITH EVERY GATE OPERATOR.
  - WARRANTY REGISTRATION CARD
  - WARRANTY CERTIFICATE
  - INSPECTION SHEET
- HAVE YOUR TECHNICIAN GIVE YOU A DEMONSTATION OF HOW TO USE THE EMERGENCY RELEASE.
  - FOOT PEDAL
  - CHAIN DROP
  - HAND LEVER RELEASE
  - HAND TROLLEY RELEASE
- MAKE SURE THAT YOU KNOW WHICH BREAKER IN YOUR BREAKER BOX IS FOR THE GATE OPERATOR.
  - A LABEL IS PROVIDED WITH THE OPERATOR TO CLEARLY MARK THE BREAKER IN THE BREAKER BOX.
- MAKE SURE THE SAFETY PHOTO EYES OR EDGES ARE PROPERLY INSTALLED ON YOUR GATE SYSTEM.
  - 1 PHOTO EYE/EDGE IN THE CLOSING POSITION (ON ALL GATE SYSTEMS)
  - 1 PHOTO EYE/EDGE IN THE OPENING POSITION (ONLY MANDATORY ON SLIDE & OVERHEAD GATE OP ER AT O RS)
- THE ENTRANCE IS FOR VEHICELS ONLY. PEDESTRIANS SHOULD BE PROVIDED A SEPARATE ENTRANCE.
  - THE PEDESTRIAN GATE SHOULD BE LOCATED SO THAT THE MOVING VEHICULAR ACCESS GATE DOES NOT CROSS OR COMES IN CONTACT WITH THE PEDESTRIAN GATE.
  - A PEDESTRIAN GATE SHALL NOT BE INCORPORATED INTO AN AUTOMATED VEHICULAR GATE PANEL.
- A WARNING SIGN MUST BE MOUNTED ON EACH SIDE OF THE GATE (INSIDE AND OUTSIDE) IN A HIGHLY VISIBLE AR EA.

## AFTER YOUR TECHNICIAN LEAVES:

- ALWAYS KEEP A GOOD RELATIONSHIP WITH YOUR TECHNICIAN AND KEEP HIS OR HER NUMBER HANDY FOR FUTURE MAINTENANCE OR EMERGENCIES.
- ALL ISSUES SHOULD BE DIRECTED TO YOUR TECHNICIAN.
- USE THE EMERGENCY RELEASE ONLY WHEN THE GATE IS NOT MOVING. MAKE SURE BEFORE USING THE FOOT
- PEDAL RELEASE, THE CIRCUIT BREAKER FOR THE OPERATOR IS TURNED OFF.
  NO ONE EXCEPT A QUALIFIED, EXPERIENCED GATE TECHNICIAN SHOULD EVER REMOVE THE COVER OR ACCESS
- DOOR FROM THE GATE OPERATOR.
- ONLY A QUALIFIED, EXPERIENCED GATE TECHNICIAN SHOULD WORK ON, REPAIR OR SERVICE THE GATE OPERATOR.
- KEEP GATES PROPERLY MAINTAINED. HAVE A QUALIFIED, EXPERIENCED TECHNICIAN SERVICE THE GATE OPERATOR
- SYSTEM & GATE HARDWARE APPROXIMATELY EVERY SIX MONTHS TO A YEAR.
- FREQUENTLY CHECK ALL SAFETY DEVICES. THIS INCLUDES PHOTO EYES, LOOPS, EDGES & ERD SENSITIVITY.
- FREQUENTLY CHECK YOUR EMERGENCY RELEASE AND BATTERY BACK-UP SYSTEM (IF APPLICABLE) FOR PROPER
- OPERATION.
- NEVER LET CHILDREN OPERATE OR PLAY WITH GATE CONTROLS. KEEP THE CONTROLS AWAY FROM CHILDREN.
- NEVER LET CHILDREN PLAY IN THE AREA AROUND THE GATE OR GATE OPERATOR.
- NEVER LET ANYONE RIDE, CLIMB UNDER OR CLIMB OVER THE GATE.
- ALWAYS KEEP PEOPLE, CHILDREN AND OBJECTS AWAY FROM THE GATE WHILE THE GATE IS IN OPERATION.
- NO ONE SHOULD CROSS THE AREA OF A MOVING GATE.

  KEEP THE AREA AROUND THE GATE OPERATOR CLEAN AND FREE OF DEBRIS.
  KEEP THE AREA AROUND THE GATE OPERATOR FREE FROM INSECTS AND RODENTS. INSECTS AND RODENT CAN CAUSE DAMAGE TO THE GATE OPERATOR WHICH IS NOT COVERED BY THE WARRANTY.

## UL GATE CLASSIFICATION

CLASS I – Residential Vehicular Gate Operator – A vehicular gate operator (or system) intended for use in garages or parking areas associated with a residence of one-to four single families.

CLASS II – Commercial/General Access Vehicular Gate Operator – A vehicular gate operator (or system) intended for use in a commercial location or building such as a multi-family housing unit (five or more single family units), hotel, garages, retail store, or other buildings accessible by or servicing the general public.

CLASS III – Industrial/Limited Access Vehicular Gate Operator – A vehicular gate operator (or system) intended for use in an industrial location or building such as a factory or loading dock area or other locations not accessible by or intended to service the general public.

CLASS IV – Restricted Access Vehicular Gate Operator – A vehicular gate operator (or system) intended for use in a guarded industrial location or building such as an airport security area or other restricted access locations not servicing the general public, in which unauthorized access is prevented via supervision by security personnel.

## GENERAL SPECIFICATIONS

| MODEL | RAM 2000-1/2Hp |
|---|---|
| MAX GATE WEIGHT | 500 LBS |
| MAX GATE LENGTH | 20 |
| MOTOR | 1/2Hp, 115VAC, 4.5A, 1625 rpm |
| CAPACITOR | 65uf, 240V, 50/60 Hz |
| DUTY CYCLE | CONTINUOUS |
| APPLICATION | RES/COM/IND |
| CHASSIS & PLATING | 1/4" GOLD/ZINC PLATED |
| EMERGENCY RELEASE | HAND PULL |
| OVERALL DIMENSIONS | 10" x 143" x 13" |
| SHIPPING WEIGHT | 125 lbs. |
| BBS SYSTEM (SOLD SEPARATELY) | RPI-TL 1250 |

## RECOMMENDED ELECTRICAL CONNECTION

A 3-wire, 115VAC electrical circuit with a 15 amps independent (dedicated) circuit breaker for single operator and a 20 amps for Primary/Secondary. Ideally, the electrical conduits should exit the concrete under the operator. Low voltage control wires must be run in a separate conduit to the operator.

NOTE: ALWAYS CONSULT AND FOLLOW ALL LOCAL BUILDING AND ELECTRICAL CODES PRIOR TO INSTALLATION.
PERMANENT WIRING IS TO BE EMPLOYED AS REQUIRED BY LOCAL CODES.
GROUNDING THE OPERATOR IS ESSENTIAL FOR SAFETY AND PROPER OPERATION.

## RECOMMENDED WIRE GAUGE

| MODEL | HP | VOLTS (AC) | RUN | START |
|---|---|---|---|---|
| R2000 | 1/2 | 115 | 4.5A | 5.0A |

| 12 GA | 10 GA | 8 GA | 6GA |
|---|---|---|---|
| up to 225' | 226-370' | 371-550' | 551-925' |

## ENTRAPMENT AND SAFETY PROTECTION

Included with every overhead gate operator, there are 2 entrapment protection photo eyes. (2 - EMX NIR 50-325)
Every overhead gate operator needs to have a minimum of 2 entrapment protection device.
A maximum of 10 entrapment protection devices may be connected to your operator, depending on direction of travel and type of device.
Since every installation is different, it is up to a qualified, trained technician to make sure that ALL entrapment areas are protected by an entrapment protection device.
It is also up to a qualified, trained technician to determine what types and how many devices are needed.

VERTICAL PIVOT GATE
Entrapment protection types
A, B1, B2 or D

Note: The same type of device shall not be utilized for both entrapment protection means.

Type A – Inherent entrapment protection system.
Type B1 – Non-contact sensor (photoelectric sensor or the equivalent).
Type B2 – Contact sensor (edge device or the equivalent).
Type D – Actuating device requiring continuous pressure to maintain opening or closing motion of the gate.

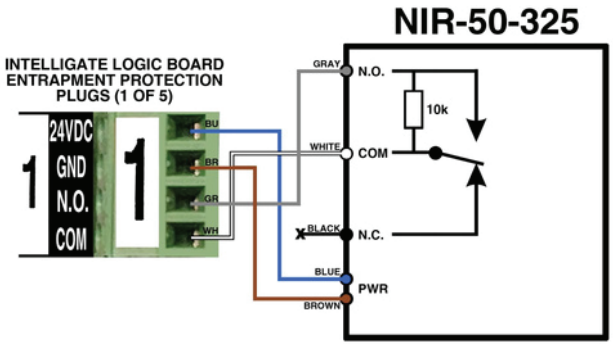
| Minimum Quantity of Entrapment Protection Means | | |
|---|---|---|
| | Opening | Closing |
| VERTICAL PIVOT GATE OPERATOR | 2* | 2* |

15.4.8 Cable supplied with the operator for connection of a Class 2 circuit to an external device, and cable supplied with an
external device intended for connection to a Class 2 circuit of an operator shall be:

a) Type CL2, CL2P, CL2R or CL2X complying with the Standard for Power-Limited Circuit Cables, referenced in Annex A, Ref. No 12, or
b) Other cable with equivalent or better electrical, mechanical, and flammability ratings; or
c) Cable that is a factory-connected integral part of a Class 2 power supply complying with the Standard for Class 2 Power Units, referenced in Annex A, Ref. No. 13, or a Class 2 transformer complying with the Standard for low voltage Transformers – Part 3: Class 2 and Class 3 Transformers, referenced in Annex A, Ref. No. 11, or an LPS (Limited Power Source) supply complying the Standard for Information Technology Equipment – Safety – Part 1: General Requirements, referenced in Annex A, Ref. No. 14

## EMX – NIR 50-325 – Enclosed Photo Eyes Instructions

- Read, understand and follow the enclosed manual for the 2 entrapment protection devices.
- Wiring diagram:



# ENTRAPMENT PROTECTION AREA

ENTRAPMENT ZONE: Locations between a moving gate and a counter opposing edge or surface where entrapment is possible up to 6 ft. above grade. Such locations occur if during any point in travel the gap between a moving gate and fixed counter opposing edges or surfaces is less than 16 inches.

A MAXIMUM OF 10 ENTRAPMENT PROTECTION DEVICES MAY BE CONNECTED TO YOUR OPERATOR (DEPENDING ON DIRECTION OF TRAVEL PROTECTED AND TYPE OF DEVICE)

MAKE SURE ALL ENTRAPMENT ZONES ARE PROTECTED BY AN APPROVED ENTRAPMENT PROTECTION DEVICE.

APPROVED ENTRAPMENT PROTECTION DEVICES:

PHOTO EYES:

- EMX NIR 50-325
- EMX IRB-RET
- OMRON E3K-R10K4-NR-1
- TRANSMITTER SOLUTIONS
- IGAZE50LR-UL

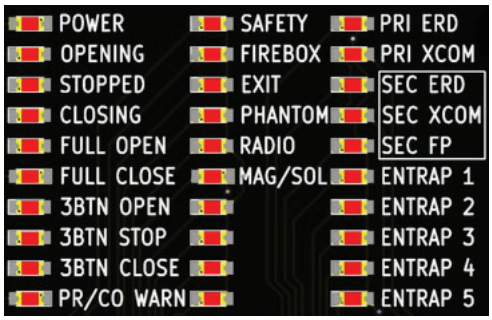
EDGE SENSORS:

- MILLER EDGE – RBAND GATE KIT – RB-G-K10
- MILLER EDGE – PRIME GUARD
- MILLER EDGE – REFLECTI-GUARD
- SECO-LARM "ENFORCER" – E931-S50RRGQ
- SECO-LARM "ENFORCER" – E936-S45RRGQ
- SECO-LARM "ENFORCER" – D90GQ


VERTICAL PIVOT GATE ENTRAPMENT ZONE– Locations between a moving gate or exposed operator components and a counter opposing edge or surface where entrapment is possible. Such locations occur when the gap between a moving gate and fixed counter opposing edges or surfaces, other than the ground or floor at the bottom of the gate, is greater than 2.25 in. and less than 16 in., or when the gap between a moving gate and fixed counter opposing edges or surfaces at the bottom of the gate is less than 16 in.

# INTELLIGATE L.E.D. LAYOUT

## LOGIC BOARD LAYOUT

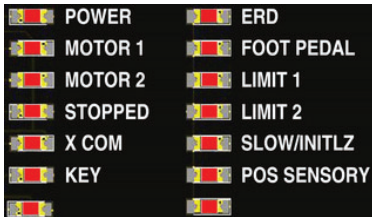



1. POWER – 24V is present.
2. OPENING – Gate is opening.
3. STOPPED – Gate is stopped.
4. CLOSING – Gate is closing.
5. FULL OPEN – Gate is fully open.
6. FULL CLOSE – Gate is fully closed.
7. 3BTN OPEN – 3 Button Station 'OPEN' is being triggered.
8. 3BTN STOP – 3 Button Station 'STOP' is being triggered.
9. 3BTN CLOSE – 3 Button Station 'CLOSE' is being triggered.
10. PR/CO WARN – Pre Warn / Constant Warn relay is active.
11. SAFETY – Safety device is being triggered.
12. FIRE BOX – Fire box device is being triggered.
13. EXIT – Exit device is being triggered.
14. PHANTOM – Phantom device is being triggered.
15. RADIO – Radio device is being triggered.
16. MAG/SOL – Magnetic Lock / Solenoid relay is active.
17. PRI ERD – ERD on the primary unit is being triggered.
18. PRI XCOM – Primary Communication is sending/receiving a signal.
19. SEC ERD – ERD on the secondary unit is being triggered.
20. SEC XCOM – Communication is sending/receiving a signal on the secondary unit.
21. SEC FP – The foot pedal switch on the secondary unit is down (manual mode).
22. ENTRAP 1 – Entrapment device in ENTRAP 1 is being triggered.
23. ENTRAP 2 – Entrapment device in ENTRAP 2 is being triggered.
24. ENTRAP 3 – Entrapment device in ENTRAP 3 is being triggered.
25. ENTRAP 4 – Entrapment device in ENTRAP 4 is being triggered.
26. ENTRAP 5 – Entrapment device in ENTRAP 5 is being triggered.

ENTRAP 1 – 5
Solid = Triggered
Blinking = Disconnected

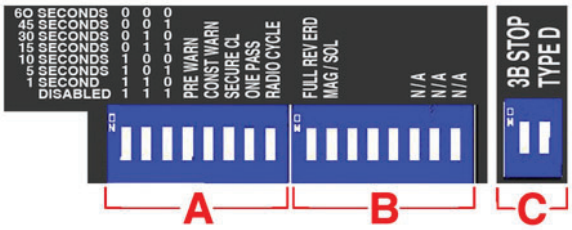
ALL LED'S BLINKING =
Entrapment protection learn mode

## DRIVER BOARD LED LAYOUT




1. POWER – 24V is present.
2. MOTOR 1 – Motor is running.
3. MOTOR 2 – Motor is running.
4. STOPPED – Gate is stopped.
5. X COM – Communication received.
6. KEY – Emergency key is triggered.
7. ERD – Obstruction is being sensed.
8. FOOT PEDAL – Foot pedal is down.
9. LIMIT 1 – Gate is on the limit.
10. LIMIT 2 – Gate is on the limit.
11. SLOW/INITLZ – Slowdown is initialized.
12. POS SENSORY – Position sensor is triggered.

# INTELLIGATE LOGIC BOARD DIP SWITCHES - FUNCTIONS




## DIP SWITCH 'A'

### 'A' 1, 2 & 3 - AUTOMATIC CLOSE TIMER

'0' is "OFF" | '1' is "ON"

| Switch 1 2 3 | Gate Open Duration |
|---|---|
| 0 0 0 | Disabled |
| 0 0 1 | 00 Seconds |
| 0 1 0 | 5 seconds |
| 0 1 1 | 10 seconds |
| 1 0 0 | 15 seconds |
| 1 0 1 | 30 seconds |
| 1 1 0 | 45 seconds |
| 1 1 1 | 60 Seconds |

### 'A' 4 -PRE WARN ALARM

| | |
|---|---|
| OFF | Normal operation |
| ON | triggers a closed contact between con/pre warn plug (on relay connections plug) for 3 seconds before the gate moves in any direction. |

### 'A' 5 - CONSTANT WARN ALARM

| | |
|---|---|
| OFF | Normal operation |
| ON | Triggers a closed contact between con/pre warn inputs (on relay connections plug) whenever the motor is running. |

*** If both 'A' 4 & 'A' 5 are "on" then a closed contact will occur for the 3 seconds before and as the motor is running.**

### 'A' 6 - SECURE CLOSE

| | |
|---|---|
| OFF | Normal operation |
| ON | When power is lost and then regained, if all devices are clear and it's safe, the gate will close. |

### 'A' 7 - ONE PASS

| | |
|---|---|
| OFF | Normal operation |
| ON | While the gate is opening, if the safety input is triggered and then cleared, the gate will immediately start closing. If the safety input is then activated again, before the gate is fully closed, the gate will stop and stay at rest until the safety loop is cleared. At any time if a valid open signal is received, the gate will open. |

### 'A' 8 - RADIO CYCLE

| | |
|---|---|
| OFF | Gate will open, if on the close limit, and close, if on the open limit. If in travel, the gate will always open or continue to open. |
| ON | Gate will open, if on the close limit, and close, if on the open limit. If in travel, the gate will stop with the first command and then reverse with a second command. |

## DIP SWITCH 'B'

### 'B' 1 - Full Reverse ERD

| | |
|---|---|
| OFF | Normal Operation. If an obstruction is sensed:<br>If opening, the gate will stop & reverse for 1 sec.<br>If closing, the gate will stop & reverse for 1 sec. |
| ON | If an obstruction is sensed:<br>If opening, gate will stop and reverse for 1 second<br>If closing, gate will stop & reverse until fully open |

### 'B' 2 - Magnetic/Solenoid Lock

| | |
|---|---|
| OFF | Magnetic Lock<br>Mag/Sol relay is shorted when the gate is closing and closed. |
| ON | Solenoid Lock<br>Mag/Sol relay is shorted for 2 seconds when the gate starts to open. |

## DIP SWITCH 'C'

### 'C' 1 - 3B STOP

| | |
|---|---|
| OFF | 3-button station is active. A normally-closed contact switch must be present between 'common' and 'stop'. |
| ON | 3-button station is bypassed. No connection between 'common' and 'stop' is needed. |

### 'C' 2 - TYPE D

| | |
|---|---|
| OFF | Type D device* is not being used to meet UL325 standards. |
| ON | Type D device* is being used to meet UL325 standards. |

*Type D device - A pushbutton or equivalent that requires maintained pressure for activation.

**For gate operators utilizing Type D protection:**

1) The gate operator controls must be placed so that the user has full view of the gate area when the gate is moving,
2) The placard as required by 62.1.6 shall be placed adjacent to the controls,
3) An automatic closing device (such as a timer, loop sensor, or similar device) shall not be employed, and
4) No other activation device shall be connected.

## PUSHBUTTONS


**E.P. LEARN - ENTRAPMENT PROTECTION LEARN BUTTON**

Activates the entrapment protection learning process. This button is to be pressed after the entrapment protection devices are connected to the board. During this process, the LEDs will blink. The processor will check for devices connected. Once this process is complete the LEDs will return to normal operation and the processor will monitor for the 'learned' devices connected. (For further information, see the entrapment protection section of this manual).


**SLOW LEARN - SLOW LEARN BUTTON**

Not in use at this time.

# INTELLIGATE LOGIC BOARD ENTRAPMENT PROTECTION DIP SWITCHES

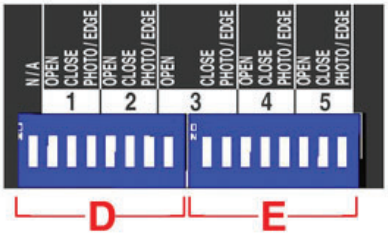
## SETUP FOR MONITORED ENTRAPMENT PROTECTION DEVICES

1. CONNECT THE ENTRAPMENT DEVICE TO PLUGS #1 THRU 5 [FIGURE 4]. ALL 4 WIRES MUST BE CONNECTED TO THE PLUGS.
2. USING THE CORRESPONDING DIP SWITCHES D & E (#1 THRU 5) [FIGURE 1], CHOOSE THE DIRECTION & TYPE OF ENTRAPMENT PROTECTION BEING USED [FIGURE 2].
3. CONTINUE STEPS 1 & 2 UNTIL ALL ENTRAPMENT PROTECTION DEVICES ARE CONNECTED.
4. PRESS AND HOLD THE 'E.P. LEARN' BUTTON [FIGURE 3] UNTIL ALL THE LEDS FLASH.
5. RELEASE THE 'E.P. LEARN' BUTTON. THE LEDS WILL CONTINUE TO FLASH DURING THE LEARN CYCLE. THIS ALLOWS THE PROCESSOR TO SEE HOW MANY DEVICES ARE PRESENT TO BE MONITORED.
5. ONCE THE LIGHTS STOP FLASHING, THE BOARD IS NOW OPERATIONAL.
6. THESE STEPS MUST BE FOLLOWED ANY TIME A NEW ENTRAPMENT DEVICE IS CONNECTED, REMOVED OR REPLACED.

note: Devices can be doubled up on each plug (#1 thru 5) as long as it is the same direction and type of device.

### ENTRAPMENT PROTECTION

FIGURE 1




**DIP SWITCH 'D' & 'E'**

| 'D' 1 - N/A (NOT USED AT THIS TIME) | |
|---|---|
| OFF | Keep this in the 'down' position. |
| ON | N/A - Not used at this time. |

**'D' 2 thru 8, 'E' 1 thru 8**

Dip Switch 'C' & 'D', #1 thru #5 correspond with JP18 thru JP22, #1 thru #5. (see plug config)

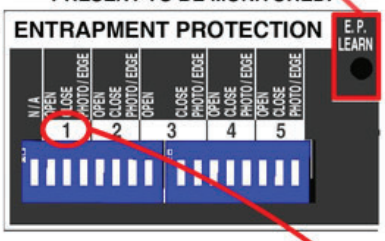
FIGURE 2

| OPEN | CLOSE | PHOTO/ EDGE | DEVICE & LOCATION |
|---|---|---|---|
| OFF | OFF | OFF | NO DEVICE CONNECTED |
| ON | OFF | OFF | EDGE ON OPENING |
| OFF | ON | OFF | EDGE ON CLOSING |
| ON | ON | OFF | EDGE ON OPENING & CLOSING |
| OFF | OFF | ON | NO DEVICE CONNECTED |
| ON | OFF | ON | PHOTO EYE ON OPENING |
| OFF | ON | ON | PHOTO EYE ON CLOSING |
| ON | ON | ON | PHOTO EYE ON OPENING & CLOSING |

* "ON" - Switch Up
"OFF" - Switch down

TO 'LEARN' THE MONITORED ENTRAPMENT PROTECTION, THE "E.P. LEARN" MUST BE PUSHED. THIS ALLOWS THE PROCESSOR TO SEE WHAT DEVICES ARE PRESENT TO BE MONITORED.

FIGURE 3




OPEN - USED TO PROTECT IN THE OPENING CYCLE
CLOSE - USED TO PROTECT IN THE CLOSING CYCLE
PHOTO/EDGE - DIFFERENTIATES BETWEEN A PHOTO EYE AND AN EDGE CONNECTOR.
(*VERY IMPORTANT - PHOTO EYES REACT DIFFERENTLY THAN EDGE CONNECTORS)

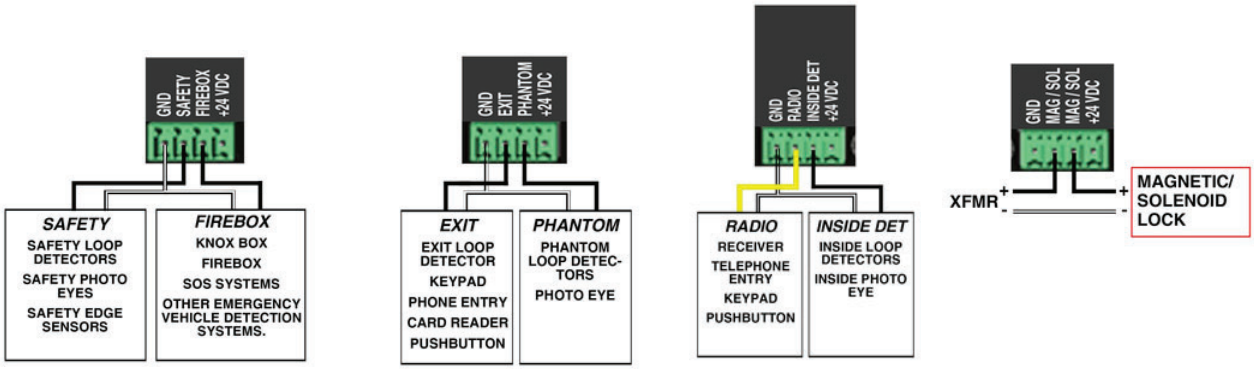
FIGURE 4


4-WIRE CONNECTION - ALL 4 WIRES MUST BE CONNECTED FOR THE ENTRAPMENT PROTECTION DEVICE TO WORK.

TWO DEVICES CAN BE CONNECTED IN PARALLEL AS LONG AS:
- BOTH DEVICES ARE PROTECTING THE SAME DIRECTION OF TRAVEL.
- BOTH DEVICES ARE THE SAME KIND. (PHOTO EYE OR EDGE SENSOR).

A MAXIMUM OF 10 ENTRAPMENT PROTECTION DEVICES CAN BE CONNECTED TO THE GATE OPERATOR (DEPENDING ON THE DIRECTION OF TRAVEL AND TYPE)

# INTELLIGATE LOGIC BOARD PLUGS




*SAFETY* - Used to stop the gate from closing. Holds the gate open when maintained. This is a non-monitored connection. Monitored connections should be connected to the entrapment protection plugs.

*FIREBOX* - Used to open the gate for emergency vehicles. Requires a maintained signal. Overrides all safety devices.
*ONLY USE FOR EMERGENCY VEHICLES.

*EXIT* - Used to open the gate and/or hold the gate open.

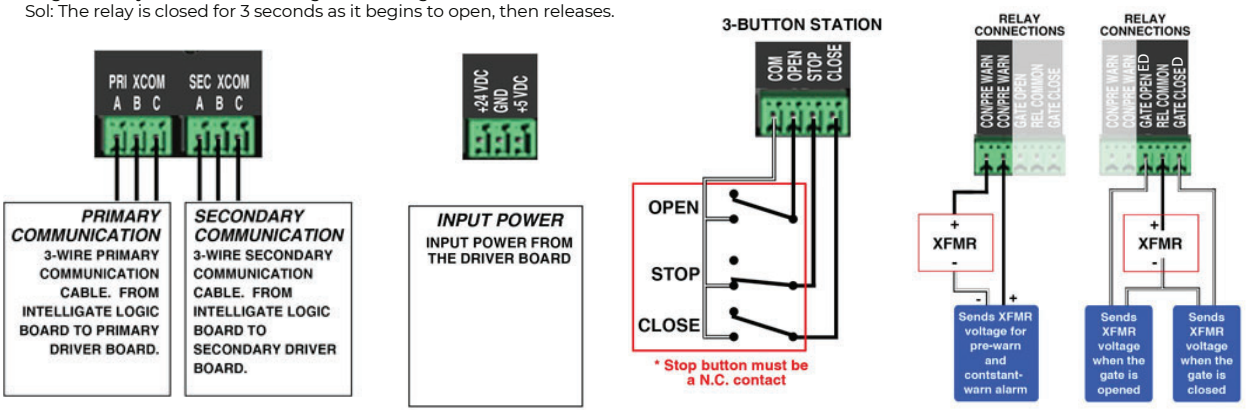
*PHANTOM* - Used to hold the gate open when it's on the open limit. Once the gate starts to close this has no effect. Works with a loop detector or photo eye to cover the area that the gate travels over.

*RADIO* - Used to open, stop & close the gate.

*INSIDE DET* - Used to stop a swing gate from opening and hitting an obstruction. Usually works with a photo eye installed on the inside of the property. When triggered, the gate will stop and wait until the detector is cleared. Once the detector is cleared, the gate will then continue to open.

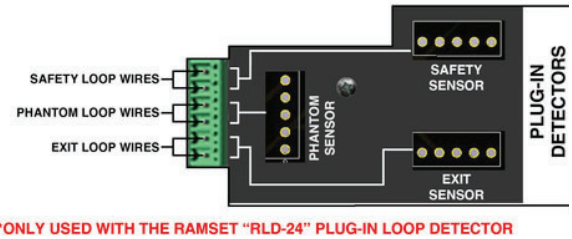
*MAG /SO L*- Used with a magnetic or solenoid lock. See dip switch 'B4'. This is a relay output. A separate transformer or power source is needed to work with this connection.

Mag: The relay is closed when the gate is closing or closed.
Sol: The relay is closed for 3 seconds as it begins to open, then releases.




PRIMARY XCOM - Primary Communications. Communication between the logic board and the primary driver board.
SECONCARY XCOM - 3-Wire communications between the logic board and the secondary unit. Only used in bi-parting applications.
INPUT POWER - Low voltage input power to the logic board. 3-wire harness from the driver board.
3-BUTTON - Used with a 3-button station. The open & close are normally open connections, whereas, the stop is a normally closed connection. When an entrapment protection device is triggered, the 3-button station can move the gate with constant pressure.
RELAY CONNECTION - Relay outputs for external devices such as lights, buzzers, alarms...etc.

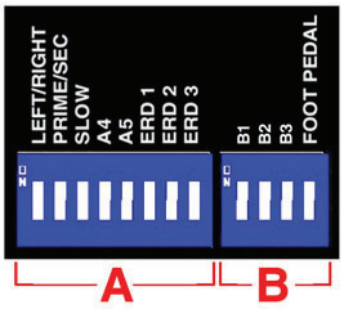
1) Constant/Pre Warn - Function decided by dip switch A3 & A4.
   Constant warn only (A5 is 'on') - Closed contact when gate is moving.
   Pre Warn only (A4 is 'on') - Adds a 3 second delay on any movement. Closed contact for 3 seconds before any movement.
   Constant & Pre Warn (A4 & A5 are 'on') - Adds a 3 second delay on any movement. Closed contact for 3 seconds before movement and during movement.
2) Gate Open - Closed contact between relay com and Gate opened when gate is open.
3) Gate Closed - Closed contact between relay com and gate closed when gate is closed.




**ONLY USED WITH THE RAMSET "RLD-24" PLUG-IN LOOP DETECTOR

SAFETY LOOP WIRES, PHANTOM LOOP WIRES & EXIT LOOP WIRES - When using an RLD-24 plug-in loop detector use these plugs for the loop wires that correspond to the type of loop. If connecting more than 1 loop, then put the loops in series.

# INTELLIGATE DRIVER BOARD DIP SWITCHES, PUSHBUTTONS & DIALS




## DIP SWITCH 'A'

| 'A' 1 -Left/Right | |
|---|---|
| OFF | Left Hand Installation |
| ON | Right Hand Installation |

**Point of view - Standing on the same side of the gate the operator is installed on, looking through the gate opening.**

| 'A' 2 - Primary/Secondary | |
|---|---|
| OFF | Primary Gate Operator |
| ON | Secondary Gate Operator |

| 'A' 3 - Slow | |
|---|---|
| OFF | Normal operation |
| ON | SLOW - Activates the slow start and stop features. see Slow start & stop dials. *ONLY USED ON THE "ALL SECURE" MODELS |

| 'A' 4 & 'A' 5 - Not used at this time | |
|---|---|
| OFF | Normal operation |
| ON | Normal operation |

**'A' 6, 7 & 8 - ERD 1, ERD2 & ERD 3**

'0' is "OFF" '1' is "ON"

| Switch 1 2 3 | Gate Open Duration |
|---|---|
| 0 0 0 | Most Sensitive - Lighter Gates |
| 0 0 1 | |
| 0 1 0 | |
| 0 1 1 | |
| 1 0 0 | |
| 1 0 1 | |
| 1 1 0 | |
| 1 1 1 | Least Sensitive - Heavier Gates |

## DIP SWITCH 'B'

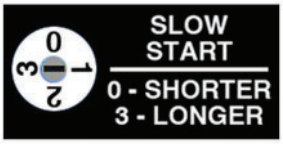
| 'B' 1, 2 & 3 - NOT USED AT THIS TIME | |
|---|---|
| OFF | Normal operation |
| ON | Normal operation |

| 'B' 4 - FOOT PEDAL | |
|---|---|
| OFF | Activates foot pedal switch. If foot pedal is down, unit will not run. |
| ON | Bypasses foot pedal switch. Used when a foot pedal (switch) is not present. Ram 50GB, 5000s, 30, 302, 3000s, 3030s & 2000s |


**OPEN** - Opens the gate. Also, if maintained, overrides the entrapment protection devices.

**STOP** - Stops the gate.

**CLOSE** - Closes the gate. Also, if maintainted, overrides the entrapment protection devices.



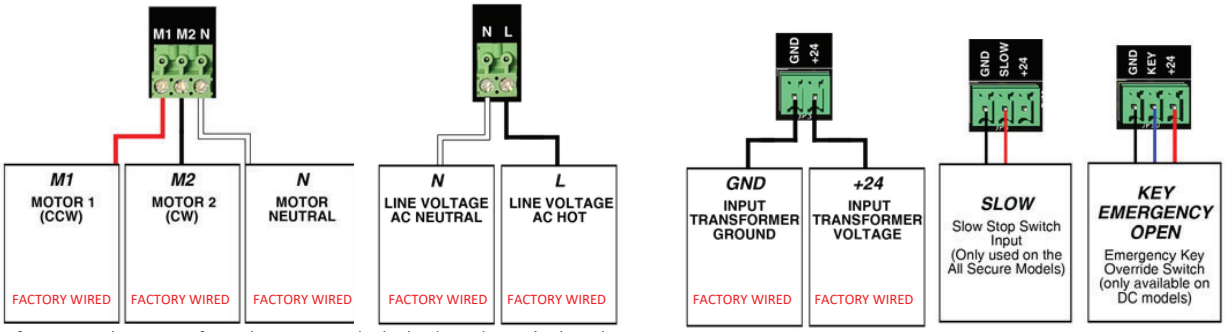

**Sets the amount of time it will take the motor to ramp up to full speed.**

**0 - Shortest time. Ramps up fast.**
**to**
**3 - Longest time. Ramps up slower.**

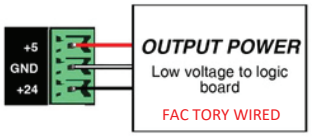

**Sets the amount of time it will take the motor to ramp up to full speed.**

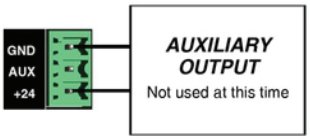
**0 - Shortest time. Ramps up fast.**
**to**
**3 - Longest time. Ramps up slower.**

# INTELLIGATE DRIVER BOARD PLUGS

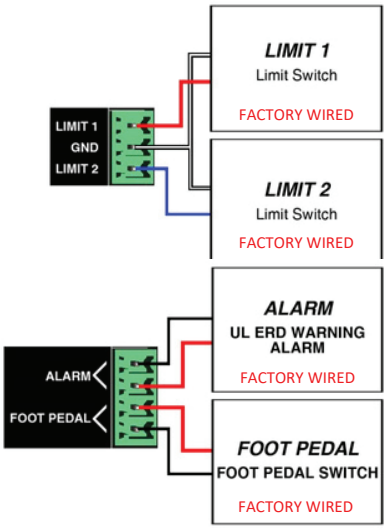


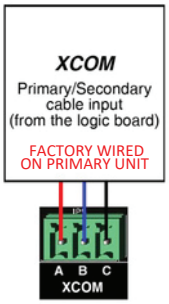

*M1* – 1 of 3 motor wires. Input from the counter-clockwise (CCW) terminal on the motor.
*M2* – 1 of 3 motor wires. Input from the clockwise (CW) terminal on the motor.
*MN* – 1 of 3 motor wires. Input from the neutral/line/common terminal on the motor.
*N* – Input high voltage neutral (115VAC or 230VAC).
*L* – Input high voltage Line/Hot (115VAC or 230VAC).
*GND* – Input low voltage power input ground/negative (from transformer).
*+24* – Input low voltage power input positive (from transformer).
*SLOW* – Input for the slow stop switch (only on the All Secure Models). Activates slow stop.
*KEY EMERGENCY OPEN* – Input for the emergency key opening switch. Located on the operator, this input is for a key switch that will move the gate when power is lost (only available on DC models).




*OUTPUT POWER* – Output low voltage power. Supply voltage to the logic board.
*AUXILIARY OUTPUT* – Not used at this time.
*LIMIT 1* – Input for a limit switch (Limit direction controlled by Left/Right dip switch). When shorted, stops the gate from moving in the assigned direction.
*LIMIT 2* – Input for a limit switch. (Limit direction controlled by Left/Right dip switch). When shorted, stops the gate from moving in the assigned direction.
*ALARM* – UL ERD warning alarm. Connects to the supplied alarm that sounds when an obstruction has been sensed twice in one travel. When triggered, the output of this plug is 24VDC.
*FOOT PEDAL* – Input for the foot pedal switch located on the foot pedal assembly. When triggered open, this puts gate operator into manual mode. When triggered short, this puts the gate operator into automatic mode.
*XCOM* – Input for the primary/secondary communication from the logic control board. The Prim/Sec switch differentiates between the primary and secondary gate.



# LOGIC PCB TO AC DRIVER PCB - FACTORY WIRING