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Optical Barrier Swing Glass
High Glass – Clear View
OBSG-HG

Installation Manual

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1. GETTING STARTED

This manual is written as a guide for you to install, connect, and test the OBSG-HG-CV optical speedgates. You will learn how they work, how to operate them, which components are which, and what to look for during occasional maintenance and repair visits. We ask that you read the entire manual before beginning the installation process.

2. OPERATIONAL OVERVIEW

The OBSG-HG-CV is an optical speedgate with center barriers configured for continuous bi-directional cardholder traffic flow. The OBSG-HG-CV standard configuration is set at card in / card out for secure bi-directional traffic flow. The OBSG-HG-CV can also be set to operate in several other modes that are set by the Remote Lane Controller, or through your access control system. These modes include Free Exit, Free Entry, Exit Only, Enter Only, Disable Lane, and Close Lane.

3. MOUNTING AND INSTALLATION

Installing speedgates is a simple process, but each stage requires extra care to insure a smooth and problem free installation. Here are a few pointers to keep in mind during installation:

1. **Beam alignment is critical**. The physical layout and securing of the speedgate to the floor in the installation phase, should be carefully planned and laid out. The floor must be level to allow for a secure mounting of the pedestal. Extra care at this early stage will ensure a smooth and problem free installation. Improper layout will affect beam alignment and cause the lanes to malfunction. Be sure the pedestals are square and parallel in relationship to each other. Always ensure the proper lane width, and measure diagonally to be sure the pedestals are square.

2. **Use gloves, if necessary.** In some cases the outer material of the cabinets can be very sensitive to oils (Unfinished Brass or Muntz Metal), and may cause a permanent mark that will require replacement of the side/top panels.

3. **Never place tools or metal objects on top of the turnstile.** Please be sure not to leave items that may scratch the cabinet leaning against the side of the pedestal.

A: Uncrating- To remove the speedgate pedestals from the crate you will need a pair of tin snips (or equivalent), a ratchet set with an extension, open ended wrenches, and the door tool provided in the crate. Once the top and walls of the crate are removed, use the door tool found inside the cleaning kit provided to remove the door panels (skins) labelled "Open here" which are fastened with ball studs, and retention clips. Loosen the bottom clips first with the door tool provided**. The doors are not hinged, please be sure to remove door evenly so you do not break off the clips or ball studs**. When the bottom door is removed you will see the horizontally mounted board panels on the bottom frame. They are on hinges located toward the middle of the ped. You will need to remove the 2 screws that secure the panel to the bottom frame using a 5/32" Allen wrench. You will then carefully flip the panel up and toward the middle of the ped. This will fully expose the hardware used to fasten the peds to the crate. Unfasten the pedestals from the crate floor with the ratchet set.

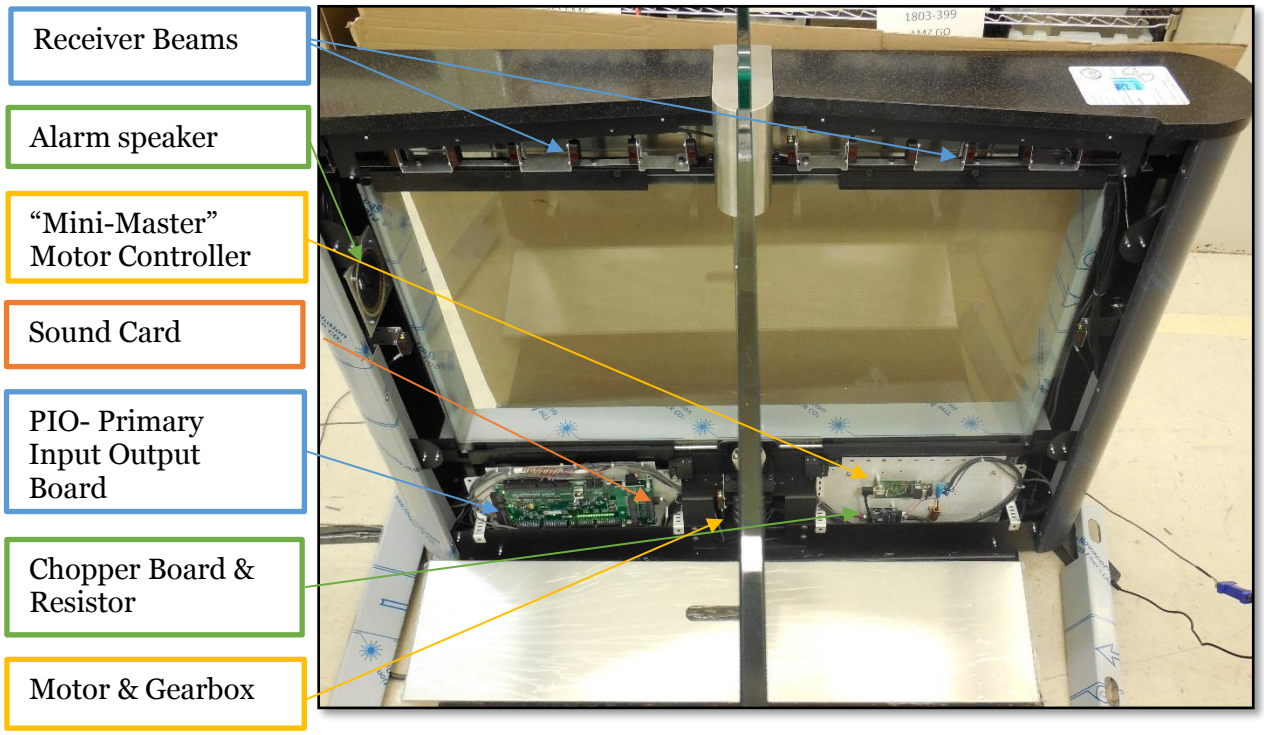
B: Lane Layout- The speedgates are referenced from the unsecured side of the building. Pedestal 1 will always be the turnstile farthest to the right. Pedestal 2 will be just to the left of Pedestal 1, and so forth. These pedestal numbers are chosen right to left due to the primary controller (PIO) being located on the right pedestal of each lane. The pedestals are labeled prior to shipment to help explain the speedgates lane designation.

C: Mounting the Pedestals- There are four (4) mounting holes, located at the corners of the base, two (2) at each end. There are also two (2) 3" conduit pass through holes, one at each end. Do not use the center hole unless directed. Please see the OBSG-HG-CV Construction Layout drawing for details. We can provide base templates prior to installation if it is required before the speedgates arrive.

D: Mounting Hardware- The mounting holes are 5/8" wide in diameter to accommodate mounting hardware no larger than 1/2" wide. As floor materials vary from project to project, we do not provide mounting hardware. We ask that whatever hardware used; please make sure it goes at least 4" below finished floor level for proper pedestal stability. Please contact us if you need advice on what type of hardware to use for your application.

4. SPEEDGATE COMPONENTS

A: Primary Side Electronics



Receiver Sensors- There are 17 receiver sensors used to determine that the user is traveling through the lane correctly in the OBSG-HG-CV. The receiver sensors are always on the primary side of the lane.

Alarm Speaker – One speaker is mounted above the PIO and produces the sound for each lane.

Mini-Master Motor Controller – The mini-master is used as a language translator between the PIO and the motors. It is powered via the USB cable attached to the PIO.

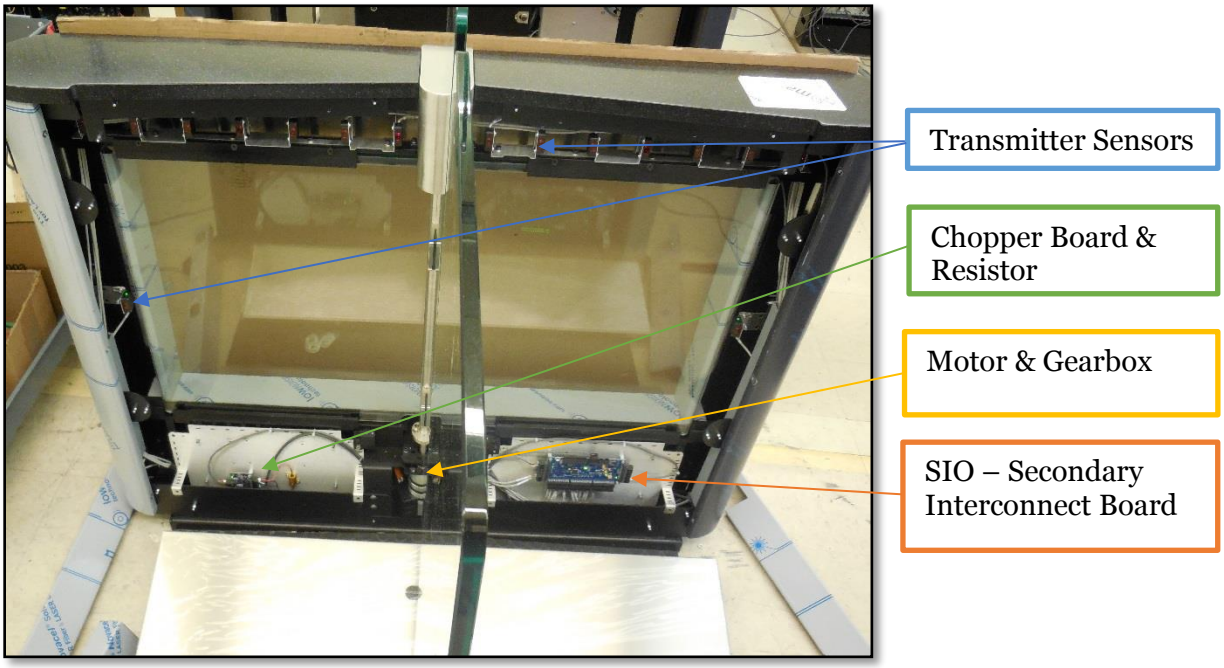
On Board Sound Card – Provides 5 distinct tones, and Volume control.
1) Card read/ acknowledgment
2) Forced Entry Alarm
3) Tailgate alarm
4) Lane Held Open Alarm (beam block)
5) Crawl Under / Climb over Alarm

PIO- This is the "workhorse" of the speedgate. The Primary I/O Board is located inside every pedestal, except the last pedestal in the suite. There is one PIO per lane. This board receives incoming power, all access control input signals, and inputs from the Remote Lane Controller. This board outputs serial communications to the SIO, alarm conditions via relays, and produces sound. The PIO contains the master program for how the lane will function, as well as saves all of the settings for each lane.

Chopper Board & Resistor – This board is in line with the direct motor power. It is used to direct any generated power from the movement of the arms into the resistor to prevent damaging any components on the PIO.

Motor & Gearbox – Each lane has a primary and secondary motor. The primary motor is directly connected to the secondary motor, to the chopper assembly, and to the mini-master.

B: Secondary Side Electronics



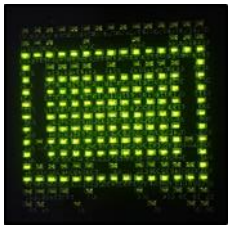
Transmitter Sensors- There are 17 transmitter sensors that provide a signal for the receiver beams in the OBSG-HG-CV. The transmitter sensors will always be found on the secondary side of the lane.

SIO - The Secondary I/O Board is located in every pedestal except the first pedestal of the suite. This board receives incoming power and Data from the PIO. It also powers the transmitter sensors, the secondary LSI, and the secondary motor and chopper board.

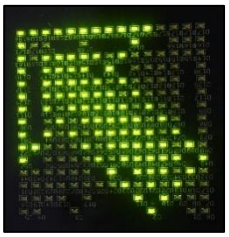
C: Lane Status Indicator (LSI) and Reader Mounting

The LSI is the indicator mounted on the top ends of each lane. It indicates the lane status as shown below.

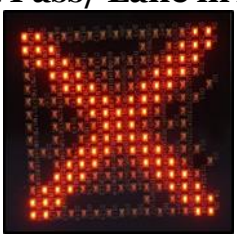
Present Card



Proceed Through Lane



Do Not Pass/ Lane in Alarm



The LSI / Reader Mount bracket is designed to accept a single-gang switch-plate size proximity card reader. The card reader may be mounted at Orion's manufacturing facility during the production process or may be installed in the field at a later date. If a non-standard proximity card reader is used.

5. WIRING

A: Single Lane - One OBSG-HG-CV speedgate consists of two pedestals. Each lane will contain one (1) Primary I/O Board (PIO) and one (1) Secondary I/O Board (SIO), one (1) Primary motor, and one (1) secondary motor. An 18awg/4 conductor interconnect cable is required for power and communication to the SIO board from the PIO board. The motors will be connected via a supplied cable coiled in the primary pedestal. Each lane's PIO will require an isolated fire alarm relay and an isolated 18/2 or 16/2 24v power line from the power supply. The PIO will also receive communications to the remote lane controller (RLC) via either an Ethernet cable, or 18awg/4 conductor cable for serial communications. All pedestals must be grounded.

B: Multiple Lanes - When there are two or more lanes being installed, it is necessary to understand the placement of the pedestals and board locations. Referencing from the unsecured side, the first pedestal is on the right hand side and will contain only a PIO board, and the last pedestal farthest to the left side will contain only a SIO board. All of the middle pedestals will contain both a PIO and a SIO board. If the pedestals are mounted correctly, then each lane will have a PIO on the right and a SIO on the left when facing the lane from the unsecured side.

Secured Side

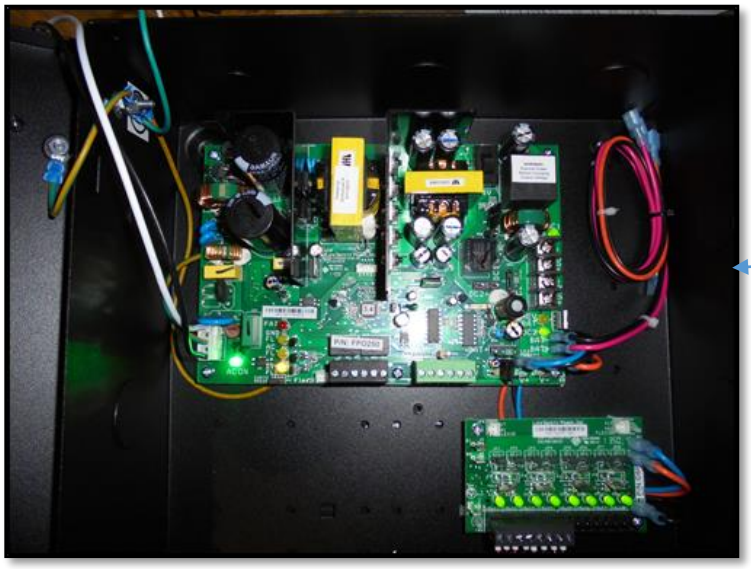
Secondary Pedestal
Ped 2
SIO

Primary Pedestal
Ped 1
PIO

Unsecured Side

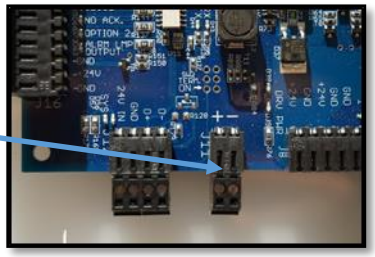
C: Standard Power Supply - 120Vac/24Vdc 10A Power Supply

Verify output power is between 24-25VDC on two pin connector (J11) before connecting it to PIO. The Life Safety power supply provided with the units is capable of handling 1 – 2 OBSG-HG-CV speedgates. It should be located within 50 feet of the first pedestal. A separate 16-18 awg/2 conductor shall be "homerun" to each PIO. The power is then transferred to the adjacent pedestal's SIO via an 18 awg/4 conductor interconnection cable. Each lane draws 10 amps at peak. A 240w 24VDC 10A power supply is provided by (see below) for each suite of up to 2 lanes. 120Vac 15A circuit must be provided.

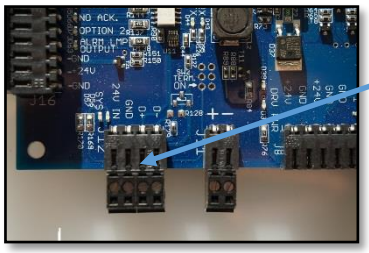


Life Safety Power Supply

24vdc Input for the PIO Board - Connector J11

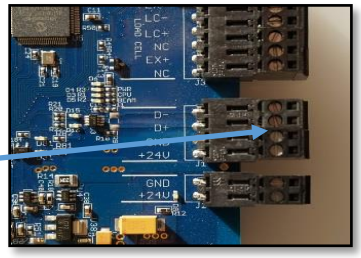


D: PIO to SIO Communications - A shielded 18awg /4 conductor is required to run from pedestal 1 to pedestal 2, pedestal 2 to pedestal 3 and so forth. The interconnecting wire is terminated from each lane's primary pedestal (PIO) to the corresponding lane's secondary pedestal (SIO).



PIO to SIO data and power connector J12

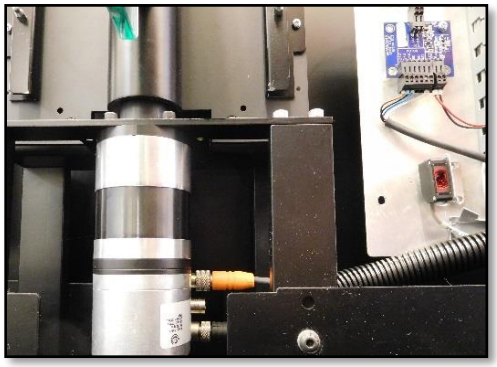
SIO to PIO data and power connector J1



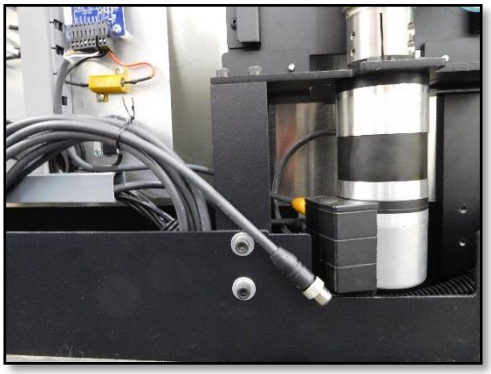
Connect pins 1-4 from J12 on the PIO board to J1 on the SIO Board

E: Motor to Motor Communications – Each lane has a primary and secondary motor. These motors need to communicate with each other via a direct connection. There is a cable coiled up in pedestal 1 that will need to be attached to the motor in pedestal 2. If there are multiple lanes in the suite, pedestal 2 will have a cable coiled inside that will attach to the motor in pedestal 3, etc. The motors closest to each other in the lane should be connected. Verify that the primary motor of lane 1 and the primary motor of lane 2 are not accidently connected together. When the lane is fully powered the green LED on the motors should be solid; if it is blinking, the communications cable is not seated properly.

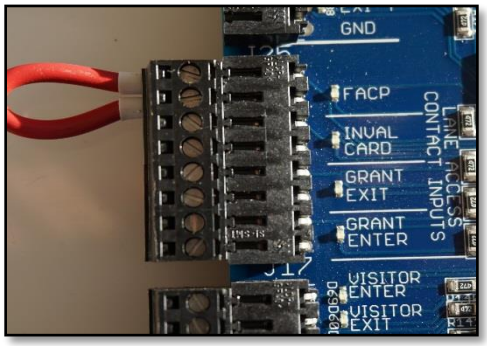
Secondary side motor



Primary side motor

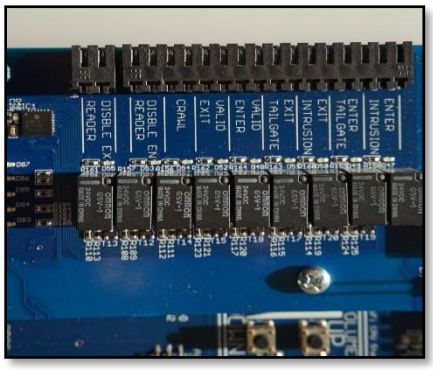


F: Access Control / FACP Inputs – An 18awg /6 conductor is required to run to each lane's PIO in order to operate the lanes in both directions and provide the Invalid Card Alarm Signal. Each access point should be a dry contact closure of **1 second or less** from your access control system relays. **Provide a separate isolated 18awg /2 conductor stranded fire rated cable to a N/C fire alarm relay. This input may not be in series or parallel with any other device.**



18/6 to PIO board
Connector J17:
Grant Enter = 1&2
Grant Exit = 3&4
Invalid Card = 5&6
FACP = 7&8

G: Alarm Condition Monitoring Outputs - This is optional, and is not necessary for all applications. If you would like to monitor all the outputs, a 22awg/14 conductor is required.



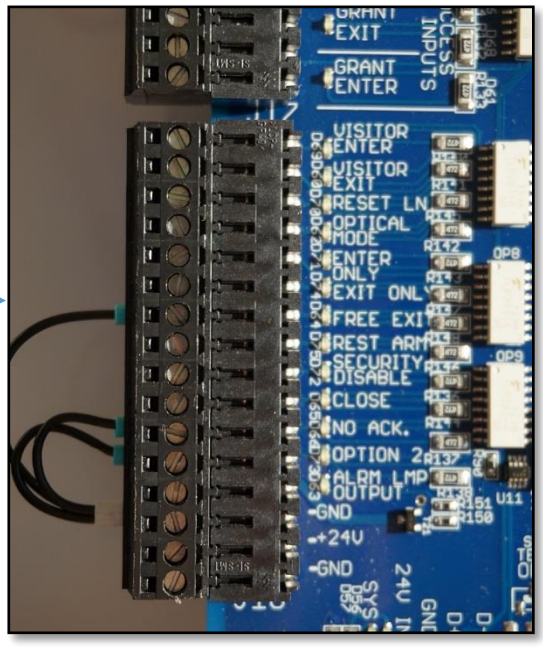
Connector J14 - Relay Outputs
1&2 = ENTER INTRUSION
3&4 = ENTER TAILGATE
5&6 = EXIT INTRUSION
7&8 = EXIT TAILGATE
9&10 = VALID ENTER
11&12 = VALID EXIT
13&14 = CRAWL
15&16 = DISABLE ENTER READER
17&18 = DISABLE EXIT READER

H: Remote Lane Control - Pushbutton, or hard wired Remote Lane Control Inputs -

A 22awg/14 conductor is required to run to all of the pedestals except the last pedestal in order to operate the pushbutton or hardwired RLC with full functionality.

22/14 from RLC-PB to PIO Board, Connector J16
Listed From bottom to top

Point #	Description
16	Visitor Enter
15	Visitor Exit
14	Reset Lane
13	Optical Mode
12	Enter Only
11	Exit Only
10	Free Exit
9	Reset Barrier
8	Security Disable
7	Close Lane
6	No Acknowledgement
5	Option 2
4	Alarm Lamp Output
3	Ground (Common)
2	24vdc
1	Ground



Note: To activate any mode or feature (i.e. Free Exit) simply provide a jumper from that point to ground.

I: Remote Lane Control - Touchscreen Connection Options-

1) **485 communication** – A Shielded/Stranded 18 -22 awg/4-conductor cable rated for 485 communications is required to run from the control computer, to the first lane's PIO. Then daisy chain to each of the other lane's PIOs (J19 + J20) in order to operate the RLC with full functionality. Each PIO is addressed via the on-board rotary switch from number 1 to the total number of lanes.

2) **Ethernet –** An Ethernet cable should be run from each PIO to a DHCP switch or router, a separate cable should be run from the DHCP device to the control computer. IPs will need to be saved to each PIO and then set in the computer.

J: Earth Ground - **An earth ground is required to each pedestal's base for warranty coverage. Pictures of both ends of the ground are required to enable warranty.**

6. REMOTE LANE CONTROLLERS (RLC) (optional)

A: Push-Button Controller (RLC-PB)

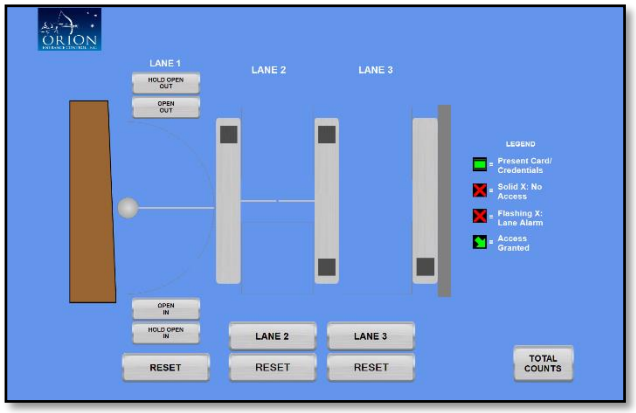
Pictured above is the Pushbutton Remote Lane Controller (RLC-PB). Across the top of the desktop controller provides the number of lanes controlled by this RLC. The left column provides the functions that the turnstile is capable of operating remotely.

B: Infinity Software (RLC-TS), (RLC-SP) or (RLC-SW)

The Infinity software allows for all the functionality of the pushbutton controller with many additional features, including each lane's functional counts and lane/beam diagnostic tools. The software can be purchased as software only (RLC-SW), on our standard touchscreen computer (RLC-TS), or our Surface Pro bundle (RLC-SP).

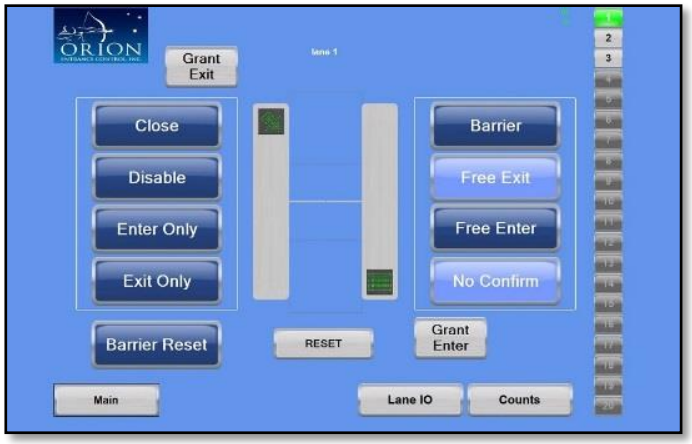
The Main Control Screen is customizable for viewing all the lanes in your suite at one time. It provides visitor entry & exit remote lane control, and provides alarm notifications per lane.

Main Control Screen



The single lane feature screen provides you with all the remote lane control features available on one screen, controlling one single lane at a time, with just a push of the button.

Single Lane Screen



1. **Visitor Entry:** Pressing this button allows one person at a time to enter through the designated lane in the entrance direction.
2. **Visitor Exit:** Pressing this button allows one person at a time to exit through the designated lane in the exit direction.
3. **Optical Mode:** Latching this button causes the barriers to move into the disabled position (open) and remain there during operation, while still allowing the lane to function normally. Card access is still required.
4. **Barrier Reset:** Latching this button removes power to the motors. Depressing this button will cause the barriers to recalibrate and reset their position. The lane will be down for 25 seconds during this calibration.
5. **Disable:** This lane can be shut down allowing for free access in both directions. The feature may be used for large visitor parties to pass or for maintenance/repair by pressing this button. Both LSIs will display a green arrow for free entry and exit. The green LED on the pushbutton will indicate disable is active.
6. **Reset:** Pressing this button will shut down the alarm sounding in the specific lane. The green LED indicates this lane is in alarm.

The Lane I/O Diagnostic screen provides Real time status of all lane inputs, outputs and sensor beams, as well as provides remote lane control, volume level adjustment, current firmware display and access to other interactive pages.

Lane I/O Diagnostic Screen

7. SENSOR ALIGNMENT PROCEDURE

1) To start, make sure there are no sensor obstructions in the lane.
2) Verify that the vertical green LEDs on the PIO labelled beam 1-20 are lit up. If any of the beams 1-20 are off, that means those receiver sensors are not making contact with the transmitters.
3) If you have the Infinity software and your lanes are wired and set up, you can verify sensor alignment via the Lane Diagnostic screen. Beams 1-20 should be displaying a green circle if properly aligned.
4) If one of the sensors is out, then either the transmitter or the receiver beam will need adjustment. Moving the sensor left and right can be done by gently bending the aluminum bracket. Be careful not to over adjust the sensor to be aimed at a different number sensor. Adjusting the sensor vertically should be done by loosening one of the screws that mount the sensor to the sensor bracket, adjusting, and then tightening in place.
5) During adjustments, look for the orange LED on top of the receiver sensor to indicate that the receiving sensor is making contact with the transmitter.
6) After all beams are making contact, install pedestal skins one at a time and ensure that sensor alignment is maintained. If a sensor goes out while installing the sensor skins, remove the skin and readjust as needed.
7) If alignment is difficult in the daytime, the sensors can be easily aligned in the darkness. If a dark room is not an option, a tarp may be necessary to block the light from the lane during alignment.
8) If the RLC is available, and after all skins are installed on the pedestals, verify that all of the sensors are still making contact in the Lane diagnostic screen.

Transmitter

Receiver