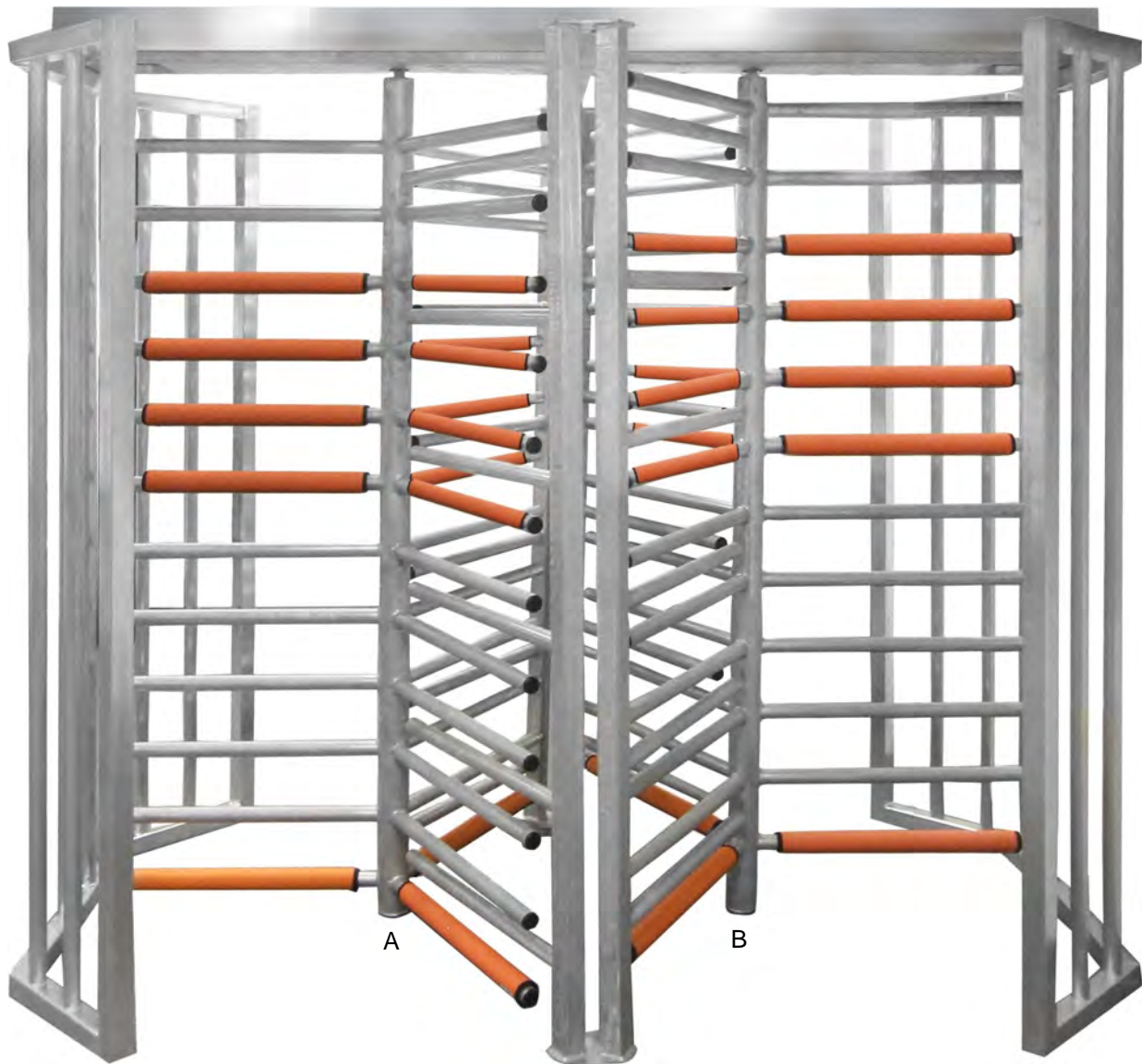


## JOINT VENTURE

### **SecureTurn HT431T A.R.C. Full Height Turnstile**

# **Tandem Full Height Turnstile Installation & Maintenance Manual**



**Important: Please save this manual after installation.**  
If installation is done by an outside contractor, be sure to give this manual to the end user.

## IMPORTANT

### Read and understand before beginning installation

These instructions are provided for your convenience. It is your responsibility to determine if you have the knowledge, skills and physical ability to properly perform an installation. Hayward Turnstiles, Inc. and [www.TURNSTILES.us](http://www.TURNSTILES.us), Inc. shall have no liability for damage or injury resulting from the improper installation of our products. It is your responsibility to ensure that all products are installed in accordance with all local laws and regulations. Warranty does not cover installation. Our full warranty is attached to the end of this manual and can also be viewed online.

If you feel this installation is beyond the scope of your ability, please call us to obtain information about certified installers.

Every installation is different, be sure to mount your turnstile SECURELY to the floor! These instructions assume the turnstile will be mounted to a concrete floor. If you are installing on a different floor surface and are not sure how to go about it, please call us for recommendations.

**Questions?**

**TURNSTILES.us**

**303-670-10**

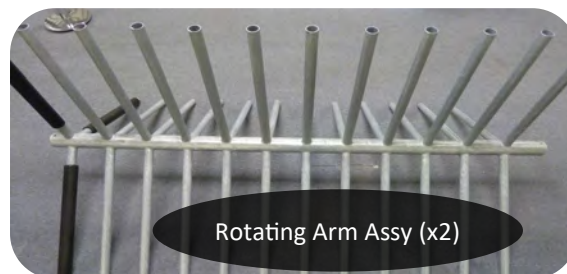
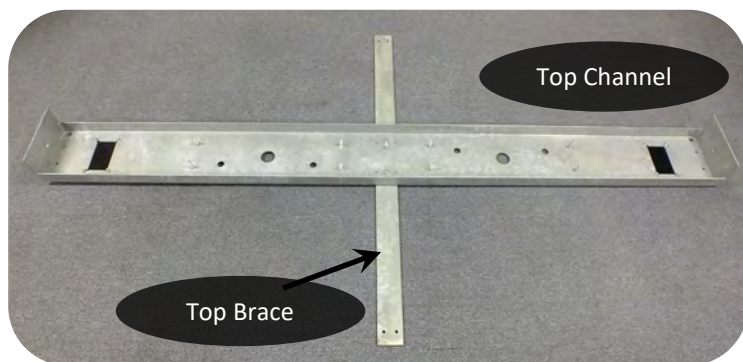
**Or visit:**

**[www.TURNSTILES.us](http://www.TURNSTILES.us)**

## What's Included

SecureTurn 431 Tandem includes:

- (1) Top channel
- (1) Top Brace
- (1) Top channel cover
- (4) Cage assemblies (2 left, 2 right)
- (2) Rotating arm assembly
- (2) Fixed Center Arm assemblies
- (2) Pre-assembled turnstile mechanism (end user specified)
- (72) Arm end caps (pre-installed)





## HT431T Installation hardware kit:

- (2) Floor bearing mount
- (2) Floor bearing
- (14) 1.500" concrete floor anchors
- (22) 3/8-16 x 1.00" hex bolts
- (22) 3/8 flat washers
- (30) 3/8 lock washers
- (16) 3/8 hex nuts
- (14) 1/4-20 x .50" Allen bolts
- (16) black plastic hole plugs (small)
- (16) black plastic hole plugs (large)
- (4) black plastic square hole plugs
- (8) stick on wire retaining clips (for electric units)





## Tools needed for concrete floor installation:

Hammer drill

1/2" masonry drill bit

5/32" Allen wrench

9/16" deep socket

9/16" shallow socket

9/16" wrench

Philips screwdriver (for electric units)

Hammer

Rubber mallet

Grease



## SAFETY NOTES

The SecureTurn turnstile components are somewhat heavy. The installation of this turnstile is a 2-person job. Be sure to follow safe lifting procedures. Also, during installation, some of the individual components may have sharp edges. Take care not to cut or pinch yourself. Once the unit is fully assembled, there will be no exposed edges. Common sense goes a long way. We have pre-assembled as much as possible before shipment.



### **DO NOT CLIMB ON TURNSTILE!**

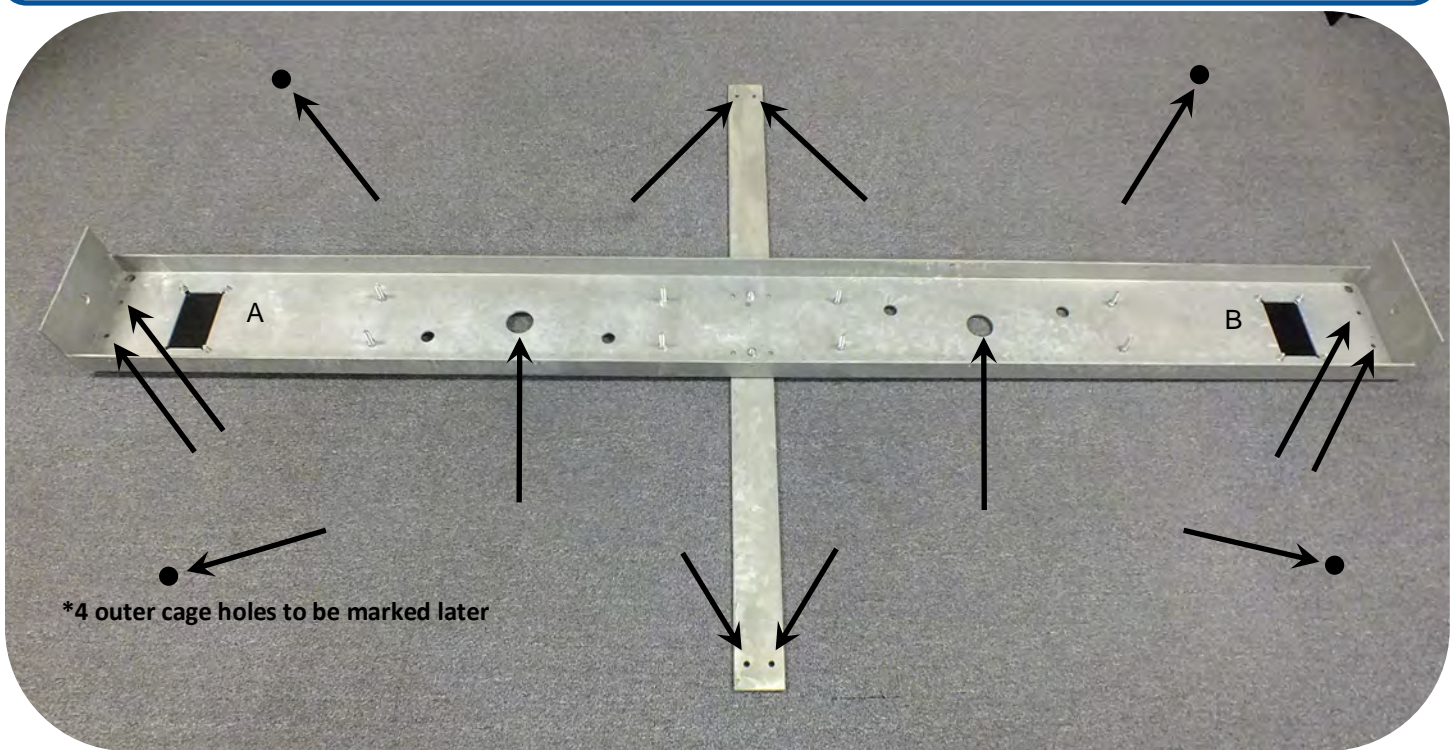
This device is to be used for pedestrian traffic control only. It is not designed to support the weight of a person of any size. Misuse may cause serious injury and will void the manufacturers warranty.

## INSTALLATION INSTRUCTIONS

### BE SURE TO COMPLETELY READ AND UNDERSTAND

A total of 14 holes will need to be drilled to mount the turnstile. A print with all the hole locations is included, but we have found it is much easier to locate the holes using the top channel and cage assemblies as templates.

Carefully lay the top channel on the floor where the turnstile will be located. Be sure the orientation is correct.



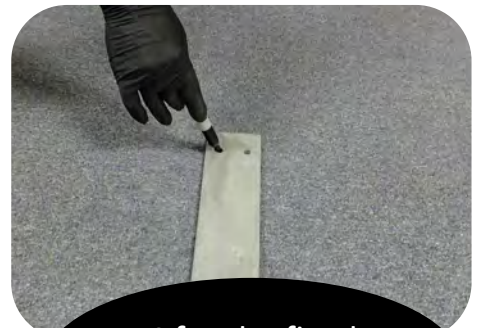
2. Mark the locations where the mounting holes will be drilled in the floor.



4 inner cage holes  
(2 on each end)



2 for the rotating  
arms



4 for the fixed  
center arms

3. The cages have 4 more holes that will need to be marked. Move the top channel out of the way. Stand up the left cage section and align the inner mounting hole over the mark you previously made .



4. Now mark the remaining outer cage hole.  
(repeat the process for the right side cage)



4a. Repeat the process for the remaining cages at the other end of the turnstile.



Again, every floor is different, so be sure to use proper mounting hardware for your application.

5. Now that all the hole locations are marked, drill all of them using a ½" masonry drill bit. Drill to a min depth of 1.500" and a max of 1.75". (We've found that 1.75" works well.)



It is very important to drill the holes precisely. Drilling holes in concrete can be difficult, sometimes the drill will "walk" away from where you start. Take your time and get this step right. You really only get one chance at it.

6. Once all the holes are drilled, drive the concrete anchors into the floor.



To make assembly easier, we have labeled the parts with numbers and “up” arrows. Just match up the corresponding numbers.

7. Lift the left cage section into place over it's respective holes and tighten down with the provided 3/8-16 x 1.0 hex bolts, flat washers & lock washers.



8. Repeat the process for the right cage section.



- 8a. Repeat the process for the remaining cages at the other end of the turnstile.

Remember, the cage sections are not secured at the top yet! Take care not to bump them or you may distort the metal around the floor mounting holes. Once the turnstile is completed, the cages will be secure.



9. Install the fixed center arms using 2, 3/8-16 x 1.0 hex bolts, flat washers & lock washers



9a. Repeat on the other side

Same as the cages, the fixed arms are not secured at the top yet! Take care not to bump them. Once the turnstile is complete, everything will be secure.

10. Install the center bearing floor mounts with the provided 3/8-16 x 1.0 hex bolt, flat washer & lock washer.





11. Using 2 people, lift the top channel onto the cages and the fixed arms.

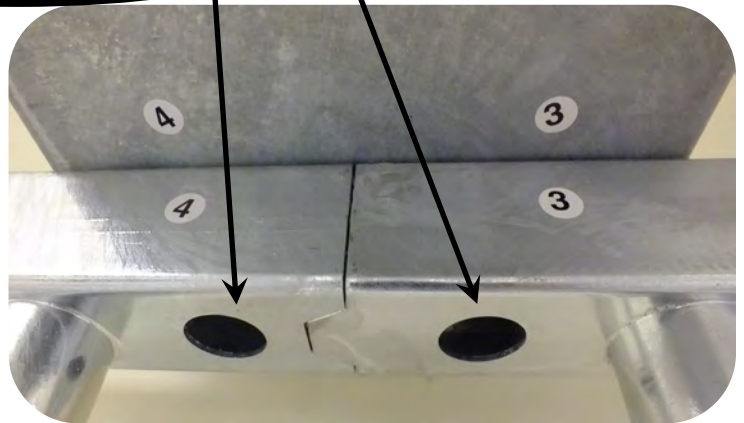


BE CAREFUL, the top channel is heavy and awkward.  
The edges may be sharp!



12. Align all the holes and bolt the top channel down securely using the provided hardware .

4-3/8-16 x 1.00" hex head bolts, flat washer, lock washers and hex nuts for the cage sides .



hint: a shallow 9/16" socket makes the cage bolts much easier to install

4- 3/8-16 x 1.00" hex head bolts, flat washers, lock washers and hex nuts for the fixed arm sides.





13. Install the floor bearings, be sure to grease them!



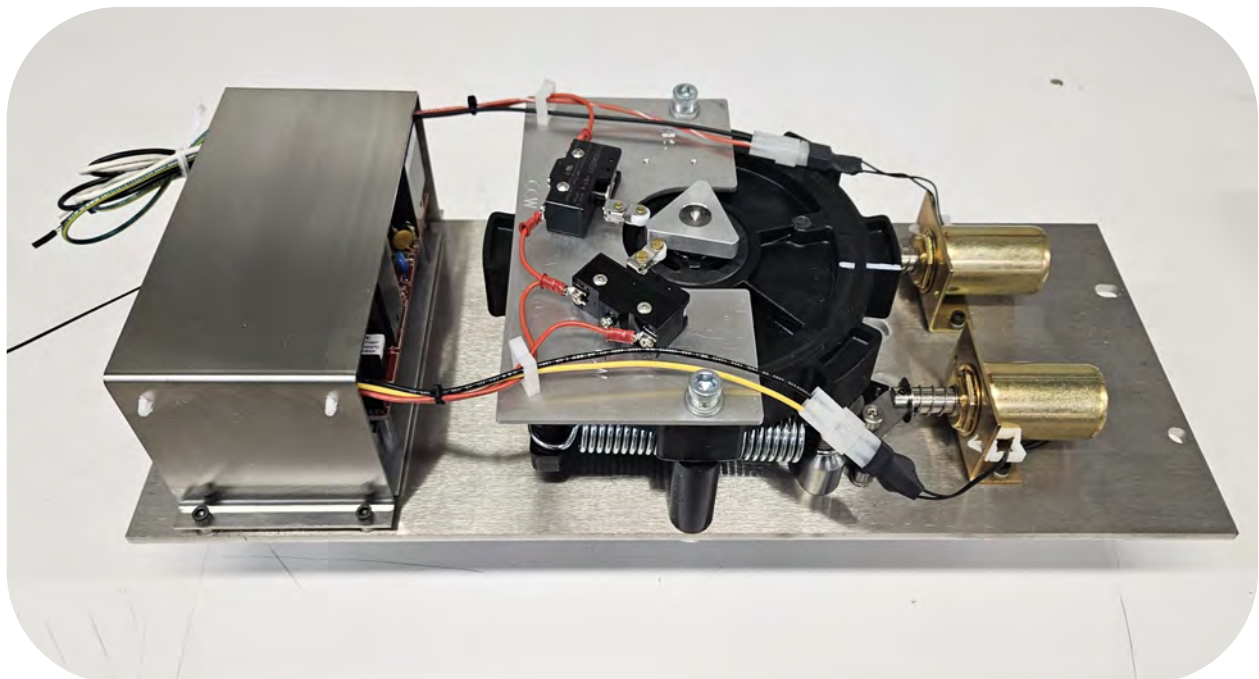
14. With 2 people, lift the rotating arm assembly up and place it on the bearing.



**DON'T LET GO YET!**



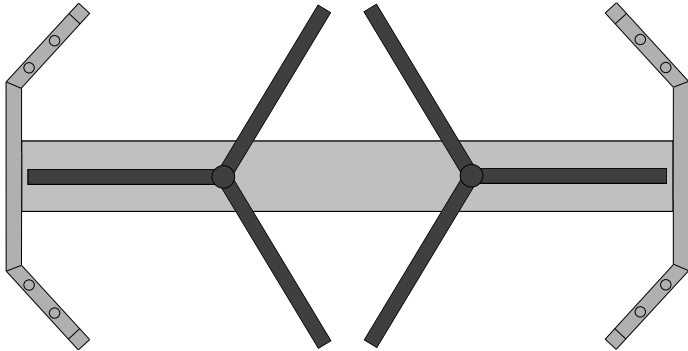
The mechanism assembly is heavy, be careful not to pinch your fingers while installing.



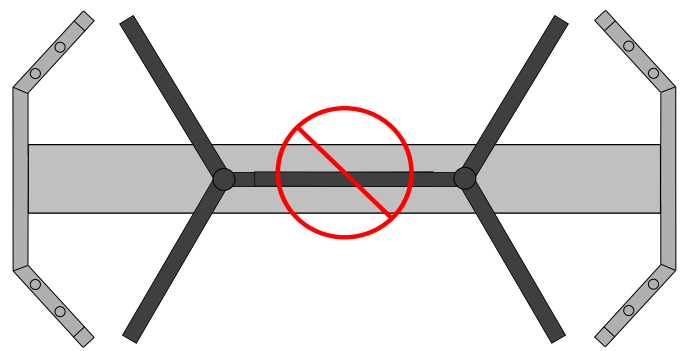
\*electric 2-way A.R.C. mechanism (Automatic Rotational Control)

A ladder is required for the next step, no pun intended. ☺

**CORRECT ARM POSITIONING**



**INCORRECT ARM POSITIONING**

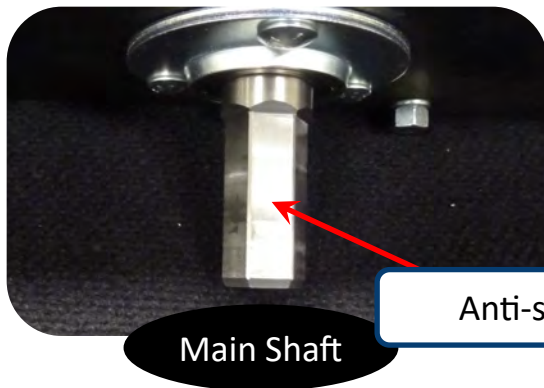
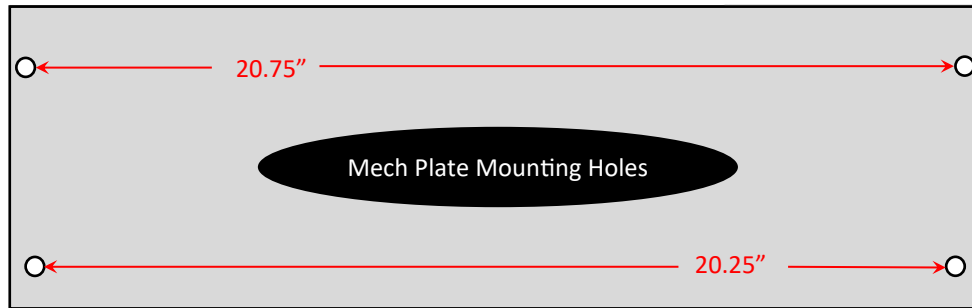


15. Align 1 section of arms on the rotating arm assembly so they point towards the center of the cage section. While one person holds the arms in place, another person can lift the mechanism up into the top channel.



Arms towards cage section

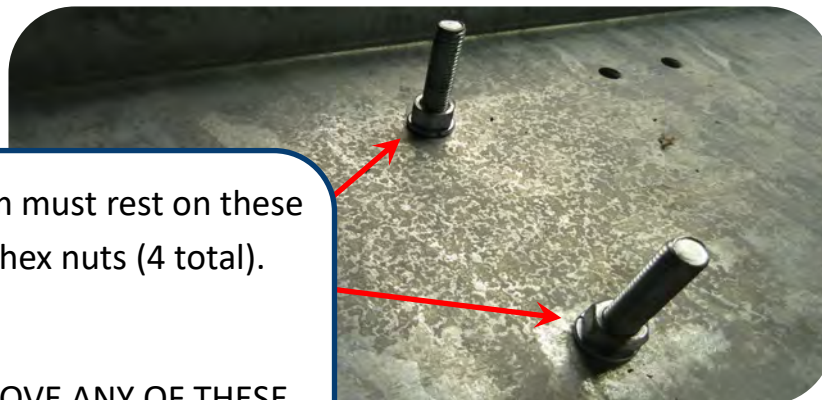
The mechanism assembly can only go in ONE way. Be sure you have it oriented correctly before starting to insert the main shaft into the rotating arms.



Anti-seize

There is a tight tolerance between the main shaft and the hex in the rotating arms. It is **very important** to put a coating of anti-seize on the main shaft before installing into the rotating arm assembly. We have supplied a small packet.

You may have to wiggle the mechanism assembly to get it to fully seat in the rotating arms.

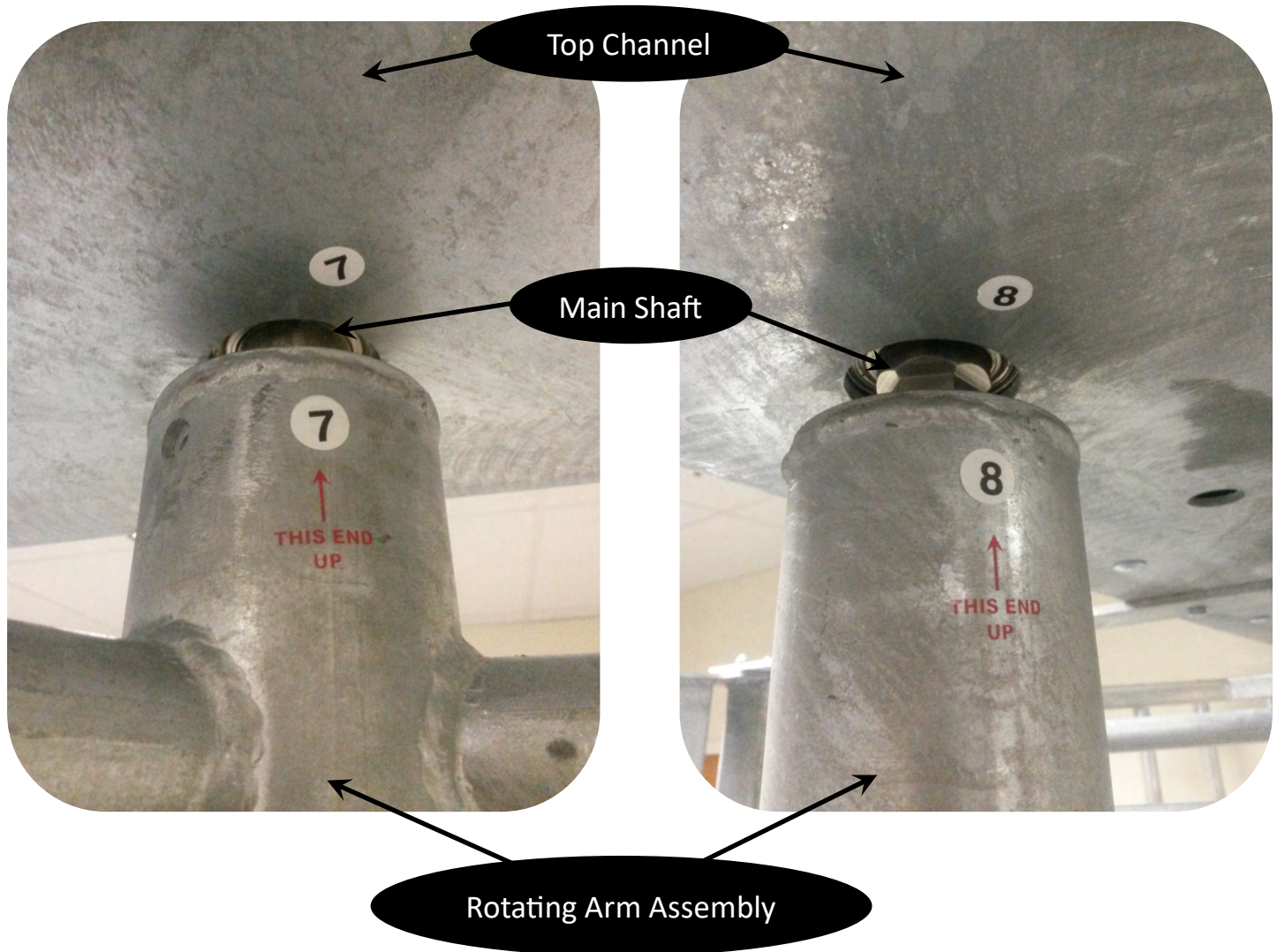


The mechanism must rest on these preinstalled hex nuts (4 total).

DO NOT REMOVE ANY OF THESE HEX NUTS.



15a. Repeat the process for the other rotating arm assembly and mechanism.



16. Once the mechanism assembly has “dropped” into place, tighten it down with supplied 3/8 lock washers and hex nuts.



Be sure to tighten the mech down good.

17. You can let go of the rotating arms now. The turnstile can now be rotated safely. First, move the ladder out of the way, then spin the turnstile in both directions a couple of times to make sure there is no binding or any interference.

If your unit is manual (no electronics), proceed to step 20

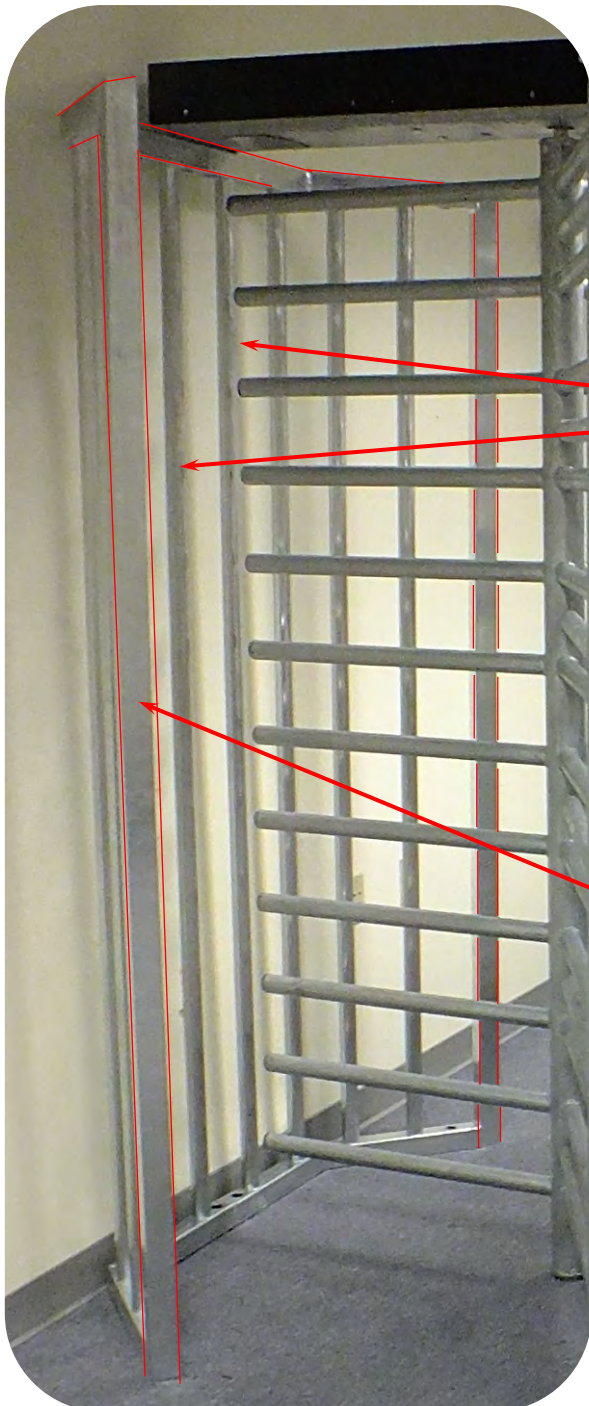
Electric units continue on next page



## POTENTIAL ELECTRICAL HAZARD

Be sure the power circuit is OFF while routing and connecting all wiring!

Every installation is different and there is no “required” way to route your wiring. Just use common sense and make sure no wiring interferes with any moving parts

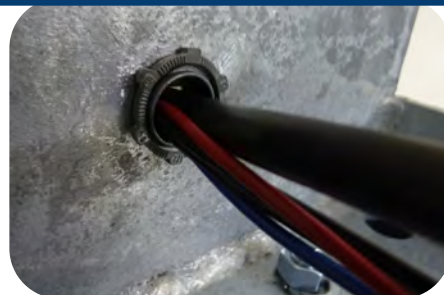


18. If your unit is electric, run all the power and integration wiring up to, and through the top channel.

Do not run low voltage and high voltage in the same conduit. Be sure to bond the turnstile according to local code. The HT431 was designed to accommodate many different wiring configurations. Wiring can be run from the floor up through any of the cage section uprights and into the top channel. A print with the conduit hole locations is on the next page.

Reader plates mount to the outside square tube of the cage. Wiring can be run through the upper square tubing.

Alternately, wiring can be run from a wall directly into either end of the top channel.



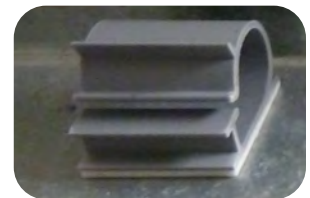
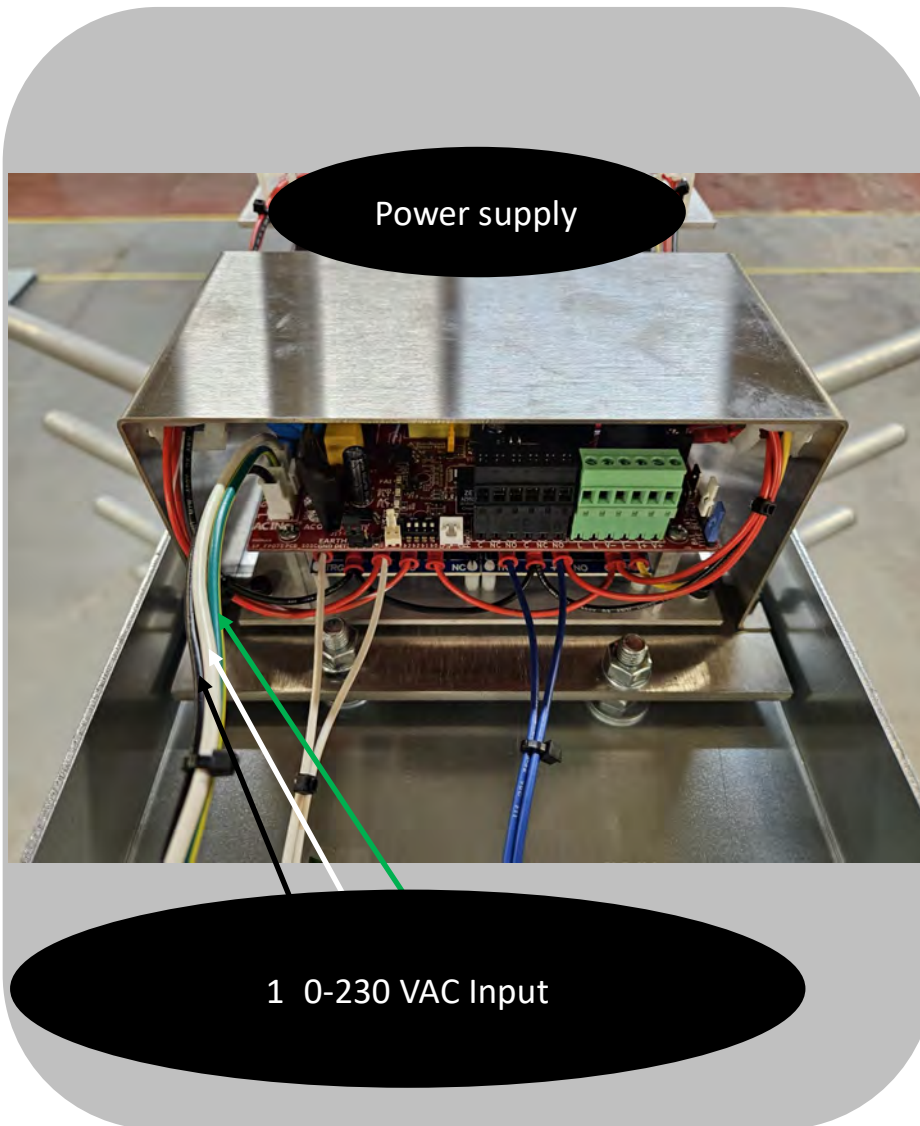


## POTENTIAL ELECTRICAL HAZARD

Be sure the power circuit is OFF while routing and connecting all wiring!



Connect 1 0-230 VAC to the supplied DC power supply mounted to the mechanism plate. We have included some stick-on wire retaining clips to help secure your wiring.



Wire retaining clip

## 431T Full Height Turnstile Access Control Information



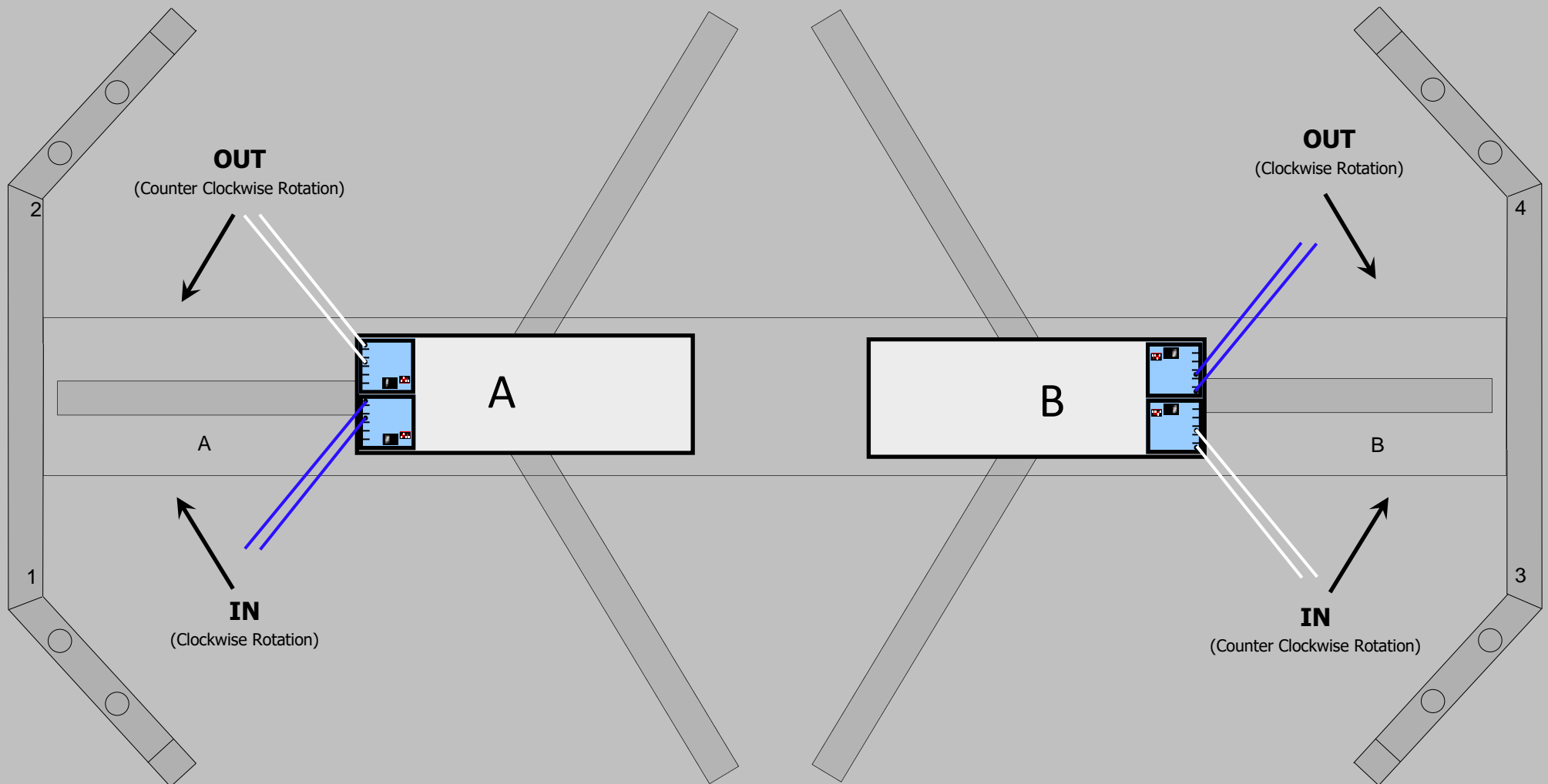
Our turnstile is designed to operate with a dry contact relay closure of no more than one second. Depending on the requested configuration, each mechanism assembly is supplied with 2 blue wires that control the clockwise rotation and/or 2 white wires that control the counter-clockwise rotation (see diagram on next page). These are the wires that connect to the access control relay(s) (not supplied). Each mechanism assembly has its own 24VDC power supply, so it is very important that the access control signal is “dry”.

Any stray voltage will overload the turnstile control board.

Again, Our turnstile requires a momentary “unlock signal” of no more than 1 second. Once it receives the signal, the turnstile unlocks. When a person goes through the turnstile, a rotation switch is triggered, and everything is reset and relocked. If that “unlock signal” is too long, the rotation switch cannot reset the unit because it is still being told to unlock.

Our units also have what is called an “inactivity timer”. This timer is used in the event that someone swipes a card but doesn’t walk through the turnstile. It will relock the unit after a fixed time. This timer is started when the turnstile receives an unlock signal. When the turnstile is rotated, this timer is automatically reset by the rotation switch. This timer is NOT adjustable. Any attempts to change this will cause the turnstile to behave erratically.

## 431 Tandem Full Height Turnstile Access Control Connections





## Full Height Turnstile Electrical Connections

\*\*\*\*\*

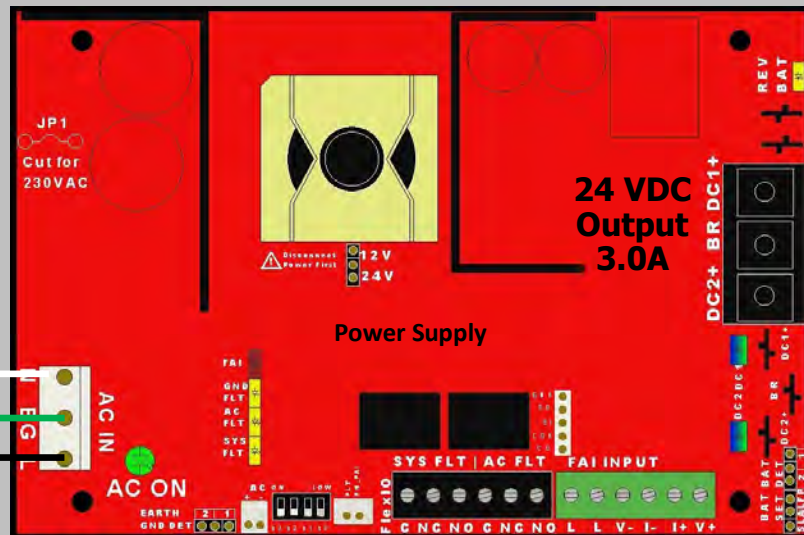
This diagram is meant as a guideline.  
All installations are different and  
should be performed by a qualified  
electrician.

Hayward Turnstiles, Inc. does not  
assume responsibility and disclaims  
liability for damage, loss or expense  
arising from improper use, operation  
or installation of this product.

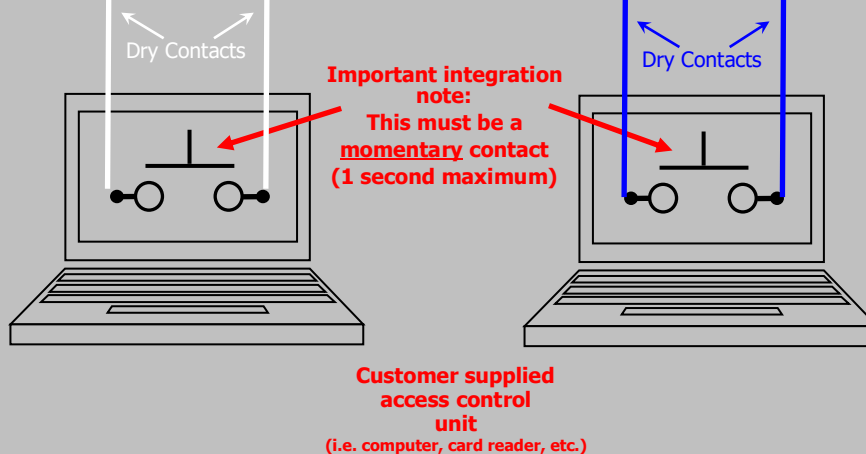
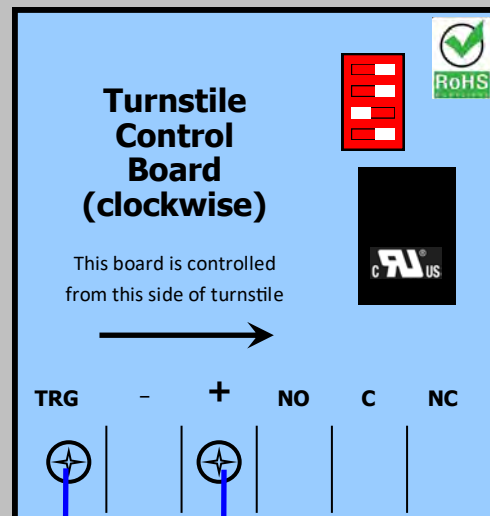
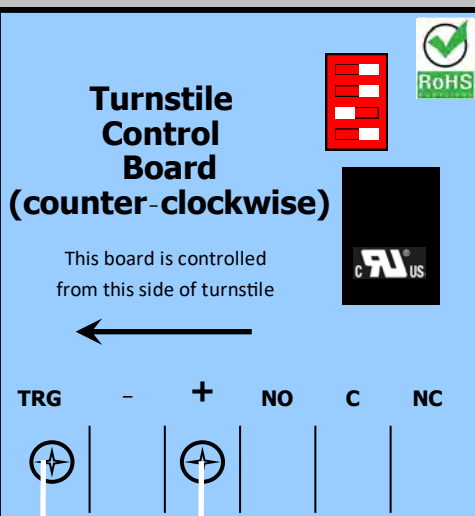
**110-230 VAC**  
**Input**  
**1.6A 50/60Hz**



**WARNING**  
**ELECTRIC SHOCK**  
**HAZARD.**  
This equipment is to be  
serviced by trained  
personnel only.



\*This power supply has advanced features that can be integrated with  
access control systems. A complete manual is included at the end.



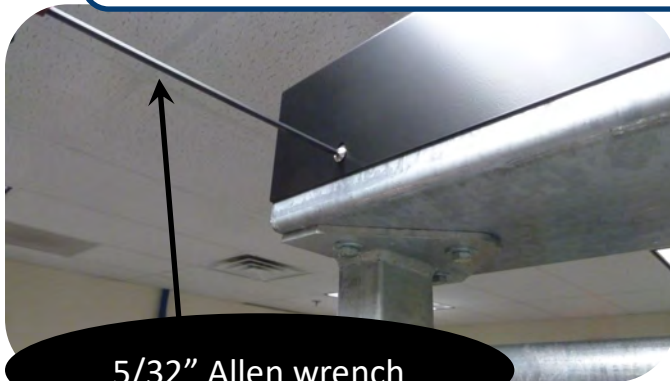
**CAGE SIDE OF TURNSTILE**

19. Once all the connections are made, turn the power on and verify the power supply is energized.

Test the access control “triggers” to make sure the turnstile unlocks when it receives a signal.

20. Install the top cover with the provided ¼-20 bolts Allen bolts. (10 total)

Make sure you didn't leave any tools in the top channel!



5/32" Allen wrench



21. Using the supplied black plastic plugs, plug all exposed holes.

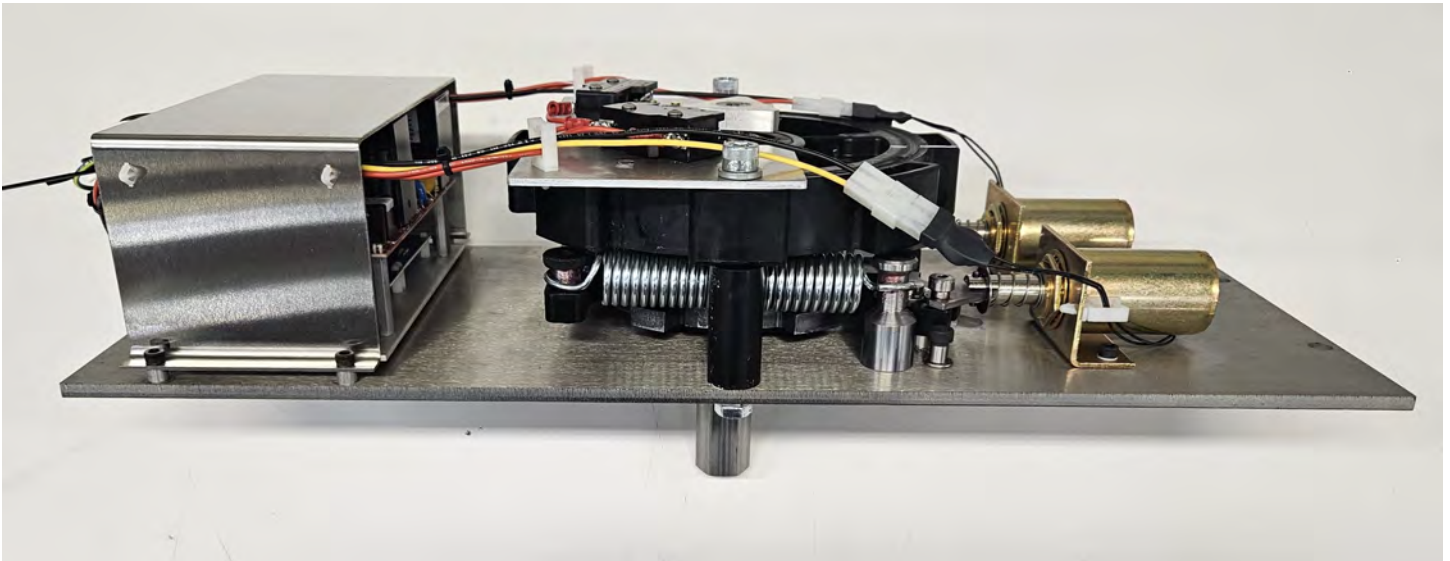
(Don't want any fingers getting stuck 😊)



22. Clean up the area and test the operation a few times to make sure everything is functioning as it should.

You're Done!

# Maintenance



The A.R.C. mechanism was designed to be virtually maintenance free; however we do recommend simple periodic preventative maintenance.

**Mechanism service:**

- Remove the top cover.
- Remove any debris, compressed air works well.
- Inspect main spring for any wear or damage.
- Inspect all pivot points for excessive wear.
- Make sure all pivots, nuts, and bolts are properly secured.
- If necessary, grease outer diameter surface of the main cog.
- If necessary, grease all 3 cog bearings.
- **ON ELECTRIC MODELS, DO NOT LUBRICATE SOLENOID!!**

**If turnstile is electric:**

- Make sure all wiring is secure and there are no signs of damage.
- Make sure switches are properly fastened.
- Check switches for damage.

\*models may vary

**Questions?**

**TURNSTILES.us**

**303-670-1099**

**Or visit:**

**www.TURNSTILES.us**

Thank you and remember to save this manual for future reference.

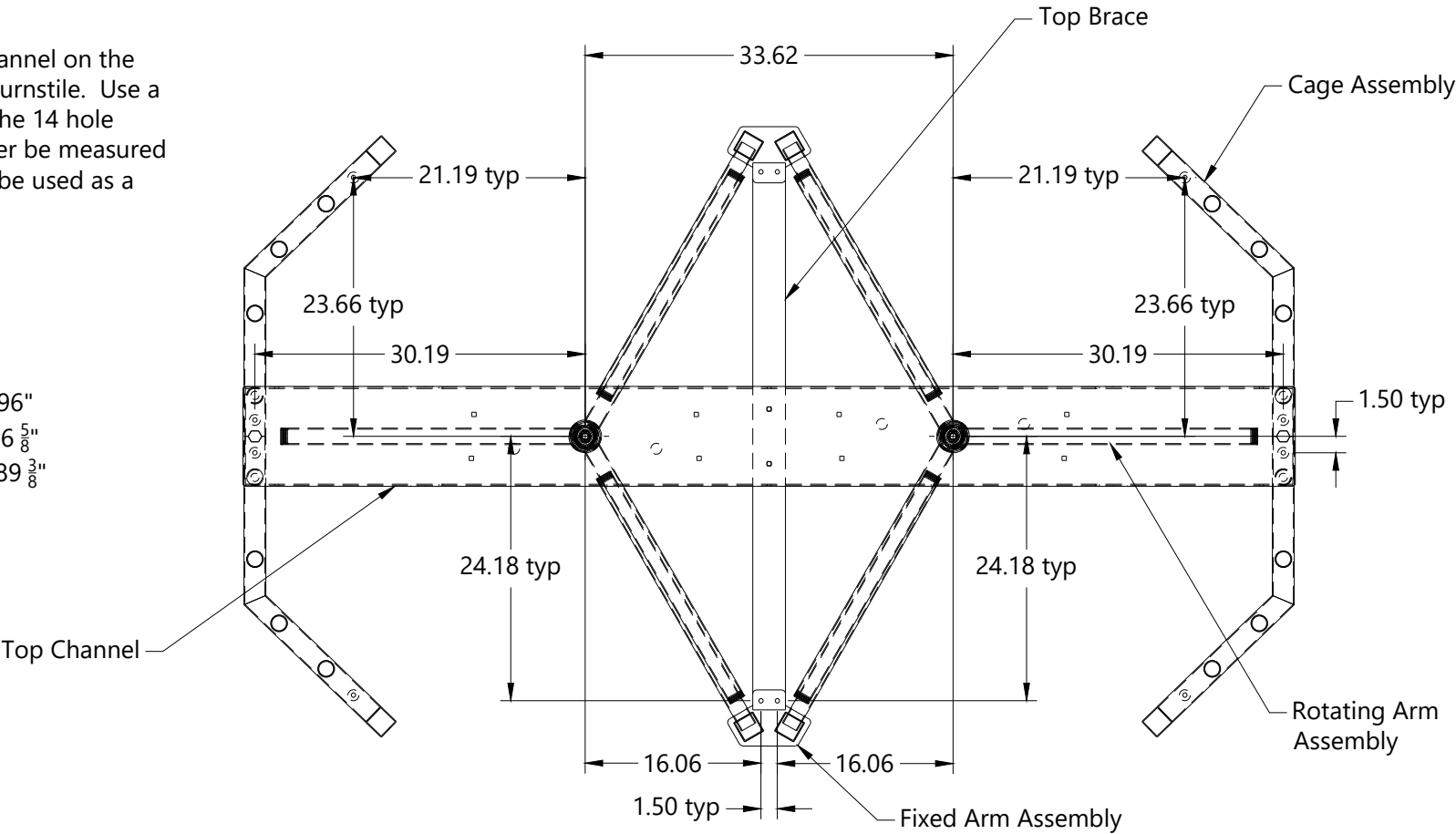


All measurements are referenced from the center of the rotating arm assemblies.

A total of 14 holes need to be drilled in the mounting surface (4 for the fixed center arms, 2 for rotating arm bearings & 8 for the cage assemblies).

HINT: you can lay the top channel on the ground where you want the turnstile. Use a magic marker to trace 10 of the 14 hole locations. The last 4 can either be measured or each cage assemblies can be used as a template.

Overall Length 96"  
Overall Width 56 <sup>5</sup>/<sub>8</sub>"  
Overall Height 89 <sup>3</sup>/<sub>8</sub>"



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Call 303 670 1099 \* Text 303 918 9787  
patrick.mcallister@turnstiles.us

www.TURNSTILES.us

TITLE  
**HT431T Mounting Hole Locations**

SIZE	CODE	DWG NO	REV
A		HT431T Holes	
SCALE	1:16	WEIGHT	SHEET 1/1

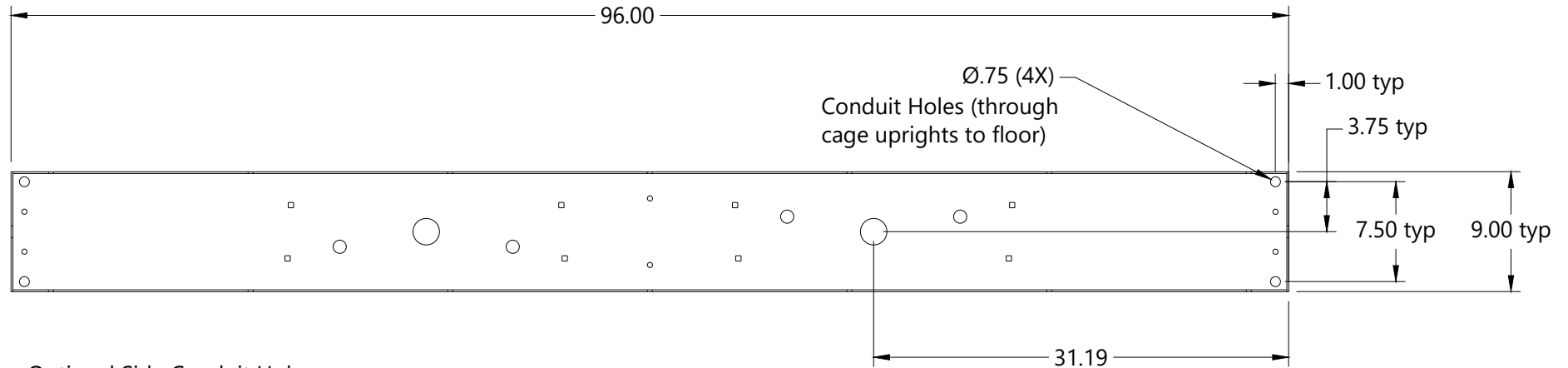
Drawn: MM 1/18/22

Unless otherwise specified, all  
dimensions are in inches.

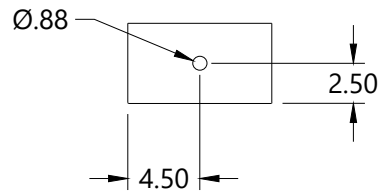
**WIRING NOTES:** Do not run low voltage and high voltage wiring in the same conduit. Be sure to bond the turnstile according to local code. Every installation is different so the HT431T was designed to accommodate many different wiring configurations. Wiring can be run from the floor up through any of the cage section uprights and into the top channel. Additionally, wiring can be run from a wall directly into the top channel at either end.

## REVISIONS

ZONE	REV	DESCRIPTION	DATE	APPROVED
------	-----	-------------	------	----------



Optional Side Conduit Holes  
(each end of channel)



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Call 303 670 1099 \* Text 303 918 9787  
patrick.mcallister@turnstiles.us

www.TURNSTILES.us

TITLE  
**HT431T Tandem Conduit Holes**

Material:

Finish:

Drawn: MM

SIZE

A

CODE

DWG NO

**HT431T Conduit**

REV

SCALE

1:12

WEIGHT

SHEET

1/1

Unless otherwise specified, all  
dimensions are in inches.



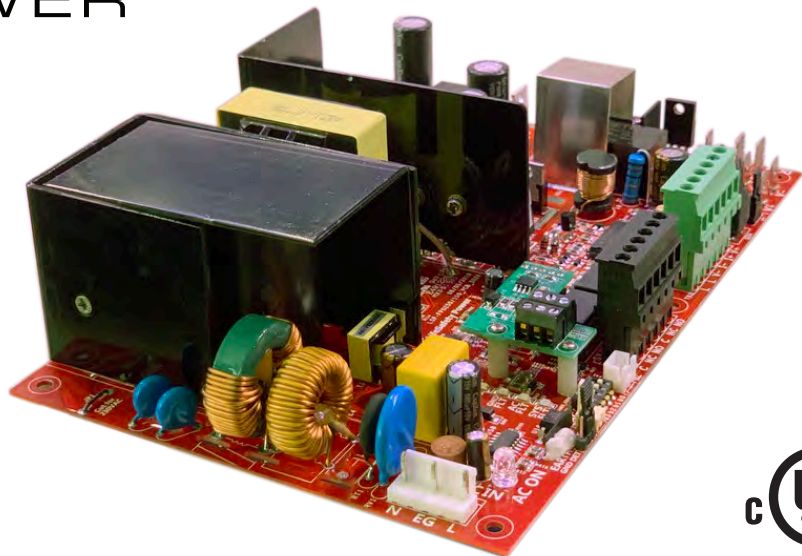
Power is knowledge.™

LifeSafety Power®

# FlexPower Generation 2 DC Power System Installation Manual



**FLEXPOWER®**



P03-40 Rev A20





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# Notes and Warnings

## Symbol Definitions

The following symbols are used throughout this manual:

-  This symbol is intended to alert the installer of shock hazards within the enclosure. Service should only be performed by qualified service personnel
-  This symbol is intended to alert the installer of important information intended to help the installer avoid personal injury or property damage

## Warnings

-  All references to FPO, FPO75, FPO150, or FPO250 in this manual refer to the Generation 2 FPO family.
-  Installation and service should be performed only by qualified service personnel and should conform to all local codes
-  To reduce the risk of electric shock or fire, do not expose this equipment to rain or moisture
-  This equipment shall be installed in a manner which prevents unintentional operation by employees, cleaning personnel, or others working in the premises, by falling objects, customers, building vibration, or similar causes
-  This equipment is not intended for use within the patient care areas of a Health Care Facility
-  Replace fuses only with the same type and rating as indicated in the specifications section of this manual.
-  To prevent impaired operation, ensure that all wiring is routed and secured to prevent accidental open or short circuit conditions
-  The system and any batteries (if used) should be tested at least once per year to ensure proper operation
-  Batteries (if used) should be maintained at an ambient temperature of between 32 and 120 degrees Fahrenheit (0-49 Celsius) or premature loss of battery power could occur
-  For UL294 compliance, the battery set must be sized to provide a minimum of 4 hours standby at full load
-  Non-ProWire enclosure models must not integrate the SY-CLOUDLINK-G2 if compliance with ULC-S319 or ULC 60839-11-1 is required

## Regulatory Information

The equipment discussed within this manual has been tested to the following standards:

- UL294, UL2610
- ULC S318, ULC S319
- CSA C22.2 #107.1, CSA C22.2 #205
- IEC 62368-1:2014, EN55032:2015
- EN61000-3-2:2014, EN6100-3-3:2013
- EN55024:2010 +A1:2015
- CE, UKCA, BIS IS13252(Part1):2010
- NOM 001:2018, RCM, SAA
- CSFM Approved, ROHS 3 Lead Free

## FCC Information

**Note:** This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

## Conventions Used Within this Manual

Positional information (e.g. top, bottom, up, down, left, right, etc.) is referenced with the board or enclosure in the orientation shown in the illustrations in this manual.

## Power Supply Quick Start

This section gives a quick visual guide of installation connections and settings for installers already familiar with the FlexPower line of power supplies. For full information, please read this entire manual before installing.

### QUICK INSTALL - SECTION FINDER

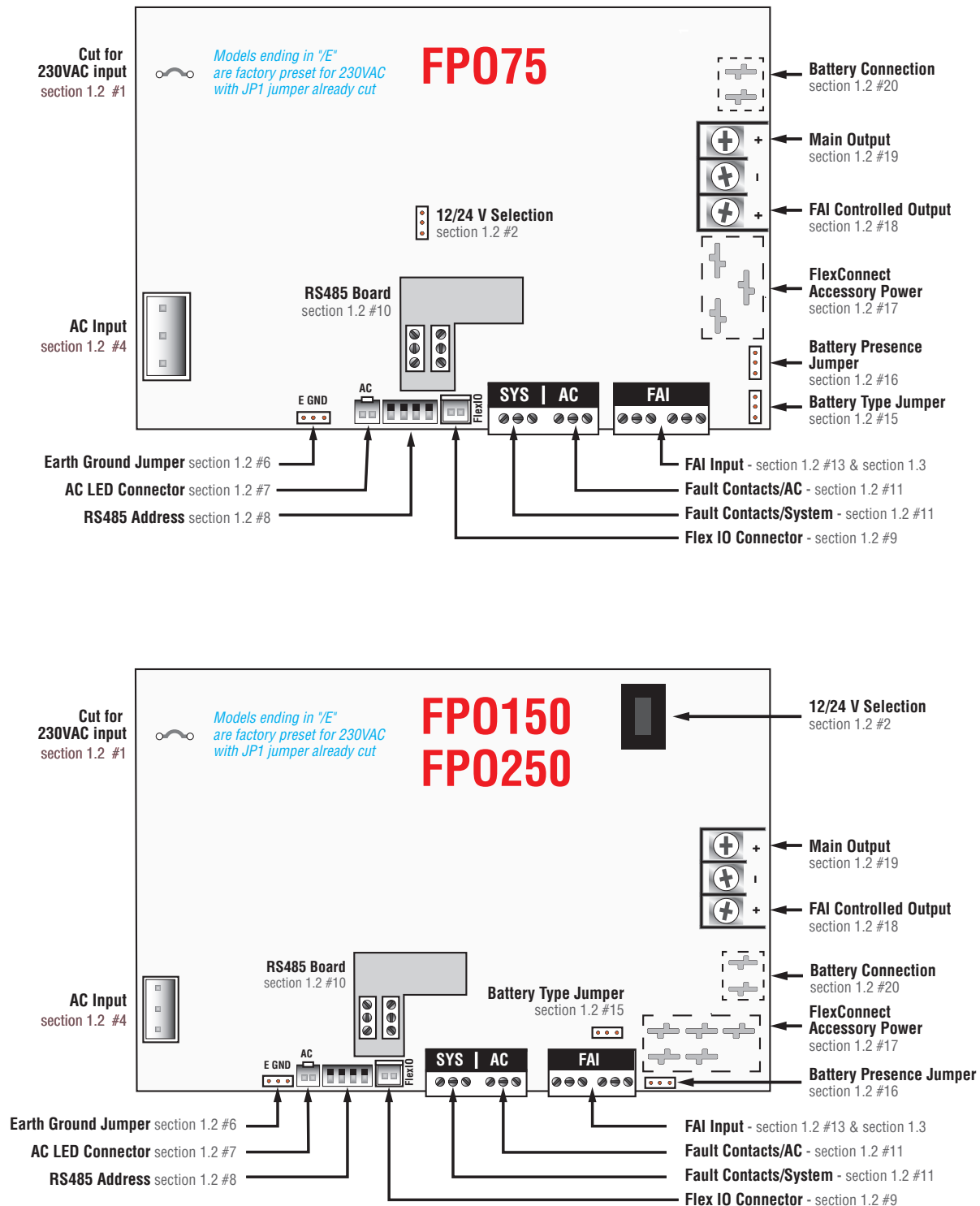


Figure 2





## Section 1 – Installation and Operation

The following pages cover the installation, setup, and basic operation of the FPO series power supplies.

### 1.1 Mounting

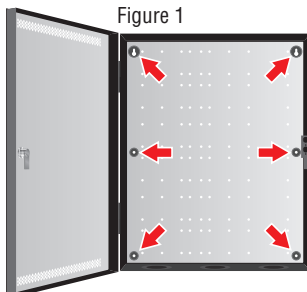


Figure 1

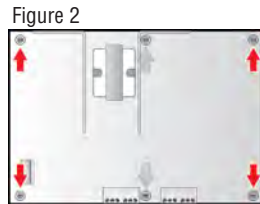


Figure 2

Figure 3



#### Mounting an Enclosure

Use the following procedure when mounting a wall-mount enclosure (figure 1).

1. (Optional) Remove the enclosure's cover.
2. Locate the top keyhole mounting holes in the back of the enclosure.
3. Mark and pre-drill the locations for the keyholes in the mounting surface.
4. Partially install two fasteners appropriate for the surface on which the enclosure is being installed. Leave the heads of the fasteners approximately 1/4" out from the surface. Minimum fastener size should be #10 or larger.
5. Hang the enclosure on the two fasteners and mark the locations of the remaining mounting holes.
6. Remove the enclosure and pre-drill the locations for the remaining mounting holes.
7. Re-hang the enclosure on the top mounting fasteners, start the remaining fasteners and tighten all fasteners.
8. Reinstall the enclosure's cover, if removed in step 1.

⚠ It is the installer's responsibility to determine the appropriate fastening system for use with the surface the enclosure is being mounted to.

⚠ For UL2610 applications, after installation is complete, the installer must install the two supplied 1" long screws to the edge of the enclosure's cover for additional security.

#### Mounting an FPO PS Board to an Enclosure

Use the following procedure when mounting an FPO power supply to a LifeSafety Power enclosure (figure 2).

1. Locate the appropriate mounting holes in the enclosure and snap the four or six standoffs provided into the holes.
2. Align the board mounting holes (mounting hole locations are indicated in the drawing above) with the standoffs and snap the board onto the standoffs. Be sure the board is properly oriented before snapping the board onto the standoffs (Figure 3).
3. When two FPO/FPV boards are installed, the larger shall be located on top (figure 4).

#### Mounting a Sub Assembly to an Enclosure

Third Party sub assemblies will be mounted in one of three methods based on the supplied mounting hardware (figure 5).

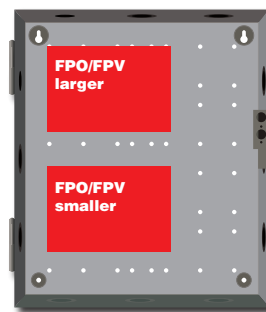


Figure 4

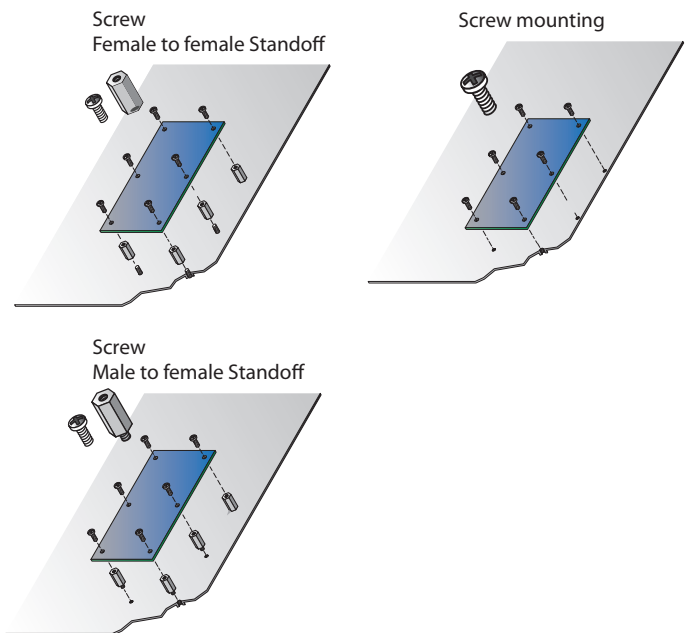
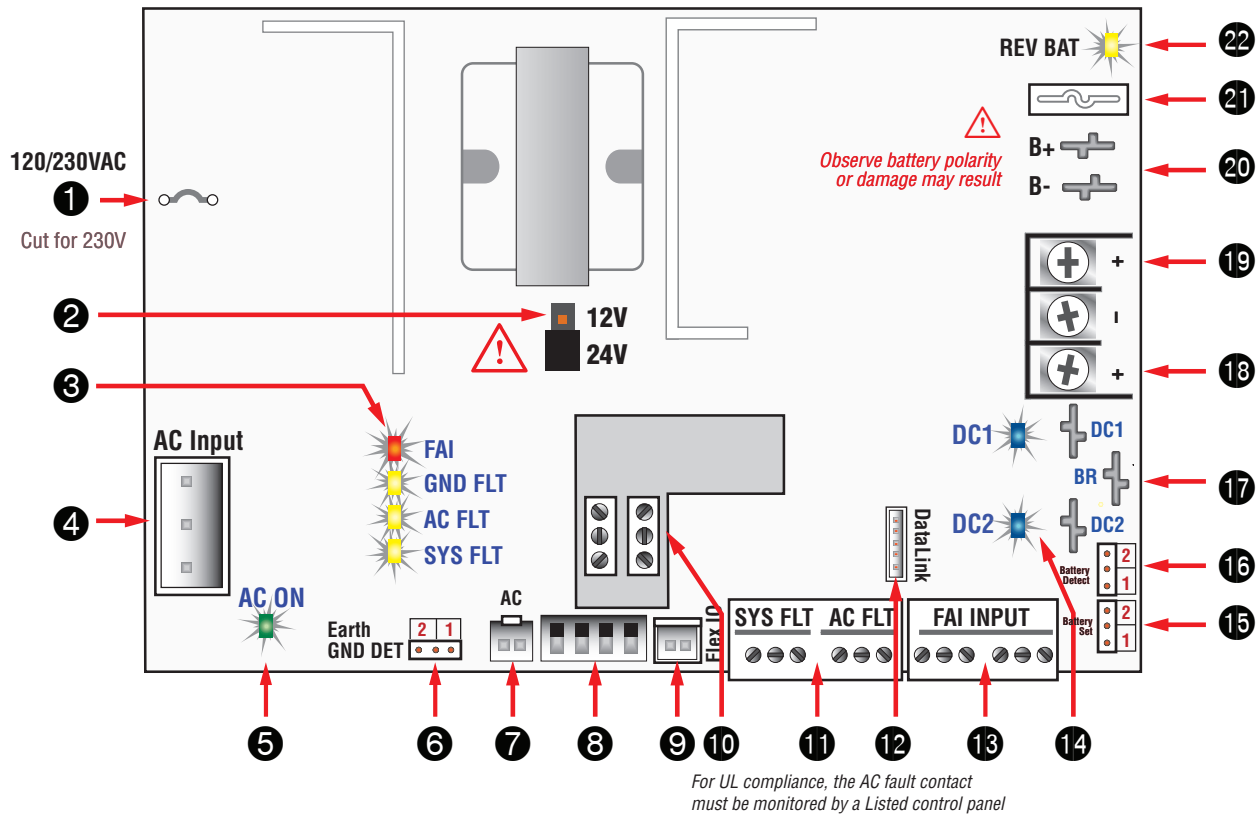
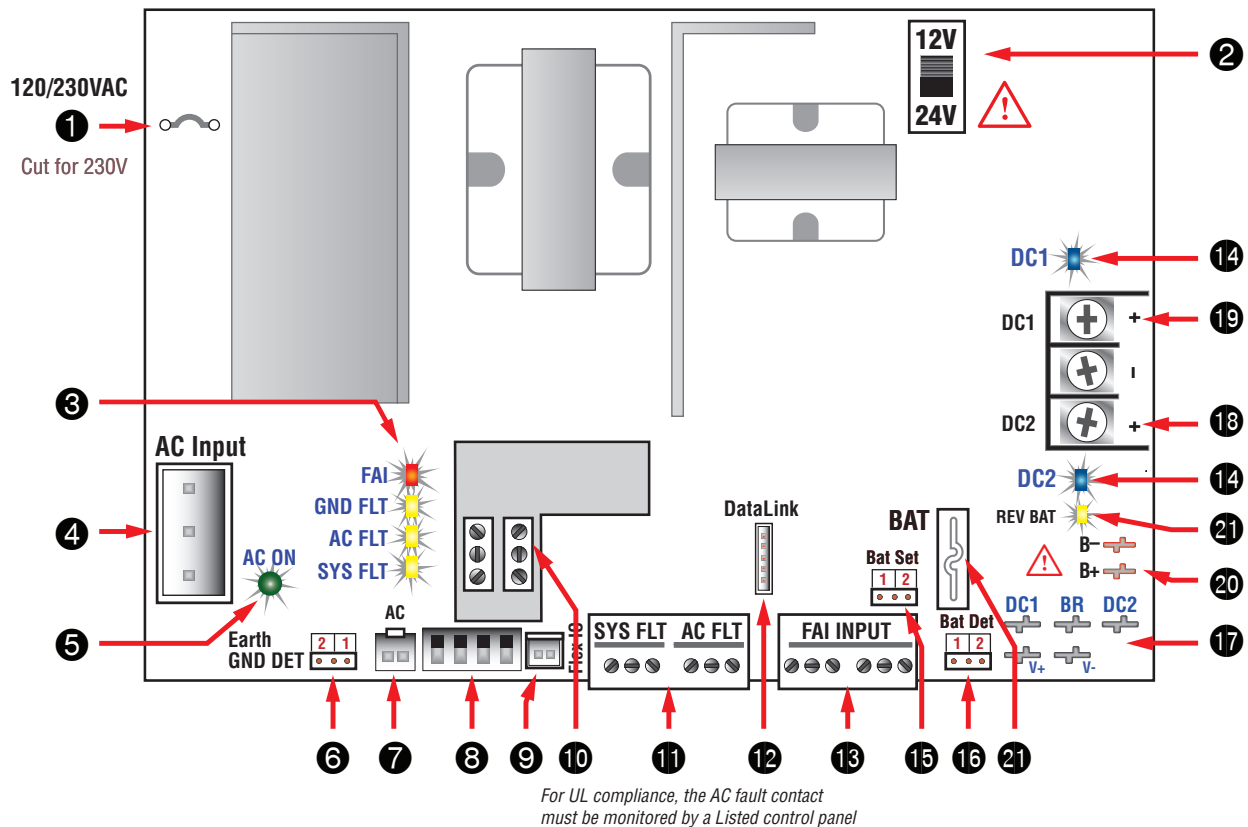


Figure 5

## FP075



## FP0150 / 250





## 1.2 Jumper / LED / Connector Descriptions

### 1 AC Input Voltage Selection (JP1)

This jumper configures the FPO for the AC input voltage to be used.

- Leave jumper INTACT for 120V input
- CUT and remove jumper for 230V input

⚠ Models ending in "E" are preset for 230VAC

⚠ Failure to cut this jumper when using the FPO with a 230VAC input will result in damage to the system and void the warranty.

### 2 Output Voltage Selection (SW1)

This switch or jumper (depending on model) selects the output voltage of the FPO power supply. Voltage settings are labeled on the PC board as follows:

- 12 12VDC nominal out
- 24 24VDC nominal out

⚠ Remove power before changing output voltage or damage to the power supply could occur.

### 3 FAI and Fault LED Status Indicators

#### FAI (D22) – Red

This LED lights when a valid FAI signal is received on the FAI input terminals.

#### GND FLT (D42) – Yellow

This LED lights when an impedance is detected between earth ground and any voltage output or DC common. A Ground Fault will also light the System Fault LED.

#### AC FLT (D43) – Yellow

This LED lights when the AC input voltage is low or missing.

#### SYS FLT (D33) – Yellow

This LED lights when a system trouble is detected by the FPO. Trouble conditions indicated by the SYS FLT LED include:

- Missing Battery (If BAT DET jumper is ON)
- Earth Ground Fault (If EARTH GND DET jumper is ON)
- Battery voltage out of range
- DC output voltage out of range
- Ruptured fuse
- Accessory Board Fault
- Internal Fault

### 4 AC Input (J9)

J9 accepts the provided three-wire connector harness for connection to the AC Line. Cut jumper JP1 if powering the FPO with a 230VAC input. Connections are by wire nut as follows:

#### 120VAC

White – Neutral  
Green – Earth Ground  
Black – Hot

#### 230VAC

White – Phase 2  
Green – Earth Ground  
Black – Phase 1

⚠ Models ending in "E" have the JP1 jumper pre-cut for 230VAC operation only (see #1 above).

### 5 AC ON (D34) – Green

This LED lights when any AC voltage is present on the AC input. It does not indicate that the voltage is sufficient for proper operation of the FPO power supply. See the yellow AC FLT LED for AC voltage out of range indication.

⚠ Always confirm the absence of AC power with a meter before servicing to prevent electric shock.

### 6 Earth Ground Fault Detection (JP2)

The EARTH GND DET jumper enables or disables Earth Ground (EG) fault detection as follows:

- Position 1 Enable EG Fault Detection
- Position 2 Disable EG Fault Detection

Note: Position 2 is the factory default position

Earth Ground fault detection detects continuity between earth ground and any voltage output or DC common on the system.

⚠ Only one component of an entire system should be enabled for earth ground detection to avoid conflicts.

### 7 External AC LED Connection

This connector allows connection of an external AC ON indicator in rack mount applications. Only a LifeSafety Power AC LED should be connected.

### 8 RS485 Address Selection Switches

These switches select the RS-485 address for the FPO when using the RS485 connection. These switches are used only when the optional RS485 board is present (See #10). See section 1.6 for more information on these switches.

### 9 FlexIO Connection

This connector supplies the fault and FAI status between the FPO power supply and any accessory boards in the system. The appropriate cable is supplied with the accessory boards. For more information, see the instruction manual for any accessory boards used in the system.

### 10 RS485 Board (Optional)

This board provides the RS485 terminals for connection to an NLX network board. See the NLX manual for connection information.

### 11 Fault Output Connections (TB3)

These terminals provide the System Fault and AC Fault contact outputs. The terminals are removable and are labeled on the PC board in the non-powered (fault) state. For UL2610 compliance, a tamper switch must be wired in series with the Sys Fault contact output. See Appendix 1 for tamper switch wiring information. These terminals accept AWG14 – AWG22 wire. Fault conditions reported include:

#### AC FLT

- Low AC
- Missing AC
- Internal Fault

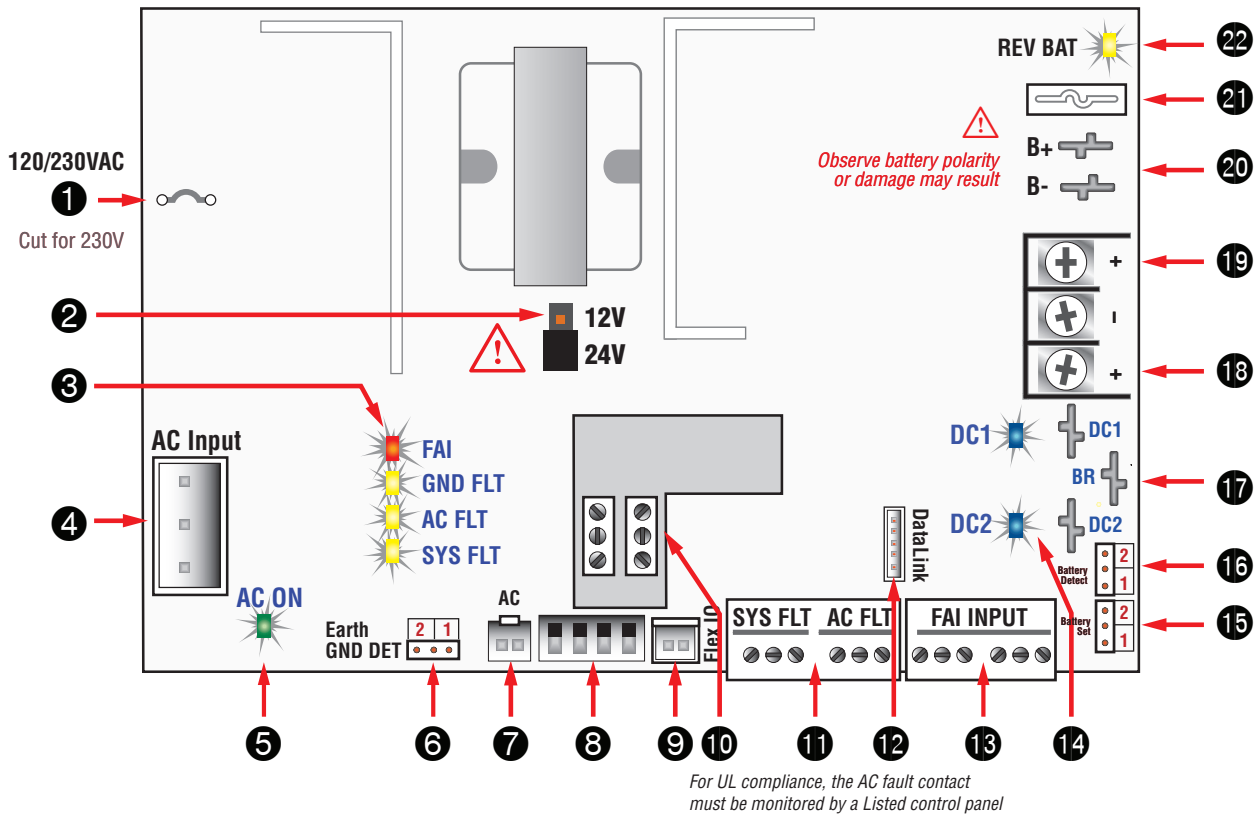
**For UL compliance, the AC fault contact must be monitored by a Listed control panel**

#### SYS FLT

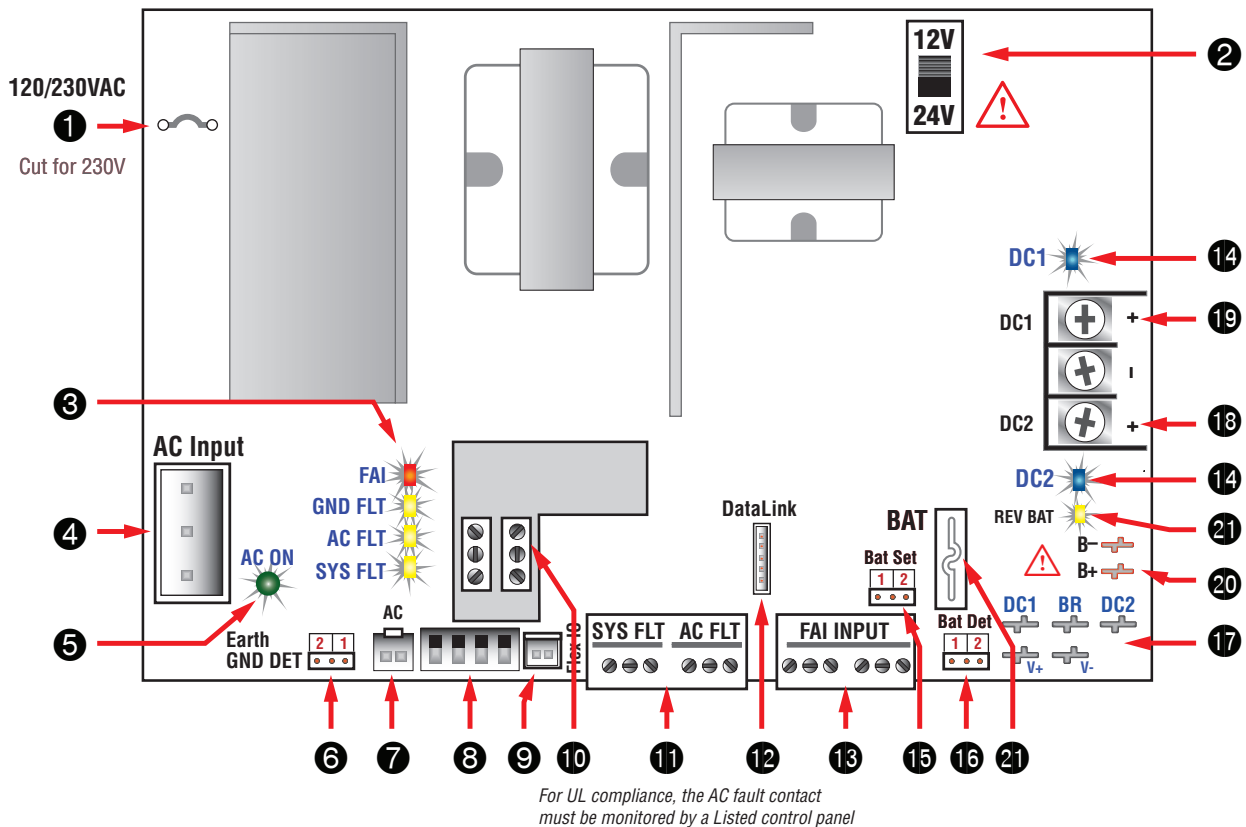
- Missing Battery (If BAT DET jumper is ON)
- Earth Ground Fault (If EARTH GND DET jumper is ON)
- Battery voltage out of range
- DC output voltage out of range
- Ruptured fuse (DC1)
- Accessory Board Fault
- Internal Fault



## FP075



## FP0150 / 250



## 12 DataLink (SPI) Connection

This is the connector for the DataLink connection. It allows optional programming and monitoring of the FPO power supply via an optional NetLink network module.

See the instructions for the Netlink module for more information.

## 13 FAI Input Connections (TB2)

These terminals accept the optional FAI / Access Control input for controlling the DC2 output and any FAI capable accessory boards connected to the FPO power supply. The terminals are removable and are labeled on the PC board. These terminals accept AWG14 – AWG22 wire. See Section 1.3. Connections are as follows:

- **I+ & I- Terminals** These terminals are the input terminals for the FAI Input. The FAI input is activated when a voltage between 9 and 30 volts is applied across these terminals in the correct polarity. **See Section 1.3 - FAI Input Usage for more information.**
- **V+ & V- Terminals** These terminals are a low-current auxiliary voltage output and are typically used with a dry contact or open collector for activating the FAI Input's I+ and I- terminals.
- **L Terminals** Latch Reset contact input. If a latching FAI Input is desired, a normally closed contact is placed across these terminals. When the FAI Input is activated, it will latch in the activated state until this contact is momentarily opened. **If the latching feature is not desired, leave these terminals open.**

## 14 DC1 & DC2 – Blue/Green

These LEDs light when voltage is available on the DC1 and DC2 output terminals. The DC2 LED will extinguish if the output is disabled via the FAI input. This LED is dual color and indicates the output voltage as follows:

- **Blue** The output is set to 24V
- **Green** The output is set to 12V

## 15 Battery Type Selection

This jumper selects the type of battery being used. Select SLA for Sealed Lead Acid/Gel type batteries. Select LFP for Lithium Iron Phosphate batteries.

## 16 Battery Presence Detection (JP3)

The BAT DET jumper enables or disables Battery Presence fault detection as follows:

- **Position 1 (jumper ON)** Enable Battery Detection
- **Position 2 (jumper OFF)** Disable Battery Detection

**⚠ Enabled (Position 1) is the factory default position which will cause a fault to occur if a battery is not connected.**

Battery Presence fault detection indicates a fault when the backup battery is disconnected from the FPO power supply. If no backup battery is being used, this jumper should be placed in position 2.

## 17 FlexConnect Power Connections

Faston connectors for the power connection to any accessory boards to be connected. Pre-terminated power leads are provided with the accessory boards. For more information, see the instruction manual for any accessory boards used in the system. Connections are as follows:

- **DC1** This faston provides a constant voltage output for connection to the accessory boards.
- **BR** The DC Common (DC Ground) for the FPO power supply.

- **DC2** This faston provides an FAI controlled output that operates in conjunction with the DC2 output terminals. This connection is typically only used in single voltage systems with D8 accessory boards. See the sections on the FAI Input and DC2 Output Configuration for more information.

- **V+/V- (FPO150/250 only)** Faston connectors for powering a NetLink network module. Do not power the NetLink module from the DC1 or DC2 buss. See the NetLink module manual for more information.

## 18 DC2 Output (TB1)

The DC2 output may optionally be controlled by the FAI input. The full current of the FPO is available on this terminal. If not using the FAI input, the DC2 output may be used to provide continuous power. See the section on the FAI Input for more information. This terminal accepts AWG12 – AWG18 wire.

**⚠ When powering magnetic loads such as maglocks, door strikes, solenoids, etc, each of these loads must have a reverse protection diode either built-in or external to the device.**

## 19 DC1 Output (TB1)

The main DC output of the FPO power supply. The full current of the FPO is available on this terminal at all times and is unaffected by the FAI input. This terminal accepts AWG12 – AWG18 wire.

**⚠ When powering magnetic loads such as maglocks, door strikes, solenoids, etc, each of these loads must have a reverse protection diode either built-in or external to the device.**

## 20 Battery Connection (BAT+ & BAT-)

Faston connectors for connection of the backup battery set. Pre-terminated battery leads are provided. See the Specifications section for the maximum battery size. If no battery set is to be used, ensure the BAT DET jumper is off to prevent a fault condition from being annunciated. The generation 2 FPO power supply has built-in low battery disconnect to prevent deep discharge of the batteries and to prevent damage to sensitive equipment.

**⚠ Select the proper battery type before connecting a battery set to the FPO power supply. See #15**

**⚠ Note that FPO75 PCB and FPO150-250 PCB's have different battery connection layouts.**

**⚠ An FPO set for a 12V output requires a 12V battery set. An FPO supply set for a 24V output must use a 24V battery set (two 12V batteries in series).**

**⚠ Observe polarity or damage to the system will occur.**

**⚠ It is the installer's responsibility to determine the proper battery size for the installation. See the Specifications section for standby current requirements.**

## 21 Battery Fuse

This fuse is in series with the battery connection. Replace with only the same type and rating.

## 22 REV BAT (D20) – Yellow

This LED lights if the backup battery set is connected in the reverse polarity. The lighting of this LED will also be accompanied by the rupture of the battery fuse (F4) and the lighting of the SYS FLT LED.

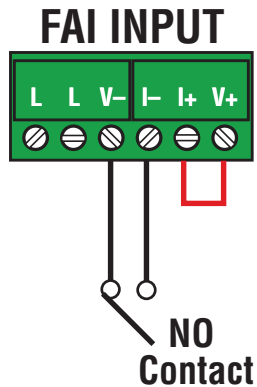
### 1.3 FAI Input Usage

This section provides more detailed information on the connection and usage of the FAI input.

#### Activation with a Normally Open Relay Contact

FAI Activates when the NO contact CLOSSES.

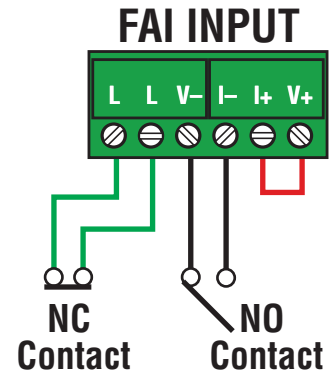
FAI Deactivates when the NO contact OPENS.



#### Latching the FAI Input

Latching of the FAI Input is achieved by placing a NC contact across the two 'L' terminals. The FAI may be activated by any of the methods listed. FAI Deactivates when the input is deactivated AND the NC Latching contact is momentarily OPENED.

Example – NO Contact activation with latching

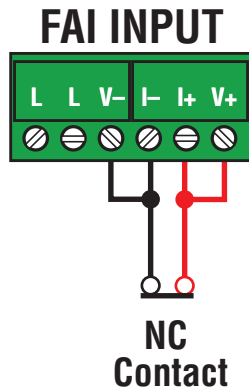


#### Activation with a Normally Closed Relay Contact

FAI Activates when the NC contact OPENS.

FAI Deactivates when the NC contact CLOSSES.

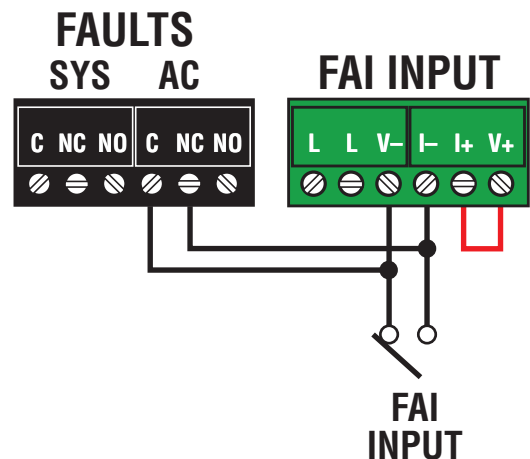
**Note:** FAI with a NC contact cannot be tested by removing the terminal strip, as this will remove the jumper wires from V+ and V- as well. To test, remove one wire going to the NC Contact.



#### FAI Activation with a Normally Open Relay Contact and FPO AC Fault Lock Override

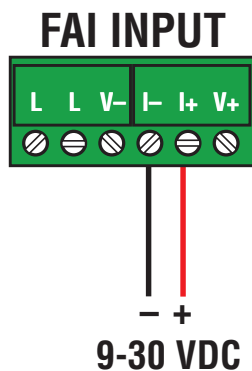
FAI Activates either when the Fire Alarm NO contact CLOSSES, *or* when the AC Fault NC contact CLOSSES

FAI Deactivates either when the Fire Alarm NO contact OPENS, *or* when the FPO AC Fault NC contact OPENS



#### Activation with a Voltage Input

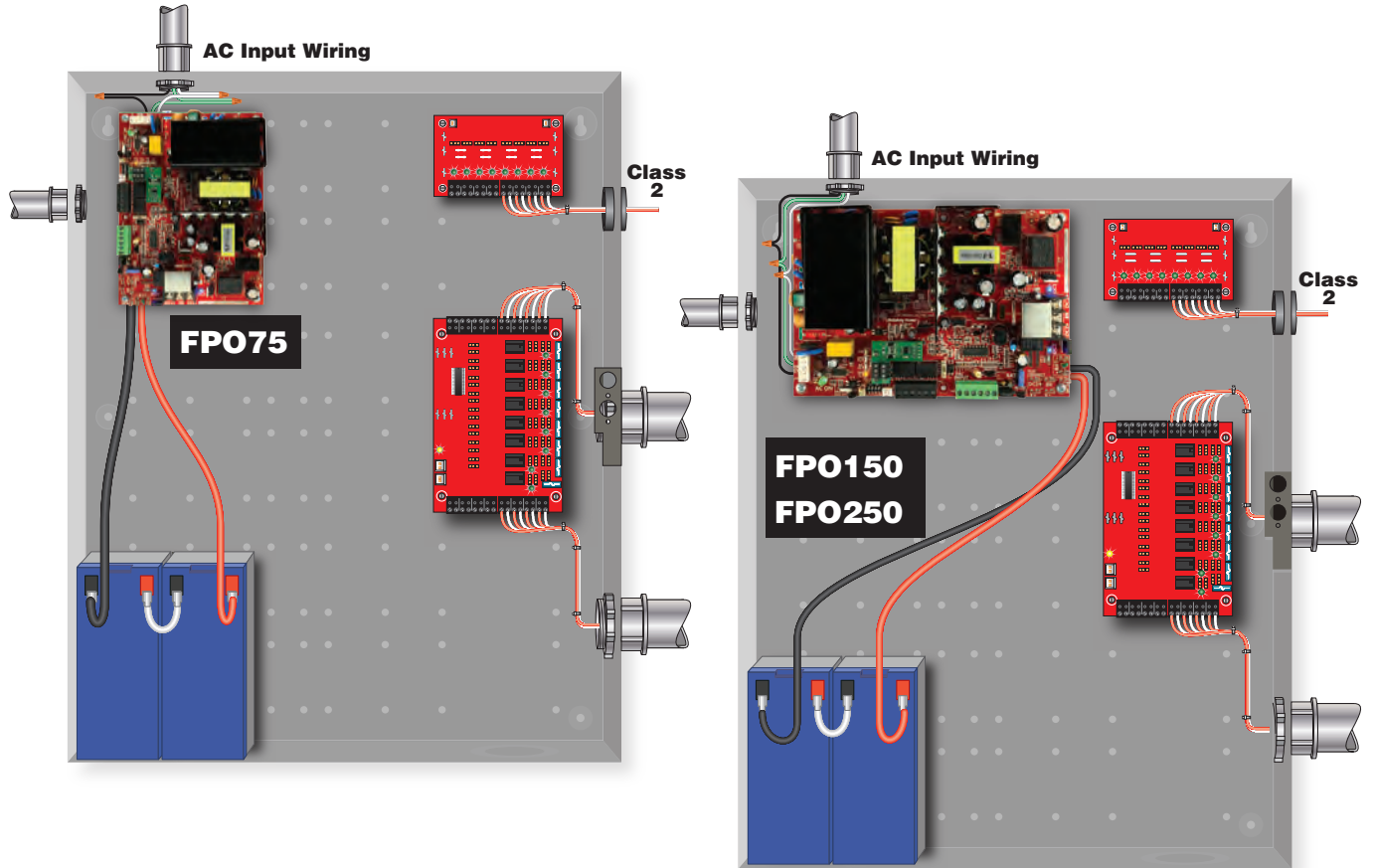
FAI Activates when voltage is APPLIED in the correct polarity. FAI Deactivates when voltage is REMOVED or the polarity of the voltage is REVERSED. Polarity shown in the ACTIVATED state







## 1.4 Typical Installation & Wire Routing



The drawing above shows a typical installation.

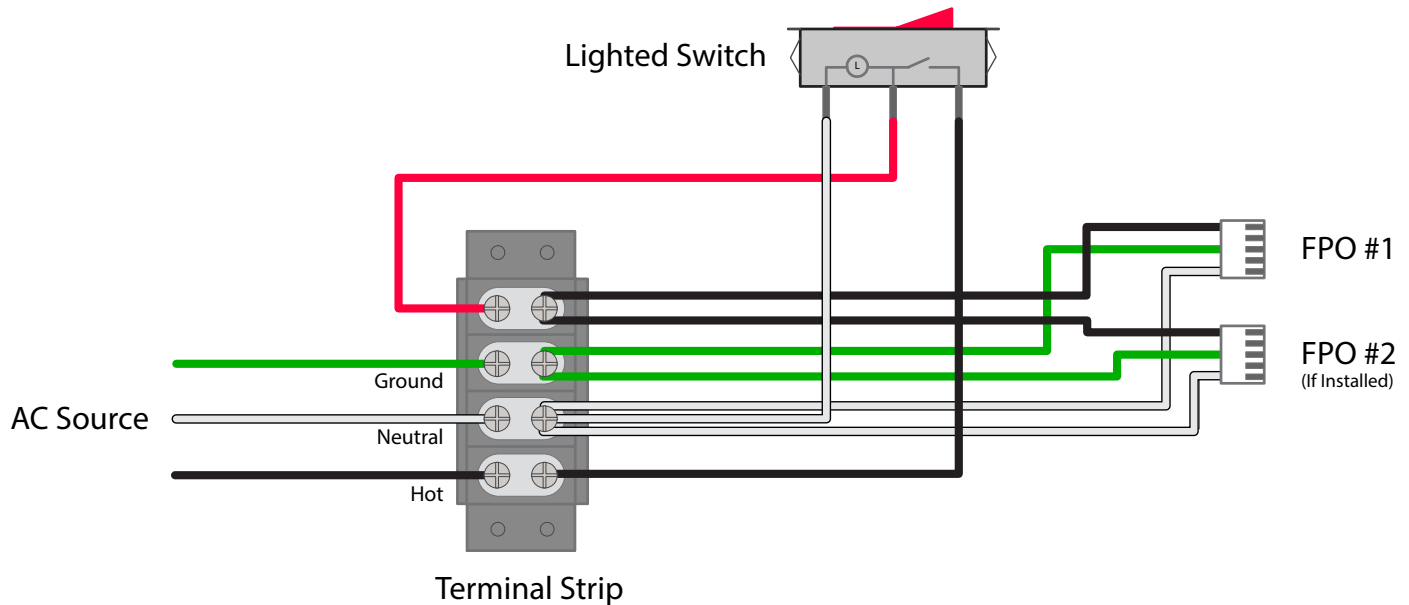
Actual configuration and wire routing will vary based on the components installed in your system.

The following guidelines should be followed for installation:

- Class 2 Power limited wiring must be separated from non-power limited wiring by a minimum of 1/4 inch and must use separate knockouts.
- The installation and all wiring methods shall be in accordance with ANSI/NFPA70 and all local codes.
- The installation and all wiring methods shall be in accordance with ANSI/NFPA70 and all local codes. For ULC S527 compliance, installation and all wiring methods shall be in accordance with the Canadian Electrical Code, C22.1, Part I, Section 32.
- Any wiring passing through knockouts in the bottom or top surfaces of the enclosure must be enclosed in rigid or flexible metal conduit.
- For **Canadian Installations** - For permanently connected equipment, a readily accessible disconnect device shall be incorporated external to the equipment. Output circuits not connected to removable terminal strips shall also utilize a readily accessible disconnect device.

## 1.5 AC Terminal and Switch Wiring

Some LSP enclosures contain a lighted AC disconnect switch and a terminal strip for the primary AC connection. The diagram below shows the connections for the switch and AC Input terminal strip.



## 1.6 RS485 Address Switch Settings

These switches set the RS485 address when using the optional RS485 module on the FPO power supply. The switches set the address as shown in the table below. See the NLX manual for more information.

Address	Switch Settings	Address	Switch Settings
0	On   On   On   On	8	Off   On   On   On
1	On   On   On   Off	9	Off   On   On   Off
2	On   On   Off   On	10	Off   On   Off   On
3	On   On   Off   Off	11	Off   On   Off   Off
4	On   Off   On   On	12	Off   Off   On   On
5	On   Off   On   Off	13	Off   Off   On   Off
6	On   Off   Off   On	14	Off   Off   Off   On
7	On   Off   Off   Off	15	Off   Off   Off   Off



## 1.7 Power-Up and Basic System Verification Checklist

---

1. Ensure proper configuration of all jumpers and switches.
2. Apply AC power to the FPO power supply.
3. Ensure the “AC ON”, “DC1”, and “DC2” LEDs are lit.
4. Verify DC1 output voltage with a meter.
  - a. If set for the 12V nominal setting, the voltage should be approximately 12.5VDC
  - b. If set for the 24V nominal setting, the voltage should be approximately 25.0VDC
5. Connect battery, if required for the installation.
6. Verify that no yellow LEDs are lit on the FPO power supply.
7. If used, activate the FAI input and verify that the red “FAI” LED lights and that the DC2 output powers down. Deactivate the FAI input (and reset the input if configured for latching) and verify that the red FAI LED extinguishes and the DC2 output returns to normal.
8. If the battery presence jumper is enabled, remove one lead from the battery – verify that the yellow “SYS FLT” LED lights. Reconnect the battery and the “SYS FLT” LED should extinguish.
9. If the Earth Ground jumper is enabled, connect a wire from the ground stud on the enclosure to the DC1+ terminal – the “GND FLT” and “SYS FLT” LEDs should light. Remove the wire and the “GND FLT” and “SYS FLT” LEDs should extinguish. Repeat for the DC1- terminal.
10. When a standby battery set is used, remove AC power from the FPO power supply. Verify that the “DC1” LED remains lit and that the “AC FLT” LED lights. Reconnect AC power and verify that the “AC FLT” extinguishes.



## Section 2 – Troubleshooting and Maintenance

### 2.1 Troubleshooting Table

Symptom	Possible Problem	Information / Possible Solution
SYS FLT LED lit and SYS FLT relay indicating a trouble condition	Battery Disconnected	<ul style="list-style-type: none"> <li>Verify that the battery is connected to the FPO. Check all crimp connections on the battery leads</li> <li>Verify that the battery set being used is charged and in good condition</li> <li>If no battery will be used in the installation, remove the BAT DET jumper</li> </ul>
	Earth Ground Fault	<ul style="list-style-type: none"> <li>This fault will be accompanied by the GND FLT LED being lit and will only display if the EARTH GND DET jumper is ON</li> <li>An impedance exists between earth ground and a voltage output or DC Common connection on the FPO power supply, an accessory board, or any connected piece of equipment. Isolate the connection with the impedance by removing wires in groups or one at a time until the fault clears. Note that most accessory board terminal strips are removable</li> <li>Ensure that no other equipment in the system is set to detect earth ground faults (including other FPO power supplies in the system). Enabling earth ground detection on more than one piece of equipment in a system will cause a conflict and may cause one or all pieces of equipment in the system to display an earth ground fault</li> </ul>
	Low Battery Voltage	<ul style="list-style-type: none"> <li>Battery discharged or damaged– Allow the battery to charge or replace the battery</li> </ul>
	High Battery Voltage	<ul style="list-style-type: none"> <li>Incorrect battery set– Ensure the battery set is configured properly for the output voltage setting</li> <li>Problem with battery charging circuit– Contact LifeSafety Power</li> </ul>
	High or Low Output Voltage	<ul style="list-style-type: none"> <li>Measure the output voltage at the DC1 terminals. The voltage should be 12.50V for the 12V setting or 25.00V for the 24V setting (<math>\pm 10\%</math>). Contact LifeSafety Power if the voltage is outside of this range</li> </ul>
	Blown Fuse	<ul style="list-style-type: none"> <li>Check the Battery fuse.</li> <li>Verify the integrity of the output wiring and powered devices before replacing any ruptured fuses. Replace fuses only with the same type and rating</li> </ul>
	Accessory Board Fault	<ul style="list-style-type: none"> <li>Verify that no fault conditions are present on any accessory board or other FPO power supplies in the enclosure. The FlexIO connectors may be disconnected to isolate the source of an accessory fault.</li> </ul>
AC FLT LED lit and AC FLT relay indicating a trouble condition	Internal Problem	<ul style="list-style-type: none"> <li>Contact Lifesafety Power</li> </ul>
	Primary AC Voltage Low or Missing	<ul style="list-style-type: none"> <li>Verify that the AC input voltage is 120V or 230V (<math>\pm 15\%</math>) with a meter. For safety, the green AC ON LED indicates the presence of any AC voltage on the input, but not the integrity of the voltage</li> </ul>
	120/230 Jumper (JP1) Set Incorrectly	<ul style="list-style-type: none"> <li>Verify that JP1 is set correctly– intact for 120V input, cut for 230V input</li> <li>Note: Models ending in "-E" are factory set for 230VAC operation and cannot be changed to 110VAC operation</li> </ul>
No DC1 Output DC1 LED Extinguished	Internal problem	<ul style="list-style-type: none"> <li>Contact LifeSafety Power</li> </ul>
	Power Supply Shut Down	<ul style="list-style-type: none"> <li>Verify DC output voltage, AC power, and backup battery voltage (if used)</li> <li>Check output load integrity and current draw</li> <li>If the FPO detects ten output faults within one minute, the supply will shut down, transfer to battery backup (if available), and generate a fault condition. Cycle AC power to reset the supply after determining the cause of the output fault condition</li> </ul>



## Section 2 – Troubleshooting and Maintenance

### 2.1 Troubleshooting Table (continued)

Symptom	Possible Problem	Information / Possible Solution
No DC2 Output DC2 LSD Extinguished	Output disabled due to FAI	<ul style="list-style-type: none"> <li>The DC2 output is disabled when the FAI input is active. Verify the red FAI LED is extinguished.</li> </ul>
	Power Supply Shut Down	<ul style="list-style-type: none"> <li>Verify DC output voltage, AC power, and backup battery voltage (if used)</li> <li>Check output load integrity and current draw</li> <li>If the FPO detects ten output faults within one minute, the supply will shut down, transfer to battery backup (if available), and generate a fault condition. Cycle AC power to reset the supply after determining the cause of the output fault condition</li> </ul>
REV BAT LED lit	Battery connection reversed	<ul style="list-style-type: none"> <li>Check the polarity of the battery connections at both ends of the battery harness</li> <li>This LED will be accompanied by a blown Battery Fuse</li> </ul>
AC ON LED Extinguished	Missing or extremely low AC Input	<ul style="list-style-type: none"> <li>Verify that the AC input voltage is 120V or 230V (<math>\pm 15\%</math>) with a meter</li> </ul>
	Blown AC Fuse	<ul style="list-style-type: none"> <li>The FPO power supply's AC input fuse is non-replaceable, as rupture of this fuse indicates a major malfunction within the FPO supply. Contact Life-Safety Power</li> </ul>
Missing Battery Not Detected	Improper setting of BAT DETECT Jumper	<ul style="list-style-type: none"> <li>The BAT DETECT jumper must be ON to detect a missing battery</li> </ul>
Earth Ground Fault Not Detected	Improper Setting of EARTH GND DETECT jumper	<ul style="list-style-type: none"> <li>The EARTH GND DETECT jumper must be ON to detect an earth ground fault</li> </ul>
	Another device in the system has earth ground detection enabled	<ul style="list-style-type: none"> <li>Only one device in the system can have earth ground fault detection enabled or conflicts will occur</li> </ul>

### 2.2 Maintenance Instructions

The following are the maintenance instructions for the FPO Series power supply system

- Disconnect AC power prior to servicing
- Verify that there are no fault conditions displayed on any of the yellow fault LEDs as indicated in this instruction manual
- Verify the integrity of all fuses and replace as necessary using the fuse ratings supplied in the Specifications section of this manual
- The battery set (if used) should be checked and replaced if found to be defective or if more than 4 years old (or as required by local code)
- Verify that all output voltages are within range as specified in the Specifications section of this document

## Section 3 – Specifications

### 3.1 Electrical Specifications

#### FPO Power Supplies

Specifications		FPO75	FPO150	FPO250
<b>AC Input</b>	Voltage	120VAC or 230VAC +10%/-15% at 50-60Hz	120VAC or 230VAC +10%/-15% at 50-60Hz	120VAC or 230VAC +10%/-15% at 50-60Hz
	Current	1.6A	2.5A	3.2A
<b>Standby</b>	Current	100mA	100mA	100mA
<b>DC Output at 12V Setting</b>	Voltage	11.3 -12.0V	11.3 -12.0V	11.3 -12.0V
	Max Current	6A*	12A	20A* (18A* if charging battery)
	* For UL2610 applications, FPO250 output current at 12V is derated to 12A max For UL2610 applications, FPO75 is derated to 4.5A at 12V output			
	Ripple	240mV	240mV	240mV
	Regulation	±2%	±2%	±2%
	Efficiency	80% (120VAC 60Hz In, Full Load, No Batt)	86% (120VAC 60Hz In, Full Load, No Batt)	88% (120VAC 60Hz In, Full Load, No Batt)
<b>DC Output at 24V Setting</b>	Voltage	23.5-24.0	23.5-24.0	23.5-24.0
	Max Current	3A	6A	10A**
	** For UL2610 applications, FPO250 output current at 24V is derated to 8A max			
	Ripple	120mV	120mV	120mV
	Regulation	±2%	±2%	±2%
	Efficiency	80% (120VAC 60Hz In, Full Load, No Batt)	86% (120VAC 60Hz In, Full Load, No Batt)	88% (120VAC 60Hz In, Full Load, No Batt)
<b>Battery</b>	Type	Lead Acid, Gel Cell, or Lithium Iron Phosphate	Lead Acid, Gel Cell, or Lithium Iron Phosphate	Lead Acid, Gel Cell, or Lithium Iron Phosphate
	Charge Current	1A (±10%) Maximum (Adjustable via PowerCom Software)	2A (±10%) Maximum (Adjustable via PowerCom Software)	2A (±10%) Maximum (Adjustable via PowerCom Software)
<b>Fuse Ratings</b>	Battery	ATM 7.5A	ATM 15A	ATM 30A
<b>BTU Output</b>	BTU	33	66	109
<b>Fault Setpoints</b>	Low AC	95V (±6%)	95V (±6%)	95V (±6%)
	Earth GND	2000 Ohms	2000 Ohms	2000 Ohms
	Output Voltage	±10% of nominal	±10% of Nominal	±10% of Nominal
	Batt Voltage	±10% of nominal	±10% of Nominal	±10% of Nominal
	Batt Presence	6–15V (12V Setting), 11–29V (24V Setting)	6–15V (12V Setting), 11–29V (24V Setting)	6–15V (12V Setting), 11–29V (24V Setting)
<b>Fault Relay Contacts</b>	AC FLT	1A at 24VDC	1A at 24VDC	1A at 24VDC
	SYS FLT	1A at 24VDC	1A at 24VDC	1A at 24VDC



## Section 3 – Specifications

### 3.2 Temperature Specifications

#### *All Models*

Ambient Temperature	0°C to 49°C (32°F to 120°F)
Ambient Humidity	93% at 32°C (90°F) maximum
Storage Temperature	–30°C to 70°C (–22°F to 158°F)

### 3.3 Mechanical Specifications

Visit [www.lifesafetypower.com](http://www.lifesafetypower.com) for AutoCAD files.

#### *Power Supply Board - FP075*

Size	6.00" L x 4.00" W x 2.00" H (152mm L x 102mm W x 51mm H)
Approximate Weight	0.75 lbs. (0.340 kg)

#### *Power Supply Board - FP0150, FP0250*

Size	8.25" L x 5.50" W x 2.5" H (210mm L x 140mm W x 64mm H)
Approximate Weight	1.38 lbs. (0a.626 kg)

#### *Enclosure E1, E1x*

Size	14" H x 12" W x 4.5" D (356mm H x 305mm W x 114mm D)
Approximate Weight (base cabinet)	8 lbs. (3.5 kg) empty

#### *Enclosure E2, E2x*

Size	20" H x 16" W x 4.5" D (508mm H x 406mm W x 114mm D)
Approximate Weight (base cabinet)	18 lbs. (8.0 kg) empty

#### *Enclosure E5, E5x*

Size	8.63" H x 11" W x 3" D (286mm H x 219mm W x 76mm D)
Approximate Weight (base cabinet)	4 lbs. (2.0 kg) empty

#### *Enclosure E4, E4x*

Size	24" H x 20" W x 6.5" D (508mm H x 508mm W x 165mm D)
Approximate Weight (base cabinet)	21 lbs. (9.5 kg) empty

#### *Enclosure E6x*

Size	30" H x 23" W x 6.5" D (762mm H x 584mm W x 165mm D)
Approximate Weight (base cabinet)	45 lbs. (21.0 kg) empty

#### *Enclosure E8x*

Size	36" H x 30" W x 6.5" D (910mm H x 760mm W x 165mm D)
Approximate Weight (base cabinet)	55 lbs. (25.0 kg) empty



## Section 3 – Specifications

### 3.4 Replacement Parts

<b>Board Kits</b>	<b>Description</b>
FPO250	FPO250 replacement board
FPO150	FPO150 replacement board
FPO75	FPO75 replacement board
B100	DC-DC Convertor (12VDC or adjustable 5 to 18VDC) replacement board
D8	Simple distribution replacement board
D8P	Simple distribution (Class 2) replacement board
F8	FAI controlled distribution replacement board
F8P	FAI controlled distribution (Class 2) replacement board
C4	Four zone power control replacement board
C4P	Four zone power control (Class 2) replacement board
C8	Eight zone power control replacement board
C8P	Eight zone power control (Class 2) replacement board
M8	Eight zone managed power control replacement board
M8P	Eight zone managed power control (Class 2) replacement board
NL4	NetLink network communication board (used in FPO systems)

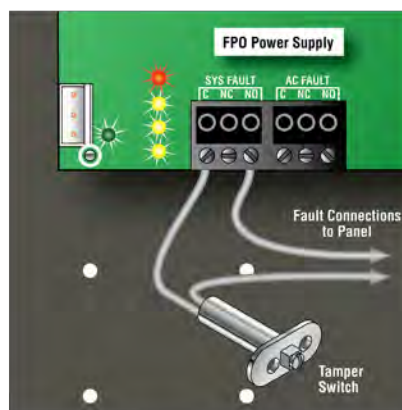
<b>Hardware</b>	<b>Description</b>
AC Cable	AC Input Cable for FPO Power Supply
Battery Cable	Battery Harness – 24"
Module Cable - 12"	Accessory board cable set – 12"
Module Cable - 18"	Accessory board cable set – 18"
Fuse - 3A	ATM-3A Fuse – Bag of 25
Fuse - 5A	ATM-5A Fuse – Bag of 25
Fuse - 7.5A	ATM-7.5A Fuse – Bag of 25
Fuse - 10A	ATM-10A Fuse – Bag of 25
Fuse - 15A	ATM-15A Fuse – Bag of 25
Fuse - 30A	ATM-30A Fuse – Bag of 25
Standoffs	Nylon Standoffs – Bag of 25
Camlock Set	Key and Lock fits LSP "E" enclosure
Tamper Switch	Tamper Switch for LSP "E" enclosure



## Appendix 1 – Tamper Switch Wiring


All FlexPower DC systems with an enclosure include a normally closed tamper switch for monitoring by the host panel. The tamper switch can either be brought into a dedicated input in the panel (see the panel's instructions), to the Event 1 input of a Netlink Network Module (See the Netlink's Instruction Manual), or the tamper switch may be series connected into the System Fault relay in the FPO supply as shown in the illustration.

Any UL2610 installation must use the tamper switch to indicate the opening or removal of the front door of the enclosure.



## Appendix 2 – User Certificate

Below is a certificate required for UL2610 installations, to be cut out, framed and hung adjacent to the FlexPower Power Supply system after installation. It contains the required battery information, as specified in UL2610.



*Specifications for the following model numbers:*

**FP0150 / FP0250**

Maximum Charging Current:	2A
Maximum Battery Capacity:	80AH
Battery Type:	Sealed Lead Acid or Gel Cell

*Specifications for the following model numbers:*

**FP075**

Maximum Charging Current:	1A
Maximum Battery Capacity:	40AH
Battery Type:	Sealed Lead Acid or Gel Cell

## Appendix 3 – UL Compliance Verification Sheet

### General - All Applications:

1. The power supply must be installed within the protected area.
2. The LifeSafety Model EB-80 must be used to house the required battery(ies) when capacities of 40 to 80Ah are required. The EB-80 shall be mounted within 6ft of the power supply and the wiring enclosed in conduit.
3. Connections to the SYS FLT, AC FLT, and FAI inputs shall be completed within the same room, not exceeding a length of 3m.
4. Do not connect equipment to an AC power source that is controlled by a switch.
5. Trouble contacts shall be monitored by a listed alarm system.

The following sections cover specific requirements based on application:

### UL2610, Proprietary Burglar Alarm Applications

1. The LifeSafety Model TS-20 tamper switch must be employed to monitor the power supply and EB-80 enclosures.
2. To achieve four hours of standby at full load current, 80Ah min. battery capacity is required for the FPO150 or FPO250. To achieve four hours of standby at full load current, 40Ah min. battery capacity is required for the FPO75.

### S319, Access Control Applications

The LifeSafety Model TS-20 tamper switch must be employed to monitor the power supply and EB-80 enclosures.

### For UL Compliance

Any locking device shall be configured for fail safe operation upon occurrence of an alarm as shown in Activation with a Normally Closed Relay Contact in Sec. 1.3, FAI Input Usage.

## LIMITED WARRANTY

Hayward Turnstiles, Inc. warrants its products to be free of defects in material and workmanship for a period of (1) year from the date of shipment. This warranty applies only to the original product which was shipped to the original customer. Any damaged sustained to the product during shipping shall not be covered under this warranty. All orders must be inspected, in their entirety, for visible and concealed shipping damage within (5) business days of receipt. Hayward Turnstiles, Inc. is not responsible for shipping damage after this time. Hayward Turnstiles, Inc. must be notified immediately upon discovery of damage. Unreported damage may also void the manufacturer warranty.

Hayward Turnstiles has no control over the installation, attachment and/or the connections made to electrical and electronic part(s) within the turnstile, therefore no warranty or implied warranty on electrical part(s) or components shall be deemed as part of the original warranty herein. This warranty does not cover the repair or replacement of any part(s) or materials which are damaged or altered due to customer misuse or abuse. Alterations, additions, or modifications to the mechanical components, electrical systems, or cabinet will, void the warranty.

The purchaser shall contact the Customer Service and request a Return Authorization Number prior to the return of any items, as the company may waive the requirement of return.

Hayward Turnstiles, Inc. will repair or replace, at its option, part(s) covered under warranty that have been preauthorized and returned to our factory at 39 N. Plains Industrial Rd, Wallingford, CT 06492. Hayward Turnstiles will inspect the returned product and reserves the right to determine whether a defect exists for which it is responsible under this warranty. If part is determined to be defective or faulty due to our workmanship or material, it will be repaired, or at our option, replaced at no cost for such part. The purchaser shall bear the cost of returning the part(s) to the factory and/or any labor cost incurred for removal and/or installation. Subsequent warrants to replaced or repaired part(s) shall extend no longer than ninety (90) days after such replacement or repair.

This warranty does not cover labor costs to install or reinstall the replaced part(s) or other costs or expenses that might be incurred as a result of such defective part(s). Nor does it cover loss of time, inconvenience, loss of use, incidental or consequential damages arising from defective parts, or delays of construction costs for late or damaged delivery, or other matters not specifically included.

### Implied Warranties:

There are no implied warranties, including warranties of merchantability and fitness for a particular purpose. There are no other warranties or responsibilities, expressed or implied, due to the wide variety of conditions for which the product may be purchased, installed, or used. No individual, integrator, or contractor is sanctioned to create any liabilities or obligations on the part of Hayward Turnstiles, Inc. not mentioned herein or implied or imposed by law. To the extent permitted by law, and subject to the specification warranty, this warranty is exclusive, in lieu of and excludes all other warranties, expressed or implied, including merchantability and fitness for a particular purpose. To the extent permitted by law, Hayward Turnstiles, Inc. liability is limited solely and exclusively to repair or replacement as set forth herein and does not include any liability whatsoever for any incidental or other damages of any kind whatsoever, whether a claim is based upon a theory of contract, negligence or tort.

### Governing Law:

The Hayward Turnstiles one (1) year limited warranty shall be governed by the laws of the State of Connecticut. Any claim or conflict arising out of this warranty or the purchase of goods from Hayward Turnstiles, Inc. shall be submitted for settlement to the American Arbitration Association. Failure to submit any claim or conflict arising out of this warranty to arbitration, shall be a complete defense to the institution or further prosecution of any other legal proceeding.