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ORWB – Optical Turnstile with Retractable Wing Barrier

Installation Manual

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1. GETTING STARTED

Thank you for choosing www.TURNSTILES.US. This manual is written as a guide for you to install the TURNSTILES ORWB Optical turnstiles, connect them, and test them for final start up. 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 TURNSTILES ORWB is an optical turnstile with retractable wing barriers configured for continuous bi-directional cardholder traffic flow. The ORWB standard configuration is set at card in / card out for secure bi-directional traffic flow. The ORWB 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, Entry Only, Exit Only, Disable Lane, and Close Lane.

3. MOUNTING AND INSTALLATION

Installing TURNSTILES turnstiles 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 turnstile to the floor in the installation phase should be carefully planned and laid out. Extra care at this early stage will insure a smooth and problem free installation. Improper layout will affect beam alignment and cause the lanes to malfunction. Be sure the pedestals are square in relationship to each other. Always measure the lane width and diagonally to be sure the system is square.

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

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

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A: Uncrating

To remove the turnstile pedestals from the crate you may need a screw-gun, flathead screwdriver, ratchet set and open ended wrenches. Once the top and walls are removed, use the panel removal tool to remove the side panels and unfasten the pedestals from the crate floor.

B: Lane Layout- The turnstiles 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. The pedestals are labeled prior to shipment to help explain the turnstiles lane designation.

C: Mounting the Pedestals- There are four (4) mounting holes located at the corners of the base and three (3) conduit pass through holes located down the center. Please see the ORWB Construction Layout drawing for details. If necessary we can provide base templates prior to installation if it is required before the turnstiles arrive.

D: Mounting Hardware- The mounting holes are 5/8" wide in diameter to accommodate mounting hardware no larger then ½" 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. WIRING

A: Single Lane- One ORWB turnstile lane consists of two pedestals. Each lane will contain one Primary I/O Board (PIO) and one Secondary I/O Board (SIO). With one (1) 18 gauge / 4 conductor cable, the first turnstile's PIO board communicates and powers the second turnstile's SIO board, thus allowing proper lane operation. To access these boards you can pull off the panels from the inside of the lane.

1 Secondary Lane Pedestal

1   Primary Lane Pedestal

SIO

PIO

Unsecured Side

PIO- The Primary I/O Board is located inside every pedestal, except the last one. This board receives incoming power, all access control input signals, input from the Remote Lane Controller and communication from the SIO.

SIO- The Secondary I/O Board receives a communication cable from the PIO. This board is located in every pedestal except the first one.

B: Multiple Lanes- When there are 2 or more lanes being installed, it is necessary to understand the placement of the pedestals and board location. Referencing the unsecured side- the first turnstiles on the right hand side will contain only a PIO board and the last turnstiles farthest to the left side will contain only a SIO board. All of the middle turnstiles will contain both a PIO and an 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 of the turnstile lane.

C: Power Supply - 120Vac/24Vdc Power Supply
The power supply is provided with the units. It is capable to handling 2 – 4 ORWB turnstile lanes. It should be located within 50 feet of the first pedestal. Power should be run to the first pedestal's PIO of each suite of turnstiles. The power is transferred to the adjacent pedestals via the 18/4 interconnection cable. Each lane draws 9 amps at peak. A 240w 24VDC 10A power supply is provided (seen below) for each set of up to 4 lanes. 120V 15A circuit should be provided on site.

110Vac Input

24Vdc Output 1

24Vdc Output 2
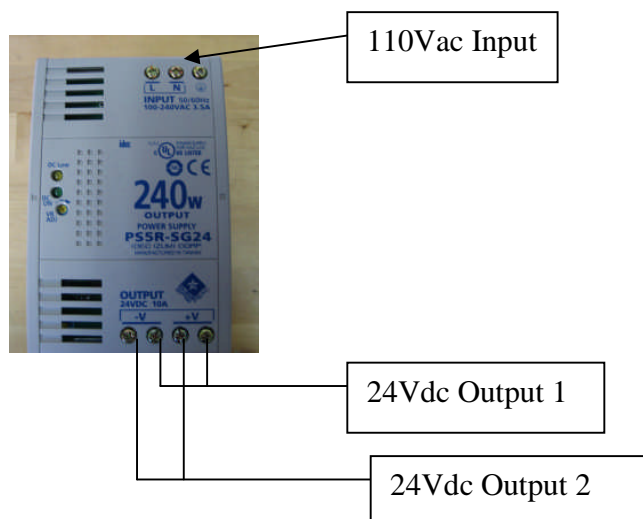
PIO Power input connection
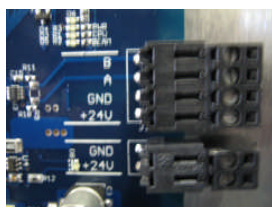
24vdc Input tied into the PIO Board - Connector J11

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D: Pedestal Communication- A shielded 18/4 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 lanes primary turnstile (PIO) to the corresponding lane's secondary turnstile (SIO).
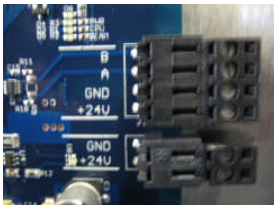
PIO J12 - Data Connector
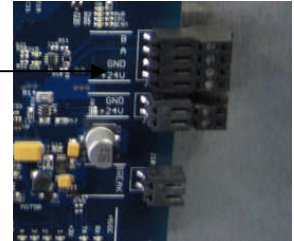
Connector J1

Interconnect pins 1-4 between J12 on PIO Board to SIO Connector J1

E: Access Control / FACP Inputs - 18/6 is required to run to each of the lane's PIO in order to operate the lanes in both directions and provide the Invalid Card Alarm Signal. Each point should be a dry contact closure of 1 second or less from your access control system relays.
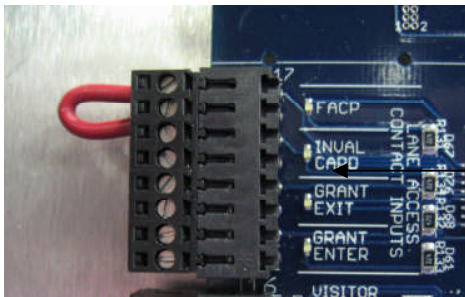
18/6 to PIO board
Connector J17:
Grant Enter = 1&2
Grant Exit   = 3&4
Invalid Card = 5&6
FACP = 7&8

F: Alarm Condition Monitoring Outputs- This is optional, and is not necessary for all applications. If you would like to monitor all the out puts, a 22/14 is required.
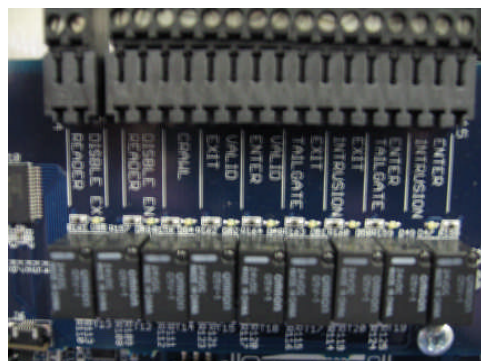
Connector J14 - Relay Outputs
1&2 = ENTER INTRUSION
3&4 = ENTER TAILGATE
5&6 = EXIT INTRUSION
7&8 = EXIT TAILGATE
9&10 = VALID ENTER
11&12 = VALID EXIT
13&14 = CRAWL
15&16 = DISABLE ENTER READER
17&18 = DISABLE EXIT READER

G: Remote Lane Controller

Push Button Controller Inputs - A 22/14 is required to run to all of the pedestals except the last pedestal in order to operate the RLC with full functionality.

22/14 from RTC to PIO Board, Connector J16

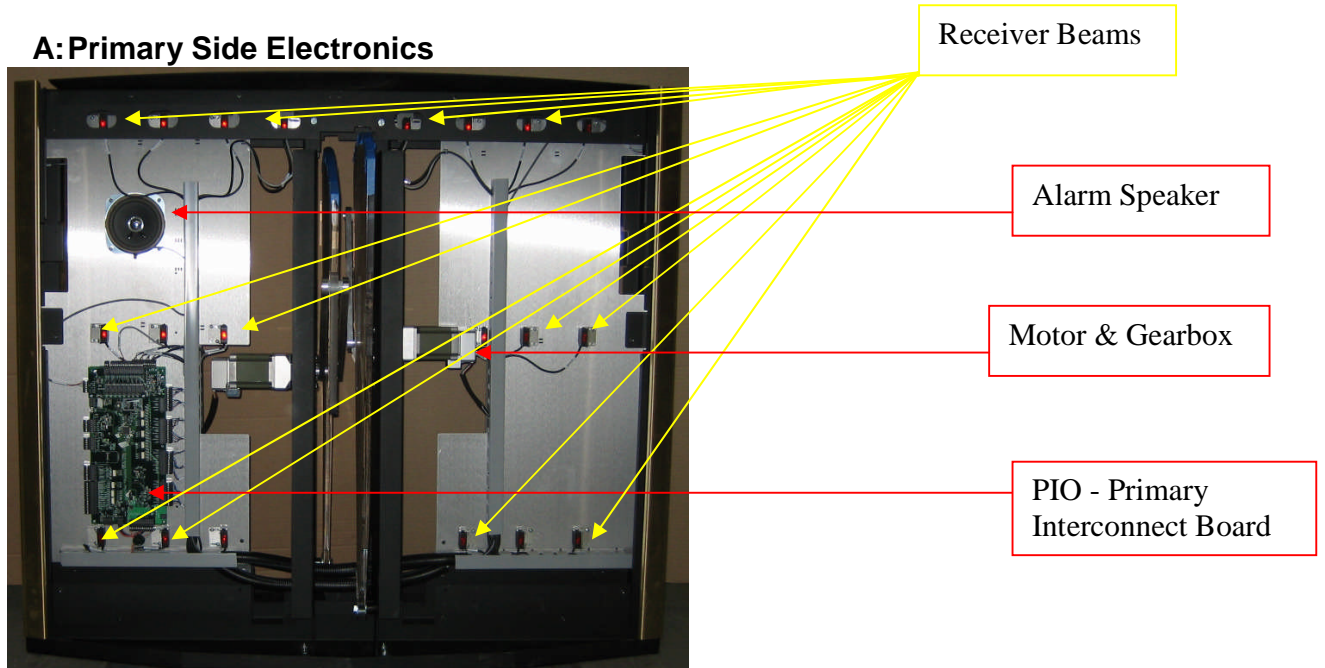| Point #	Description
1	Ground
2	24vdc
3	Ground (Common)
4	Alarm Lamp Output
5	Option 2
6	No Acknowledgement
7	Close Lane
8	Security Disable
9	Reset Barrier
10	Free Exit
11	Exit Only
12	Enter Only
13	Optical Mode
14	Reset Lane
15	Visitor Exit
16	Visitor Enter

Note: To hardwire any mode (i.e. Free Exit) simply jumper from that point to ground.

Touch Screen Controller Inputs - An 18 gauge – 6 conductor cable is required to run into the first pedestal's PIO (point J20) from the touch screen control panel. (See appendix for Touch Screen RLC Data & Power Connections.) From the first pedestal's PIO an 18/6 is then daisy chained to each of the other lane's PIOs in order to operate the RLC with full functionality.

Each PIO is addressed via the on board rotary switch as number 1 – the total number of lanes.

H: Earth Ground- An earth ground is required to each pedestal's base.

5. TURNSTILE COMPONENTS

A: Primary Side Electronics

Receiver Beams

Alarm Speaker

Motor & Gearbox

PIO - Primary Interconnect Board

Receiver Beams- There are 20 receiver beams used to determine that the user is traveling through the lane correctly.

PIO PCB- This is the "workhorse" of the turnstile. Every component of the operating system must first go through this board before functioning correctly.

On Board Sound Card – Provides 5 distinct tones as follows:
1) Card Read Acknowledgement
2) Tail Gate Alarm
3) Lane Forced Alarm
4) Crawl Alarm
5) Mute – Volume is adjusted by (UP) and (DOWN) buttons

B: Secondary Side Electronics

Transmitter Beams

SIO
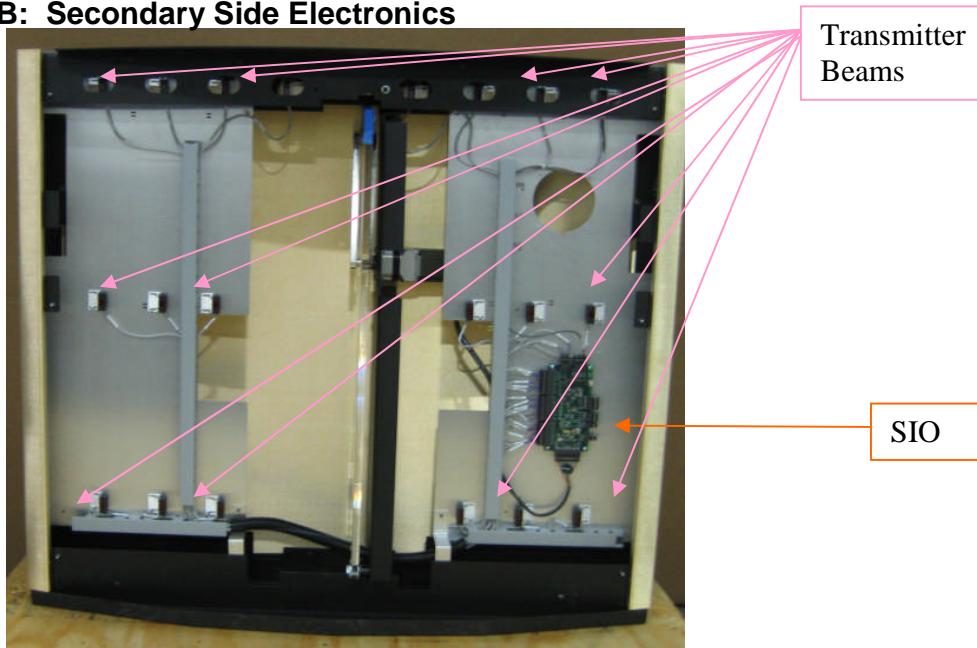
Transmitter Beams- There are 20 transmitter beams that provide a signal for the receiver beams.

SIO PCB- This board is used to provide an output for the Lane Status Indicator board and power for the transmitter beams.
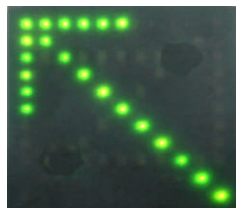
C: Lane Status Indicator (LSI) and Reader Mounting
The LSI is the indicator mounted on the top ends of each lane. It indicates the lane status as shown below.
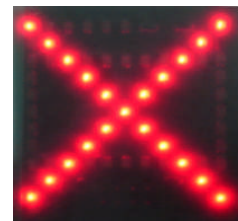
Present Card
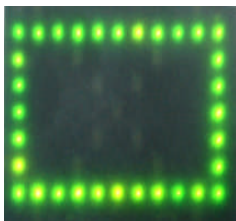
Proceed Through Lane

Do Not Pass Through Lane

The LSI / Reader Mount is designed to accept a single gain switch plate size proximity card reader. The card reader may be mounted at the manufacturing facility during the production process or may be installed in the field at a later date. To remove the reader mount, simply lift and pull toward the center of the lane.

6. REMOTE LANE CONTROLLER (RLC-PB)
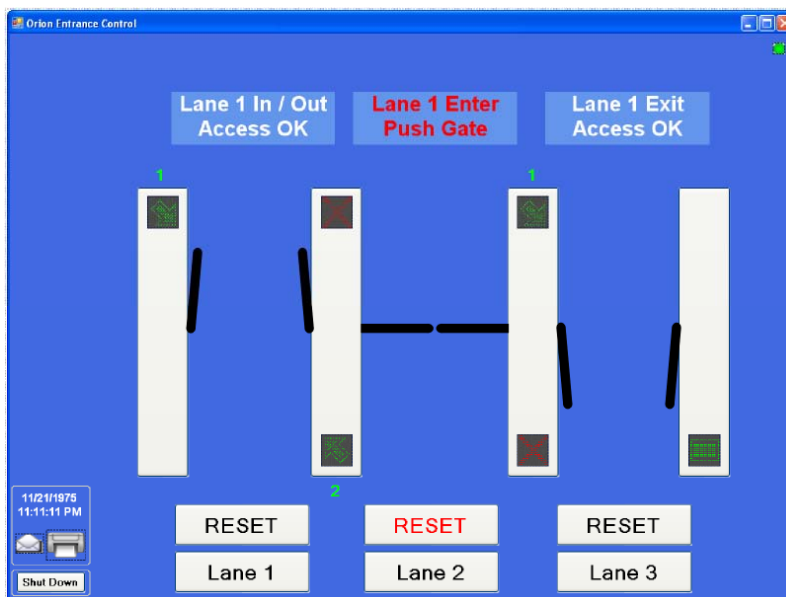# B: Push Button Controller

Pictured above is the Remote Lane Controller (RLC). 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.

1. **Visitor Entry:** Pressing this button allows one person to enter through the designated lane in the entrance direction.
2. **Visitor Exit:** Pressing this button allows one person to exit through the designated lane in the exit direction.
3. **Entry Only:** Pressing this button allows users to enter through this lane only, NO EXITING! The LSI will light the red "X" in the exit direction indicating that this lane is set up for enter only.
4. **Exit Only:** Pressing this button allows users to exit through this lane only, NO ENTERING! The LSI will light the red "X" in the enter direction indicating that this lane is set up for exit only.
5. **Disable Lane:** 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. The orange LED indicates that this lane is disabled.
6. **Alarm Reset:** By pressing this button, you can shut down the alarm sounding in the specific lane. The red LED indicates this lane is in alarm.

6. REMOTE LANE CONTROLLER (RLC-TS)
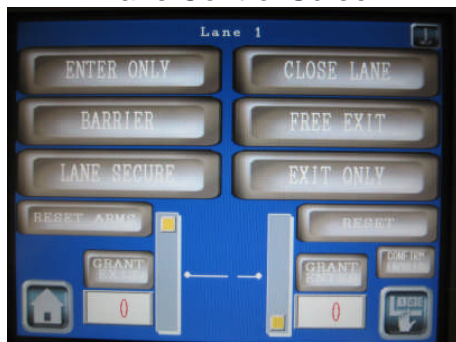# B: Touch Screen Controller

Main Control Screen

The Touch Screen Controller allows for all the functionality of the pushbutton controller with many additional features including all lane functional counts and lane / beam diagnostic tools.

Lane Control Screen   Lane Diagnostic Screen

8. TROUBLESHOOTING GUIDE

A: **Beam Obstruction-** Most alarms are caused by beam obstruction. By removing the front cover of the primary turnstile, you will be able to see the PIO and the pedestals receiver beams. In the pictures below, the number over the receiver beam represents it's LED on the PIO. If any of the LED's are out, then you can determine which beam is having an issue.

B: **Beam Status:**
You may check on the beam's status LEDs (on the top of the receiver beam) to be sure that they are receiving power (steady green on the left hand LED) and are switching from to off on the right hand beam when obstructed.