

# **TWR Lighting, Inc.** HARK<sup>®</sup>

*Enlightened Technology<sup>®</sup>*

10810 W. LITTLE YORK RD., #130 - HOUSTON, TX 77041-4150  
VOICE (713) 973-6905 - FAX (713) 973-9352  
web: [www.twrlighting.com](http://www.twrlighting.com)

## **IMPORTANT!!!**

**PLEASE TAKE THE TIME TO FILL OUT THIS FORM COMPLETELY. FILE IT IN A SAFE PLACE. IN THE EVENT YOU EXPERIENCE PROBLEMS WITH, OR HAVE QUESTIONS CONCERNING YOUR CONTROLLER, THE FOLLOWING INFORMATION IS NECESSARY TO OBTAIN PROPER SERVICE AND PARTS.**

**MODEL #** AA4/7MLED

**SERIAL #** \_\_\_\_\_

**PURCHASE DATE** \_\_\_\_\_

**PURCHASED FROM** \_\_\_\_\_

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## **AA4/7MLED CONTROLLER**

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### TABLE OF CONTENTS

<b>1.0</b>	<b>GENERAL INFORMATION .....</b>	<b>1</b>
<b>2.0</b>	<b>INSTALLATION INSTRUCTIONS .....</b>	<b>2</b>
2.1	MOUNTING THE CONTROL CABINET .....	2
2.2	EXTERNAL PHOTOCELL WIRING .....	3
2.3	POWER WIRING.....	3
2.4	LED BEACON AND SIDELIGHT WIRING.....	4
2.5	LED BEACONS AND LED SIDELIGHTS ALARM WIRING .....	5
2.6	ALARM TESTING .....	6
<b>3.0</b>	<b>THEORY OF OPERATION .....</b>	<b>7</b>
3.1	POWER SUPPLY.....	7
3.2	LED SIDELIGHTS.....	7
3.3	LED BEACONS .....	7
<b>4.0</b>	<b>MAINTENANCE.....</b>	<b>8</b>
4.1	RED OSTRUCTION LIGHTING .....	8
4.2	L-864 LED BEACON REPLACEMENT .....	8
4.3	L-810 LED SIDELIGHT REPLACEMENT.....	8
4.4	L-864 CONTROLLER .....	8
4.5	PHOTOCELL .....	8
<b>5.0</b>	<b>MAJOR COMPONENTS PARTS LIST .....</b>	<b>9</b>
<b>6.0</b>	<b>SUGGESTED SPARE PARTS LIST .....</b>	<b>10</b>

**WARRANTY & RETURN POLICY**

**RETURN MERCHANDISE AUTHORIZATION (RMA) FORMS**

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## **AA4/7MLED CONTROLLER**

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### APPENDIX

CHASSIS COMPONENT LAYOUT .....	1235-R (REV B)
SCHEMATIC LAYOUT .....	1235-S (REV B)
TROUBLESHOOTING FLOWCHART .....	1235-F
TOWER LIGHTING KIT 1,051' – 1,400' .....	803-02 (REV A)
PHOTOCELL HOUSING DETAIL .....	100239 (REV H)
LED BEACON AND SIDELIGHT CURRENT SENSOR RELAYS ....	101088 (REV A)
LED BEACON ASSEMBLY .....	100674 (REV B)
OL1VLED2 (L810 SINGLE OBSTRUCTION LIGHT).....	100656 (REV E)
OL2VLED2 (L810 DOUBLE OBSTRUCTION LIGHT).....	100658 (REV F)
JUNCTION AND STRAIN RELIEF BOXES .....	100089 (REV A)
WRAPLOCK FASTENING DETAIL .....	100984

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## **AA4/7MLED CONTROLLER**

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### **1.0 GENERAL INFORMATION**

The TWR Lighting, Inc. (TWR) Model AA4/7MLED Controller is made for A4/7 lighting of towers 1,051' to 1,400' above ground level (AGL), in accordance with the FAA A/C 70/7460-1K. One (1) LED Beacon should be placed at the top of the structure, and two (2) LED Beacons at the 3/4, 1/2, and 1/4 intervals, with respect to overall tower height. Obstruction LED Sidelights should be placed at the 7/8, 5/8, 3/8, and 1/8 intervals.

The flash rate of the LED Beacons is thirty (30) per minute. The LED Beacons flash synchronized to one another. The LED Sidelights steady burn.

Power supplied to the controller shall be 120V AC 50/60 Hz single phase.

Controller functions that are monitored by remote alarms in the form of dry contact closures are as follows:

<b>POWER FAILURE</b>	Monitors 120V AC to the controller. Relay K1 alarms in the event of power failure or tripped circuit breaker.
<b>"LIGHTS ON"</b>	K2 relay will give an indication whenever the controller is activated.
<b>LED BEACONS</b>	Will give an alarm in the event one (1) out of two (2) fixtures fails on any level.
<b>FLASHER FAILURE</b>	K3 relay will give an alarm in the event of flasher failure.
<b>OBSTRUCTION LIGHTS</b>	Will give an alarm when one (1) of three (3) LED sidelights fails.

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## **AA4/7MLED CONTROLLER**

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### **2.0 INSTALLATION INSTRUCTIONS**

#### **WARNING DANGER !!!!**

**THIS SYSTEM OPERATES AT HIGH VOLTAGE LEVELS THAT COULD BE LETHAL TO SERVICE PERSONNEL. ALL INSTALLATION AND MAINTENANCE WORK SHOULD BE DONE BY QUALIFIED SERVICE PERSONNEL ONLY. WHEN PERSONNEL IS INSTALLING SYSTEM OR PERFORMING MAINTENANCE ON THIS SYSTEM, MAKE SURE THE POWER IS TURNED OFF AT THE SERVICE BREAK PANEL!!**

**READ AND UNDERSTAND THE THEORY OF OPERATION AND ITS SAFETY MESSAGES BEFORE ATTEMPTING INSTALLATION/MAINTENANCE OF THIS SYSTEM. DO NOT ATTEMPT TO DEFEAT THE INTERNAL SAFETY SWITCHES IN THE CONTROLLER AND BEACON!!**

#### **2.1 POWER SUPPLY CONTROL CABINET MOUNTING**

(Refer to Drawing 1235-R)

**2.1.1** The power supply control cabinet can be located at the base of the structure or in an equipment building. Mounting footprints are shown on drawing 1235-R. Power wiring to the control cabinet should be in accordance with local methods and National Electrical Codes (NEC).

**2.1.2** If the control cabinet is mounted inside an equipment building, the photocell should be mounted vertically on ½” conduit outside the building above the eaves facing north. Wiring from the photocell socket to the control cabinet should consist of one (1) each, red, black and white wires. The white wire is connected to the socket terminal marked “N,” the black wire is connected to the socket terminal marked “Li,” and the red wire is connected to the socket terminal marked “Lo.” As above, the photocell should be positioned so that it does not “see” ambient light, which would prevent it from switching to the nightmode.

**2.1.3** If the control cabinet is mounted outside an equipment building, the

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## **AA4/7MLED CONTROLLER**

---

photocell should be mounted vertically on 1/2" conduit so the photocell is above the control cabinet. Care must be taken to assure that the photocell does not "see" any ambient light that would prevent it from switching into the nightmode. The photocell wiring is the same as in 2.1.1.

**2.1.4** The wiring from the photocell, the service breaker, the LED beacons, and the LED sidelights should enter the control cabinet through the watertight connectors in the bottom of the cabinet. Inside the cabinet, the connections will be made on the terminal strips and circuit breakers located at the bottom of the chassis. These connections are made as follows:

### **2.2 EXTERNAL PHOTOCELL WIRING**

(Refer to Drawing 1235-R)

**2.2.1** Connect the **BLACK** wire from the photocell to terminal block TB2 marked "L."

**2.2.2** Connect the **RED** wire from the photocell to terminal block TB2 marked "SSR."

**2.2.3** Connect the **WHITE** wire from the photocell to terminal block TB2 marked "N."

### **2.3 POWER WIRING**

(Refer to Drawing 1235-R)

**2.3.1** Power wiring to the control cabinet should be in accordance with local methods and NEC.

**2.3.2** Circuit breaker needs to be a one (1) pole rated at 10 amps.

**2.3.3** Connect incoming 120V AC "Hot" to terminal block TB1 marked "L."

**2.3.4** Connect neutral to one (1) of the terminal blocks TB1 marked "N."

**2.3.5** Connect the AC ground to the aluminum mounting lug bolt on the panel.

### **2.4 LED BEACON AND SIDELIGHT WIRING**

(Refer to Drawings 1235-R and 803-02)

# **TWR Lighting, Inc.** HARK<sup>®</sup>

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## **AA4/7MLED CONTROLLER**

---

Install wiring between the controller and the LED Beacons utilizing either strobe cable or conduit method. Refer to drawings 1235-R and 803-02 for installation of light kits. Following these requirements, installing light kits will require lifting of the cable by the supplied cable grip or conduit to affix to the tower. Always work safely and adhere to all OSHA Safety Guidelines when lifting wiring or working on the structure or tower itself. It is the installer's responsibility to install the lighting kit in a safe manner. Installers can request from OSHA their requirements 29CFT 1926.21, and 20CFR 1926.105, to ensure compliance to regulations.

**NOTE: On occasion, a set of custom lighting kit drawings may be specifically requested by a customer and installed in this manual. In cases such as these, the drawings will precede the manual if a conflict occurs.**

- 2.4.1 Connect the **BLACK** wire from LED Beacon #1 to circuit breaker marked "BL1."
- 2.4.2 Connect the **BLUE** wire from LED Beacon #2 and LED Beacon #3 to circuit breaker marked "BL2."
- 2.4.3 Connect the **BROWN** wire from LED Beacon #4 and LED Beacon #5 to circuit breaker marked "BL3."
- 2.4.4 Connect the **BLACK** wire from LED Beacons #6, and #7 to circuit breaker marked "BL4."
- 2.4.5 Connect the **RED** wire from LED Sidelight group #1 to circuit breaker marked "SL1."
- 2.4.6 Connect the **YELLOW** wire from LED Sidelight group #2 to circuit breaker marked "SL2."
- 2.4.7 Connect the **PURPLE** wire from LED Sidelight group #3 to circuit breaker marked "SL3."
- 2.4.8 Connect the **ORANGE** wire from LED Sidelight group #4 to circuit breaker marked "SL4."

## **AA4/7MLED CONTROLLER**

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2.4.9 Connect the **WHITE** neutral wire(s) to one (1) or more of the terminal blocks on TB1 marked "N."

### **2.5 LED BEACONS AND LED SIDELIGHTS ALARM WIRING** (Refer to Drawings 1235-R and 1235-S)

2.5.1 Alarm relays K1 – K3, and alarm modules M2 – M9 are provided for independent contact closures for: Power Failure, Lights "ON," Flasher Failure, LED Beacon Burnout, and LED Sidelight Burnout.

2.5.2 Alarm Wiring – To utilize all of the red light alarms, the customer will need eleven (11) pairs of wires to interface with the alarm device. One (1) wire from each of the eleven (11) pairs will terminate at the points marked common. The remaining wire from each pair will terminate as follows.

2.5.3 Power Failure Alarm – Connect the Relay K1, terminal #3, for normally open, or terminal #6, for normally closed monitoring.

2.5.4 Tower Lights "ON" – Connect to Relay K2, terminal #3, for normally open, or terminal #6, for normally closed monitoring.

2.5.5 Flasher Failure – Connect to Relay K3, terminal #6, for normally open, or terminal #3, for normally closed monitoring.

2.5.6 SL1 level Burnout – Connect to Module M6, terminal #24, for normally open, or terminal #22, for normally closed monitoring.

2.5.7 SL2 level Burnout – Connect to Module M7, terminal #24, for normally open, or terminal #22, for normally closed monitoring.

2.5.8 SL3 level Burnout – Connect to Module M8, terminal #24, for normally open, or terminal #22, for normally closed monitoring.

2.5.9 SL4 level Burnout – Connect to Module M9, terminal #24, for normally open, or terminal #22, for normally closed monitoring.

2.5.10 BL1 level Burnout – Connect to Module M2, terminal #24, for normally open, or terminal #22, for normally closed monitoring.

2.5.11 BL2 level Burnout – Connect to Module M3, terminal #24, for normally



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## **AA4/7MLED CONTROLLER**

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open, or terminal #22, for normally closed monitoring.

2.5.12 BL3 level Burnout – Connect to Module M4, terminal #24, for normally open, or terminal #22, for normally closed monitoring.

2.5.13 BL4 level Burnout – Connect to Module M5, terminal #24, for normally open, or terminal #22, for normally closed monitoring.

### **2.6 ALARM TESTING**

To test alarms, follow the procedures using an “ohm” meter between alarm common and alarm points.

**POWER FAILURE** Pull circuit breaker at electrical panel.

**TOWER LIGHTS “ON”** Operate photocell by-pass switch (SW1) or cover the photocell.

**LED BEACONS and LED SIDELIGHTS**  
Pull circuit breakers on controller panel.

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## **AA4/7MLED CONTROLLER**

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### **3.0 THEORY OF OPERATION**

#### **3.1 POWER SUPPLY**

120V AC enters the controller from the circuit breaker panel. Line (L) sits at the PRD waiting to be switched and also keeps the power failure Relay K1 energized. When the 6390-FAA photocell is activated, line (L) energizes the coil of the PRD and K2 "Lights On" Relay. This also can be accomplished by using the photocell by-pass switch (SW1).

#### **3.2 LED SIDELIGHTS**

Line LDS is sent to Modules M6 – M9, which are current sensing modules for the LED Sidelights. Each RM22JA31MR monitors one (1) level of LED Sidelights, and will provide a contact closure along with a visual indication if one (1) or more fails.

#### **3.3 LED BEACONS**

Line LDB is sent to Modules M1, and M2 – M5. Module M1 is the primary flasher for the LED beacons. The output of Module M1 is sent through the current sensing Modules M2 – M5, then to the circuit breaker outputs BL1 – BL4. If Modules M2 – M5 detect a lamp burnout, then the module would provide a contact closure along with a visual indication for that lamp circuit.

Relay K3 is a Flasher Failure Relay for the LED Beacons. If Relay K3 detects a Flasher Failure, it would then provide a contact closure for the flasher circuit.

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## **AA4/7MLED CONTROLLER**

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### **4.0 MAINTENANCE GUIDE**

#### **4.1 RED OBSTRUCTION LIGHTING**

No scheduled maintenance is required. Perform on an as needed basis only.

TOOLS REQUIRED: NONE

#### **4.2 L-864 LED BEACON REPLACEMENT**

No scheduled maintenance is required. Perform on an as needed basis only.

#### **4.3 L-810 LED SIDELIGHT REPLACEMENT**

No scheduled maintenance is required. Perform on an as needed basis only.

#### **4.4 L-864 CONTROLLER**

No scheduled maintenance is required. Perform on an as needed basis only.

#### **4.5 PHOTOCELL**

The photocell is a sealed unit. No maintenance is needed nor required other than replacement as necessary.

# **TWR Lighting, Inc. HARK**

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## **AA4/7MLED CONTROLLER**

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### **5.0 MAJOR PARTS LIST**

QTY	PART NUMBER	DESCRIPTION
1	PF-250 (This replaces the FS155-30T Module)	120 – 240V SOLID STATE FLASHER (M1)
8	RM22JA31MR	LED BEACON and LED SIDELIGHT CURRENT SENSORS (M2 – M9)
1	PRD 7AGO	120V AC LOAD CONTACTOR (PRD)
2	KRPA5AG120V	S.P.S.T. RELAY (K1 & K2)
1	6390-FAA (This replaces the 102FAA Photocell)	120 - 240V PHOTOCCELL
2	MOV524V15	MOV1, MOV2 VARISTOR
1	SPEC 224	TIME DELAY RELAY (K3)
1	STJ01002	SWITCH (SW1)
3	S261D2	2 amp CIRCUIT BREAKER (BL2 – BL4)
8	8WA1204	TERMINAL BLOCK (TB1 & TB2)
2	8WA1808	TERMINAL BLOCK END STOP
5	S261D1	1 amp CIRCUIT BREAKER (BL1) (SL1 – SL4)

# **TWR Lighting, Inc. HARK**

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## **AA4/7MLED CONTROLLER**

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### **6.0 SUGGESTED SPARE PARTS LIST**

QTY	PART NUMBER	DESCRIPTION
1	6390-FAA (This replaces the 102FAA Photocell)	120 – 240V PHOTOCCELL
1	PF-250 (This replaces the FS155-30T Module)	120 – 240V SOLID STATE FLASHER (M1)
1	SPEC 224	TIME DELAY RELAY (K3)
1	KRPA5AG120V	S.P.S.T. RELAY (K1 or K2)
1	RM22JA31MR	LED BEACON AND SIDELIGHTCURRENT SENSORS (M2 – M9)

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## **AA4/7MLED CONTROLLER**

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### **Warranty & Return Policy**

**TWR Lighting<sup>®</sup>, Inc. (“TWR<sup>®</sup>”)** warrants its products (other than “LED Product”) against defects in design, material (excluding incandescent bulbs) and workmanship for a period ending on the earlier of two (2) years from the date of shipment or one (1) year from the date of installation.

**TWR Lighting<sup>®</sup>, Inc. (“TWR<sup>®</sup>”)** warrants its “LED Product” against defects in design, material and workmanship for a period of five (5) years from the date of shipment. TWR<sup>®</sup>, at its sole option, will, itself, or through others, repair, replace or refund the purchase price paid for “LED Product” that TWR<sup>®</sup> verifies as being inoperable due to original design, material, or workmanship. All warranty replacement “LED Product” is warranted only for the remainder of the original warranty of the “LED Product” replaced. Replacement “LED Product” will be equivalent in function, but not necessarily identical, to the replaced “LED Product.”

**TWR Lighting<sup>®</sup>, Inc. (“TWR<sup>®</sup>”)** warrants its “LED Product” against light degradation for a period of five (5) years from the date of installation. TWR<sup>®</sup>, at its sole option, will, itself, or through others, repair, replace, or refund the purchase price paid for “LED Product” that TWR<sup>®</sup> verifies as failing to meet 75% of the minimum intensity requirements as defined in the FAA Advisory Circular 150/5345-43G dated 09/26/12. All warranty replacement “LED Product” is warranted only for the remainder of the original warranty of the “LED Product” replaced. Replacement “LED Product” will be equivalent in function, but not necessarily identical, to the replaced “LED Product.”

**Replacement parts (other than “LED Product”) are warranted for 90 days from the date of shipment.**

Conditions not covered by this Warranty, or which might void this Warranty are as follows:

- x Improper Installation or Operation
- x Misuse
- x Abuse
- x Unauthorized or Improper Repair or Alteration
- x Accident or Negligence in Use, Storage, Transportation, or Handling
- x Any Acts of God or Nature
- x **Non-OEM Parts**

**The use of Non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43.**

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## **AA4/7MLED CONTROLLER**

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### **Warranty & Return Policy** (continued)

**Field Service** – Labor, Travel, and Tower Climb are not covered under warranty. Customer shall be obligated to pay for all incurred charges. An extensive network of certified and insured Service Representatives is available if requested.

**Repair, Replacement or Product Return RMA Terms** – You must first contact our Customer Service Department at **713-973-6905** to acquire a Return Merchandise Authorization (RMA) number in order to return the product(s). Please have the following information available when requesting an RMA number:

- x The contact name and phone number of the tower owner or
- x The contact name and phone number of the contractor
- x The site name and number
- x The part number(s)
- x The serial number(s) (if any)
- x A description of the problem
- x The billing information
- x The Ship To address

**This RMA number must be clearly visible on the outside of the box.** If the RMA number is not clearly labeled on the outside of the box, your shipment will be refused. Please ensure the material you are returning is packaged carefully. **The warranty is null and void if the product(s) are damaged in the return shipment.**

**All RMAs must be received by TWR LIGHTING<sup>®</sup>, INC., 10810 W. LITTLE YORK RD., #130, HOUSTON, TX 77041-4051, within 30 days of issuance.**

Upon full compliance with the Return Terms, TWR<sup>®</sup> will replace, repair and return, or credit product(s) returned by the customer. It is TWR<sup>®</sup>'s sole discretion to determine the disposition of the returned item(s).

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## **AA4/7MLED CONTROLLER**

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### **Warranty & Return Policy** (continued)

**RMA Replacements** – Replacement part(s) will be shipped and billed to the customer for product(s) considered as Warranty, pending return of defective product(s). When available, a certified reconditioned part is shipped as warranty replacement with a Return Merchandise Authorization (RMA) number attached. Upon receipt of returned product(s), inspection, testing, and evaluation will be performed to determine the cause of defect. The customer is then notified of the determination of the testing.

- x Product(s) that is deemed defective and/or unrepairable and covered under warranty - a credit will be issued to the customer's account.
- x Product(s) found to have no defect will be subject to a **\$75.00 per hour testing charge (1 hour minimum), which will be invoiced to the customer.** At this time the customer may decide to have the tested part(s) returned and is responsible for the return charges.
- x Product(s) under warranty, which the customer does not wish returned, the customer will be issued a credit against the replacement invoice.

**RMA Repair & Return** – A Return Merchandise Authorization (RMA) will be issued for all part(s) returned to TWR<sup>®</sup> for repair. Upon receipt of returned product(s), inspection, testing, and evaluation will be performed to determine the cause of defect. The customer is then notified of the determination of the testing. If the returned part(s) is deemed unrepairable, or the returned part(s) is found to have no defect, the customer will be subject to a **\$75.00 per hour testing charge (1 hour minimum), which will be invoiced to the customer.** Should the returned parts be determined to be repairable, a written estimated cost of repair will be sent to the customer for their written approval prior to any work being performed. In order to have the tested part(s) repaired and/or returned, the customer must issue a purchase order and is responsible for the return shipping charges.

**RMA Return to Stock** – Any product order that is returned to TWR<sup>®</sup> for part(s) ordered incorrectly or found to be unneeded upon receipt by the customer, the customer may be required to pay a minimum **20% restocking fee.** Product returned for credit must be returned within 60-days of original purchase, be in new and resalable condition, and in original packaging. Once the product is received by TWR it's condition will be evaluated and a credit will be issued only once it is determined that the RMA Return Terms have been met.

**Credits** – Credits are issued once it is determined that all of the Warranty and Return Terms are met. All credits are processed on Fridays. In the event a Friday falls on a Holiday, the credit will be issued on the following Friday.

### **Warranty & Return Policy**



# **TWR Lighting, Inc.** **MARK**<sup>®</sup>

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## **AA4/7MLED CONTROLLER**

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(continued)

**Freight** – All warranty replacement part(s) will be shipped via ground delivery and paid for by TWR<sup>®</sup>. Delivery other than ground is the responsibility of the customer.

REMEDIES UNDER THIS WARRANTY ARE LIMITED TO PROVISIONS OF REPLACEMENT PARTS AND REPAIRS AS SPECIFICALLY PROVIDED. IN NO EVENT SHALL TWR<sup>®</sup> BE LIABLE FOR ANY OTHER LOSSES, DAMAGES, COSTS, OR EXPENSES INCURRED BY THE CUSTOMER, INCLUDING, BUT NOT LIMITED TO, LOSS FROM FAILURE OF THE PRODUCT(S) TO OPERATE FOR ANY TIME, AND ALL OTHER DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING ALL PERSONAL INJURY OR PROPERTY DAMAGE DUE TO ALLEGED NEGLIGENCE, OR ANY OTHER LEGAL THEORY WHATSOEVER. THIS WARRANTY IS MADE BY TWR<sup>®</sup> EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED. WITHOUT LIMITING THE GENERALITY OF THE FORGOING, TWR<sup>®</sup> MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS OF THE PRODUCT(S) FOR ANY PARTICULAR PURPOSE. TWR<sup>®</sup> EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES.

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## **AA4/7MLED CONTROLLER**

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### **RETURN MERCHANDISE AUTHORIZATION (RMA) FORM**

**RMA#:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**CUSTOMER:** \_\_\_\_\_

\_\_\_\_\_

**CONTACT:** \_\_\_\_\_ **PHONE NO.:** \_\_\_\_\_

**ITEM DESCRIPTION (PART NO.):** \_\_\_\_\_

\_\_\_\_\_

**MODEL NO.:** \_\_\_\_\_ **SERIAL NO.:** \_\_\_\_\_

**ORIGINAL TWR INVOICE NO.:** \_\_\_\_\_ **DATED:** \_\_\_\_\_

**DESCRIPTION OF PROBLEM:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

**SIGNED** \_\_\_\_\_ **DATE NEEDED**   A   \_\_\_\_\_

**RETURN ADDRESS:** \_\_\_\_\_

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PLEASE RETURN PRODUCT TO: 10810 W. LITTLE YORK RD., #130 HOUSTON, TX 77041-4150

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## **AA4/7MLED CONTROLLER**

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### **RETURN MERCHANDISE AUTHORIZATION (RMA) FORM**

**RMA#:** \_\_\_\_\_ **DATE:** \_\_\_\_\_

**CUSTOMER:** \_\_\_\_\_

\_\_\_\_\_

**CONTACT:** \_\_\_\_\_ **PHONE NO.:** \_\_\_\_\_

**ITEM DESCRIPTION (PART NO.):** \_\_\_\_\_

\_\_\_\_\_

**MODEL NO.:** \_\_\_\_\_ **SERIAL NO.:** \_\_\_\_\_

**ORIGINAL TWR INVOICE NO.:** \_\_\_\_\_ **DATED:** \_\_\_\_\_

**DESCRIPTION OF PROBLEM:** \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

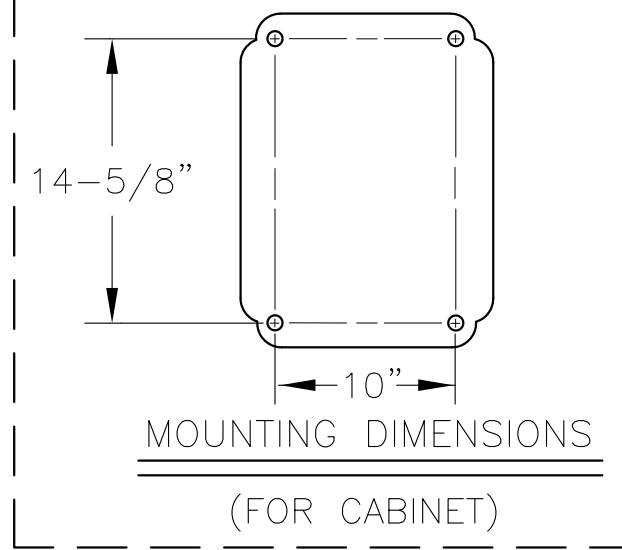
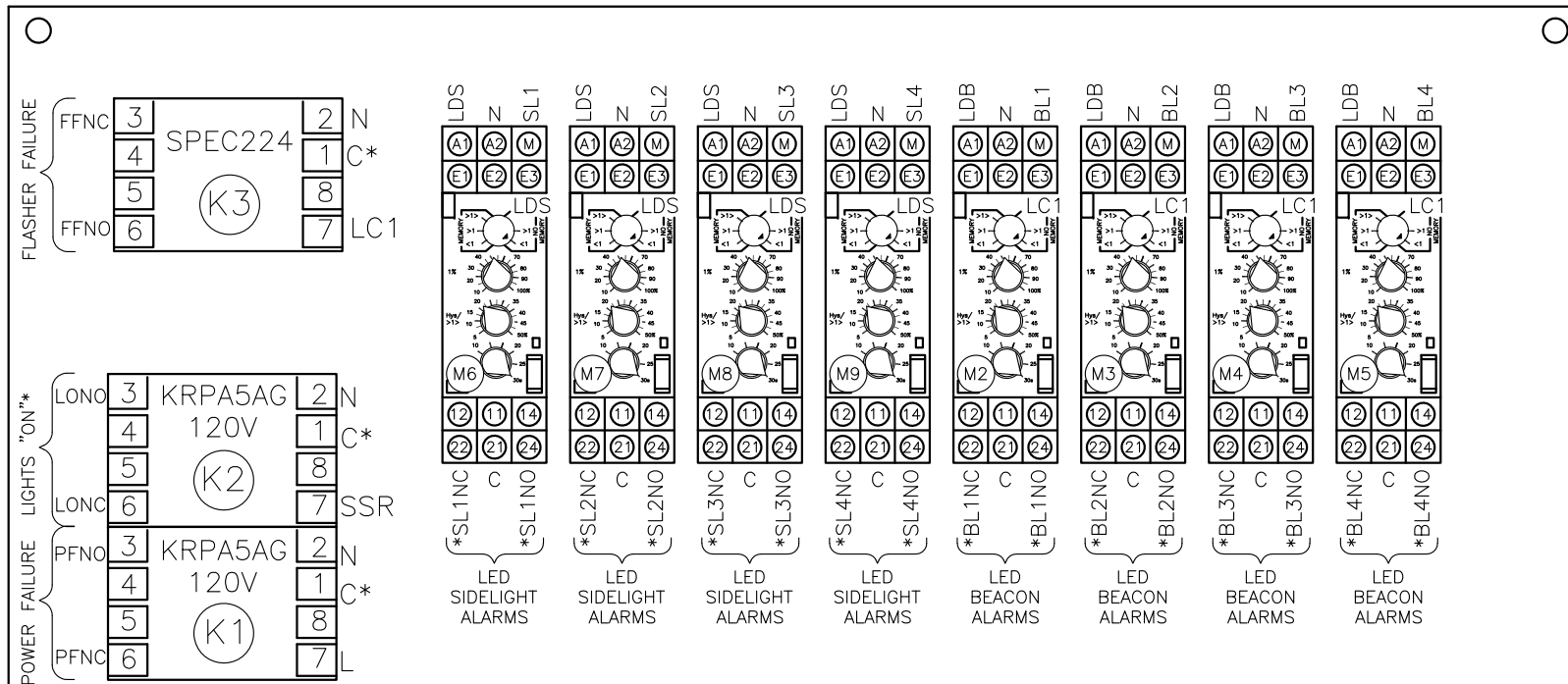
\_\_\_\_\_

**SIGNED** \_\_\_\_\_ **DATE NEEDED** \_\_\_\_\_

**RETURN ADDRESS:** \_\_\_\_\_

\_\_\_\_\_

PLEASE RETURN PRODUCT TO: 10810 W. LITTLE YORK RD., #130 HOUSTON, TX 77041-4150



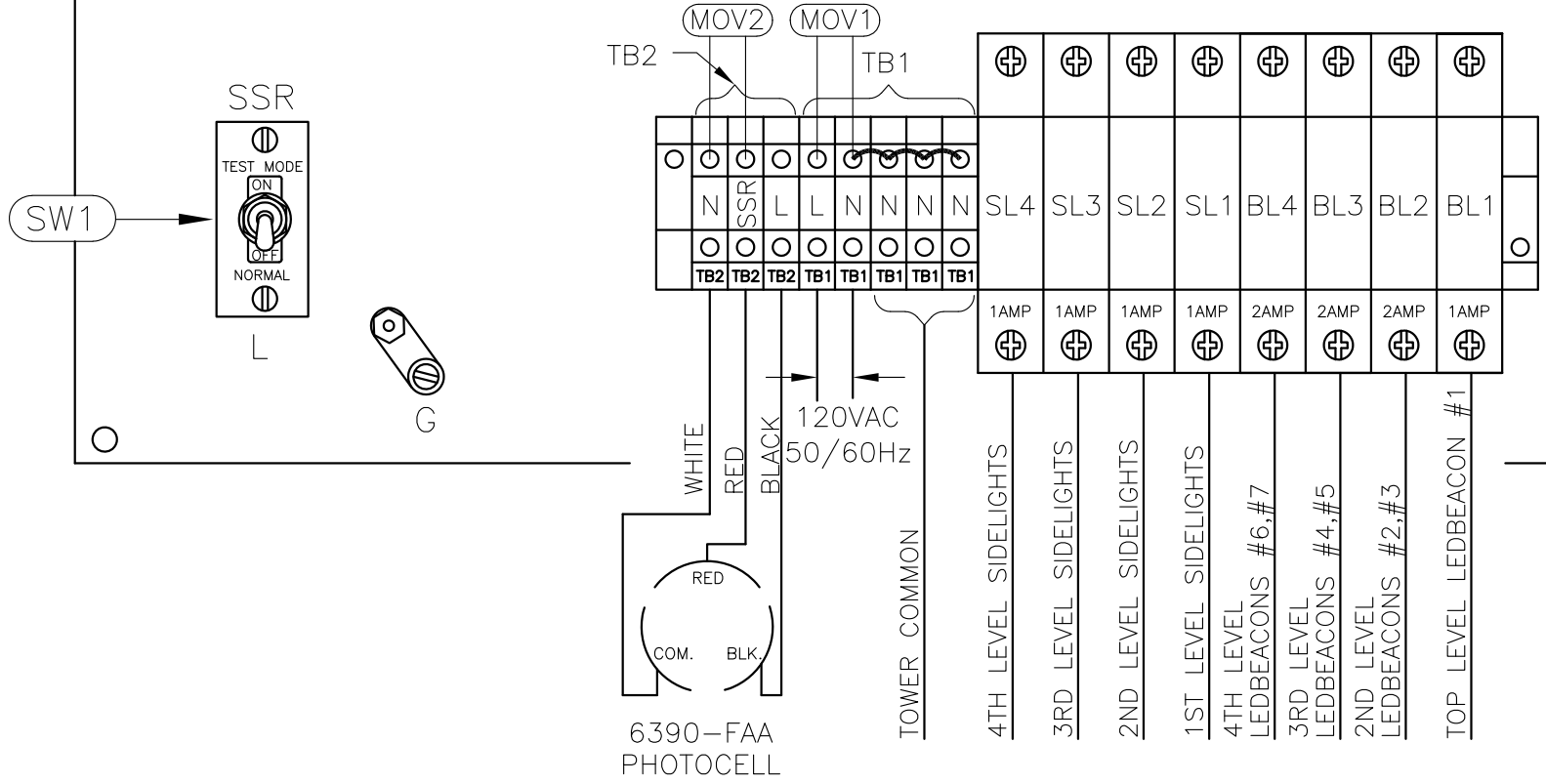
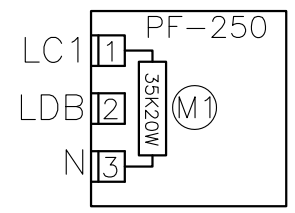
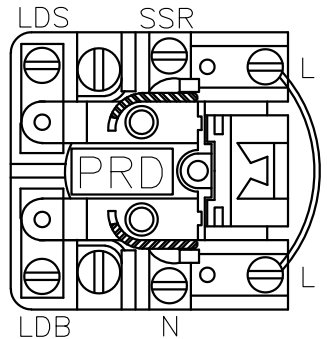
**\*CUSTOMER ALARM POINTS**

- C = ALARM COMMON
- NC = NORMALLY CLOSE
- NO = NORMALLY OPEN
- PFNO/PFNC = POWER FAILURE
- LONO/LONC = LIGHTS "ON"
- BL1NO/BL1NC = LED BEACON LEVEL #1 FAILURE
- BL2NO/BL2NC = LED BEACON LEVEL #2 FAILURE
- BL3NO/BL3NC = LED BEACON LEVEL #3 FAILURE
- BL4NO/BL4NC = LED BEACON LEVEL #4 FAILURE
- SL1NO/SL1NC = LED SIDELIGHT LEVEL #1 FAILURE
- SL2NO/SL2NC = LED SIDELIGHT LEVEL #2 FAILURE
- SL3NO/SL3NC = LED SIDELIGHT LEVEL #3 FAILURE
- SL4NO/SL4NC = LED SIDELIGHT LEVEL #4 FAILURE

\* ALARM OUTPUTS ARE FORM C.

**NOTES:**

1. WHEN REPLACING METAL BASE MODULES USE HEAT SINK COMPOUND BETWEEN MODULE AND ALUMINUM PLATE.
2. WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) LDB TO LDB TO LDB.

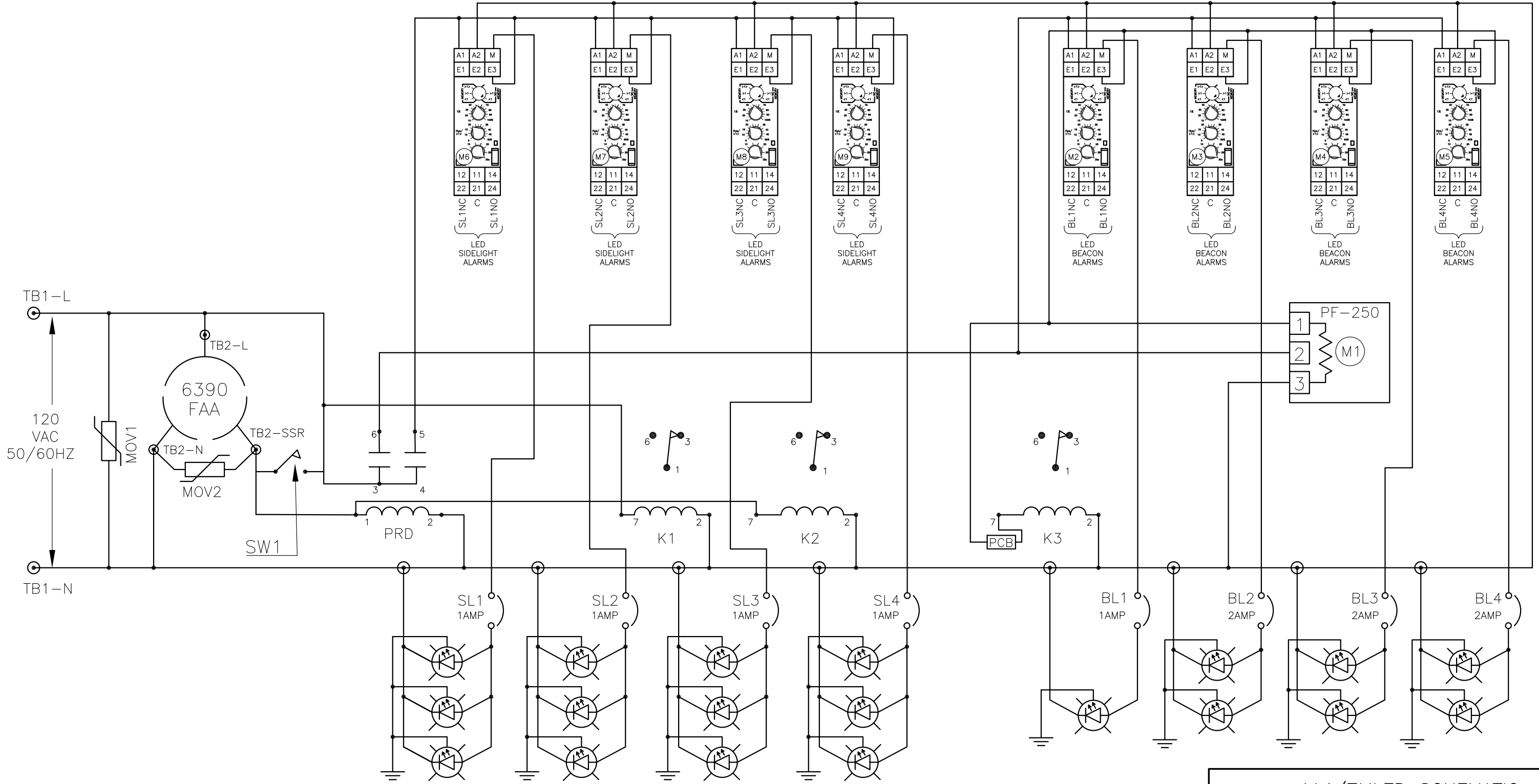


6/04/21		GDS	BL2-BL4 1.5 to 2AMP
DATE:	LTR.		REVISION

<b>AA4/7MLED CONTROLLER</b>			
<b>CHASSIS LAYOUT</b>			
PROD DEPT	<b>TWR Lighting, Inc. </b> <i>Enlightened Technology</i>		
SERV DEPT			
ENGINEER			
DRAWN BY	E.A.SALAZAR	SHEET SIZE	SHEET QTY.
DATE	10/24/06	B	1 OF 1
	SCALE	N.T.S.	DWG. NO.
			1235-R

The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of compliance with FAA requirements as published in Advisory Circular 150/5345-43.

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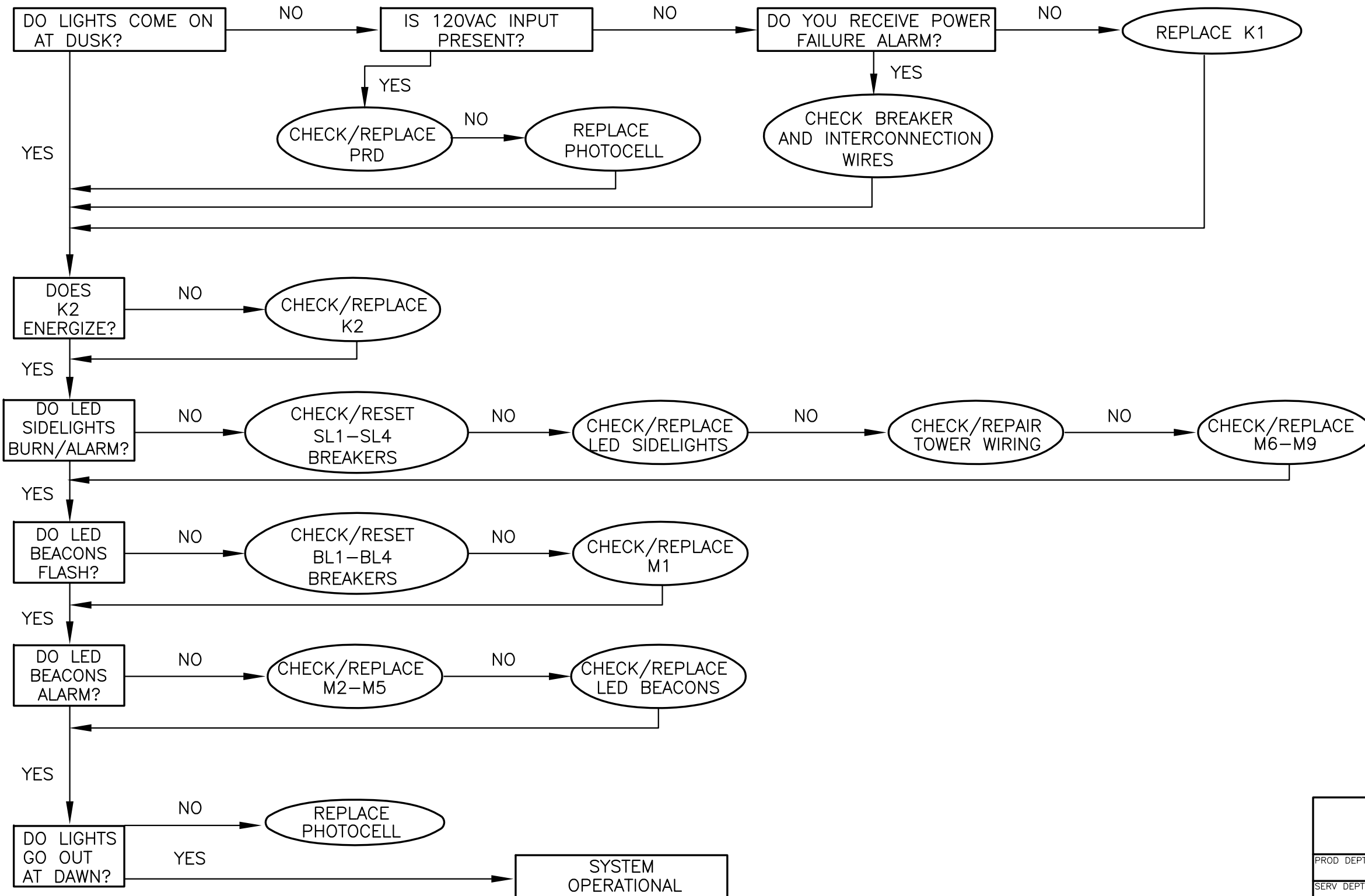
AA4/7MLED SCHEMATIC

PROD DEPT	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology®</i>	SHEET SIZE	SHEET QTY.
SERV DEPT		B	1 OF 1
ENGINEER			

DRAWN BY	E.A.SALAZAR	DATE	10/24/06	SCALE	N.T.S.	DWG. NO.	1235-S
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06/04/2021		BL2-BL4 1.5 to 2AMP
DATE:	LTR.	REVISION

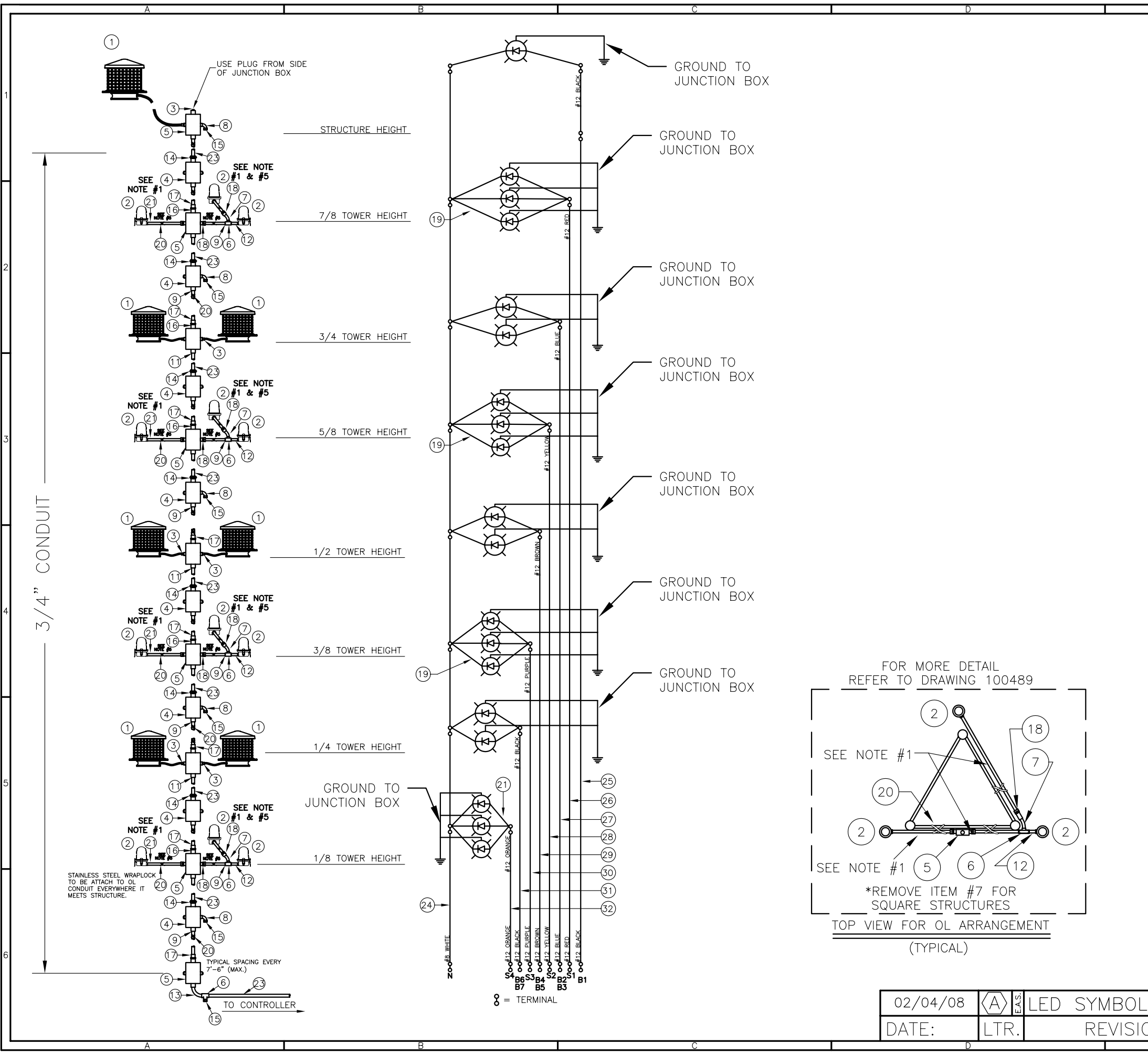
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**AA4/7MLED TROUBLESHOOTING  
FLOW CHART DWG# 1235-R**

PROD DEPT	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology®</i>		
SERV DEPT			
ENGINEER			
DRAWN BY E.A.SALAZAR	SHEET SIZE B	SHEET QTY. 1 OF 1	
DATE 10/24/06	SCALE N.T.S.	DWG. NO. 1235-F	

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**BILL OF MATERIALS**

ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
1	7	LED BEACON	LED BEACON
2	12	OL1LED	LED SIDELIGHT 3/4"
3	7	CG295SA	3/4" CORD CONNECTOR 0.5 - 0.625
4	8	JB8SRC	1" STRAIN RELIEF
5	9	JB82TC	1" CAST JUNCTION BOX W/2 TERM
6	5	T27CG	3/4" CONDULET W/COVER AND GASKET
7	4	EL3430	3/4" 30° ELBOW
8	5	EL3490	3/4" 90° ELBOW
9	46	A314	3/4" CONDUIT LOCKNUTS
10	4	PIPDOP	4 oz. PIPE DOPE
11	34	RE32	1" TO 3/4" REDUCER
12	4	N34T3	3/4" x 3" NIPPLE
13	2	EL34SW90	3/4" 90° SWEEP ELBOW
14	9	UNY205	3/4" UNION
15	6	5012902	3/4" BREATHER
16	8	N34T18	3/4" x 18" NIPPLE
17	8	EXPJNT34	3/4" EXPANSION JOINT
18	12	HC402	3/4" NO THREAD CONNECTOR
19	12	SLPIGTAIL25G	25' SIDELIGHT PIGTAIL WITH GROUND WIRE
20	3	SS10012	STAINLESS STEEL WRAPLOCK 100'
21	120	CONDUIT34	3/4" CONDUIT
22	1	AA4/7 LED	AA4/7 LED CONTROLLER

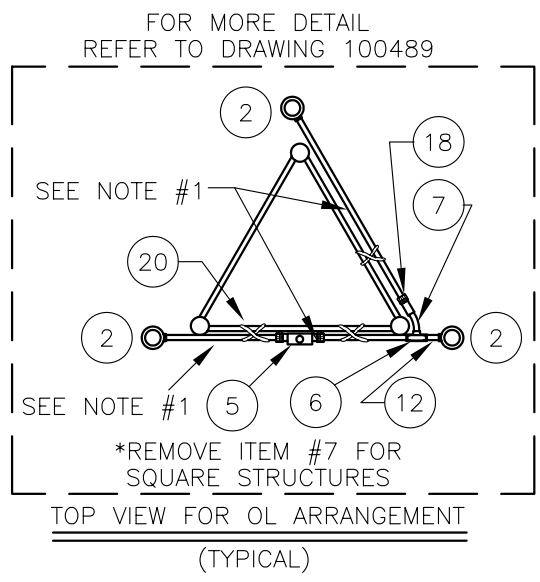
ITEM NUMBERS #23-#32 ARE NOT INCLUDED IN THE KIT BUT ARE AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.

23	-	CONDUIT34	3/4" CONDUIT (TOWER HT. + 40'/12M)
24	-	8THHNWHT	#8 THHN WHT. WIRE (TOWER HT. + BRIDGE + 60'/19M)
25	-	12THHNBLK	#12 THHN BLK. WIRE (TOWER HT. + BRIDGE + 60'/19M)
26	-	12THHNRED	#12 THHN RED WIRE (7/8 TWR HT. + BRIDGE + 60'/19M)
27	-	12THHNBLUE	#12 THHN BLUE WIRE (3/4 TOWER HT. + BRIDGE + 60'/19M)
28	-	12THHNYLW	#12 THHN YLW. WIRE (5/8 TWR HT. + BRIDGE + 60'/19M)
29	-	12THHNB RN	#12 THHN BRN WIRE (1/2 TOWER HT. + BRIDGE + 60'/19M)
30	-	12THHNPLE	#12 THHN PLE. WIRE (3/8 TWR HT. + BRIDGE + 60'/19M)
31	-	12THHNBLK	#12 THHN BLK. WIRE (1/4 TOWER HT. + BRIDGE + 60'/19M)
32	-	12THHNORG	#12 THHN ORG. WIRE (1/8 TOWER HT. + BRIDGE + 60'/19M)

\* = ITEMS NOT SHOWN

**NOTES:**

- 1) PART #CONDUIT34 CUT TO LENGTH FOR PROPER EXTENSION OF OL1 (6"-12") FROM STRUCTURE. ATTACH PART #HC402 TO UNTHREADED CONDUIT TO COMPLETE ASSEMBLY.
- 2) MOUNT BEACON HINGE SO LENS WILL OPEN UNOBSTRUCTED BY STRUCTURE.
- 3) ON AM TOWER APPLICATIONS, KEEP GROUND LUG FROM BEING CONNECTED TO EARTH GROUND. GROUND TO THE TOWER ONLY.
- 4) THIS DRAWING IS PROVIDED AS A GENERAL REFERENCE. TWR LIGHTING, INC. DOCUMENTATION SUPERSEDES THIS DRAWING & SHOULD BE REVIEWED PRIOR TO INSTALLATION OF THIS SYSTEM.
- 5) USE COUPLING THAT IS PROVIDED WITH PART #CONDUIT34.
- 6) CONDUIT SIZE BASED ON USING TYPE THHN WIRE.
- 7) USE RIGID GALVANIZED STEEL CONDUIT.
- 8) BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.



**LK2A4/7LED TOWER LIGHTING KIT**  
(TOWERS 1051'/320M TO 1400'/427M)

PROD DEPT	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology</i>	SHEET SIZE	SHEET QTY.
SERV DEPT		B	1 OF 1
ENGINEER			
DRAWN BY	J.L.BUSTAMANTE	DATE	09/05/07
DATE	09/05/07	SCALE	N.T.S.
DWG. NO.	803-02		

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02/04/08	(A)	LED SYMBOLS
DATE:	LTR.	REVISION

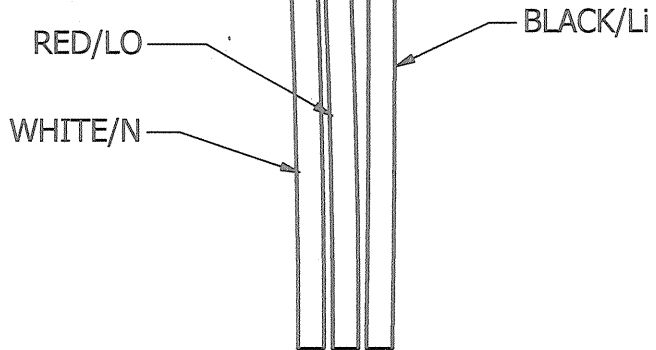
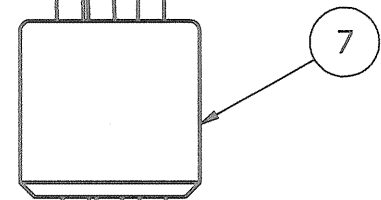
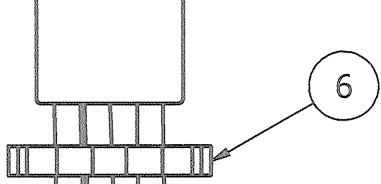
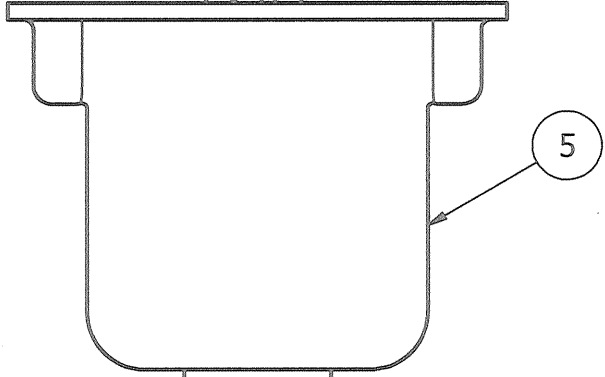
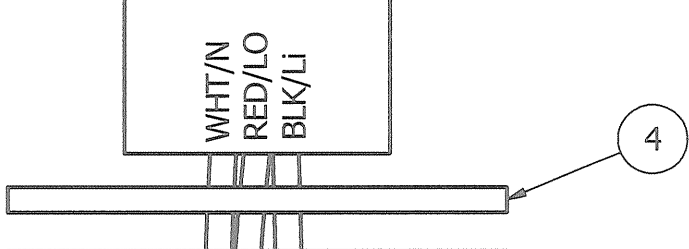
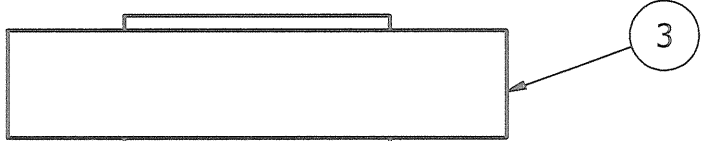
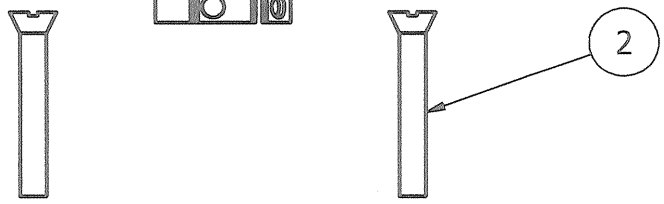
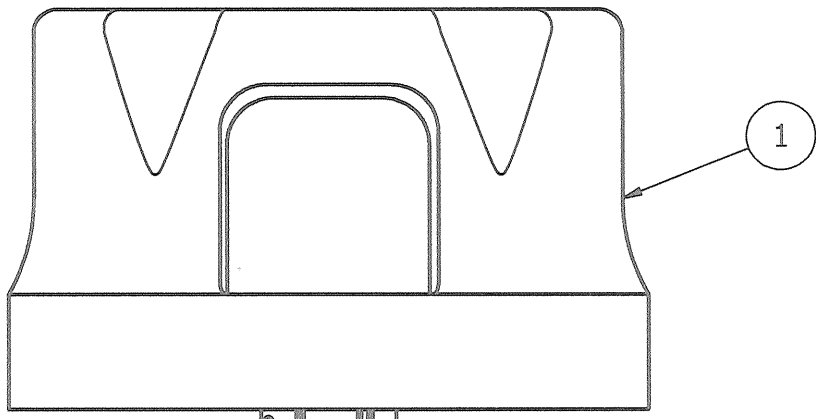
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3

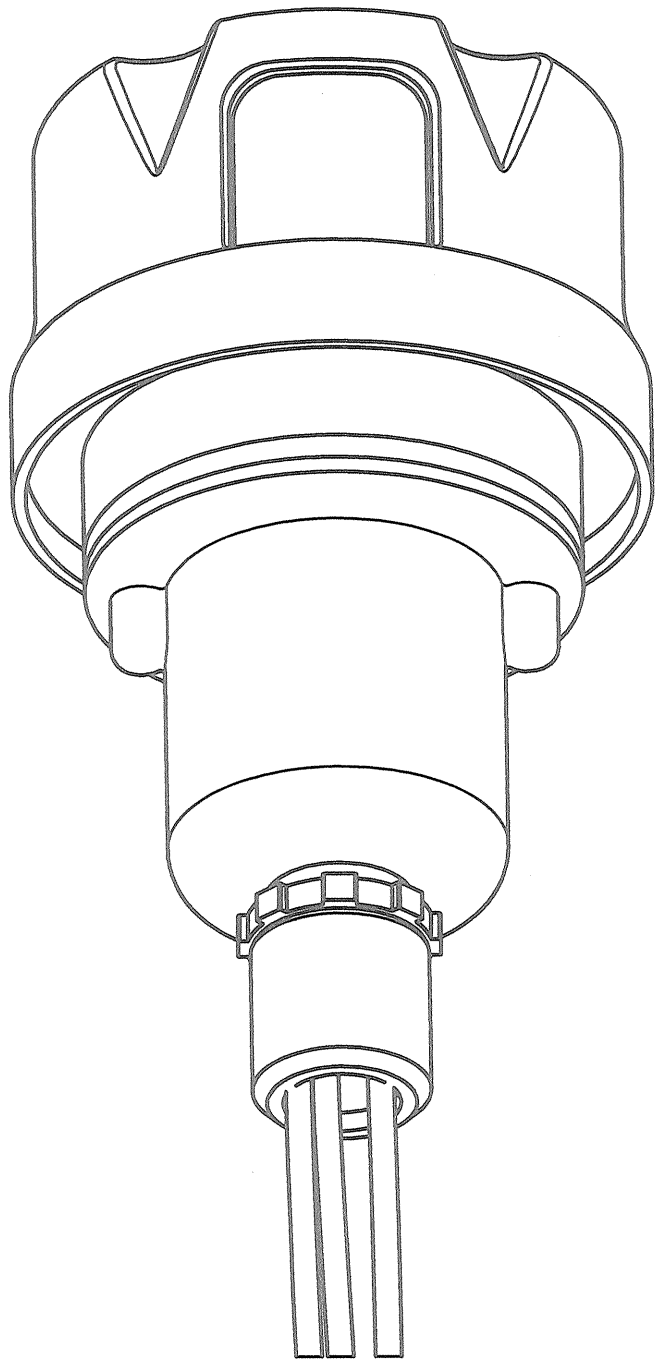
2

1

PARTS LIST		
ITEM	QTY	PART NUMBER
1	1	PHOTOCELL
2	2	6-32 x 1" SCREW
3	1	RECEPTACLE SOCKET
4	1	RECEPTACLE GASKET
5	1	RECEPTACLE HOUSING
6	1	1/2" CONDUIT LOCKNUT
7	1	3/4" TO 1/2" REDUCER



EXPLODED VIEW



ASSEMBLY

NOTES:

- 1. ITEM #7 CAN BE USED TO REDUCE 3/4" CONDUIT TO 1/2" CONDUIT AT THE HOUSING OR AT THE CONTROLLER ITSELF.
- 2. IF ADDITIONAL WIRE IS REQUIRED OVER THE FACTORY 20', USE THE FOLLOWING CHART.  
 21' TO 300' - 16 AWG TFFN  
 301' TO 500' - 14 AWG TFFN

PHOTOCELL HOUSING DETAIL

PROD. DEPT  
 SERV. DEPT  
 ENGINEER  
**TWR Lighting, Inc. HARK**  
*Enlightened Technology®*

DRAWN BY	vhernandez	SHEET SIZE	B	SHEET QTY.	1 OF 1
DATE	10/18/1995	SCALE	1/1	DWG. NO.	100239i

DATE	REV	AUTHOR	DESCRIPTION
02/03/2015	H	JZAMORANO	UPDATED NOTES

4

3

2

1



# AC UNITS CURRENT MEASUREMENT RM22JA31MRSP01

## 120VAC PRODUCT SPECIFIC SETTINGS

QTY.	PART NO.	INPUT	#1	#2	#3	#4	#5
1	OL1_LED2	E2	*<1	30	20	30	OFF
2	OL1_LED2	E2	*<1	50	20	30	OFF
3	OL1_LED2	E3	*<1	<b>15</b>	20	30	OFF
4	OL1_LED2	E3	*<1	25	20	30	OFF
6	OL1_LED2	E3	*<1	35	20	30	OFF
8	OL1_LED2	E3	*<1	45	15	30	OFF
10	OL1_LED2	E3	*<1	60	10	30	OFF
1	LEDBEAON2	E3	*<1	<b>20</b>	20	30	OFF
1	LEDBEAON2A	E3	*<1	<b>15</b>	20	30	OFF
1	LEDBEAON2(T)	E3	*<1	<b>25</b>	20	30	OFF
1	STLDBEAON2	E3	*<1	<b>20</b>	20	30	OFF
1	STLDBEAON2A	E3	*<1	<b>15</b>	20	30	OFF
2	STLDBEAON2A	E3	*<1	<b>25</b>	20	30	OFF
2	STLDBEAON2A	E3	*<1	<b>25</b>	20	30	OFF

\*NO MEMORY

### FUNCTIONS

- 1) Configuration: Selection of operation mode (<1 / >1 / >1<) with or without memory.
- 2) Adjustment of current threshold as % of setting range.
- 3) Hysteresis adjustment from 5% to 50%.
- 4) Time Delay adjustment from 0.1 to 30sec.
- 5) Diagnostic button.
- 6) Yellow indicator light (**See conditions below**)
- 7) Dial Pointer (Green) LED
  - Steady green LED indicates that supply to the RM22 is present
  - Flashing green LED indicates a setting has been changed that requires a power cycle.

### YELLOW LED CONDITIONS

**NOTE:** ( ) ASTERISK INDICATES LED CONDITIONS OPERATE OPPOSITE FROM RM22JA31MR MODULE

\*

- ➔ Steady Burn Fixtures
  - Yellow light \*off : Normal condition (no alarm)
  - Yellow light flashing : Undercurrent condition detected and time delay initiated
  - Yellow light \*on : Alarm condition
- ➔ Flashing Fixtures
  - Yellow light flashing inconsistent : Normal condition (no alarm)
  - Yellow light flashing consistent : Under current condition detected and time delay initiated

**NOTE :** To help troubleshoot or to set the sense current, turn the time delay to 0sec. Adjusting the current setting should only be done if it is known that all the lights are functioning. For Steady Burn adjust the current until the yellow LED comes \*off, and the relay is not dropping in and out. For Flashing Fixtures adjust the current setting until the yellow light starts to flash. This is the normal condition setting. Return the time delay back to 30sec.

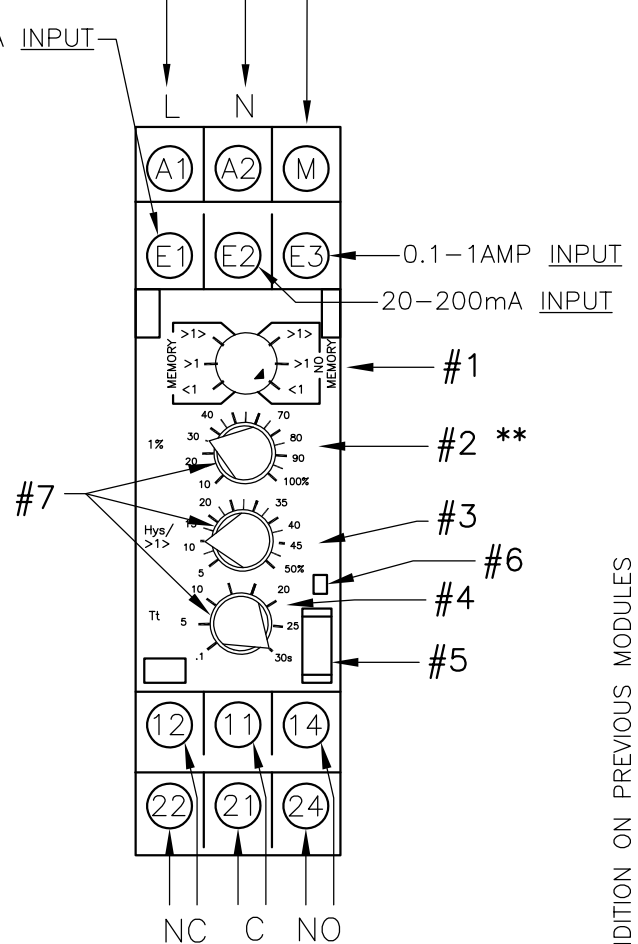
- Yellow light \*on : Alarm condition

\*\* Due to current draw tolerances slight adjustments to setting #2 may be needed for proper alarming.

CONTROL VOLTAGE INPUT

4-40mA INPUT

OUTPUT TO LOAD



4

3

2

1

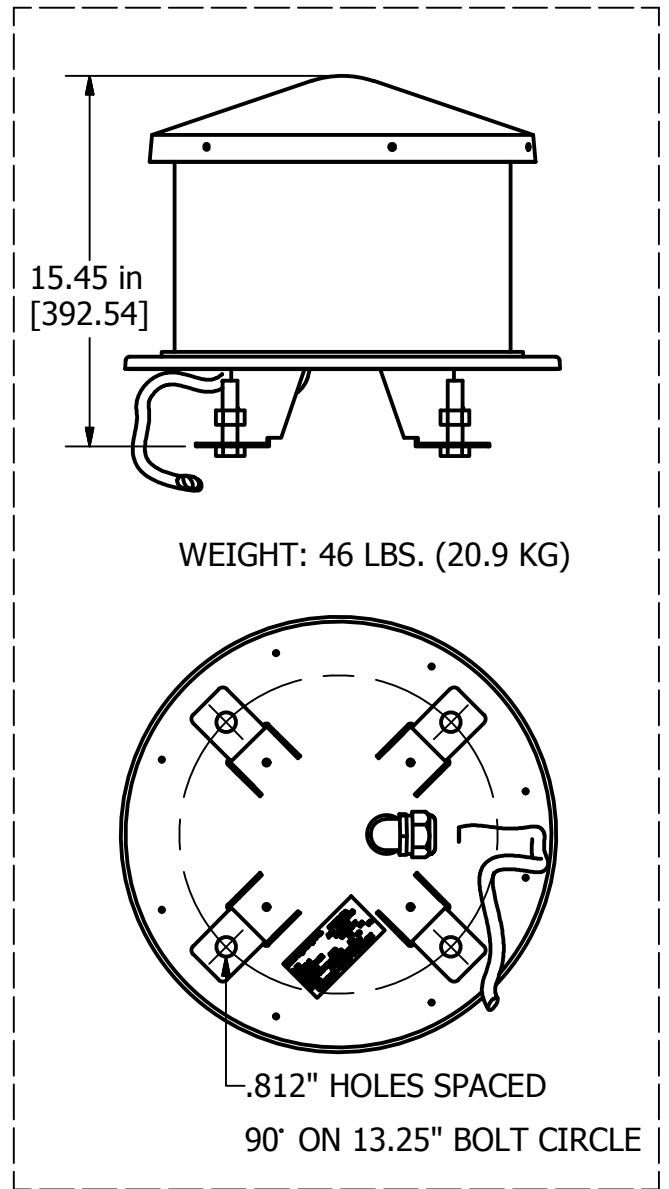
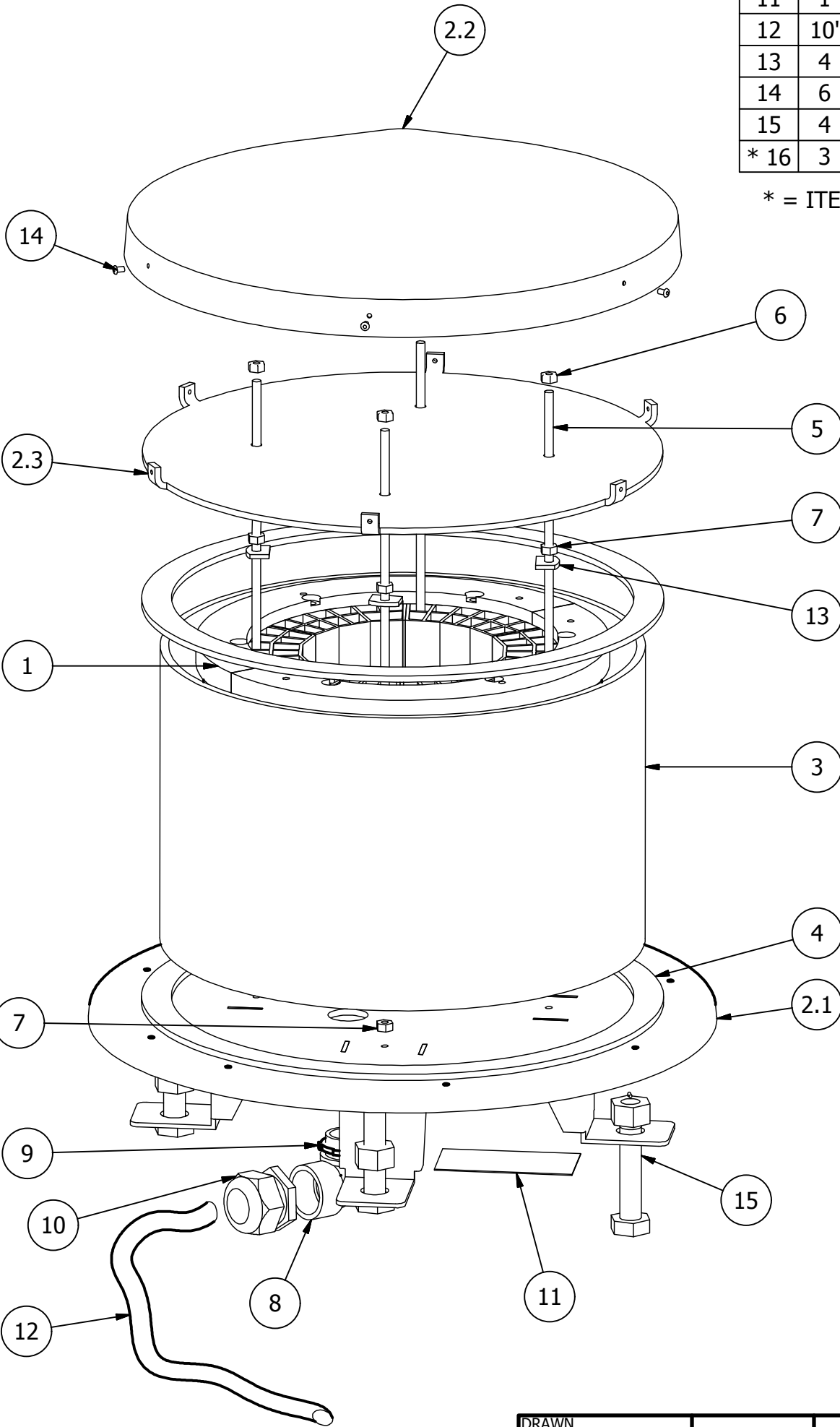
Parts List

ITE	QTY	PART NUMBER	DESCRIPTION
1	1	LEDLITEENG	120 VAC L-864 LED LIGHT ENG
2	1	LEDFRAMKIT	LEDBEA KIT / BASE, LID & CAP
2.1	1	(100672-01)	LEDBEA CON BASE PLATE
2.2	1	(100344)	CAP DUAL BEACON
2.3	1	(100673)	LEDBEA CON1 LID PLATE
3	1	STLDBCTUBE	CLEAR ACRYLIC TUBE 14"
4	2	STBEAGSK2	GASKET 3/16 X 15 1/4
5	4	1420X81316AT	14-20 X 8-13/16 S/S
6	4	1420SSNUTN	1/4-20 S/S NUT W/NYLON
7	8	1420NUT	1/4-20 S/S NUT
8	1	EL190S	1" 90 SHORT ELBOW GALV
9	1	A315	1" CONDUIT LOCKNUT GALV
10	1	CC-MPT-1-G	1" CORD CONNECTOR
11	1	STCONLAB2	PRODUCT LABEL
12	10'	CS014/3	3 - #14 SO CORD
13	4	100606M	RETAINING WASHER
14	6	18PRSS	1/8 X .45 SS POP RIVET
15	4	58X234	A325 5/8 X 1-1/2 W/LNUT
* 16	3	* 14RB-2577	FEM DISC 16-14 GA

\* = ITEMS NOT SHOWN

B

B



WEIGHT: 46 LBS. (20.9 KG)

.812" HOLES SPACED 90° ON 13.25" BOLT CIRCLE

A

A

DRAWN	gsebek	2/8/2005
CHECKED		10/12/2005
QA		
MFG		10/12/2005
APPROVED		10/12/2005

**TWR Lighting, Inc.** **WARK**  
*Enlightened Technology*

TITLE  
**LEDBEA CON ASSEMBLY**

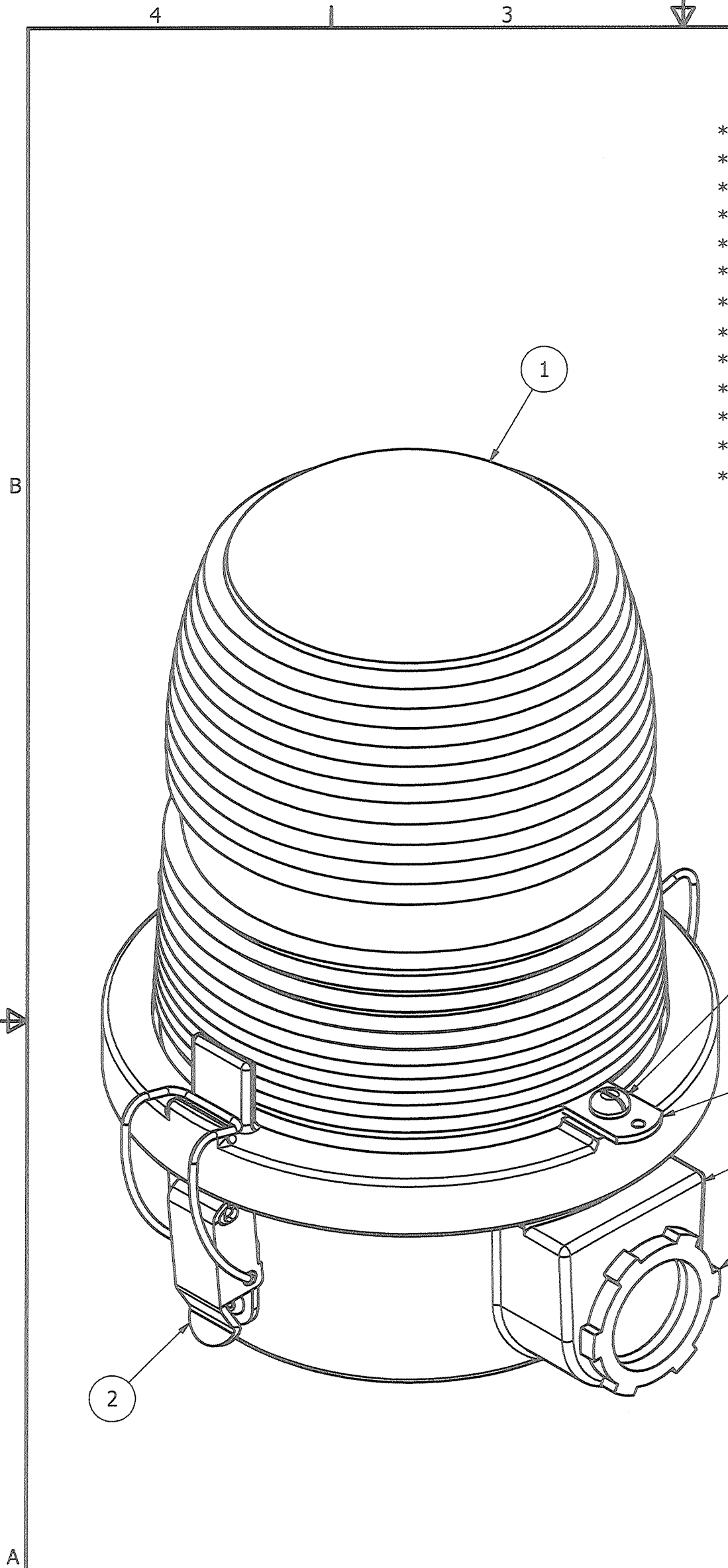
SIZE	DWG NO	REV
B	100674	B
SCALE	SHEET 1 OF 1	

4

3

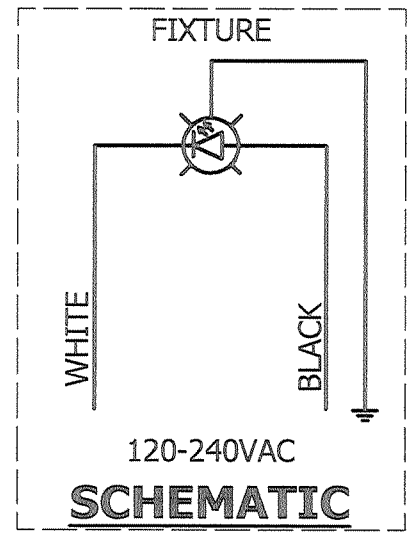
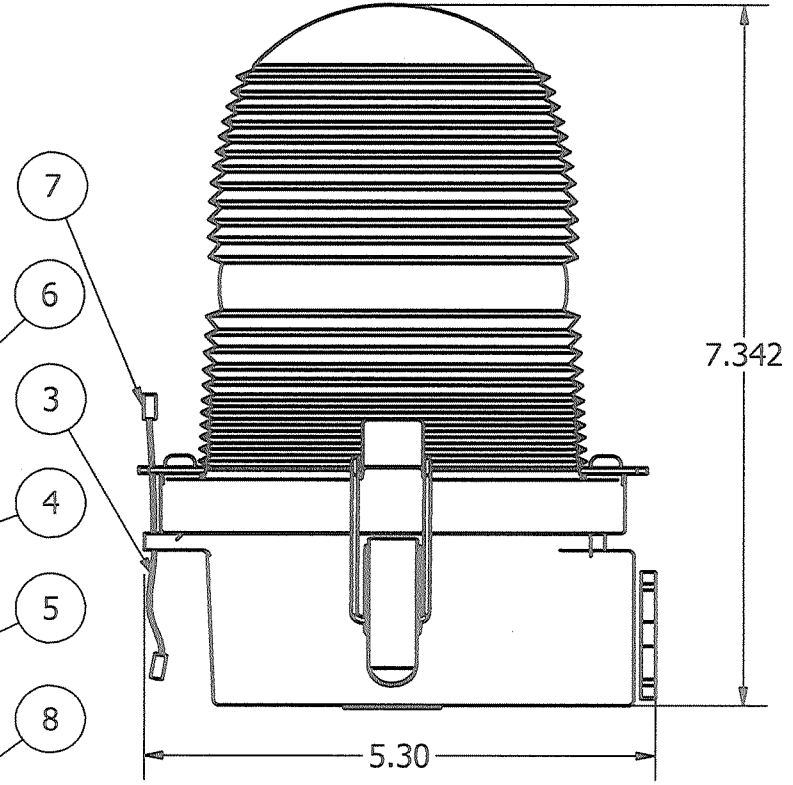
2

1



Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	OL1VLED2	L810 OBSTRUCTION LIGHT
* 1.1	1	100588_RE	OL 6LED BASE PLATE
* 1.2	1	100591	OL 6LED STAR DISK
* 1.3	1	100680	OL1/2 SERIAL # LABEL
* 1.4	1	A10290	5/32" ID RUBBER GROMMET
* 1.5	6	STD05008	LED EMITTER
* 1.6	1	OLG	OL GASKET
* 1.7	1	AP100846	SIDELIGHT LENS CLEAR ACYRLIC
* 1.8	1	106V	LENS HOLDER RING
* 1.9	6	STE01-047	LED VERTICAL PCB
* 1.10	16	18PRSS	1/8 X .45 SS POP RIVET
* 1.11	1	PS90-260/24	POWER SUPPLY
* 1.12	1	20RED	#20AWG RED BELDON WIRE
* 1.13	2	WIRENUTBLU	BLUE WIRE NUT
2	2	HC255SS	SIDELIGHT LATCH
3	1	7X7SS	1/16 HOL 7X7 S.S. WIRE
4	2	12V245	OL LENS CLIP
5	1	105V	SINGLE SIDELIGHT BODY
6	2	832X14PH	8-32 X 1/4 PH SS SLOT SCREW
7	2	A1A	STAKON CRIMP
8	1	A314	3/4" CONDUIT LOCKNUT GALV.

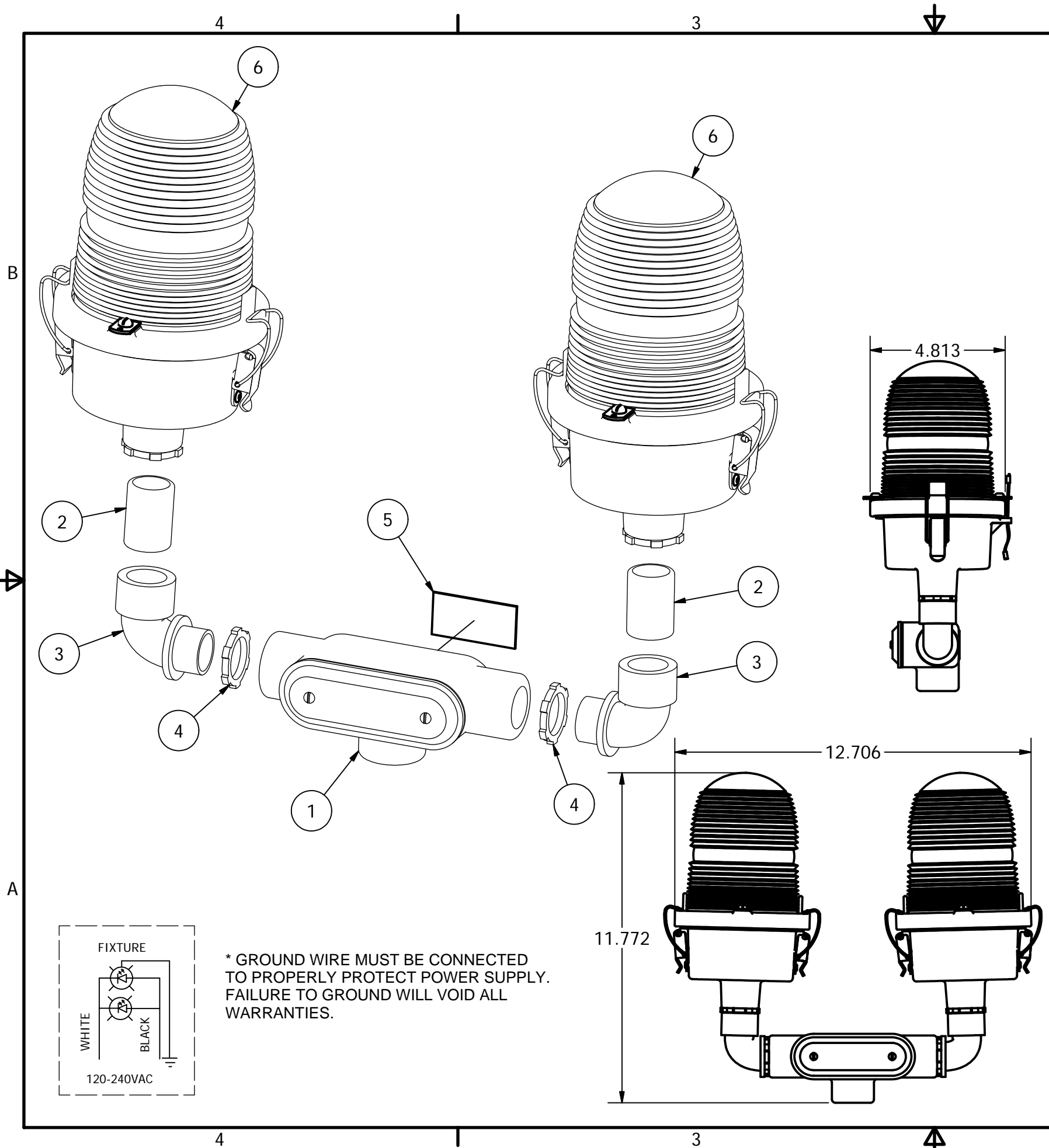
\* = ITEMS NOT SHOWN



\* GROUND WIRE MUST BE CONNECTED TO PROPERLY PROTECT POWER SUPPLY. FAILURE TO GROUND WILL VOID ALL WARRANTIES.

DRAWN gsebek	8/18/2004	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology®</i>	<b>WARK®</b>
CHECKED			
QA			
MFG			
APPROVED	<i>[Signature]</i> 11/10/14	TITLE OL1VLED2 120-240VAC FAA-OL16LED (L810 OBSTRUCTION LIGHT)	
DATE	REV	AUTHOR	DESCRIPTION
11/07/14	E	JZAMORANO	REM. WIRE CONNECT
SIZE B		DWG NO 100656i	
SCALE		REV E	
SHEET 1 OF 1			

DATE	REV	AUTHOR	DESCRIPTION
11/07/14	E	JZAMORANO	REM. WIRE CONNECT

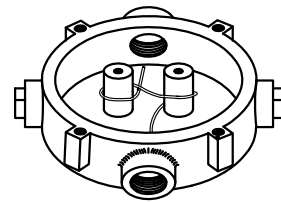
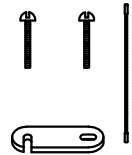
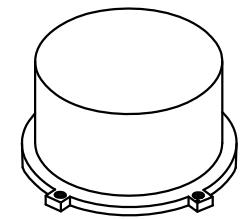
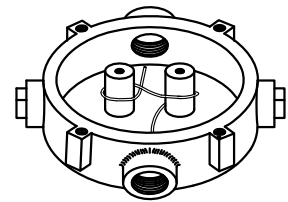
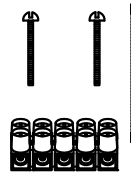
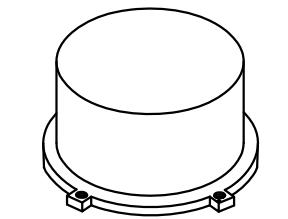


\* GROUND WIRE MUST BE CONNECTED TO PROPERLY PROTECT POWER SUPPLY. FAILURE TO GROUND WILL VOID ALL WARRANTIES.

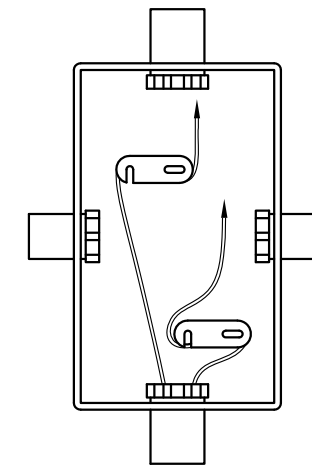
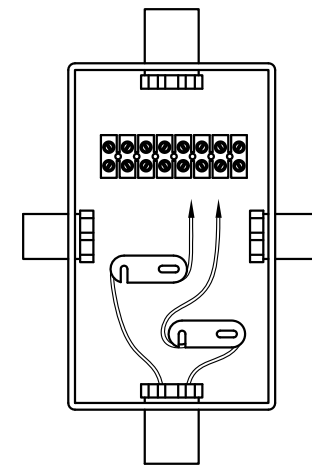
Parts List			
ITEM	QTY	STOCK NUMBER	DESCRIPTION
1	1	T27CG	T27 CONDULET W/COVER & GSKT
2	2	34CLNP	3/4" GALV CLOSE NIPPLE
3	2	EL3490	3/4" 90 DEGREE SHORT ELBOW GALV
4	5	A314	3/4" CONDUIT LOCKNUT GALV.
5	1	100680	OL1/2 LED SERIAL # LABEL
6	2	OL1VBH34LED2	FAA OL16LED 120/240VAC VALOX LED BH SL 3/4
* 6.1	1	105RV	VALOX SINGLE SIDELIGHT BODY
* 6.2	1	106V	VALOX LENS HOLDER RING
* 6.3	2	HC255SS	SIDELIGHT LATCH
* 6.4	1	OLG2	OL1 6 LED GASKET
* 6.5	16	18PRSS	1/8 X .45 SS POP RIVET
* 6.6	.5	7X7SS	1/16 HOL 7X7 S.S. WIRE
* 6.7	2	A1A	STAKON CRIMP
* 6.8	1	A314	3/4" CONDUIT LOCKNUT GALV.
* 6.9	3	12V245	OL LENS CLIP
* 6.10	3	832X14PH	8-32 X 1/4" PH SS SLOT SCREW
* 6.11	1	AP100846	SIDELIGHT LENS CLEAR ACYRLIC
* 6.12	1	PS90-260/24	POWER SUPPLY
* 6.13	6	STE01-047	LED VERTICAL PCB
* 6.14	1	100588	OL 6LED BASE PLATE
* 6.15	1	100591	OL 6LED STAR DISK
* 6.16	6	STD05008	LED EMITTER
* 6.17	1	A10290	5/32" X 11/32" RUBBER GROMMET
* 6.18	3	632X14PHH	6-32 X 1/4" PH PH SCREW
* 6.19	.3	20RED	#20AWG RED BELDON WIRE
* 6.20	1	14GREEN	#14AWG GREEN BELDON WIRE
* 6.21	1	14RB6R	RING TERMINAL (GROUND WIRE)
* 6.22	3	WIRENUTRED	RED WIRE NUT FOR #8 TO #12 WIRE

\* = ITEMS NOT SHOWN

DRAWN gsebek	6/9/2005	<b>TWR Lighting, Inc. WARK</b> <i>Enlightened Technology®</i>	
CHECKED			
QA		TITLE	
MFG		OL2VLED2 FAA-OL16LED 120-240VAC DOUBLE VALOX LED SL (L810 LED DOUBLE OBSTRUCTION LIGHT)	
APPROVED		SIZE B	REV F
REVISION JZAMORANO	11/07/14	DWG NO 100658	SCALE
		SHEET 1 OF 1	



JB-5 AND JB-0  
3/4" JUNCTION BOX



JB-8 AND JB-8SR  
1" JUNCTION BOX

NOTES:

- 1) DRAWING ILLUSTRATES METHOD OF STRAIN RELIEVING WIRE. USE THIS METHOD ON ALL JUNCTION BOXES.
- 2) THE NATIONAL ELECTRICAL CODE-ARTICLE 300-19-B3 REQUIRES CONDUCTORS IN A VERTICAL CONDUIT BE SUPPORTED TO RELIEVE STRAIN ON TERMINAL BLOCK CONNECTIONS.
- 3) SKETCH ILLUSTRATES METHOD OF STRAIN RELIEVING A SINGLE CONDUCTOR. SEVERAL CONDUCTORS MAY BE GROUPED TOGETHER.
- 4) CONDUCTORS MAY BE MIXED BUT SHOULD NOT TAKE UP MORE THAN 40% OF CONDUIT'S INSIDE AREA.

USING THIS JUNCTION BOX METHOD SPACING IS 100 FEET MAXIMUM.

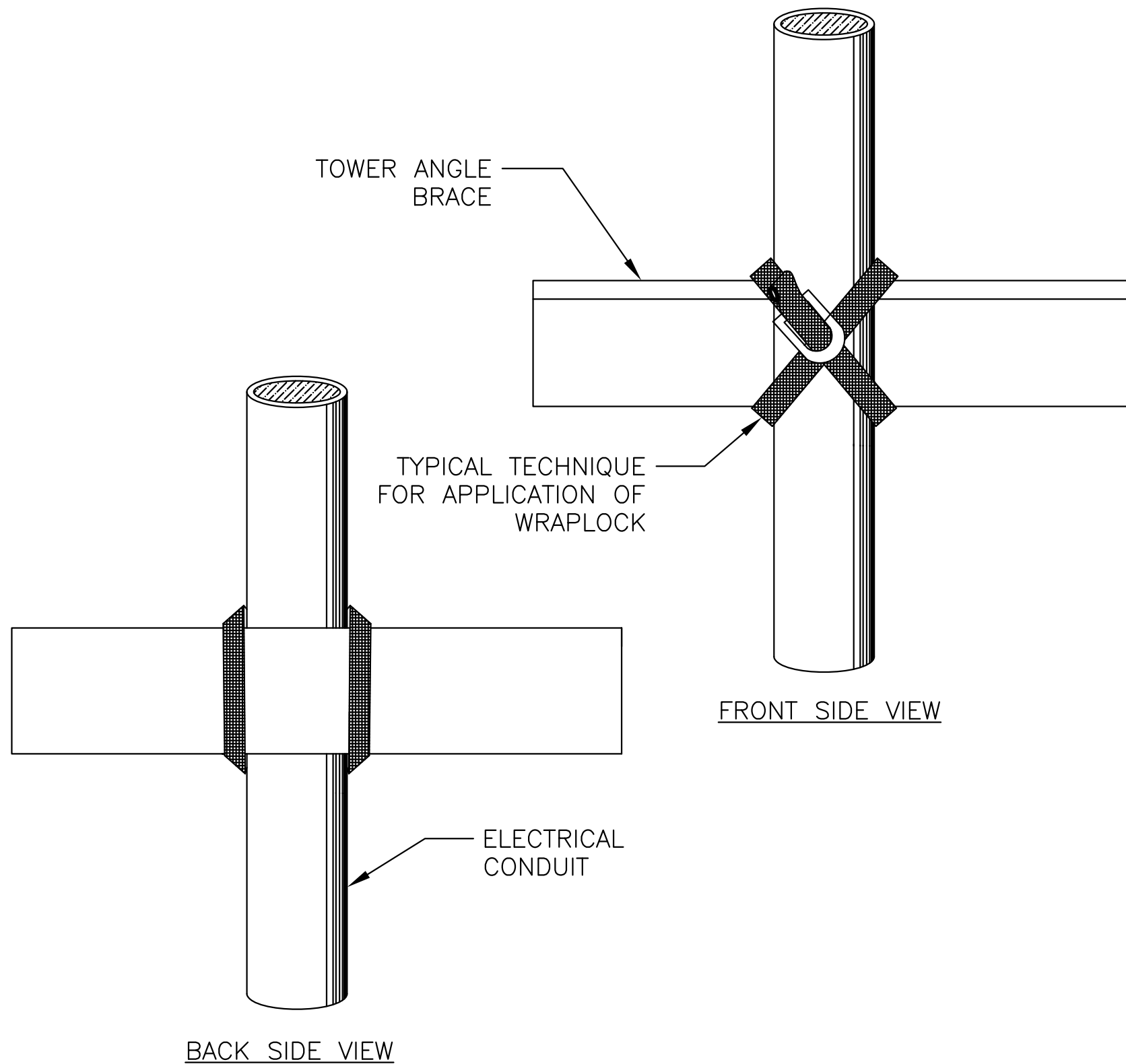
AWG WIRE SIZE	MAX. NUMBER WIRES IN 3/4" CONDUIT	MAX. NUMBER WIRES IN 1" CONDUIT	WIRE AREA SQ. INCHES	WEIGHT PER 100 FEET
12 THHN	16	26	0.0117	2.50
10 THHN	10	17	0.0184	4.10
8 THHN	6	9	0.0373	6.70
6 THHN	4	7	0.0519	10.30
4 THHN	2	4	0.0845	16.20

<u>JUNCTION AND STRAIN RELIEF BOXES</u>					
PROD DEPT	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology®</i>				
SERV DEPT					
ENGINEER					
DRAWN BY	G.D. SEBEK	SHEET SIZE	B	SHEET QTY.	1 OF 1
DATE	07/26/93	SCALE	N.T.S.	DWG. NO.	100089

9/29/00	(A)	UPDATED NOTES
DATE:	LTR.	REVISION

The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43.  
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## DIRECTIONS FOR USING WrapLock

CUT OFF BAND TO PROPER LENGTH.  
(SEE TABLE ON COVER OF BOX)

1.— PASS ONE END THROUGH YOKE AND BEND BACK ABOUT 1 1/2" AND FLATTEN DOWN.



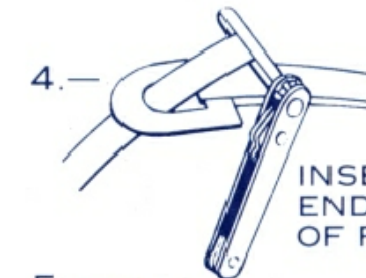
2.— PASS BAND AROUND WORK AND THROUGH YOKE.



3.— REPEAT AND PASS END THROUGH A SECOND TIME, DRAW UP FREE END SNUGLY WITH PLIERS.



4.—



INSERT FREE END IN SLOT OF RATCHET.

5.—



TURN DOWN UNTIL CLAMP IS TIGHT.

6.—

BACK OFF SLIGHTLY TO REMOVE RATCHET. CLAMP IS NOW SECURELY LOCKED.

### TO REMOVE WrapLock

UNCOIL END WITH RATCHET. PRESS DOWN AT POINT WHERE BAND METAL HAS BEEN FORCED THROUGH CURVED PART OF YOKE.

#### WRAPLOCK FASTENING DETAIL

ENGINEER	<b>TWR Lighting, Inc.</b> <i>Enlightened Technology®</i>		
APPROVED			
APPROVED			
APPROVED	DRAWN BY M. PETERMAN	SHEET SIZE B	SHEET QTY. 1 OF 1
APPROVED	DATE 05/01/2014	SCALE N.T.S.	DWG. NO. 100984

The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43.  
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