



OWNERS MANUAL AND INSTALLATION INSTRUCTIONS

*ADAMS RITE POWER SUPPLY*

***PS-LR***

**Document Part Number**

**80-0180-247 Rev.(H)**

**ECN 11117**

**2 - October - 2007**

# ADAMS RITE POWER SUPPLY PART NUMBER PS-LR

## Table of Contents

<b>1.</b>	<b><i>CONFIGURE THE ADAMS RITE POWER SUPPLY</i></b>	<b>3</b>
1.1.	STEP-1 – SET PRIMARY VOLTAGE	3
1.2.	STEP 2 – SET OPERATION MODE	4
1.3.	STEP 3 – SET HOLD TIMES	4
1.4.	STEP 4 – CONNECT FIRE ALARM	5
1.5.	STEP 5 – WIRE INPUT CONTROL SWITCHES	5
1.6.	STEP 6 – WIRE EXIT DEVICES	5
1.7.	STEP 7 – MOUNT THE ADAMS RITE POWER SUPPLY	6
1.8.	STEP 8 – INSTALL BACKUP BATTERIES (OPTIONAL)	6
1.9.	STEP 9 – PS-LR WIRING DIAGRAM	7
1.10.	STEP 10 – BASICDOOR WIRING DIAGRAM	8
1.11.	STEP 11 – WIRE AUTOMATIC DOOR INTERFACE (OPTIONAL)	9
1.12.	STEP 12 – WIRING PRIMARY POWER CONNECTION	9
<b>2.</b>	<b><i>DESCRIPTIONS, PART NUMBERS AND MEASUREMENTS</i></b>	<b>10</b>
2.1.	DESCRIPTIONS AND PART NUMBERS	10
2.2.	SOLENOID VALUE READING	10
2.3.	PS-LR VALUE READINGS	10
2.4.	LED CONFIGURATION	10
2.5.	SW1 DIP SWITCH SETTINGS	10
<b>3.</b>	<b><i>FREQUENTLY ASKED QUESTIONS / TROUBLESHOOTING</i></b>	<b>11</b>
3.1.	EXIT DEVICE WON'T UNLOCK WHEN I USE MY ACCESS CONTROL	11
3.2.	I HAVE BLOWN FUSES IN MY PS-LR	11
3.3.	THE EXIT DEVICE INTERMITTENTLY LOCKS AND UNLOCKS	11
3.4.	NO POWER TO SOLENOID	11
3.5.	NEITHER EXIT DEVICE RETRACTS AFTER CONTROL SWITCH IS ACTIVATED	12
3.6.	DEVICES RETRACT EVEN WHEN THE CONTROL SWITCH HAS NOT BEEN ACTIVATED	12
3.7.	BUZZING SOUND IS COMING FROM THE INSIDE OF THE EXIT DEVICE	<b>12</b>
<b>4.</b>	<b><i>APPENDIX</i></b>	<b>13</b>
4.1.	APPROVED REPLACEMENT FUSES	13
4.2.	CONNECTOR SIGNAL DESCRIPTIONS	13
4.3.	4.2.1 CONNECTOR J1 - BATTERY BACKUP	14
	4.2.2 CONNECTOR J3 - FIELD WIRING	14
	4.2.3 CONNECTOR J4 - MAIN POWER	14

# ADAMS RITE POWER SUPPLY PART NUMBER PS-LR

ADAMS RITE MANUFACTURING CO.  
260 Santa Fe Street, Pomona, CA 91767 • 800.872.3267 • Fax 800.232.7329

## THEORY OF OPERATION

The Adams Rite Power Supply provides power and control for up to two exit devices. Each exit device is controlled by a timer that is initiated by a switch closure. The timer is user configured and holds the exit device(s) in the unlatched position for 2, 5, 10, 15, 20, 30, 45 or 60 seconds. At the end of the selected time the exit device(s) will relatch. If the switch controlling the exit device is held closed longer than the selected time, the exit device remains unlatched until the controlling switch is released.

An optional mode is available allowing both retraction timers to activate in response to closure of either switch.

The Adams Rite Power Supply is listed as an Exit Device, Access Control System unit to UL305 and UL1012 requirements for power supplies and CAN / CSA - C22.2.

Exit devices under the system control remain latched during a complete power failure but always allow free mechanical egress.

## 1. CONFIGURE THE ADAMS RITE POWER SUPPLY

### **\*\*Caution\*\***

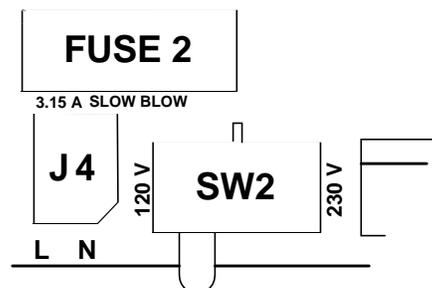
**ALL CONNECTIONS MUST BE MADE PER THE FOLLOWING INSTRUCTIONS. SAFETY AND PROPER OPERATION RELY ON PROPER INSTALLATION. BYPASSING OR OMITTING CONNECTIONS MAY DAMAGE EXIT DEVICES, THE ADAMS RITE POWER SUPPLY, AND COULD RESULT IN UNSAFE CONDITIONS.**

**THIS IS NO PLACE FOR CREATIVE WIRING!**

### **1.1. STEP1 – SET PRIMARY VOLTAGE**

The Adams Rite Power Supply may be powered from 115VAC or 230VAC. SW2 selects the desired voltage, and is factory pre-set for 115 VAC operation. To operate from 230VAC, set SW2 to the position marked "230V" on the circuit board.

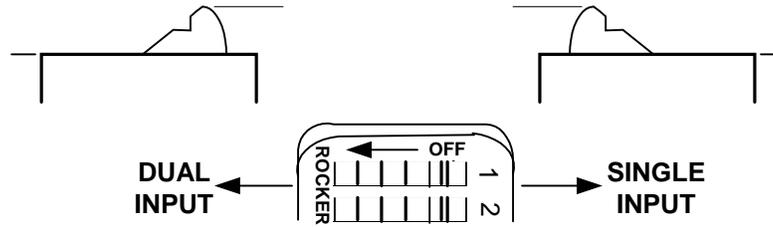
**MAKE SURE THIS SETTING IS CORRECT BEFORE APPLYING POWER!**



# ADAMS RITE POWER SUPPLY PART NUMBER PS-LR

ADAMS RITE MANUFACTURING CO.  
 260 Santa Fe Street, Pomona, CA 91767 • 800.872.3267 • Fax 800.232.7329

## 1.2. STEP 2 – SET OPERATION MODE



Two operating modes are available. Set the mode with switch 1 on dip switch SW1.

### Single Input – Sequential Operation (Factory Setting)

**Application:** Control one opening

**Operation:** Either input retracts Exit Device #1 immediately followed by Exit Device #2.

### Dual input – Independent Operation

**Application:** Control two separate openings

**Operation:** Input IN1 retracts Exit Device #1. Input IN2 retracts EXIT DEVICE #2.

## 1.3. STEP 3 – SET HOLD OPEN TIMES

The *Adams Rite Power Supply* has two hold open timers. Set the hold open time for Exit Device #1 with switches 3, 4, and 5 on dip switch SW1. Set the hold open time for Exit Device #2 with switches 6, 7, and 8 on dip switch SW1.



The following charts show settings for a given hold time:

### Solenoid Hold Time Settings for Exit Device #1

	2 SEC	5 SEC	10 SEC	15 SEC	20 SEC	30 SEC	45 SEC	60 SEC
Switch 3	OFF	ON	OFF	ON	OFF	ON	OFF	ON
Switch 4	OFF	OFF	ON	ON	OFF	OFF	ON	ON
Switch 5	OFF	OFF	OFF	OFF	ON	ON	ON	ON

### Solenoid Hold Time Settings for Exit Device #2

	2 SEC	5 SEC	10 SEC	15 SEC	20 SEC	30 SEC	45 SEC	60 SEC
Switch 6	OFF	ON	OFF	ON	OFF	ON	OFF	ON
Switch 7	OFF	OFF	ON	ON	OFF	OFF	ON	ON
Switch 8	OFF	OFF	OFF	OFF	ON	ON	ON	ON

# ADAMS RITE POWER SUPPLY PART NUMBER PS-LR

ADAMS RITE MANUFACTURING CO.  
260 Santa Fe Street, Pomona, CA 91767 • 800.872.3267 • Fax 800.232.7329

## 1.4. STEP 4 – CONNECT FIRE ALARM

### **\*\*Caution\*\***

*USE OF THE ADAMS RITE POWER SUPPLY WITH FIRE DOORS REQUIRES THE SYSTEM TO BE UNDER THE CONTROL OF AN AUTOMATIC FIRE CONTROL ALARM SYSTEM*

The *Adams Rite Power Supply* is factory set to be used without a fire alarm interface. To use the *Adams Rite Power Supply* without fire alarm control, leave the factory installed jumper in place between positions 9 and 10 of the J3 terminal block.

### **To use the Adams Rite Power Supply with a fire alarm control connect as follows:**

Remove the jumper wire factory installed between positions 9 and 10 (Fire) of the J3 terminal block.

Connect the fire alarm **normally closed** relay contacts to positions 9 and 10 (Fire) of the J3 terminal block. Closed relay contacts indicate NO ALARM CONDITION.

When a fire alarm occurs, the controlled exit devices will immediately latch secure. Exit Devices remain latched during a Fire Alarm but always allows free mechanical egress.

Maximum current through the fire alarm relay contacts is 120mA at 28VDC.

## 1.5. STEP 5 – WIRE INPUT CONTROL SWITCHES

Wire the normally open activation switch (dry contacts!) for Exit Device #1 to the IN1 terminals on J3 (J3-3 and J3-4). Wire the normally open activation switch for Exit Device #2 to the IN2 terminals on J3 (J3-1 and J3-2). Exit device is rated for continuous duty.

## 1.6. STEP 6 – WIRE EXIT DEVICES

The *Adams Rite Power Supply* is designed to power one or two Adams Rite two wire exit devices. Use the chart below to determine the correct wire gauge. Do not exceed the maximum length listed with each wire gauge.

<u>MAXIMUM CABLE LENGTH</u>	<u>WIRE GAUGE</u>
40 FEET	16 AWG
60 FEET	14 AWG
100 FEET	12 AWG

# ADAMS RITE POWER SUPPLY PART NUMBER PS-LR

ADAMS RITE MANUFACTURING CO.  
260 Santa Fe Street, Pomona, CA 91767 • 800.872.3267 • Fax 800.232.7329

## 1.7. STEP 7 – MOUNT THE ADAMS RITE POWER SUPPLY

### **\*\*Caution\*\***

*THE ADAMS RITE POWER SUPPLY IS INTENDED FOR INDOOR USE ONLY.*

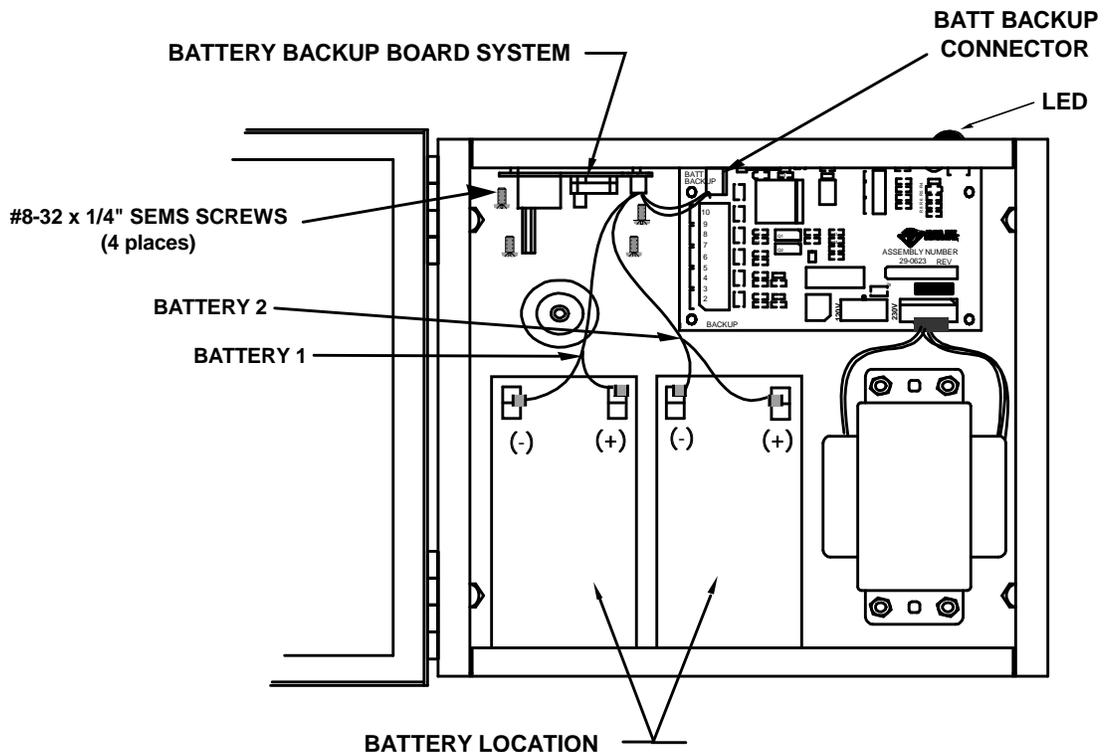
Install the Power Supply close to the door that will be operated. Securely fasten the Power Supply to the wall using the mounting holes located in the back of the metal enclosure. Mounting holes are ¼ inch in diameter. Box dimensions are 10" wide x 10" long x 4" high.

## 1.8. STEP 8 – INSTALLING THE BATTERY BACKUP SYSTEM (BBK-LR)

To install the Battery Backup in the 29-0624 Power Supply, you will need to order the BBK-LR Battery Backup System Kit and two 12V, 7AH batteries such as EverOn EVA12-7.5F batteries or equivalent.

An orange jumper block has been installed into the BATT BACKUP connector of the Power Supply circuit board. Remove this jumper by pulling the orange jumper free from the circuit board.

Install the Battery Backup System circuit board in the location shown below. Mounting points are available in the enclosure for the Battery Backup System circuit board.



The Adams Rite Battery Backup System circuit board has a short wire harness to connect to the Adams Rite Power Supply circuit board. Install the orange connector of this harness into the BATT BACKUP connector of the Adams Rite Power Supply circuit board.

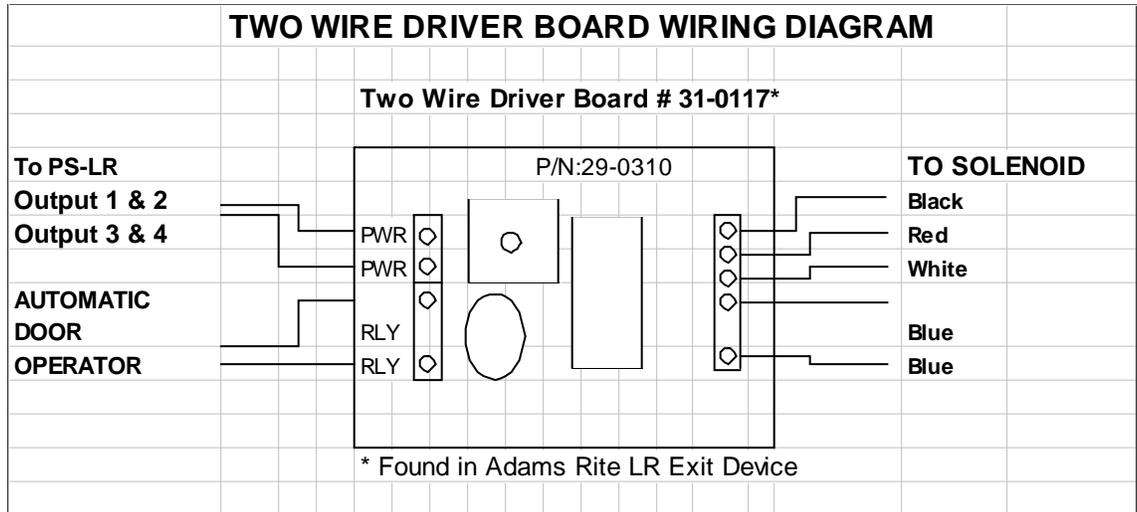
Wire the battery terminals of one battery to the (-) and (+) terminals on the BATT1 connector of the Adams Rite Battery Backup System circuit board. Wire the battery terminals of the other battery to the (-) and (+) terminals on the BATT2 connector of the Battery Backup System circuit board

# ADAMS RITE POWER SUPPLY PART NUMBER PS-LR

ADAMS RITE MANUFACTURING CO.  
 260 Santa Fe Street, Pomona, CA 91767 • 800.872.3267 • Fax 800.232.7329

## 1.11. STEP 11 – WIRE AUTOMATIC DOOR INTERFACE (OPTIONAL)

This step is required to use the Adams Rite Power Supply with an automatic door opener. Automatic door opening systems need an indication of the latch state. The latch controller which is located in the panic device has relay contacts that let the automatic door opener know the latch state. The relay contacts are closed when the latch is fully retracted. The relay contacts open when the latch is extended. Connect the automatic door opener as shown in the figure below.



## 1.12. STEP 12 – WIRING PRIMARY POWER CONNECTION

### J4 Connection

For the 115/230 VAC power input, terminal block J4 will accommodate up to 12AWG wire. Connect the mains "live wire" to J4 pin L. Connect the mains neutral wire to J4 pin N.

### Ground Connection

An earth ground connection is provided for, within the chassis. Make the ground connection to the green ground screw located on the back of the chassis.

**\*\*Caution\*\***

*AN EARTH GROUND CONNECTION MUST BE MADE TO THE CHASSIS.*

# ADAMS RITE POWER SUPPLY PART NUMBER PS-LR

ADAMS RITE MANUFACTURING CO.  
260 Santa Fe Street, Pomona, CA 91767 • 800.872.3267 • Fax 800.232.7329

## 2. DESCRIPTIONS, PART NUMBERS, AND MEASUREMENTS

### 2.1. DESCRIPTIONS AND PART NUMBERS

Two Wire Driver Board	P/N#	31-0117-IP
Solenoid	P/N#	31-0833-IP
Microswitch ( found on Solenoid )	P/N#	31-0101
PS-LR Board	P/N#	29-0623
Battery Backup System Kit	P/N#	BBK-LR

#### **Fuses for PS-LR Board** (Can be purchased from Fuses Unlimited Ph # 1-800-255-1919)

F1 - 4 Amps*	P/N#	0213004.MXP
F2 - 3.15 Amps*	P/N#	02133.15P
F3 - 7 Amps* (unserviceable)	P/N#	0230007.HXP

**\*All Slo Blo**

### 2.2. SOLENOID VALUE READINGS

<b>Black/White Wires:</b>	Approximately 44 OHMS* / 28.5VDC* when powered
<b>Black/Red Wires:</b>	2 OHMS* / .6VDC* when powered
<b>Microswitch:</b>	Blue wires set on Normally Closed**

\* Can be measured from Two Wire Driver Board. Solenoid wires do not need to be removed from board.

\*\* If Microswitch is Open when no power applied, terminals may be set Normally Open, Terminal Connectors are loose or Microswitch is failing and need replacing.

### 2.3. PS-LR VALUE READINGS

<b>OUT 1 &amp; OUT 2</b> when IN1 / IN2 are open	<b>1.6VDC</b>
<b>OUT 1 &amp; OUT 2</b> when IN1 / IN2 are closed	<b>approximately 30VDC</b>

### 2.4. LED CONFIGURATION

**Power to PS-LR Board\*** **Main Power** (Red LED) **Output Power** (Green LED) ON.

\* If OUT1 and/or OUT2 (green LED) are on and IN1 and IN2 are OPEN, Replace Board.

### 2.5. SW1 DIP SWITCH SETTINGS

**Single Input # 1 On** (controls one/pair opening)

Operation: Either Input retracts Exit Device # 1 immediately followed by Exit Device # 2.  
Either IN1 / IN2 (green LED) will activate OUT1 (green LED) then OUT2 (green LED)

**Dual Input # 1 Off** (controls two separate openings)

Operation: IN1 retracts Exit Device # 1, IN2 retracts Exit Device # 2  
IN1 (green LED) will activate OUT1 (green LED). IN2 (green LED) will activate OUT2 (green LED)

Refer to 1.3. Step 3 for Set Hold Open Times settings.

# ADAMS RITE POWER SUPPLY PART NUMBER PS-LR

ADAMS RITE MANUFACTURING CO.  
260 Santa Fe Street, Pomona, CA 91767 • 800.872.3267 • Fax 800.232.7329

## 3. FREQUENTLY ASKED QUESTIONS / TROUBLESHOOTING

### 3.1. Q: THE EXIT DEVICE WON'T UNLOCK WHEN I USE MY ACCESS CONTROL SYSTEM?

**A:** Check PS-LR board that MAIN POWER & OUTPUT POWER LEDs are on. Check SW2 switch (located next to TRANSFORMER connector J5). Setting should be on 120V. Disable Access Control from 1-2 of IN2 and/or 3-4 of IN1 found on J3 and place a jumper wire in 3-4 of IN1. If exit devices activate, problem could be the access controller. Verify Jumper on J3 9-10 for Fire Alarm is secure and tight. Verify connector for BATT BACKUP is in place and secure. Also check for shorts in the wiring and if fuses are blown in the PS-LR.

If existing hardware, check Solenoid for burnt and discolored tape. Measure Ohm readings on Solenoid. Refer to 1.14 for solenoid value readings. Verify microswitch on solenoid is normally closed. Switch becomes normally open when powered applied. Verify revision on Two Wire Driver Board. If lower than REV H, recommend replacement. Also check for shorts in the wiring and if fuses are blown in the PS-LR.

### 3.2. Q: I HAVE BLOWN FUSES IN MY PS-LR

**A:** If new install. Check for shorts in the wiring, particularly around the exit device and hinge. Check for rods binding.

If existing hardware, verify revision on Two Wire Driver Board. If lower than REV H, recommend replacement. Check Solenoid for burnt or discolor tape. Possible plunger is binding in core. Measure Ohm readings on Solenoid. Refer to 1.14 for solenoid value readings. Replace PS-LR board if F3 is blown.

### 3.3. Q: THE EXIT DEVICE INTERMITTENTLY LOCKS AND UNLOCKS?

**A:** When device is activated, the solenoid may do a "chatter" where the plunger is released and then pulled back by the solenoid. Check microswitch on solenoid for loose terminals. Measure microswitch with Ohm Meter for continuity. Recommend replacing Two Wire Driver board and Solenoid if no trouble found on microswitch.

### 3.4. Q: NO POWER TO THE SOLENOID.

**A:** Check microswitch on solenoid for loose terminals. Measure microswitch with Ohm Meter for continuity. If measured open, replace Microswitch. If terminals are loose, crimp terminal connectors with needle nose pliers.

***Before proceeding through the next section, ensure that exit device latches are not binding against their corresponding strikes. A bound latch can cause sluggish electric retraction or prevent retraction entirely.***

# ADAMS RITE POWER SUPPLY PART NUMBER PS-LR

ADAMS RITE MANUFACTURING CO.  
260 Santa Fe Street, Pomona, CA 91767 • 800.872.3267 • Fax 800.232.7329

## 3.5 NEITHER EXIT DEVICE RETRACTS AFTER THE CONTROL SWITCH IS ACTIVATED.

### VERIFY CONNECTIONS

- Ensure exit device wires are properly terminated in the power supply.
- Verify continuity through power transfer devices such as wired hinges and door cords / loops.

### "MAIN POWER" RED LED IS NOT LIT

- Verify line voltage is present.
- Check fuse F2 (in the black fuse holder). See Section 3.1 for replacement details.
- Ensure that the Primary Voltage Selection Switch SW2 is properly set. See installation Step 1 for additional information.

### "OUTPUT POWER" LED ON POWER SUPPLY BOARD IS NOT LIT

- Check fuse F1. See Section 3.1 for replacement details.
- If fuse F1 is blown, the wires that are run to the exit device are probably shorted together against the conduit, door frame, or electric hinge. Use a meter to check for shorts.
- There is no Fire Alarm connected between J3-9 and J3-10 or the factory installed jumper between J3-9 and J3-10 is removed.

### IN1 AND IN2 LIGHTS DO NOT LIGHT IN RESPONSE TO INPUT SWITCHES

- An open connection in the field wiring exists between the *Adams Rite Power Supply* and control switch used for activating the latch solenoids.
- A defective control switch exists on J3 -1 and J3-2 or J3 -3 and J3-4.

### OUT1 AND OUT2 LIGHTS DO LIGHT IN RESPONSE TO INPUT SWITCHES

- An open connection in the field wiring between the *Adams Rite Power Supply* and the exit device may exist. Do a resistance check to verify.

If previous suggestions do not solve the problem, and one EXIT DEVICE works and one does not, prop the door open and connect a voltmeter across the BLACK and WHITE leads coming from the exit device. Next, activate the malfunctioning Exit Device. If the voltmeter measures approximately 28VDC at the time of activation, but the latch did not budge, then two wire driver is not generating pulses to the PULL coil of the solenoid. The exit device must be replaced.

## 3.6. DEVICES RETRACT EVEN THOUGH THE CONTROL SWITCH HAD NOT BEEN ACTIVATED.

- A maintained control switch is being used and is in the closed position.
- Control switch is defective – Disconnect switch to verify.

## 3.7 BUZZING SOUND IS COMING FROM INSIDE THE EXIT DEVICE.

- The latch is binding against its corresponding strike and preventing it from retracting fully due to misalignment between the latch and strike opening.

# ADAMS RITE POWER SUPPLY PART NUMBER PS-LR

ADAMS RITE MANUFACTURING CO.

260 Santa Fe Street, Pomona, CA 91767 • 800.872.3267 • Fax 800.232.7329

## 4. APPENDIX

### 4.1. Approved Replacement Fuses

The *Adams Rite Power Supply* has two user serviceable fuses F1 and F2. These fuses are described below:

**F1     4 A/250V 5X20MM  
226.518 SLOW-BLOW**

*Fuse F1 is in line with the transformer output (28VDC)*

- Little Fuse P/N: 213004. MXP
- Adams Rite Mfg P/N: 29-0667

**F2     3.15A/250V 5X20MM  
202 P<sub>t</sub> SLOW-BLOW**

*Fuse F2 is in line with the transformer input (120VAC/230VAC)*

- Little Fuse P/N: 2133.15.MXP
- Adams Rite Mfg P/N: 29-0668

### BBK-LR FUSES

*BBK-LR BATTERY BACKUP CHARGER FUSE IS THE SAME AS F1 (ABOVE)*

FUSE REPLACEMENT MUST BE THE SAME RATING

Fuse F3 is not user serviceable. If replacement is needed, return to the factory.

This fuse will blow if fuse F1 is replaced with a fuse of higher value than recommended.

The average input current for the *Adams Rite Power Supply* is:

- 115 VAC        0.70 Amp
- 230 VAC        0.40 Amp.

### **\*\*Caution\*\***

INSTALLING A FUSE THAT EXCEEDS THE RATING OF THE ORIGINAL FUSE WILL BLOW F3, AN INTERNAL FUSE AND VOID THE WARRANTY. THE ADAMS RITE POWER SUPPLY CAN NO LONGER BE USED AND MUST BE SENT BACK TO THE FACTORY FOR REPLACEMENT.

# ADAMS RITE POWER SUPPLY PART NUMBER PS-LR

## 4.2 Connector Signal Descriptions

### 4.2.1 Connector J1 – BATTERY BACKUP

<b>PIN</b>	<b>DESCRIPTION</b>
<b>1</b>	<b>Power In - 28VDC returned from battery charging system</b>
<b>2</b>	<b>Power Out - 28VDC supplied to battery charging system</b>
<b>3</b>	<b>Ground</b>

### 4.2.2 Connector J3 – FIELD WIRING

<b>PIN</b>	<b>DESCRIPTION</b>
<b>1&amp;2</b>	<b>INPUT #2: Normally open activation switch.</b>
<b>3&amp;4</b>	<b>INPUT #1: Normally open activation switch.</b>
<b>5</b>	<b>EXIT DEVICE #2, Coil return</b>
<b>6</b>	<b>EXIT DEVICE #2, +28VDC</b>
<b>7</b>	<b>EXIT DEVICE #1, Coil return</b>
<b>8</b>	<b>EXIT DEVICE #1, +28VDC</b>
<b>9</b>	<b>FIRE RELAY</b>
<b>10</b>	<b>FIRE RELAY</b>

### 4.2.3 Connector J4 – MAIN POWER

<b>L</b>	<b>The Main Power LIVE / HOT input. <i>Usually black or any other color other than white or Green</i></b>
<b>N</b>	<b>The Main Power NEUTRAL / RETURN input. White Conductor</b>