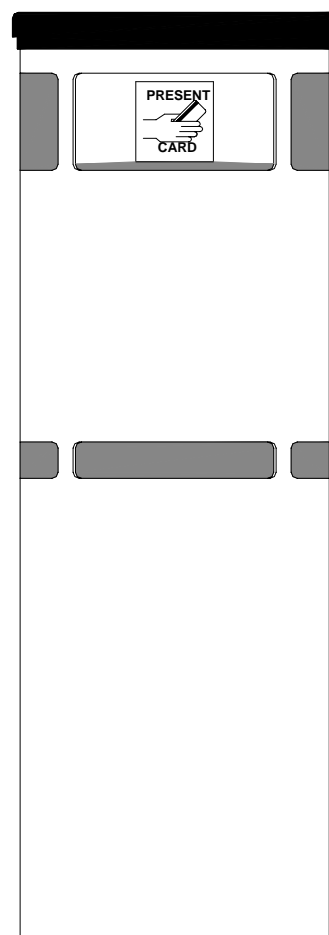
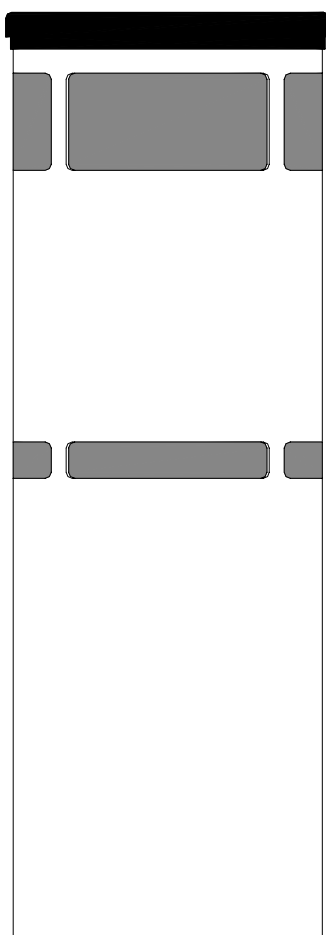


DS!

DESIGNED SECURITY, INC.

A Detex Company

ES860 OPTICAL TURNSTILE



INSTALLATION AND OPERATION MANUAL

To accommodate unique architectural arrangements of these bollards, their design and construction will allow their being installed in an arc shape, while maintaining full functionality of a DSI Optical Turnstile system.

Site Preparation -

- Layout the arc and determine spacing and placement location for each bollard.
- Conduit should be routed to correspond with the hole in center of each bollard's base plate.

Installation -

Become familiar with the Components, their location, Wiring requirements, Alignment requirements, and Assembly/Disassembly steps before beginning the Installation process. Then:

- Disassemble the Bollard for installation
- Mount and orient the Base Plate / Internal Assembly
- Perform Wiring, Alignment and Initial Testing of unit
- Reassemble the bollard.
- Perform Final Test

Configuration -

Determine mode of operation. Free Exit, or Card In/Card Out. Configure for Free Exit if applicable.

Considerations -

- In planning the final assembly, allow for alignment of sensors through Plexiglas panes in stainless steel exterior, avoiding interruption of light path by stainless steel pane dividers.
- Slots in mounting base plate allow for rotational adjustment of bollard.
- Cable path (conduit) between adjacent bollards is required for Exit Light Array cable.

BOLLARD DISASSEMBLY / ASSEMBLY

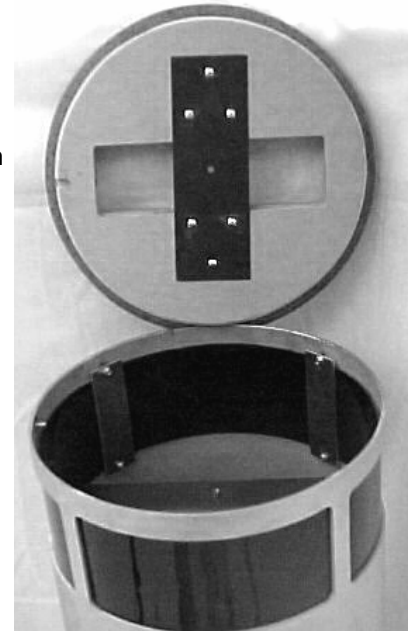
- Using the Suction Cup (included); Remove the Light Array Plexiglas cover by pulling it up and away from the top of the bollard. It is secured with magnetic tape and should require little force to remove.
- Using the same technique, remove the Light Array assembly. It is retained using double-sided tape.



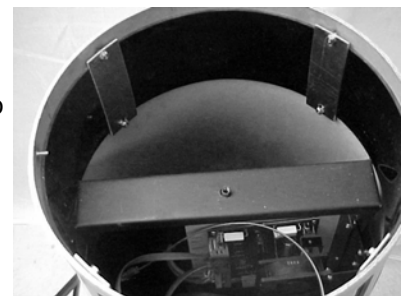
- Disconnect the wiring from the Light Array. Note there are two cables attached with RJ-style connectors. One cable comes from the electronics below, the other is a longer cable which connects to the adjacent bollard's electronics which controls the Light Array's Exit functions. (End Bollards will only have one cable, Entry or Exit only)
- Place the Light Array in a safe place.



- Looking through the hole in the top of the bollard, you may now see the bolt which attaches the top to the internal structure. Remove this bolt.
- The top may now be lifted off the top of the bollard assembly. Note the alignment pin and corresponding notch for reference when re-assembling the unit. The top may have a tight fit, pull it straight up from underneath by reaching through the hole.
- Place the top in a safe place.



- The round external shell may now be removed. It is HEAVY, at least two persons should be used to lift it straight up in order to safely remove it and avoid damage to either the internal structure or the exterior shell.
- During assembly, note that the alignment pin should be oriented in such a way that, when facing from the Reflector/Electronics side of the bollard structure, the pin is centered on the left end of the top panel.



Component Locations -

The following photos will be used to define various points of reference which will be used throughout this document. The photos will also show detail regarding how to disassemble and reassemble each bollard.



REFLECTOR SIDE

- This photo shows the Internal parts of the bollard as seen from the Reflector/Electronics side.
- The Base Plate has a hole in the center for conduit access and Mounting Slots for securing and orienting the bollard in relationship to the adjacent bollards.
- The Reflectors are on a plate that may be adjusted to align with the Infrared Beams coming from the Sensors on the opposite bollard. (See Adjustment Photo for more Detail)
- The Electronics/MPU section is where all Input/Output terminations are made for Control signals, Alarm sensing and the Light Array operation.

- The Sensor Side photo of the Internal structure shows the Sensors which generate and detect the IR Signals.
- These signals are monitored to provide access control.
- Their optical alignment may be adjusted by gently bending the Sensor mounting bracket and by loosening the screws for making minor vertical adjustments. (See Adjustment Photo for more Detail)



SENSOR SIDE

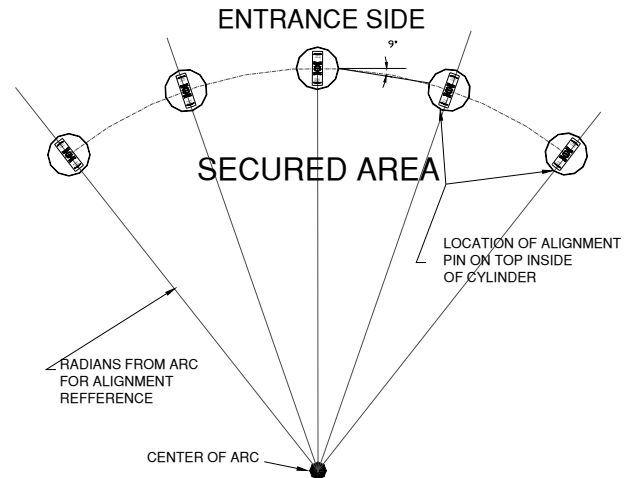
MOUNTING

Verify that the bollards are mounted in correct orientation. When viewed from the Entry/Un-secure side, the right-most Bollard will be the first "smart" Bollard (unit with electronics). The left-most bollard will have reflectors only.

Take time to thoroughly understand all aspects of configuration and operation prior to physical mounting.

Recommended mounting anchors are 1/2" diameter bolts.

Run wires from Access Control System to the Electronics package via 3.5"x3.5" square hole in base plate.



WIRING

Refer to the drawing "Wiring Diagram" for Input, Output and Light array connection details.

- Connect N/O dry contact from "Exit Valid Card" output of the access system to TB2-10 & 12 (Valid 1). Set hold time on this contact, for valid card input, to less than 0.5 second, or as near as possible.
- Connect N/O dry contact from "Entry Valid Card" output of the access system to TB2-11 & 12 (Valid 2). Set hold time on this contact, for valid card input, to less than 0.5 second, or as near as possible.
- Connect N/O dry contact from "Invalid card" output of the access system to TB2-7 & 9 (Invalid). Set the hold time on this Input for Invalid, to less than 0.5 second, or as near as possible. This input is optional.
- Connect N/O lane Bypass from remote monitoring equipment to TB2-7 & 8 (Bypass) for bypassing the lane, or to reset the MPU.
- Connect N/O Alarm output from MPU, on TB2-5 & 6 to remote monitoring equipment detecting an alarm condition.
- Connect 12 VAC 6 amp power supply to TB2-13 & 14. Wire gauge should be 14 AWG for a wire run of 50 feet or less and 12 AWG for 50 - 100 feet. Greater distances may require calculating the appropriate wire gauge necessary.

FREE EXIT MODE ENABLE

Enable Free Exit Mode by shorting the "Sensor 4" and "Common" terminals found at TB1-11 & 12.

INFRARED SENSOR BEAMS

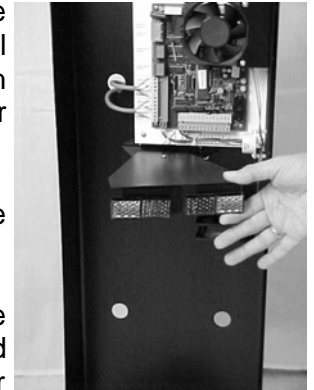
The Infrared beams from the sensors pass through IR-Passing Plexiglas and will not pass through ordinary glass. If the IR Plexiglas becomes damaged or needs replacement, please contact DSI for additional information or replacement parts.

SENSOR/REFLECTOR ALIGNMENT

Once the bollards are in place and the wiring is complete, the system may be powered up and checked for proper alignment of the IR optical sensors. IR optical sensor alignment may be verified by observing the bi-color LED on the end of each sensor. Red LED off and Green on indicates the sensor is aligned with a reflector and a "Lock" state is present.

The plate which the Reflectors are attached to may be adjusted to align the reflectors with the opposite bollard's Sensor light path.

The Sensors may only need adjustment by rotation of the Bollard on it's base plate mounts to face the Reflector. If necessary, the sensor alignment may be fine-tuned by adjusting the bracket the Sensor is mounted on. Observe the sensor LED for Lock indication (Red LED off and Green on).



Reflector Adjustment

TIP: During alignment, cover adjacent sensors and reflectors in order to prevent alignment with the wrong reflector.

For precision alignment use a card with a penny-sized hole to cover the center of the reflector being used. This will focus the beam to a tighter tolerance before a Green LED is lit.

Once the IR sensors are aligned, and connections to the access control system verified, the passageway should operate normally, allowing passage on a valid input for that direction, as well as sounding an alarm for an invalid passage, and provide remote control of the lane if the optional inputs are connected to remote switches.

ADJUSTMENTS

Adjustment P.1 (Alarm Reset) sets the delay on the Alarm Auto Reset (adjustable 1 - 20 seconds). This is the time the unit will remain in Alarm mode after a violation.

Adjustment P.2 (Valid Access Delay) sets the time allowed for a valid card user to walk through the passageway before the system resets for the next user (adjustable 1 - 20 seconds). If a user does not walk through after being validated, this delay is how long the lane will wait before resetting for the next user.

COMPONENTS

LIGHT ARRAYS

The Light Arrays provide visual cues to the user. The appropriate Light Array will be found on the User's right, regardless of direction of travel.

All **Exit-side Graphics** are referenced as "1" (i.e.: Valid 1, Horizontal 1) on the MPU connections. All "Exit" side hardware (Light Array, Reader) are found on the **right-hand side**, when entering the lane from the "EXIT" or "Secure" side. This places these pieces of hardware in the bollard across the lane from the MPU/ Electronics Package for any given lane. The Long cable is used to connect this Light Array to the adjacent Bollard's MPU for that lane.

All **Entry-side Graphics** are referenced as "2" (i.e.: Valid 2, Horizontal 2) All "Entry" side hardware (Light Array, Reader) are also found on the **right-hand side**, when entering the lane from the "ENTRY" or "Un-Secure" side. These pieces of hardware are mounted in the same bollard the MPU/Electronics Package is mounted in. The Short cable is used to connect this Light Array to the MPU in the same Bollard.

The Horizontal Array has three modes; Present Card (Card Arrow is lit); Alarm or In Use (Bar is flashing or lit); and Proceed (Arrows)

End bollards will consist of a "Smart" unit at one end (with MPU), and a "Reflector only" unit at the other end. The "**Smart**" end bollard will have only 1 light array connection via a 3' cable from "Horiz 2" on the MPU in the same bollard. This array will be oriented towards the Entry, or un-secure, side.

The "**Reflector only**" bollard at the other end of the installation will also only have 1 light array connection via a 15' cable to the Horiz 1 on the adjacent bollard's MPU controlling that lane. This Array will be oriented towards Exit side.

All "**Center**" bollards have dual arrays (Entry and Exit) and connect with both a 3' **local** (Entry-Horiz 2) and 15' **adjacent** (Exit-Horiz 1) cable.

OPERATION / USER INSTRUCTIONS

Approaching the lane from the **Entry** (un-secure) side:

- Watch light array for prompt to “**PRESENT CARD.**”
- Scan Entry card, then wait for a beep and look for “**PROCEED**” before proceeding.
- Move through the lane at a normal stride, keeping loose items in front of, or beside your body. Not swinging.
- If there is an alarm, wait for security personnel to respond.

Approaching the lane from the **Exit** (secure) side:

- If Free Exit mode is enabled, the Light Array will display Green Arrows indicating that the user should proceed.
- If Card Out mode is enabled, the Light Array will prompt the user to Present Card.
- Scan Card, then wait for a beep and look for Green Arrows before proceeding.
- Move through the lane at a normal stride, keeping loose items in front of, or beside your body. Not swinging.
- If there is an alarm, wait for security personnel to respond.

Alarm Conditions may be caused by:

- A user passing through the lane without validation.
- A user tailgating a valid user.
- A valid user swinging a briefcase, umbrella, coattail, etc. may appear to be a tailgater.
- A User entering the lane in one direction when validation has been given to a User coming from the opposite direction.
- An Alarm Output on TB2 5 & 6
- An Invalid Input on TB2 9 & Common

Alarm Conditions may be cancelled by:

- Auto reset timeout. (P1 adjustable 1-20 seconds)
- Bypass Input

SPECIFICATIONS

Technical Data: (electrical)

Power: 12VAC @ 4 Amp/Walkway

Inputs:

Access Control:

N/O Dry Contact from access control system for valid card (Entry & Exit)

N/O Dry Contact from access control system for invalid card

Shunt:

N/O Dry Contact to Override lane operation

Free Exit Mode Enable:

Free Exit Mode may be enabled by placing a jumper across TB-1 Pins 11&12

Valid Access Delay: P1 adjusts 1-20 Seconds

Alarm Auto Reset Delay: P2 adjust 1-20 Seconds

Outputs:

N/O Alarm Contact - 500mA @ 30 VDC

N/O Invalid Card Contact - 500mA @ 30 VDC

Technical Data (mechanical):

Size: Ht: 38" Dia: 13.5"

Mounting: 3.5"x3.5" Conduit access; 3 ea. 1/2" mounting bolts.

Finish:

Top surface - DuPont Corian

Pedestal - Stainless Steel

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.**

DSI Power Wire-Run Gauge Calculator

Use this form to determine the wire gauge of the power trunk for equipment.

If used to calculate a:

- **“DAISY CHAIN”** application - one where all equipment is attached to the same trunk, you will need to calculate the total load and the total distance in wire run to the last load on the chain.
- **“HOME RUN”** application - where each piece of equipment is on a separate trunk returning to the central power supply, you use this form to determine the gauge for each run.
 1. Specify total Current load of all devices sharing this trunk, in Amps.
 2. Specify Distance of actual Wire Run (in feet) from power supply to most remote load.
 3. Multiply figures from line 1 and line 2
 4. Match final number to Table below to determine Wire Gauge needed to provide adequate Voltage.

TABLE

up to 45	22AWG
45 to 90	18AWG
90 to 170	16AWG
170 to 275	14AWG
275 to 415	12AWG
415 to 680	10AWG

If your result is greater than 680, make individual supply runs to each device, or sub-sets of devices, which are within the above parameters.

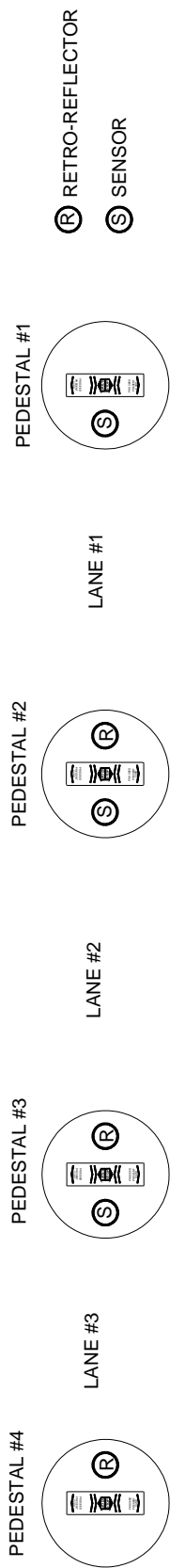
EXAMPLE: 3 devices @ .250, .500, .125 amps - total amps of .875

Distance of 150 ft.

150 times .875 = 131.25

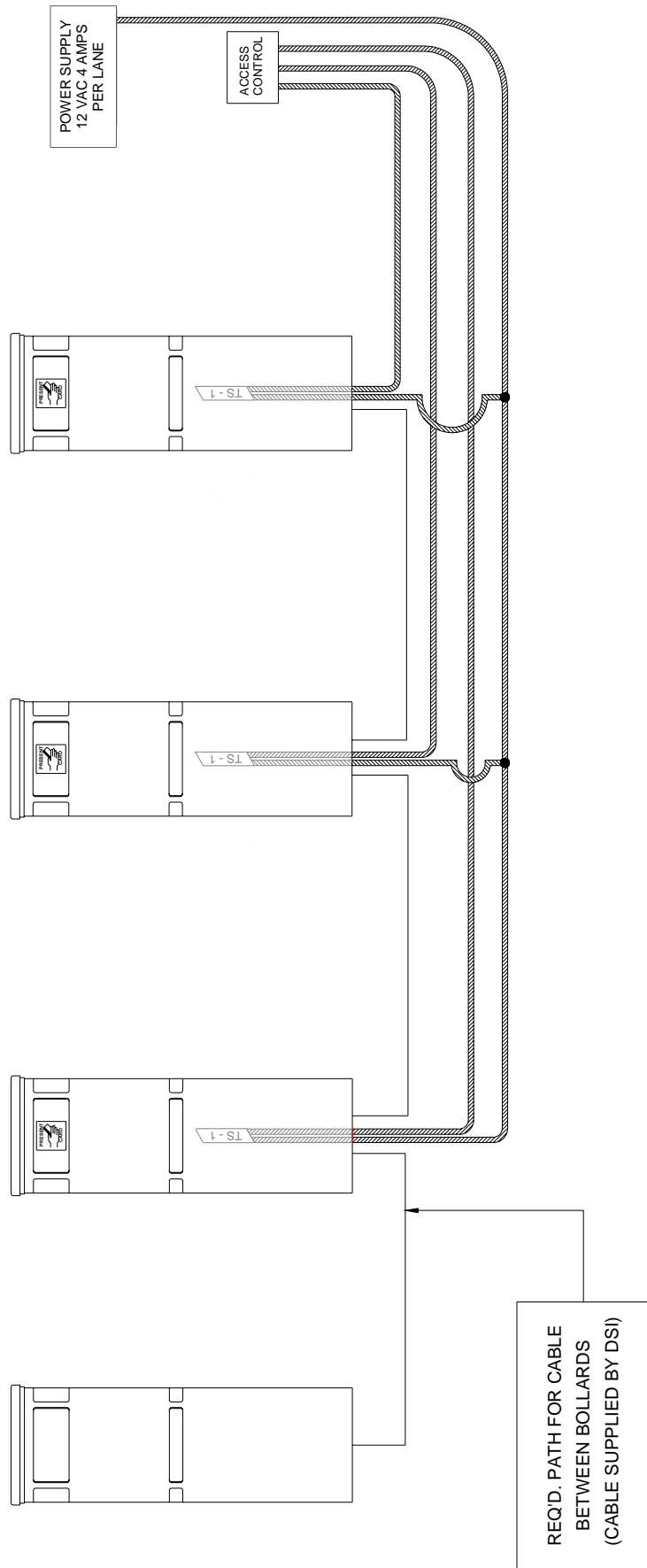
131.25 falls into the category of 16 AWG wire.

SECURED / EXIT READER SIDE



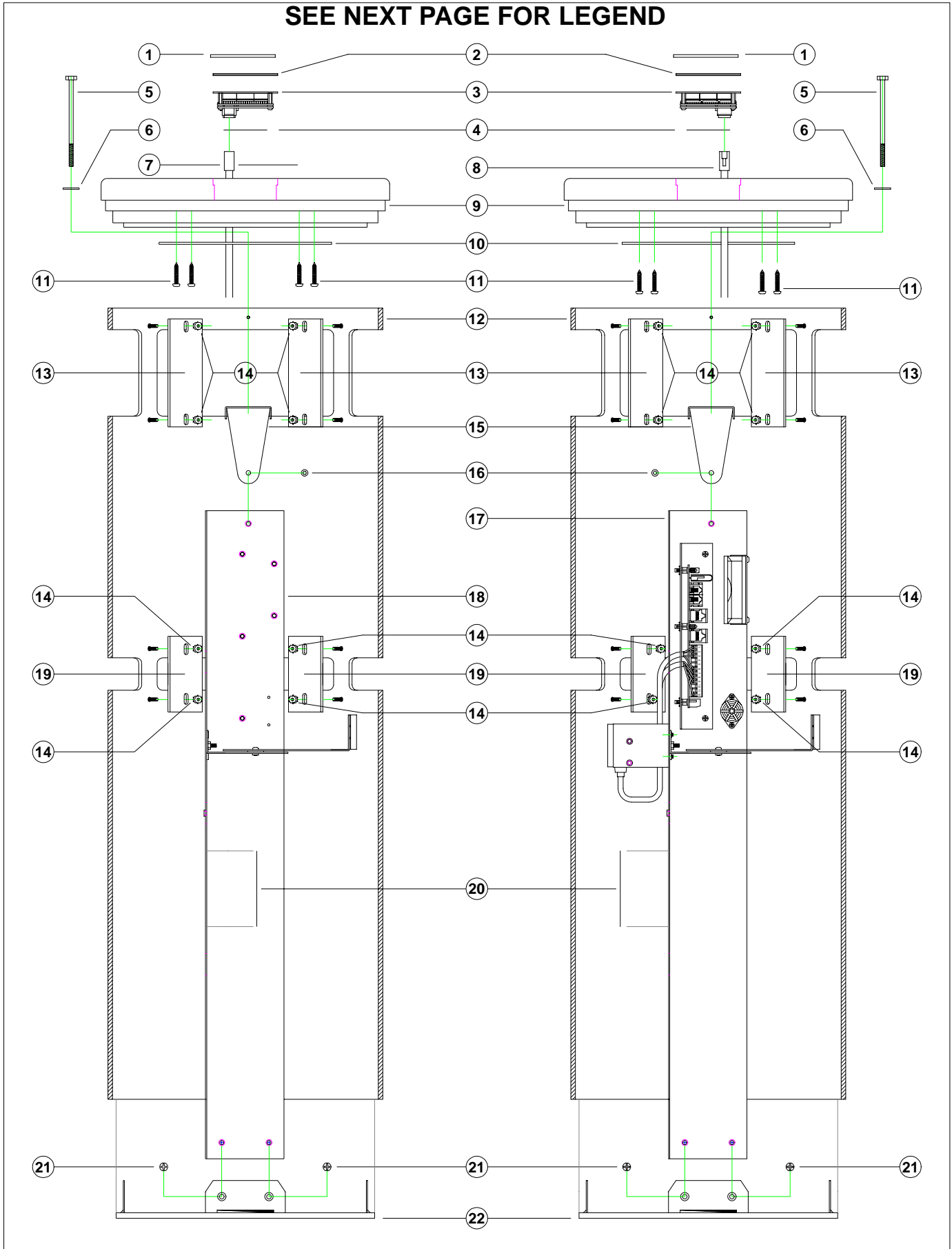
UNSECURED / ENTRANCE READER SIDE

CABLING AND LAYOUT DIAGRAM



TYPICAL ILLUSTRATION FOR CARD IN / CARD OUT 3 LANE SYSTEM

SEE NEXT PAGE FOR LEGEND



EXPLODED DIAGRAM

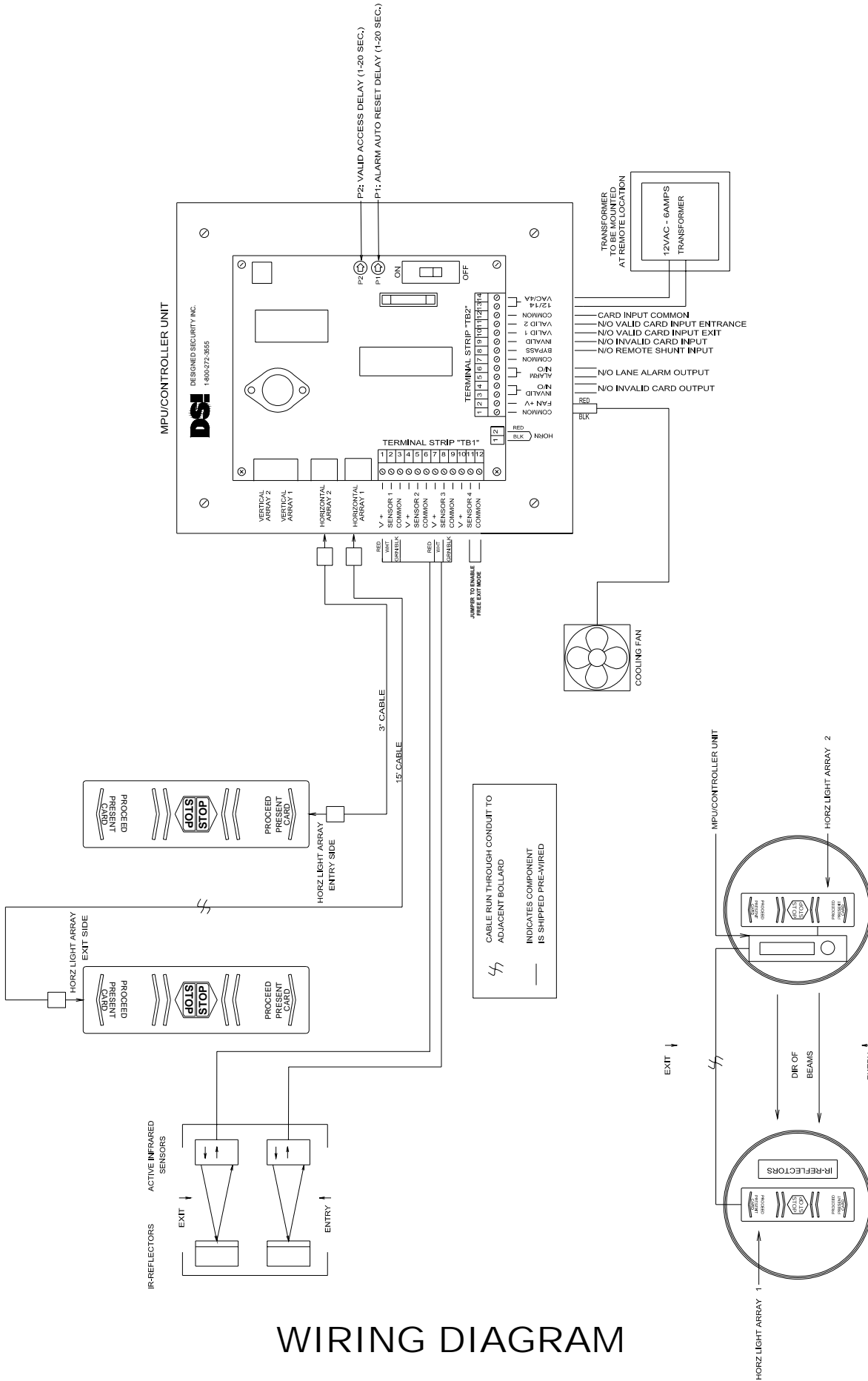
LEGEND FOR EXPLODED DIAGRAM

PARTS LIST	
ITEM	DESCRIPTION
1	HGA SCREENED PLEXI-ES860
2	3" MAGNETIC TAPE STRIP
3	HGA SUB ASSEMBLY 1
4	2" DOUBLE SIDE TAPE STRIP
5	1/4" x 4" CARRIAGE BOLT
6	.307" ID x .749" OD FLAT AL WASHER
7	15' HGA CABLE
8	3' HGA CABLE
9	ES860 TOP
10	ES860 TOP MTG BRACKET 1
11	#8 x 1" WOOD SCREW
12	ES860 ENCLOSURE
13	ES860 PLEXI RETAINER 1
14	6-32 LOCK NUT

PARTS LIST	
ITEM	DESCRIPTION
15	TOP MTG BRACKET 2
16	#10 x 1/2" SOCKET HEAD
17	CENTER SUB ASSMB, SENSOR
18	CENTER SUB ASSMB, REFLECTOR
19	ES860 PLEXI RETAINER 2
20	ES860 LANE LABEL
21	#10 x 1/2" FH PHILLIPS
22	ES860 BASE
23	ES860 TOP PLEXI RING
24	ES860 BOTTOM PLEXI RING
25	SUCTION CUP
26	CARD READER DECAL
27	12 VAC 6 AMP TRANSFORMER
28	PRODUCT INSTRUCTIONS



TOP VIEW



WIRING DIAGRAM

NOTES: