



INSTALLATION INSTRUCTIONS AND SAFETY INFORMATION

FOR THE VIKING SINGLE & MASTER/SLAVE ECU



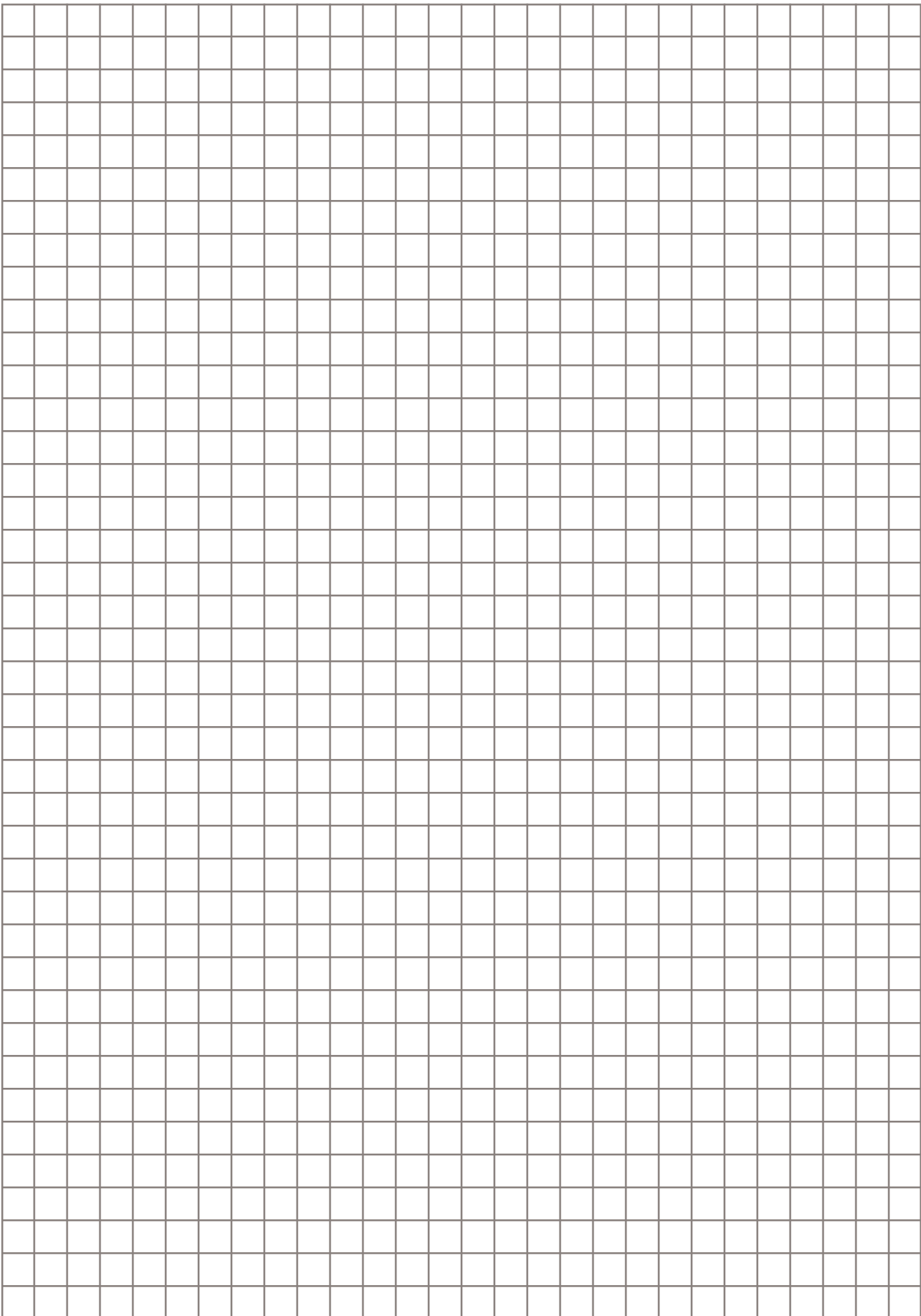
CLASS II, CLASS III, AND CLASS IV
**Commercial/Residential Vehicular
Swing Gate Control Unit**



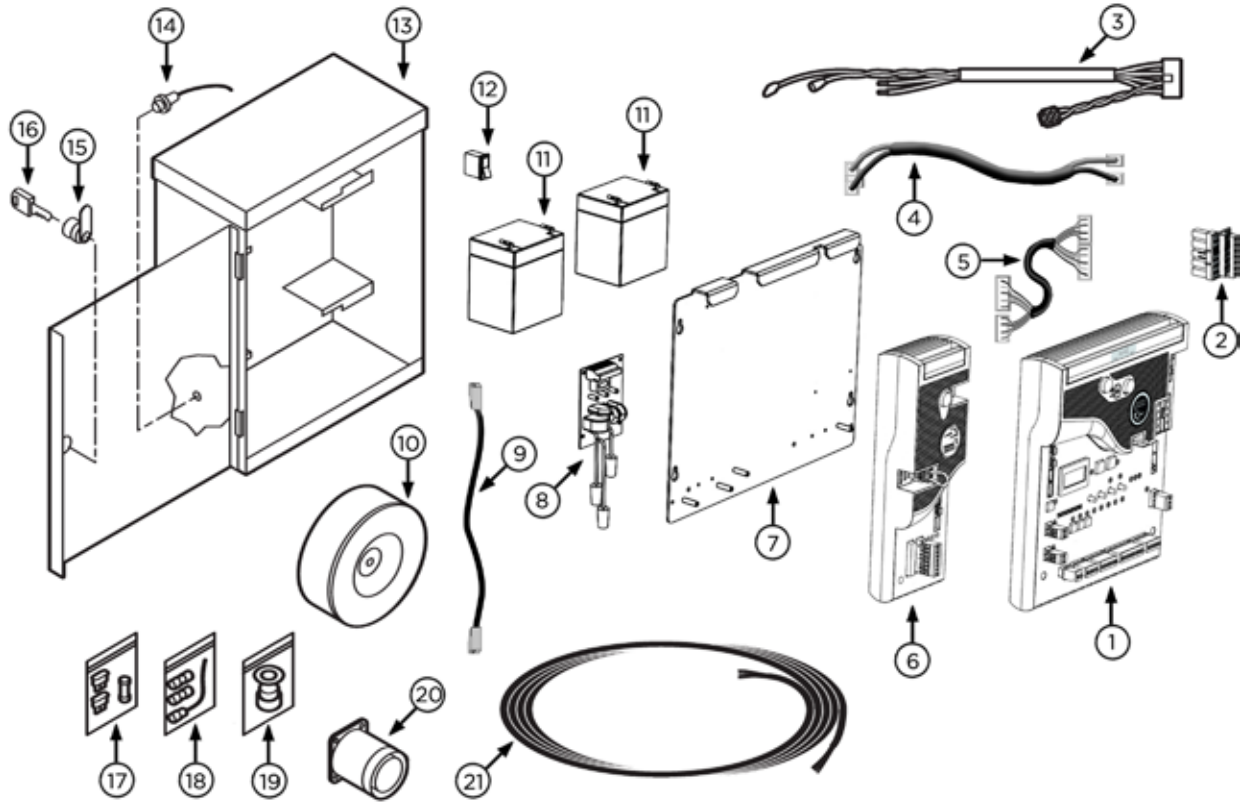


The Electronic Control Unit “ECU” is equipped for use with 115/230VAC, 24VAC/VDC or solar, includes a built-in battery backup system and Viking’s new “VFlex” control system. The VFlex control boards offer enhanced surge/lightning protection, state of the art technology and a user-friendly design for setup and troubleshooting.

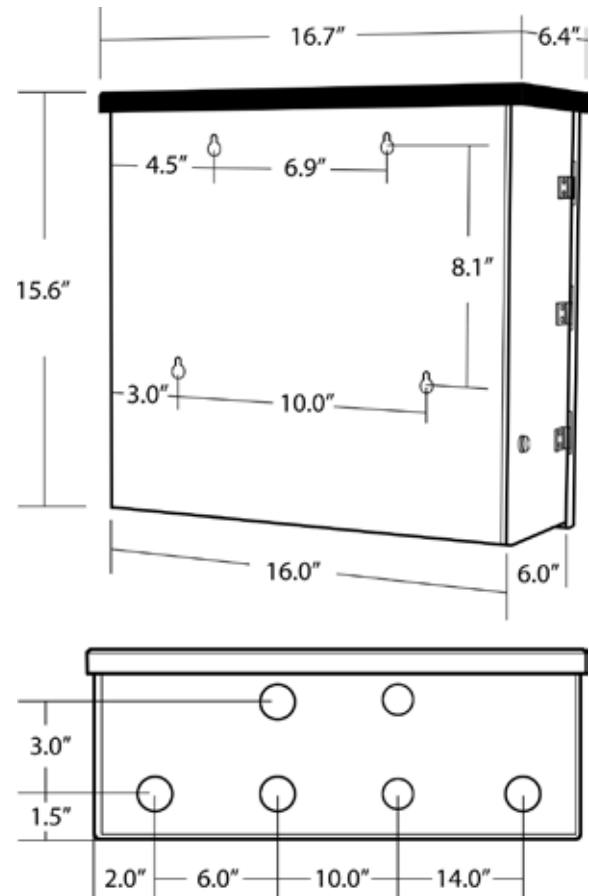
THE VIKING ELECTRONIC CONTROL UNIT



PARTS DIAGRAM:



Item	Description	Part No.
1	VFlex Control Board	VFLEXPCB
2	Motor Connector - Master (G5/X9 only)	VEUCMCM
2	Motor Connector - Master (i8 only)	VEUCMCMi8
3	Power Harness	DUPHCECU
4	Slave Power Harness (Dual Controller only)	VECUSPH
5	Master/Slave Comm Cable (Dual Controller only)	VEUCMSC
6	Slave Module (Dual Controller only)	VFLEXSM
7	Board Mounting Plate	VECUBMP
8	EMI Board	DUEMI10
9	EMI Comm Cable	VWEMICC
10	Toroid Transformer - 10 amp	DUTT10
11	Battery	DUBA12
12	Battery Switch	DUMRST0
13	ECU Cabinet Chassis	VNXCUBB
14	Alarm Reset Switch	ECURW
15	ECU Key Cylinder & Keys	ECUKEYC20
16	ECU Access Key	ECUKEY20
17	Fuse Kit	DUFSK10
18	Radio Antenna Kit	VARAK
19	Strain Relief (ECU)	DH3/4NMCC
20	Alarm	DUAL10
21	6 Conductor Cable, 16AWG Shielded	VA-CB16

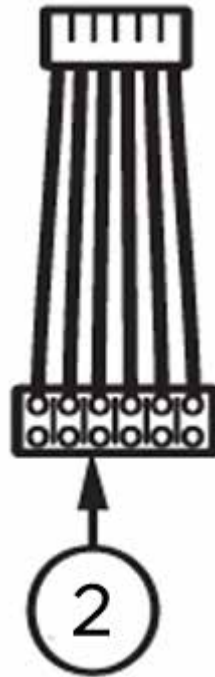


PARTS ADDENDUM:

SUBJECT: Single Controller - VA-ECUSNX

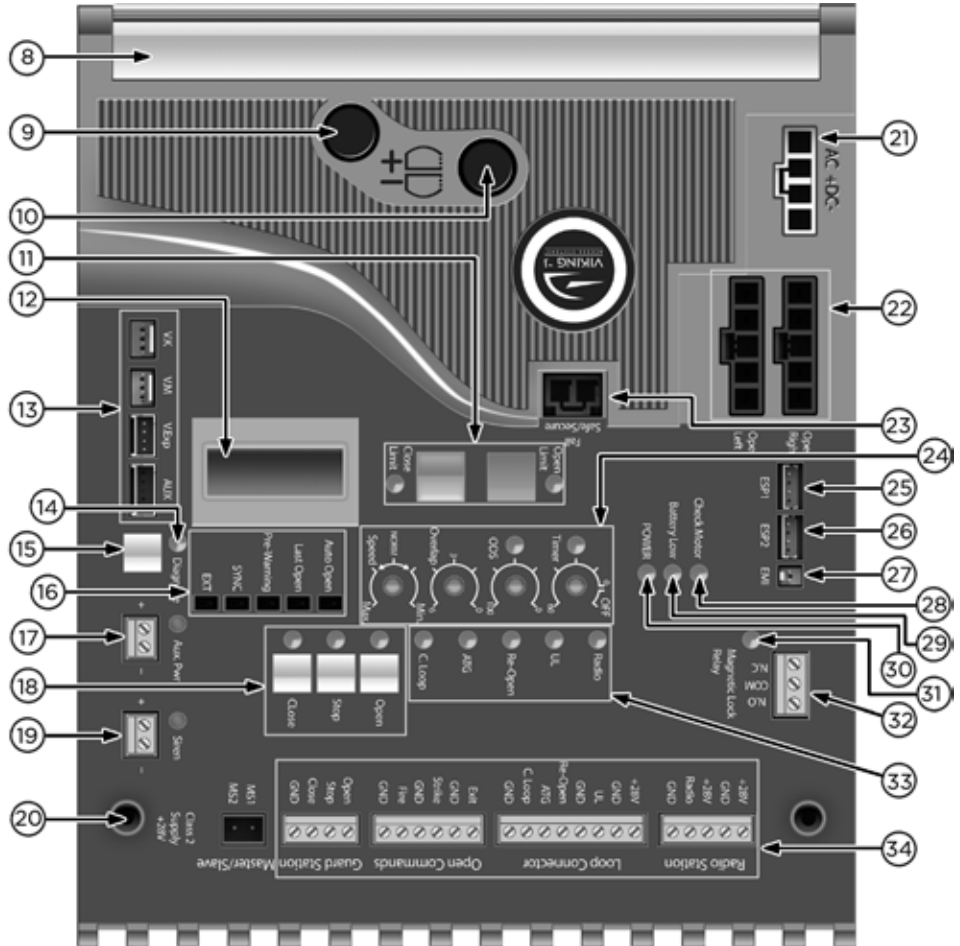
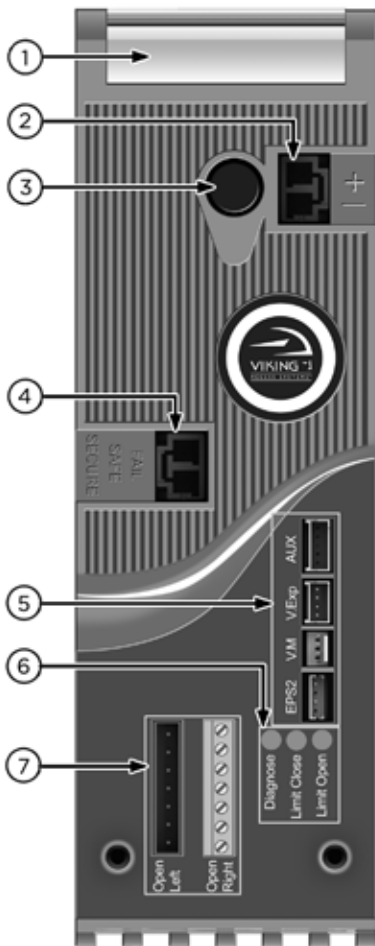
RE: Substituted part for item #2

Earlier model 2nd generation Single Electronic Control Units had been equipped with a motor harness (illustrated below). This item has been replaced with part# VECUMCM (for G-5 & X-9) or VECUMCMi8 (for i-8 only) as illustrated in the parts diagram on the preceding page.



**Part# ECUMTHRN
Motor Harness**

CONTROL BOARD REFERENCES:



1. HEAT SINK - SLAVE MODULE
secures the control board and dissipates heat.
2. SLAVE MODULE POWER HARNESS CONNECTOR
provides power to the Slave Module. pg 17
3. FUSE HOLDER - 15 AMP
for the Slave motor circuit.
4. "FAIL SAFE/SECURE" Jumper - SLAVE MODULE
power failure option. pg 21
5. M/S COMM CABLE CONNECTION - SLAVE MODULE
for master/slave (dual) gate applications. pg 17
6. STATUS LEDs - SLAVE MODULE
provides diagnostic information.
7. SLAVE MOTOR CONNECTION
provides power to the Slave motor. pg 17

8. HEAT SINK - MASTER/SINGLE
secures the control board and dissipates heat.
9. FUSE HOLDER - 4 AMP
for the charging circuit.
10. FUSE HOLDER - 15 AMP
for the Master motor circuit.
11. LIMIT SETUP BUTTONS
for G-5 operator model only. pg 18-19
12. LCD DIAGNOSTICS DISPLAY
provides error messages, diagnostics settings
and operator status information. pg 34-36
13. M/S COMM CABLE CONNECTION - MASTER BOARD
for master/slave (dual) gate applications. pg 17
14. "DIAGNOSE" LED
informs that errors have been detected and
available on LCD Display. pg 34-36
15. "DIAGNOSE" Button
allows you to navigate through the
Diagnostics LCD Display. pg 34-36
16. FEATURE ACTIVATION PIN HEADERS
activate features by placing a jumper onto the
pin headers. pg 21
17. "AUX. PWR" Terminal Block
used for solar applications & in-motion
warning devices. pg 15, 21
18. ON-BOARD 3 BUTTON STATION
controls the gate during set up.
19. "Siren" Terminal Block
Vikings UL Siren is connected here. pg 12, 22
20. CONTROL BOARD MOUNTING HOLES
secures and grounds the control board.
21. POWER HARNESS CONNECTOR
provides power to the control board. pg 14-15
22. MASTER or SINGLE MOTOR CONNECTION
provides power to the motor. pg 16
23. "FAIL SAFE/SECURE" Jumper
power failure option. pg 21

24. FEATURE ACTIVATION TRIM POTS
activate and set features. pg 20
25. "EPS1" CONNECTOR
available for future developments
26. "EPS2" CONNECTOR
monitors the limit positions.
27. EMI BOARD CONNECTOR
monitors the high voltage power supply.
28. "CHECK MOTOR" Status LED
indicates motor power status. pg 32
29. "BATTERY LOW" Status LED
indicates battery power status. pg 32
30. "POWER" Status LED
control board power status. pg 14, 32
31. "MAGNETIC LOCK RELAY" Status LED
status of this on-board relay. pg 29, 32
32. "MAGNETIC LOCK RELAY" Terminal Block
connect electric locks here. pg 29, 32
33. INPUT STATUS LEDs
indicates input status. pg 32-33
34. ACCESS CONTROL TERMINAL BLOCKS
accessory connections. pg 24-27, 38-40

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IMPORTANT SAFETY INFORMATION

⚠ WARNING! Not Following these instructions may cause severe injury or death.

IMPORTANT SAFETY INSTRUCTIONS

⚠ WARNING! To reduce the risk of severe injury or death.

1. READ AND FOLLOW ALL INSTRUCTIONS.
2. Never let children operate or play with gate controls. Keep the remote 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 when an object activates the non-contact sensors. After adjusting the force or the limit 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 a separate entrance.
8. **Every gate operator installation MUST have secondary protection devices against entrapment, such as edge sensors and photo beams more in particular in places where the risk of entrapment is more likely to occur.**
9. SAVE THESE INSTRUCTIONS.

IMPORTANT INSTALLATION INSTRUCTIONS

1. Install the gate operator only when:
 - a. The operator is appropriate for the construction of the gate and usage Class of the gate (refer to page 9),
 - b. All openings of a horizontal slide gate are guarded or screened from the bottom of the gate to a minimum of 6 feet (1.83 m) above the ground to prevent a 2-1/4 inch (57.2 mm) 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,
 - c. ALL EXPOSED PINCH POINTS ARE ELIMINATED OR GUARDED, AND
 - d. GUARDING IS SUPPLIED FOR EXPOSED ROLLERS.
2. 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 into contact with the vehicular gate during the entire path of travel of the vehicular gate.
3. 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 in to the public access areas.
4. 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 a damaged gate.
5. The gate operator controls must be placed so that the user has full view of the gate area when the gate is moving **AND AWAY FROM THE GATE PATH PERIMETER.**

IMPORTANT SAFETY INFORMATION

 **WARNING! Not Following these instructions may cause severe injury or death.**

IMPORTANT INSTALLATION INSTRUCTIONS (Continued)

6. Controls intended for user activation must be located at least six feet (6') 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 (i.e. fire, police, EMS) may be placed at any location in the line-of-sight of the gate.
7. 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.
8. A minimum of two (2) WARNING SIGNS shall be installed, one on each side of the gate where easily visible.
- 9. For gate operators using non-contact sensors (Photo Beams or like) in accordance with section 31.1.1 of the UL standard:**
 - a. See instructions on the placement of non-contact sensors for each type of application (refer to page 10).
 - b. 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
 - c. 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 (refer to page 10).
 - d. Use only Omron E3K-R10K4 photoelectric eye to comply with UL 325
- 10. For a gate operator utilizing a contact sensor (Edge sensor or like) in accordance with section 31.1.1 of the UL 325 standard:**
 - a. One or more contact sensors shall be located where the risk of entrapment or obstruction exists, such as a the leading edge, trailing edge, and post mounted both inside and outside of a vehicular horizontal slide gate.
 - b. One or more contact sensors shall be located at the bottom of a vehicular vertical lift gate.
 - c. One or more contact sensors shall be located at the pinch point of a vehicular vertical pivot gate.
 - d. A hardwired contact sensor shall be located and its wiring arranged so that the communication between the sensor and the gate operator is not subject to mechanical damage.
 - e. A wireless contact sensor 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 obstructions. A wireless contact sensor shall function under the intended end-use conditions.
 - f. 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 6 inches (152 mm) above the ground at any point in its arc of travel, one or more contact sensors shall be located at the bottom edge (refer to page 11).
 - g. One or more contact sensors shall be located at the bottom edge of a vertical barrier (arm).
 - h. Only Use Miller Edge Model MGR20 or MGS20 edge sensor to comply with UL325.

IMPORTANT SAFETY INFORMATION

 **WARNING! Not Following these instructions may cause severe injury or death.**

MAINTENANCE

Remove the Power Harness from the Control Board. (refer to page 14)

- Clean and lubricate the turning pins and gate hinges using the recommended lubricant.
- Check that all mounting hardware of the gate operator is properly tighten.
- Ensure that the gate moves freely.
- Check for corroded parts and replace if necessary.
- Check the battery for the following:
 - Battery connections must be free of corrosion.
 - Battery voltage must be 26VDC (fully charged battery).

Reconnect the Power Harness for the Control Board. (refer to page 14)

- Check and confirm the proper operation of all safety devices (photoelectric eye, edge sensors or like).
- Check and confirm the operation of all installed accessories.
- Check and confirm the operation of all special features such as the Intelligent Obstruction Sensor, Hold Open Timer. (refer to page 20 and 22)
- Check and confirm the operation of the manual release. (See Operator Manual)
- Verify the functionality of the battery backup, or power failure option, by turning off the main power source (115VAC or 230VAC). **DO NOT FORGET TO TURN ON THE MAIN POWER SOURCE AFTER VERIFICATION.**

GENERAL SAFETY PRECAUTIONS

The following precautions are an integral and essential part of the product and must be supplied to the user. Read them carefully as they contain important indications for the safe installation, use and maintenance.

- These instruction must be kept and forwarded to all possible future users of the system.
- This product must be used only for that which it has been expressly designed.
- Any other use is to be considered improper and therefore dangerous.
- The manufacturer cannot be held responsible for possible damage caused by improper, erroneous or unreasonable use.
- Avoid operating in the proximity of the hinges or moving mechanical parts.
- Do not enter the path of the moving gate while in motion.
- Do not obstruct the motion of the gate as this may cause a situation of danger.
- Do not allow children to play or stay within the path of the moving gate.
- Keep remote control or any other control devices out of the reach of children, in order to avoid possible involuntary activation of the gate operator.
- In case of break down or malfunctioning of the product, disconnect from the main power source. Do not attempt to repair or intervene directly, contact only qualified personnel for repair.
- Failure to comply with the above may create a situation of danger.
- All cleaning, maintenance or repair work must be carried out by qualified personnel.
- In order to guarantee that the system works efficiently and correctly it is important to have the manufacturer's instructions on maintenance of the gate and operator carried out by qualified personnel.
- In particular, regular checks are recommended in order to verify that the safety devices are operating correctly.

All installation, maintenance and repair work must be documented and made available to the user.

IMPORTANT SAFETY INFORMATION

CAUTION: To Reduce the Risk of Fire or Injury to Persons:

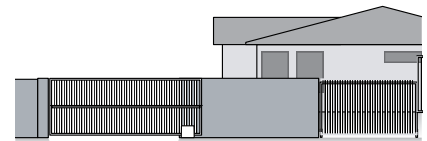
- Use only the following type and size battery(ies): Yuasa NP7-12 or VIKING DUBA12
- Do not dispose of the battery(ies) in fire. The cells may explode. Check with local codes for possible disposal instructions.
- Do not open or mutilate the battery(ies). Released electrolyte is corrosive and may cause damage to the eyes or skin. It may be toxic if swallowed.
- Exercise care in handling batteries in order not to short the battery with conducting materials such as rings, bracelets and keys.
- Change the battery(ies) provided with or identified for use with this product only in accordance with the instructions and limitations specified in this manual.
- Observe proper polarity orientation between the battery(ies) and charging circuit.
- Do not mix batteries of different sizes or from different manufactures in this product (applies to products employing more than one user replaceable secondary battery).
- A battery-operated product employing a secondary battery supply intended to be charged within the product shall contain specific instructions concerning the proper method of charging.

UL325 Gate Operator Classifications

GLOSSARY

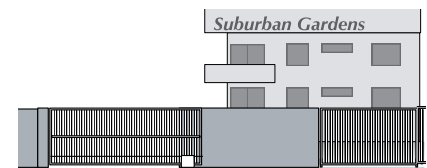
RESIDENTIAL VEHICULAR GATE OPERATOR

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



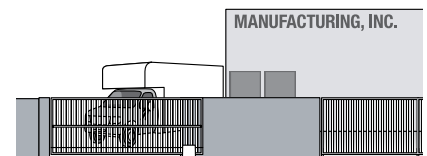
COMMERCIAL/GENERAL ACCESS VEHICULAR GATE OPERATOR

CLASS II - 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 building servicing the general public.



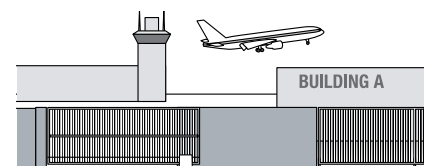
INDUSTRIAL/LIMITED ACCESS VEHICULAR GATE OPERATOR

CLASS III - 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.



RESTRICTED ACCESS VEHICULAR GATE OPERATOR

CLASS IV - 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.



Install the gate operator only when:

The operator is appropriate for the construction of the gate and the Usage Class of the gate.

IMPORTANT SAFETY INFORMATION

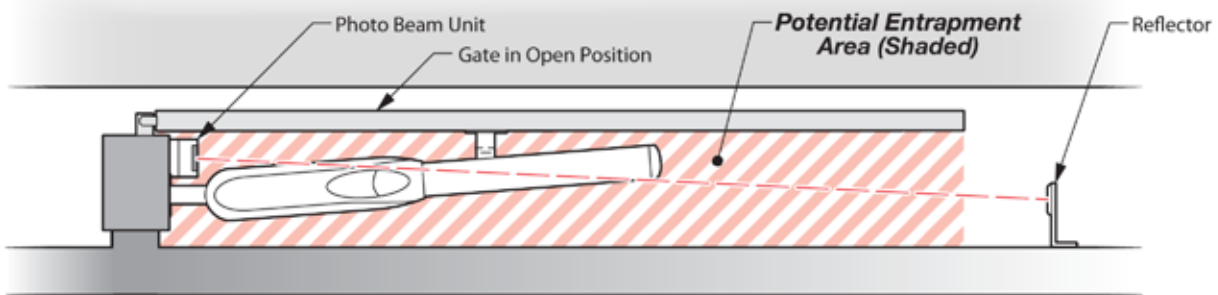
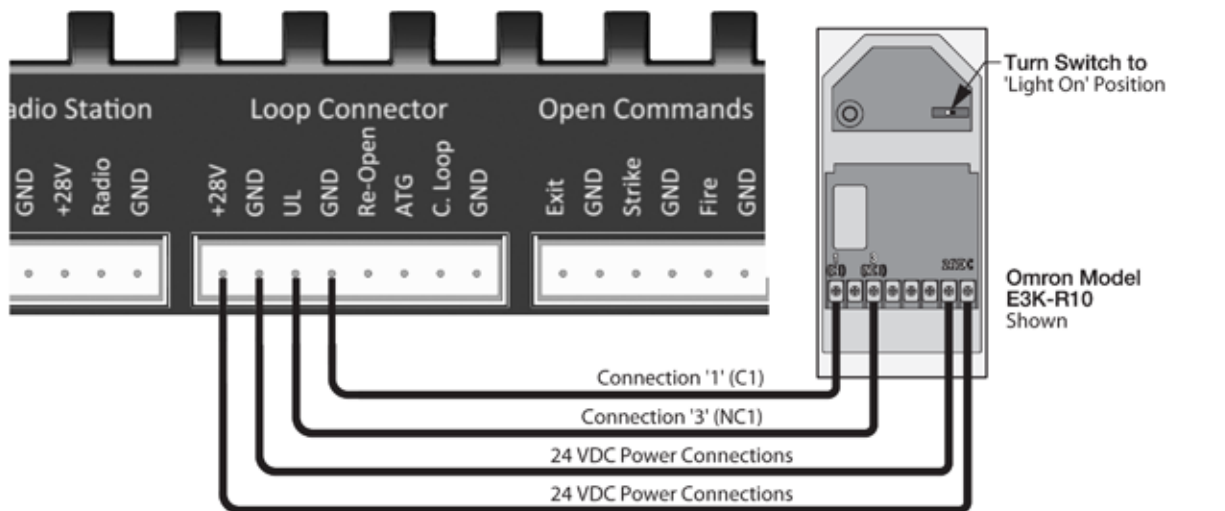
⚠ WARNING! Not Following these instructions may cause severe injury or death.

NOTE: This type on installation DOES NOT reverse the gate all the way back to its limits when the photo beam is obstructed. This installation is only to protect against entrapment and to comply with UL325.

Secondary Entrapment Protection

Photo Beam (non-contact sensor) Installation

- **Photo beams or like must be installed to reduce the risk of entrapment.**
- Use only Omron E3K-R10K4 photoelectric eye to comply with UL325
- Make the electrical connections of the photoelectric sensor as described here in this page.
- 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;
- 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.



Consult the installation manual for the UL325 device (photo beam or like) for detail information about the usage, installation and maintenance.

IMPORTANT SAFETY INFORMATION

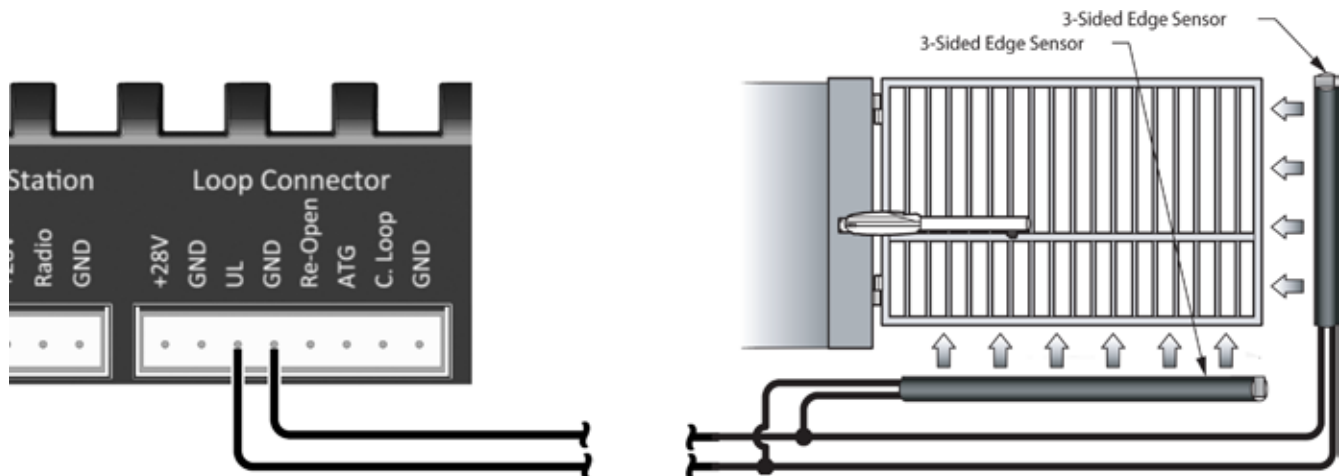
⚠ WARNING! Not Following these instructions may cause severe injury or death.

NOTE: This type on installation DOES NOT reverse the gate all the way back to its limits when the edge sensor is obstructed. This installation is only to protect against entrapment and to comply with UL325.

Secondary Entrapment Protection

Edge Sensor (contact sensor) Installation

- **Edge Sensors or like must be installed to reduce the risk of entrapment.**
- Use only Miller Edge 3-sided activation type MGR20 or MGS20 to comply with UL325.
- 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 6 inches (152 mm) above the ground at any point in its arc of travel, one or more contact sensors shall be located on the bottom edge.
 1. 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.
 2. A wireless contact sensor 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 contact sensor shall function under the intended end-use conditions.



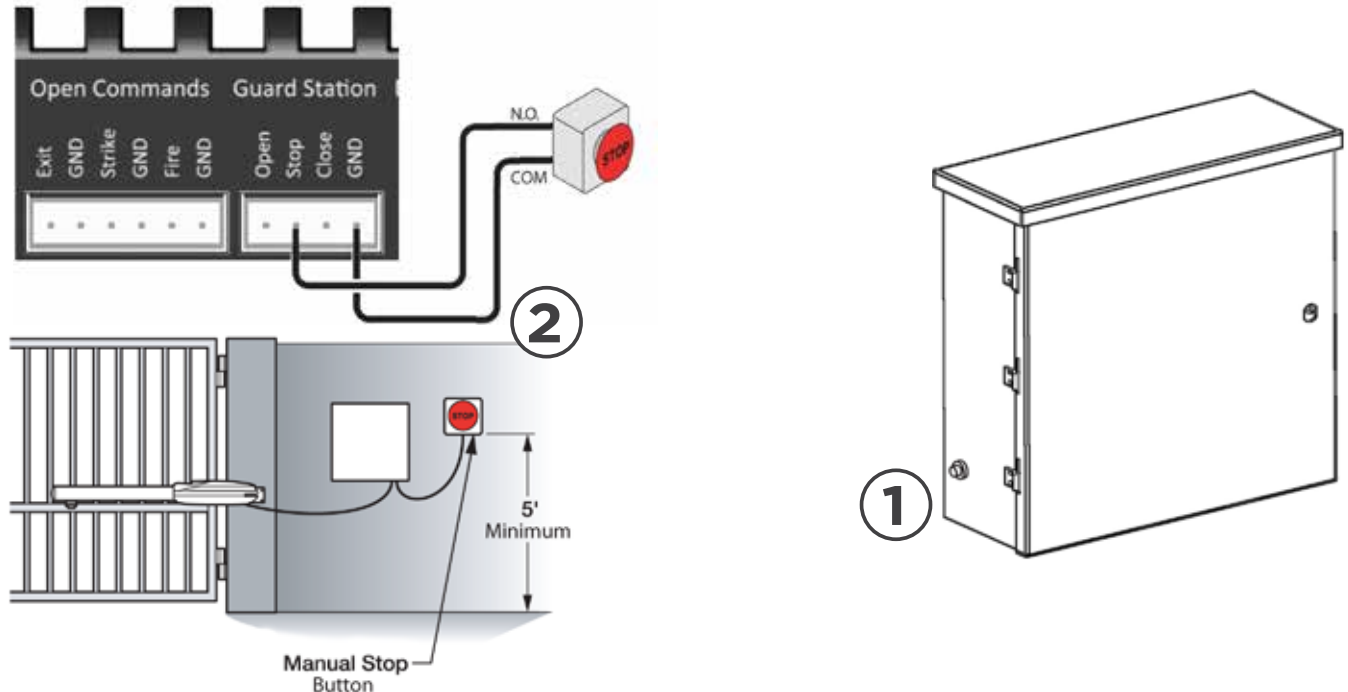
IMPORTANT SAFETY INFORMATION

⚠ WARNING! Not Following these instructions may cause severe injury or death.

Audible Alarm Reset Switch Installation

Manual Reset for the Audible Alarm

- UL325 standard requires an audible alarm to sound after two consecutive events detected by the primary entrapment protection of the gate operator (obstruction sensor).
- The audible alarm will continue to sound for 5 minutes or until a stop command gets actuated.
- The Stop command can be actuated in three different forms:
 1. Using the Built in Stop switch on the Control Board; or
 2. Using an External Stop button within the sight of the gate, away from moving parts of the gate and out of reach of children.
 - a. Controls intended for user activation must be located at least six feet (6') 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. Outdoor or easily accessible controls shall have a security feature to prevent unauthorized use.
 - b. 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.
 3. Using the Reset Button on the Electronic Control Unit that is externally accessible on the left side of the cabinet.



Warning Placard Installation

- All Warning Placards must be installed where visible in the area of the gate.
- A minimum of two placards shall be installed.
- A placard is to be installed in the area of each side of the gate and be visible.

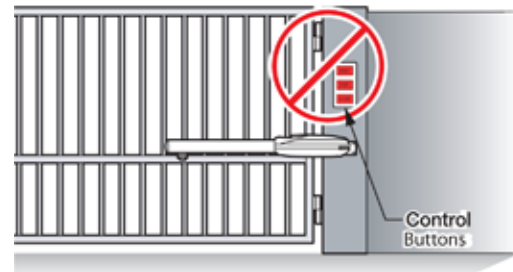


IMPORTANT INSTALLATION INFORMATION

⚠ WARNING: DO NOT allow pedestrian use of this gate.

Locate Control Buttons:

1. Within sight of the gate,
2. At a minimum height of 5 feet so small children are not able to reach it; and
3. At least 6 feet away from all moving parts of the gate.



Specifications

Power Requirements:

115VAC / 230VAC (Amperage depends on motor unit)

Single Phase (50Hz / 60Hz)

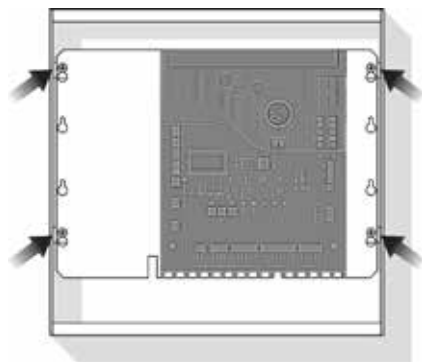
24VAC / 24VDC (60VA / 60W)

Solar 24V 80W

ECU Box Installation

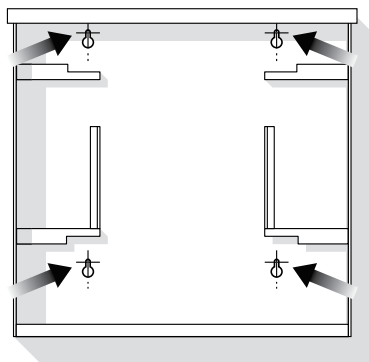
STEP 1

Disconnect the Siren, Stop Button and EMI Harness from the Control Board. Remove the Control Board Mounting Plate. The plate is held in the box by four screws.



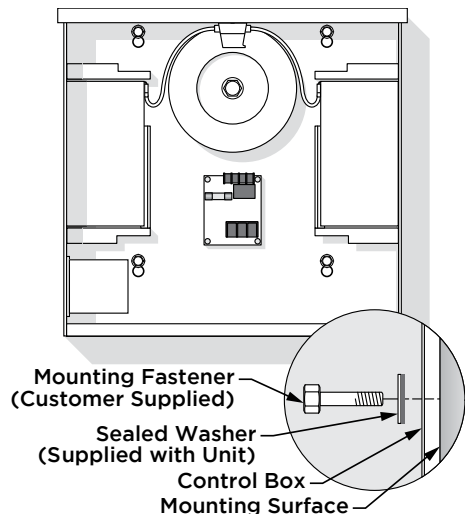
STEP 2

Position the ECU Box in the desired place and mark the mounting holes. Prepare the holes to receive the anchors/fasteners. NOTE: Anchors are Not Supplied.



STEP 3

Position the ECU Box and secure it to the mounting surface using the Sealed Washers provided (rubber side of the washers against the inside of the control box).



⚠ WARNING: If the control box is not mounted properly it may fall, causing damage and/or injury. The Electronic Control Unit (ECU) weight is approximately 40 lbs. Be sure that the substrate being mounted to and the fasteners being used are appropriate to support the weight of the control box.

ELECTRICAL INSTALLATION

High Voltage Supply Option

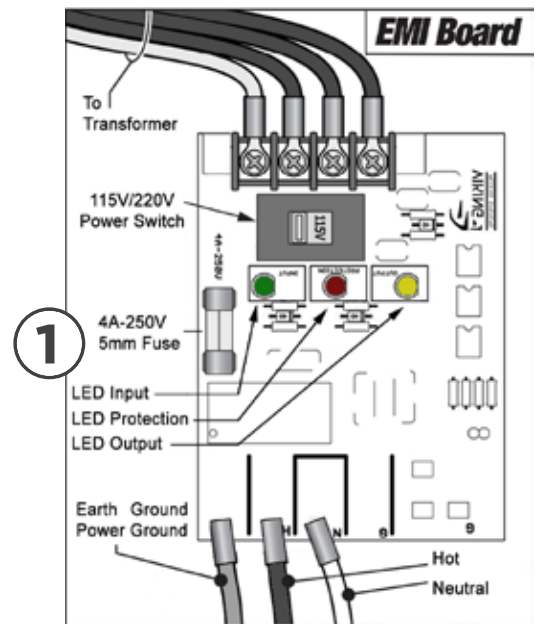
⚠ Caution: Always turn off power breakers when working with high voltage. DO NOT connect the “Power Harness” to the Control Board until the electrical installation is complete and ready for verification.

STEP 1

⚠ WARNING: SINGLE PHASE AC ONLY

At the “EMI Board”:

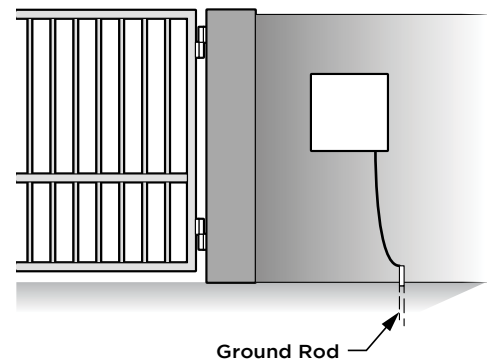
- Set the “Voltage Selector” according to the supply voltage (115V or 230V).
- Connect the incoming power wires to the terminals as shown in the illustration.
- Ground the ECU cabinet according to local code or guidelines.
- Turn on the main facility breaker and verify that all three (3) Status LEDs are illuminated on the EMI Board.



Tips for proper ground installation:

To minimize the effects caused by lightning, follow these guidelines:

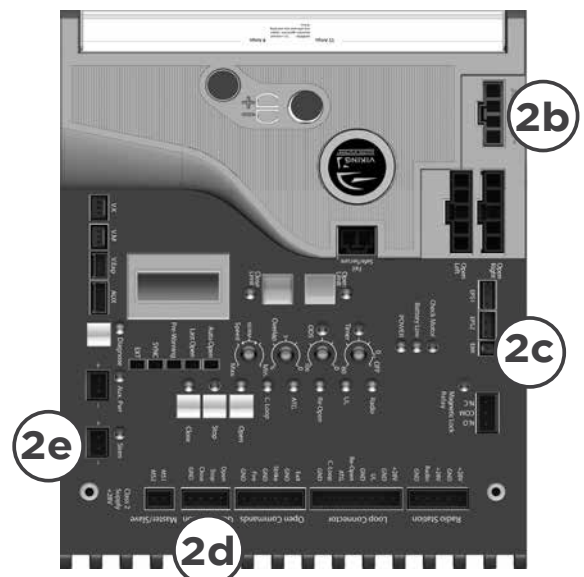
- Use a ground rod to provide a ground reference.
- Consult your city code and be aware of underground services in the site of the gate operator to prevent inconveniences.
- Always use a single bonding point for grounding.
- All ground wires must be as short and as thick as possible.
- Prevent unnecessary turns or loops in all ground wires.



STEP 2

At the Control Board:

- Reinstall the Control Board Mounting Plate with the control board(s).
- Connect the Power Harness and verify the “POWER” LED is illuminated solid.
- Reconnect the EMI Harness.
- Reconnect the Stop Button Harness
- Reconnect the Siren Harness



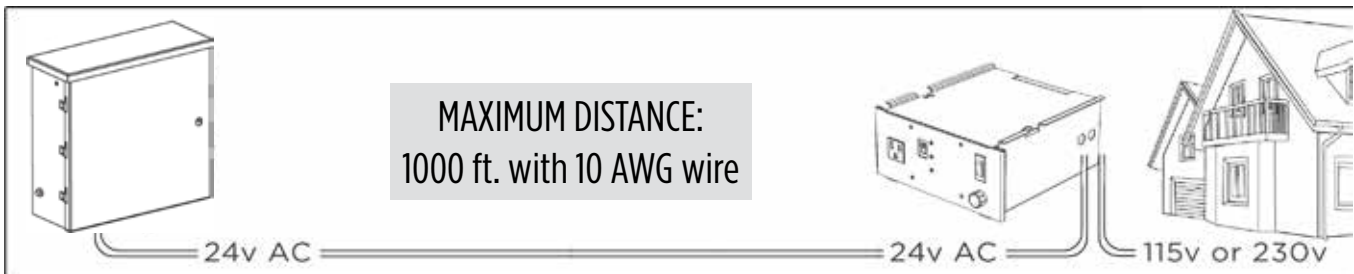
ELECTRICAL INSTALLATION

Low Voltage Supply Option

TIP: As an alternative to high voltage, the operator can be powered by 24VAC. It is recommended to use Vikings Modular Power Box (**part # VNXMPB**) as the source.

⚠ Caution: Always turn off power breakers when working with high voltage. DO NOT connect the “Power Harness” to the Control Board until the electrical installation is complete and ready for verification.

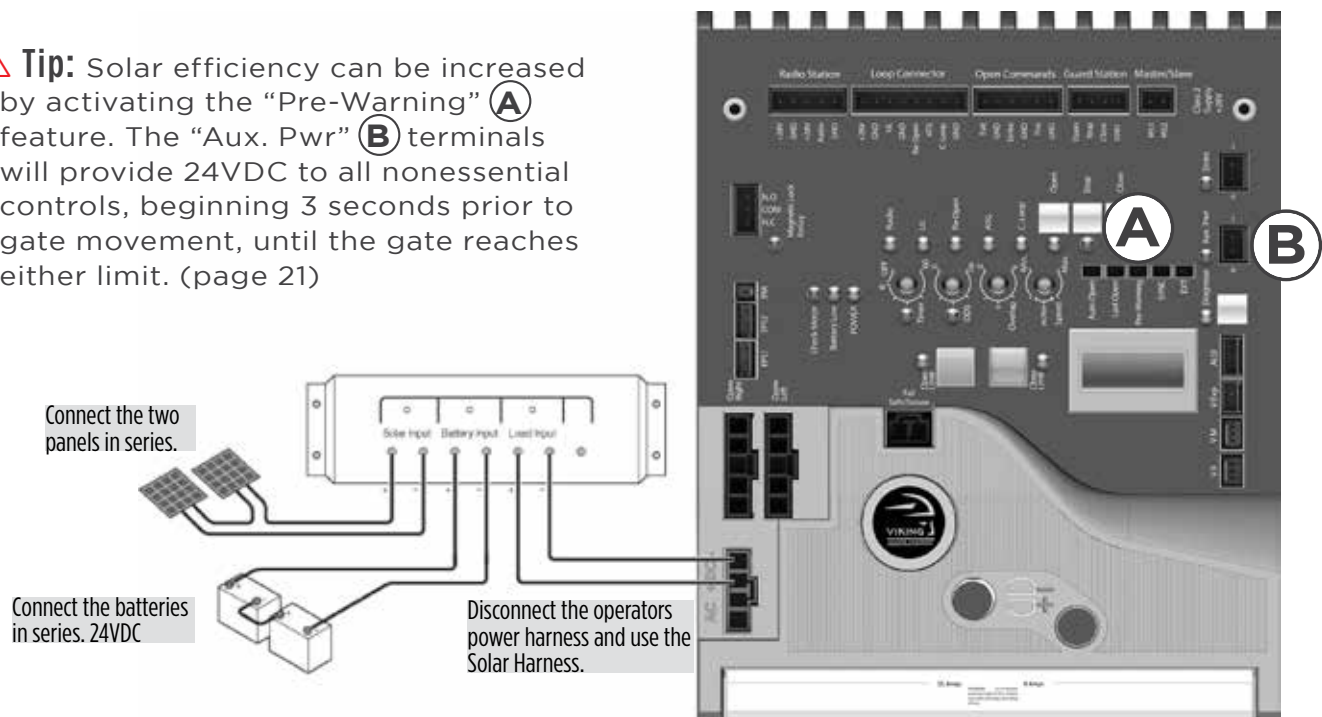
Install the “Modular Power Box” at the nearest high voltage source (115V or 230V single phase) and connect to the controller’s Power Harness. Follow local codes or guidelines.



Solar Supply Option

Vikings Solar Package (**part # VA-SOCHP**) is an efficient and effective solution to powering the operator with solar energy. (See page 42 for package details)

⚠ Tip: Solar efficiency can be increased by activating the “Pre-Warning” **(A)** feature. The “Aux. Pwr” **(B)** terminals will provide 24VDC to all nonessential controls, beginning 3 seconds prior to gate movement, until the gate reaches either limit. (page 21)



⚠ IMPORTANT: The number of cycles achieved daily is dependent on many factors, including local solar radiation data and power consumption of the motor and accessories. It is very important that you consider this when using solar power.

ELECTRICAL INSTALLATION

Motor Cable - Master (Single)

NOTE: The Single Electronic Control Unit (VA-ECUSNX) is equipped to operate a single gate motor only, and does not include a Slave Module. The steps described on pages 17 and 19 do not apply for this type of application.

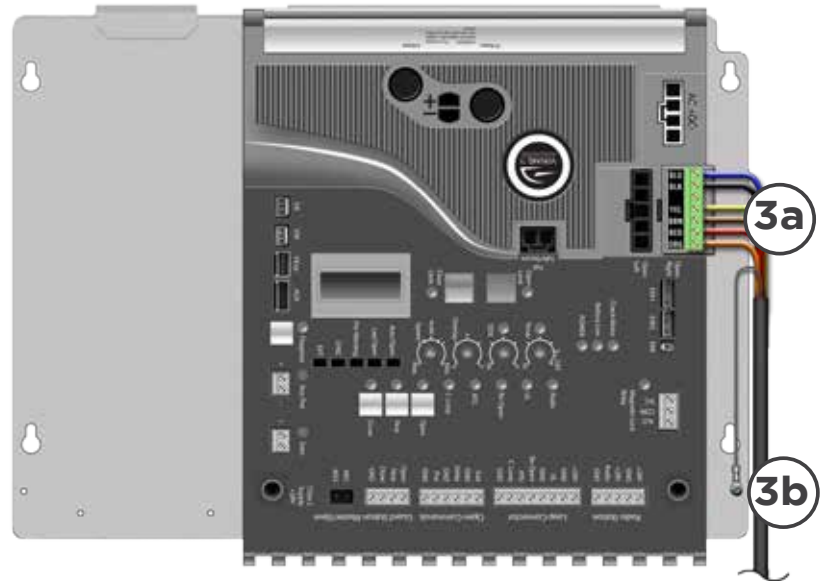
STEP 3

Master Motor:

- Connect motor cable to the Motor Connector at the Master Control Board as illustrated, according to the printed color code.

⚠️ FOR i-8 MODEL OPERATORS:

- Place a **jumper wire** between terminals 3 & 4 (Blank & YLW).
 - Only the Blue & Black wires are required from the motor cable.
- Attach the grounding wire (non insulated) to the Board Mounting Plate using the screw provided.



STEP 4

Master Open Left or Open Right:

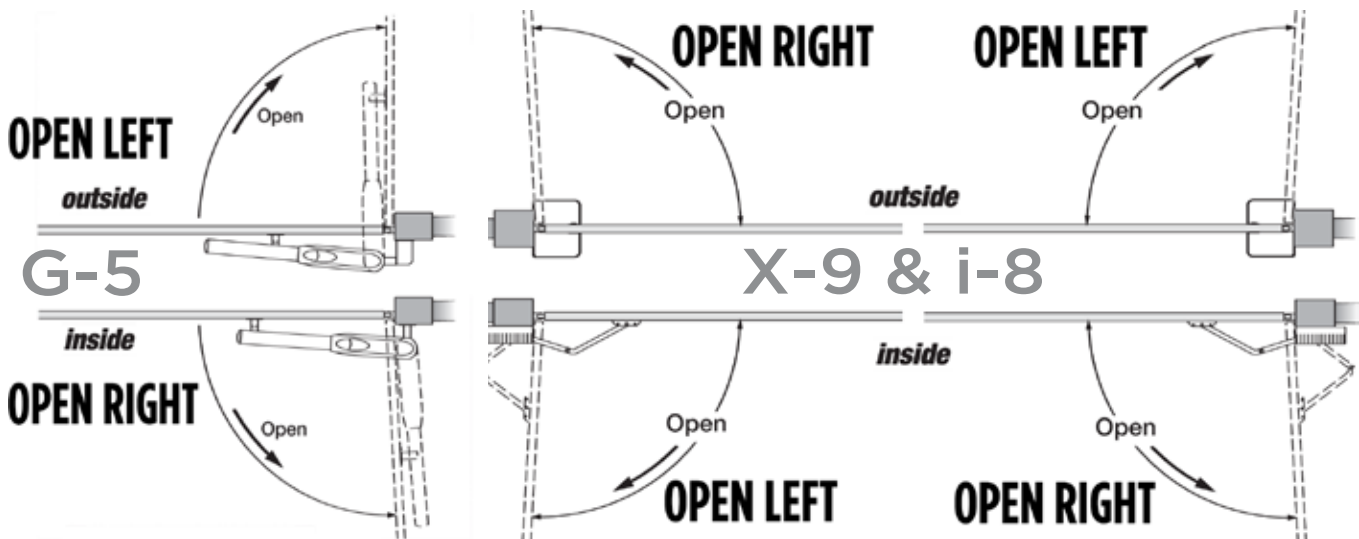
Place the terminal block in the proper location for the gate opening direction.

For G-5 operator

- “OPEN RIGHT” Connector if the gate opens to the **INSIDE (pull to open)**.
- “OPEN LEFT” Connector if the gate opens to the **OUTSIDE (push to open)**.

For X-9 and i-8 operators

- “OPEN RIGHT” Connector if the gate opens **Inside to the Right** or **Outside to the Left**.
- “OPEN LEFT” Connector if the gate opens **Inside to the Left** or **Outside to the Right**.



ELECTRICAL INSTALLATION

Motor Cable - Slave (Dual)

NOTE: The Master/Slave, or Dual, Electronic Control Unit (VA-ECUMSNX) is equipped with both the VFlex Control Board (Master) and a Slave Module, and is required to operate two gate motors in tandem.

STEP 5

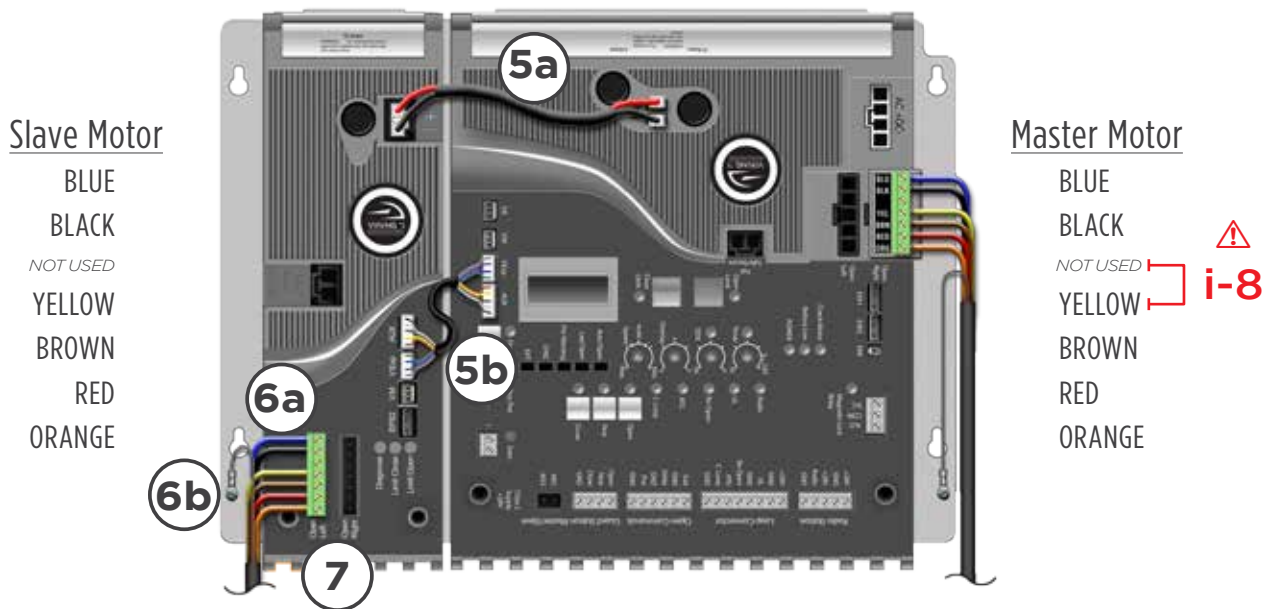
Slave to Master Connections:

- Ensure that the Slave Power Harness is connected as illustrated. Polarity is important!
Red to “+” Black to “-”
- Ensure that the Master/Slave Communication Cable is connected as illustrated.

STEP 6

Slave Motor:

- Connect motor cable to the terminal block at the Slave Module as illustrated, according to the color code provided.
- Attach the grounding wire (non insulated) to the Board Mounting Plate using the screw provided.



STEP 7

Slave Open Left or Open Right: Refer to the illustration on page 16.

Place the terminal block in the proper location for the gate opening direction.

For G-5 operator

- “OPEN RIGHT” Connector if the gate opens to the **INSIDE (pull to open)**.
- “OPEN LEFT” Connector if the gate opens to the **OUTSIDE (push to open)**.

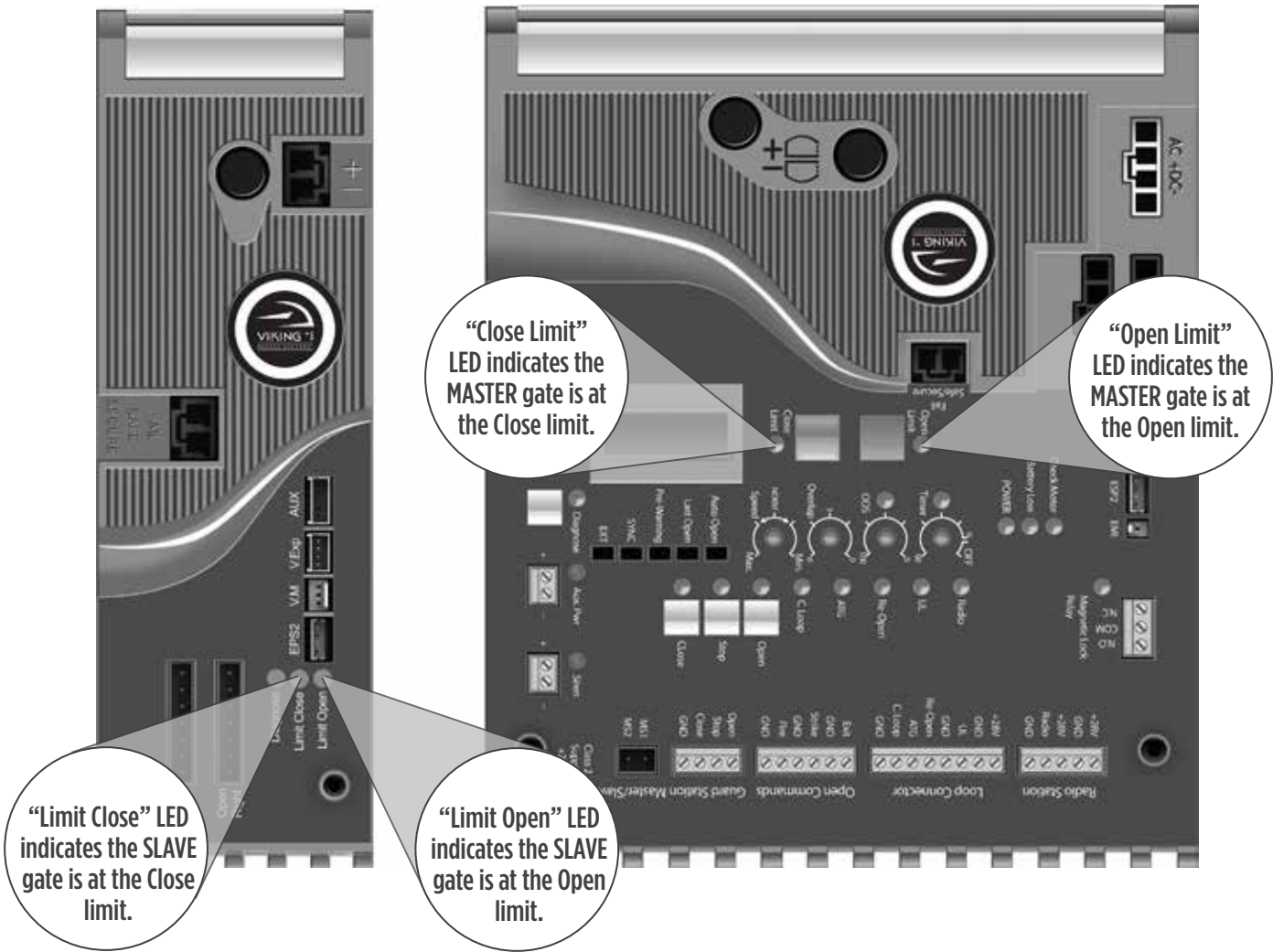
For X-9 and i-8 operators

- “OPEN RIGHT” Connector if the gate opens **Inside to the Right** or **Outside to the Left**.
- “OPEN LEFT” Connector if the gate opens **Inside to the Left** or **Outside to the Right**.

LIMIT INDICATIONS

⚠ IMPORTANT: The gate operator uses mechanical limits. Therefore, the limits cannot be set electronically by this controller. The Limit Buttons on the control board have been rendered inactive by the controller. Refer to the gate operator’s Installation Manual (G-5, X-9 or i-8) for specific instructions on how to set the limits for the gate operator model chosen.

⚠ TECHNICAL TIP: The Limit LEDs will illuminate solid when the gate reaches the corresponding limit switch on the gate operator. Both LEDs will flash, indicating a problem with the limit switches or wires.



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CONTROL BOARD SETUP

Initial Settings

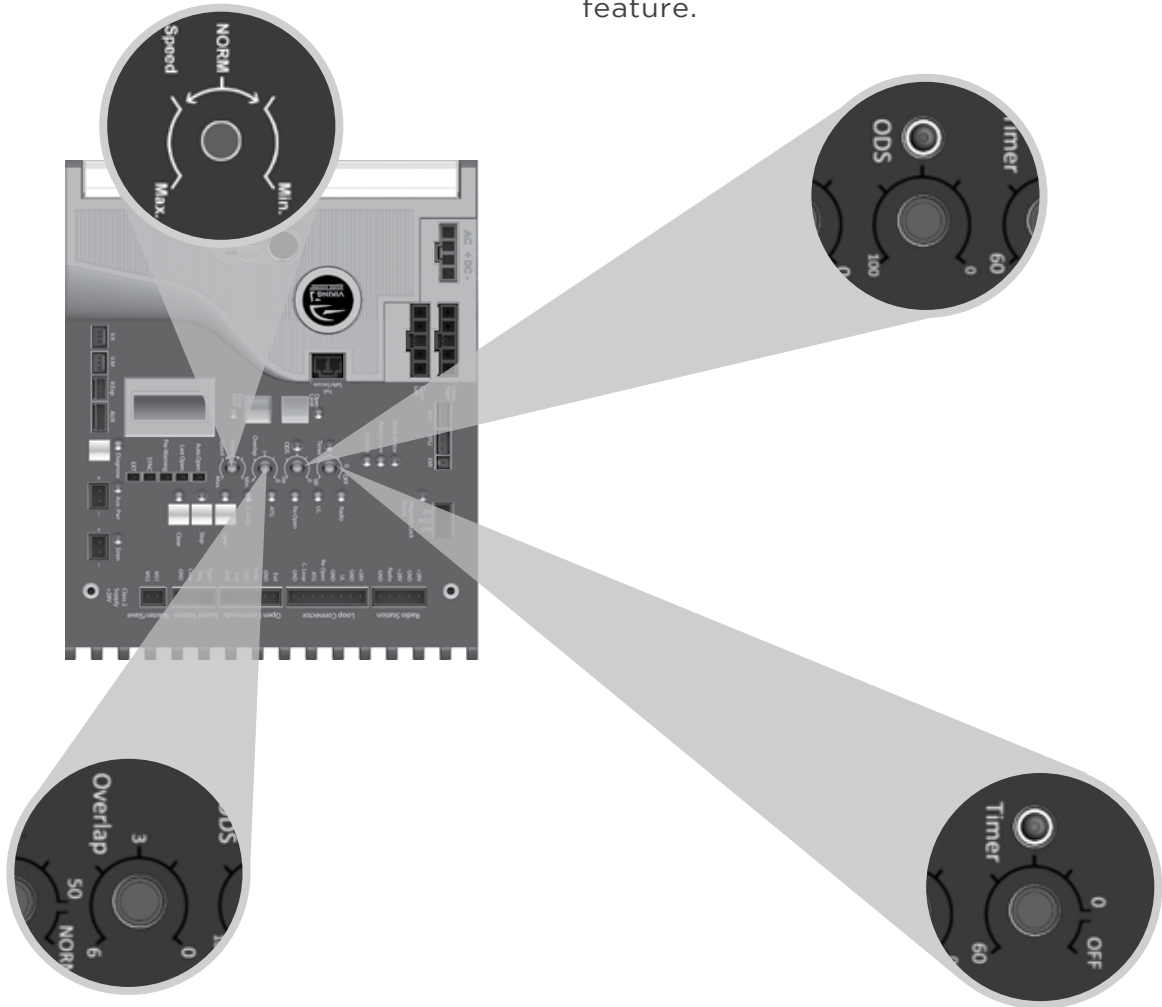
“Speed” Motor Speed

Increases or decreases the speed of gate travel.

“ODS” Obstruction Detection Sensor

Sets the amount of force required to trip the inherent obstruction sensor.

See page 22 for more details about this feature.



“Overlap” Overlap Delay

Delays the gate from opening for the selected amount of time from 1-6 seconds.

⚠ Typically not used on slide gates. For Master/Slave application, the control board that has this feature turned on is the master and will close first.

“Timer” Hold Open Timer

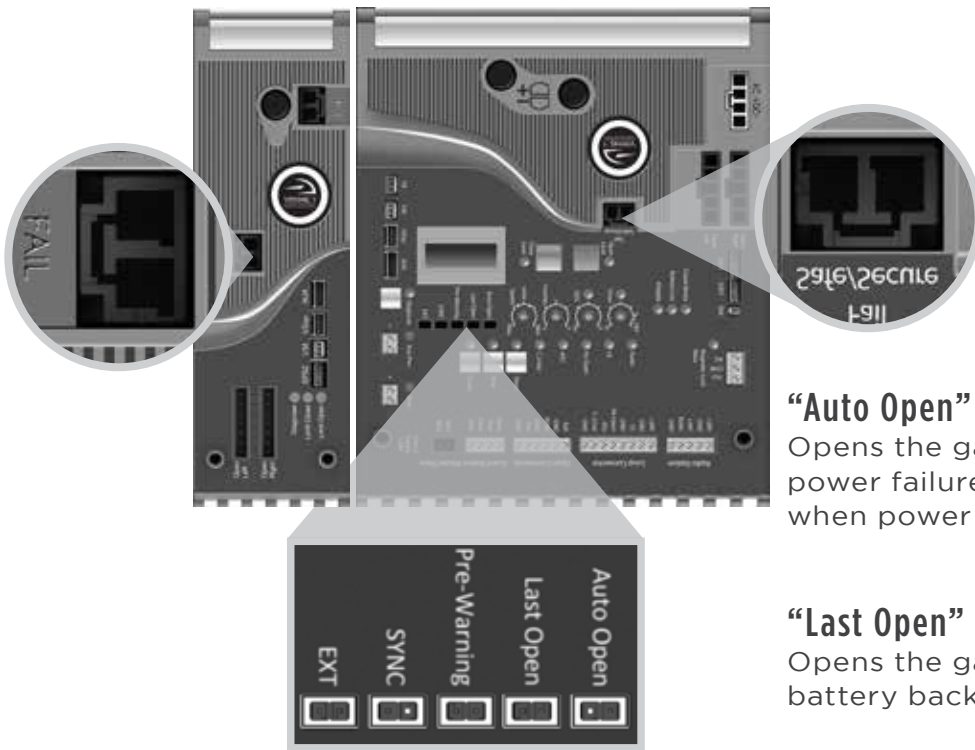
Automatically closes the gate after the selected amount of time from 1-60 seconds.

Turning the dial between “0” and “OFF” will disable this feature, requiring a close command to close the gate.

CONTROL BOARD SETUP

Initial Settings

NOTE: Installing a shunt, or jumper, on the pins will activate the feature.



“Fail Safe/Secure”

During complete power failure, including battery power; determines the force required to manually move the gate.

- **Fail Safe Mode: (G-5 Only)**
By removing the wire-jumper plug from the “Fail Safe/Secure” connector:
The gate can move manually with a relatively low amount of force.
- **Fail Secure Mode:**
By inserting the wire-jumper plug into the “Fail Safe/Secure” connector:
The gate will not move manually.

“Auto Open” - Power Failure Option

Opens the gate automatically during power failure. Resumes normal operation when power is restored.

“Last Open” - Power Failure Option

Opens the gate automatically when the battery backup voltage is critically low.

“Pre-Warning” Initiates two options for an audio or visual warning, 3 seconds prior to gate motion, and will continue:

1. **Until gate reaches closed limit:**
“Magnetic Lock” terminals provide a contact between “COM” and “N.O.”.
2. **Until gate reaches either limit:**
“AUX. PWR” terminals provide 24VDC.

“Sync” Used only in conjunction with the Viking Barrier gate operator model B-12. Activating this feature allows for synchronized operation with the B-12 operator. See page 30.

“EXT” Available for future developments.

CONTROL BOARD SETUP

Obstruction Sensor (Primary Entrapment Protection)

⚠ IMPORTANT: The appropriate “ODS” setting is dependant upon the gate installation and construction. Set this feature accordingly. Additional Safety equipment should be used to reduce possible risk of injury or vehicle damage.

“ODS” Obstruction Detection Sensor

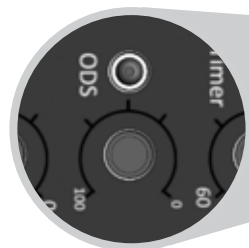
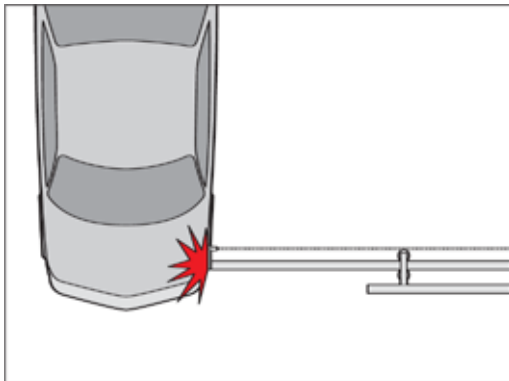
The Obstruction Sensor detects obstructions in the path of the traveling gate. The dial sets the amount of force required to activate the operators inherent obstruction detection.

Setting the dial to “0” will require the least amount of force to activate;

Setting the dial to “100” will require the maximum amount of force to activate.

UL325 standard requires an audio alarm to go off after two consecutive entrapment events sensed by the Inherent Entrapment Protection of the Gate Operator.

The audio alarm will sound for a period of 5 minutes or until a Stop command or the “Alarm Reset” switch has been actuated. (refer to page 12)



When the Obstruction Sensor detects an obstruction it will:

1. Stop the gate’s movement and reverse it momentarily.
2. Bring the gate to a resting position.
3. Disable the Hold Open Timer feature until the Gate Operator receives a new command.

If second obstruction is detected before the gate reaches either limit it will:

1. Stop the gate’s movement.
2. Disable the Gate Operator.
3. Sound the UL Alarm
4. A STOP command must be provided to disable the alarm and continue operation.

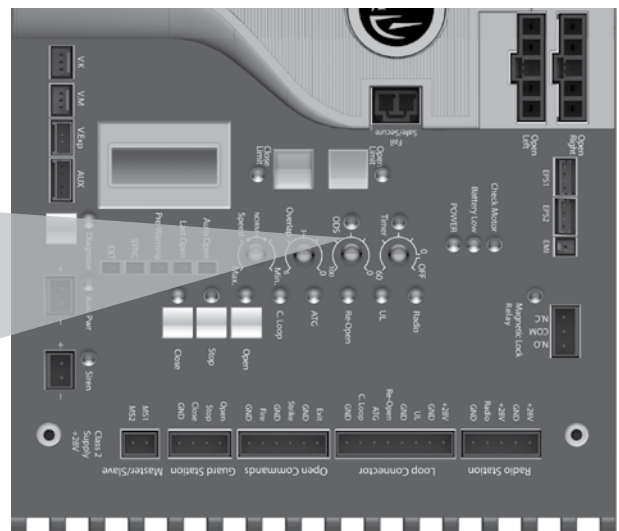
⚠ TECHNICAL TIP: The Status LED for the “ODS” will indicate the following when it has been triggered.

A. **Solid:** Obstruction.

Detected a sudden or abrupt increase in gate resistance.

B. **Flashing:** Overload.

Detected a more subtle, but sustained increase in gate resistance.



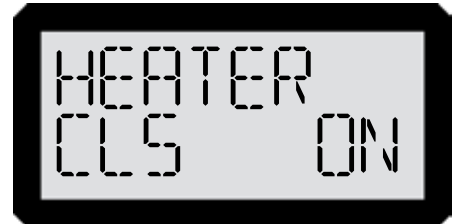
CONTROL BOARD SETUP

Viking Heater

The operator has an integrated heater. Activate this feature when the operator is used in application temperatures down to -20°F (-29°C).

To set the heater to turn on at the Close Limit:

1. Use the “Diagnose” button to scroll through the LCD Display to “HEATER CLS”
2. Press and hold the “Stop” button on the control board.
3. Press and release the “Diagnose” button to turn this feature ON and OFF.



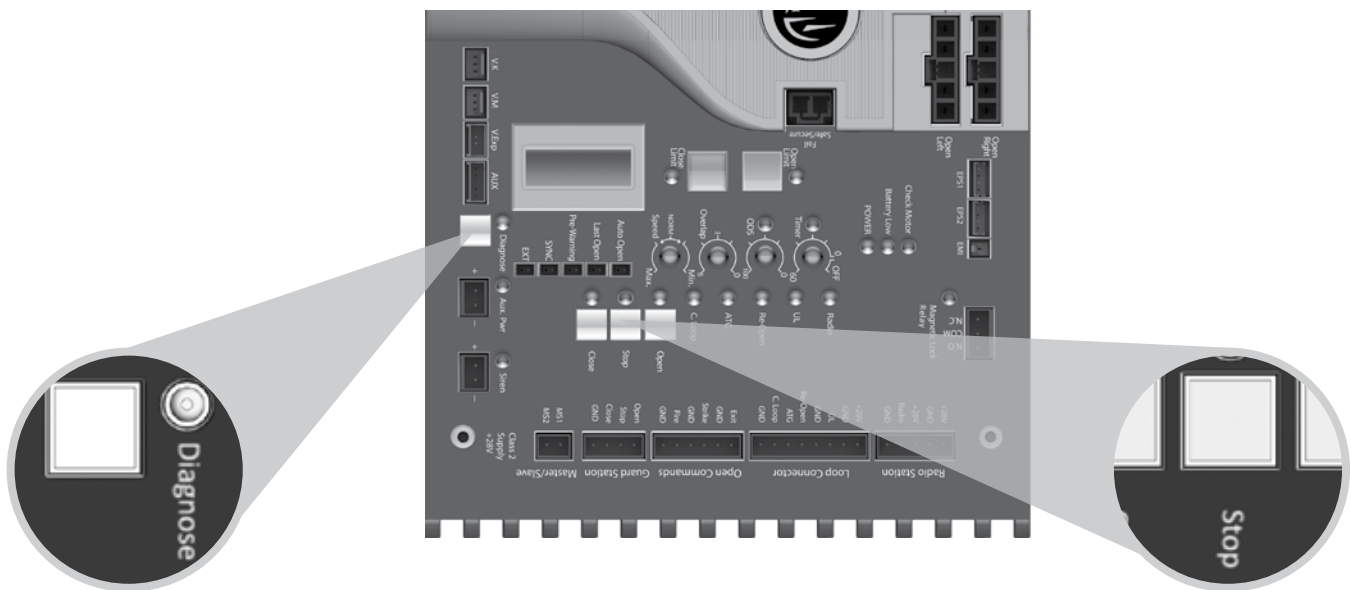
To set the heater to turn on at the Open Limit:

1. Use the “Diagnose” button to scroll through the LCD Display to “HEATER OPN”
2. Perform steps 2-3 as described above.



NOTE: If the application requires the gate to be held open for any reason, set the HEATER ON for both limit positions.

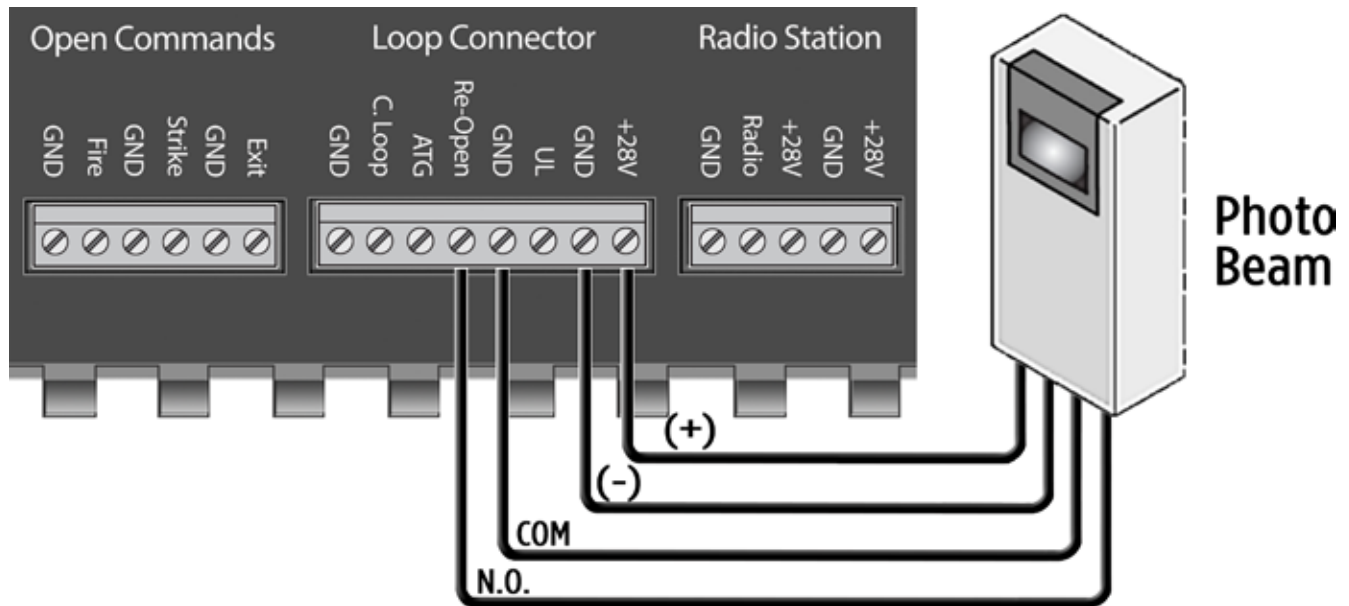
⚠ IMPORTANT: A POSITIVE STOP **must** be used on the gate at the limit position(s) the HEATER has been set for.



ACCESSORY CONNECTIONS

Re-Open Photo Beam (vehicular Safety)

NOTE: This type of photo-beam installation will stop then RE-OPEN the gate all the way to the open limit, when the beam is obstructed. Intended for vehicular safety ONLY. For the purpose of pedestrian entrapment, see pages 10-11.



Note regarding Photo Beam types:

Fail-Safe type - connect the “N.C.” terminal of the photo beam to the “Re-Open” terminal on the control board.

Typically, these are the reflective type photo beams.

Fail -Secure type - connect the “N.O.” terminal of the photo beam to the “Re-Open” terminal on the control board.

Typically, these are the transmitter/receiver type photo beams.

Check for proper operation:

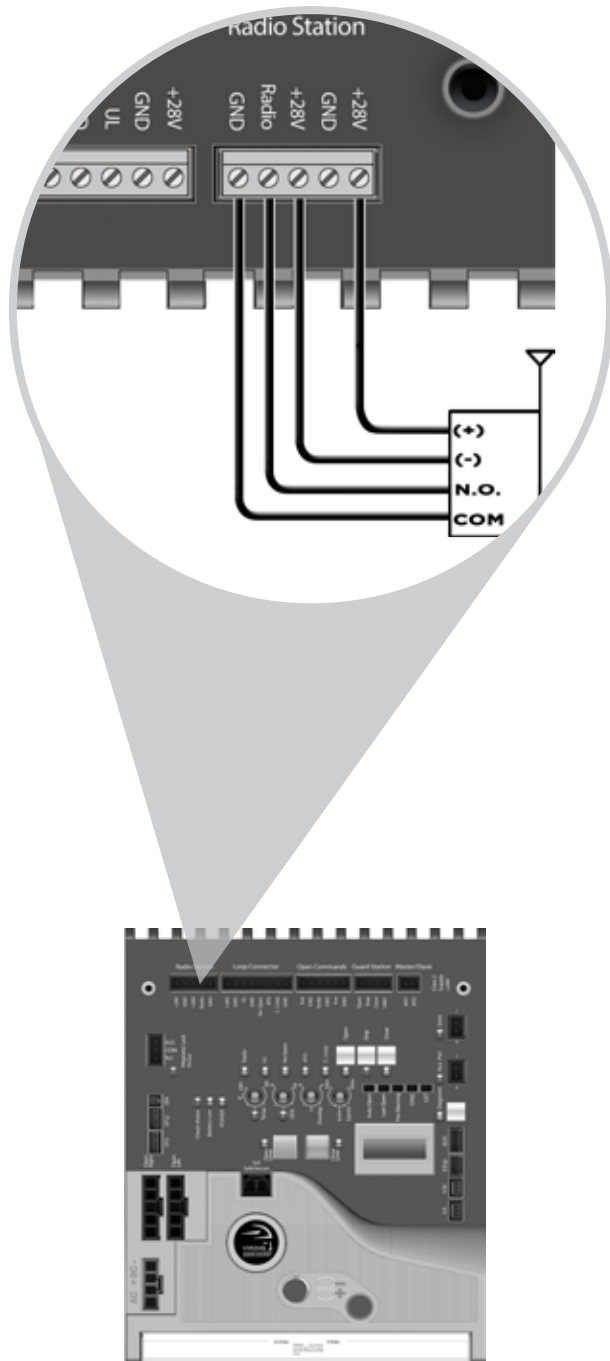
The “Re-Open” LED will illuminate solid while the beam is obstructed and remain off when the beam is unobstructed.

⚠ TECHNICAL TIP: For more information regarding accessory connections to the control board and individual input terminal functions, refer to “Appendix (A)” pages 38-39.

ACCESSORY CONNECTIONS

Radio Receiver (Typical)

⚠ IMPORTANT: The Hold Open “Timer” setting (page 20) affects how the gate will respond to the radio receiver command.



The control board provides two modes of operation that a radio receiver can control the gate:

Open-Stop-Close

1. By having the radio receiver connected as illustrated and with the Hold Open Timer OFF (see page 20):

Every command of the radio transmitter will control the gate as follows:

- First command opens the gate,
- Second command stops the gate and
- Third command closes the gate
- Any subsequent commands will continue in the same order to control the gate.

This type of configuration is not recommended for commercial installations.

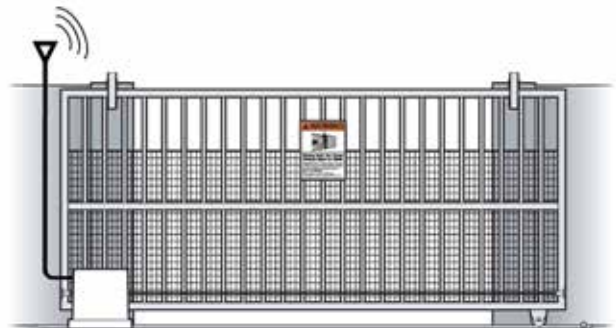
Open Only

2. By having the radio receiver connected as illustrated and with the Hold Open Timer ON (see page 20):

Each command of the radio transmitter is **ALWAYS AN OPEN COMMAND** to the gate.

For maximum reception range:

Locate the radio antenna to the top of the gate column.



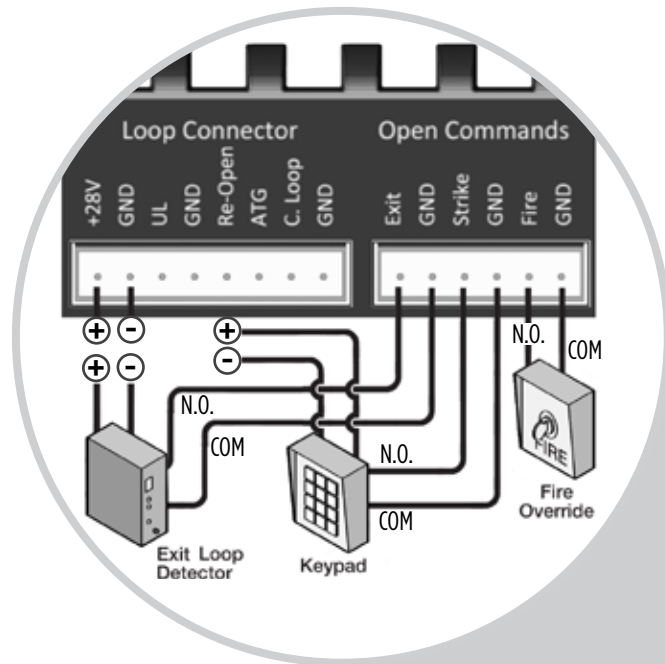
⚠ TECHNICAL TIP: For more information regarding accessory connections and terminal functions, refer to “Appendix (A)” on pages 38-39.

See “Appendix (B)” on page 40 for connecting common radio receiver models.

ACCESSORY CONNECTIONS

Anti-Tailgate, Open Commands & Guard Station

⚠ TECHNICAL TIP: For more information regarding accessory connections and terminal functions, refer to “Appendix (A)” on pages 38-39.



Open Commands

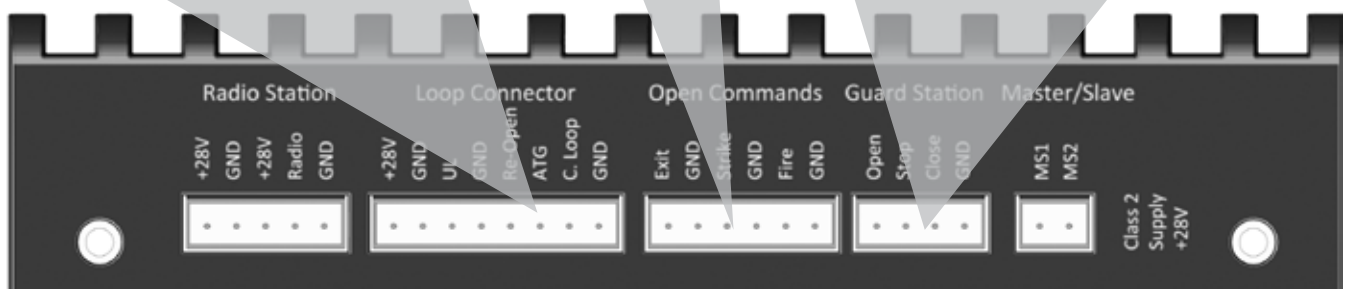
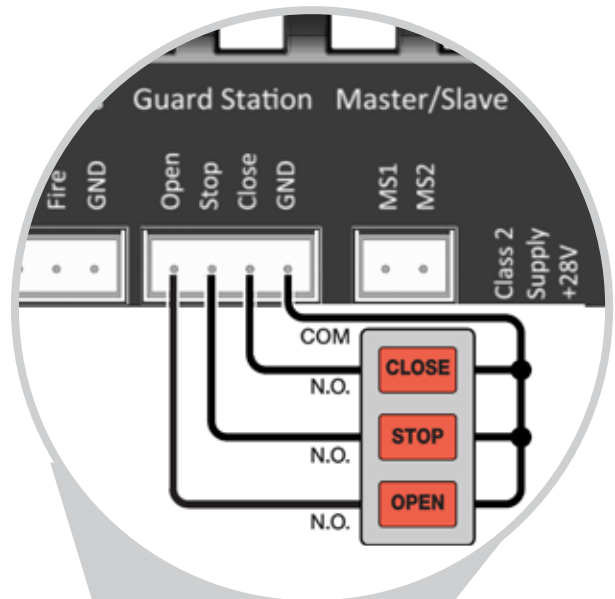
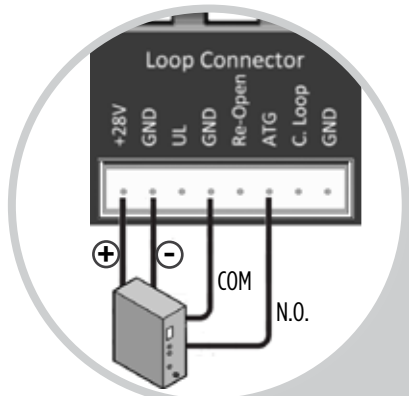
“Exit”, “Fire” and “Strike” input terminals all provide an open command to the control board. Any device connected as shown will open the gate.

Guard Station

⚠ All three buttons must be a Normally Open “N.O.” type of switch, and can share the same common “C” connection to “GND”.

“ATG” Anti-Tailgate

This input will stop the gate when the vehicle triggers the sensor, then closes the gate when the vehicle leaves the sensor, preventing unauthorized vehicles from entry.



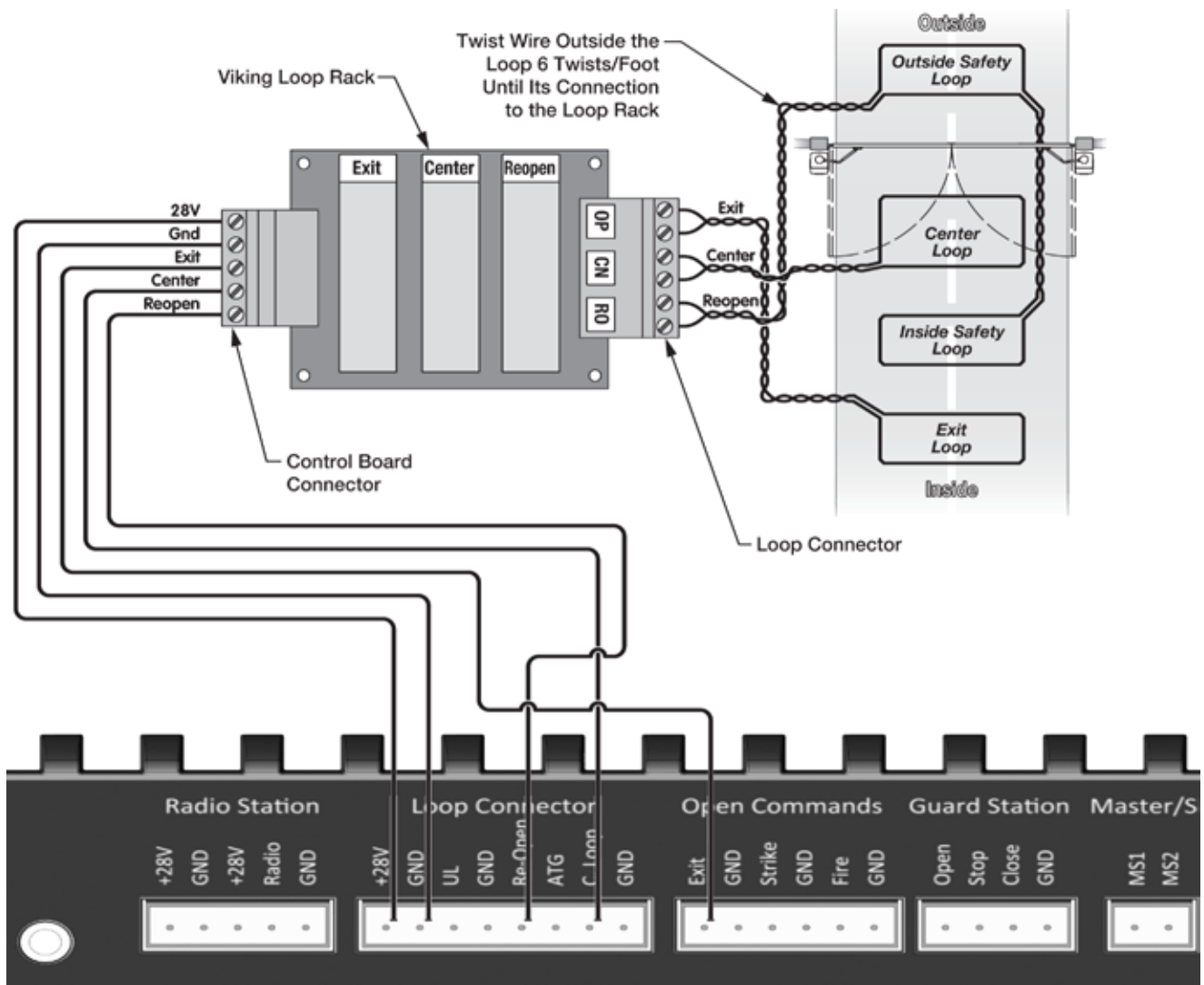
ACCESSORY CONNECTIONS

Viking Loop Rack

TIP: This operator may be equipped with a pre-wired **Loop Rack** that plug-in type loop detectors can be connected to. This provides a convenient alternative to the box type loop detectors that would need to be wired to the control board. Viking does not provide either type of loop detectors.

Loop Rack: Part # VA-LR

Loop Rack Wiring Harness: Part # VA-LRH



ACCESSORY CONNECTIONS

Guidelines for Loop Installation

1. Prevent sharp corners in the geometry of the loop sensor.
2. Install the appropriate number of turns for your loop geometry based on the loop perimeter. Use Table C (below) as a guide.
3. Use XLP (cross-linked-polyethylene) type of wire. This wire reduces the effects of moisture and other environmental events in altering the functionality of the vehicular loop detector.
4. Twist the lead wire at least 6 turns per foot.
5. Use BACKER-ROD to minimize damage to the loop detector wire prior to using the sealant.
6. Place the loop detector wire and adjust the sensitivity of the vehicular loop detector unit in a way to minimize the effects of the gate over the loop detector wire.

⚠ IMPORTANT! Some of the following parameters may affect the proper functionality of the vehicular loop detector.

Consult the manufacturer of the vehicular loop detector and/or loop wire.

- Gate size
- Number of turns in the loop sensor wire
- Distance of the loop sensor wire to the gate at either at the open or close position

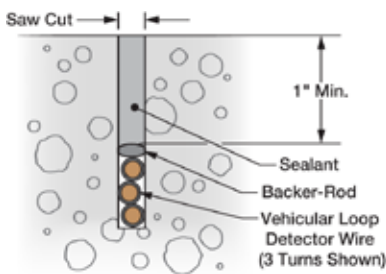
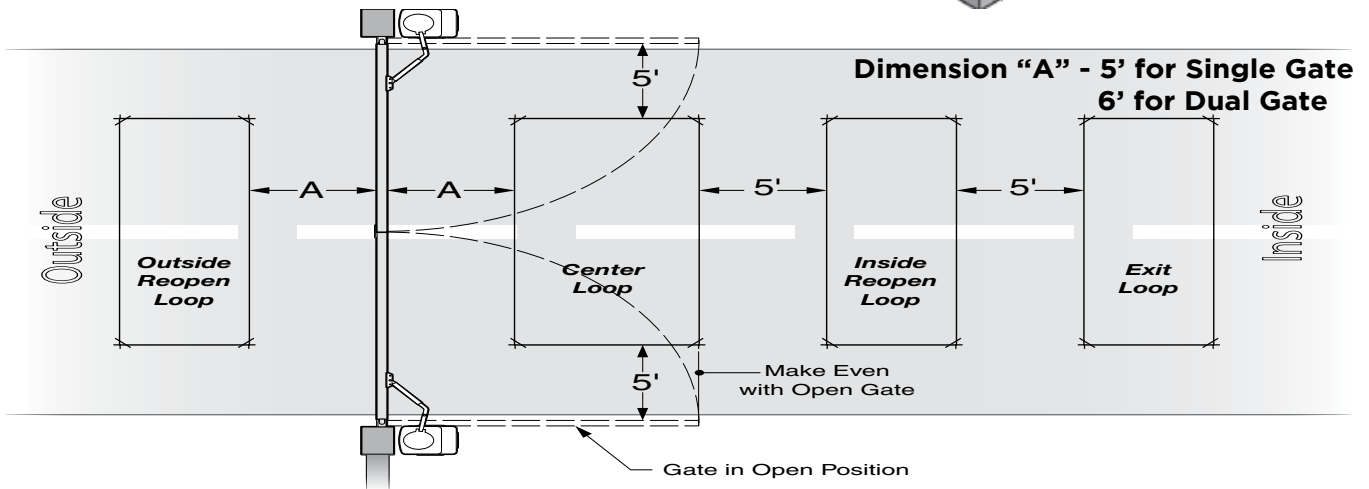
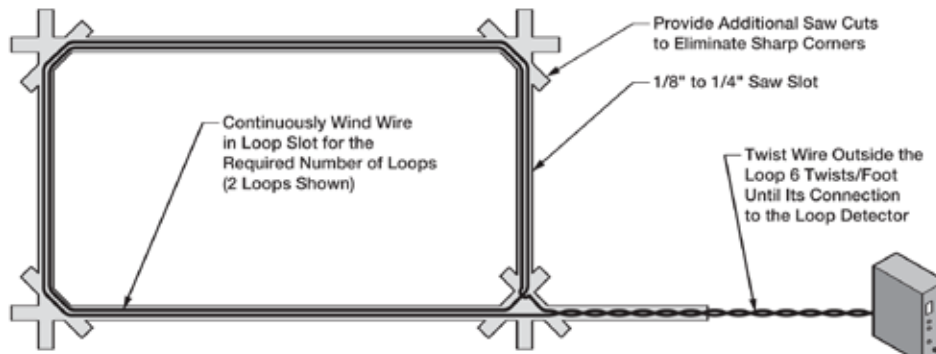


Table C - Recommended Number of Turns

Perimeter (ft.)	Number of Turns
10	5
20	4
30-40	3
50-100	2



ACCESSORY CONNECTIONS

Magnetic Lock, Lock Solenoid

NOTE: Viking Access Systems does not provide external gate lock devices. These items can be purchased from your dealer or distributor.

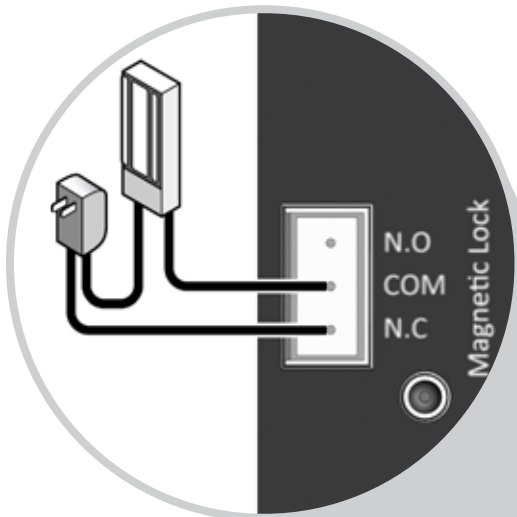
Power for the Locks:

Do not use the 24VDC power supplied by the control board. An external power supply, or plug-in transformer, must be used for the magnetic lock or lock solenoid. Plug the transformer into the "120VAC" receptacle provided at the operators Power Box. This will prevent rapid drainage of the battery in the event of power failure.

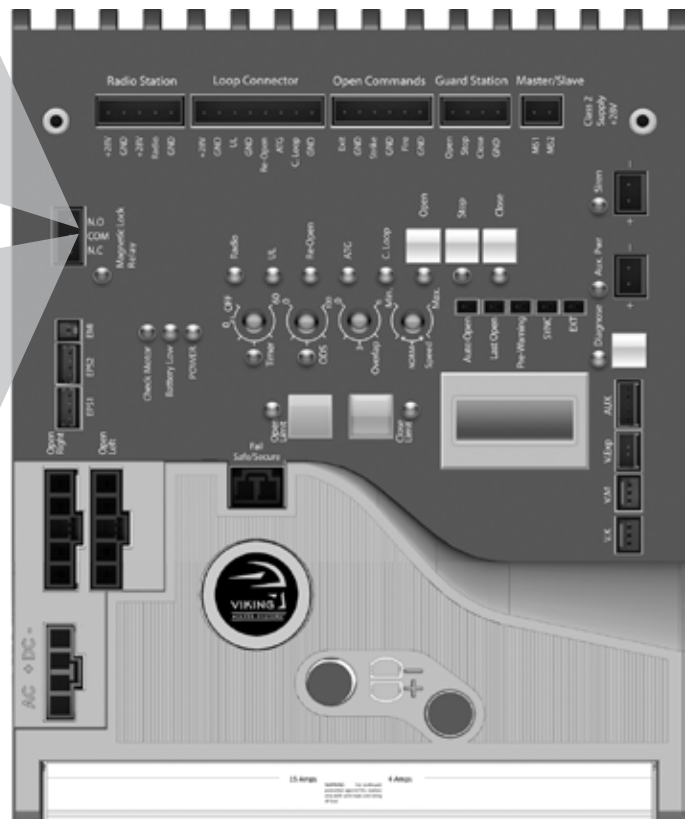
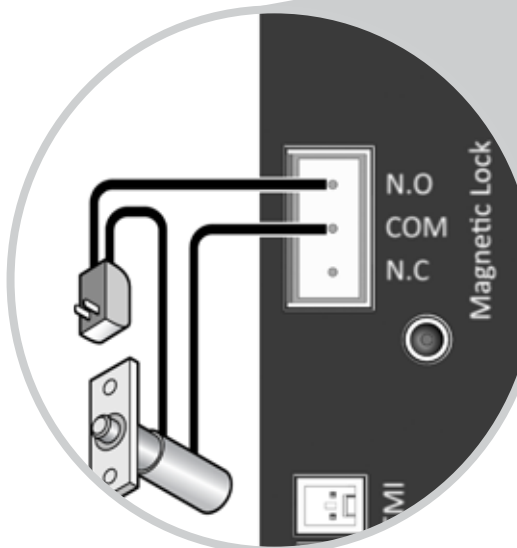
The control boards "Magnetic Lock" relay is rated for 10A-250VAC.

⚠ TECHNICAL TIP: The Magnetic Lock Relay LED will indicate status of the on-board relay even if a lock is not connected to the control board. Refer to page 38.

Magnetic Lock



Lock Solenoid



SYNCHRONIZATION WITH B-12

Barrier Arm (B-12) Synchronization Option

NOTE: The Control Board provides a convenient solution for applications that require synchronized operation with the Viking Barrier Arm Operator model B-12.

This type of application opens and closes in the following pattern:

1. Open Command is provided only to the Viking B-12 Barrier Arm Operator.
2. The Barrier Arm will delay to open until this Gate Operator reaches its Open Limit.
3. The Gate Operator will delay to close until the Barrier Arm reaches its Close Limit.

STEP 1 (Figure A & B)

Connect the Gate Operator to the Viking B-12 Barrier Arm Operator as illustrated.

STEP 2 (Figure A)

At the B-12 Barrier Arm Operator, connect the primary device that will be used as the OPEN input.

STEP 3 (Figure B)

On the Gate Operator Control Board, activate Sync Mode by placing a jumper on to the pin headers labeled "SYNC".

Figure A

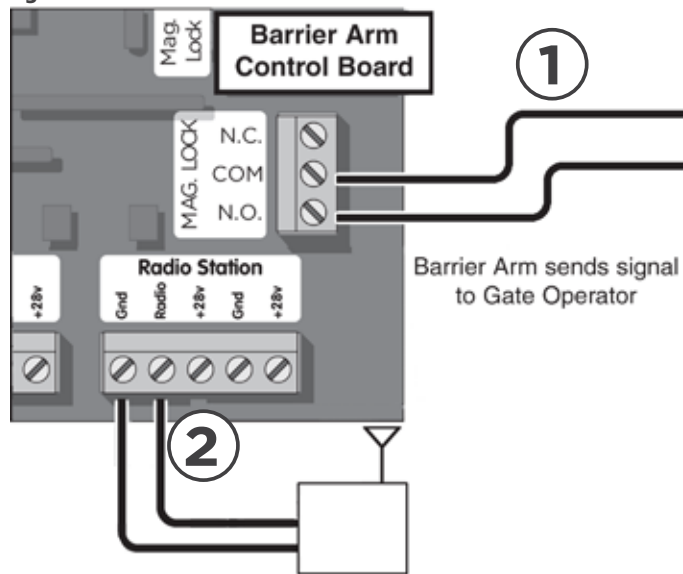
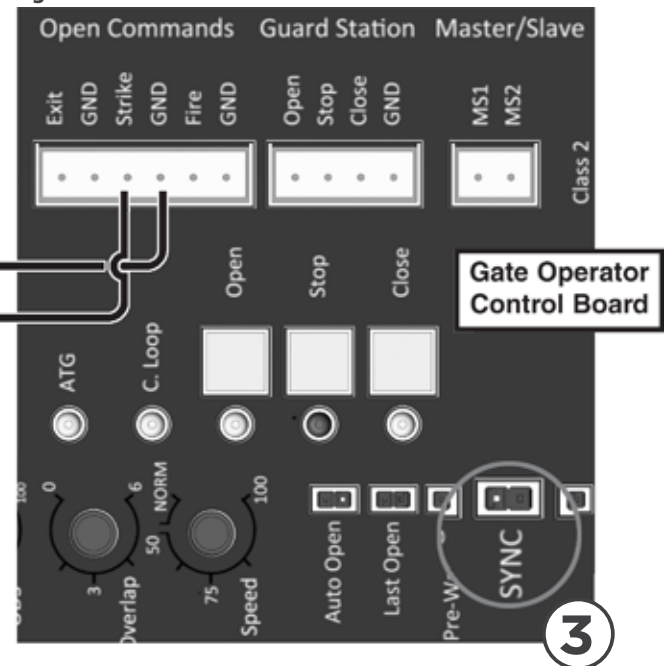


Figure B



STEP 4 (Figure C & D)

Connect Viking B-12 Barrier Arm Operator to the Gate Operator as illustrated.

Figure C

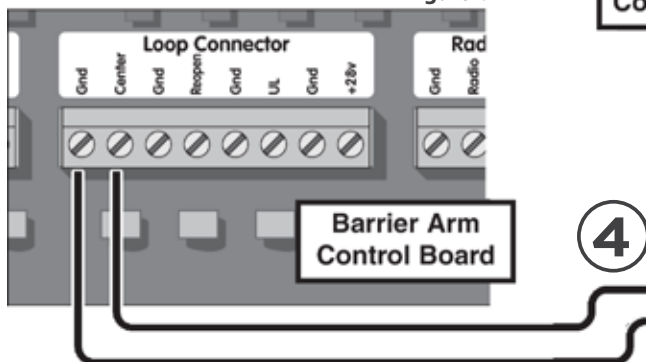
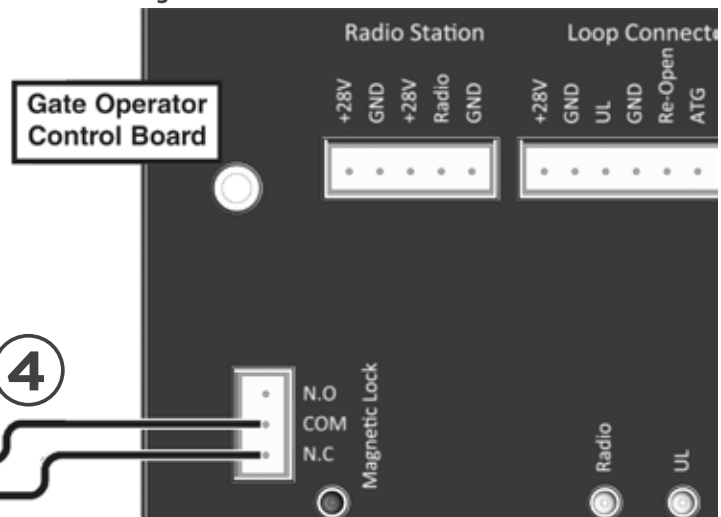


Figure D

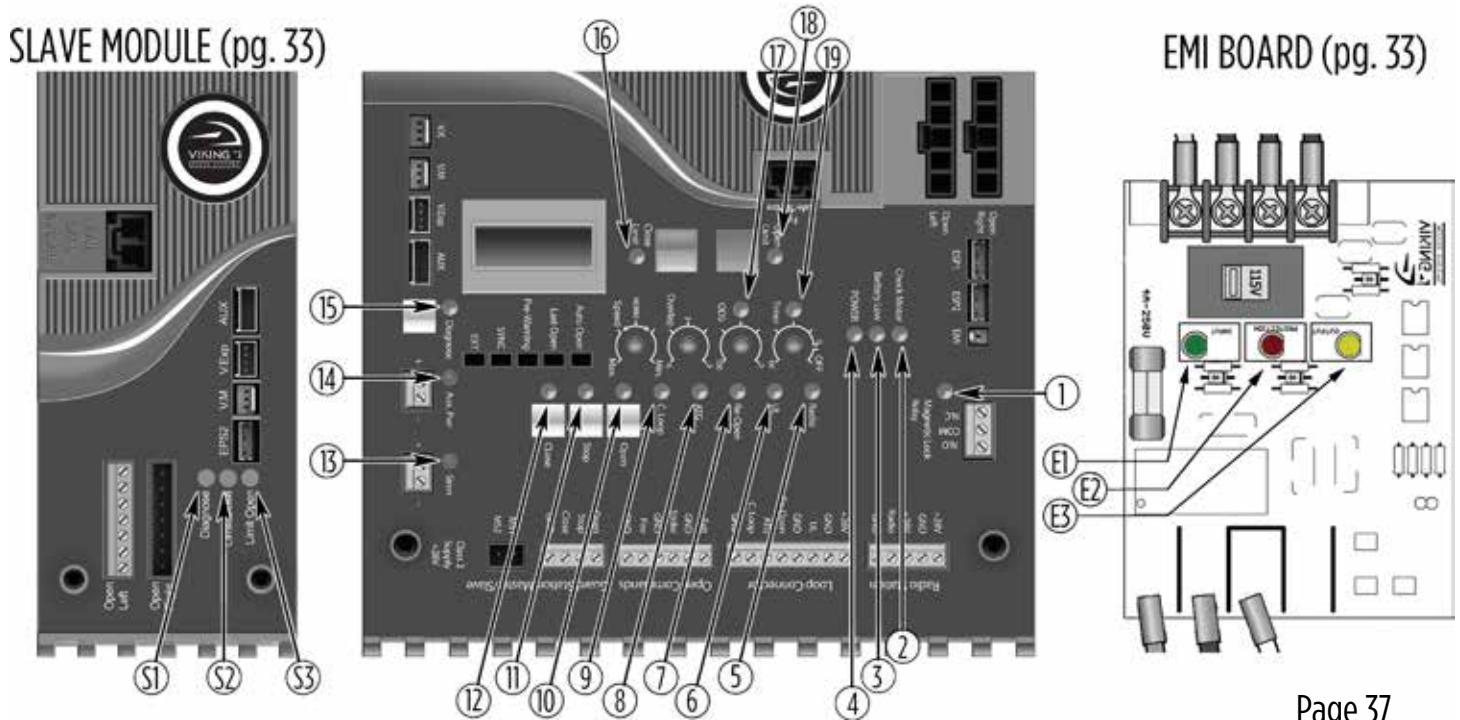


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TROUBLESHOOTING

LED References

In addition to the LCD Display, the control board LEDs monitor the various circuits of the control board. Use the table below to identify the corresponding “TS Ref#” and refer to pages 34-37 for further troubleshooting.



Page 37
TS Ref#(s)

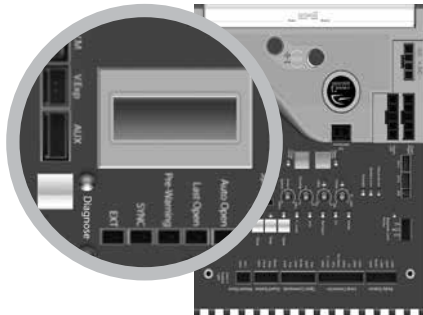
#	LED	Status	Meaning	TS Ref#(s)
1	"Magnetic Lock Relay"	OFF	At Closed Limit and Magnetic Lock Relay state is closed across "COM" & "N.C.". (pg. 29). Gate should be at the Close Limit.	
		SOLID	Not at Closed Limit and Magnetic Lock Relay state is closed across "COM" & "N.O.". (pg. 29). Gate should not be at the Close Limit	
2	"Check Motor"	OFF	Normal Condition.	
		SOLID	The control board is sending power to the motor but the circuit is open.	7, 8
3	"Battery Low"	OFF	Normal Condition.	
		SOLID	Batteries are low. Check power supply to the operator. (pg. 14-15).	1, 2
		FLASHING	Batteries critically low. Check power supply to the operator. (pg. 14-15).	1, 2
4	"POWER"	SOLID	Normal Condition.	
		FLASHING	Operator is running on batteries only (pg. 14-15).	1, 2
		OFF	No power to control board.	1, 2, 4, 5
5	"Radio"	OFF	Normal Condition.	
		SOLID	Control Board is receiving an input from a device connected to the Radio terminal (pg. 25,38).	9, 10
6	"UL"	OFF	Normal Condition.	
		SOLID	Control Board is receiving an input from a device connected to the UL terminal (pg. 10-11, 38).	9, 10
7	"Re-Open"	OFF	Normal Condition.	
		SOLID	Control Board is receiving an input from a device connected to the Re-Open terminal (pg. 24, 27, 38).	9, 10
8	"ATG"	OFF	Normal Condition.	
		SOLID	Control Board is receiving an input from a device connected to the ATG terminal (pg. 26, 38).	9, 10

#	LED	Status	Meaning	TS Ref#(s)
9	“C Loop”	OFF	Normal Condition.	
		SOLID	An input from a device connected to the C Loop terminal (pg. 27, 38)	9, 10
10	“Open”	OFF	Normal Condition.	
		SOLID	An input from a device to Exit, Fire, Strike or Open terminal (pg. 26, 38)	9, 10
11	“STOP”	OFF	Normal Condition.	
		SOLID	An input from a device connected to the Stop terminal (pg. 26, 38)	9, 10
12	“Close”	OFF	Normal Condition.	
		SOLID	An input from a device connected to the Close terminal (pg. 26, 38)	9, 10
13	“Siren”	OFF	Normal Condition.	
		SOLID	Second consecutive obstruction has been detected. (pg. 20)	11, 13, 1, 2
		FLASHING	Batteries are critically low.	1, 2
14	“Aux. Pwr”	OFF	No voltage output on these terminals at the moment.	
		SOLID	There is 24VDC output on these terminals at the moment.	
15	“Diagnose” (master)	OFF	Normal Condition	
		FLASHING	Errors have been detected; Check LCD Display for ERR messages (pg. 36)	
16	“Close Limit” (master)	OFF	Gate is not at the close limit position.	
		SOLID	Gate is at the close limit position.	
		FLASHING	Indicates a problem with the limit switches or wires.	6
17	“Open Limit” (master)	OFF	Gate is not at the open limit position.	
		SOLID	Gate is at the open limit position.	
		FLASHING	Indicates a problem with the limit switches or wires.	6
18	“ODS”	OFF	Normal Condition.	
		SOLID	Obstruction event has been detected on the MASTER motor. (pg. 20, 22)	11, 13, 1, 2
		FLASHING	Overload event has been detected on the MASTER motor. (pg. 20, 22)	11, 13, 1, 2
19	“Timer”	OFF	If gate is at the open limit, the Timer to close is turned OFF. (pg. 20)	
		SOLID	Timer to close is ON and counting down to close the gate. (pg. 20)	
		FLASHING	Timer is ON but is not timing out due to a conflicting command. (pg. 20)	9, 10
S1	“Diagnose” (slave)	OFF	Normal Condition	
		FLASHING	Errors have been detected; Check LCD Display for ERR messages. (pg. 36)	
		SOLID	Obstruction event has been detected on the SLAVE motor. (pg. 20, 22)	11, 13, 1, 2
		RAPID FLSH	Overload event has been detected on the SLAVE motor. (pg. 20, 22)	11, 13, 1, 2
S2	“Limit Close” (slave)	OFF	Slave gate is not at the close limit position.	
		SOLID	Slave gate is at the close limit position.	
		FLASHING	Indicates a problem with the limit switches or wires on the slave operator.	6
S3	“Limit Open” (slave)	OFF	Slave gate is not at the open limit position.	
		SOLID	Slave gate is at the open limit position.	
		FLASHING	Indicates a problem with the limit switches or wires on the slave operator.	6
E1	“AC VOLTAGE INPUT”	SOLID	Normal Condition.	
		OFF	Incoming power to the EMI Board is not sufficient..(pg. 14)	1
E2	“PROTECTION WORKING”	SOLID	Normal Condition.	
		OFF	EMI Board is damaged and circuit is not protected . Replace EMI Board.	
E3	“AC VOLTAGE OUTPUT”	SOLID	Normal Condition.	
		OFF	There is no output voltage from the EMI Board.	2

TROUBLESHOOTING

LCD Display References

The control board is equipped with a LCD Display that provides operator information, current conditions, settings, diagnostics and error messages. Use the table below to identify the corresponding “TS Ref#” and refer to page 37 for further troubleshooting.



1. Error Messages will be displayed first.
2. The “Diagnose” LED will flash consecutively indicating how many Error Messages are available.
3. Press the Diagnose button to manually scroll through all of the Messages.

Page 37
TS Ref #s

LCD MSG	Meaning	
VIKING ACCESS	Welcome Message	
MODEL ---	Indicates the Model of the unit. G-5, X-9 or i-8	
System Status Messages		
GATE IS IDLE	Gate is stopped between limits.	
GATE IS OPENING	Gate is opening.	
GATE IS CLOSING	Gate is closing.	
GATE IS OPENED	Gate is at the limit open position.	
GATE IS CLOSED	Gate is at the limit close position.	
STOP BY OBSTRUCT	Master or Single motor has stopped due to an obstruction of the gate system. Also refer to the “ODS” LED. (pg. 22, 32, 33 @ 18)	11, 12, 13
STOP BY OVERLOAD	Master or Single motor has stopped due to an overload of the gate system. Also refer to the “ODS” LED. (pg. 22, 32, 33 @ 18)	11, 12
OVERLAP TIMING	Gate is waiting for the overlap time.	
HOLDING ... SEC	Gate is at the limit open position and timing to close - The display shows the actual time left before closing.	
STOP BY ODS S	Slave motor has stopped due to an obstruction sensor event. Also refer to the “DIAGNOSE” LED on the Slave Module. (pg. 22, 32, 33 @ S1)	11, 12, 13

LCD Display References

LCD MSG Meaning

Multi Meter Displays

MOT AMP
---- A This is the motor current amperage during operation.

MOT VOLT
---- VDC This is the actual motor voltage during operation.

AC VOLT
---- VAC This is the actual low voltage AC to the Control Board from the transformer.

CHARGE
---- VDC Indicates the charging voltage to the batteries, if the Battery Switch is in the OFF position.

BAT VOLT
---- VDC Indicates battery voltage, if the AC power is discontinued to the Control Board.

Board Settings Messages

SPEED
__% Shows the percentage of speed set by the Speed adjustment on the control board. (pg. 20)

OVERLAP
__ SEC Shows the number of seconds set by the Overlap Adjustment on the control board.

ODS SENS
----% Shows the force setting selected to trip the obstruction sensor. (pg. 20, 22)

TIMER
__ SEC Shows the amount time set or remaining to hold the gate at the Open Limit position, before the gate starts to close. (pg. 20)

HEATER
CLS OFF The Integrated Heater has been disabled for the Closed Limit. (pg. 23)

HEATER
CLS ON The Integrated Heater has been enabled to turn on at the Close Limit position (pg. 23) "*" will be displayed while it is heating.

HEATER
OPN OFF The integrated Heater has been disabled for the Open Limit. (pg. 23)

HEATER
OPN ON The Integrated Heater has been enabled to turn on at the Open Limit position (pg. 23) "*" will be displayed while it is heating.

TROUBLESHOOTING

LCD Display References

Page 37
TS Ref #s

LCD MSG	Meaning	
Error Messages		
ERR AC LOW	Indicates that the 24VAC supply to the VFlex Board is too low from the 115/230 power supply.	1, 3, 20
ERR AC HIGH	Indicates that the 24VAC supply to the VFlex Board is too high from the 115/230 power supply.	1, 3, 20
ERR AC NO AC	Indicates that there is no 24VAC supply detected to the VFlex Board from the 115/230 power supply.	1, 2, 4, 20
ERR CHRG HIGH	Potential problem with the charging voltage from the control board.	1, ?
ERR CHRG CHECK 4A	a) 4 Amp Fuse is blown, or; b) There is a problem with the batteries or the control board.	18, ?
ERR BAT LOW	The battery is low.	1, 2, 3, 4
ERR FUSE 15 AMP	15 Amp motor fuse is blown on the Master or Single Control Board.	7, 11, 12
ERR EMI NO EMI	No EMI board detected.	15
ERR EMI NO FUSE	4 Amp main fuse is blown on Power Supply Panel Assembly.	2
ERR EMI NO AC	There is no AC voltage detected from the EMI Board.	20
ERR EMI UNKNOWN	There is a problem with the communication between the EMI Board and the VFlex Board.	21
ERR EMI PROTECT	Lightning strike protection for the EMI Board (behind the Power Supply Panel Assembly) needs to be replaced.	?
ERR FUSE 15A S	15 Amp motor fuse is blown on the SLAVE Module.	7, 11, 12
ERR REFV WRONG	One, or more, of the internal reference voltages from the VFlex (Master) Control Board are incorrect.	?

TROUBLESHOOTING

Solutions

Begin the troubleshooting process by referring to the error messages on the LCD Display and/or the Status LEDs on the control board. Use pages 32-36 to identify the Troubleshooting Reference # (TS Ref#) then reference the table below.

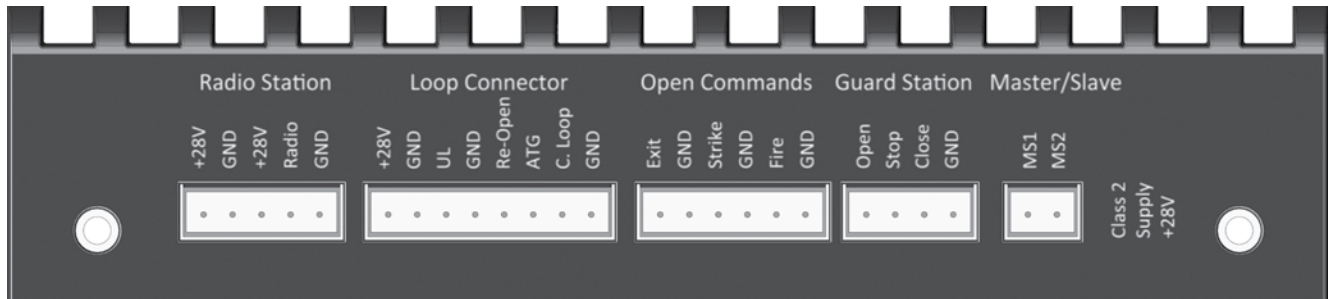
TS Ref#	CHECK	Page Ref#
1	Check that the high voltage power supplied to “EMI Board” is within range. 100V-120V or 200V-240V	pg. 14
2	Remove and check EMI Fuse for continuity.	pg. 14
3	Check that the “Voltage Selector”, on the EMI Board, is set according to the high voltage power supply. 115VAC or 230VAC	pg. 14
4	Not applicable to this model	
5	Check that the Power Harness is connected to the control board.	pg. 4, 14
6	Check that the limit circuits are Normally Closed (N.C.). Check the limit switch.	
7	Check Motor Fuse on the control board.	pg. 4
8	Check that the operator is not in Manual Release mode	
9	Check the Status LEDs and LCD Display to determine if the control board is receiving an input from any external devices or if the “ODS” has been triggered.	pg. 20, 22 32-34
10	Remove the external devices from the control board to determine if the control board is responding to an input or problem with the external device or wiring.	pg. 24-27, 32-33
11	Check the “ODS” setting on the control board.	pg. 22
12	Check that the gate can be moved manually with low resistance throughout its full range of motion.	pg. 8
13	Check the limit position.	
14	Not applicable to this model	
15	Check that the EMI cable is properly connected to the “EMI” connection at the VFlex control board and at the EMI Board.	pg. 4
16	Check the LCD Display for Error Messages	pg. 36
17	Not applicable to this model	
18	Check 4 Amp fuse on the control board	pg. 4
19	Manually adjust any setting on the Control Board to clear all wireless override settings	
20	Check for 24VAC out from the Toroidal Transformer and Power Harness	pg. 4, 14
21	Check the EMI Cable and contacts between the EMI Board and the VFlex Board	pg. 2, 4
?	The Control Board or EMI board may be damaged. Call Viking Technical Support for further assistance	

Appendix (A)

Access Control Connections

Power Connections

The control board provides a 24VDC output to power external devices and controls. Alternatively, for devices that require a power supply other than 24VDC, the operators Power Box contains a convenient 120VAC receptacle to connect a plug-in transformer.



“C”	=	Common
“N.O.”	=	Normally Open

Terminals Connections and Input Functions:

Viking Terminal	Function	Device Terminal
“+28V”	DC Positive	“+”
“GND”	DC Negative	“-”
“GND”	Relay Common	“C”
“Radio”	Open - Stop - Close If “Timer” OFF: If “Timer” ON:	“N.O.”
“UL” (see pages 10 & 11)	Stops gate then Reverses 12 inches Stops gate, does not reverse	“N.O.”
“Re-Open”	No function Stops then Opens gate	“N.O.”
“ATG” Anti-Tailgate	Stops gate if closing Closes gate to prevent tailgating	“N.O.”
“C. Loop”	No function Prevents gate from Closing	“N.O.”
“Open”, “Exit”, “Fire” & “Strike”	Opens gate Stops then Opens gate	“N.O.”
“Stop”	Stops gate	“N.O.”
“Close”	Closes gate No function	“N.O.”

⚠ TECHNICAL TIP: Each input Terminal (i.e. Radio, Exit, Re-Open, UL) has a corresponding Status LED that when illuminated indicates an input is currently being provided to the terminal and the gate is responding accordingly. (See pages 32-33 LED References)

Relays In General

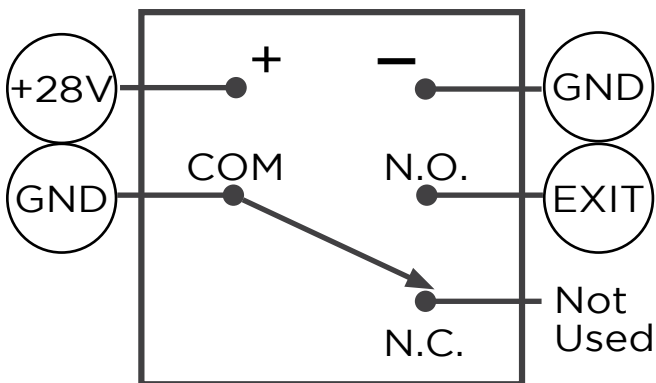
NOTE: Viking Access Systems does not provide the external safety devices and access controls. These items can be purchased from your dealer or distributor.

In General

In regards to the Viking control board, all external safety devices and access controls contain, and are, simple relays that provide an input to the Viking control board when the device is activated.

When these devices are activated, their internal relays create a contact, or short, between the “C” and “N.O.” terminals. This contact is what provides the command to the Viking control board.

▲ TECHNICAL TIP: Viking uses the Normally Open “N.O.” contact from the device, excluding “fail-safe” type photo beams. In such instances, the Normally Closed “N.C.” will be used instead.



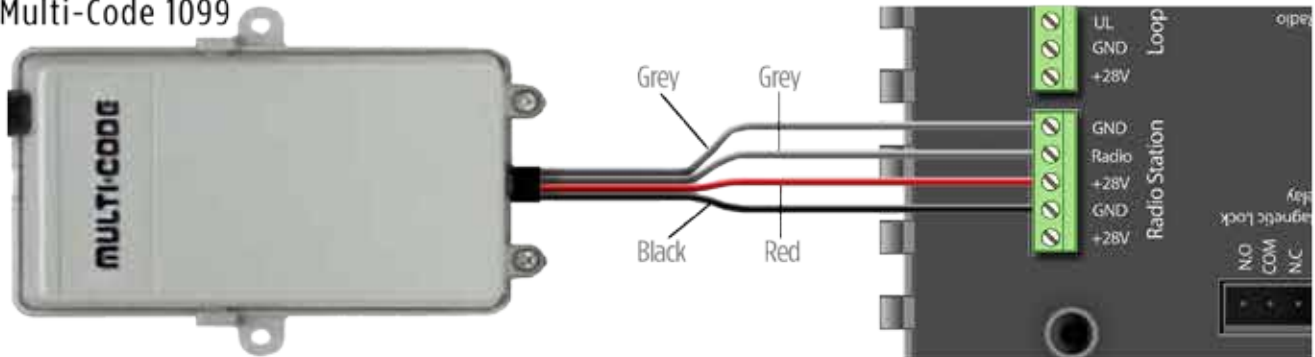
Glossary of Terms

- 1. Terminal:** Wire Connections.
- 2. Input Terminal:** On the Viking control board, the terminal which is labeled for a specific command (Re-Open, Exit, Radio, etc.). The N.O. contact from the access control device is to be connected to the Input Terminal.
- 3. Terminal Block:** On the Viking control board, a removable block containing multiple terminals.
- 4. Relay:** The component of an access control or safety device that provides an input or command to the Viking control board.
- 5. “C” Relay Common Terminal:** This is the relay terminal that makes contact (a short) to the N.O. terminal when the device is activated. *Always wire this relay terminal to any “GND” terminal at the control board.*
- 6. “N.O.” Relay Normally Open Terminal:** The relay terminal that has an open contact to “C” while the relay is not activated, and a closed contact when the relay is activated. *Almost always wire this relay terminal to an “Input Terminal” at the control board,*
- 7. “N.C.” Relay Normally Closed Terminal:** The relay terminal that has a closed contact to “C” while the relay is not activated, and an open contact when the relay is activated. *This terminal is rarely used.*
- 8. Relay Coil:** Contains the terminals that provide power at the relay.
- 9. “+” Relay Positive Terminal:** The positive power pole for the relay coil. *Always wire this relay terminal to any “+28v” terminal at the control board.*
- 10. “-” Relay Negative Terminal:** The negative power pole for the relay coil. *Always wire this relay terminal to any “GND” terminal at the control board.*

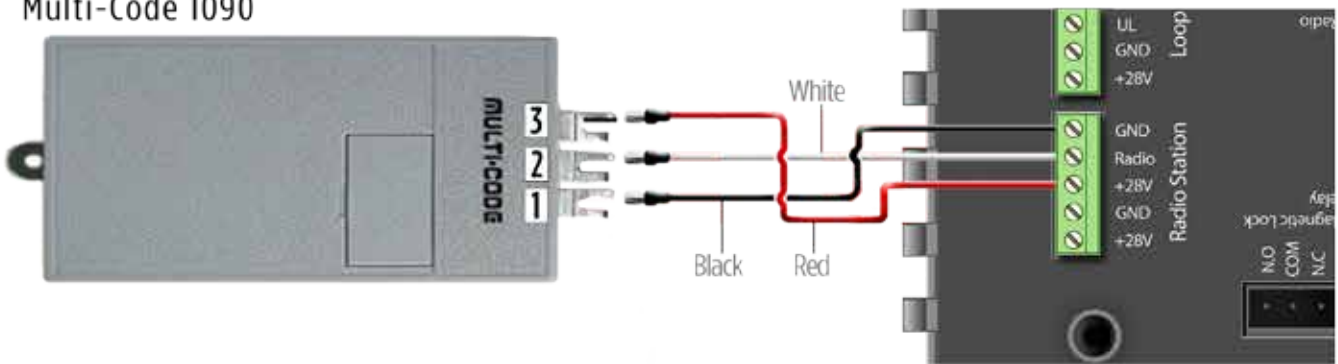
Appendix (B)

Common Radio Receivers - Connections

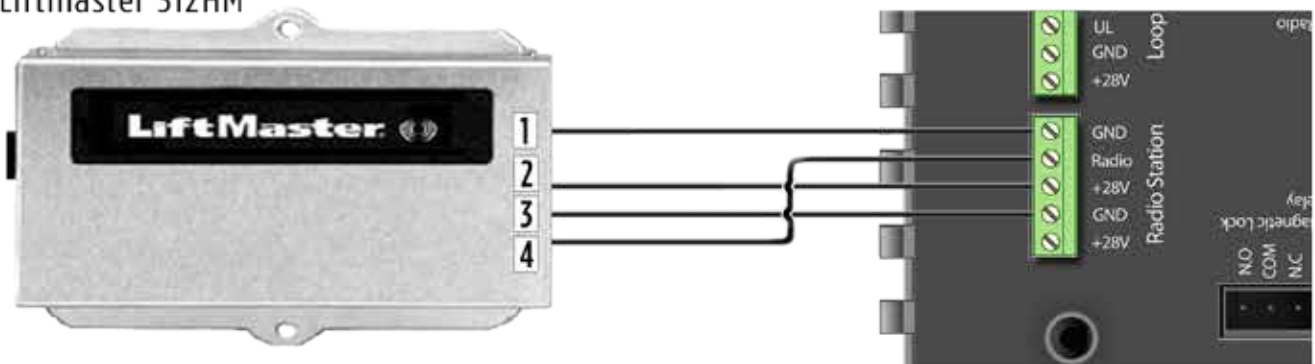
Multi-Code 1099



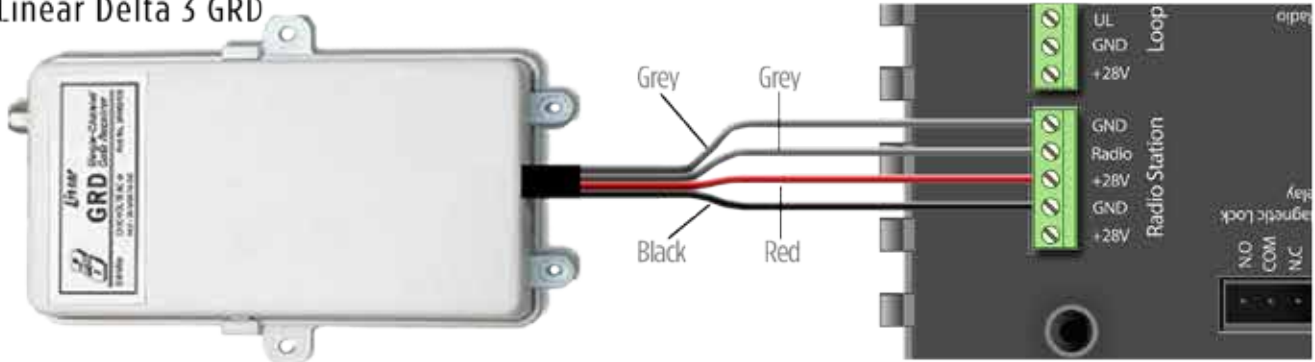
Multi-Code 1090



Liftmaster 312HM



Linear Delta 3 GRD



Solar Applications

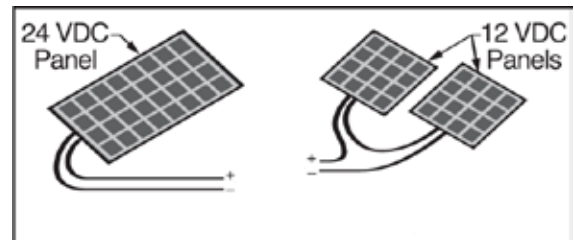
NOTE: Viking recommends Solar Package (**part # VA-SOCHP**) for most general solar applications. Alternatively, individual and third party solar components can be used. The following are minimum system requirements and installation information.

Panels

- Voltage 24V
- Wattage 80W (minimum)

Cut the wires coming from the toroidal transformer.

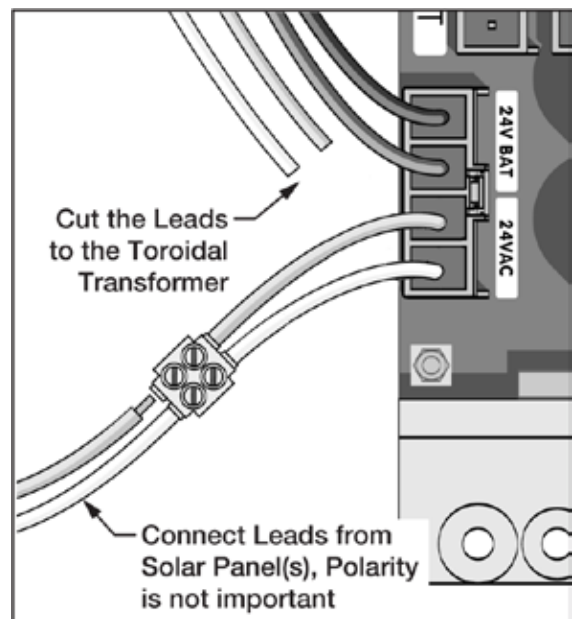
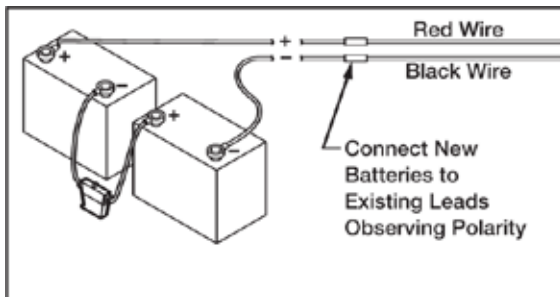
Connect the solar panel cables to the power harness as shown.



Batteries & Fuse

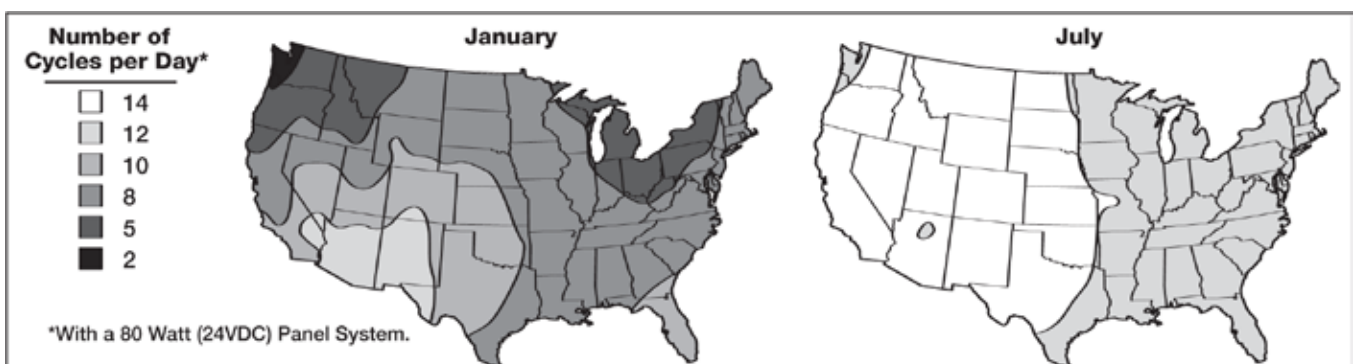
- Voltage 24V
- Amp Hour 35Ah (minimum)
- Fuse 10A (minimum)

Replace the operators batteries with 35Ah or greater.



⚠ IMPORTANT: The chart provided can be used as a guide for the number of cycles the gate will operate per day. The chart is for a single gate operator with just:

- One Radio Receiver
- One low voltage, low current loop detector
- One low voltage, low current photo beam



If more specific information is needed please consult with Viking Access Systems. For more information regarding solar energy refer to www.nrel.gov/solar

VIKING EXPANSION PRODUCTS



VIKING KONNECT Master/Slave Kit Secure and reliable Master/Slave communication using Viking's Konnect technology. Paired with the Viking App, each module also doubles as a diagnostic tool.
Part# VA-KONNECT-MS

Q-7, B-12 & ECU Operators require (2) Antenna Extension Cables (part# VA-RPSMA)



VIKING KONNECT Diagnostic Tool On-site remote access to the operator from the convenience of a compatible hand held device. With the Viking App, this tool becomes a wireless extension of the control board allowing you to view and change settings, review diagnostic information, operate the gate for testing and update the control boards firmware. **Part# VA-KONNECT-D**

Q-7, B-12 & ECU Operators require (1) Antenna Extension Cable (part# VA-RPSMA)



VIKING MONITOR Off-site access to operator diagnostics and perform firmware updates from just about anywhere with cellular service. With the Viking App, this tool allows you to monitor and label multiple operators by site and location for quick reference. Provides error notifications, operator status, settings and diagnostic information.

Part# VA-MONITOR

Q-7, B-12 & ECU Operators require (1) Antenna Extension Cable (part# VA-RPSMA)



VIKING APP Mobile device user interface application for Viking Konnect and Viking Monitor. Available for iOS, Android and Windows operating systems. Free for download from your mobile device application store or www.vikingaccess.com



VIKING AC SURGE PRO Adds another layer of protection to the high voltage power supply of your gate operator. Connecting the AC Surge Pro in parallel to the EMI Board, provides a dual layer of protection from surges up to 20,000 Volts / 10,000 Amps. **Part# VA-SURGEPROAC**



VIKING SOLAR KIT The components included in this package are intended to provide sufficient power for general applications.

Part# VA-SOCHP

This Kit includes the following components:

- (2) **12V 40W Solar Panels** Part# VA-SO40W (**wired in series = 24V 80W**)
- (2) **12V 35Ah batteries** Part# DUBA35 (**wired in series = 24V 35Ah**)
- (1) **Solar Charger** Part# SOCHR10
- (1) **Solar Power Harness** Part# SOHAR

⚠ NOTE: The number of cycles achieved from this kit are dependent upon the following and may require increased panel and battery capacities:

- Power consumption of all accessories being used
- Average solar radiation of geographic location

OUR CONTINUOUS COMMITMENT TO EXCELLENCE

Viking Access Systems is continuously working hard to identify and design products that will appeal to the industry and its needs. As technology continues to advance, we have developed a completely efficient and intelligent line of gate operators to meet the changing demands. These machines offer: full UL325 and UL991 compliance, soft-start and soft-stop, intelligent obstruction sensors, continuous operation (100% duty cycle) and extreme power efficiency. Innovative features include: adaptive and self-learning algorithms, redundancy design in both hardware and software to ensure operation and functionality, protection from lightning, short circuit and power surges, and our exclusive helical gearing offering the highest efficiency rating in the industry. Our entire product line is continually modified and improved based on the latest technology and our customer's valuable feedback. The results are products that offer accuracy, efficiency, reliability and performance, all in sleek, high-tech designs.

We pledge to continue establishing ourselves as the leader in high quality, innovative gate operators by developing "Next Level" technology. We are committed to providing safety and convenience with innovative solutions for every security gate need.



STANDARD FEATURES

- UL Listed; UL325 and UL991
- ETL Listed; UL325 and UL991
- Elegant design, appealing to any architectural project
- Plated and powder coated cabinet
- Weather-proof design
- Adjustable travel speed
- Auto-Open and Last-Open features for power outage management
- Hold Open Timer to automatically close the gate
- Built-in Battery Backup
- Intelligent speed control with smooth start and stop, self-adjust system
- On-Board LCD Display provides diagnostics, operator status, settings and real-time volt and amp readings
- Intelligent obstruction detection with adjustable sensitivity
- Built-in motor heater for cold weather applications
- Built-in protection against lightning strikes or similar electrical surges
- Regulated power supply for your external accessories
- Inherent overload protection; redundancy design using multiple types of protection
- Modular connectors for easy access control and accessory installation
- Solar panel and low voltage wiring compatibility
- LED indicators display gate and operator status for easy troubleshooting
- Equipped for 115/230 VAC, 24 VAC/VDC and Solar power supplies.

INSTALLATION DATE: _____

COMPANY / INSTALLER: _____

CONTACT: _____

SERIAL NUMBER(S): _____

ALL INSTALLATION, MAINTENANCE AND REPAIR WORK MUST BE DOCUMENTED AND MADE AVAILABLE TO THE USER.



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