

OVERVIEW

The OTS-HHB monitors through-beam infrared sensors, access control contacts, and barrier position sensors to control the motion of the half height barriers mounted in the center of the lane housing. The barriers are normally extended, and swing into the lane housing when a valid card signal is received from the card access system. The barriers remain in the retracted position while the person passes through the lane, then are reset to the extended position when the lane is cleared. The card access system is interfaced with the optical turnstile control system. All lane controls and alarms are communicated with relay contacts between the card access system and the optical turnstile system. Lane displays and sounders are also controlled from the optical turnstile control system.

FEATURES

- ◇ CARD IN / CARD OUT OPERATION
- ◇ DAY / NIGHT MODE
- ◇ BARRIER BYPASS MODE
- ◇ ANTI-CRAWL SENSORS
- ◇ SAFETY SENSORS TO PREVENT BARRIER MOTION WHILE A PERSON IS IN THE BARRIER MOVEMENT AREA
- ◇ BACKLIT DISPLAY INDICATOR GRAPHICS
- ◇ AUTOMATIC ALARM RESET
- ◇ TAILGATE SENSITIVITY FIELD ADJUSTABLE
- ◇ DURABLE STAINLESS STEEL CONSTRUCTION
- ◇ FOOTPRINT: 6x48x38 INCHES
- ◇ BRUSHED STAINLESS STEEL FINISH
- ◇ SPECIALTY FINISHES AVAILABLE
- ◇ CLEAR POLYCARBONATE BARRIERS WITH SCRATCH RESISTANT COATING
- ◇ ADA COMPLIANT
- ◇ BASIC LANE CONTROL DESKTOP REMOTE INCLUDED
- ◇ OPTIONAL COLOR TOUCHSCREEN DISPLAY WITH NETWORK INTERFACE AVAILABLE
- ◇ OPTION FOR TOUCHSCREEN DISPLAY IS SECURED IPHONE/IPAD INTERFACE



One person is allowed to pass through the walkway for each valid card presented. If a person walks through the passageway without presenting a valid card, an alarm is generated. A sounder in the housing alerts area personnel that a violation has occurred, and an alarm relay contact notifies the access control system of the alarm.

OPERATION

VALID CARD USAGE When a valid card contact is received at the lane control, the barriers retract into the lane housing. After the person passes through the lane and all IR sensors are cleared the barriers reset to the extended position.

FREE EXIT MODE The optical turnstile system has two operating modes - CARD IN / CARD OUT and CARD IN / FREE EXIT. When the system is in FREE EXIT MODE, the sensors at the secured end of the lane determine that a person is exiting and the barriers automatically retract into the lane housing to allow exit passage. The barriers are reset to the extended position after the person passes through the walkway.

CUT SHEET CONTINUED

TAILGATE ALARM When the optical turnstile system detects a Tailgate Violation, the barriers are sent to the extended position after the first person passes through the barrier movement area. Multiple IR sensors are positioned throughout the lane passage area so that a tailgate violation is determined prior to the violating person reaching the barrier movement area.

BARRIER BYPASS The barrier operation may be Bypassed with a contact from the card access system to allow for optical turnstile to operate without the barrier. The barriers retract into the lane housing until the Bypass contact is reset. The optical turnstile continues to operate normally.

EMERGENCY OPERATION An Emergency Override Contact from the card access or fire alarm system will cause the barriers to be retracted into the lane housing, and the motion control system will be disabled so that the barriers cannot be extended into the lane passageway.

EMERGENCY EXIT If the system is in Card In / Card Out operation, and an emergency event happens and the Fire Alarm System Contact has not yet been activated, a person can still exit the secured area by walking into the lane from the secured side. The sensors will see the person exiting, generate an EXIT ALARM and retract the barriers to allow exit.

TECHNICAL SPECIFICATIONS

Power 120 VAC

Inputs Valid Entry Card Contact: 1 Lock Control Relay from card reader system closes for entry.

Valid Exit Card Contact: 1 Lock Control Relay from card reader system closes for exit.

Invalid Card Contact: contact closes when an invalid card is presented to the reader.

Fire Alarm / Barrier Bypass: contact is open for active barriers / contact is closed for disabled barriers

Lane Bypass: contact closes when lane is placed in bypass mode.

Day / Night Mode: contact is open for Card In / Card Out operation (Night Mode), close contact for Card In/ Free Exit operation. (Day Mode)

Through beam infrared sensors, mounted inside housing.

Outputs 1 Normally Closed Alarm Status Relay

1 Normally Closed Bypass Status Relay

Alarm sounder @ 85dB. Sounder is on during alarm.

Access Denied Chime sounder @ 85dB. Chime is on when access is denied.

Green Display graphic indicates entry access enabled.

Red Display graphic indicates Secured Mode. Entry will generate an alarm.

Field

Adjustments Tailgate Sensitivity Adjustment - sets the sensitivity of the tailgate detection software.

Beam Block – sets the time delay to Beam Block Alarm.

Alarm Auto Reset – sets the Time Delay for Alarm Reset.

Unused Access Reset Delay – sets the Time Delay to reset the lane to normal if a valid card is presented and the lane passage does not occur.

Construction The sub-base and internal frame are constructed of 3/8" steel. There are 8 mounting holes and access for wiring.

Housing is stainless steel with brushed finish.

Dimensions 8.5" wide x 48" length x 38"

Mounting The sub-base is bolted to the floor using the provided anchor bolts. The housing frame is mounted to the sub-base.

Spacing Standard Passageways. The housings should be spaced to provide 30 to 32 inches of walkway space for standard passageways.

ADA Passageways. The housings should be spaced to provide a minimum of 36 inches of walkway space for ADA compliant passageways

KOUBA & ASSOCIATES, INC.

4040 FM 535

BASTROP, TEXAS 78602

PHONE: 512.303.5033

FAX: 512.321.4692

WWW.KOUBASYSTEMS.COM

UNPACK TURNSTILES

1. Remove the bolts at the ends of the turnstiles to separate from the skids and place turnstiles on the floor. With a box knife cut the cardboard flaps at the front of the housing next to the wood base. Cut the cardboard along the long side of the board just above the staples. Be careful not to damage the turnstile housings. Lift off the cardboard, the turnstile is protected by plastic and surrounded by foam. Refer to Figure 1.

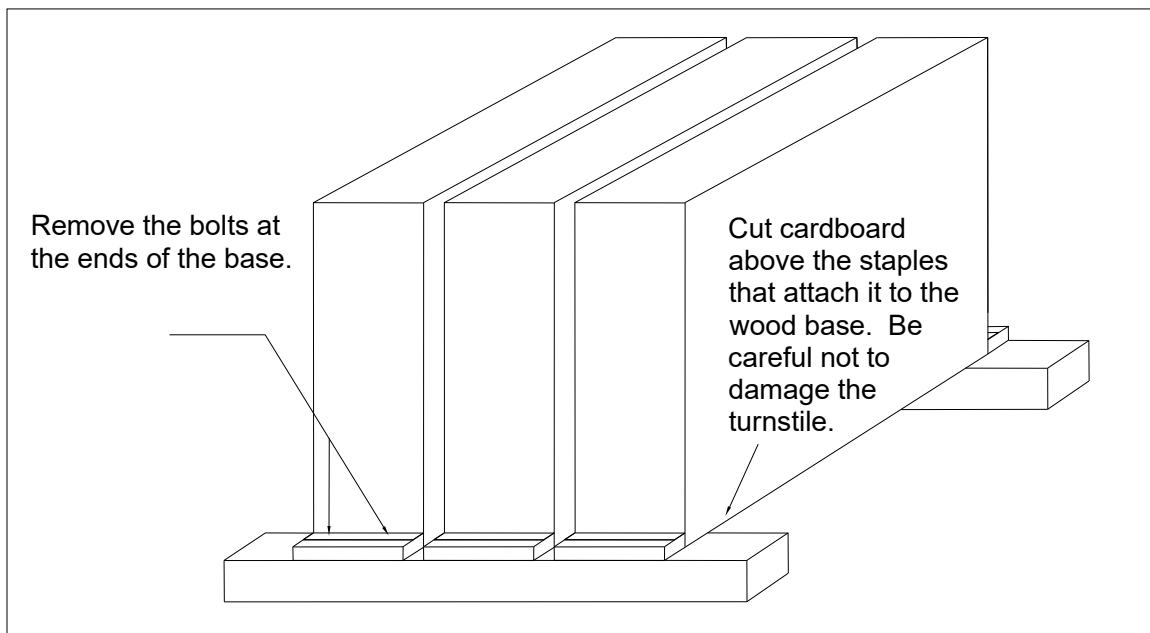


Figure 1

2. Insert the keys into the key cylinders located at middle height on each end of each side panel. Rotate the keys outward to release the latch holding the side panels to the frame. The side panels are also attached with Velcro.
3. To remove the side panels, slowly pull the panels from the top left and right corners utilizing enough force to separate the corners of the side panel from the frame approximately $\frac{3}{4}$ of an inch.
4. Pull the side panel from the top middle until it separates from the Velcro. Lift the side panel up and pull off. Keep track of the side panels as they relate to each turnstile. The panels are *not* interchangeable, minor factory adjustments were made to ensure proper fit to each housing.
5. With the side panels removed, locate the lag bolts that are used to attach the turnstile frame to the wood base. Remove these and discard the wood base.

TURNSTILE MOUNTING

CAUTION: The units weigh approximately 280 pounds.

6. Position the units at the installation location using a chalk line to ensure proper alignment. If the units were custom designed for a specific application then space turnstile as required for application. If standard units, we recommend that spacing between the turnstiles be 30 to 32 inches for standard walkways and for ADA designated walkways 36 inches. Please take into consideration that at least one walkway should accommodate ADA requirements. Mark the position of each turnstile.

7. Refer to Housing Anchoring and Leveling Instructions for detailed anchoring and leveling procedures.

WIRE REQUIREMENTS

Refer to the system level-wiring diagram for site specific cabling requirements. The housings with the lane electronics and card readers will require:

- 3 conductor 14 AWG minimum for 120 VAC Power to each housing
- 16 conductor 22 AWG minimum for interface to the access control system
- 8 conductor shielded 24 AWG minimum housing to housing motor control only for adjacent lanes with motors (CAT5 recommended)
- 2 conductor 18 AWG minimum housing to housing motor power only for adjacent lanes with motors
- Card Reader cable from Card Access System to each housing

WIRE TERMINATIONS

- Refer to the system wiring diagrams for exact terminations and signal definitions. The valid card signal is to be connected to the card reader lock output relay. The lock output relay must be configured for 1 second maximum contact duration or for automatic relock when the door is opened.
- The door-input circuit of the card reader system should be connected to the "entry acknowledge" or "exit acknowledge" relay output on the lane control panel. The "entry acknowledge" or "exit acknowledge" relay output operates as a door mimic operation. The relay closes when a person walks through the lane, and re-opens when the lane is clear. The card reader system detects that relay cycle as a normal door unlock and open sequence. If a person walks through the lane without a valid card, then the relay closes. The card reader system detects that relay closing as a forced door.

Inputs:

- **Entry Card (momentary) Input** – this input is activated by the access control system to allow a valid entry passage through the lane. The access control system lock relay should be configured to provide a maximum 1 second pulse to this input or return to an open state after the system monitors the entry acknowledge relay changing state.
- **Exit Card (momentary) Input** – (Not used in FREE EXIT) this input is activated by the access control system to allow a valid exit passage through the lane. The access control system lock relay should be configured to provide a maximum 1 second pulse to this input or return to an open state after the system monitors the exit acknowledge relay changing state.
- **Invalid Card (momentary) Input** – this input is activated by the access control system to notify the card holder that their badge was read but access is denied. The card holder is alerted to the status by the flashing red LED arrays mounted under the glass and a distinctive chime.
- **Bypass (maintained) Input** – this input can be activated by the access control system or from a remote switch. When activated the arms retract and both LED arrays mounted behind the glass illuminate green. In this condition the unit will not alarm if individuals pass through the lane.
- **Fire Alarm (maintained) Input** – this input is intended to be activated from the fire alarm system. When activated the unit retracts the arms and allows free passage until the fire alarm is reset.

Outputs:

- **Alarm Relay** – activates when an invalid passage through the lane occurs.
- **Invalid Card Relay** – is enabled when an invalid input activates.
- **Arm Fault Relay** - activates when the arm is out of position.
- **Exit Acknowledge Relay** – activates when an exit passage is detected by the unit whether the passage is valid or an alarm condition has occurred.
- **Entry Acknowledge Relay** – is enabled when an entry passage is detected by the unit whether the passage is valid or an alarm condition has occurred.

OPERATION VERIFICATION

1. INITIAL POWER UP: Make sure that the Valid Card output is open. Apply 120 VAC to the power input to the local housing (*If remote housing is used, always apply power to it prior to applying power to the local housing*); this will power up the control board and the sensors. The arms will begin to move automatically and will find the proximity sensors at the ends of the turnstile and then proceed to the center of the housing. If the arm continues past the open position do not worry, there are safety features in place to prevent damage to the turnstile and surroundings. The proximity sensor will need to be adjusted so that the barrier is seen by the proximity sensor. To align the proximity sensor; power off the lane and point the stainless steel flag bolt towards the proximity sensor. Move the sensor using the nuts the sensor is threaded through until the sensor is approximately one millimeter away from the flag bolt.

2. SENSOR TEST: Each infrared Transmitter has one Red LED. The infrared Receiver has 2 LED's on each Receiver. The Green LED indicates powered up and aligned, the Red LED is illuminated when the sensors are misaligned or beams are blocked.

3. **FIRST WALK TEST:** The Red PRESENT CARD indicator on the top should be illuminated. Walk into the sensing area from the entry side. The unit should provide an audible sounder, entry alarm, entry acknowledge relay should activate and the arms should lock in place. Then walk through the unit in the exit direction.

3a. (Free Exit) The unit's barrier arms should open away from the path of travel and the exit acknowledge relay should activate. When the lane is clear, the arms should return to the closed position.

3b. (Card Out) The unit should provide an audible sounder, exit alarm, exit acknowledge relay should activate and the arms should lock in place.

4. **SECOND WALK TEST:** Present a valid card at the reader and ENSURE the valid card input contact CLOSED. The Green PROCEED indicator on the display should illuminate and the barrier arms should open away from the path of travel and the unit's entry acknowledge relay should activate. Walk through the unit and the indicator lights should return back to illuminating red and the barrier should close.

5. **THIRD WALK TEST:** Present a valid card to the reader, and have two people walk through the sensing area close together. An alarm should be generated. Repeat this several times varying the distance between the two people. At some point of closeness, an alarm will not be generated. The tailgate sensitivity adjustment is provided to set the alarm distance between people.

6. **ADJUSTMENTS -** Refer to the photo of the control board for the location of the adjustment delays. The Tailgate sensitivity adjustment is used to allow purses, bags, umbrellas, etc to be carried through the sensing area without generating a false alarm, while maintaining a valid level of tailgate monitoring. This adjustment can be set for very sensitive tailgate detection, which can cause false alarms when bags and other objects are carried through the sensing area. Or this adjustment can be set for loose tailgate detection, which can allow someone to follow a person through the sensing area without generating an alarm. Maximum sensitivity is with the pot set toward the programming jumpers or counterclockwise. Minimum sensitivity is with the pot set away from the jumpers. The pot has a 180-degree turn of rotation.

FINAL ASSEMBLY

After the turnstiles are mounted and system operation is verified, remove the remaining protective covering from the side panels and install back on the corresponding turnstiles. The panels are not interchangeable, minor factory adjustments were made to ensure proper fit to each housing.

CLEANING

The lanes may be kept clean by using any household or industrial grade stainless steel and window cleaner.

ELECTRICAL CHARACTERISTICS

System power requirements:

Input Voltage 120 VAC, 60 HZ, 20 Amp dedicated circuit for each group of lanes (consisting of up to three walkways). A 500 Watt UPS backup for each lane is recommended to maintain operation during power grid faults. If building backup electric generators take longer than 30 seconds to provide stable 120 VAC/60 HZ power during an outage, then the UPS backup wattage will need to be increased.

Internal power:

The PLC is powered directly from 120 VAC. Sensors and indicators are powered from an internally mounted enclosed switching 12 VDC 40 Watt power supply with built in EMI filter. Stepper motor is

powered from an internally mounted enclosed switching 24 VDC 240 Watt power supply with built in EMI filter. Power supplies are UL listed for industrial control applications.

Control system:

The control system is PLC based. The control program is in non-volatile memory and is retained during power loss. The operational variables including time delays, operational status, arm position, sensor conditions are in random access memory, and are not retained during power loss. The PLC system has UL, CUL, and CE agency approvals.

Presence and direction sensors:

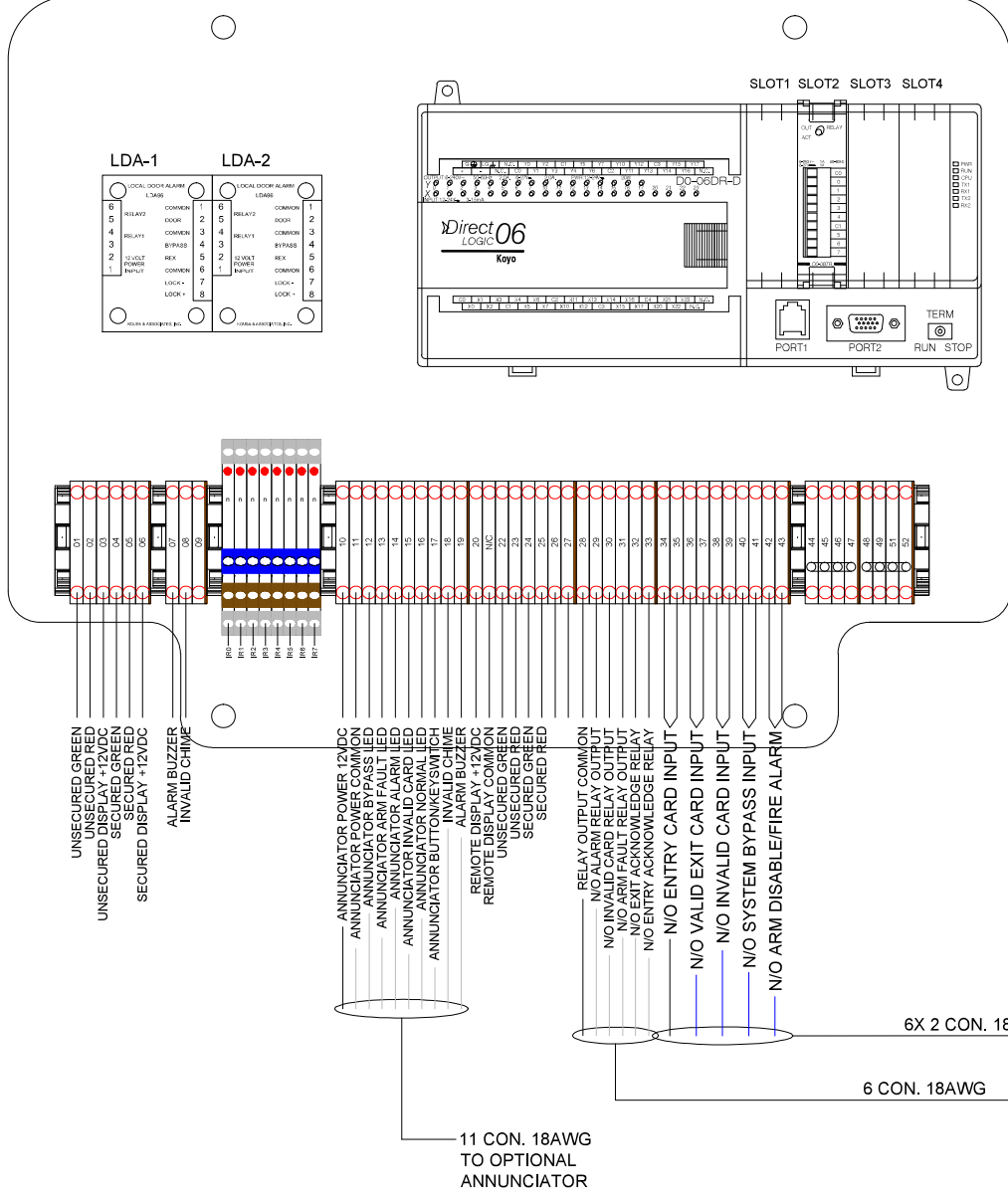
The sensors are 16 through beam active infrared sensor. Response time is 2 ms or less. Operating voltage is 24 VDC @ 50 mA max. The sensors are UL listed for industrial control applications.

Arm limit sensors:

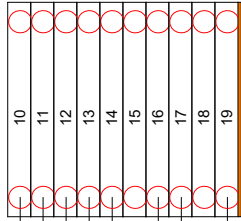
The arm limit sensors are light industrial grade inductive proximity sensors with a 2mm sensing range. Operating voltage is 24 VDC @ 50 mA max. The inductive proximity sensor is UL listed for industrial control applications.

Stepper Motor:

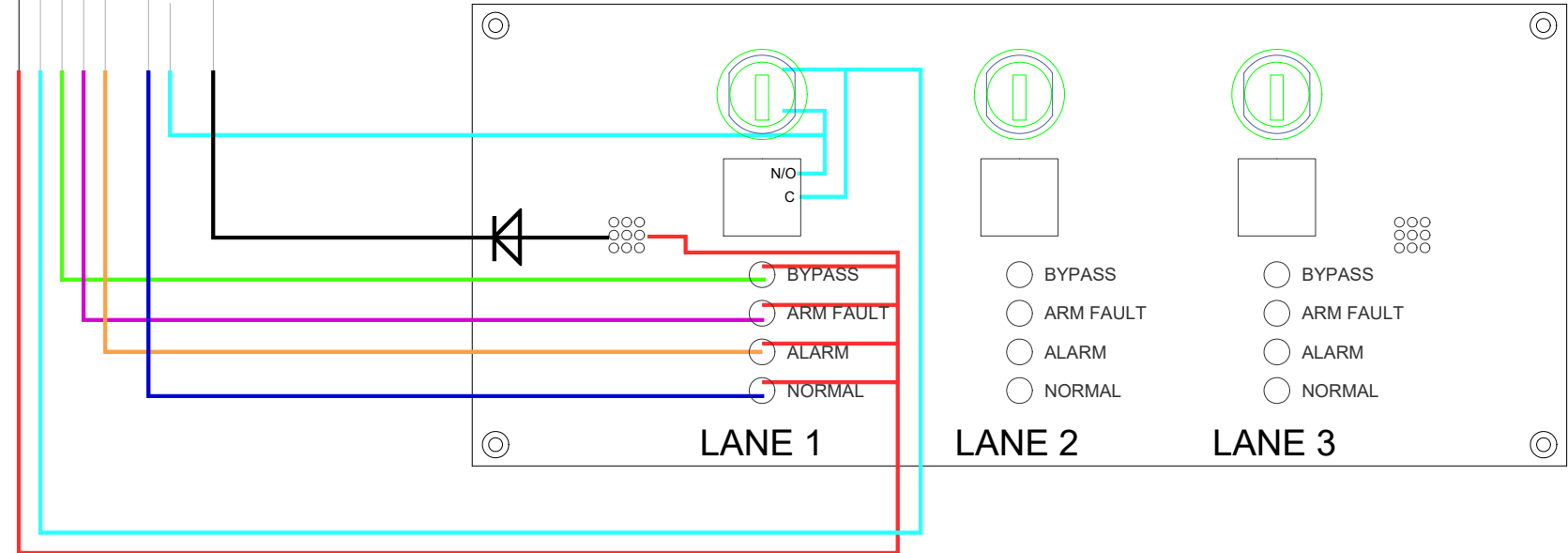
The stepper motor is a NEMA 24 bipolar integrated micro stepping motor manufactured by Applied Motion. Max rated current 3.3 AMP. Output torque range 10.16 – 15.39 Nm. The stepper motor is UL listed for industrial control applications.

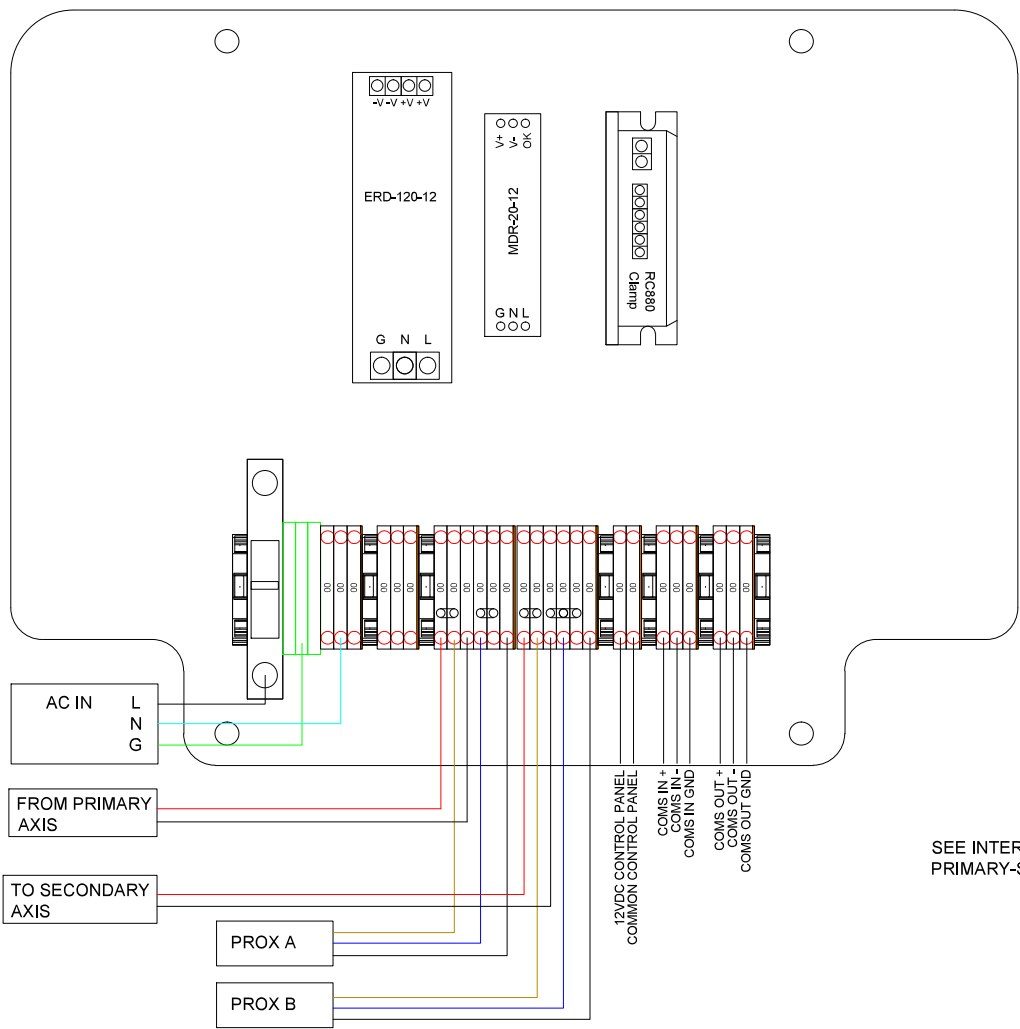


PROJECT:		HHB-6 OPTICAL TURNSTILE	
NO.	REVISION	DATE	
+	+	+	
DRAWING TITLE:		STATUS:	SCALE:
CONTROL PANEL		AS BUILT	X:1
DRAWING NUMBER:		REVIEWED BY:	REVIEWED DATE:
REF DWG:		01	
REF DATE:		DRAWN BY:	DATE:
		CRS	07-25-16
REF COMPANY:		REVIEWED BY:	REVIEWED DATE:
		1 OF 4	
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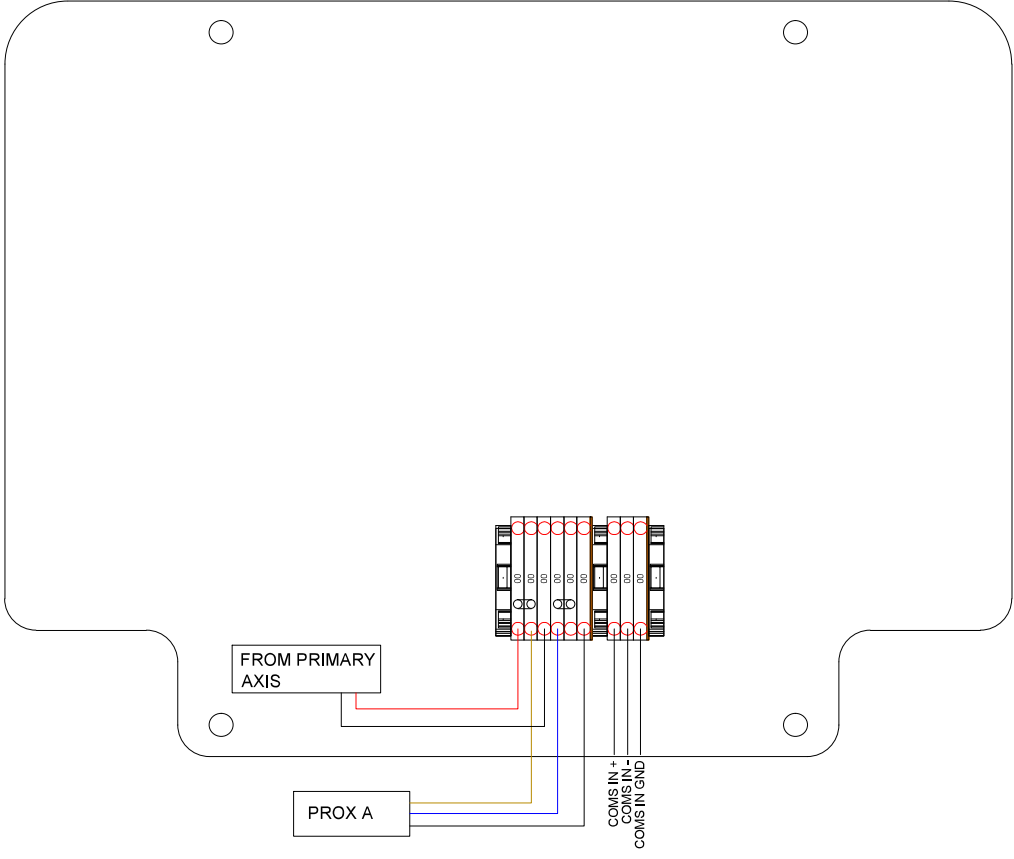
ANNUNCIATOR POWER 12VDC
 ANNUNCIATOR POWER COMMON
 ANNUNCIATOR BYPASS LED
 ANNUNCIATOR ARM FAULT LED
 ANNUNCIATOR ALARM LED
 ANNUNCIATOR NORMAL LED
 ANNUNCIATOR BUTTON/KEYSWITCH
 ALARM BUZZER





SEE INTER HOUSING WIRING FOR
PRIMARY-SECONDARY RELATIONSHIPS

PROJECT: HHB-6 OPTICAL TURNSTILE	
NO. *	REVISION
DATE *	DATE *
DRAWING TITLE: INTELLIGENT HOUSING POWER PANEL	
STATUS: PROPOSED	SCALE: X:1
DRAWING NUMBER: 01	REVIEWED BY:
REF DWG:	DATE: 07-25-16
REF COMPANY:	REVIEWED DATE:
SHEET 2 OF 4	
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NO.	REVISION	DATE
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PROJECT:

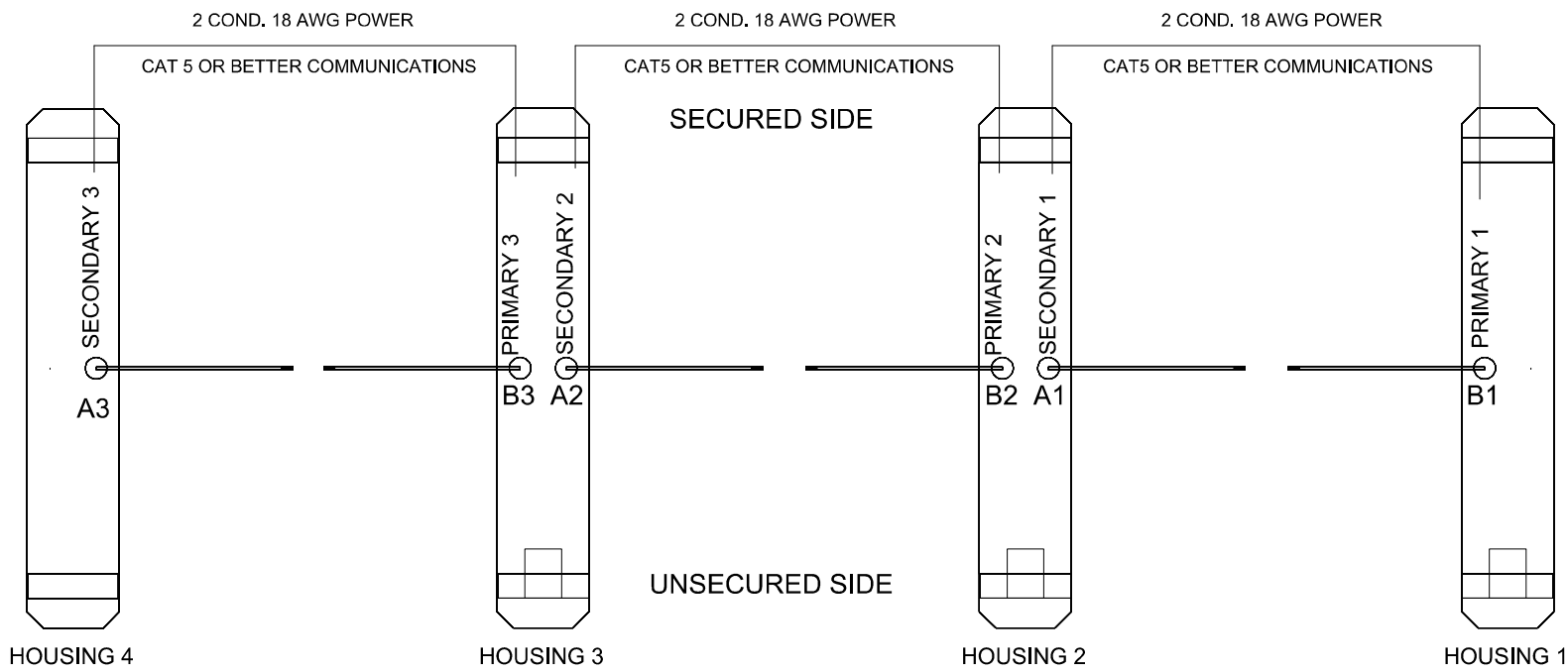
HHB-6 OPTICAL TURNSTILE

DRAWING TITLE	STATUS	SCALE
FINAL HOUSING POWER PANEL	PROPOSED	X:1

DRAWING NUMBER	REVIEWED BY	REVIEWED DATE
01		

REF DWG	REF DATE	DATE
		07-25-16

REF COMPANY	SHEET	REVISION DATE
	3 OF 4	



PROJECT:		HHB-6 OPTICAL TURNSTILE	
NO.	REVISION	DATE	
+			
DRAWING TITLE:		STATUS:	SCALE:
INTER HOUSING WIRING		PROPOSED	X:X
DRAWING NUMBER:	REV:	REVIEWED BY:	REVIEWED DATE:
	01		
REF DWG:	REF DATE:	DRAWN BY:	DATE:
		CRS	07-25-16
REF COMPANY:	SHEET:	REVIEWED BY:	REVIEWED DATE:
	4 OF 4		
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