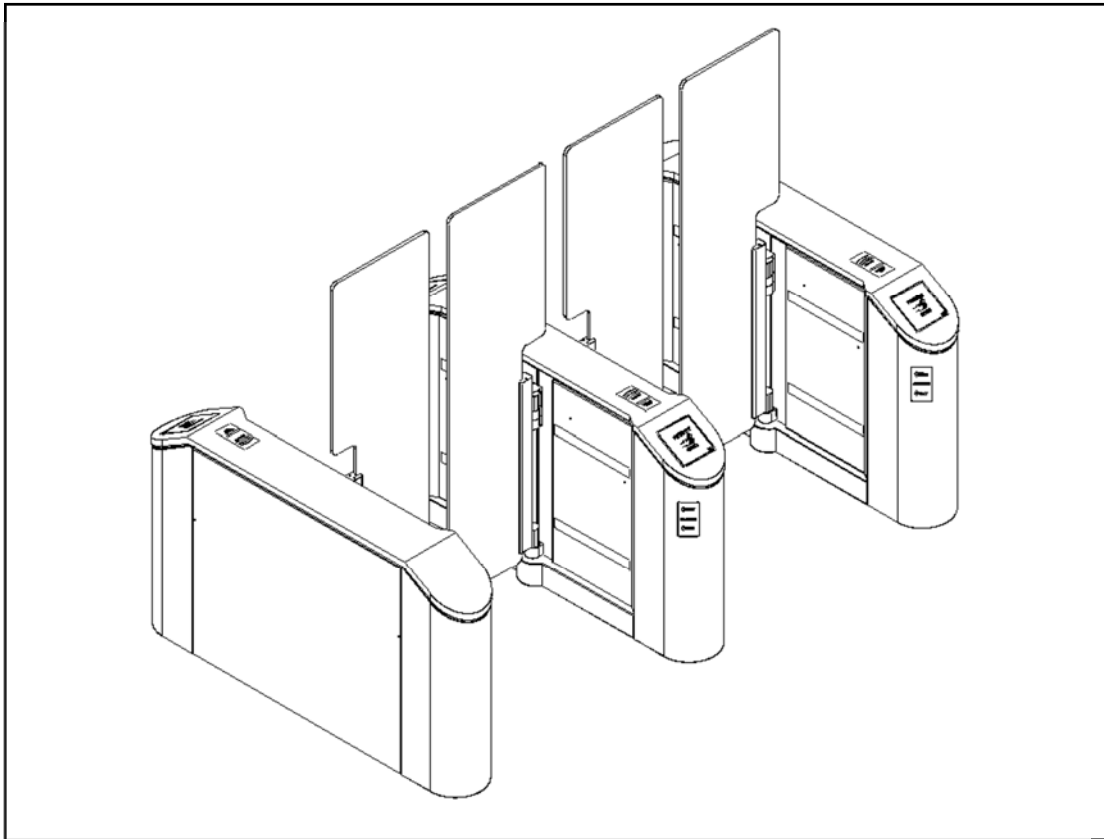


DS! Invisigate ES880

DESIGNED SECURITY, INC.

GLASS BARRIER OPTICAL TURNSTILE

A Detex Company



INSTALLATION AND OPERATION

CUSTOM NOTES

SITE PREPARATION



Refer to LANE PLACEMENT ERGONOMICS in the Appendix for information regarding planning considerations which can maximize efficient traffic flow and minimize nuisance alarms. Taking into consideration any installation from the perspective of providing access control while minimizing the impact on the user's daily routine may allow security goals to be met more effectively.

PRE-INSTALLATION REQUIREMENTS

Conduit or other cableway:

1. From Access Control System to Each Lane's Electronics for Input and Output connections.
2. From each Lane's Electronics Side to opposite bollard for Motor, Lock, Position and Graphic control cabling.

Mounting Anchors or Floor Plate:

A solid, stable mounting point for each bollard is necessary to maintain proper optical alignment. Refer to information included for Specifications, and Layout, Squaring, and Leveling techniques.

See Base Plate Template or Dimensional drawing for access and mounting detail

PRE-INSTALLATION CONSIDERATIONS

*The **DSI Glass Barrier Optical Turnstile** is a very straight-forward installation when a little time is taken to prepare before you begin.*

You may take time now to read and understand the installation and operation instructions in order to get an idea of what the system does and what is required from you to install your turnstile. Experienced installers will find in this manual everything needed for trouble-free installation.

We are available to assist you by calling **800 272 3555** for Customer Support.

- Treat the units as you would any fine furniture or delicate instrument. Keep them out of harsh environments. Do not store or install them where they will be exposed to inclement weather, or extremes of humidity, dust, or temperature. This will insure that they will keep their appearance and functionality for many years to come.
- When installing the wiring, be certain to strain-relief the cables to some hard point in the bollard and leave enough service loop on each cable for any future repairs, component removal or upgrade. In other words, take the time to route your wires in such a way that they will not be damaged, or in the way, should the unit require servicing in the future.
- Precautions should be taken to properly ground the units to a known "Earth Ground", during the mounting process, to prevent any ESD (electro-static discharge) damage to the electronics during installation and operation.

INSTALLATION



INITIAL LAYOUT

Placement :

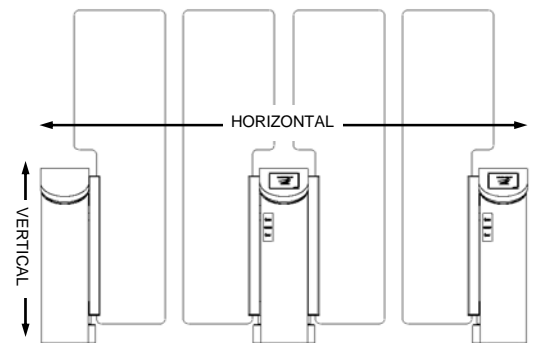
- The bollards are designed to be placed in a parallel arrangement, *not to exceed 40 inches* between bollards.
- Spacing of *37" between bollards is our standard.*
(Custom ordered lane spacing may differ from standard)
- Mounting should *leave a 4" gap* between glass panels.
- Verify the design specification for each lane prior to attachment. Refer to architectural plans, or set the bollards up in proper order, with barriers extended to determine appropriate spacing.

Ergonomics :

- The number of lanes required is determined based upon the peak traffic volume and available space. Contact the DSI Sales team for additional information.
- The placement of the lanes should compliment the natural flow of traffic and not impede the flow any more than necessary to achieve access control goals.
- Care should be taken in placing the bollards to ensure that the user may easily access the Reader System* (I.E.: Mag. Card, Proximity, Biometric, etc. [*provided by installer/integrator]) while maintaining a reasonable flow of pedestrian traffic. (Readers may be pre-installed on some applications) If you have any questions regarding Reader mounting, contact the DSI Support team.

Function :

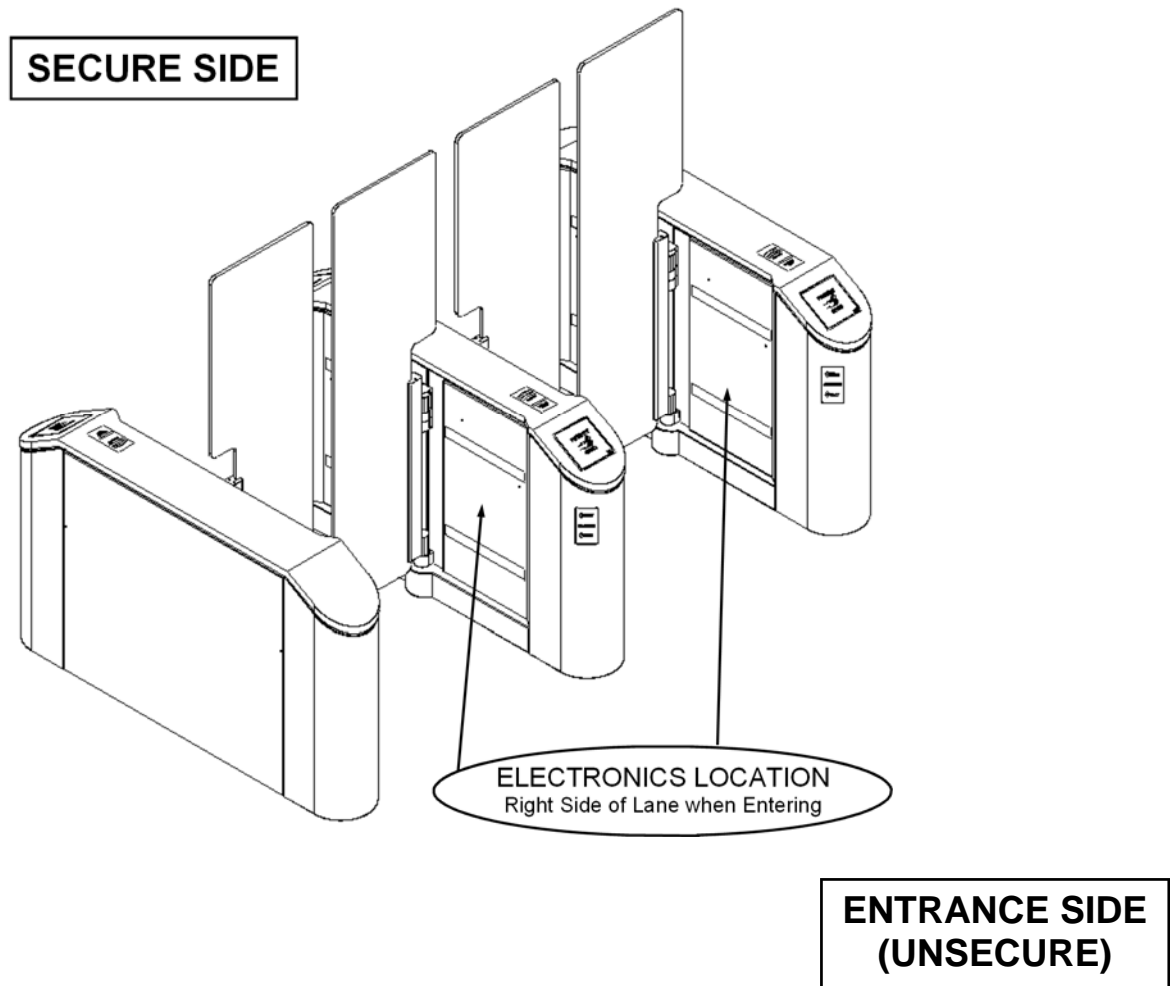
- For technical and aesthetic reasons *it is very important to insure that the bollards are installed level and plumb (horizontal and vertical), and in alignment with one another (parallel).* Obviously the installation will look better, and it will make the setup and adjustment of the optical sensors much easier. More about this will be covered in the "Leveling and Aligning" section.



Quality Installation :

- ***Experienced installation crews have found how attention to detail during layout, anchoring, and performing the leveling techniques will save valuable time and prevent having to spend much more time later correcting optical alignment issues.***
- Verify the surface you are installing upon is not bowed or crowned. Shim Bollard to compensate for uneven surfaces.

BOLLARD ORIENTATION



SECURE (EXIT)/UN-SECURE (ENTRY) SIDES—DEFINED

In the above illustration the orientation of the bollards is shown to help installers understand the proper placement of the Turnstiles in reference to the direction of traffic.

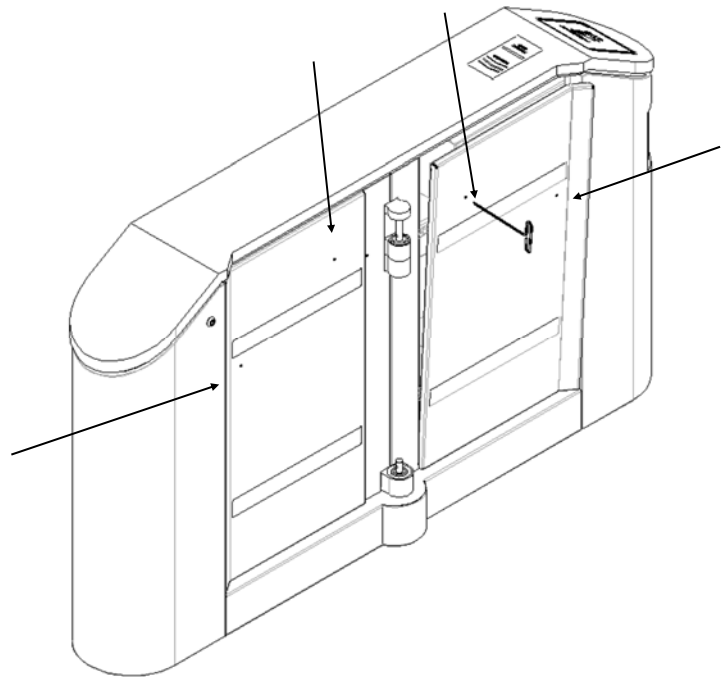
When entering the lane from the Un-Secure side, or Entrance Side, the Electronics Package for that lane will be located, facing into the lane, in the bollard on the right.

NOTE: Be certain of this orientation prior to bolting the bollard to the surface and running cables!

BOLLARD INTERNAL ACCESS

PANEL REMOVAL STEPS

- Insert “T-Handle” Hex-key wrench into small holes near bollard center at the top of each panel.
- Turn 3/4 turn Counter-Clockwise to release latch.
- Repeat above steps for other small hole at bollard end of each panel, below sensor Plexiglas. Be ready to catch panel.
- Tilt panel away from the Bollard, then lift up to remove from lower pins. Use wrench to get tilt-out started if necessary, by applying slight pressure down on wrench and pulling, simultaneously. (minimal force)
- Place removed panel in safe location. Take care to avoid damaging finish or creating a hazard to pedestrian traffic.



PANEL INSTALLATION STEPS

- Place panel on Hinge Points.
- Tilt into place in Bollard.
- Insert “T-Handle” Hex-key wrench into small hole near the top, side edge of panel.
- Turn 3/4 turn Clockwise to latch.
- Repeat for other small hole below sensor Plexiglas.

LAYOUT AND MOUNTING

BOLLARD LAYOUT

- Using a chalk line, or equivalent method, lay out the bollard arrangement. Bollard's positions should be parallel and square with each other.
- Verify the "on centers" measurement to accommodate the bollard width and clearance for barrier operation prior to setting anchors or drilling for conduit.

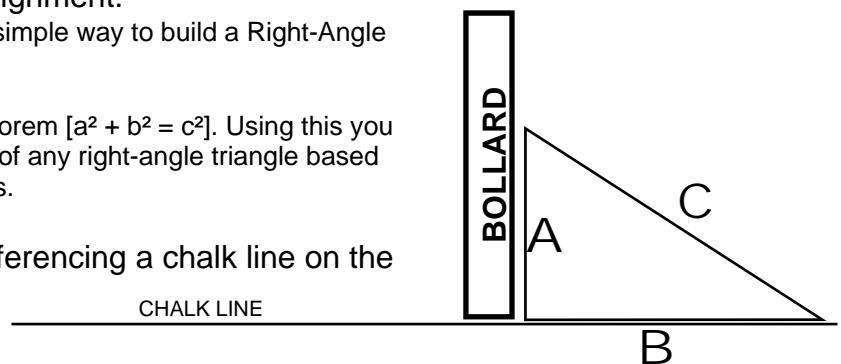
After going over the details of the installation with the architect or designer and you have determined planned spacing and orientation of the system, you may have some questions regarding how to lay out the array of bollards with the most accuracy in regard to alignment.

Here are two alignment tips which may be helpful:

Tip 1- Determining a "Right Angle" for alignment.

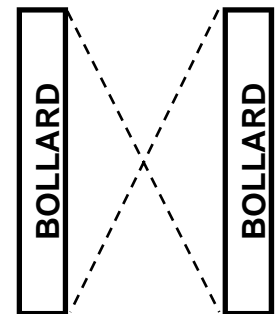
- Without getting into a lot of math, there is a simple way to build a Right-Angle Triangle by using sides of 3', 4' and 5'.
- This method is based upon a geometric Theorem [$a^2 + b^2 = c^2$]. Using this you can calculate the length of the long side (C) of any right-angle triangle based upon the known length of the other two sides.

Use this device to verify alignment by referencing a chalk line on the floor.



Tip 2 - Alignment Check

- Once you have established a known right-angle to the initial chalk-line, you will want to verify that each bollard is aligned to the adjacent bollard.
- You may do this by choosing a point on each end of a bollard, (for instance the center of a mounting hole or a corner of a pedestal), you can measure in an "X" pattern from one point to it's opposite in the "X".
- When the bollards are the correct distance apart and both lengths of the "X" are equal, the bollards are in alignment.



VERTICAL ALIGNMENT

- Check level of the bollards vertically using a plumb or spirit level, use shims to make final adjustments.

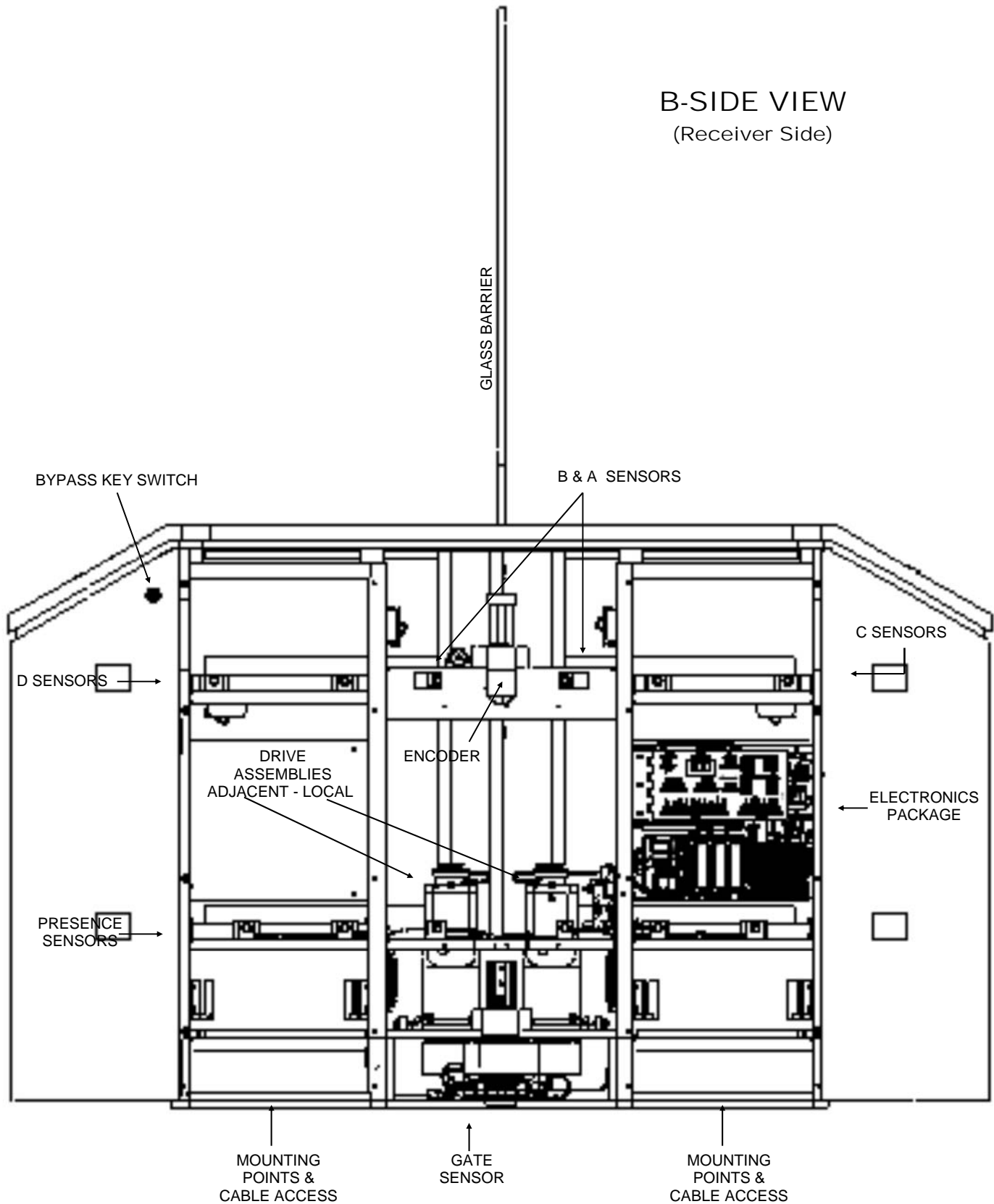
ANCHORS

- Use appropriate anchors for the mounting surface. Loosely tighten prior to glass install and adjusting level and plumb. (1/2" bolt suggested)
- **Tighten securely to prevent any movement of the bollard.**
- Some custom models may have special mounting requirements. Additional information will have been provided when necessary.

LEVEL

- Install Glass Panels prior to leveling.
- Level the bollards horizontally using a straight edge and/or a spirit level that will span two or three bollards at once.

COMPONENT LOCATION



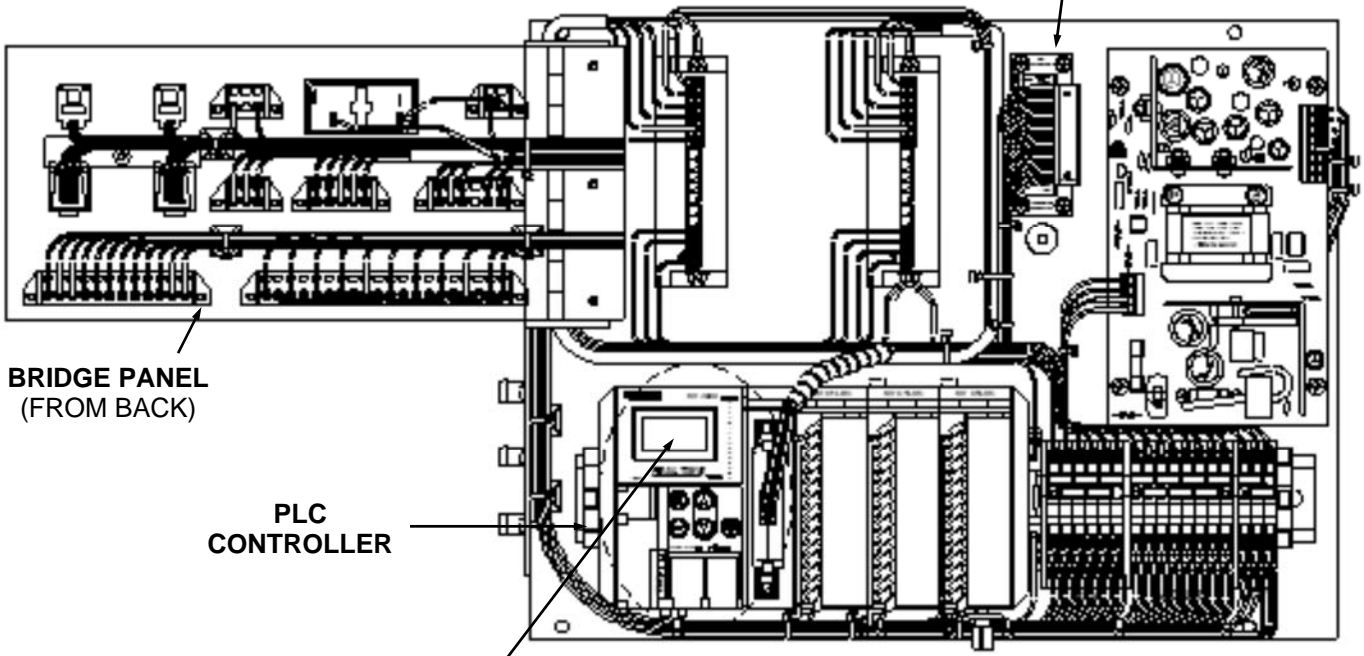
ELECTRONICS PACKAGE

N/O OR N/C OUTPUT JUMPER

JUMPER LOCATED BESIDE EACH OUTPUT RELAY MAY BE CONFIGURED FOR N/O OR N/C OPERATION (DEFAULT IS N/O)

Move Jumper to cover center and lower pins for N/C Output.

Default-Jumper covers upper and center pins for N/O Output



Start Screen

Version #

Top Menu

Trimmer 0 Card Access Dly

Current (default 50 = 5 sec)
Max Limit (300=30 sec)
Increment

Trimmer 1 Auto Reset Time

Current
Maximum
Increment

SET TRIMMERS
(setting of "10" = 1 second)

- To reach top menu press "M" key 3 times .
- Use down arrow to highlight "3. Trimmers". Press "Return" ↵
- Display will show "TRM0 Direct". This is the **Card Access Delay**.
- Use Left-Right Button to set **Increment Value**
- Use Up and Down Buttons to change **Current** setting value
- To move to next setting press "Return" ↵
- Display will show "TRM1 Direct". This is the **Auto Reset Time**.
- Use up arrow to increase value from "0" to "50".
- To return to "TRM0" press "Return" ↵ 7 times
- To return to top menu press "M" key.

	Project Name	GB030000	
	1.DeviceMode		
	2.ErrorClr		
	3.Trimmer		
	4.I/O TEST		
	TRM0	Direct	
		50	
	L	300	
		1	
	TRM1	Direct	
		50	
	L	300	
		1	

COMPONENT DESCRIPTION

Electronics Package

The Electronics are found in the right-hand pedestal as seen when facing the B-Side of the bollard. (A-side holds the #2 Motor and Sensors.)

The **Motor Controllers** control the local barrier and the remote barrier. These are mounted in the upper left-hand corner of the Electronics Package.

The **PLC (Programmable Logic Controller)** is the Module mounted on the **DIN Rail** and below the Motor Controller(s). The PLC controls the barrier by reading the **Encoder** position information and communicating barrier movement information to the Motor Controllers in response to PLC inputs.

Sensors

The **C1 & 2 Sensors** are used to detect objects present in the barrier path on the un-secure side of the lane. If something is blocking these beams, the barriers will not move to allow a user to exit from the secure side (although the barriers may always be pushed open in an emergency).

The **D1 & 2 Sensors** work similarly for users exiting from the secure side (IE: blocking this beam will prevent the barriers from moving) and, in addition these sensors will detect the presence of an exiting user, when in "Free Exit" mode, and tell the PLC to move the barriers to allow egress.

The **Presence Sensors** detect objects in the lower portion of the lane.

The **Gate Sensor** detects a break-over state if the Glass Barrier is forced.

PLC Controller

The **PLC** (Programmable Logic Controller) is made up of several modules. All Inputs terminate here and all Outputs originate here. The operating software runs on the PLC.

Wall and Bridge Connection Panels

The **Wall** is a panel located beside the Motor Controllers, on the left side of the Electronics Package. All wiring for the lane's local components goes through the Wall panel; including **Motor 1; Encoder 1; Lock 1;** and all **Sensor** connections.

The **Bridge** is a hinged panel located in front of the Electronics Module. All Input and Output wiring and Remote; **Motor 2, Encoder 2, Lock 2, Gate 2,** and **Graphic Array** cabling terminates on the Bridge.

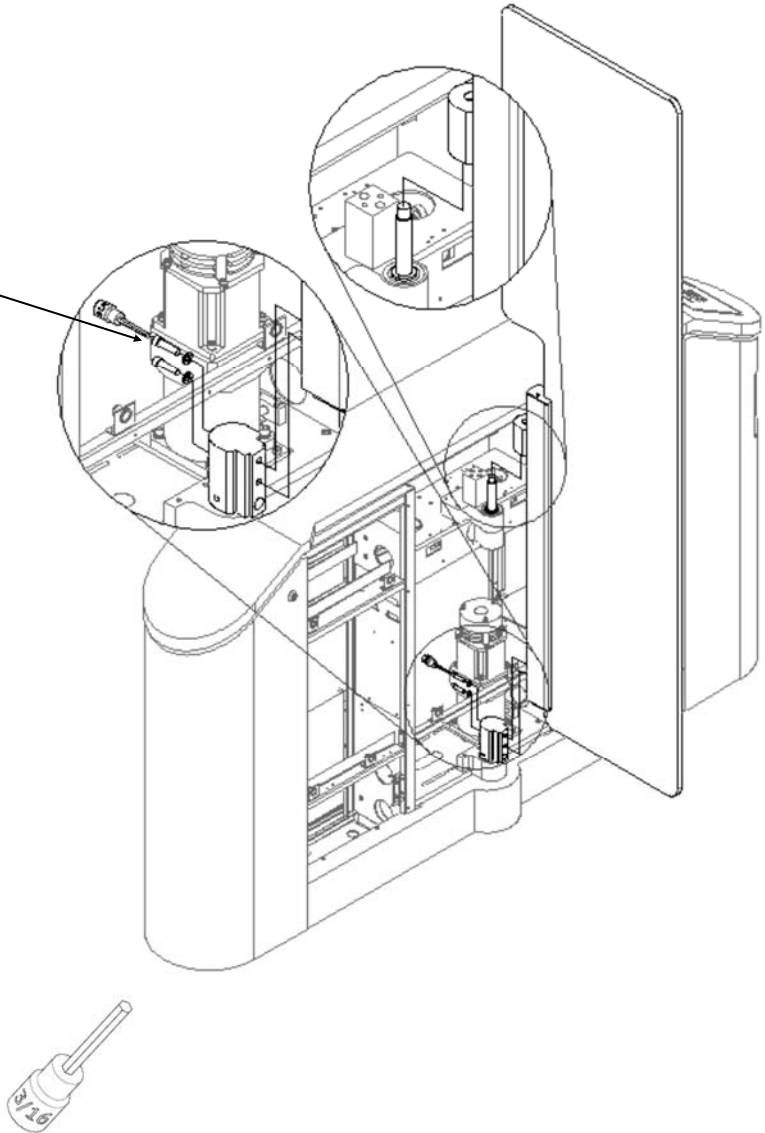
Additional detail regarding the Bridge panel and connectors is found in the Wiring section.

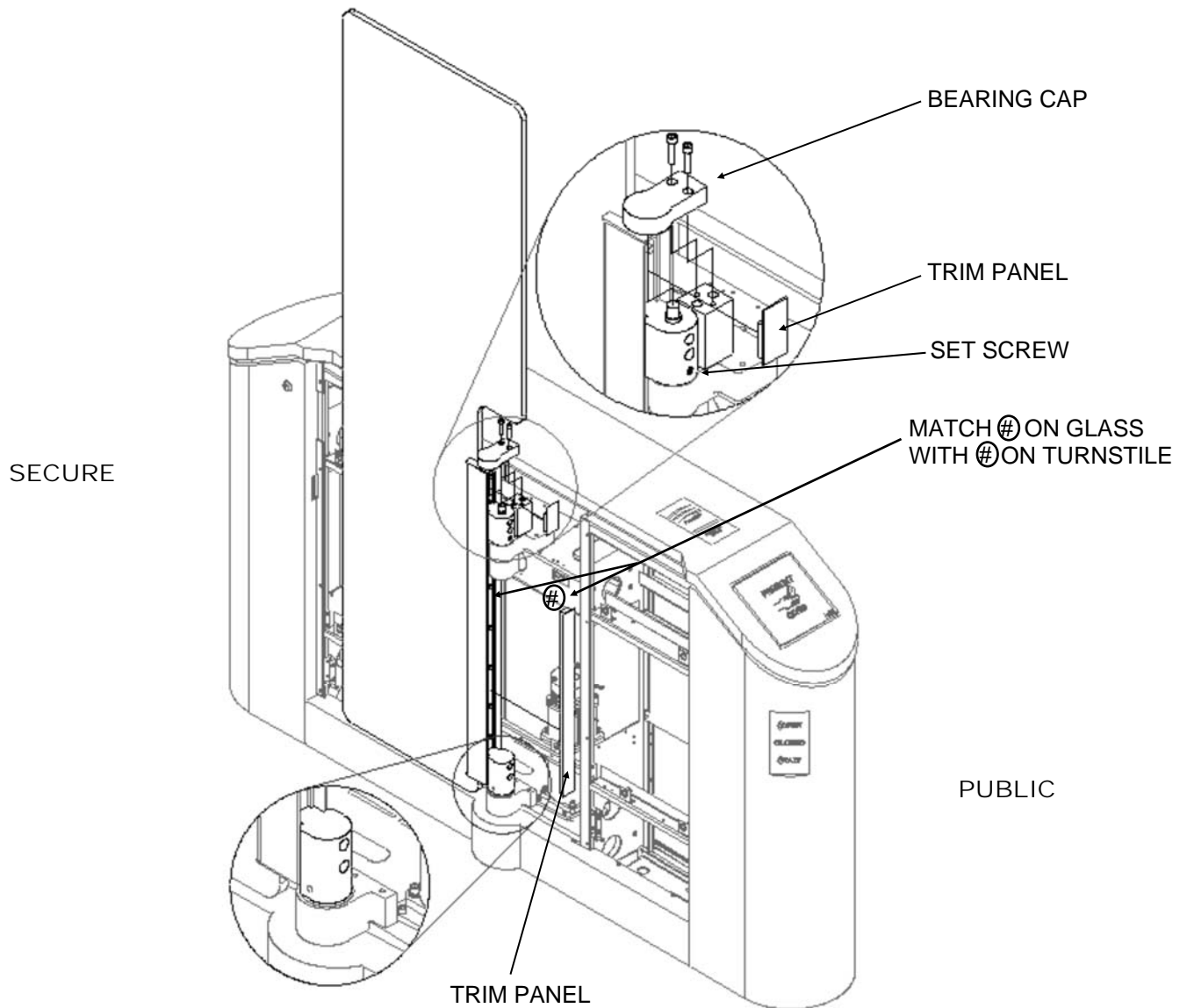
GLASS BARRIER ASSEMBLY

INSTALLATION

- Remove (2) center panels from bollard by removing 2 screws from the right and 4 screws from the left.
- Hold glass panel perpendicular to bollard as shown.
- Use two persons to lower onto top hinge pin first, then align lower hinge.
- Attach glass assembly to lower hinge using (2) 1/4-20 x 1" screws and lock washers.
- Hand tighten using 3/16" hex bit.
- Rotate glass towards Secure side.
- Tighten (2) 1/4-20 screws on bottom hinge. Tighten set screw on top hinge.
- Install bearing cap on upper hinge using (2) 1/4 -20 screws.
- Install glass holder trim panels (magnetic).
- Repeat previous steps for the second glass panel on dual panel lanes.
- Do not install Center or Access panels at this time.

(2) 1/4-20 SCREWS





FINAL ASSEMBLY AND TEST

- Unit should still be powered with **Bypass enabled**, and the lane is clear of obstructions to glass motion.
- Manually move the glass towards center.
- Check that sensors are aligned. (see Setup and Operation)
- After sensor alignment has been verified install center trim panels, left side first.
(HAND TIGHTEN TRIM PANEL SCREWS - NO POWER TOOLS)
- Install right and left access panels
- Remove bypass and turnstile should start homing routine after a short delay.

WIRING



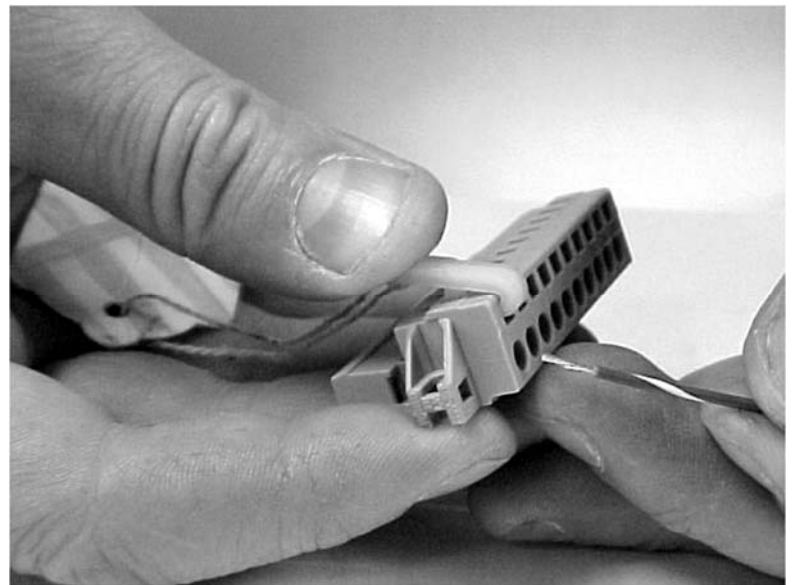
WIRING

CABLE ROUTING

- The **Motor 2, Encoder 2, Gate Sensor 2, Graphic Array, and Lock 2 cables must be routed** between the bollards of each lane. (15 ft. cables included)
- If you are installing multiple lanes, you may want to use the next lane's cable as reference when reconnecting the cable to the connector to assure correct wire placement. Reference wire color/pin-out information in this document.
- **Begin wiring from the Right-most bollard** when facing from the Entrance (un-secure) side. This bollard should have the Electronics Package in the side facing into the lane.
- Leave adequate service loop in cables. Route cables neatly in pedestal.
- **Check conduit or cableway for airflow** using a strip of tissue paper. If airflow is detected, use paper or foam material to block airflow through conduit access hole. *Airflow through chassis may result in rapid dust accumulation on sensor optics which can lead to false alarms and frequent cleaning requirements.*
- **Power Cable must be of sufficient Gauge** to provide 24VDC under load, measured at the Power Input Connector.

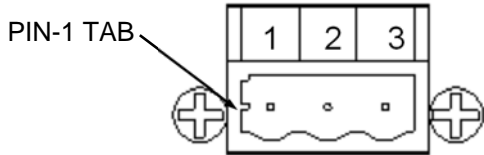
CABLE TERMINATION

- Use the included **WAGO™** tool to remove and connect the wires on each of the **WAGO™** connectors.
- Photo shows **WAGO™** tool in use. **Hook over edge and press tab into connector to release spring holding each wire.**



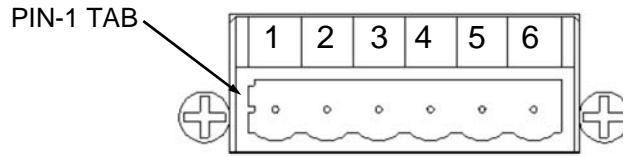
LANE CABLES CONNECTOR DETAIL

GATE SENSOR



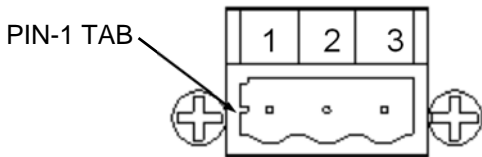
PIN	COLOR
1	Red
2	White
3	Black

ENCODER 2



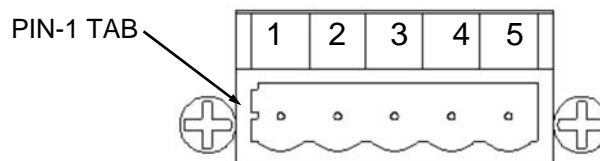
PIN	COLOR
1	Shield
2	Black
3	Vacant
4	Red
5	White
6	Green

LOCK



PIN	COLOR
1	Red
2	Vacant
3	Black

MOTOR 2



PIN	COLOR
1	Black *
2	White
3	Vacant
4	White *
5	Black

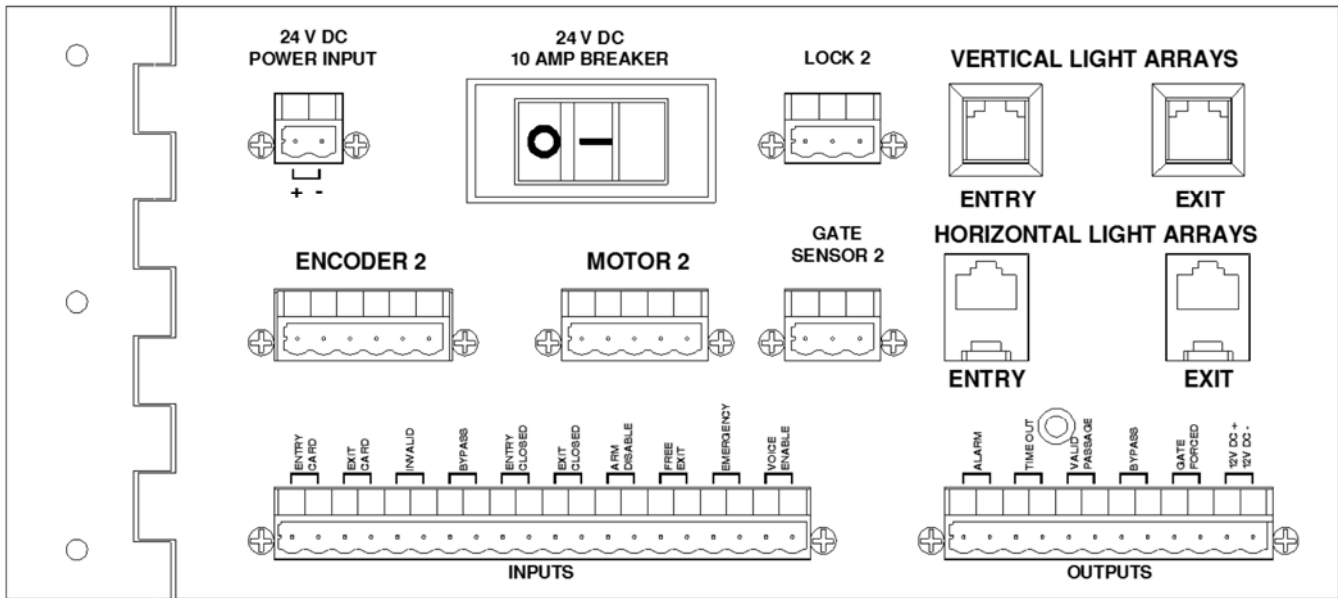
* the Black and White pair marked with heat shrink.

INPUT AND OUTPUT CONNECTION REQUIREMENTS

Inputs from Access Control System include:			
<i>Entry Valid Card Read</i>	1-2	Dry contact closure indicating valid Entry card read (Momentary Closure of .5 Second or Less recommended)	N/O
<i>Exit Valid Card Read</i>	3-4	Dry contact closure indicating valid Exit card read (Momentary Closure of .5 Second or Less recommended)	N/O
<i>Invalid Card</i>	5-6	Dry contact closure when an invalid card has been presented.	N/O
Inputs for Remote Control include:			
<i>Reset/Bypass</i>	7-8	Dry contact closure to reset alarms or to bypass the lane, stow the barriers and allow unrestricted traffic flow.	N/O
<i>Entry Closed</i>	9-10	Dry contact closure disables Entry mode.	N/O
<i>Exit Closed</i>	11-12	Dry contact closure disables Exit mode.	N/O
<i>Barrier Disable</i>	13-14	Dry contact closure which stows barriers.	N/O
<i>Free Exit</i>	15-16	Dry contact closure enables the "Free Exit" function.	N/O
<i>Emergency</i>	17-18	Dry contact closure, moves Barriers to Exit position and sounds alarm.	N/O
<i>Voice Enable/ Horn Disable</i>	19-20	Dry contact closure, only on models with Voice Annunciation Option. Disables Alarm horn when shorted.	N/O
Outputs for Remote Monitoring include:			
<i>Alarm</i>	1-2	Indicates that unit is in Alarm Mode.	N/O*
<i>Timeout</i>	3-4	Indicates that the valid read timed out before passage was completed. Closes for .3 sec when triggered.	N/O*
<i>Valid Passage</i>	5-6	Indicates that a passage was completed. Closes for .3 sec when triggered.	N/O*
<i>Bypass</i>	7-8	Indicates when unit is in Bypass Mode.	N/O*
<i>Gate Forced</i>	9-10	Indicates the Glass Barrier has been forced open.	N/O*
<small>* Default. (N/C Outputs available via Jumper Setting. See Electronics Package page for detail)</small>			
<i>+/- 12 Volt DC</i>	11-12	Accessory 12 VDC Max Current 2 Amps	

WARNING: Multiple lanes sharing a common Input Source must be isolated through a unique relay contact for each lane input. Wiring common inputs in a daisy-chain (parallel) can cause damage to electronics.

BRIDGE PANEL DETAIL



POWER CONNECTOR

- Connect 10 Amp 24 VoltDC Power Supply to the “24VDC POWER INPUT” connector. Pin 1 is “+”.
- See *Power Wire Gauge Calculator* in Appendix to determine proper gauge for your application.
- Use WAGO™ Tool to install wire in removable connector (provided).

ON/OFF CIRCUIT BREAKER

- This thermal circuit breaker will trip if current rating is exceeded. Allow to cool before resetting.
- Voltage Drop over long cable run from Power Supply may create a high current condition that trips the breaker. Use appropriate gauge wire for your installation.

LIGHT ARRAY CONNECTIONS

- Entry (local) and Exit (adjacent) Horizontal and Vertical Light Array connections.

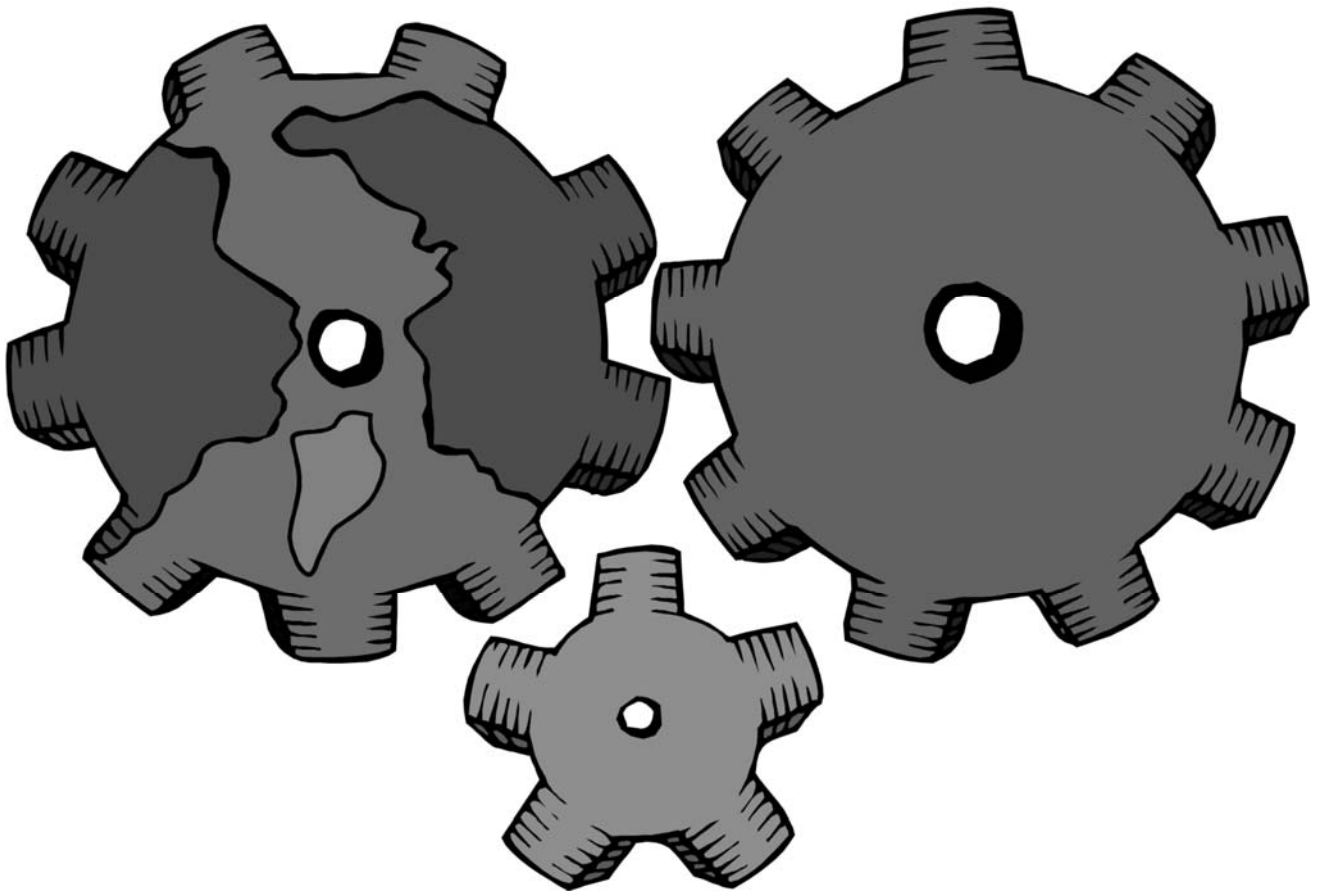
INPUT AND OUTPUT CONNECTIONS

- Install all Input and Output wiring to WAGO™ Connectors (provided).
- Use WAGO™ Tool to install wire.
- **WARNING:** Multiple lanes sharing a common Input Source must be isolated through a unique relay contact for each lane input. Wiring common inputs in a daisy-chain (parallel) can cause damage to electronics.

ADJACENT BOLLARD INTERCONNECTIONS

- MOTOR 2
- ENCODER 2
- EXIT LIGHT ARRAYS (Horizontal and Vertical)
- LOCK 2
- GATE SENSOR 2

SETUP & OPERATION



SENSOR ALIGNMENT

When the bollards are aligned, level and plumb the sensor setting from the factory will be ready-to-go in most instances.

Should a sensor be misaligned during installation you may follow these steps to identify and realign it:

- Apply Power to the lane. Barriers should go to “normal” state, blocking the lane.
- Locate each of the Receive Sensors on the bollard with the Electronics.
- Look behind the Receive Sensor for a mirrored surface that allows you to view the status LED on the rear of the sensor.
- When the beam is misaligned or blocked the LED will be lighted.

If a lighted Sensor Status LED is found:

- Verify the beam path is clear of obstructions.
- Examine both the Transmitter and Receiver Sensors for any obvious misalignment.
- Adjust sensors until the beam is detected (Status LED OFF on receiver side) by tweaking the mounting bracket as necessary.
- Repeat for each Sensor that has the Status LED lighted.

Once all Receiver sensor status are verified clear (LED Off) the Barriers should cycle and park extended across the lane on power-up, and/or when the Bypass input is cycled.

If the Barriers do not move, or if there is an Alarm condition repeat the above steps.

RECEIVE SENSORS	(B-Side)	- Green LED indicates Beam Path is Blocked
TRANSMITTERS	(A-Side)	- Green LED indicates power On

FINAL TESTING PROCEDURE

Provide Input or State from Left Column, Look for responses marked with

INPUTS	OUTPUTS						BARRIER POSITION		
	ALARM	TIMEOUT	VALID PASSAGE	BYPASS	GATE FORCED	AUDIBLE	ENTRY	EXIT	CLOSED
ENTRY CARD		<input type="radio"/> OR <input type="radio"/>					<input type="radio"/>		
EXIT CARD		<input type="radio"/> OR <input type="radio"/>						<input type="radio"/>	
INVALID CARD	<input type="radio"/>					<input type="radio"/>			<input type="radio"/>
RESET/BYPASS				<input type="radio"/>			<input type="radio"/>		
ENTRY CLOSED									<input type="radio"/>
EXIT CLOSED									<input type="radio"/>
BARRIER DISABLE							<input type="radio"/>		
FREE EXIT							EXIT WHEN "D" SENSOR IS BROKEN BY USER		
EMERGENCY	<input type="radio"/>					<input type="radio"/>		<input type="radio"/>	
VOICE ENABLE/HORN DISABLE	SILENT WHEN IN ALARM								
BARRIER AND SENSOR STATES									
FORCED GATE						<input type="radio"/>	<input type="radio"/>	OPEN IN DIRECTION FORCED	
SENSOR BEAM BLOCK	A						<input type="radio"/>		<input type="radio"/>
	B						<input type="radio"/>		<input type="radio"/>
	C							BARRIERS WILL NOT MOVE INTO AREA WITH BLOCKED BEAM	
	D								
TAILGATE	<input type="radio"/>					<input type="radio"/>			

WARNING: Multiple lanes sharing a common Input Source must be isolated through a unique relay contact for each lane input. Wiring common inputs in a daisy-chain (parallel) can cause damage to electronics.

GUIDELINES FOR EVERYDAY USE

(PROVIDE COPIES TO ALL TURNSTILE USERS)

Optical Turnstiles are provided for greater security in your workplace. They help ensure that only authorized individuals will be allowed into the secure areas of your facility. You may find daily use of Optical Turnstiles becomes routine as you follow these basic guidelines:

APPROACHING THE LANE

- **Look** at the lighted **Vertical Graphic Display** at the front of the bollard on the right-hand side of the lane you will enter in order to **determine the status of the lane**.

The Messages you will see are;

OPEN	– lane is available
CLOSED	– lane is unavailable
WAIT	– lane is in use

USER VALIDATION

“ID” for access control can be of many types, from card readers to biometric systems.

Please refer to instructions provided for reader operation by the manufacturer, or by your security director.

- **Look** at **HORIZONTAL DISPLAY** status, then **PRESENT ID** to the Reader mounted on, or in, the right-hand bollard of the lane you are using. It may beep to indicate your ID was read.
- **Listen** for a **BEEP** after the **ID has been validated** and/or **watch** the Horizontal Graphic Display on the top of the right-hand bollard to indicate authorization.
- Next **Look** for a **PROCEED** message and/or **Green Arrows** to indicate that **you are now authorized** to pass through the lane. **The barriers will automatically swing out of the way** allowing passage.

CAUTION: AVOID TOUCHING THE GLASS, except in an Emergency, otherwise AN ALARM MAY SOUND

- **MOVE THROUGH THE LANE PROMPTLY.** Avoid stopping or moving backward, as this will trigger the alarm.

TIP: During passage through the lane, swinging items (purses, briefcases, etc) could be interpreted by the turnstile as a person tailgating you, or moving in the other direction, thus causing an alarm. To avoid delays caused by false alarms, hold items close to your body, or at your side as you pass through the lane.

- **IF ALARM SOUNDS**, exit the lane, **STOP** and wait for security personnel to respond.
- Once through the lane, continue moving ahead to clear the lane for other users.

FREE EXIT MODE

Some turnstiles may be configured for “Free-Exit,” meaning there is no requirement to present ID when leaving the secured area. The **Graphic Displays** will indicate both **OPEN** (vertical display) and **PROCEED** (horizontal display) on the right-hand side of the lanes which are set up for Free-exit.

- **As you enter the lane, the turnstile will sense your presence and direction** allowing you to exit the secured area of the building. **Barrier will automatically open for Free Exit.** Pass through turnstile as outlined above. **Touching the barriers while passing through the turnstile may cause an Alarm.**
- Keep in mind that the sensors are active during Free-exit mode. Keep any bags or packages high and close to your body, or at your side, and avoid swinging them, as this may cause an alarm, even in Free Exit mode.

EMERGENCY USE

- During an emergency you may push through the Glass Barriers. They will break away when 50 lbs. of force is applied at the side of the glass barrier opposite the hinge point. An Alarm will sound. Follow established

GUARD/OPERATOR - OPTICAL TURNSTILE GUIDELINES

(LEAVE COPY AT GUARD OR OPERATOR DESK FOR REFERENCE)

Making an optical turnstile installation work well depends upon a number of factors being present.

- **Users must be provided adequate instruction.** *Written, and First-hand / One-on-one.*
- **Users must know that a consequence to them exists for improper use, in order to avoid abuse of the access control system.** *Without consequence, abuse will continue.*
- **Guards must be knowledgeable in proper operation of the turnstiles, and be able to effectively provide training to new or errant Users.**
- **Guards must have an established policy and the authority to act on any Security violation.**

TRAINING USERS

- Optimally, all Users need to be provided with a written instruction, and, be shown at least one time, one-on-one, how to properly use the turnstile.
- Instruction should include having the User identify the Reader location and be asked to explain to the instructor what is expected of the User as they approach and use the lane.
- The Users need to know that they are to **always AVOID touching the Barriers**, except in an emergency. If a User pushes the glass, an Emergency is presumed to exist and the Alarm will sound. This is a violation and should be responded to. **IF THE USER TOUCHES THE GLASS BARRIER, THEY SHOULD VISIT THE GUARD.**

NOTE: The single most frequent violation, and cause of abuse, results from Users “pushing through” the barrier. It is important that the User be trained to NEVER touch the Glass Barrier, they are automatic.

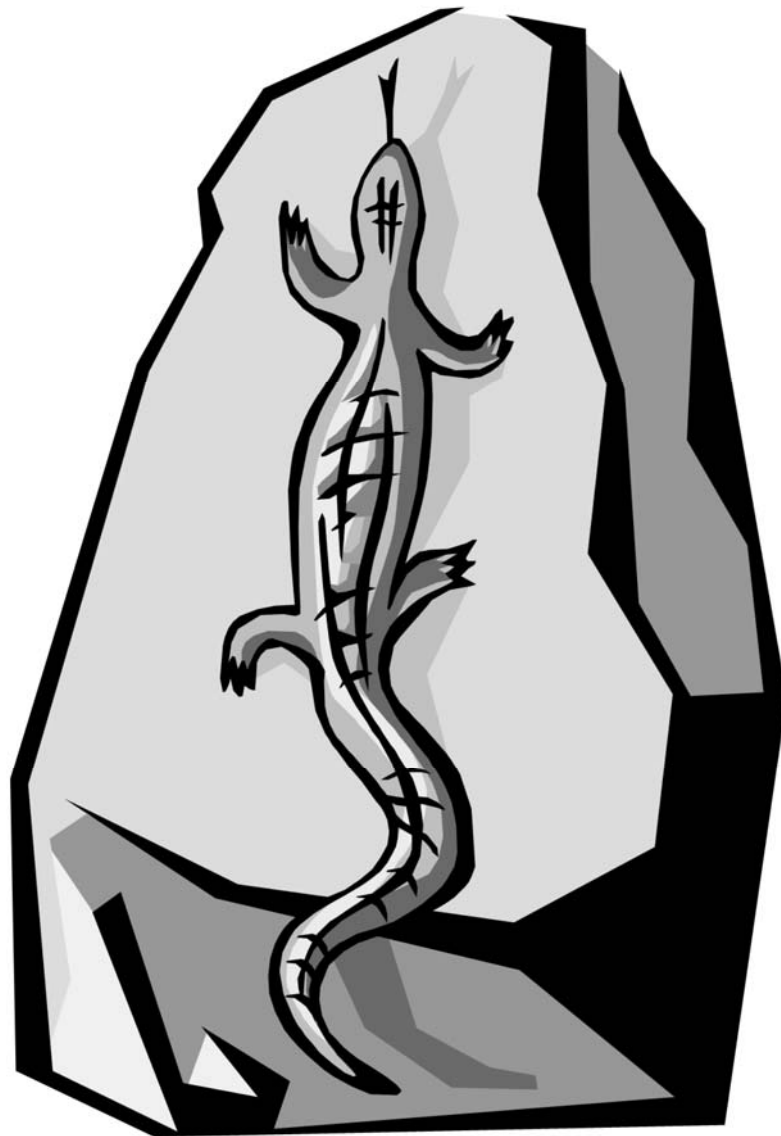
GUARD TRAINING AND AUTHORITY

- The Guard **MUST** have the authority to stop Users who have violated a lane. Even Free Exiting Users who cause an alarm should be encouraged to use the lane properly through some consequence to their action after causing a violation. Without consequence, the User will continue to abuse the Security system.

TIP: Some of our customers get good results by having their Guard call an errant User over to the desk and verify the User’s ID. This inconvenience to the User’s routine encourages them to use the lane properly and to avoid causing alarms. This also provides the Guard an opportunity to help the User learn how to use the turnstile.

- It is important that the Guard deal with the User from a frame of mind of *“What can I do to help you learn how to use the Security system and avoid causing alarms?”*
- Having copies of the User Instructions available to give users is suggested. Taking time to lead the user through the process will also help build rapport and reinforce that the relationship between the Guard and the User is complementary rather than adversarial.
- If you have questions, or would like further assistance drawing from over a decade of experience with Optical Turnstiles, please contact DSI Customer Support at 800 272 3555.

APPENDIX



SPECIFICATIONS

Power:	24-26 VDC @ 10 Amps per walkway	
Wiring:	Power-	up to 50 feet maximum; -12 Gauge
	Signal-	50 to 200 feet; -22 Gauge
Inputs:	N/O Dry Contact for	- Valid Entry Card (from Access Cntrl)
<p>WARNING: Multiple lanes sharing a common Input Source must be isolated through a unique relay contact for each lane input. Wiring common inputs in a daisy-chain (parallel) can cause damage to electronics.</p>	N/O Dry Contact for	- Valid Exit Card (from Access Cntrl)
	N/O Dry Contact for	- Invalid Card (from Access Cntrl)
	N/O Dry Contact for	- Bypass/Reset/Override
	N/O Dry Contact for	- Entry or Exit Closed
	N/O Dry Contact for	- Barrier Disable
	N/O Dry Contact for	- Free Exit
	N/O Dry Contact for	- Emergency (Fire Alarm)
	N/O Dry Contact for	- Voice Enable (Factory Option)
Outputs:	Output relays are rated for 1A @ 5-30 VDC Output relays <i>may optionally be selected as N/C</i>	
	N/O Dry Contact for	- Alarm
	N/O Dry Contact for	- Time Out
	N/O Dry Contact for	- Valid Passage
	N/O Dry Contact for	- Bypass
	N/O Dry Contact for	- Gate Forced
	Accessory Power	- 12 Vdc @ 2Amps
Audible Alarm:	80db at 3 feet	(Disable by shorting Voice Enable input)
Timing Adjustments:	Card Access	(0-20 Seconds timeout if no passage)
	Alarm Auto-Reset	(0-20 Seconds timeout for Alarm sounder)
Dimensions:	10"W X 33"H X 64.5"L	
Walkway Spacing:	Standard / A.D.A.	- 37" between Bollards
	Custom Lane Widths may differ from Standard	
Mounting:	12 Gauge Steel base (2 pedestals) with (8) 7/8" Mounting Holes and (2) 4" X 3" Cable Access Holes per Bollard	
Interconnect Cables:	Encoder2	15'
	Motor2:	15'
	Exit Light Arrays:	15' ea.
	(2 Exit Light Array cables, 1 Horizontal and 1 Vertical array cable)	
	Lock and Gate cable	15'

Resetting Glass Barrier after Breakaway

When a user has pushed through the glass barrier, it will break away when 50 lbs. of force is applied.

This will result in an alarm condition, triggering an audible and a relay output alarm indication.

To return the lane to operation:

- Swing the glass barrier back toward it's normal position across the lane.
- When it reaches the detent it will lock back into place
- The lane may now resume operation after resetting the alarm condition.

Adjusting Breakaway Pressure

The pressure required to breakaway the glass barrier should not need adjustment in normal operation

Should an installation have unique conditions which would require that this breakaway force be reduced, please contact DSI Customer Service at 800 272 3555 for assistance.

OPTICAL TURNSTILE ERGONOMICS

Prior to laying out the lanes, some information should be understood, regarding efficient placement of the bollards, traffic flow and minimizing nuisance-alarms, in order to make your installation effective at providing security with the least amount of intrusion into the user's daily routine.

This is what we consider the psychology of lane placement, and from our experience is worthy of consideration prior to finalizing your installation parameters.

The OT provides a physical and psychological barrier to the user. People will behave differently, and be more aware of entering secure areas when they feel they are being guided and/or monitored into the secure zone. Through careful placement, the OT is very effective at promoting positive traffic flow through the area of the security threshold.

DSI recommends placing the OT in areas that encourage users to "move through" the area rather than in a place where people may congregate.

If an environment exists that encourages users to congregate due to lane placement, people may tend to stop in the lanes, lean on the bollards or they may simply encroach into one of the lanes IR Beams. These behaviors can lead to nuisance alarms, disruption of pedestrian traffic flow, and possible optical misalignment or other damage to the bollard. With this in mind, we'll look at some possible installation scenarios to better understand how best to place the lanes to maximize utility and minimize trouble calls.

Pull Doors

It is a good idea not to place the bollards immediately before a pull door. The action of pulling the door open may cause the user to back into the lane. This could generate a nuisance alarm.

Even if the bollards are placed further back from the door, the scenario of two or more users passing through the lane, with the first user opening a pull door, may cause a following user to back into the lane.

Allow adequate space between the turnstile and the pull door for users to easily open the door without interrupting the traffic flow through the lane behind them.

Queuing Areas

It is recommended that the OT lane not be placed near any type of queue. After passing through the lane, the user should be encouraged to move out of the area by either the architecture or layout arrangement of the Optical Turnstile lanes. Promoting positive traffic flow through the lanes and across the security threshold should be kept in mind during the planning stage.

Elevator Lobbies

An elevator lobby has both positive and negative attributes for a turnstile application. If the bollards are placed in such a way that a user is facing the bank of elevators, this will encourage a moderate pace through the turnstile.

However, should the elevator's doors be closed, then a queue may be generated beyond the turnstiles. This could create nuisance alarms similar to those mentioned previously regarding the "Pull Door," due to the congregation of users blocking the lane, leaning on the bollards, or encroaching into the I.R. Sensor's light path.

Placing the turnstiles before each elevator could be beneficial from a security standpoint, and creates the possibility of having each user card-in before entering the elevator which may in some applications significantly slow down the traffic flow into the elevator itself.

When planning for an elevator lobby consider the maximum number of users that may need to be accommodated while waiting for the elevator. Allow adequate space for the users to congregate beyond the turnstiles while not restricting traffic flow through the lane(s).

The Ideal Application

The ideal placement will encourage users to approach slowly, enter, and pass through the lane, but discourage rushing through or stopping either in, or just after, the lane. One example of ergonomics designed with this in mind would be a “T”-type traffic pattern, with the entrance traffic flowing into the base of the “T”.

If the OT were placed in the corridor just before the “T”, users would not be prone to rush through the lane because they will see a wall or other barrier (rope, chain, etc.) before them. After passing through the lane, there should also be some incentive to encourage moving on. An inviting, open space like a lobby or waiting area or some place which is perceived as less confining than the security entryway would be ideal.

Slowing traffic through the lanes minimizes false alarms generated through beam interruption by briefcases, bags, umbrellas, coats, etc. A rapidly moving user could be swinging these items and this has been known to generate a tailgate violation.

Placing the turnstile in a long straight corridor may encourage this “swinging” of personal items by fast walkers or those users in a hurry, especially on free-exit applications.

A free-exit user does not have to pause to present a card, he may be moving more rapidly. A back-swing into the beams could be interpreted as an entry attempt by the electronics, thus producing a nuisance alarm.

Naturally there will be a balance to be reached, in that the security entryway must also allow smooth traffic flow during peak traffic periods each day while still serving the purpose of limiting access to valid users of the system.

With this knowledge of turnstiles, traffic flow and turnstile operational parameters in mind, a little planning beforehand could prevent conflicts later between users, operators, the integrator, and the customer’s original security plan.

Moving the users through a psychologically “restrictive” area into an “inviting” open space, while also providing a security threshold large enough to allow smooth traffic flow during peak periods, would exemplify the ideal installation.

CARE AND CLEANING

Congratulations on your purchase of a DSI Optical Turnstile system.

This guide provides information for cleaning and maintaining the finishes, materials and optical paths of DSI's standard finishes on our turnstile line. Including ES810, ES811, ES831, ES840, ES850, ES860, and ES880

DSI recommends the following information be distributed to appropriate personnel to preserve long lasting appearance of the finish, and to maintain clear optical paths for the Infrared beams.

Stainless Steel - CAUTION: Avoid getting polish or solvents on the Plexiglas panels to prevent contaminating the optical path.

The suggested polish is a light household polish/oil.

Holloway House Lemon Oil is what we use at the factory. <http://www.hollowayhouse.net>

Soap and water may be used to clean stains, then use polish to preserve the finish.

Corian and Laminates-

Soapy water or ammonia-based cleaners will remove most dirt and stains from Corian and Laminate finishes.

Additional Corian information is available from the DuPont Corian website: <http://www.corian.com>

Brass -

These finishes are clear-coated and should be polished with any product labeled as appropriate for a clear-coat finish. Automotive clear-coat polishes work well for this application. (Turtle Wax's Clear Coat Polish and Restorer is what we use at the factory)

Powder Coat Painted -

Clean with mild soap, water and a soft non-abrasive cloth. A periodic use of a non-ammonia based cleaning solution (Formula 409) can be used for oils or stubborn stains. Always apply by hand using a circular motion.

Plexiglas -

CAUTION: Never use ammonia-based glass cleaners, abrasive cleaners, or paper towels to clean Plexiglas.

These surfaces should be cleaned with a soft cloth dampened with soap and water, or use a spray cleaner such as Chemtronics® ES1668; at <http://www.chemtronics.com/> or you may call Chemtronics at 800-645-5244 for more information.

Optics - The Plexiglas over the sensors and reflectors must be kept optically clear for the Infrared Beams to function properly. Cleaning personnel need to be instructed to avoid wiping any oils or other polishes on these panels. Use of alcohol or ammonia based cleaners may leave a static charge which will attract dust, the Chemtronics® ES1668 is an anti-static cleaner that works well. Any similar anti-static cleaner approved for use on Plexiglas should work.

Dust accumulation on the inside of these Plexiglas panels, and on the Sensors/Reflectors themselves, can impair the optical path which may lead to false alarms. A periodic inspection after initial installation may help determine the appropriate interval for cleaning the inside surfaces, based upon the environment at the site.

Glass -

Clean with soap and water or any standard glass cleaner (ammonia based). Wipe dry with paper or cloth towel.

TROUBLESHOOTING TIPS

The following are a few of the most common questions the Customer Support group answers.

Symptom: Circuit Breaker Trips

Solution:

This is an indication that the current through the circuit breaker is high, usually due to the Supply Voltage being low (less than 24 VDC) as a result of using too small a gauge of wire for Power. Check for loose connections and verify the proper gauge wire is installed. If necessary, replace the power wire with a larger gauge (smaller number) or increase the Supply Voltage in order to deliver 24 VDC at the Power Input Connector, while the ES880 is operating under load.

Symptom: Numerous False Alarms

These Alarms may occur spontaneously, or after passage of a valid user (even in Free Exit mode).

Solution:

The optical path has become partially obstructed by dust accumulation, or by application of cleaners/polish/etc. on the Infrared Plexiglas covers over the sensors and reflectors. Clean the Sensors, the I.R. Plexiglas, and the Reflectors with a mild soap and water solution. Instruct the Cleaning Staff to avoid using any cleaners or polish on the Plexiglas. When handling the Plexiglas, hold it by the edges to avoid getting oils and fingerprints on the surface which would distort the beam and may attract dust. (See Care and Cleaning info in Appendix)

Symptom: Multiple users card in, only first user allowed to pass.

Solution:

The Access Control System is holding the Valid User (Entry or Exit) Input for subsequent users. The Access Control System needs to be adjusted to provide a shorter cycle time (preferably less than half a second contact closure) in order to provide a discrete input cycle to the OPTICAL TURNSTILE for each valid card read. Because many Access Control Systems are built to control door locks, their default setting is five seconds, and the system simply holds the lock for each subsequent user rather than providing a unique input cycle (Open/Close/Open) for each valid user.

DSI!

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WARRANTY

The DSI Optical Turnstile Product you have purchased is warranted to be free of defects in material and workmanship when properly installed, used and maintained according to instructions. DSI will, for a period of three (3) years from date of purchase, repair or replace any part which, upon our examination, proves to be defective under normal use. **DSI/DETEX SHALL NOT BE LIABLE FOR ANY DIRECT, INCIDENTAL OR CONSEQUENTIAL LOSS OR DAMAGE ARISING OUT OF THE FAILURE OF THIS DEVICE.**