

SwingSmart™ CNX

CNX 20

Vehicular swing gate operator with SmartCNX™ Controller



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SwingSmart CNX 20

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SAFETY MESSAGES

The safety messages below inform you about potential hazards that can result in injury. Safety messages specifically address level of exposure to operator and are preceded by one of four words: **DANGER, WARNING, CAUTION** or **NOTICE**.

! DANGER

Indicates a hazardous situation which, if not avoided, **WILL** result in **DEATH** or **SERIOUS INJURY**.

! WARNING

Indicates a hazardous situation which, if not avoided, **COULD** result in **DEATH** or **SERIOUS INJURY**.

! CAUTION





Indicates a hazardous situation which, if not avoided, **COULD** result in **MINOR** or **MODERATE INJURY**.

NOTICE

Addresses practices not related to personal injury. Indicates damage to equipment is probable if the hazardous situation is not avoided.

COMMON INDUSTRIAL SYMBOLS

These international safety symbols may appear on product or in its literature to alert of potential personal injury hazards. Obey all safety messages that follow these symbols to avoid possible injury or death.

| Symbol | Safety Hazard |
|--|-------------------------|
|  | Attention - Take Notice |
|  | Danger - Keep Away |
|  | Entrapment Zone |
|  | Possible Pinch Point |

SAFETY REQUIREMENTS

IMPORTANT SAFETY INSTRUCTIONS

Hazards, associated with automatic gates, can be reduced with proper site design, installation, and use. Installers, maintenance crews, and owners/users must read and follow the safety requirements found in HySecurity® product manuals.



It is important that only qualified installers handle installation of HySecurity Gate vehicular gate operators. A "qualified" installer has one of the following:



1. A minimum of three years experience installing similar equipment.
2. Proof of attending a HySecurity Technical Training seminar within the past three years.
3. Significant manufacturer endorsements of technical aptitude in gate operator installation and operation.

Underwriter Laboratories (UL) and the American Society for Testing and Materials (ASTM) are responsible for current safety standards and regulations regarding gate operators and automated gates. All aspects of gate installation must comply with the appropriate safety standard. For the most up-to-date ASTM F2200 Gate and Fence Standards, refer to www.astm.org. For UL 325 Safety Standard, refer to www.ul.com. Consult local government agencies for up-to-date rules and regulations as certain municipalities have established licensing, codes or regulations that regulate automated gate system design and installation.

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.

GENERAL SAFETY INFORMATION

A gate operator is only a component in a gate system. The other parts of the gate system can include the gate, the external safety sensors, access controls, and vehicle detectors. To have a gate system that provides for safety, security, and reliable operation it is essential these components operate together as a system. It is the responsibility of the system designer and/or installer to ensure any safety or operational issues have been addressed.

IDENTIFYING GATE OPERATOR CATEGORY AND UL 325 USAGE CLASS

The UL 325 standard covers gate operators. Within this safety standard several Usage Classes are described that define different types of installations where gate operators can be applied. Some operators are restricted in their usage application. Appropriate Usage Classes are shown in the Specifications.

Class I



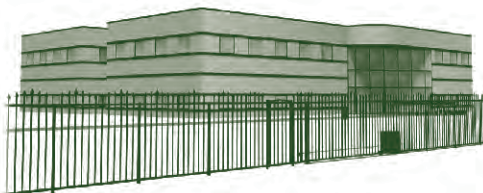
Class I: Intended for use in a location of one to four single family dwellings or a parking area associated with one to four single family dwellings.

Class II



Class II: Intended for use in a commercial location or building such as a multi-family housing units (five or more single family units) hotels, garages, retail stores or other buildings servicing general public.

Class III



Class III: Intended for use in an industrial location or building such as factories or loading docks or other locations not accessible by the general public.

Class IV



Class IV: Intended for use in guarded industrial locations or buildings such as an airport security area or other restricted access location, not servicing general public, in which access is monitored by security personnel or via closed circuitry.

SAFETY REQUIREMENTS

VEHICULAR TRAFFIC ONLY

WARNING

This automatic gate operator is not designed nor is it intended for pedestrian traffic. Vehicular gate operators must by their nature be powerful to function reliably. This power can cause injury or death. Accordingly, direct all pedestrian traffic to a separate walk-through gate.

Install this gate operator only when:

- The operator is appropriate for the construction of the gate and the usage Class of the gate.
- 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 in) 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.
- All exposed pinch points are eliminated or guarded.
- Guarding is supplied for exposed rollers.

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.

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.

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.

Permanently mounted controls intended for user activation must be located at least 1.83 m (6 ft) 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.

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.

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.

For gate operators utilizing a non-contact sensor (Photo Eye):

- See instructions on the placement of non-contact sensors for each type of application.
- 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.
- 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.

For a gate operator utilizing a contact sensor (Edge):

- 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.
- 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.
- 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.
- 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.

USE OF VEHICLE DETECTORS

Use of vehicle detectors (loop detectors) is strongly encouraged to prevent damage to vehicles caused by gates closing on them. This is not considered to be a safety item as vehicle detectors cannot provide protection to pedestrians. In some situations, photoelectric devices may be used as vehicle detectors, but should be wired accordingly.

GATE CONSTRUCTION AND SAFETY

Gate construction plays a very important role in ensuring the safety of any automated gate system. The standard for gate construction is ASTM F2200. Below are key areas to address in gate design for safety. For complete information consult the standard. Copies of the standard are available at:

<https://www.astm.org/Standards/F2200.htm>.

Another source of information is available from DASMA, the Door and Access System Manufacturer's Association. The Association publishes Technical Data Sheets, one of which concerns ASTM F2200. For more information, see:

<http://www.dasma.com/PDF/Publications/TechDataSheets/OperatorElectronics/TDS370.pdf>.

General Requirements for gate construction:

- Gates shall be constructed in accordance with the provisions given for the appropriate gate type listed. Refer to ASTM F2200 for additional gate types.
- Gates shall be designed, constructed and installed to not fall over more than 45 degrees from the vertical plane, when a gate is detached from the supporting hardware.
- Gates shall have smooth bottom edges, with vertical bottom edged protrusions not exceeding 0.50 in (12.7 mm) other than the Exceptions listed ASTM F2200.
- The minimum height for barbed wire shall not be less than 6 ft (1.83 m) above grade. The minimum height for barbed tape shall not be less than 8 ft (2.44 m) above grade.
- An existing gate latch shall be disabled when a manually operated gate is retrofitted with a powered gate operator.
- A gate latch shall not be installed on an automatically operated gate.
- Protrusions shall not be permitted on any gate. Consult ASTM F2200 for exceptions.
- Gates shall be designed, constructed and installed such that their movement shall not be initiated by gravity when an automatic operator is disconnected.
- 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.
- Any non-automated gate that is to be automated shall be upgraded to conform to the provisions of this specification.
- This specification shall not apply to gates generally used for pedestrian access and to vehicular gates not to be automated.
- Any existing automated gate, when the operator requires replacement, shall be upgraded to conform to the provisions of this specification in effect at that time.

The following provisions shall apply to Class I, Class II, Class III, and Class IV vehicular horizontal swing gates:

- Gates shall be designed, constructed and installed so as not to create an entrapment area between the gate and the supporting structure or other fixed object when the gate moves toward the fully open position, subject to the following provisions.
- The width of an object (such as a wall, pillar or column) covered by a swing gate when in the open position shall not exceed 4 inches (102 mm), measured from the centerline of the pivot point of the gate. Exception: For a gate that is not in compliance with this provision, the defined area shall be subject to the entrapment protection provisions of UL 325.
- Except for the zone specified above the distance between a fixed object such as a wall, pillar or column, and a swing gate when in the open position shall not be less than 16 inches (406 mm). Exception: For a gate that is not in compliance with this provision, the defined area shall be subject to the entrapment protection provisions of UL 325.

MAINTENANCE OF GATE SYSTEMS

To keep your automated gate system performing both safely and reliably it is important to ensure that the components of that system are functioning properly.

At least monthly:

- Disconnect the gate operator and manually move the gate through its range of travel. Note any squeaks from rollers or hinges or areas of binding. The gate should travel smoothly and quietly throughout its range. If it does not, contact a gate professional to correct the problem.
- Reconnect the gate operator and perform the following tests:
 - With the gate opening, block any photo eyes and/or depress any safety edges used to protect the open direction. The gate should stop and/or reverse.
 - With the gate closing, block any photo eyes and/or depress any safety edges used to protect the close direction. The gate should stop and/or reverse.
 - Using a suitable obstruction in the path of the gate (a solid, immovable object), run the gate in the open direction until it contacts the obstruction. The gate should stop and reverse.
 - Using a suitable obstruction in the path of the gate (a solid, immovable object), run the gate in the close direction until it contacts the obstruction. The gate should stop and reverse.

ENTRAPMENT PROTECTION

The UL 325 standard for gate operators requires a minimum of two independent entrapment protection means for each entrapment zone.

An entrapment zone is defined as follows:

For swing gates, locations between a moving gate or moving, exposed operator components and a counter opposing edge or surface where entrapment is possible up to 6 ft (1.83 m) 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 inches (101.6 mm) and less than 16 inches (406 mm); 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 inches (101.6 mm). Any other gap between a moving gate and fixed counter opposing edges or surfaces or other fixed objects is less than 16 inches (406 mm) (examples are walls, curbs, berms or other immovable objects).

All Nice HySecurity gate operators feature an Inherent Entrapment System (IES) (UL 325 Type A) that monitors the force on the gate during travel. This system protects in both the open and close direction and reverses on contact with an obstruction. The IES serves as one of the means of entrapment protection.

Potential entrapment zones are shown on the next page for swing gates, but keep in mind there may be other entrapment zones presented by the actual installation and adjacent structures or landscape that must be protected as well. External sensors must be used to protect against entrapment at each location where an entrapment zone exists. The minimum number of external sensors required to enable automatic operation of the gate operator is as follows:

- Swing Gates: One external sensor in the Close direction (provided the gate in the open direction presents no risk of entrapment).

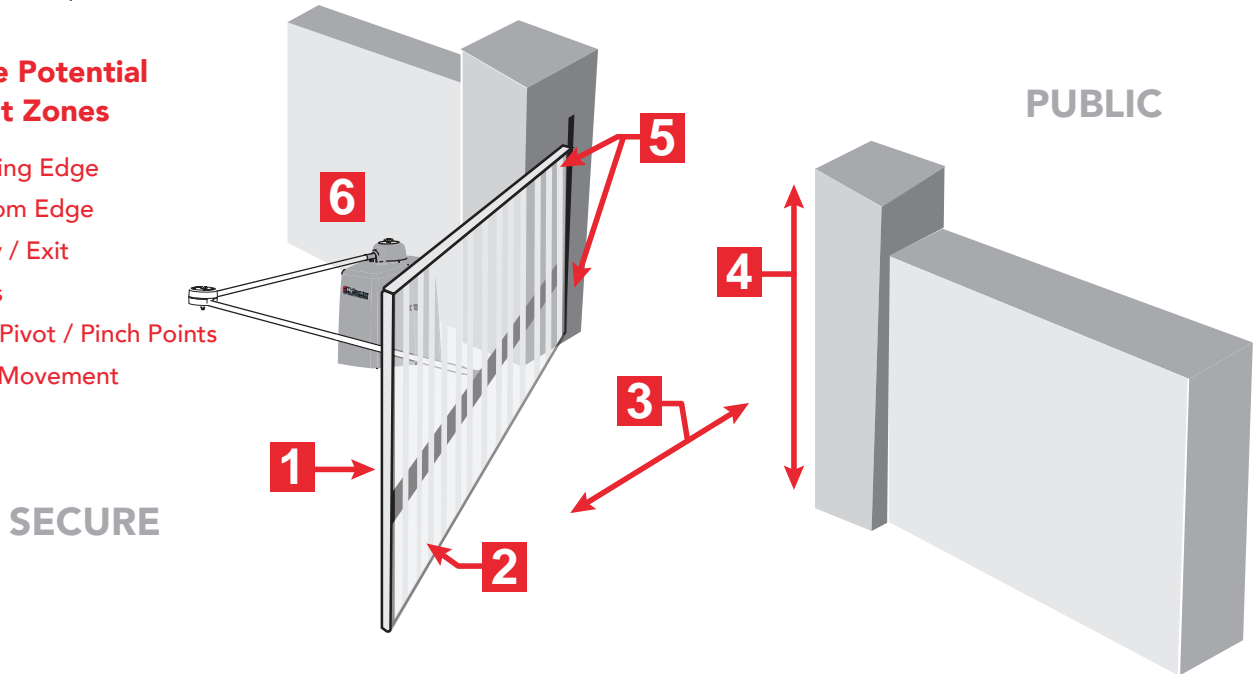
The gate operator tests for the presence of these sensors, and if the required minimum number is not found, the operator will only run using continuous pressure on an Open/Close button, either on the controller, or an external device.

Installers must identify all potential entrapment zones and install sensors that protect these areas.

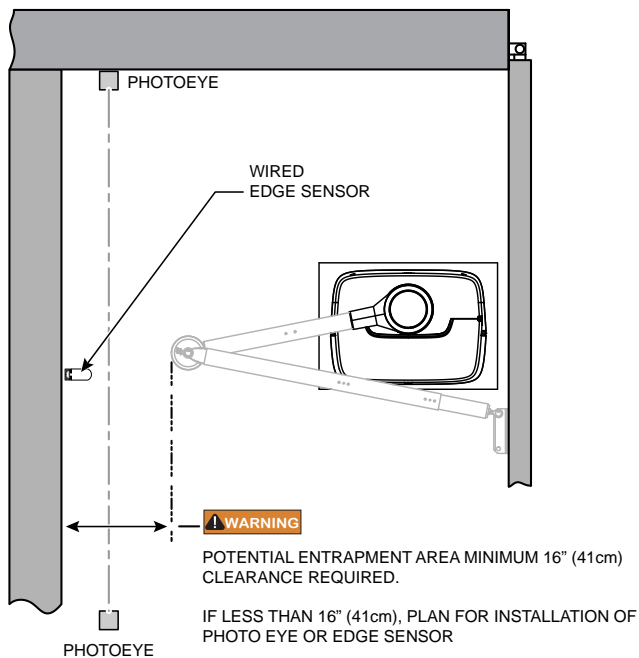
Review your installation plan for entrapment zones. Install entrapment sensors anywhere within the motion of the gate or gate operator where it has a clearance less than 16 inch (41 cm).

Swing Gate Potential Entrapment Zones

1. Leading Edge
2. Bottom Edge
3. Entry / Exit
4. Posts
5. Post Pivot / Pinch Points
6. Arm Movement



SWING GATE CLOSED POSITION ENTRAPMENT ZONES



STOP BUTTON

The stop button clears entrapment mode and resets some faults, errors, and alarms.

The stop button on SmartCNX operators is located on the cover.

Press the stop button while the gate is opening or closing to stop gate travel and disable the automatic close timer. The operator requires a new open or close command to resume function.

Inform all users of the location of the stop button and its function.

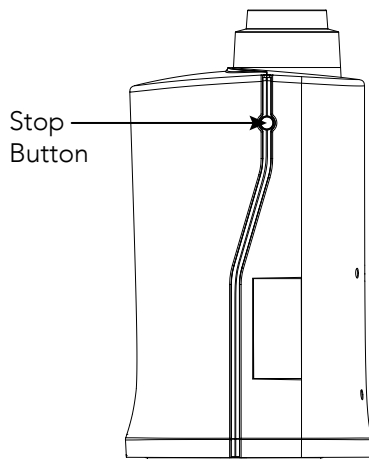


Figure 1. Emergency Stop Button

EMERGENCY RELEASE

Teach all users how to turn off electric power, loosen the taper clamp, and move the gate manually.

When you set DC power to OFF:

- The motor disengages to stop it from running if an open or close input is activated
- The Motor Disengaged warning appears on the display

To manually open the gate, follow these steps:

1. Use the key to remove the top cap and the front cover.
2. Set the DC switch to OFF.
3. Loosen the taper clamp (Figure 2).
4. Swing the gate(s) open or close from the end of the gate.

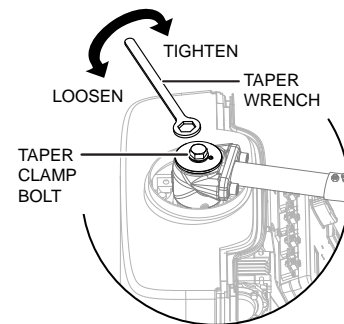


Figure 2. Taper Bolt and Taper Wrench

To return SwingSmart to automatic operation, follow these steps:

1. Tighten the taper clamp until no slippage occurs when you simulate a gate strike. Refer to "Set the Taper Clamp" on page 21.
2. Set the DC power switch to ON.
3. Press STOP or RESET to clear any faults.
4. Attach the front cover and top cap.

INTELLIGENT FEATURES: SmartCNX™ Controller

SmartCNX installer smartphone app for full control from your phone. Save operator configurations and troubleshoot system via smartphone app or USB.

User Interface - The SmartCNX controller manages 70+ configurable items in a simple menu driven interface. The controller includes a library of dozens of solutions for relay logic applications.

Three configurable user relays plus optional SmartCNX I/O Expansion module for 8 additional relay outputs

OLED display - A 32-character OLED provides increased readability for programming and troubleshooting.

Independent adjustment for open and close gate speeds - An easy-to-use menu on the SmartCNX Controller allows the installer to independently vary the open and close speed settings.

Intelligent Inherent Entrapment Sensor (IES) - Any impediment to gate travel is sensed by the system, stopping gate movement per UL 325 Safety Standards. The intelligent system monitors gate power then adapts the IES to trip at an adjustable threshold above normal power.

Hy5B™ 2.0 vehicle detector with automatic sensitivity adjustment, advanced tailgating detection, and loop health scoring.

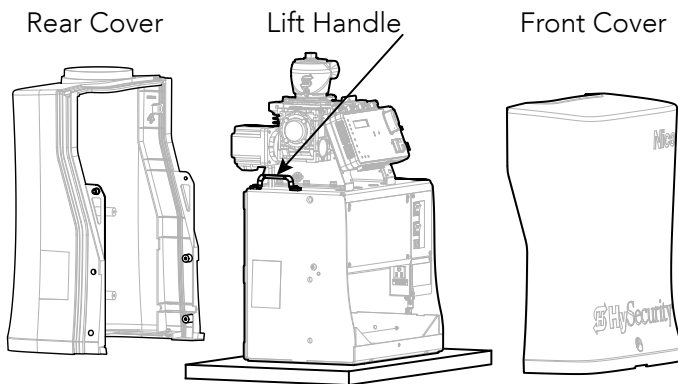
Integrated HyNet™ technology provides remote management capabilities over Ethernet: Securely report gate system status, vehicle tailgating, gate hits, failure to operate, and more, in real time to maintain perimeter security. Additionally, configure email alerts to communicate issues to installer, facility or security responders.

Compatible with Nice accessories. OXI receiver, ERA and INTI transmitters and BlueBUS photo eyes.

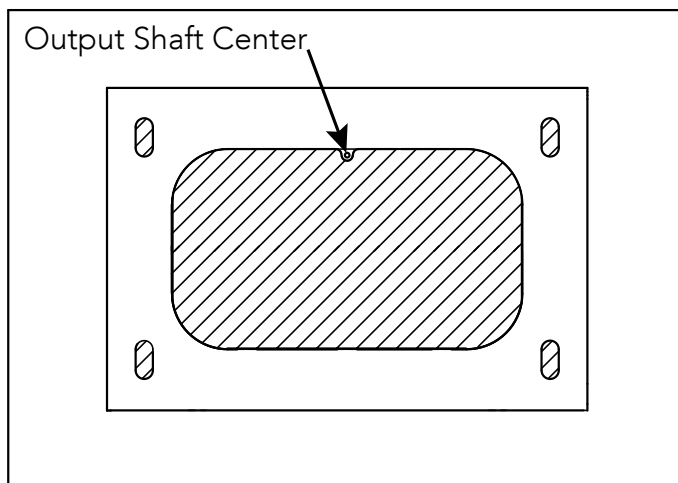
UNPACK THE OPERATOR

UNPACK THE OPERATOR

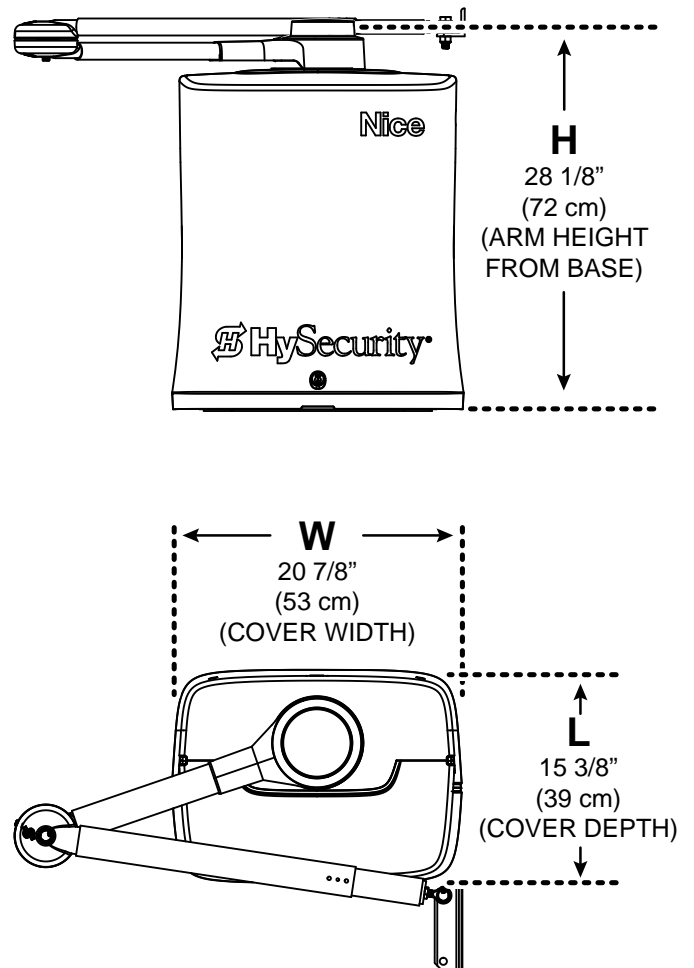
1. Open the box and remove the front cover, rear cover, photo eye, and ship-with kit.
2. Check the contents of the ship-with kit:
 - a. Basic Manual
 - b. UL 325 required gate safety signs and zip ties
 - c. Taper clamp wrench
 - d. DASHA gate safety literature
 - e. Rear cover mounting hardware
 - f. Cover keys
 - g. Top cap, top cap shield, and zip ties
 - h. Optional 208/230VAC and 24VDC voltage labels
3. Lift operator using lift handles.



Note: You can mark the slots, conduit area, and output shaft center on the plywood underneath the chassis and then use the plywood as an anchor hole template.



GENERAL OPERATOR DIMENSIONS



NEW INSTALLATION

1. Make sure the pad is completely level before installation.
2. Determine the location of the operator from the gate hinge (Figure 3).
3. Refer to Table 1, Table 2, and the installation site for ideal operator and gate bracket locations.
4. Position the output shaft center at X and Y dimensions from the gate hinge.
5. Refer to Figure 4 for minimum dimensions for a new concrete pad. Refer to Figure 6 for conduit and earth ground requirements.
6. Mark Xg on the gate and mark the anchor hole positions on the concrete pad (Figure 3, Figure 5).
7. Remove the operator and drill holes for four 1/2 inch UNC x 3-1/2 inch wedge style anchors.
8. Install the anchor bolts, mount the operator on the bolts, put a heavy duty flat washer on each bolt, and tighten the anchor-bolt nuts.
9. Bury the earth ground rod and connect earth ground wire to the chassis ground lug.

RETROFIT INSTALLATION

1. Remove any existing operator and anchor bolts.
2. Check the level of the concrete pad and level it if needed.
3. Position the new SwingSmart CNX operator around the conduit.
4. Mark the new anchor locations (Figure 5).
5. Remove the operator and drill holes for four 1/2 inch UNC x 3-1/2 inch wedge style anchors.
6. Install the anchor bolts, mount the operator on the bolts, put a heavy duty flat washer on each bolt, and tighten the anchor-bolt nuts.
7. Measure X and Y from the output shaft center and use Table 3 to calculate Xg, A, and B.
8. Mark Xg on the gate (Figure 3).
9. Route the earth ground wire and connect it to the earth ground lug.

Note: Use these tables as a starting point. Test gate movement and adjust the arm dimensions to achieve proper geometry.

| Table 1. Short/Medium Gate Installation for Gates up to 13 feet (4 meters) | | | | |
|--|-----------------|-----------------|------------------|------------------|
| X | Y | Xg | A | B |
| 12.0 in (30.5 cm) | 22.0 in (56 cm) | 33.0 in (84 cm) | 21.0 in (53 cm)* | 28.0 in (71 cm)* |
| 12.0 in (30.5 cm) | 24.0 in (61 cm) | 35.0 in (89 cm) | 22.0 in (56 cm)* | 30.0 in (76 cm)* |
| 12.0 in (30.5 cm) | 28.0 in (71 cm) | 39.0 in (99 cm) | 24.5 in (62 cm)* | 33.5 in (85 cm)* |

*Section of pivot arm must be cut to achieve geometry.

| Table 2. Long Gate Installation for Gates up to 20 feet (6 meters) | | | | |
|--|------------------|------------------|------------------|------------------|
| X | Y | Xg | A | B |
| 16.0 in (38 cm) | 32.0 in (81 cm) | 47.0 in (119 cm) | 29.0 in (74 cm)* | 40.5 in (103 cm) |
| 16.0 in (38 cm) | 36.0 in (91 cm) | 51.0 in (130 cm) | 32.0 in (81 cm) | 43.0 in (109 cm) |
| 16.0 in (38 cm) | 40.0 in (102 cm) | 56.0 in (142 cm) | 35.5 in (90 cm) | 46.0 in (117 cm) |

*Section of pivot arm must be cut to achieve geometry.

| Table 3. Custom Gate Installation | | | | |
|-----------------------------------|---|------------------------|-----------------|-----------------|
| X | Y | Xg | A | B |
| — | — | $X + Y - 1 \text{ in}$ | $0.63 \cdot Xg$ | $0.87 \cdot Xg$ |

| Table 4. Operator Placement and Gate Arm Geometry for 100° through 120° opening | | | | | |
|---|-----------------|-----------------|------------------|-----------------|------------------|
| Degree of Swing | X | Y | Xg | A | B |
| 100 | 20.0 in (51 cm) | 24.0 in (61 cm) | 43.0 in (109 cm) | 31.5 in (80 cm) | 36.0 in (91 cm) |
| 110 | 26.0 in (66 cm) | 24.0 in (61 cm) | 43.0 in (109 cm) | 32.5 in (83 cm) | 40.5 in (103 cm) |
| 120 | 32.0 in (81 cm) | 20.0 in (51 cm) | 46.0 in (117 cm) | 36.0 in (91 cm) | 44.5 in (113 cm) |

Maximum A = 38 in (97cm) and Maximum B = 47 in (121cm)

PREPARE INSTALLATION SITE

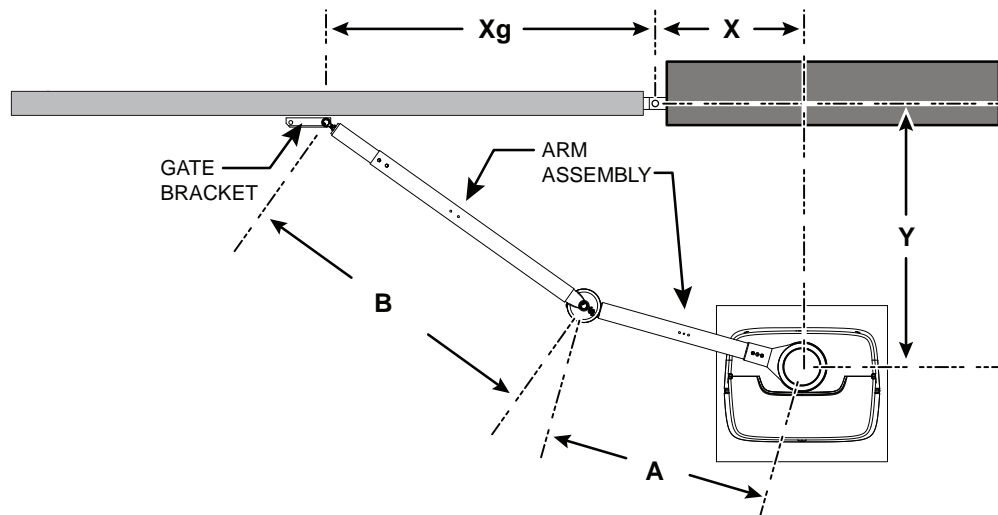


Figure 3. Operator Position Right Hand Opening

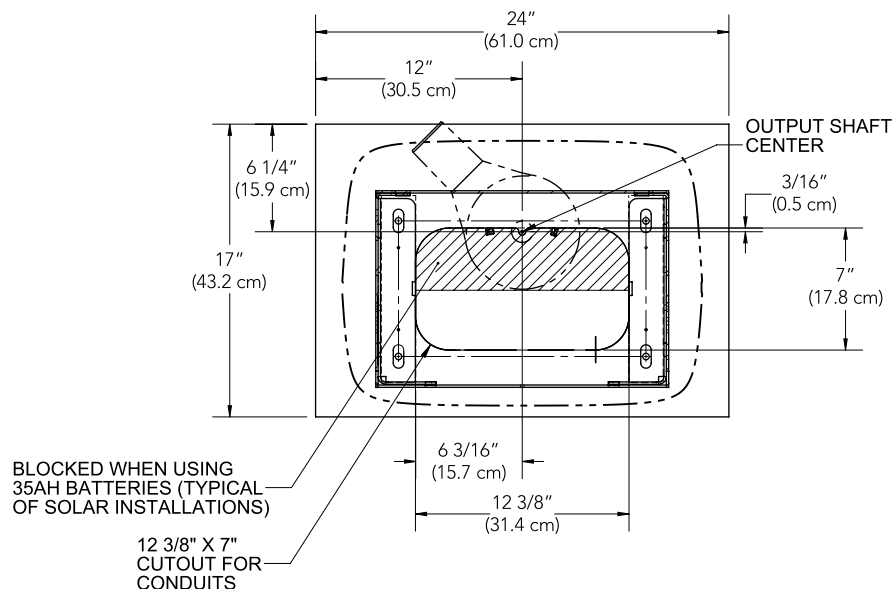


Figure 4. Concrete Pad and Conduit Area Dimensions

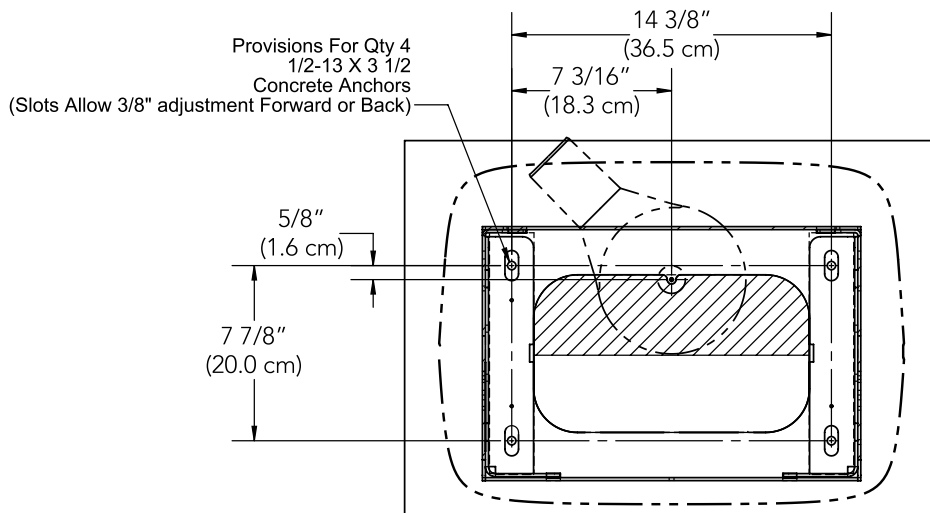


Figure 5. Anchor Hole Dimensions

PREPARE INSTALLATION SITE

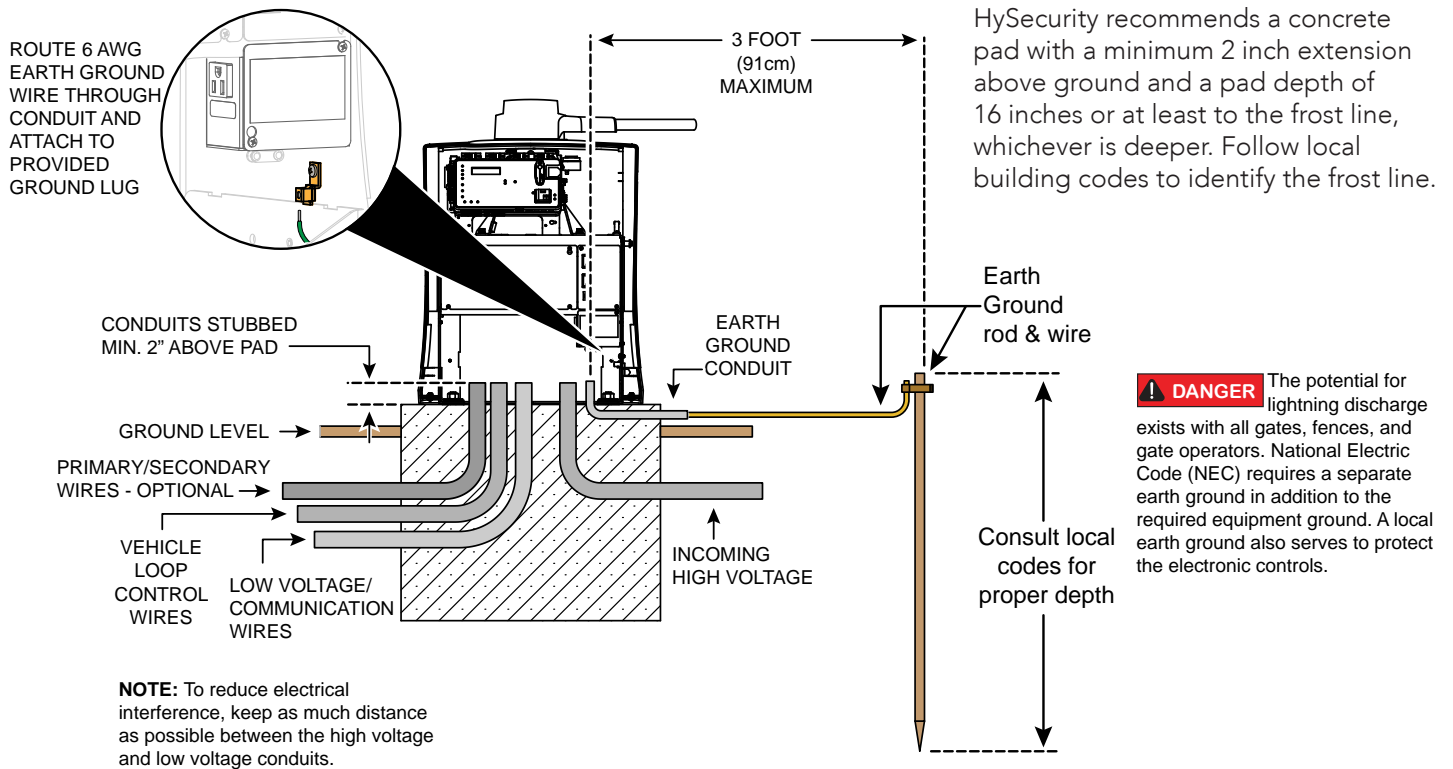


Figure 6. Conduits and Earth Ground

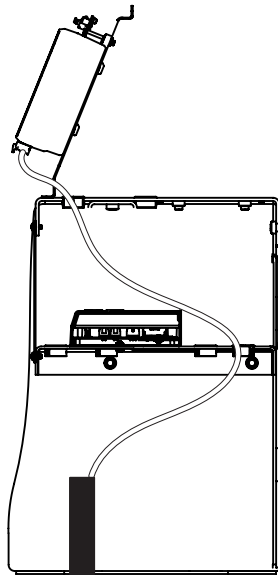


Figure 7. Preferred Control Wire Routing to SmartCNX Controller

INSTALL ARM ASSEMBLY

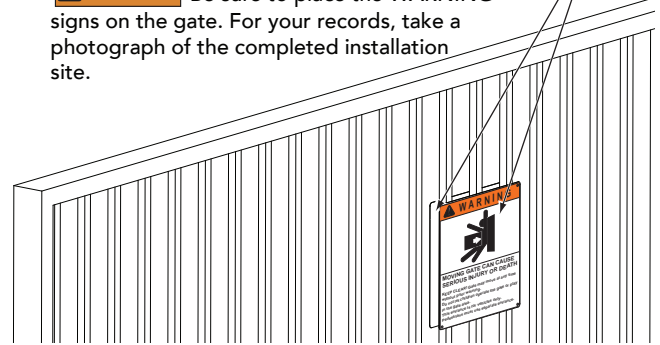
1. Loosen the taper clamp bolt with the taper wrench (Figure 8).
2. Attach the operator arm to the taper clamp (Figure 9).
3. Use Tables 1 through 4 to determine the length of the operator arm (A) and the gate arm (B) (Figure 10).
4. Loosen the set bolt on each arm and set the arms to length. Tighten the set bolts (Figure 11).
5. For safety reasons, secure the gate at the closed position to make sure that it does not move.
6. Position the gate bracket at Xg dimension.
7. Level the arm assembly.
8. Move the end of the assembly to Xg and mark the height so the arm assembly stays level (Figure 12).
9. Clamp the gate bracket at Xg and the marked height (H).
10. Connect the arm assembly to the gate bracket (Figure 13).
11. Make sure that the operator arm is below the gate arm (Section B above Section A, Figure 10).
12. For a bent arm in the closed position, install the set screw in the middle or inner position from the gate. A bent arm in the closed position allows the taper clamp to slip and reduces the risk of damage to the operator in the event of a gate strike (Figure 14 and Figure 15C).
13. For a straight (locked) arm in the closed position, install the set screw in the outer position from the gate. A straight arm in the closed position increases security, but increases the risk of damage to the operator in the event of a gate strike (Figure 14 and Figure 15D).

Note: Straighten the arm instead of overtightening the taper clamp for increased security.

14. Manually swing the gate between open and close. Check the arm assembly geometry and clearance with the operator.
15. Adjust the Xg position or the length of the arms with the set bolts to achieve correct gate geometry (Figure 15A).
16. Weld or bolt the gate bracket at the final position.
17. To set the arm lengths drill 17/64 inch holes through the holes on either side of the set bolts. Then put the 1/4 x 20 bolts through the holes and secure them with the lock nuts (Figure 16).
18. Alternatively, apply a 1/8 inch (3 mm) fillet weld to each seam to permanently set the length of the arm assembly (Figure 16).
19. Remove the set bolts (Figure 11).

Attach WARNING Signs

⚠ WARNING Be sure to place the WARNING signs on the gate. For your records, take a photograph of the completed installation site.



INSTALL ARM ASSEMBLY

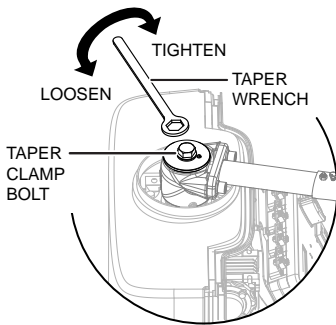


Figure 8. Taper Bolt and Taper Wrench

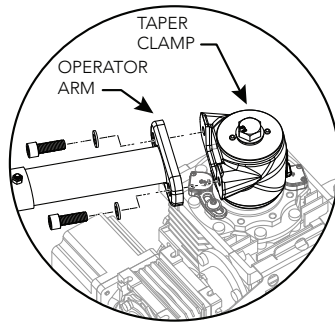


Figure 9. Operator Arm to Taper Clamp

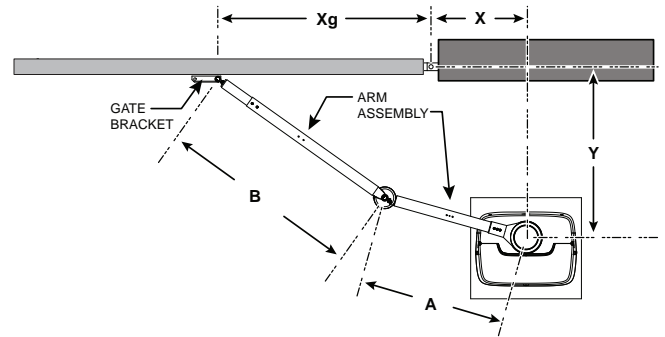


Figure 10. Installation Dimensions

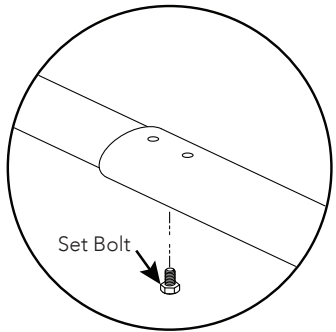


Figure 11. Set Temporary Arm Length

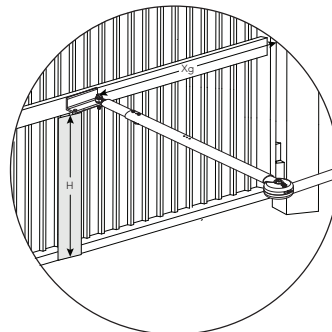
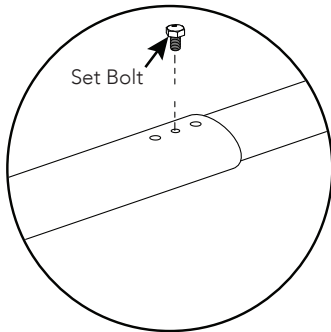


Figure 12. Gate Bracket Height

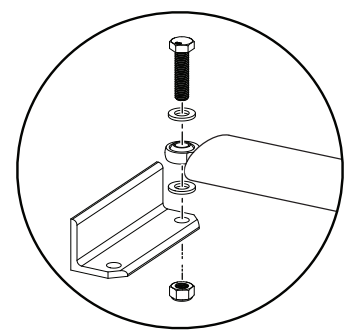


Figure 13. Gate Bracket Hardware

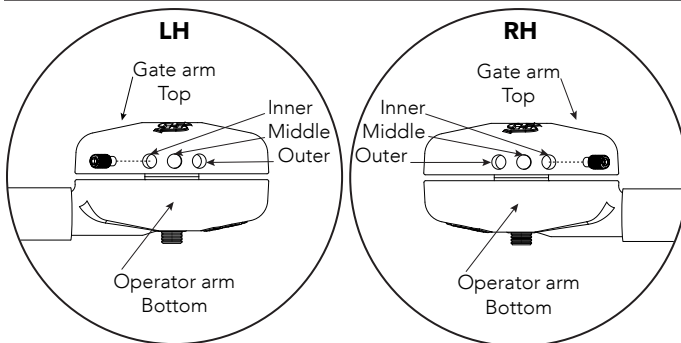


Figure 14. Set Screw Positions

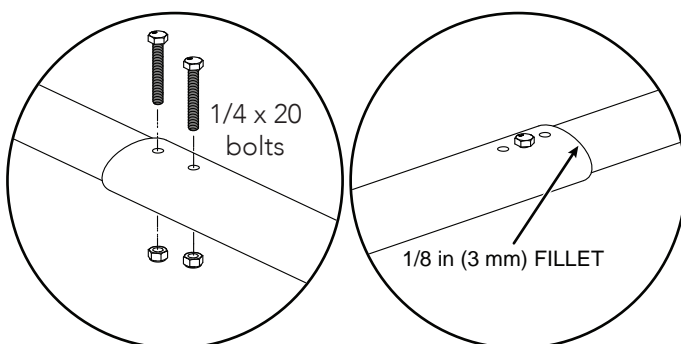


Figure 16. Set Permanent Arm Length

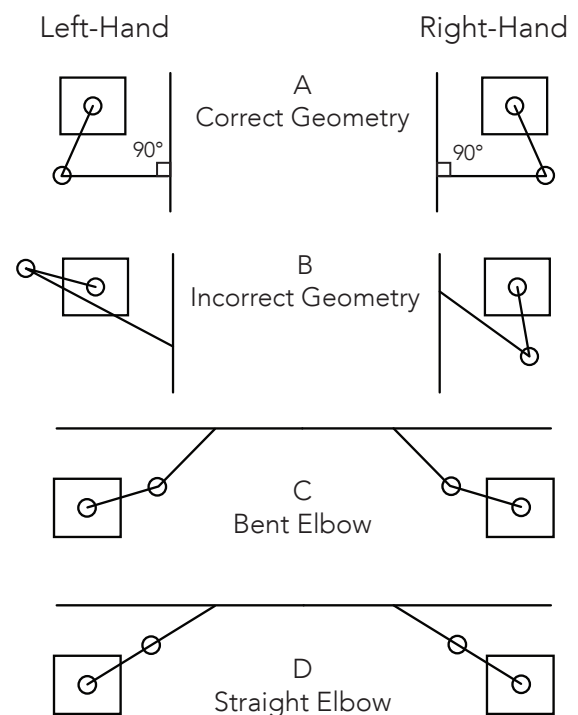


Figure 15. Gate Geometry

INSTALL AND ADJUST THE LIMIT SENSORS

The factory default positions of the limit sensor bracket screws are 1 and 5 for a LEFT-HAND installation (Figure 17).

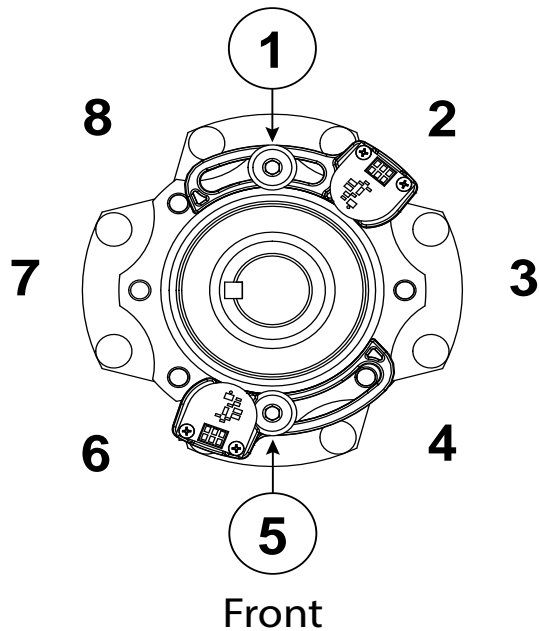


Figure 17. LEFT-HAND Installation

Loosen the limit sensor bracket screws with a 5 mm allen wrench and move the limit sensor brackets to positions 3 and 7 for a RIGHT-HAND installation (Figure 18).

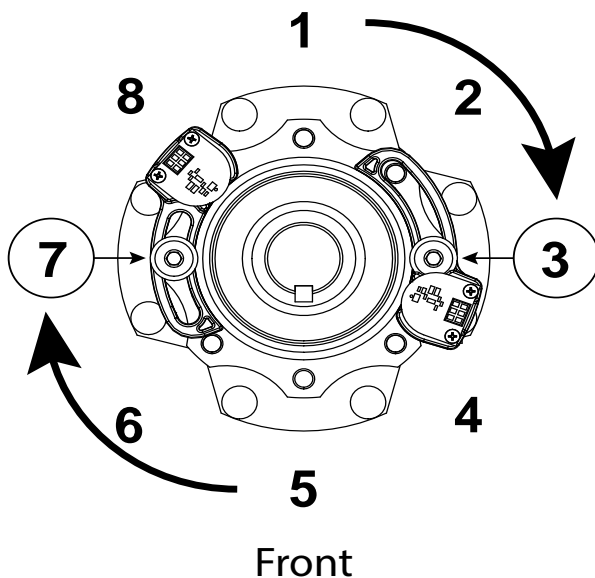


Figure 18. RIGHT-HAND Installation

Note: Some arm geometries will require moving the sensor bracket to the next gearbox hole.

ADJUST THE LIMIT SENSORS

1. Loosen the taper clamp bolt with the taper bolt wrench to allow the gate and arm assembly to rotate freely (Figure 19).
2. Loosen limit sensor bracket screws with a 5 mm allen wrench (Figure 20).
3. Move the gate to the CLOSED position.
4. Center the closed limit sensor under the target magnet. Hold the target magnet bracket in place and tighten the bolt.
5. Move the gate to the OPEN position.
6. Center the open limit sensor under the target magnet and tighten the bolt.

Note: When the power is on, an LED on the sensor board indicates correct alignment and position.

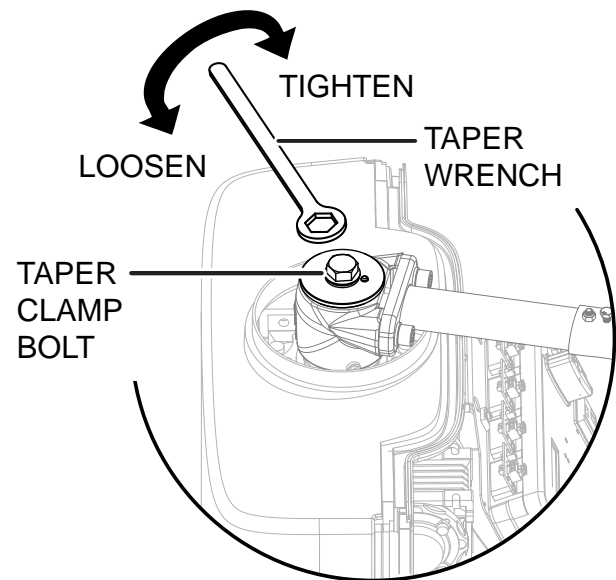


Figure 19. Loosen the Taper Clamp

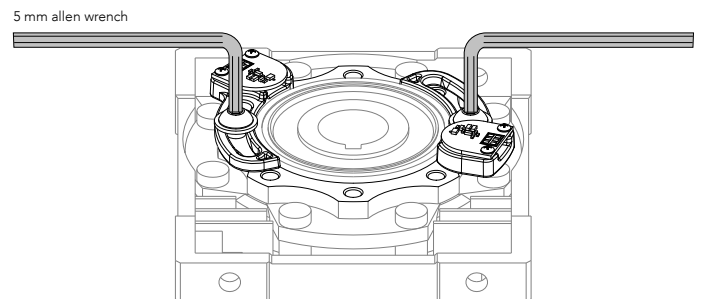
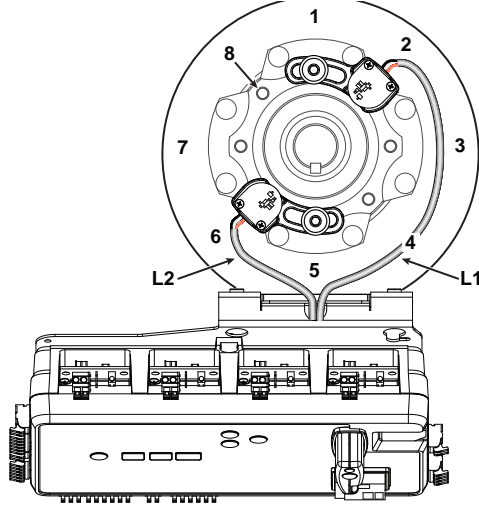
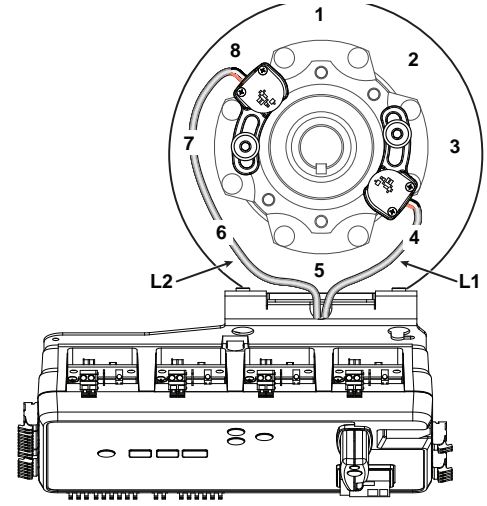


Figure 20. Loosen the Limit Sensor Bracket Bolts

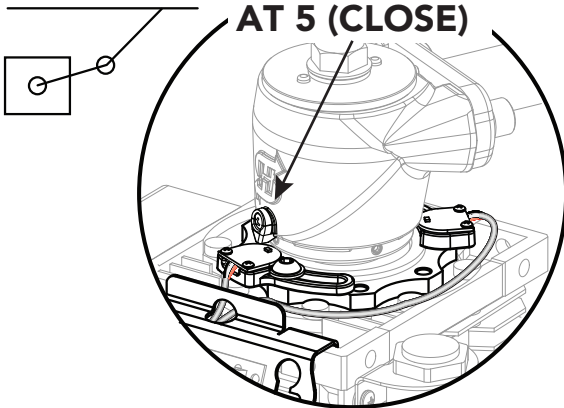
LEFT-HAND LIMIT SENSOR BRACKETS AT 1 & 5



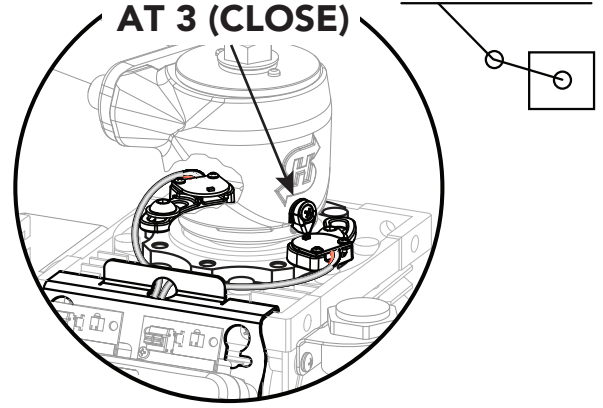
RIGHT-HAND LIMIT SENSOR BRACKETS AT 3 & 7



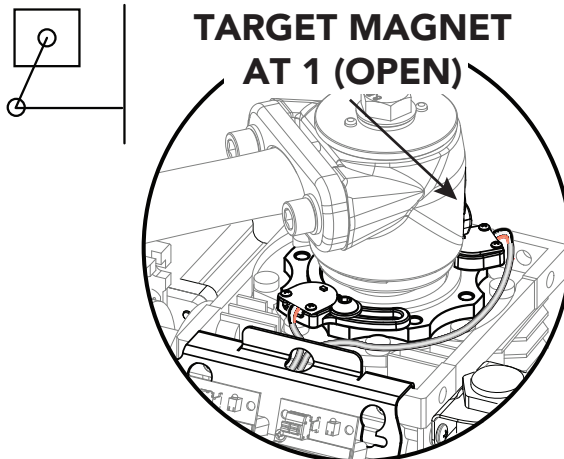
LEFT-HAND TARGET MAGNET AT 5 (CLOSE)



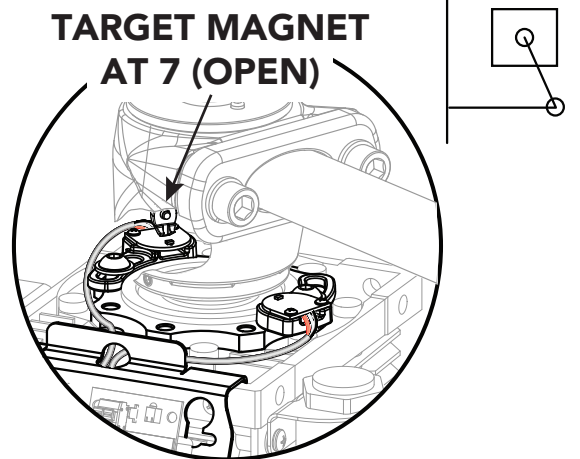
RIGHT-HAND TARGET MAGNET AT 3 (CLOSE)



LEFT-HAND TARGET MAGNET AT 1 (OPEN)



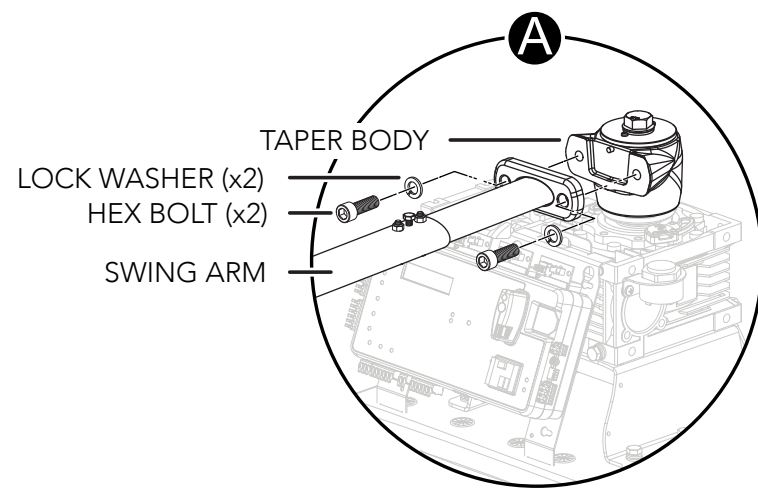
RIGHT-HAND TARGET MAGNET AT 7 (OPEN)



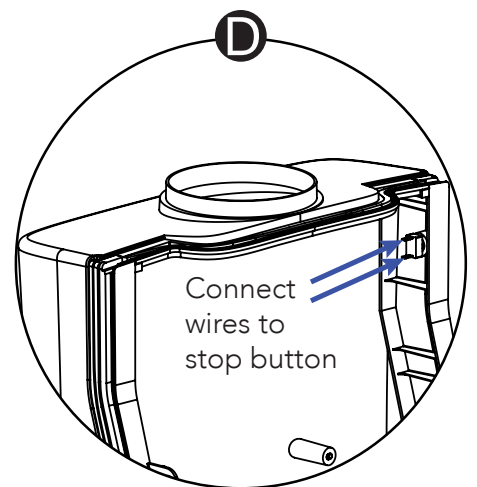
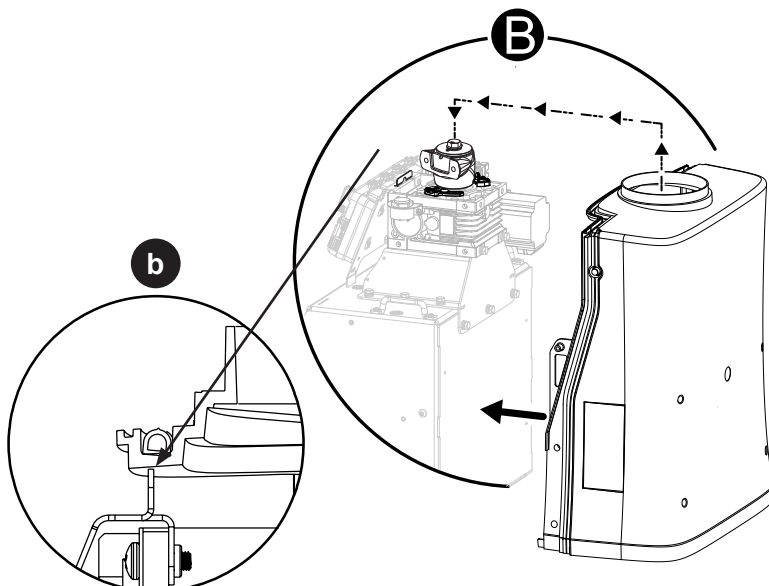
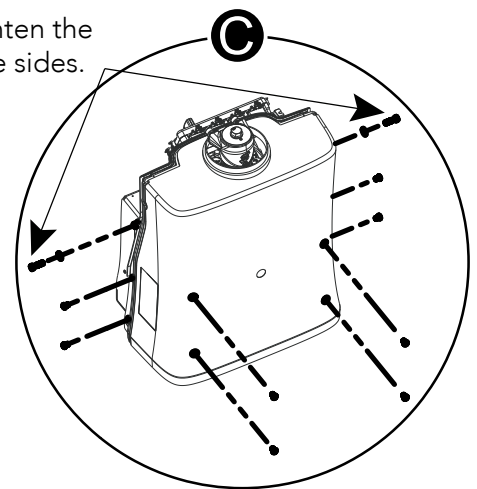
ATTACH BACK COVER

1. Remove the screws holding the operator arm to the taper clamp (A) and set the arm assembly to the side.
2. If the incoming power is 208V/230VAC, then set the voltage switch on the power supply to the correct setting with a flathead screwdriver before you attach the back cover. Refer to page 22 for more information.
3. Set the back cover over the taper clamp (B).

Note: Make sure that the vertical tab on the controller mounting bracket is underneath the gasket groove in the back cover (b).



Do not overtighten the top bolts on the sides.



ATTACH TOP CAP AND ADJUST TAPER CLAMP

1. Position the top cap shield underneath the operator arm.
2. Thread zip ties through slots in shield.
3. Secure shield to underside of operator arm with zip ties.
4. Trim the ends of the zip ties.
5. Slide the top cap shield against the opening in the back cover and then pull it away less than 1/8 inch.

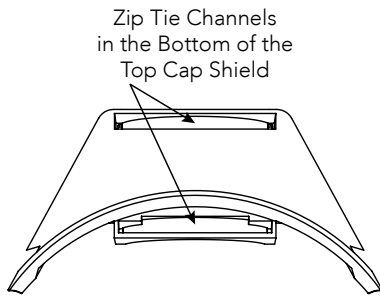


Figure 21. Zip Tie Channels

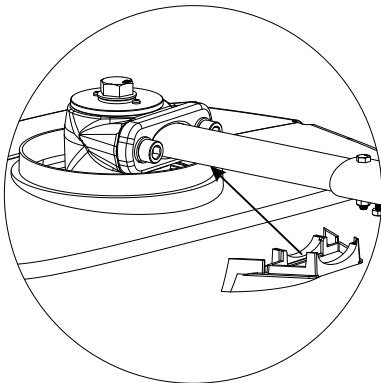


Figure 22. Position the Top Cap Shield

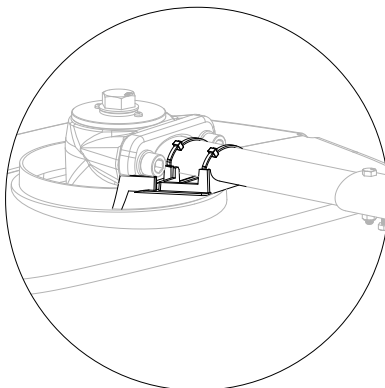


Figure 23. Wrap the Zip Ties Around the Arm

When a gate strike occurs the taper clamp will break free by design, but not slip during normal operation. Follow these steps to set the taper clamp:

1. Loosen the taper clamp with the taper wrench.
2. Manually swing the gate halfway between the open and close position, at least 45 degrees from close position. (Figure 24)

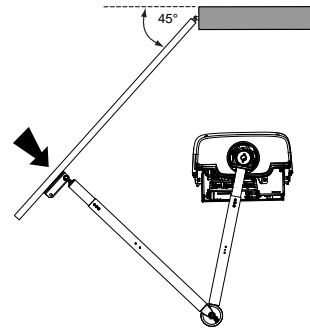


Figure 24. Test the Taper Clamp

3. Hand tighten the taper clamp and then tighten the taper clamp 1/8th turn at a time until it only breaks free with a strong push at the end of the gate (approximately 50 lb).

Note: Do not overtighten the taper clamp or it will not slip properly and could damage the operator in the event of a gate strike.

Note: To maintain free flow of traffic, do not tighten the taper clamp until you power and program the operator.

4. Center the top cap over the taper clamp and operator arm.
5. Lock the cap in place with the key.
6. Store the taper wrench in the cover storage slot. (Figure 25)

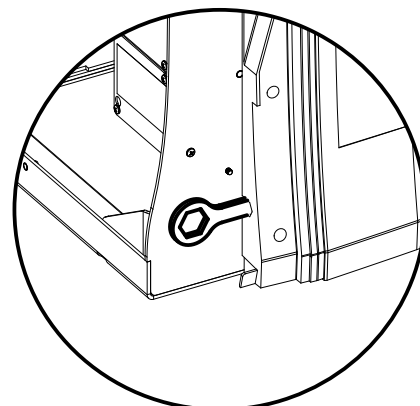


Figure 25. Store the Taper Wrench

WIRING AND POWER

Wiring 115VAC or 208/230VAC Power

- Verify AC power supply wires and low voltage accessory wires run through separate conduits. The input voltage to the AC power supply may cause interference and anomalies in SwingSmart CNX operation if the high voltage wires are routed through the same conduit as the low voltage wires.
- Maximum gate operator current draw is 7.5 Amps on a dedicated 115VAC circuit (20A dedicated circuit is recommended).
- Maximum gate operator current draw is 4 Amps on a dedicated 208/230VAC circuit (20A dedicated circuit is recommended).
- Make sure proper wire gauge is used for the length of the wire run. The following tables show the maximum allowable wire run from the power source to the operator for various wire sizes.

Table 5. Wire Gauge versus Run

| AC Power | 14 gauge wire | 12 gauge wire | 10 gauge wire |
|--------------------|----------------|----------------|-----------------|
| One operator 115V | 485 ft (147 m) | 775 ft (236 m) | 1235 ft (376 m) |
| Two operators 115V | 242 ft (73 m) | 387 ft (117 m) | 617 ft (188 m) |

Table 6. Wire Gauge versus Run

| AC Power | 14 gauge wire | 12 gauge wire | 10 gauge wire |
|------------------------|-----------------|-----------------|------------------|
| One operator 208/230V | 1375 ft (419 m) | 2185 ft (665 m) | 3475 ft (1059 m) |
| Two operators 208/230V | 687 ft (209 m) | 1092 ft (332 m) | 1737 ft (529 m) |

NOTICE

Table 5 and Table 6 assume a dedicated circuit with an accessory power load up to 2A. Additional loads require that the wire size be increased or the distance of the run be decreased.

Operators are factory set for incoming power of 115VAC. If 208/230VAC, change the voltage switch on the power supply to 230VAC with a flathead screwdriver (Figure 26 and Figure 27).

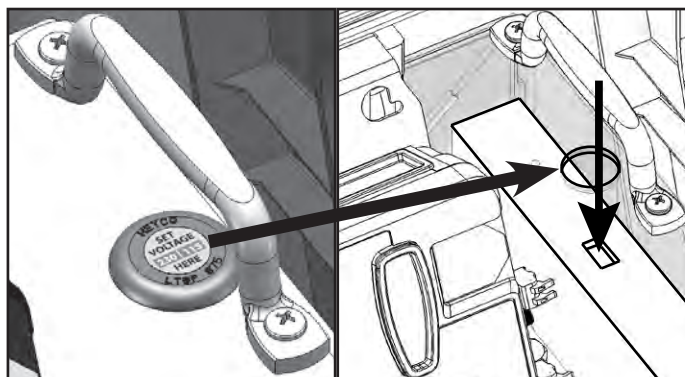


Figure 26. Voltage Switch Access



Figure 27. Voltage Switch Positions

DANGER

Turn off AC power at the source (circuit breaker panel) before accessing the wires in the CNX junction box. Follow facility Lock Out/Tag Out procedures.

1. Make sure both the DC and AC power switches are in the OFF position.
2. Connect the battery harness to the back right-hand corner of the drive module. (Figure 28)
3. Remove the junction box cover. (Figure 29)
4. Connect the incoming power supply wires to the AC or DC (solar) terminal block inside the junction box. Match the wire colors. (Figure 30)
5. Organize all the wire connections and put the cover onto the junction box.

Note: For 208V/230V or solar (24V) installations, place the label (included in the ship with kit) over the factory default 115V 1Ø label.

6. For solar installations, remove the power switch mounting plate and disconnect the DC wires from the power supply. Tape or wire nut the ends separately to prevent shorts (Figure 31).

Note: CNX operators require 24VDC rated solar panels with a maximum open circuit voltage of 48VDC.

7. Set both AC and DC power switches to ON (Figure 32).
8. Software version will appear on LCD display and then the Setup Menu.

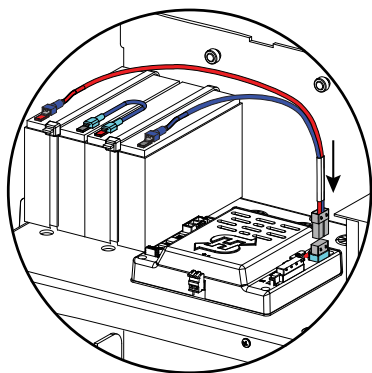
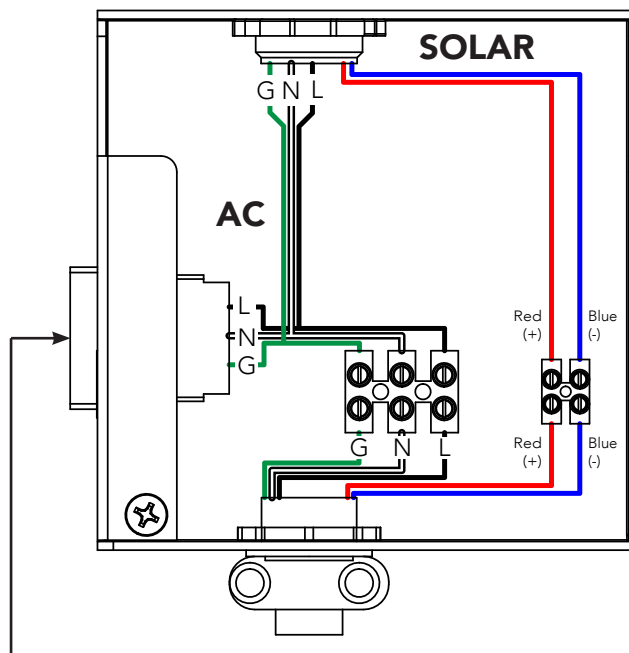


Figure 28. Battery Harness to Drive Module



Figure 29. Junction Box Cover



Connect service outlet lead wires to 115VAC only.

Figure 30. 115VAC/230VAC and Solar DC Terminals

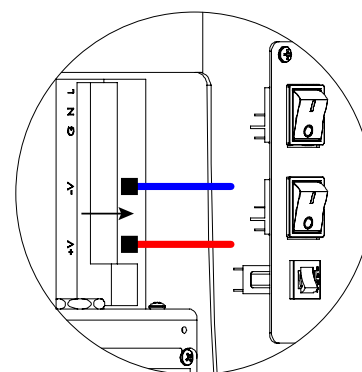


Figure 31. Disconnect DC Power Supply Wires

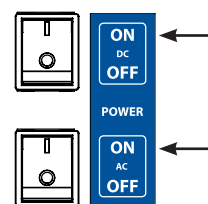


Figure 32. Set Both Power Switches to ON

CONTROLLER CONNECTIONS

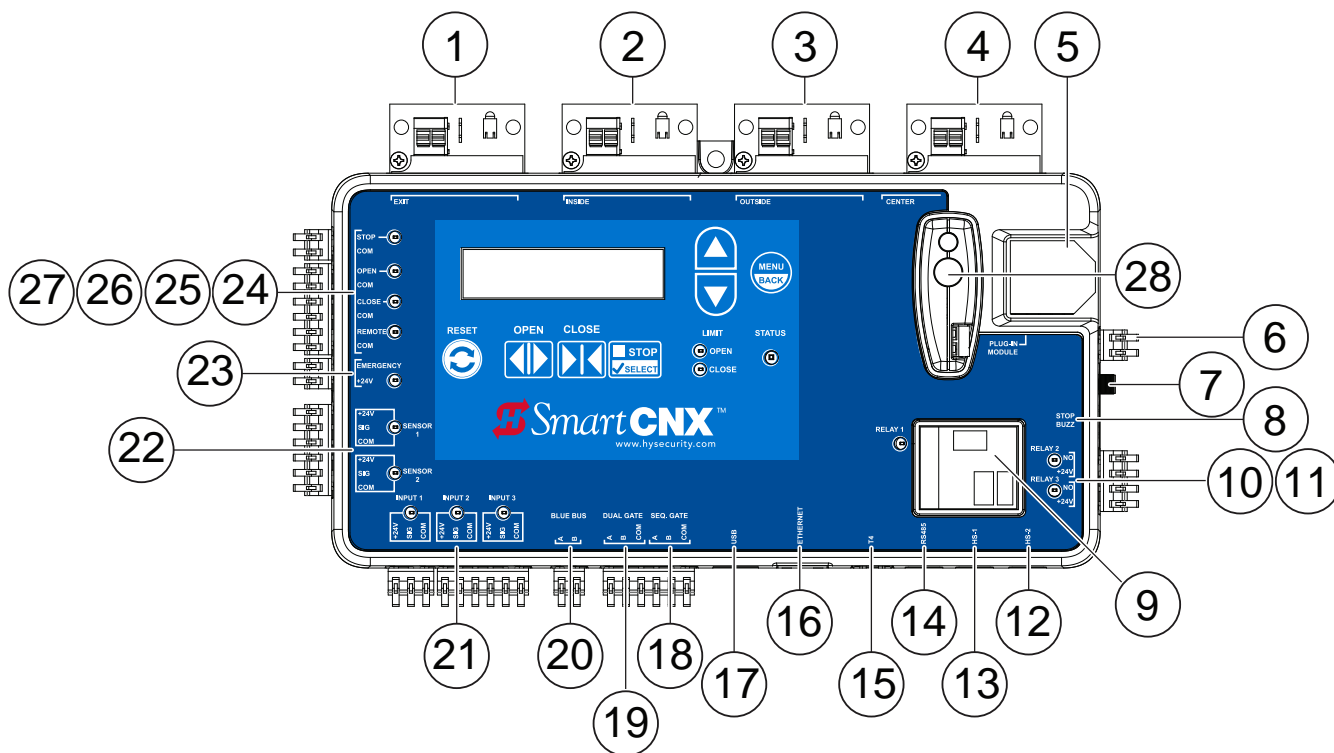


Figure 33. SmartCNX Controller Connections

1. **Hy5B EXIT Loop** – This opens a fully closed gate or reopens a closing gate.
2. **Hy5B INSIDE Loop** – Reversing loop on secure side.
3. **Hy5B OUTSIDE Loop** – Reversing loop on public side.
4. **Hy5B CENTER Loop** – Detect vehicle in swing arc of the gate
5. **(Not Used)**
6. **OXI Antenna**
7. **(Not Used)**
8. **Stop/Buzzer Harness**
9. **Relay 1** – Mechanical relay
10. **Relay 2** – Solid state relay
11. **Relay 3** – Solid state relay
12. **HS-2** – Can connect to expansion module.
13. **HS-1** – Harness connects communication to drive module.
14. **RS485**
15. **T4 Port**
16. **Ethernet**
17. **USB** – Used for software updates & fault log download.
18. **Sequenced Gate Connection**
19. **Dual Gate**
20. **BlueBUS** – For use with NICE BlueBUS devices
21. **Programmable Inputs 1-3**
22. **Programmable Sensor Inputs 1-2** – UL325 required external entrapment sensors
23. **Emergency** – Programmable to fire department open or emergency close
24. **Remote** – Programmable for three functions, defaults to step function
25. **Close** – Close only input
26. **Open** – Open only input
27. **Stop** – Stop and reset input
28. **OXI** – Radio for NICE access control devices.

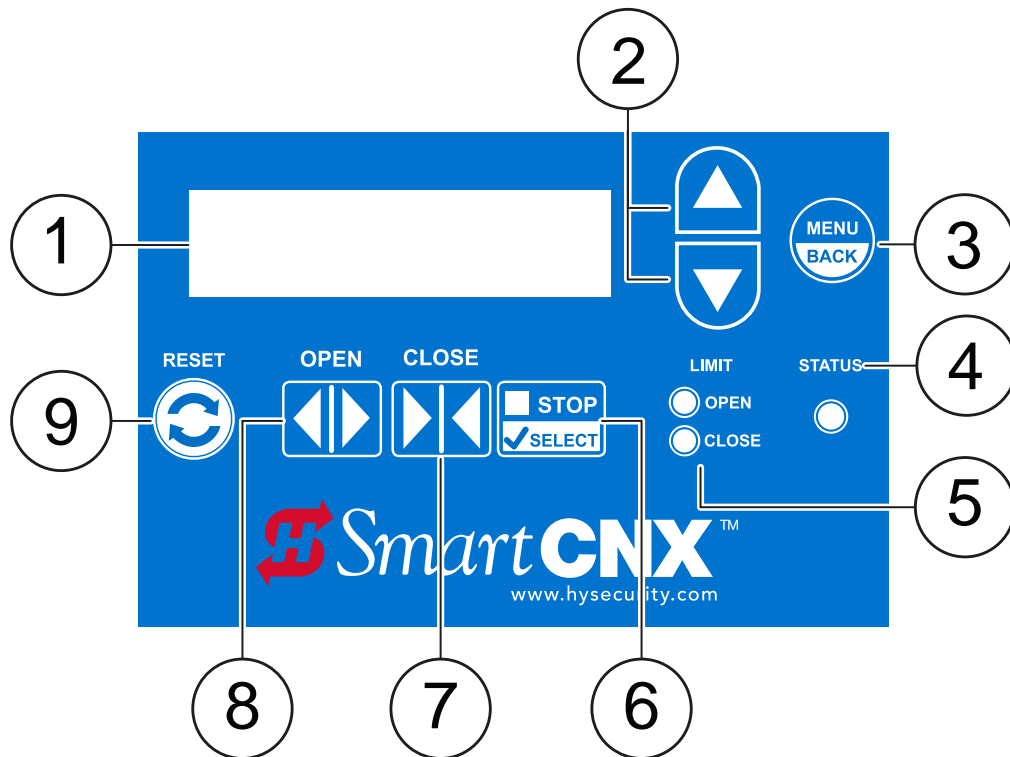


Figure 34. SmartCNX Controller User Interface

1. **Display** – 16 characters per line, 2 line display. Displays current operator status, menus, and alerts/faults/errors.
2. **Up/Down Arrows** – Navigate through menu and display options while in Menu Mode.
3. **Menu/Back** – Open the configuration menu from the operator status display. Go back from the current menu (exit the current menu).
4. **Status LED** – Indicates gate operator status
 - a. Flashing Red – An Alert, Fault, or Error has occurred. Immediately shut down the machine and correct the fault.
 - b. Solid Red – Operator is in Menu Mode
 - c. Flashing Green – Operator is in Run Mode
 - d. Flashing Blue – Operator is pairing with a Bluetooth device.
 - e. Alternating Blue and Red/Green – Operator is communicating with a Bluetooth device.
5. **Limit Open/Close** – Solid green when target magnet activates limit sensor.
6. **Stop/Select** – Stops gate travel when in run mode.
Press to select current menu option or to confirm setting value
7. **Close** – Closes the gate while in Run Mode.
8. **Open** – Opens the gate while in Run Mode.
9. **Reset** – Press to clear faults and return to Run Mode. Cannot be used in Menu Mode.

Note: You can configure the menus on battery power when an external power source is not yet present.

INITIAL SETUP

CONFIGURE THE SETUP MENU (SWING)

The first time you power on the SmartCNX controller you must select an option for two settings, USAGE CLASS and GATE HANDING.

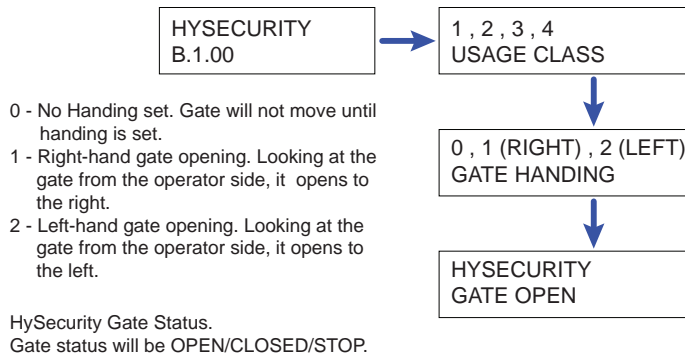
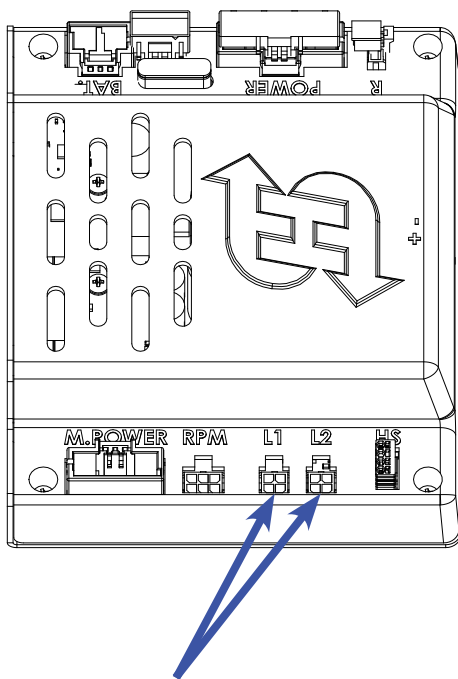


Figure 35. Configuring Setup Menu

1. Press SELECT, press the UP or DOWN arrow to select the correct USAGE CLASS, press SELECT, and press the UP or DOWN arrow once.
2. Press SELECT, press the UP or DOWN arrow to select the correct option, and press SELECT.
3. The SmartCNX controller resets, flashes all LED lights, clears the display, and returns to the gate status display. Initial setup is complete.

Note: If the gate is in one position, but the display shows the other (e.g. gate is Open, but display says CLOSED) swap the limit sensor plugs L1 and L2 at the drive board.



Note: Switch limit sensor plugs if necessary.

NAVIGATE THE MENUS

Press MENU/BACK to enter the menus or to exit the current screen (up one level without saving any changes).

Press the UP or DOWN arrow to change the current selection until you find the one you want.

Press SELECT to access the menu or sub-menu.

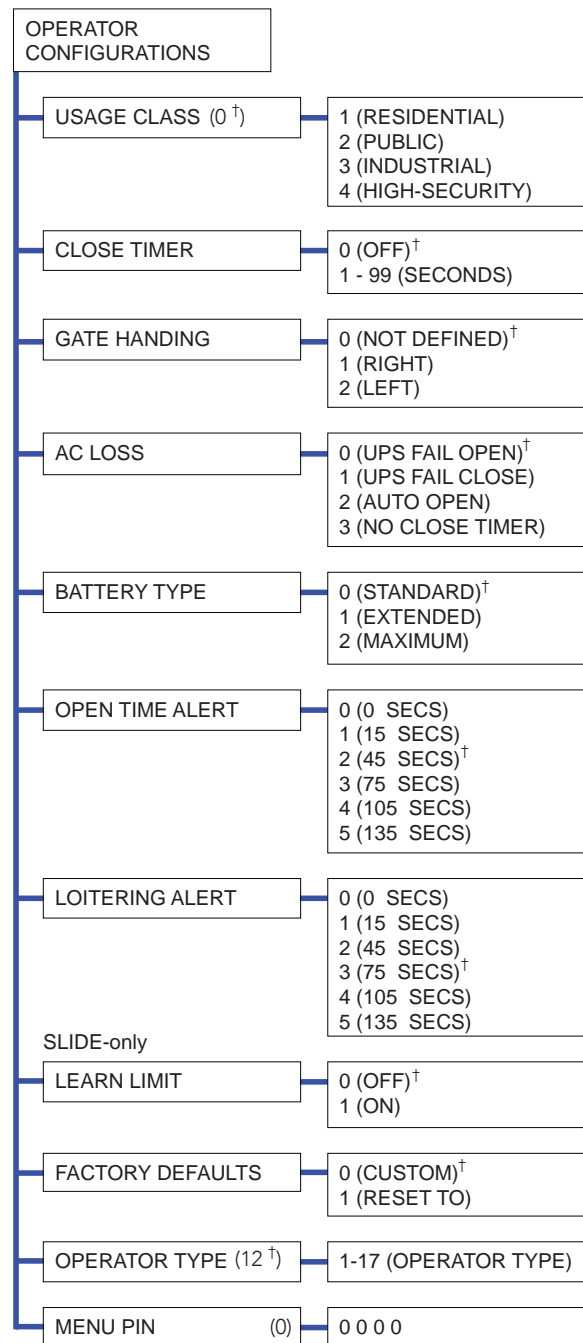
Press SELECT to accept the current option or value.

Note: These navigation instructions are the same throughout the SmartCNX controller menus.



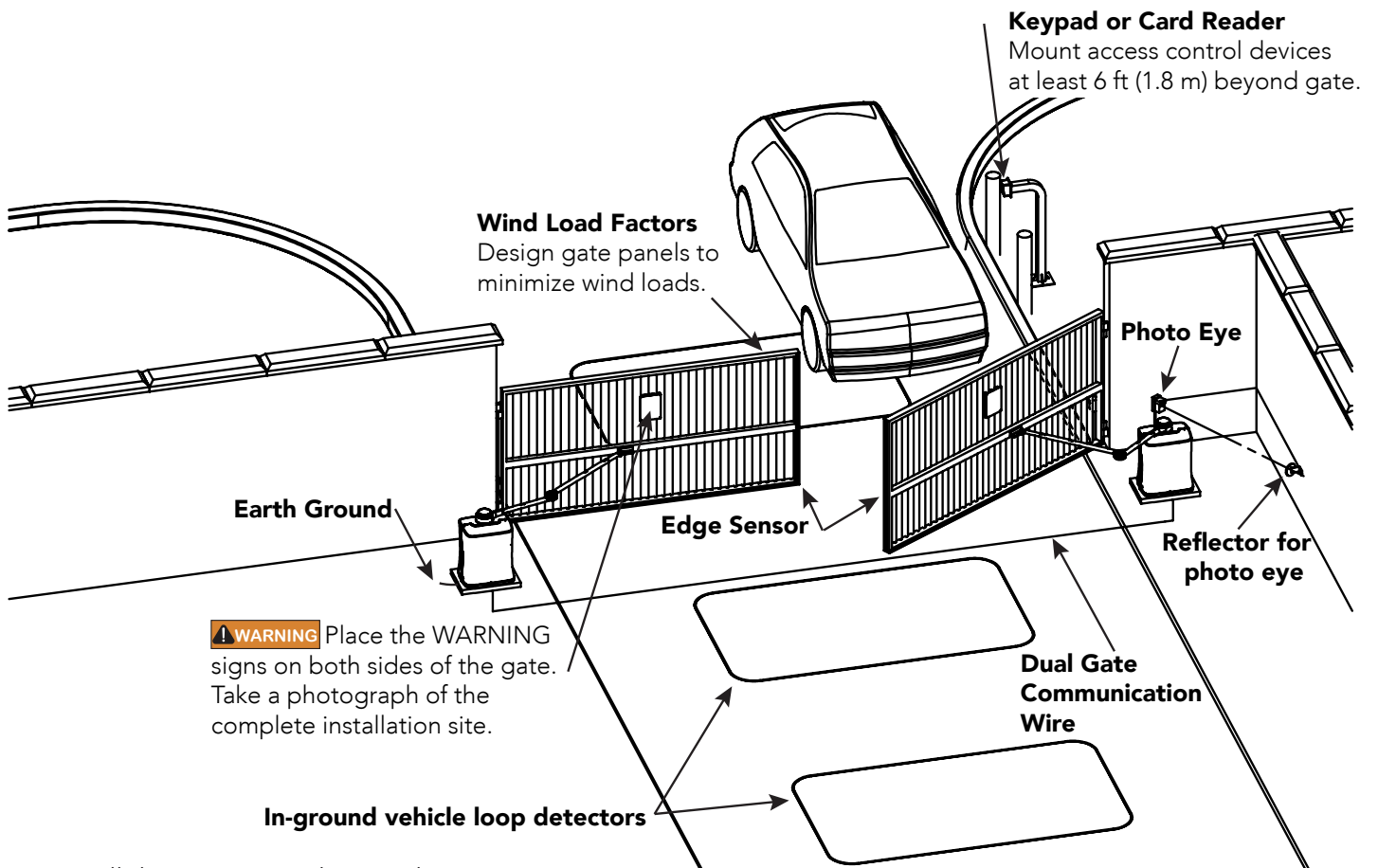
OPERATOR CONFIGURATIONS

- **USAGE CLASS:** UL 325 designations 1-4 (refer to Safety Requirements page 5)
- **CLOSE TIMER:** Number of seconds before open gate initiates closure after all inputs are clear.
- **GATE HANDING:** Direction gate opens when viewed from the operator.
- **AC LOSS:** Action operator performs during an AC power loss. (Refer to Advanced Manual)
- **BATTERY TYPE:** Configure if using larger capacity batteries. (Refer to Advanced Manual)
- **OPEN TIME ALERT:** Activates relay (function 8) when gate is open longer than selected time period.
- **LOITERING ALERT:** Activates relay (function 13) when vehicle is over Outside Obstruction Loop with gate closed longer than selected time period.
- **LEARN LIMIT (SLIDE ONLY):** Set to 1 to place operator in learn limits mode. Installer must then reset open and close positions.
- **FACTORY DEFAULTS:** Set to 1 to erase all installer entered settings and return to factory defaults.
- **OPERATOR TYPE:** Factory set. Used only if replacing the SmartCNX Controller.
- **MENU PIN:** Allows installer to set a 4-digit security pin to restrict access to CNX controller menus.



[†] = Indicates default

BI-PARTING GATE SETUP



1. Install the primary and secondary operators.
2. Set up external entrapment sensors, vehicle detectors, and other input devices on both operators before you connect the operators.
3. Test cycle the operators independently to make sure there are no problems with gate travel and open/close stops.
4. Install a communication wire between the two operators. Match A-A, B-B, and COM-COM. Install the grounding wire on only one of the controller mounting brackets.

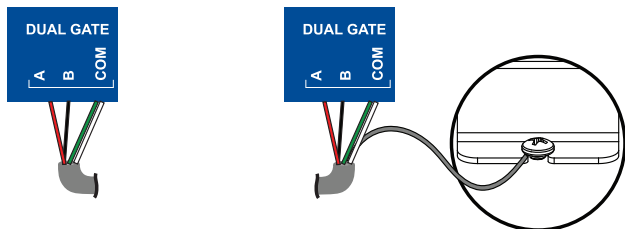
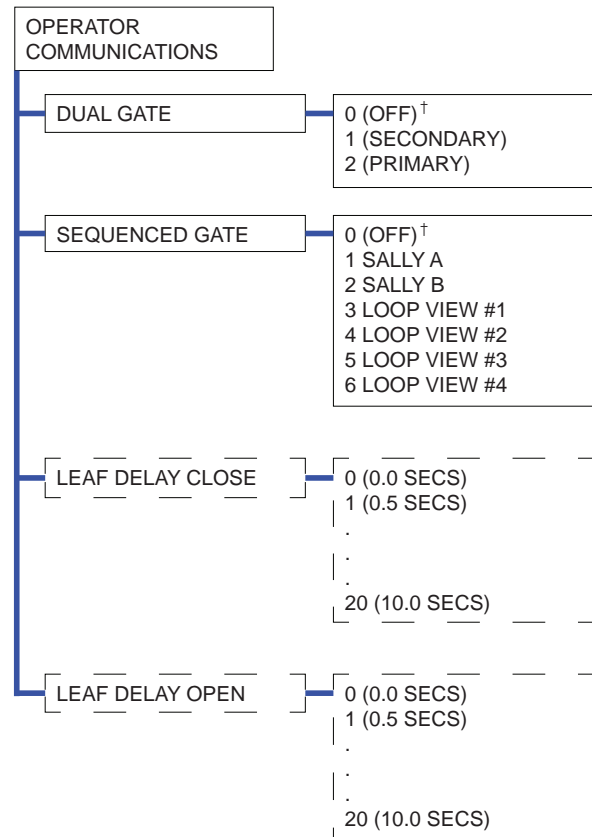


Figure 36. Dual Gate Connection

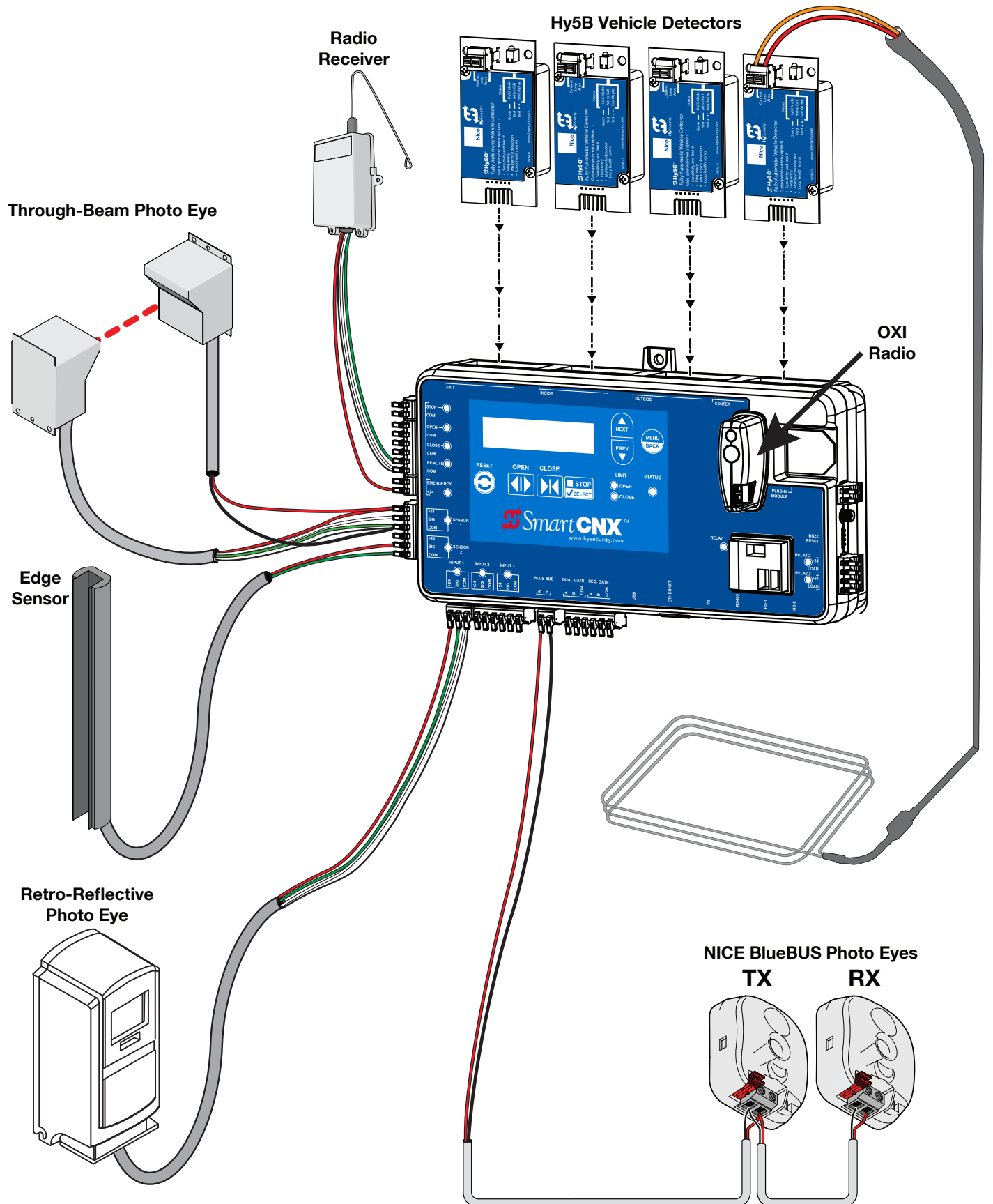
5. Set one operator as the primary and the other as the secondary.
6. Test the gate operation.
7. Adjust LEAF DELAY CLOSE and LEAF DELAY OPEN if required.



For Sequenced Gate applications refer to Advanced Manual.

[†] = Indicates default

SmartCNX Controller Input Examples



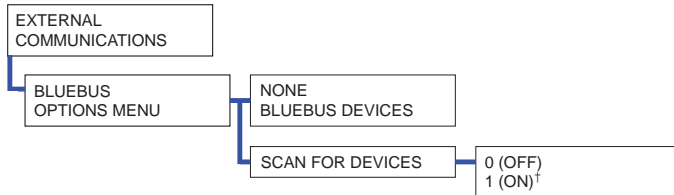
ENTRAPMENT SENSOR WIRING - BLUEBUS

HySecurity provides one BlueBUS through-beam photo eye pair typically used as EYE CLOSE.

1. Verify the jumpers on transmitter (TX) and receiver (RX) are in the same positions (Figure 37).
2. Install the BlueBUS photo eyes in appropriate locations for entrapment protection (page 9).
3. Set the AC and DC switches to OFF.
4. Route the wires to the inside of the CNX chassis (Figure 7).
5. Install the wires between the TX and RX and then into BlueBUS terminals on the SmartCNX controller (Figure 38)

Note: With BlueBUS technology there are 4 total close direction pairs and 2 open direction pairs available. Refer to Advanced Manual for more information. Pairs may either be connected in parallel to one another or directly to the SmartCNX Controller.

6. Set AC and DC switches to ON.
7. In EXTERNAL COMMUNICATIONS MENU, select BLUEBUS OPTIONS MENU, and set SCAN FOR DEVICES to 1 (ON).

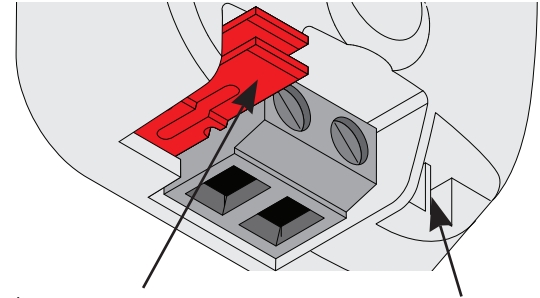


8. Display will show EYE CLOSE BlueBUS P1.
9. In ENTRAPMENT SENSOR RESPONSE menu, set the desired response action for each entrapment type.
10. Test the function of each sensor pair.

| RX LED Status Light | Status |
|--------------------------|---------------------------------------|
| Off | No power |
| 3 flashes, pause, repeat | Controller has not memorized the pair |
| Slow flashes | Good signal |
| Fast flashes | Weak signal |
| Always on | No signal |

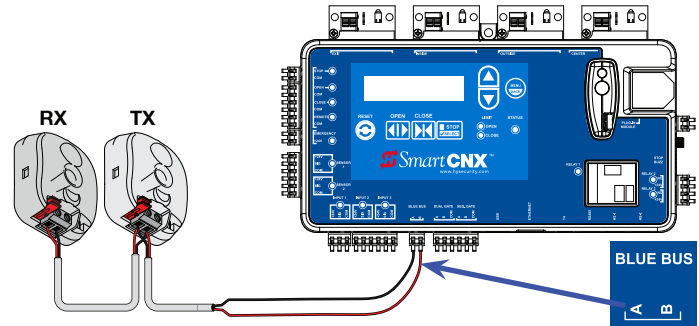
| Direction | Pair | Jumper Positions (Pairs must match) | BlueBUS Photo Eye Position |
|-----------|------|-------------------------------------|----------------------------|
| CLOSE | P1 | | FOTO |
| OPEN | P5 | | FOTO 2 |

Figure 37. BlueBUS and Jumper Designation



Example jumper position
CLOSE P1

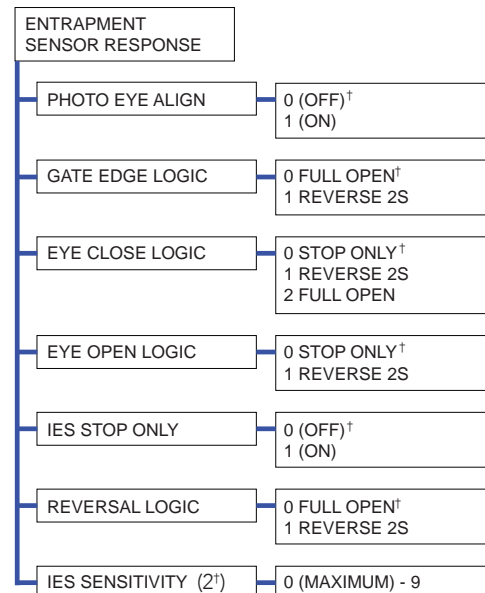
Jumper storage



NOTE: Matching wire polarity is not required for BlueBUS photocells.

NOTE: Jumper locations shown here are for a CLOSE P1 installation.

Figure 38. Connect the BlueBUS Photo Eye



† = Indicates default

ENTRAPMENT SENSOR WIRING

Additional non-BlueBUS non-contact sensors and contact sensors can connect to the SmartCNX Controller.

1. Install the non-BlueBUS entrapment sensor in an appropriate location for entrapment protection (page 9).
2. Set AC and DC switches OFF
3. Route the wires to the inside of the CNX chassis (Figure 7).
4. Install the wires into Sensor #1 or Sensor #2 on the SmartCNX controller (Figure 39).

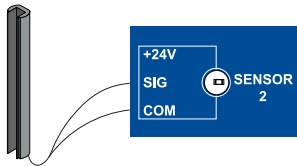
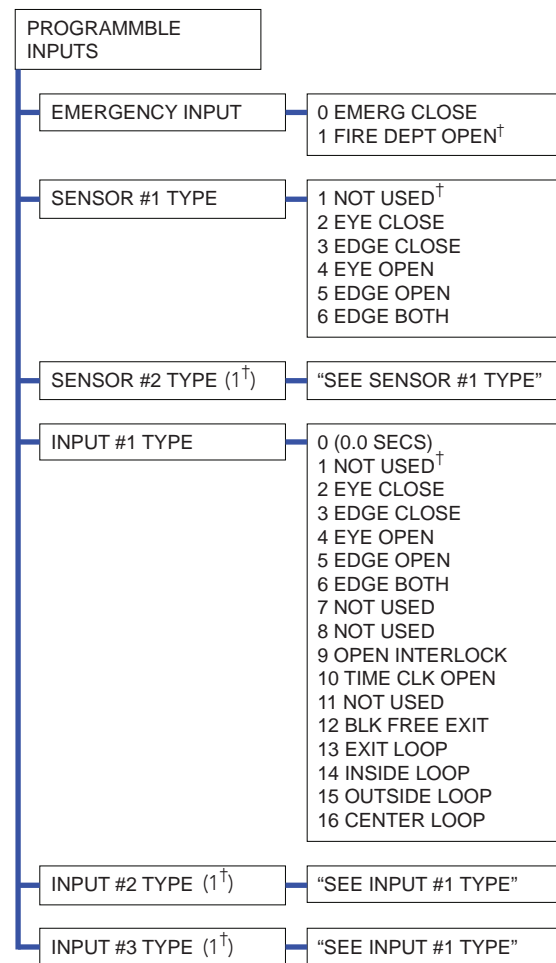


Figure 39. Sensor Connection

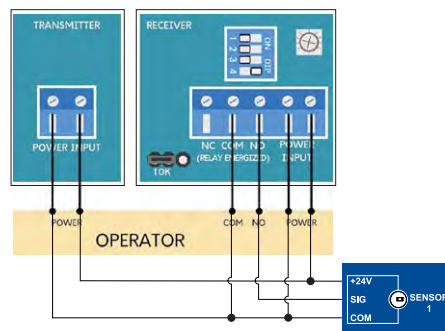
5. Set AC and DC switches to ON.
6. In PROGRAMMABLE INPUTS menu, select the SENSOR TYPE for each external entrapment sensor. The indicator LED changes to green when sensor is activated or not installed correctly.
7. In ENTRAPMENT SENSOR RESPONSE menu, set the desired response action for each entrapment type.
8. Test the function of each sensor.



Note: Additional entrapment sensors can connect to Sensor 1 - 2 and Inputs 1 - 3

An example wiring diagram is shown below for a non-contact sensor (photo eye). Set any DIP-switches and jumpers according to manufacturer instructions for 10k normally open.

Example wiring for the EMX IRB-MON transmitter and receiver.



[†] = Indicates default

LIST OF ENTRAPMENT SENSORS

COMPATIBLE EXTERNAL SENSORS

NOTICE

The SmartCNX Controller inputs use 10k or 4-wire pulsed monitoring. Connect sensor using normally open connections. The SmartCNX Controller does not support normally closed inputs.

Table 1. Sensors Tested for Use with HySecurity Operators

| | Mfg. Part # | Mfg. | Details | 10k or 4-Wire Pulsed | Hysecurity Part # |
|-------------------------------------|---|-----------------------|--|----------------------|--|
| Photo Eyes (Retroreflective) | E3K-R10K4-NR | Omron | 40 ft max range limit | 10k | MX000999 |
| | NIR-50-325 | EMX | 45 ft max range limit | 10k | |
| | IRB-RET | EMX | 53 ft max range limit | Both | |
| | E-931-S50RRGQ | Seco-Larm | 46 ft max range limit | 10k | |
| Photo Eyes (Through-Beam) | IRB-MON | EMX | 65 ft max range limit | 10k | MX3990 |
| | E-960-D90GQ | Seco-Larm | 90 ft max range limit | 10k | |
| | BlueBUS | Nice | 65 ft max range limit | | |
| Edge Sensors | Sentir Series | ASO Safety | Channel mount, high profile Channel mount, low profile Round, wraparound Square, wraparound | 10k | AS1502-0440-05 AS1502-0430-05 AS1501-0760 AS1501-0790 |
| | CPT210-2U-#-T2 | Miller Edge | 10k resistor termination (replace # with length requirement in feet) | 10k | |
| Edge, Wireless Kits | iGAZE RE Kit | Transmitter Solutions | 50 ft line of sight max range limit | 10k | |
| | WEL-200 (kit with receiver and transmitter) | EMX | 200 ft line of sight max range limit | Both | |

To comply with UL 325 Safety Standards, CNX operators are equipped with a Type A, Inherent Entrapment Sensor (IES). The IES software monitors the average motor current when a gate is in motion and reverses direction of gate travel when the current exceeds a self-adapting threshold. A spike in motor current can be caused by a collision with a vehicle, failing gate hardware, extreme wind gust, or any other force applied against the moving gate. To set the IES sensitivity for your site follow these instructions:

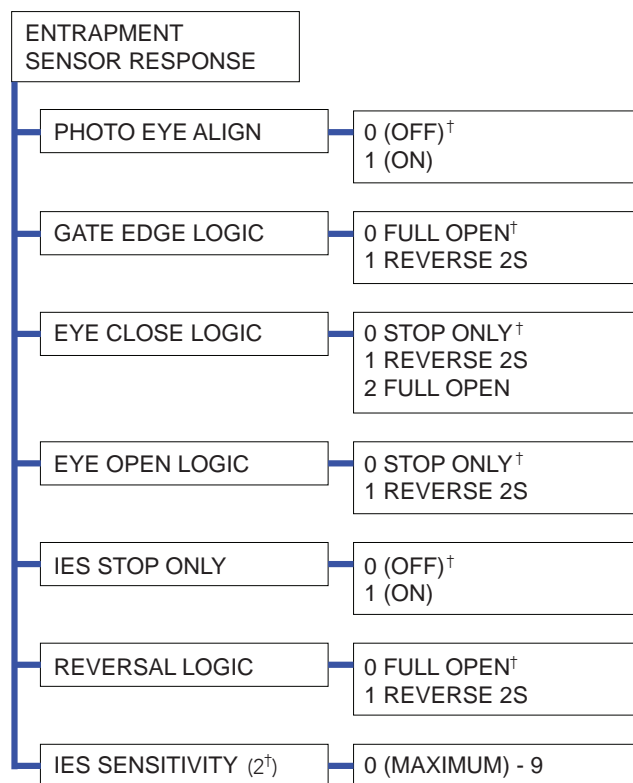
1. Press MENU on the Smart CNX Controller.
2. Press the UP or DOWN arrow to navigate to ENTRAPMENT SENSOR RESPONSE, press SELECT.
3. Press the UP or DOWN arrow to navigate to IES SENSITIVITY, press SELECT.
4. Press the UP or DOWN arrow to choose an IES SENSITIVITY, press SELECT to update the setting.

Note: Settings 0-8 are adaptive and setting 9 is fixed.

5. Press BACK until the display shows the operator status.
6. Run the operator for 3 uninterrupted gate cycles so the IES can adapt to the new setting.
7. Apply force to the leading edge of the moving gate to trigger the IES. Gate will stop motion and reverse for two seconds. "SAFE MODE" appears on the display.

Note: In Safe Mode, the automatic close timer is disabled, but any open or close input restarts gate motion. Safe Mode clears when full travel reached or Reset button pushed.

Note: A second IES trip before Safe Mode is cleared, results in an Entrapment Mode Alert which can only be cleared with a Reset on the display, an open input, stop input, or stop button on CNX cover.

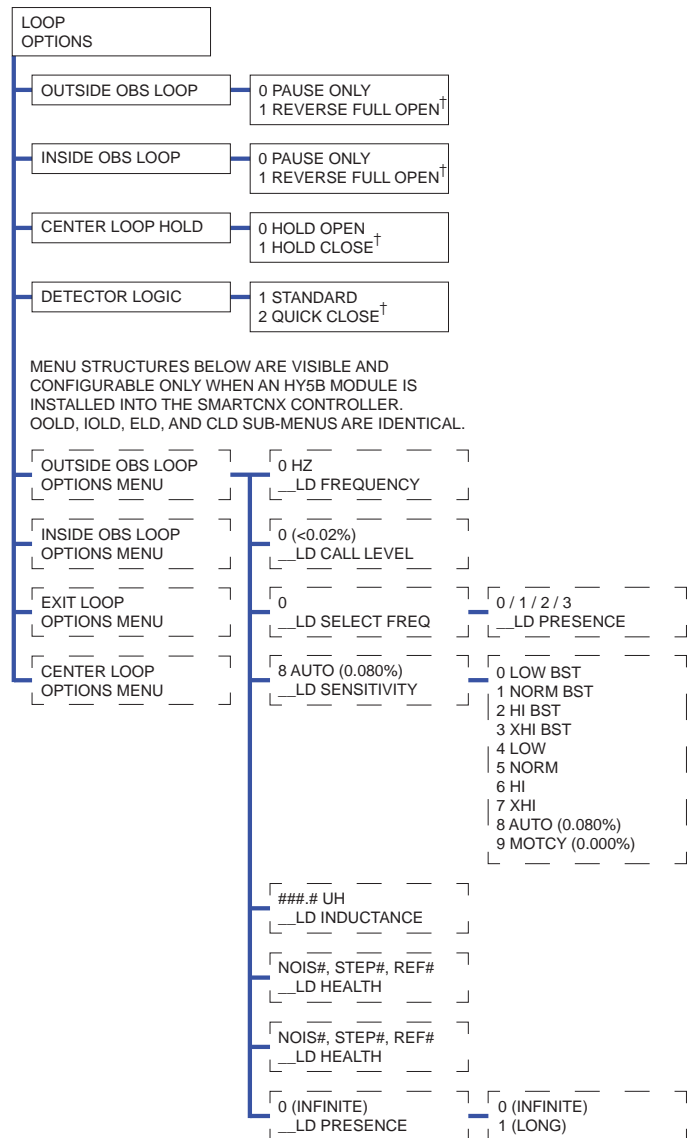
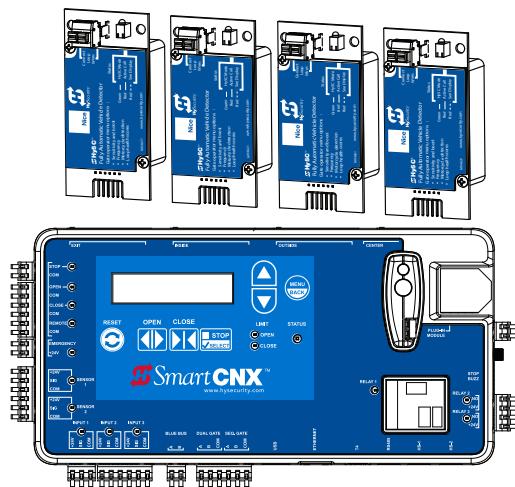


[†] = Indicates default

INSTALL AN HY5B AND VEHICLE LOOP DETECTOR

There are 4 Hy5B ports on the SmartCNX controller: Free Exit, Outside Obstruction, Inside Obstruction, and Center. Refer to Appendix A for a standard loop layout illustration.

1. Route the loop detector wires through the operator chassis to the SmartCNX Controller.
2. Switch off AC and DC power.
3. Connect the wires to the Hy5B module.
4. Plug the Hy5B into the appropriate port (remove rubber plug).
5. Use zip ties and the holes in the aluminum controller bracket to neatly organize the loop lead wires to keep wires out of the way and prevent them from moving.
6. Switch on AC and DC power. The display will show loop detectors 'Initializing'.
7. In LOOP OPTIONS menu configure the appropriate loop detector settings.



[†] = Indicates default

The three relays on the SmartCNX Controller are configurable to perform a wide range of options for integration with external devices. For more information, see Advanced Manual.

1. Install the relay controlled device according to the manufacturer's instructions.
2. Route the relay wires to the SmartCNX Controller (Figure 40).

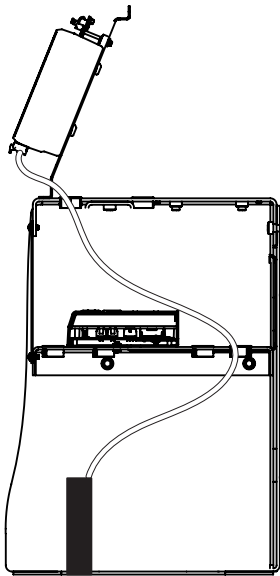


Figure 40. Route Relay Wires

3. Install the relay wires in the appropriate relay port: mechanical (Relay 1) or solid state (Relay 2 and 3) (Figure 41).

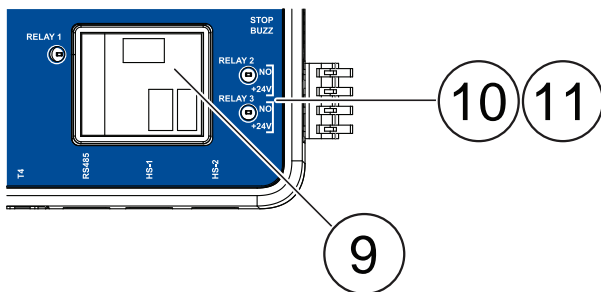
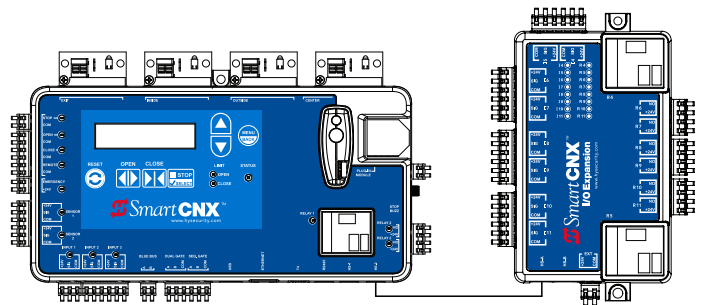


Figure 41. Relay Ports

4. Press MENU on the SmartCNX Controller.
5. Press the UP or DOWN arrow to navigate to USER RELAY OUTPUTS, press SELECT,
6. Press the UP or DOWN arrow to navigate to RELAY LOGIC, press SELECT.
7. Press the UP or DOWN arrow to highlight the appropriate setting, press SELECT.
8. Press BACK until the SmartCNX controller resets and operator status displays.

| USER RELAY OUTPUTS | |
|--------------------|------------------|
| RELAY 1 – 3 LOGIC | |
| 0 DISABLED | 25 BATTERY OK |
| 1 CLOSE LIMIT | 26 EXIT PULSE |
| 2 CLOSE PULSE | 27 NOT OP AC |
| 3 OPEN LIMIT | 28 FLASH AC |
| 4 OPEN PULSE | 29 ARM ENTRY |
| 5 WARN B4 OP | 30 ARM EXIT |
| 6 GATE LOCK | 31 RESET TKT |
| 7 FORCE OPEN | 32 BACKOFF |
| 8 OPEN 2LONG | 33 TRANS IN |
| 9 SAFE MODE | 34 TRANS OUT |
| 10 ENTRAPMENT | 35 TENANT IN |
| 11 TAILGATER | 36 TENANT OUT |
| 12 OUTSIDE LOOP | 37 SPEC IN |
| 13 LOITERING | 38 SPEC OUT |
| 14 NEAR LIMIT | 39 UNK IN |
| 15 ALERT/FAULT | 40 UNK OUT |
| 16 MOTOR RUNNING | 41 TEST OPEN |
| 17 AC POWER LOSS | 42 AMR BREAK |
| 18 LOW BATTERY | 43 WARN THRU |
| 19 FLASHER | 44 POL PULSE |
| 20 EXIT LOOP | 45 OUTS CLOSE |
| 21 INSIDE LOOP | 46 TIMER OPEN |
| 22 CENTER LOOP | 47 OXI ACCESSORY |
| 23 PRISON LOCK | 48 OXI ACC/-MIN |
| 24 PARTIAL OPEN | |
| RELAY 4 – 11 LOGIC | |
| 0 DISABLED – | 48 OXI ACC/-MIN |

RELAY 4 – 11 ARE VISIBLE AND CONFIGURABLE ONLY WITH OPTIONAL I/O EXPANSION MODULE WHICH CONNECTS VIA TWISTED SHIELDED PAIRS COMMUNICATION CABLE FROM HS-2 ON THE SMARTCNX CONTROLLER TO HS-1 ON THE EXPANSION MODULE



- Accessory power limited to 2A at 24VDC.
- Relay capacity: (1) Mechanical 10A max at 240VAC (Figure 41 Item 9). (2) Solid state relays 30VDC, 3A max (Figure 41 Item 10, 11).

MECHANICAL MAINTENANCE

The SwingSmart CNX requires minimal mechanical maintenance. Check the following on a routine basis:

- Sweep debris out and away from the chassis.
- Check for signs of rust. If any areas of rust are found, reduce spread of corrosion by treating areas with a rust inhibitor.
- Check for wear on taper clamp. Reset limits per instructions on page 21 to avoid collision with physical stops which causes unnecessary taper clamp slip. Replace if required.
- Verify condition of swing arm elbow joint.
- Check for damage due to gate strikes. Replace bushings if required.
- Grease swivel joint at gate attachment point.
- Replace worn-out batteries. Refer to "DC Battery Replacement" on page 36.

FUSE REPLACEMENT

A 20A fuse is located next to the battery harness. It requires no maintenance, but if blown due to a power surge, swap it out with a new fuse (Figure 42). ALERT 28 BATT DISCONNECTED indicates a blown fuse or disconnected batteries.

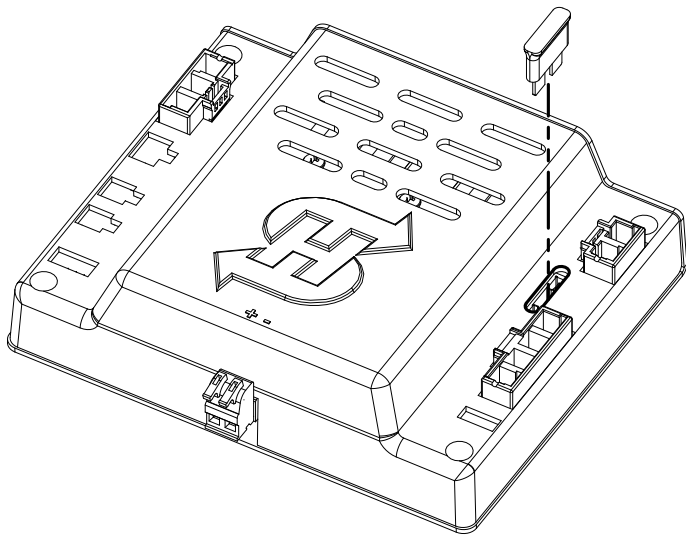


Figure 42. Fuse Replacement

Note: Dispose of batteries properly. See Advanced Manual for more information.

DC BATTERY REPLACEMENT

HySecurity provides a one year warranty from the date of shipment for all batteries supplied with the SwingSmart CNX operator.

Display indicators of a low battery include:

- LOW BATTERY or DEAD BATTERY
- ALERT 18 - CHANGE BATTERY
- ALERT 28 - DISCONNECTED BATTERIES. Gate operation is affected by AC power loss.

The two 8Ah batteries are located on the left hand side of the power shelf behind power shelf cover.

To replace the batteries:

1. Remove the front cover.
2. Set the DC and AC power switches to OFF.
3. Remove the power shelf cover.
4. Cut the zip ties on the batteries.
5. Disconnect the blue jumper wire, disconnect the wire harness, and remove the 8Ah batteries.

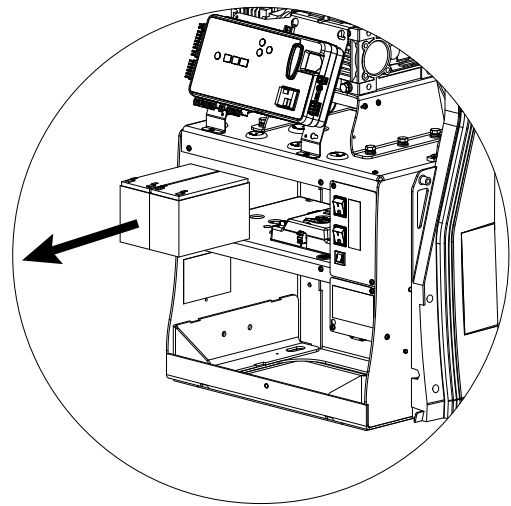


Figure 43. Remove the Batteries

6. Install the new batteries.
7. Connect the red harness wire to the red terminal on left battery.
8. Connect the blue harness wire to the black terminal on the right battery.
9. Connect the blue jumper wire between the batteries.
10. Set the AC and DC switches to ON and replace the front cover.

Download the firmware to a USB drive:

1. Go to <https://hysecurity.com/technical-support/operator-software/> for the correct operator type and login or register.

2. Download the latest firmware.

3. Connect a USB drive to your computer.

Note: FAT32 is the preferred file system for USB drives used for CNX firmware updates.

4. Navigate to the folder with the firmware zip file.
5. Right click on the zip file, click Extract All, click Browse, select the USB drive, click Select Folder, and wait for the files to finish extracting.

6. Safely disconnect the USB drive.

Install the firmware:

1. Move the gate to the open position to allow free flow of traffic. The SmartCNX Controller ignores all inputs and outputs during the firmware update.
2. Plug the USB drive into the USB port on the SmartCNX Controller (Figure 44).
3. Press SELECT when USB OPTIONS MENU appears.
4. Press the UP or DOWN arrow to LOAD SW and press SELECT.
5. Press the UP or DOWN arrow to YES and press SELECT.
6. The display shows LOADING SW while the firmware loads. It could take up to 10 minutes to load the firmware.

NOTICE

Do not shut off power. Do not remove the USB or HSP1 communication cable during download. This can cause SmartCNX Controller communication to stop and requires a SmartCNX Controller replacement.

7. The display shows COMPLETE and the controller beeps once when software loading ends.
8. Remove the USB drive.

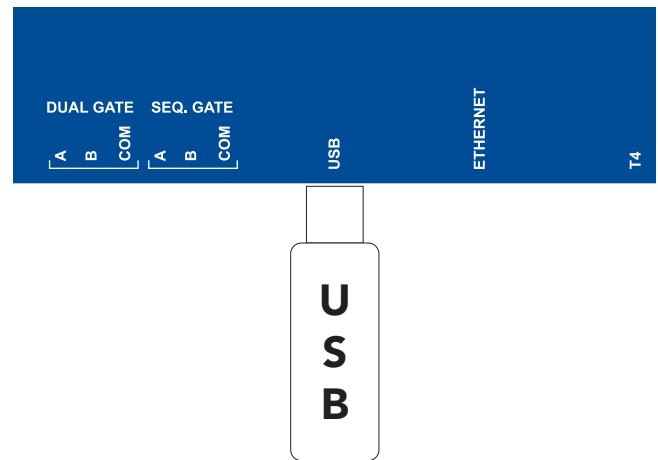
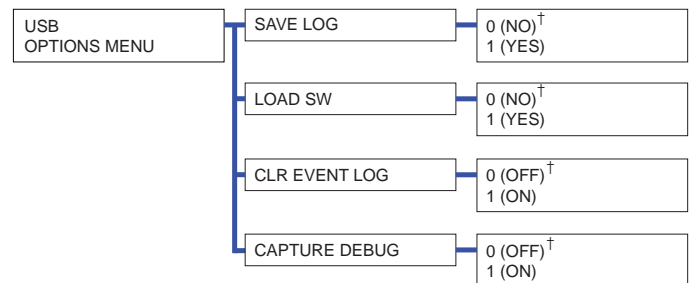


Figure 44. USB Port



SAVE LOG allows for download of fault log to USB.

CAPTURE DEBUG collects useful troubleshooting data when cycling the operator. Data is written to USB as long as USB remains plugged in.

† = Indicates default

Table 7. SmartCNX Controller - Troubleshooting

| Display Condition | Description Alert, Error or Fault | Possible Causes | Solutions |
|-------------------|-----------------------------------|--|---|
| SAFE MODE | Safe Mode Alert | Occurs when an edge sensor or Inherent Entrapment Sensor (IES) trips. Gate binding, wind, or a faulty edge sensor can cause a false alert. | <ol style="list-style-type: none"> 1. Press RESET or either STOP button. 2. Remove obstruction. 3. Correct gate hardware. 4. Correct faulty edge sensor. 5. Adjust IES sensitivity. |
| ENTRAPMENT MODE | Entrapment Mode Alert | <p>Occurs when IES is tripped when gate is already in Safe Mode (two IES trips in one cycle). Operator will not function until it is reset, which can occur by:</p> <ul style="list-style-type: none"> ● An Open or Stop command from a push-button control ● Pressing STOP button on operator side ● Pressing RESET button below display <p>Gate binding, wind, or a faulty edge sensor can cause a false alert.</p> | Refer to solutions above. |
| NO AC POWER | No AC Input Power Advisory only. | AC power is shut off at source (breaker) or is not connected. AC power switch on operator (lower rocker switch) is turned off, or circuit breaker on the operator has tripped. Bad power supply. Power supply selector switch is in the wrong position. | <ol style="list-style-type: none"> 1. Set AC switch to On. 2. Reset operator circuit breaker or reset circuit breaker at electrical panel. 3. Verify AC power to operator. Have a licensed electrician check wiring. 4. Check power supply output is 36VDC. |

Table 7. SmartCNX Controller - Troubleshooting

| Display Condition | Description Alert, Error or Fault | Possible Causes | Solutions |
|--------------------------|--|---|--|
| LOW 24VDC | Low 24VDC UPS Batteries Advisory only. | Occurs when battery voltage has dropped to less than 22V. At this level, batteries are 80% depleted. Normal function until 21V. <ul style="list-style-type: none"> ● No AC Power. ● Wiring / Connector problem ● Drive module charger failure ● Power supply failure | <ol style="list-style-type: none"> 1. Verify AC power. 2. Check all connections. Clean or repair as required. 3. Check battery condition and replace as required. 4. Check charger voltage is 27VDC at red/blue battery wires. Replace drive controller. 5. Verify power supply voltage of 36VDC and replace as required. |
| DEAD BATTERY | Extremely low UPS batteries – no automatic operation - batteries below 21V. | Occurs when battery voltage has dropped to less than 21V. At this level, batteries are 90% depleted. Gate will automatically open or close depending upon setting chosen. No additional automatic function is possible, but limited push button control is available to 18V. | Refer to solutions above. |
| HYSECURITY BAD POWER | Critically low 24V supply power. This message can occur only on initial start up if power is critically low. | DC power is below 14V – no control functions will be allowed at all. | Refer to solutions above. |
| No display, LED blinking | SmartCNX Controller is receiving power, but battery voltage is very low. | Several possible causes: <ul style="list-style-type: none"> ● AC power has been shut off from the operator for too long and the batteries are drained. ● Wiring problem. ● Batteries no longer hold a charge. ● Bad SmartCNX Controller. ● Bad power supply or drive module. ● Disconnected com (HSP) wire between SmartCNX controller and drive module. | Refer to solutions above. |

Table 7. SmartCNX Controller - Troubleshooting

| Display Condition | Description Alert, Error or Fault | Possible Causes | Solutions |
|---------------------------------------|---|--|--|
| LOADING SW | Software is being loaded into SmartCNX Controller. | Software is currently being loaded. | Wait for software to finish loading. |
| ALERT 1 FORCE OPEN | Gate forced open. Alarm will sound. | Gate has been forced open from a full close limit and is being prevented from re-closing. | Will self-clear after an open or close input. |
| ALERT 2 DRIFT CLOSED | Gate drifted closed. | Gate has drifted closed from a full open limit and is being prevented from re-opening. | Will self-clear after an open or close input. |
| ALERT 3 EXCESS DRIFT | Gate drift in transit - Advisory only | Alert appears if gate drifts three times in a five minute period. | Check track to make sure it is level. |
| ALERT 4 MOTOR OVERLOAD | Thermal overload alert. When alert is triggered, gate can only "fully open" until alert is cleared. | Motor drive heat sink exceeds 195°F. Alert temporarily disables operator, but automatically resets itself when it cools down. May also occur if the heatsink temperature is 70°F. higher than ambient temperature. | Check gate hardware. Alert automatically clears when temperature drops below threshold. |
| ALERT 5 BOTH LIM ACTIVE (Swing only) | Both limit sensors are on at the same time | <ul style="list-style-type: none"> ● Short in wiring or drive module connection ● Failed limit sensor | <ul style="list-style-type: none"> ● Repair any wiring issues. ● Check limit sensors and replace as required. |
| ALERT 6 LIM NOT RELEASED (Swing only) | The limit did not release when the operator was commanded to move. | <ul style="list-style-type: none"> ● Loose taper clamp. ● Arm assembly binding. | <ul style="list-style-type: none"> ● Tighten taper clamp ● Check limit sensors and replace as required ● Verify arm condition |
| ALERT 7 FREQ SHIFT FAULT* | Hy5B detects a frequency change outside normal range. | Likely causes are poor integrity of loops or metallic objects within range. | Check lead and roadway loop wires for problems. Replace if necessary. |
| ALERT 8 LOOP SHORTED* | Hy5B detects a loop shorted to ground. | Caused by inadequate insulation of loop wires. | Refer to solution above. |
| ALERT 9 LOOP OPEN* | Hy5B detects a lack of continuity in loop wire. | Caused by broken loop wire or wire has come unplugged from detector. | Refer to solution above. |

* This message will also indicate which detector the alert applies to: Exit Loop (ELD), Inside Obstruction Loop (IOLD), Outside Obstruction Loop (OOLD), or Center Loop (CLD).

Table 7. SmartCNX Controller - Troubleshooting

| Display Condition | Description Alert, Error or Fault | Possible Causes | Solutions |
|---------------------------------------|--|--|--|
| ALERT 10 I2C BUS ERROR* | Communication error detected to a Hy5B vehicle detector. | Caused by removal of Hy5B or lack of integrity of socket connection. | Remove and re-install the Hy5B and press RESET. Replace Hy5B, if necessary. |
| ALERT 11 DETECTOR FAULT* | A problem detected within an Hy5B vehicle detector. | Caused by a fault within Hy5B. | Remove and re-install the Hy5B and press RESET. Replace Hy5B, if necessary. |
| ALERT 12 ON TOO LONG* | An input loop (Hy5B or box detector output) is active for more than 5 minutes. | Caused when SmartCNX Controller sees an active loop for more than 5 minutes. "Active" loop can be actual or false. | Check traffic patterns at site. Loop and lead in wires should be checked for problems or replaced. |
| ALERT 13 STIFF GATE | A gate takes more power to move over time. | Caused by degrading gate hardware or debris in track. This alert appears in history log. It does not have any effect with regard to opening or closing gate. | Check and correct gate hardware as required. |
| ALERT 14 STUCK GATE | The gate cannot move at all. | Caused by broken gate hardware or ice/snow buildup. | Check and correct gate hardware as required. Clear ice and snow. |
| ALERT 15 NO TARGET (SLIDE ONLY) | Target magnet is missing or is not detected. | Target magnet fell off or target sensor wires are damaged. | <ol style="list-style-type: none"> 1. Make sure target is properly fastened. 2. Check target sensor to make sure it is reading magnet. 3. Change sensor if it or its wires are damaged. |
| ALERT 18 CHANGE BATTERY | 24VDC UPS batteries need to be replaced. Buzzer will chirp every minute until UPS batteries are replaced. | Batteries are not taking a charge properly. | Replace the 24VDC UPS batteries |
| ALERT 20 LI BLOCK OPEN | | An interlock contact is closed, indicating that the gate latch (lock) is engaged, preventing the operator from starting. | <ol style="list-style-type: none"> 1. Check the interlock terminal and wiring. 2. Check programmable input setting. |

* This message will also indicate which detector the alert applies to: Exit Loop (ELD), Inside Obstruction Loop (IOLD), Outside Obstruction Loop (OOLD), or Center Loop (CLD).

Table 7. SmartCNX Controller - Troubleshooting

| Display Condition | Description Alert, Error or Fault | Possible Causes | Solutions |
|--|---|---|---|
| ALERT 22 INTLOCK FAILURE | Interlock/ Sequential Gate communication lost. Alert auto clears when communication between two operators is restored. | <ul style="list-style-type: none"> ● Appears when communication connection is lost for more than 5 seconds between interlocked or sequenced gate operators. ● Solo operator has Dual Gate or Sequential gate set to ON. | <ol style="list-style-type: none"> 1. Check cable connections and wiring. Make sure both operators are working properly with same, current software versions. 2. Verify Dual Gate and Sequential Gate are both set to (0) on a solo operator. |
| ALERT 28 BATTERY DISCONNECTED | Battery disconnected from drive module. | Dead or disconnected batteries detected by SmartCNX Controller. Operator may still function on AC power but will not have battery backup. Battery fuse may be blown. | Replace or reconnect batteries. Replace fuse if needed. |
| FAULT 1 MOTOR RUN TIME (SWING ONLY) | The motor is on longer than the maximum run time selected. | <ul style="list-style-type: none"> ● Taper clamp slipping ● Missing target or bad limit sensor | <ol style="list-style-type: none"> 1. Tighten taper clamp. 2. Check limit sensors. Replace as required. 3. Increase Max Run Timer. |
| FAULT 2 PHOTO EYE | Photo eye is missing or not working. | This fault can only occur if monitored sensor check fails. | Correct malfunctioning photo eye. |
| FAULT 4 GATE NO LOAD | SmartCNX Controller detects no load on operator. Gate is non-operational while this fault is triggered. | Possible causes: <ul style="list-style-type: none"> ● Motor wires disconnected. ● DC switch off. ● Arm assembly disconnected ● Taper clamp too loose | <ol style="list-style-type: none"> 1. Check DC motor wires condition and connection to drive module. 2. Turn DC power switch on. 3. Tighten taper clamp. 4. Press RESET to clear fault. |
| FAULT 14 STUCK GATE | SmartCNX Controller could not overcome stuck gate after 3 attempts. Gate is non-operational while this fault is triggered. | Caused by broken gate hardware or ice/ snow buildup. | <ol style="list-style-type: none"> 1. Check and correct gate hardware as required. 2. Press RESET to clear fault. |

Table 7. SmartCNX Controller - Troubleshooting

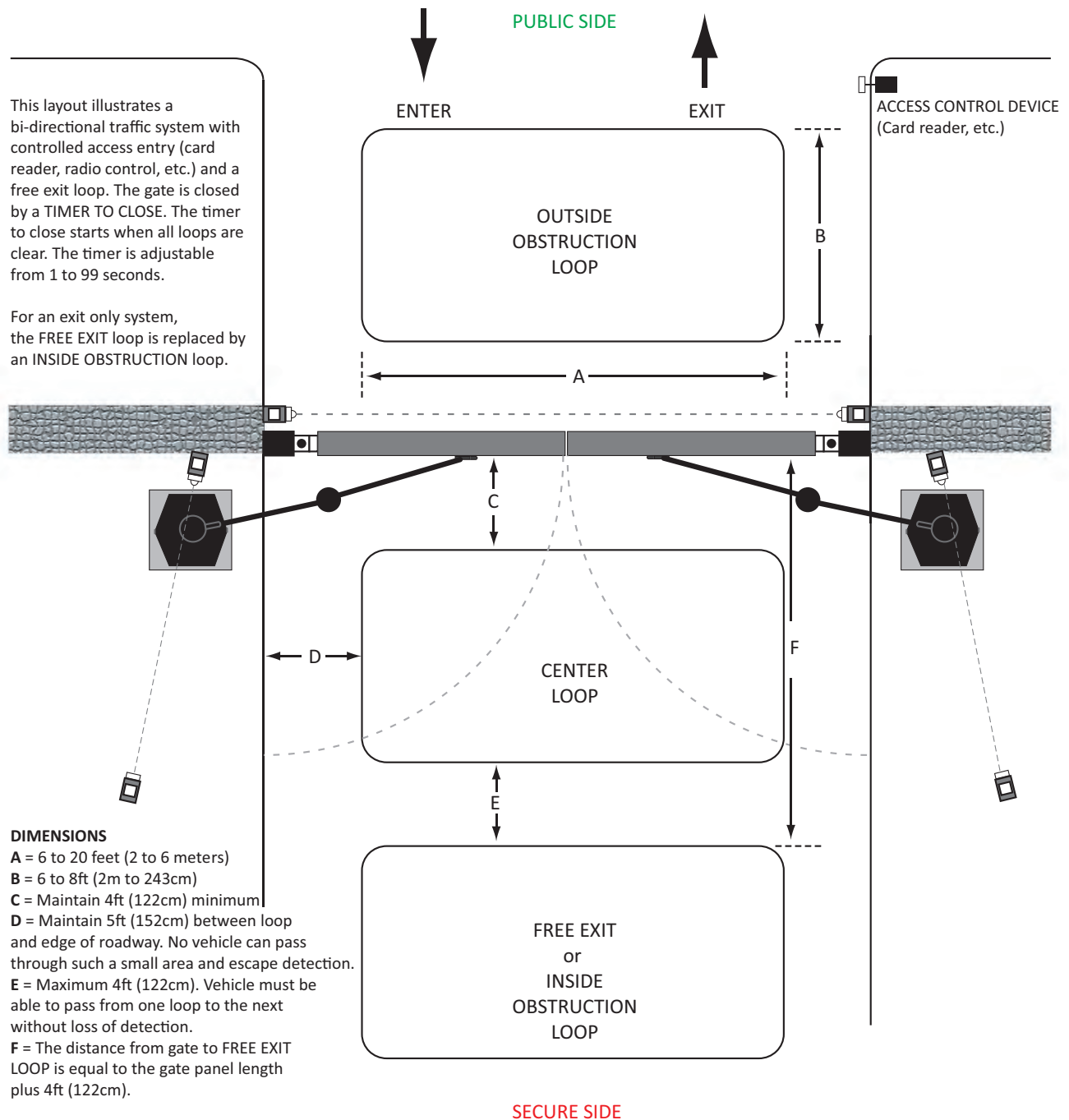
| Display Condition | Description Alert, Error or Fault | Possible Causes | Solutions |
|---|--|--|--|
| ERROR 1 DIRECTION ERROR | SmartCNX Controller detects operator ran in wrong direction. | Limit sensor plugs switched on drive module. | <ol style="list-style-type: none"> 1. Switch limit sensor plugs or reset operator handing Left Hand/Right Hand. 2. Press RESET to clear fault. |
| ERROR 3 Hy5B FAILED* | SmartCNX Controller detects communication error with a Hy5B vehicle detector. | Caused by Hy5B removal or socket connection integrity. | <ol style="list-style-type: none"> 1. Press RESET. 2. Remove and re-install Hy5B. 3. Replace Hy5B, if needed. |
| ERROR 4 PRIMARY- SECONDARY COM | SmartCNX Controller detects a communication error between primary and secondary in a dual gate installation. | <p>Several possible causes:</p> <ul style="list-style-type: none"> ● Primary/Secondary communication cable is installed incorrectly. ● Primary/Secondary not configured properly through Installer Menu. ● Operator is not properly earth grounded. ● Primary/Secondary communication cable installed in same conduit as high-voltage AC power. ● One operator is powered off. ● Different software versions between operators. Check software version currently loaded in operator by pressing RESET. | <ol style="list-style-type: none"> 1. Correct communication cable. 2. Verify one operator as is set as Primary and the other is set as Secondary. 3. Install ground rod per NEC/NFPA standard. 4. Install communication cables in a low voltage conduit. 5. Ensure AC power is present at both operators and all power switches are On. 6. Make sure both operators are running same software version. |

* Message indicates which detector the alert applies to: Exit Loop (ELD), Inside Obstruction Loop (IOLD), Outside Obstruction Loop (OOLD), or Center Loop (CLD).

Table 7. SmartCNX Controller - Troubleshooting

| Display Condition | Description Alert, Error or Fault | Possible Causes | Solutions |
|-----------------------------|---|--|--|
| ERROR 5 No display | Display is blank, but the error appears in the START log and means that SmartCNX Controller detects a serious internal error. | Internal software/hardware error. Report any instance of this error to HySecurity Technical Support. | <ol style="list-style-type: none"> 1. Set AD & DC switches to off to reset software. 2. Update to latest software version. 3. Replace SmartCNX Controller. |
| ERROR 6 DRIVE BOARD COMM | Indicates communication failure between drive module and SmartCNX Controller. | Drive module communication is bad or the drive module may be bad. | <ol style="list-style-type: none"> 1. Verify connection between SmartCNX Controller and drive module (HSP1). 2. Replace drive module. |
| ERROR 7 MENU CHECKSUM | Software issue exists that may require factory reset. | Corrupt software or data. | Call HySecurity Technical Support for assistance. |
| ERROR 8 RPM SENSOR | RPM sensor disconnected. | Motor Encoder or wires are damaged or unplugged. | Check wiring from motor to drive module. |
| ERROR 9 BATTERY DISCONNE | SmartCNX Controller detects no battery connected. | <p>Batteries are disconnected, or a wiring fault exists.</p> <p>Only appears when the batteries are disconnected and the only input power is solar panels.</p> | <ol style="list-style-type: none"> 1. Connect battery harness to drive module. 2. Correct any issues with battery wiring. 3. Check 20 amp fuse on drive module. |

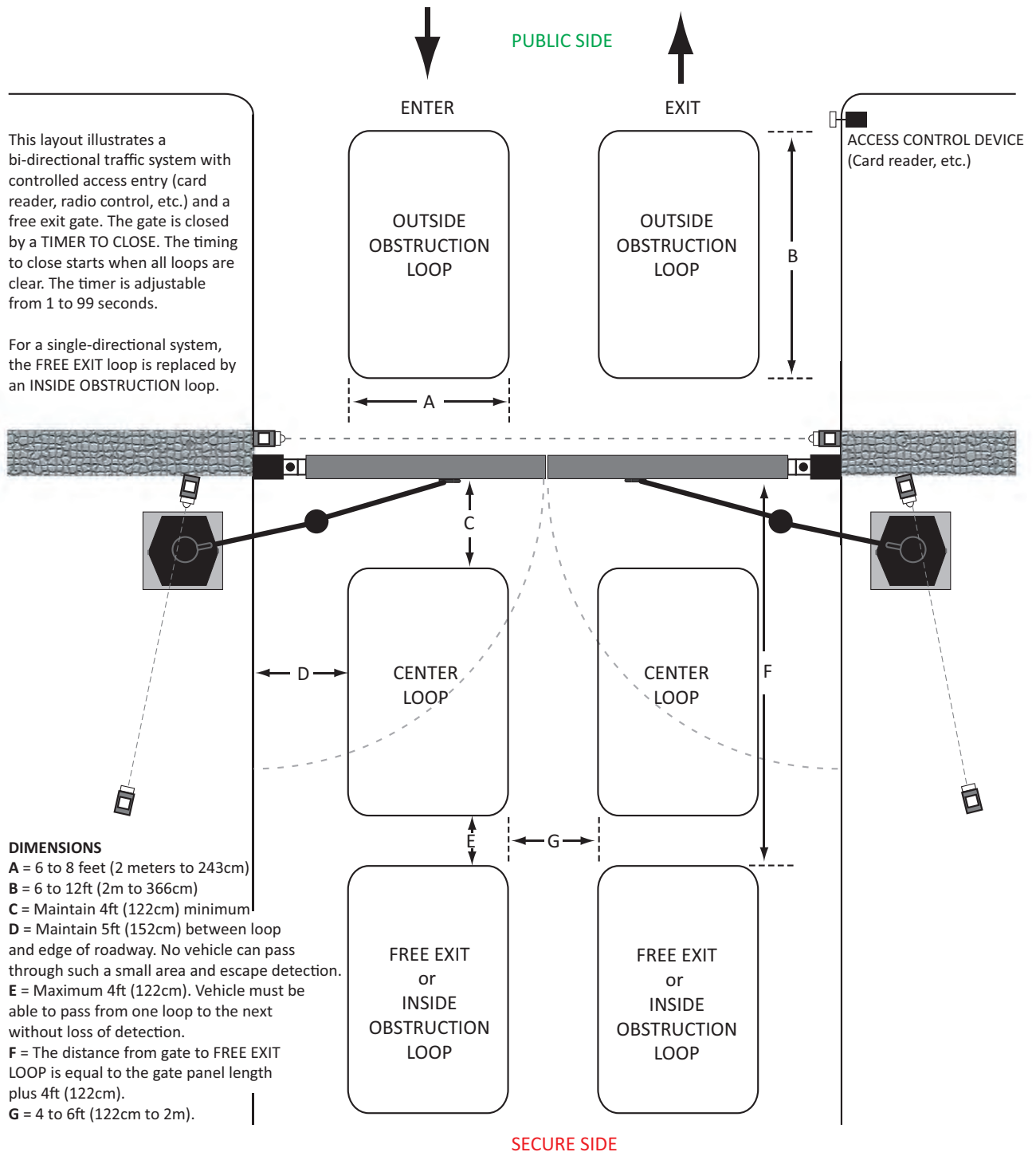
APPENDIX A - VEHICLE DETECTOR LOOPS



Vehicle Detectors and Loop Layout for Openings less than 28 feet*

* NOTE: A minimum of three (3) detectors are required for this type of gate.

APPENDIX A - VEHICLE DETECTOR LOOPS



Vehicle Detectors and Loop Layout for Openings greater than 28 feet*

* NOTE: A minimum of three (3) detectors are required for this type of gate.

FRENCH TRANSLATIONS

The following French translations provided below are found in the Safety Section located at the beginning of the manual.

| English | French |
|---|---|
| IMPORTANT SAFETY INSTRUCTIONS WARNING – To reduce the risk of injury or death: | INSTRUCTIONS DE SÉCURITÉ IMPORTANTES AVERTISSEMENT – Pour réduire les risques de blessures et de mort : |
| 1. READ AND FOLLOW ALL INSTRUCTIONS. | 1. LISEZ CETTE NOTICE ET CONFORMEZ-VOUS AUX MISES EN GARDE |
| 2. Never let children operate or play with gate controls. Keep the remote control away from children. | 2. Ne laissez jamais les enfants manoeuvrer les commandes de la barrière ou jouer avec celles-ci. Laissez la télécommande hors de la portée des enfants. |
| 3. Always keep people and objects away from the gate. NO ONE SHOULD CROSS THE PATH OF THE MOVING GATE. | 3. Tenez toujours à l'écart de la barrière toute personne ou tout objet avoisinant. IL NE FAUT JAMAIS PASSER DANS LA TRAJECTOIRE D'UNE BARRIÈRE EN MOUVEMENT. |
| 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. | 4. Vérifiez le fonctionnement de l'ouvre-barrière une fois par mois. Le sens de la course DOIT s'inverser lorsque la barrière entre en contact avec un objet dur ou la barrière DOIT s'arrêter lorsqu'un objet active les capteurs sans contact. Vérifiez à nouveau l'ouvre-barrière après tout réglage de la force de déclenchement ou du seuil de fin de course. Un réglage incorrect de l'ouvre-barrière ou l'omission de vérifier à nouveau le fonctionnement de l'ouvre-barrière peut causer des blessures, voire la mort. |
| 5. Use the emergency release only when the gate is not moving. | 5. Ne déclenchez le dispositif de désaccouplement d'urgence que lorsque la barrière ne bouge pas. |
| 6. KEEP GATES PROPERLY MAINTAINED. Read the user's manual. Have a qualified service person make repairs to gate hardware. | 6. ASSUREZ-VOUS QUE LA BARRIÈRE EST CORRECTEMENT ENTRETENUE. Lisez le manuel de l'utilisateur. Confiez la réparation du matériel de la barrière à un technicien qualifié. |
| 7. The entrance is for vehicles only. Pedestrians must use separate entrance. | 7. La voie d'accès est réservée aux véhicules seulement. Les piétons doivent utiliser une voie d'accès différente. |
| 8. SAVE THESE INSTRUCTIONS. | 8. CONSERVEZ CES INSTRUCTIONS. |

APPENDIX B - FRENCH TRANSLATIONS

| English | French |
|---|---|
| 2.3 Install the gate operator only when: | 2.3 N'installez l'ouvre-barrière que si : |
| a. The operator is appropriate for the construction of the gate and the usage Class of the gate, | a. l'ouvre-barrière est approprié pour la structure et la classe d'utilisation de la barrière; |
| b. 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, | toutes les ouvertures de la barrière coulissante sont protégées ou grillagées du bas de la porte jusqu'à un minimum de 1,83 m (6 pi) du sol si bien qu'une sphère de 57,2 mm (2 1/4 po) de diamètre ne peut passer par une ouverture au niveau de la barrière et de la portion de la clôture adjacente que la barrière couvre en position ouverte; |
| c. All exposed pinch points are eliminated or guarded, and | c. tous les points de pincement sont éliminés ou protégés; |
| d. Guarding is supplied for exposed rollers. | d. des protections sont fournies pour les galets exposés. |
| 2.4 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. | 2.4 L'ouvre-barrière est destiné à n'être installé que sur des barrières utilisées pour les véhicules. Il faut fournir une autre voie d'accès aux piétons. La voie d'accès pour les piétons doit être conçue pour favoriser le passage des piétons. Placez la barrière de sorte que personne ne puisse entrer en contact avec la barrière pour les véhicules sur l'ensemble de sa trajectoire |
| 2.5 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. | c) Pour réduire les risques de coincement lors de l'ouverture et de la fermeture, la barrière doit être installée dans un endroit où la barrière et les structures avoisinantes sont suffisamment éloignées l'une de l'autre. Les barrières battantes ne doivent pas ouvrir dans une zone d'accès public. |

| English | French |
|---|--|
| 2.6 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. | 2.6 La barrière doit être bien installée et fonctionner librement dans les deux directions avant d'entreprendre l'installation de l'ouvre-barrière. Ne serrez pas trop l'embrayage ou la soupape de surpression de l'ouvre-barrière pour compenser une barrière endommagée. |
| 2.7 Controls intended for user activation must be located at least 1.83 m (6 ft) 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. | 2.7 Les commandes destinées à l'activation par l'utilisateur doivent être situées à au moins 1,83 m (6 pi) des pièces mobiles de la barrière et à un endroit où l'utilisateur ne peut pas atteindre les commandes par le dessus, par le dessous, par les côtés et au travers de la barrière. Exception : Les commandes d'accès d'urgence accessibles au personnel autorisé seulement (p. ex. pompier, policier, SMU) peuvent être placées à tout endroit dans le champ de visibilité de la barrière. |
| 2.8 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. | 2.8 Le bouton d'arrêt, le bouton de réenclenchement ou ces deux boutons doivent être situés dans le champ de visibilité de la barrière. L'activation des commandes de réenclenchement ne doit pas mettre en marche l'ouvrebarrière. |
| 2.9 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. | 2.9 Au moins deux panneaux de mise en garde doivent être installés dans la zone de la barrière. Chaque étiquette doit être visible des personnes situées de chaque côté de la barrière sur laquelle l'étiquette est installée. |
| 2.10 For gate operators utilizing a non-contact sensor | 2.10 Pour les ouvre-barrières qui fonctionnent avec des capteurs |
| a. See instructions on the placement of non-contact sensors for each Type of application, | a. Voir les instructions sur le positionnement des capteurs sans contact pour chaque type d'utilisation. |
| 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 | b. Des précautions doivent être prises pour réduire les risques de déclenchement inutile, comme lorsqu'un véhicule déclenche le capteur alors que la barrière est encore en mouvement. |
| 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. | c. Un capteur sans contact ou plus doit être situé où il existe un risque de coincement ou d'obstruction, comme dans l'espace que peut occuper la barrière lorsqu'elle est en mouvement. |
| 2.11 For a gate operator utilizing a contact sensor | 2.11 Pour les ouvre-barrières qui fonctionnent avec des capteurs |

APPENDIX B - FRENCH TRANSLATIONS

| English | French |
|--|--|
| a. 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. | a. Au moins un capteur de contact doit être situé où il existe un risque de coincement ou d'obstruction, comme sur le bord d'ouverture, sur le bord de fermeture et sur les poteaux montés sur l'intérieur ou l'extérieur d'une barrière coulissante pour véhicules. |
| b. 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. | b. Un capteur de contact doit être installé et câblé de sorte à éviter que la communication entre le capteur et l'ouvrebarrière soit gênée par des dommages mécaniques. |
| c. 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. | c. Un dispositif sans fil, comme un appareil qui transmet des signaux de radiofréquence (RF) à l'ouvre-barrière pour prévenir le coincement, doit être situé à un endroit où la transmission des signaux ne sera pas obstruée ou gênée par des structures, des arbres ou d'autres obstacles similaires. Un dispositif sans fil doit fonctionner selon les conditions d'utilisation finale prévues. |
| d. 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 inches) but less than 406 mm (16 inches) above the ground at any point in its arc of travel, one or more contact sensors shall be located on the bottom edge. | d. Au moins un capteur de contact doit être situé sur les bords d'ouverture intérieur et extérieur d'une barrière battante. De plus, si le dessous d'une barrière battante est situé à plus de 152 mm (6 po) mais à moins de 406 mm (16 po) du sol à l'un des points de sa trajectoire, au moins un capteur de contact doit être situé sur le bord inférieur. |

1. Warranty.

Hy-Security Gate, Inc. ("HySecurity") warrants that at the time of sale each HySecurity-branded product that it sells will, in all material respects, conform to its then applicable specification and will be free from defects in material and manufacture.

The following additional durational warranties apply to HySecurity products, depending on whether (1) the product is purchased through an authorized HySecurity distributor and (2) whether a timely and complete product registration is submitted to HySecurity.

It is therefore important that you register your product with HySecurity, online at www.hysecurity.com/warranty, within the 60-day period described below.

1(a) HySecurity Products Purchased Through Authorized Distributors and Properly Registered

For any gate operator product that is purchased from an authorized HySecurity distributor (this excludes product purchased through internet resellers or any distributor not authorized by HySecurity), if the product registration is completed by the Dealer/Installer or End User within 60 days of the date of purchase, the following warranty terms will apply. HySecurity warrants that the product will remain serviceable for the following periods:

- a) Hydraulic industrial gate operator hydraulics, controls, and mechanical components: Five Years or 500,000 gate cycles (whichever occurs first) after the date of installation,
- b) Hydraulic wedge operator hydraulics and controls: Five Years or 500,000 cycles (whichever occurs first) after the date of installation. Wedge mechanical components: Two Years after the date of installation,
- c) Electromechanical pad-mounted Slide and Swing operators: Five Years or 500,000 cycles (whichever occurs first) after the date of installation, except single family residential usage, where the warranty term shall be Seven Years after the date the product was shipped from HySecurity,
- d) Electromechanical linear actuator Swing operators: Two Years after the date of installation,
- e) Electromechanical surface mount wedge operator electronics: Two Years or 500,000 gate cycles (whichever occurs first), after the date of installation,
- f) Electromechanical Barrier Arm Operators: Two years or 1,000,000 gate cycles (whichever occurs first) after the date of installation,

provided that the preceding Five Year warranty period in (a), (b), and (c) will not extend beyond seven years from the date that the product was shipped from HySecurity, and the Two Year warranty period in (b), (d), (e), and (f) will not extend beyond four years from the date that the product was shipped from HySecurity.

The preceding warranty durations do not apply to the products or components described below (g-j), which have a shorter warranty period:

- g) Hydraulic gate operator drive wheels, including XtremeDrive™ wheels and rack: Two Years from date of installation.
- h) AC and DC power supplies, chargers, and inverters and HyNet™ Gateway: Two Years from date of installation, except batteries.
- i) Batteries: One Year from date of shipment from HySecurity.
- j) Components subject to normal wear including, but not limited to, chains, belts, idler wheels, sprockets and fuses: One Year from date of installation.

1(b) HySecurity Products Not Purchased Through an Authorized Distributor or Not Properly Registered within 60 Days

For any product that is not purchased from an authorized HySecurity distributor or for which the product registration was not completed by the Dealer/Installer/End User within sixty (60) days of the date of purchase, the following warranty will apply: HySecurity warrants that the product will remain serviceable for the following periods, which begin on the date that the product was shipped from HySecurity:

- a) All gate operators: One Year or 100,000 gate cycles, whichever comes first.
- b) AC and DC power supplies, chargers, or inverters: One Year.
- c) HyNet™ Gateway: One Year.
- d) Hydraulic gate operator drive wheels: One Year.

1(c) Replacement Parts

HySecurity warrants that replacement parts (whether new or reconditioned) will remain serviceable for One Year from the date that the part was shipped from HySecurity or the remaining period of the Gate Operator warranty, whichever is longer.

1(d) Limitations and Exclusions Applicable to Each of the Preceding Warranties.

The preceding warranties shall not apply to equipment that has been (1) installed, maintained, or used improperly or contrary to instructions; (2) subjected to negligence, accident, vandalism, or damaged by severe weather, wind, flood, fire,

terrorism or war; or (3) damaged through improper operation, maintenance, storage or abnormal or extraordinary use or abuse. Any modification made to products will void the warranty unless the modifications are approved in writing by HySecurity in advance of the change (this exclusion does not apply to normal installation of approved accessories and/or protective devices or sensors). It is the responsibility of the Distributor, Dealer/Installer, or End User to ensure that the software version in the product is maintained to the latest revision level.

The preceding warranties do not extend to accessories when those items carry another manufacturer's name plate and they are not a part of the base model. HySecurity disclaims all warranties for such accessory components, which carry only the original warranty, if any, of their original manufacturer. HySecurity hereby assigns its rights under such manufacturer warranties—to the extent that such rights are assignable—to Buyer.

These warranties extend to HySecurity's Distributors, to the Dealer/Installer, and to the first End User of the product following installation. They do not extend to subsequent purchasers.

2. Exclusion of Other Warranties.

The warranties contained in Section 1 are the exclusive warranties given by HySecurity and supersede any prior, contrary or additional representations, whether oral or written. Any prior or extrinsic representations or agreements are discharged or nullified. HYSECURITY HEREBY DISCLAIMS AND EXCLUDES ALL OTHER WARRANTIES—WHETHER EXPRESS, IMPLIED, OR STATUTORY—INCLUDING ANY WARRANTY OF MERCHANTABILITY, ANY WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, ANY LIABILITY FOR INFRINGEMENT, AND ANY WARRANTIES OTHERWISE ARISING FROM COURSE OF DEALING, COURSE OF PERFORMANCE, OR USAGE OF TRADE.

3. Buyer's Exclusive Remedies for Any Nonconformity.

If a HySecurity product fails to conform to the warranties in Section 1, Buyer must notify and order replacement parts from the Distributor through which the product was purchased within a reasonable time and in no event more than thirty (30) days after the discovery of the nonconformity. HySecurity will investigate and, in the event of a breach, will provide, within a reasonable period of time, one of the following:

- (1) repair or replacement of any nonconforming products or components or
- (2) refund of the price upon return of the nonconforming items. HySecurity reserves the right to supply used or reconditioned material for all warranty claims. HySecurity will not be considered to be in breach of or default under this Warranty because of any failure to perform due to conditions beyond its reasonable control, including any force majeure. This warranty does not cover any incidental expenses, including fines or penalties, temporary security, labor, shipping, travel time or standby time that are incurred for inspection or replacement of any nonconforming items. As a condition of warranty coverage, warranty claims must be submitted in accordance with the procedures described on the HySecurity form, "RMA Procedures."

THE REMEDY SELECTED BY HYSECURITY IN ACCORDANCE WITH THIS PARAGRAPH SHALL BE THE EXCLUSIVE AND SOLE REMEDY OF BUYER FOR ANY BREACH OF WARRANTY.

4. Exclusion of Consequential and Incidental Damages.

HYSECURITY SHALL NOT BE LIABLE FOR ANY INCIDENTAL, SPECIAL, OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM NONDELIVERY OR FROM THE USE, MISUSE, OR INABILITY TO USE THE PRODUCT OR FROM DEFECTS IN THE PRODUCT OR FROM HYSECURITY'S OWN NEGLIGENCE. This exclusion applies regardless of whether such damages are sought for breach of warranty, breach of contract, negligence, or strict liability. This exclusion does not apply to claims for bodily injury or death.

5. Severability.

If any provision of this warranty is found to be invalid or unenforceable, then the remainder shall have full force and effect.

6. Proprietary Rights.

HySecurity retains and reserves all right, title, and interest in the intellectual property rights of its products, including any accompanying proprietary software. No ownership of any intellectual property rights in the products or accompanying software is transferred to Distributor, Dealer/Installer, or End User.

7. Applicable Law.

This warranty will be interpreted, construed, and enforced in all respects in accordance with the laws of the State of Washington, without reference to its choice of law principles. The U.N. Convention on Contracts for the International Sale of Goods will not apply to this warranty.

SwingSmart™ CNX Model, AC or Solar

| | |
|-----------------------------------|--|
| Standard | SwingSmart CNX 20 |
| Solar | Solar ready for 24V |
| Gate Specs | 1,300 lb (590 kg) for 12 ft (4 m) leaf, 800 lb (363 kg) for a 16 ft (5 m) leaf, 600 lb (272 kg) for a 20 ft (6 m) leaf |
| Open/Close Time | Open/Close time set independently. Adjustable 10 to 15 seconds. |
| Duty Cycle | Continuous |
| Drive | Electromechanical - 24V Brushless DC motor with direct drive gear train |
| Horsepower | Equivalent to 1/2 hp |
| UPS Battery Backup Cycles* | Field configurable to fail open or secure when batteries deplete. Standard battery backup gate cycles: Two 12V 8Ah batteries. Up to 300 cycles after AC power loss. Extended battery backup gate cycles: Two 12V 35Ah batteries. Up to 1,000 cycles after AC power loss. |
| Temperature Rating | -13° to 158° F (-25° to 70° C) |
| Operating Voltage | 24VDC |
| Input Voltage | Switch select 115V or 208-230V, 60/50 Hz; Solar: 24V solar panels ** |
| Accessory Power | 24VDC at each input & SS relay (1A accumulative) |
| Communication | BlueBUS, USB, Ethernet, T4, RS-485, Bluetooth |
| User Controls | SmartCNX Controller with 70+ configurable settings. 32 character OLED display and 7 tactile buttons or Bluetooth smartphone interface, for programming. |
| Relays | 3 configurable user relays: Two 30VDC, 3A solid state. One 240VAC, 10A electromechanical; Optional SmartCNX I/O Expansion module for 8 additional relay outputs |
| Finish | Zinc rich primer with black powder coated chassis. High impact copolymer cover. |
| ETL Listed (UL 325) | Usage Class I, II, III, IV |
| Warranty | 5 year (7 year single-family residential) |

* The actual number of gate cycles available from battery depends upon gate resistance to travel, cycle length, battery size, state of charge and health, ambient temperature, accessory power draw and frequency of gate cycles during power outage.

** 40 Watt minimum 24VDC solar panel (or two 12V - 20W panels wired in series), not included but required for solar operation.

- Call for information on solar panel size calculations.

To enable fully automatic operation, all SWING gate operators require a minimum of ONE monitored external entrapment protection sensor to protect entrapment zones in either the open or close direction of travel. However, an additional monitored sensor is required if there is a risk of entrapment in both directions of gate travel.