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 #

AA4/7-MB

SERIAL #

PURCHASE DATE

PURCHASED FROM
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1.0 GENERAL INFORMATION

The TWR Lighting®, Inc. (TWR®) Model AA4/7-MB Controller is for A4 lighting of towers 1,051’ to 1,400’ AGL, in accordance with the FAA A/C 70/7460-1K. One (1) beacon should be placed at the top of the structure, two (2) beacons at the 3/4, 1/2, and 1/4 intervals with respect to overall tower height. Obstruction lights should be placed at the 7/8, 5/8, 3/8, and 1/8 intervals.

The flashing rate of the beacons is 30 per minute. The beacon flash synchronized to one another. The sidelights burn steady.

A by-pass switch allows the controller to be turned on during daylight hours without covering the photocell. This is particularly helpful since the controller is mounted indoors while the photocell is outdoors.

Each beacon requires two (2) 620W or two (2) 700W 120V bulbs. TWR® recommends that you use only these bulbs. The use of any other bulb may give a false beacon lamp burnout alarm. Do not try to use 130V bulbs. Each sidelight requires one (1) 116W 120V bulb (620PS40P, 700PS40P, and 116A21TS).

The photocell is the 3 blade, twist to lock type.

Power supplied to controller shall be 120/240V 3 wire single phase.

The controller housing is rated at NEMA 4X. It is suitable for indoor or outdoor mounting.

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

- **POWER FAILURE** Monitors 120V AC to the controller. Alarms in the event of power failure, or tripped circuit breaker.
- **LIGHTS “ON”** Gives an indication whenever the controller is activated.
- **BEACONS** Will give an alarm in the event of one (1) or both bulbs failing, or flasher stalling.
- **OBSTRUCTION LIGHTS** Will give an alarm when one (1) of three (3) sidelights fails.
2.0 INSTALLATION INSTRUCTIONS

2.1 MOUNTING THE CONTROL CABINET
(Refer to Drawing 1130-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 1130-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 1/2" 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 can prevent it from switching to the nightmode.

2.1.3 If the control cabinet is mounted outside an equipment building, the photocell should be mounted vertically on ½" 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 can 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 red incandescent beacons and the 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 blocks and circuit breaker located at the bottom of the chassis. These connections are made as follows:
2.2 **EXTERNAL PHOTOCELL WIRING**  
(Refer to Drawing 1130-R)

2.2.1 Connect the **BLACK** wire from the photocell to terminal block TB2 marked “L2.”

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 1130-R)

2.3.1 Power wiring to the control cabinet should be in accordance with local methods and National Electrical Codes (NEC).

2.3.2 Circuit breaker needs to be a 2 pole common trip rated at 50 amps.

2.3.3 Connect incoming 120V AC "Hot #1" to terminal block TB1 marked “L1.”

2.3.4 Connect incoming 120V AC "Hot #2" to terminal block TB1 marked “L2.”

2.3.5 Connect neutral to one of the terminal blocks TB1 marked “N.”

2.3.6 Connect the AC ground to the aluminum mounting plate.

2.4 **RED BEACON AND SIDELIGHT WIRING**  
(Refer to Drawings 1130-R and 263-7B)

2.4.1 Connect the **BLACK** wire from beacon #1 to circuit breaker marked “B1.”

2.4.2 Connect the first **BLUE** wire from beacon #2 to circuit breaker marked “B2.”
2.4.3 Connect the second **BLUE** wire from beacon #3 to circuit breaker marked “B3.”

2.4.4 Connect the first **BROWN** wire from beacon #4 to circuit breaker marked “B4.”

2.4.5 Connect the second **BROWN** wire from beacon #5 to circuit breaker marked “B5.”

2.4.6 Connect the third **BLACK** wire from beacon #6 to circuit breaker marked “B6.”

2.4.7 Connect the fourth **BLACK** wire from beacon #7 to circuit breaker marked “B7.”

2.4.8 Connect the **RED** wire from sidelight group #1 to circuit breaker marked “S1.”

2.4.9 Connect the **YELLOW** wire from sidelight group #2 to circuit breaker marked “S2.”

2.4.10 Connect the **ORANGE** wire from sidelight group #3 to circuit breaker marked “S3.”

2.4.11 Connect the **PURPLE** wire from sidelight group #4 to circuit breaker marked “S4.”

2.4.12 Connect the **WHITE** neutral wire(s) to one (1) or more of the terminal blocks on TB1, marked “N.”

2.5 **RED BEACON AND SIDELIGHT ALARM WIRING**
(Refer to Drawings 1130-R and 1130-S)

2.5.1 Red light failure alarm relays K1 – K13 are provided on the left hand side of the chassis. Independent contact closures are provided for: Power Failure, Tower Lights "ON," Sidelight Levels S1 – S4 Burnout, and Beacon Burnout B1 – B7.
2.5.2 Alarm wiring: To utilize all of the red light alarms, the customer will need 26 pairs of wires to interface with the alarm device. One (1) wire from each of the 26 pairs will terminate at the relay K1, terminal #4. The remaining wire from each pair will terminate as follows:

2.5.2.1 Power Failure Alarm - Connect to relay K1 terminal #3.

2.5.2.2 Tower Lights "ON" - Connect to relay K2 terminal #6.

2.5.2.3 Sidelight Top Level Burnout - Connect to relay K3, terminal #3.

2.5.2.4 Sidelight 2nd Level Burnout - Connect to relay K4, terminal #3.

2.5.2.5 Sidelight 3rd Level Burnout - Connect to relay K5, terminal #3.

2.5.2.6 Sidelight 4th Level Burnout – Connect to relay K6, terminal #3.

2.5.2.7 Top Beacon Burnout – Connect to relay K7, terminal #6.

2.5.2.8 2nd Beacon Burnout – Connect to relay K8, terminal #6.

2.5.2.9 3rd Beacon Burnout – Connect to relay K9, terminal #6.

2.5.2.10 4th Beacon Burnout – Connect to relay K10, terminal #6.

2.5.2.11 5th Beacon Burnout – Connect to relay K11, terminal #6.
2.5.2.12 6th Beacon Burnout – Connect to relay K12, terminal #6.

2.5.2.13 7th Beacon Burnout - Connect to relay K13, terminal #6.

2.5.3 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.

**LIGHTS "ON"** Operate SW1, or cover the photocell. **NOTE:** (Indication will be delayed 4 to 5 seconds for all the beacon and sidelight relays to position themselves).

**BEACON AND SIDELIGHTS** Trip circuit breakers on the controller panel.
3.0 THEORY OF OPERATION

3.1 POWER SUPPLY

120/240V AC enters the controller from the circuit breaker panel. Lines (L1, L2) sit at the PRD waiting to be switched and also keep the power failure relay K1 energized. When the 6390-FAA photocell is activated, line (L2) 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 SIDELIGHTS

LD1 is sent to the primary of the boost transformer T1. The boosted output LDB1 voltage (132V at 120V nominal input) is sent to relays K3 and K4, which are current sensing relays for sidelights S1 – S2. LD1 (120V) is sent to relays K5, and K6. The output of each sidelight relay is connected to its corresponding circuit breaker. Each 9KE-3 LAMP monitors one (1) level of sidelights, and will hold the contact open when three (3) lights are burning, but will give a contact closure if one (1) or more lights fails.
3.3 **BEACONS**

LD1, LD2, LD3, and LD4 are sent to the primary of boost transformers T1 – T4. The boosted output voltage (132V at 120V nominal input) from T1 – T3, is sent to the CS2620 current sensing modules M2, M4, M6, M8, and M10. The boosted output voltage (126V @ 120V nominal input) from T4 is sent to the CS2620 current sensing modules M12 and M14. The output of these current sensors is connected to the flasher module M1, and the load contactor modules M3, M5, M7, M9, M11, and M13. M1 is the primary flasher that operates beacon B1, and the coils of modules M3, M5, M7, M9, M11, and M13, which flashes beacons B2 – B7, synchronized with beacon B1. If one (1) or both bulbs within a beacon burns out, the CS2620 will send 120V to the beacon lamp burnout relay and energize the coil, which will cause an alarm. This condition will also exist if the flasher should fail. Resistor R1 is connected across the flasher to apply a "dummy load," so in the event the flasher should lose the beacon B1 load, the flasher would not try to stall on.

3.4 **LOAD BALANCE RESISTORS**

The output of module M1 (flasher) is also sent to the auxiliary flasher module M15 for timing purposes. M15 output operates Load Balance Resistor (R1), and is connected to modules M16, M17, and M18. M16 – M18 operate Load Balance Resistors (R2 – R4), synchronized with R1. The Load Balance Resistors will operate alternately from the flashing beacon loads. The use of this optional equipment is to help even the current draw on generator systems.
4.0 MAINTENANCE GUIDE

4.1 RED OBSTRUCTION LIGHTING

The only required maintenance that needs to be performed is replacement of the lamps in the L-864 and L-810 fixtures. Lamps should be replaced after being operated for not more than 75% of the rated life, or immediately upon failure as per FAA Advisory Circular 70/7460-1K, Change 2. By following these instructions, maximum safety and performance can be achieved.

TOOLS REQUIRED: NONE

4.2 L-864 LAMP REPLACEMENT

4.2.1 Loosen the one (1) wing nut on the latch pin and allow it to recline backward.

4.2.2 Open the lens and tilt it backward.

4.2.3 To remove each lamp, depress down while rotating the lamp counter-clockwise 90 degrees.

4.2.4 Install the new lamps by depressing down while rotating the lamp clockwise 90 degrees.

4.2.5 Close the lens and let the latch pin drop in the recessed slot.

4.2.6 Tighten the wing nut snug, then 1/4 turn more.

4.3 L-810 LAMP REPLACEMENT

4.3.1 Unclasp the two (2) latches, and allow the bail to recline backward.

4.3.2 Lift the lens up and over the lamp, allowing the lens to hang from the safety cable.

4.3.3 Unscrew the lamp counter-clockwise and remove.
4.3.4 Install the new lamp by screwing the lamp clockwise.

4.3.5 Re-install the lens making sure it is seated properly on the base.

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 or required, other than replacement as necessary.
### 5.0 MAJOR COMPONENTS PARTS LIST

<table>
<thead>
<tr>
<th>QTY</th>
<th>PART #</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>6390-FAA</td>
<td>120 – 240V AC PHOTOCELL (This replaces the 102FAA Photocell)</td>
</tr>
<tr>
<td>1</td>
<td>CR360L304</td>
<td>LOAD CONTACTOR</td>
</tr>
<tr>
<td>1</td>
<td>PF-250</td>
<td>SOLID STATE FLASHER (M1) (This replaces the FS155-30T Module)</td>
</tr>
<tr>
<td>9</td>
<td>SF-250</td>
<td>SOLID STATE LOAD CONTACTOR - (M3, M5, M7, M9, M11, M13, M16, M17 &amp; M18)</td>
</tr>
<tr>
<td>1</td>
<td>B12J2K5</td>
<td>2500 ohm 12w RESISTOR</td>
</tr>
<tr>
<td>7</td>
<td>CS2620</td>
<td>BEACON LAMP BURNOUT DETECTOR – (M2, M4, M6, M8, M10, M12, &amp; M14)</td>
</tr>
<tr>
<td>1</td>
<td>AF-250</td>
<td>SOLID STATE AUXILIARY FLASHER (M15) (This replaces the FA155 module)</td>
</tr>
<tr>
<td>8</td>
<td>KRPA5AG120V</td>
<td>SPDT RELAY (K1, K7 – K13)</td>
</tr>
<tr>
<td>4</td>
<td>9KE-3LAMP</td>
<td>SIDELIGHT BURNOUT DETECTOR (K3 – K6)</td>
</tr>
<tr>
<td>1</td>
<td>SPEC 224</td>
<td>DELAY ON MAKE RELAY (K2)</td>
</tr>
<tr>
<td>3</td>
<td>P-5512</td>
<td>BOOST TRANSFORMERS (T1 – T4)</td>
</tr>
<tr>
<td>11</td>
<td>S261D20</td>
<td>20 amp BREAKER (B1 – B7, AND S1 – S4)</td>
</tr>
<tr>
<td>4</td>
<td>S201D30</td>
<td>30 amp BREAKER (R1 – R4)</td>
</tr>
<tr>
<td>2</td>
<td>MOV524V15</td>
<td>VARISTOR (MOV1 AND MOV2)</td>
</tr>
</tbody>
</table>
## 6.0 RECOMMENDED SPARE PARTS LIST

<table>
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<th>DESCRIPTION</th>
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<td>120 – 240V AC PHOTOCELL (This replaces the 102FAA Photocell)</td>
</tr>
<tr>
<td>1</td>
<td>PF-250</td>
<td>SOLID STATE FLASHER (M1) (This replaces the FS155-30T Module)</td>
</tr>
<tr>
<td>1</td>
<td>CS2620</td>
<td>BEACON LAMP BURNOUT DETECTOR – (M2, M4, M6, M8, M10, M12, &amp; M14)</td>
</tr>
<tr>
<td>1</td>
<td>SF-250</td>
<td>SOLID STATE LOAD CONTACTOR - (M3, M5, M7, M9, M11, M13, M16, M17 &amp; M18)</td>
</tr>
<tr>
<td>1</td>
<td>KRPA5AG120V</td>
<td>SPDT RELAY (K1, K7 – K13)</td>
</tr>
<tr>
<td>1</td>
<td>9KE-3LAMP</td>
<td>SIDELIGHT BURNOUT DETECTOR (K3 – K6)</td>
</tr>
<tr>
<td>2</td>
<td>S261D20</td>
<td>20 amp BREAKER (B1 – B7, and S1 – S4)</td>
</tr>
<tr>
<td>1</td>
<td>S201D30</td>
<td>30 amp Breaker (R1 – R4)</td>
</tr>
<tr>
<td>2</td>
<td>MOV524V15</td>
<td>VARISTOR (MOV1 and MOV2)</td>
</tr>
</tbody>
</table>
Warranty & Return Policy

TWR Lighting®, Inc. ("TWR®") 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®, Inc. ("TWR®") warrants its “LED Product” against defects in design, material and workmanship for a period of five (5) years from the date of shipment. TWR®, at its sole option, will, itself, or through others, repair, replace or refund the purchase price paid for “LED Product” that TWR® 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®, Inc. ("TWR®") warrants its “LED Product” against light degradation for a period of five (5) years from the date of installation. TWR®, at its sole option, will, itself, or through others, repair, replace, or refund the purchase price paid for “LED Product” that TWR® 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:

- Improper Installation or Operation
- Misuse
- Abuse
- Unauthorized or Improper Repair or Alteration
- Accident or Negligence in Use, Storage, Transportation, or Handling
- Any Acts of God or Nature
- 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.
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.

Return 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:

- The contact name and phone number of the tower owner
- The contact name and phone number of the contractor
- The site name and number
- The part number(s)
- The serial number(s) (if any)
- A description of the problem
- The billing information
- 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®, INC., 10810 W. LITTLE YORK RD. #130, HOUSTON, TX 77041-4051, within 30 days of issuance.

Upon full compliance with the Return Terms, TWR® will replace, repair and return, or credit product(s) returned by the customer. It is TWR®’s sole discretion to determine the disposition of the returned item(s).
Warranty & Return Policy
(continued)

**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.

- Product(s) that is deemed defective and/or unrepairable and covered under warranty - a credit will be issued to the customer’s account.
- 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.
- Product(s) under warranty, which the customer does not wish returned, the customer will be issued a credit against the replacement invoice.

**Repair & Return** – A Return Merchandise Authorization (RMA) will be issued for all part(s) returned to TWR® 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.

**Return to Stock** – Any order that is returned to TWR® for part(s) ordered incorrectly by the customer, or unneeded upon receipt, the customer is required to pay a **20% restocking fee.** A credit will be issued once it is determined that the Return Terms are 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.

**Freight** – All warranty replacement part(s) will be shipped via ground delivery and paid for by TWR®. 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® 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® EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESSED OR IMPLIED. WITHOUT LIMITING THE GENERALITY OF THE FORGOING, TWR® MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS OF THE PRODUCT(S) FOR ANY PARTICULAR PURPOSE. TWR® EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES.
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 77041-4051
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 77041-4051
NOTES:
1. WHEN REPLACING MODULES USE HEAT SINK COMPOUND BETWEEN MODULE AND ALUMINUM PLATE.
2. PLUG 6390 FAA PHOTOCELL INTO 43109 TWIST LOCK RECEPTACLE AND TWIST TO LOCK.
3. WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) L1 TO L1 TO L1.
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
3. WIRE CONNECTIONS ARE TO BE TINNED AT ITEM 3.
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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NOTES:
1. THIS DRAWING IS A TYPICAL INSTALLATION DETAIL FOR 3 OL-1 PER LEVEL SYSTEM.
2. PART # EL3430 MAY BE OMITTED WHEN ARRANGING FOUR LEG TOWERS.
3. PART # CONDUIT34 CUT TO LENGTH FOR PROPER EXTENSION OF OL1 FROM STRUCTURE (6"-12"). ATTACH PART # HC402 TO UNTHREADED CONDUIT TO COMPLETE ASSEMBLY.
4. USE COUPLING THAT IS PROVIDED BY PART # CONDUIT34.
5. GREEN WIRE USED ONLY ON LED SIDELIGHTS
## Parts List

<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>AP35222</td>
<td>RED SIDELIGHT GLASS</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>105C</td>
<td>SINGLE SIDELIGHT BODY</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>106C</td>
<td>LENS HOLDER RING</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>12V245</td>
<td>OL LENS CLIP</td>
</tr>
<tr>
<td>5</td>
<td>2</td>
<td>B32X14PH</td>
<td>8-32 X 1/4&quot; PH SS SLOT SCREW</td>
</tr>
<tr>
<td>6</td>
<td>2</td>
<td>HC255SS</td>
<td>SIDELIGHT LATCH</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>7X7SS</td>
<td>1/16 HOL 7X7 S.S. WIRE</td>
</tr>
<tr>
<td>8</td>
<td>2</td>
<td>A1A</td>
<td>STAKON CRIMP</td>
</tr>
<tr>
<td>9</td>
<td>1</td>
<td>OLG</td>
<td>OL GASKET</td>
</tr>
<tr>
<td>10</td>
<td>1</td>
<td>TWR19062</td>
<td>SIDELIGHT RECEPTACLE</td>
</tr>
<tr>
<td>11</td>
<td>4</td>
<td>18PRSS</td>
<td>1/8 X .40 SS POP RIVET</td>
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<tr>
<td>12</td>
<td>1</td>
<td>A314</td>
<td>3/4&quot; CONDUIT LOCKNUT GALV.</td>
</tr>
<tr>
<td>13</td>
<td>2</td>
<td>104G</td>
<td>WHITE TEFLOIN WASHER</td>
</tr>
<tr>
<td>14</td>
<td>2</td>
<td>B32X34PH</td>
<td>8-32 X 3/4&quot; S.S. RH SLOT</td>
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<tr>
<td>15</td>
<td>1</td>
<td>100327</td>
<td>OL1 SERIAL NUMBER LABEL</td>
</tr>
<tr>
<td>16</td>
<td>1</td>
<td>116A21TS</td>
<td>116W-120V LAMP (TYP.)</td>
</tr>
</tbody>
</table>

* = PART NOT SHOWN
~ = PART SOLD SEPARATELY

### NOTE:
1. FAA APPROVED LIGHT USES THE 116A21TS LAMP. OTHER LAMPS ARE AVAILABLE TO MEET YOUR APPLICATION.

---

### SECTION A-A

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**TWR Lighting, Inc.**

Enlightened Technology®

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**DRAWN**

vherandez 2/13/2012

**CHECKED**

QA

MFG

APPROVED

---

**SIZE**

B

**DWG NO**

279-OL

**REV**

C

**SCALE**

2/3

**ASSEMBLY DETAIL (PART #OL1)**
### Parts List

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>100C</td>
<td>BEACON BASE</td>
</tr>
<tr>
<td>101C</td>
<td>LOWER HINGE</td>
</tr>
<tr>
<td>102C</td>
<td>UPPER HINGE</td>
</tr>
<tr>
<td>103C</td>
<td>CANOPY CAP</td>
</tr>
<tr>
<td>104C</td>
<td>CANOPY FLANGE</td>
</tr>
<tr>
<td>105G</td>
<td>GASKET BEACON BASE</td>
</tr>
<tr>
<td>106G</td>
<td>GASKET MIDDLE BEACON</td>
</tr>
<tr>
<td>107G</td>
<td>GASKET TOP HINGE</td>
</tr>
<tr>
<td>108G</td>
<td>GASKET TEFON, TOP</td>
</tr>
<tr>
<td>109G</td>
<td>WHITE TEFON WASHER</td>
</tr>
<tr>
<td>110C</td>
<td>CAP LENS RED</td>
</tr>
<tr>
<td>111C</td>
<td>MIDDLE LENS RED</td>
</tr>
<tr>
<td>112C</td>
<td>BOTTOM LENS RED</td>
</tr>
<tr>
<td>113C</td>
<td>BEACON LAMP RECEPTACLE</td>
</tr>
<tr>
<td>114C</td>
<td>3/4&quot; CORD CONNECTOR .62 TO .75</td>
</tr>
<tr>
<td>115C</td>
<td>TERMINAL BLOCK 3-PART</td>
</tr>
<tr>
<td>116C</td>
<td>BEACON TIE ROD STRAIGHT</td>
</tr>
<tr>
<td>117C</td>
<td>BEACON TIE ROD BENT</td>
</tr>
<tr>
<td>118C</td>
<td>BEACON HINGE PIN W/ COTTER PIN</td>
</tr>
<tr>
<td>119C</td>
<td>BEACON LATCH PIN</td>
</tr>
<tr>
<td>120C</td>
<td>5/16-15 HEX NUT</td>
</tr>
<tr>
<td>121C</td>
<td>5/16-18 NUT W/NYLON INSERT</td>
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<tr>
<td>122C</td>
<td>6-32 X 2 SS RH SLOT SCREW</td>
</tr>
<tr>
<td>123C</td>
<td>6-32 LOCK WASHER</td>
</tr>
<tr>
<td>124C</td>
<td>6-32 NUT HEX</td>
</tr>
<tr>
<td>125C</td>
<td>10-32 X 3/8 PHILIPS PAN HEAD</td>
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<tr>
<td>126C</td>
<td>10-32 X 5/8 PHILIPS SLOT SCREW</td>
</tr>
<tr>
<td>127C</td>
<td>10-32 X 1 SS RH SLOT SCREW</td>
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<tr>
<td>128C</td>
<td>140X5/8RH</td>
</tr>
<tr>
<td>129C</td>
<td>10032B</td>
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<td>130C</td>
<td>BEACON SERIAL NUMBER LABEL</td>
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<td>131C</td>
<td>BEACON LAMP</td>
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<tr>
<td>132C</td>
<td>HI TEMP TY WrAPS T&amp;G TEFZEL</td>
</tr>
<tr>
<td>133C</td>
<td>#16 HI-TEMP WIRE SRL WHITE</td>
</tr>
<tr>
<td>134C</td>
<td>#16 HI-TEMP WIRE SRL BLACK</td>
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<tr>
<td>135C</td>
<td>5&quot; CORD SAAW/53 CONDUCTOR</td>
</tr>
<tr>
<td>136C</td>
<td>YAV16-53AF (STAKON) BURNEY HEAVY DUTY</td>
</tr>
</tbody>
</table>

* = ITEMS NOT SHOWN
~ = PART SOLD SEPARATELY

---

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<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>QTY.</th>
<th>TWR PART NUMBER</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>1</td>
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<td>LBRBX</td>
<td>RESISTOR BOX GALVANIZED</td>
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<tr>
<td>2</td>
<td>1</td>
<td>LBR500</td>
<td>LBR HEATING ELEMENT</td>
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<td>3</td>
<td>1</td>
<td>LBR750</td>
<td>LBR HEATING ELEMENT</td>
</tr>
<tr>
<td>4</td>
<td>2</td>
<td>KAV14-H5DF (STAKON)</td>
<td>BURNTY HEAVY DUTY</td>
</tr>
<tr>
<td>5</td>
<td>20'</td>
<td>'6HTAH 16 HI-TEMP. APPL. WIRE SRML-1</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>20'</td>
<td>'6HTBL 16 HI-TEMP. APPL. WIRE</td>
<td></td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>ST2</td>
<td>1/4&quot; MEYERS HUB</td>
</tr>
<tr>
<td>8</td>
<td>4</td>
<td>832X12RH</td>
<td>8-32 x 1/2&quot; PH. S.S. SCREW</td>
</tr>
<tr>
<td>9</td>
<td>8</td>
<td>832X14PH</td>
<td>8-32 x 1/4&quot; PH S.S. SLOT</td>
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<tr>
<td>10</td>
<td>4</td>
<td>'046</td>
<td>WHITE TEFLEX WASH. 5K MIN.</td>
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<tr>
<td>11</td>
<td>2</td>
<td>BUSSBAR</td>
<td>BUSS BAR, BRASS, CA-1003 (LBR)</td>
</tr>
</tbody>
</table>

NOTES:
1. ALLOW A MINIMUM OF 6" CLEARANCE FOR TOP AND BOTTOM OF HOUSING.
2. MOUNTING BRACKETS CAN BE RELOCATED 90° FOR OVERHEAD MOUNT.
3. RUN WIRE IN 3/4" CONDUIT TO CONTROLLER.
4. 20' OF HIGH TEMPERATURE WIRE IS PROVIDED WITH LOAD BALANCE RESISTOR.
### Notes:

1. Drawing illustrates method of strain relieving wire. Use this method on all junction boxes.

2. The National Electrical Code—Article 300-19-3 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.

<table>
<thead>
<tr>
<th>AWG Wire Size</th>
<th>Max. Number of Wires in 3/4” Conduit</th>
<th>Max. Number of Wires in 1” Conduit</th>
<th>Wire Area</th>
<th>Weight Per 100 Feet</th>
</tr>
</thead>
<tbody>
<tr>
<td>12 THHN</td>
<td>16</td>
<td>26</td>
<td>0.0117</td>
<td>2.50</td>
</tr>
<tr>
<td>10 THHN</td>
<td>10</td>
<td>17</td>
<td>0.0184</td>
<td>4.10</td>
</tr>
<tr>
<td>8 THHN</td>
<td>6</td>
<td>9</td>
<td>0.0373</td>
<td>6.70</td>
</tr>
<tr>
<td>6 THHN</td>
<td>4</td>
<td>7</td>
<td>0.0519</td>
<td>10.30</td>
</tr>
<tr>
<td>4 THHN</td>
<td>2</td>
<td>4</td>
<td>0.0845</td>
<td>16.20</td>
</tr>
</tbody>
</table>
**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 INCHES 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**

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**TWR Lighting, Inc.**

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**Drawn by:**

**Checked by:**

**Date:** 05/07/2014

**Rev:**