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 #  AA2/3MB

SERIAL #

PURCHASE DATE

PURCHASED FROM
# AA2/3MB CONTROLLER
## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>GENERAL INFORMATION</td>
<td>4</td>
</tr>
<tr>
<td>INSTALLATION INSTRUCTIONS</td>
<td>6</td>
</tr>
<tr>
<td>THEORY OF OPERATION</td>
<td>12</td>
</tr>
<tr>
<td>MAINTENANCE</td>
<td>13</td>
</tr>
<tr>
<td>MAJOR COMPONENTS PARTS LIST</td>
<td>15</td>
</tr>
<tr>
<td>SUGGESTED SPARE PARTS LIST</td>
<td>16</td>
</tr>
<tr>
<td>WARRANTY &amp; RETURN POLICY</td>
<td></td>
</tr>
<tr>
<td>RETURN MERCHANDISE AUTHORIZATION (RMA) FORM</td>
<td></td>
</tr>
</tbody>
</table>
APPENDIX

CHASSIS COMPONENT LAYOUT.................................................. 1135-R

SCHEMATIC LAYOUT ................................................................. 1135-S

TROUBLE SHOOTING FLOW CHART.............................................. 1135-F

PHOTOCCELL HOUSING DETAIL.................................................. 100239

TOWER LIGHTING KIT 351’ TO 400’........................................... 261-31B

TOWER LIGHTING KIT 401’ TO 700’.......................................... 261-32B

OL-1 LIGHT LEVEL DETAIL....................................................... 100188

L-810 OL-1 SINGLE OBSTRUCTION LIGHT.................................... FM10018

L-810 OL-1 SINGLE OBSTRUCTION LIGHT DETAIL.......................... 279-OL

L-810 OL-1 WIRING DETAIL...................................................... 274-S

L-864 FB 300 MM BEACON...................................................... FM10017

L-864 FB 300 MM BEACON DETAIL............................................ 275-B

L-864 FB 300 MM WIRING DETAIL............................................. 273-B

JUNCTION BOX DETAIL............................................................ 100089
AA2/3MB CONTROLLER
GENERAL INFORMATION

The TWR Lighting, Inc. (TWR) Model AA2/3MB Controller is for A2 lighting of towers 351’ to 700’ above ground level (AGL) in accordance with the FAA Advisory Circular 70/7460-1K. One (1) beacon should be placed at the top and two (2) beacons at mid-level. Obstruction lights should be placed at the ¾ and ¼ intervals with respect to overall tower height.

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

A by-pass switch (SW1) allows the controller to be turned on during daylight hours without covering the photocell. This is particularly helpful since the controller can be mounted indoors while the photocell is outdoors. SW1 can be operated by pulling out on the plunger.

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

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

Power supplied to the controller shall be 120/240V, three (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 (Form C) 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 the flasher stalling.

**FLASHER FAILURE**  Will give an alarm in the event of failure of flasher.

**OBSTRUCTION LIGHTS**  Will give an alarm when one (1) of three (3) sidelights fail.
AA2/3MB CONTROLLER
INSTALLATION INSTRUCTIONS

1.0 MOUNTING THE CONTROL CABINET
(Refer to Drawing 1135-R)

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 1135-R. Power wiring to the control cabinet should be in accordance with local methods and National Electrical Codes (NEC).

1.1.1 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 “L,” 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.

1.1.2 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 1.1.1.

1.2 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 strips and circuit breakers located at the bottom of the chassis. These connections are made as follows:
2.0 **EXTERNAL PHOTOCELL WIRING**  
(Refer to Drawing 1135-R)

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

2.2 Connect the **RED** wire from the photocell to terminal block TB2 marked “SSR.”

2.3 Connect the **WHITE** wire from the photocell to terminal block TB2 marked “N.”

3.0 **POWER WIRING** (Refer to Drawing 1135-R)

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

3.2 Circuit breaker needs to be a two (2) pole common trip rated at 40 amps.

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

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

3.5 Connect the neutral wire(s) to one (1) of the terminal blocks on TB1 marked “N.”

3.6 Connect the AC ground to the aluminum mounting plate.
4.0 **RED BEACON AND SIDELIGHT WIRING**  
(Refer to Drawings 1135-R, 261-31B, and 261-32B)

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

4.2 Connect the first **BLUE** wire from Beacon #2 to the circuit breaker marked “B2.”

4.3 Connect the second **BLUE** wire from Beacon #3 to the circuit breaker marked “B3.”

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

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

4.6 Connect the **WHITE** neutral wire(s) to one (1) or more of the terminals marked “N.”
5.0 **RED BEACON AND SIDELIGHT ALARM WIRING**  
(Refer to Drawings 1135-R and 1135-S)

5.1 Alarm relays K1-K5, and alarm Modules M2, M4, M6, M7, and M8, are provided for independent contact closures for: Power Failure, Lights “On,” B1 Flasher Failure, B2 Flasher Failure, B3 Flasher Failure, B1 Lamp Burnout, B2 Lamp Burnout, B3 Lamp Burnout, S1 Lamp Burnout, and S2 Lamp Burnout.

5.2 Alarm Wiring: To utilize all of the red light alarms, the customer will need ten (10) pair of wires to interface with his alarm device. One (1) wire from each of the ten (10) pair will terminate at the points marking common (C). The remaining wire from each pair will terminate as follows:

**Power Failure Alarm:** Connect to relay K1, terminal #3, for normally open (OR) terminal #6, for normally closed monitoring.

**Lights “On” Alarm:** Connect to relay K2, terminal #3, for normally open (OR) terminal #6, for normally closed monitoring.

**B1 Flasher Failure:** Connect to relay K3, terminal #6, for normally open (OR) terminal #3, for normally closed monitoring.

**B2 Flasher Failure:** Connect to relay K4, terminal #6, for normally open (OR) terminal #3, for normally closed monitoring.

**B3 Flasher Failure:** Connect to relay K5, terminal #6, for normally open (OR) terminal #3, for normally closed monitoring.

**B1 Lamp Burnout:** Connect to relay M2, terminal T6, for normally open (OR) terminal #7, for normally closed monitoring.

**B2 Lamp Burnout:** Connect to relay M4, terminal T6, for normally open (OR) terminal #7, for normally closed monitoring.

**B3 Lamp Burnout:** Connect to relay M6, terminal T6, for normally open (OR) terminal T7, for normally closed monitoring.

**S1 Lamp Burnout:** Connect to relay M7, terminal T5, for normally open (OR) terminal T6, for normally closed monitoring.

**S1 Lamp Burnout:** Connect to relay M8, terminal T5, for normally open (OR) terminal T6, for normally closed monitoring.
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 photocell by-pass switch SW1, or cover the photocell. **NOTE:** Indication will be delayed 8 – 10 seconds for all the beacon and sidelight relays to position themselves.

**Beacon and Sidelights:** Trip breakers on the controller panel.
AA2/3MB CONTROLLER
THEORY OF OPERATION

6.1 POWER SUPPLY

120/240V AC enters the controller from the circuit breaker panel. Lines L1 and L2 sit at the PRD, waiting to be switched, and also keep the power failure relay K1 energized. When the 102FAA 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).

6.2 SIDELIGHTS

Line LD4 is sent to Modules M7 and M8, which are current sensing modules for sidelights. Each SCR430T monitors one (1) level of sidelights, and will provide a contact closure along a visual indication if one (1) or more lamps fail.

6.3 BEACONS

Lines LD1, LD2, and LD3 are sent to Modules M1, M3, and M5. M1 is the primary flasher for Beacon #1, which provides control voltage to Modules M3 and M5, which are auxiliary flashers for Beacon #2 and Beacon #3. The output of these modules is sent to the primary of boost transformers T1, T2, and T3. The boosted output voltage (126V at 120V nominal input) is sent through the current sensing Modules M2, M4, and M6, then to the circuit breaker outputs B1, B2, and B3. If Modules M2, M4, or M6 detect a lamp burnout, then that particular module would provide a contact closure along with a visual indication for that lamp circuit.

Relays K3 – K5 are flasher failure relays for the Beacons B#1 – B#3. If Modules M2, M4, or M6 detect a flasher failure, then that particular module would provide a contact closure for that flasher circuit.
7.0 MAINTENANCE

7.1 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 Advisory Circular 70/7460-1K. By following these instructions, maximum safety and performance can be achieved.

TOOLS REQUIRED: NONE

7.2 L-864 LAMP REPLACEMENT

7.2.1 Loosen the one (1) wing nut on the latch pin so that it can recline.

7.2.2 Open the lens and tilt it backward.

7.2.3 To remove each lamp, depress down while rotating the lamp counterclockwise 90°.

7.2.4 Install the new lamps by depressing down while rotating the lamp clockwise 90°.

7.2.5 Close the lens and allow the latch pin to drop in the recessed slot.

7.2.6 Tighten the wing nut snug, then ¼ turn more.
7.3 **LAMP REPLACEMENT**

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

7.3.2 Lift the lens up and over the lamp, letting the lens hang from the safety cable.

7.3.3 Unscrew the lamp counter-clockwise and remove.

7.3.4 Install the new lamp by screwing the lamp clockwise.

7.3.5 Reinstall the lens, making sure it is seated properly on the base.

7.3.6 Reclasp the two (2) latches.

7.4 **L-864 CONTROLLER**

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

7.5 **PHOTOCELL**

The photocell is a sealed unit. No maintenance is needed or required other than replacement as necessary.
### AA2/3MB CONTROLLER
#### MAJOR COMPONENTS PARTS LIST

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>102-FAA</td>
<td>Photocell</td>
</tr>
<tr>
<td>1</td>
<td>FS155-30T</td>
<td>Solid State Flasher (M1)</td>
</tr>
<tr>
<td>1</td>
<td>B12J2K5</td>
<td>2,500 ohm 12 watt Resistor (R1)</td>
</tr>
<tr>
<td>1</td>
<td>FA155-2</td>
<td>Solid State Load Contactor (M3 &amp; M5)</td>
</tr>
<tr>
<td>1</td>
<td>PM17AY120V</td>
<td>Mechanical Load Contactor (PRD)</td>
</tr>
<tr>
<td>3</td>
<td>XFMR-15amp</td>
<td>Boost Transformer (T1 - T3)</td>
</tr>
<tr>
<td>3</td>
<td>FB120A</td>
<td>Beacon Failure Detector (M2, M4 &amp; M6)</td>
</tr>
<tr>
<td>5</td>
<td>PB27E122</td>
<td>Octal Sockets</td>
</tr>
<tr>
<td>4</td>
<td>KBPA5AG120V</td>
<td>SPDT Relay (K1, K3, K4 &amp; K5)</td>
</tr>
<tr>
<td>2</td>
<td>SCR430T</td>
<td>Sidelight Burnout Detector (M7 &amp; M8)</td>
</tr>
<tr>
<td>1</td>
<td>SPEC 224</td>
<td>Time Delay Relay (K2)</td>
</tr>
<tr>
<td>1</td>
<td>STJ02001</td>
<td>Switch (SW1)</td>
</tr>
<tr>
<td>1</td>
<td>VJ1816HWPL2</td>
<td>Enclosure</td>
</tr>
<tr>
<td>8</td>
<td>8WA1204</td>
<td>Terminal Block (TB1 &amp; TB2)</td>
</tr>
<tr>
<td>3</td>
<td>8WA1802</td>
<td>Rail Link</td>
</tr>
<tr>
<td>2</td>
<td>8WA1808</td>
<td>Terminal Block End Stop</td>
</tr>
<tr>
<td>5</td>
<td>S261D20</td>
<td>20 amp Circuit (B1 - B3, S1 &amp; S2)</td>
</tr>
</tbody>
</table>
### AA2/3MB CONTROLLER
#### SUGGESTED SPARE PARTS LIST

<table>
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<th>Description</th>
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<td>102-FAA</td>
<td>Photocell</td>
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<tr>
<td>1</td>
<td>FS155-30T</td>
<td>Solid State Flasher (M1)</td>
</tr>
<tr>
<td>1</td>
<td>FA155-2</td>
<td>Solid State Load Contactor (M3 - M5)</td>
</tr>
<tr>
<td>1</td>
<td>FB120A</td>
<td>Beacon Failure Detector (M2, M4 &amp; M6)</td>
</tr>
<tr>
<td>1</td>
<td>KRPA5AG120V</td>
<td>SPDT Relay (K1, K3, K4 &amp; K5)</td>
</tr>
<tr>
<td>1</td>
<td>SPEC 224</td>
<td>Time Delay Relay (K2)</td>
</tr>
<tr>
<td>1</td>
<td>SCR430T</td>
<td>Sidelight Burnout Detector (M7 &amp; M8)</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 70% of the minimum intensity requirements as defined in the FAA Advisory Circular 150/5345-43E dated 10/19/95. 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.

Field Service – Repairs are warranted for 90 days from the date of service, except where TWR has made recommendations that were not adhered to that may cause premature failure on previous repairs. Labor, Travel, and Tower Climb are not covered under warranty. Customer shall be obligated to pay for all incurred charges not related to warranty. All warranty repairs are performed by trained TWR personnel, or dispatched through an extensive network of certified and insured Service Representatives.
Return Policy

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., 4300 WINDFERN RD #100, HOUSTON TX 77041-8943, 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).

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 $60.00 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 **$60.00 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: __________________________________________________
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: ____________________________________________

___________________________________________________________

4300 WINDFERN RD., SUITE 100 HOUSTON, TX 77041-8943
VOICE: 713/973-6905 FAX: 713/973-9352 WEB: twrlighting.com
*CUSTOMER ALARM POINTS

C = ALARM COMMON
PF2O/PP2O = POWER FAILURE
LON/O = LIGHTS "ON"
S1NO/S1NC = TOP LEVEL SIDE LIGHT BURNOUT
S2NO/S2NC = BOTTOM LEVEL SIDE LIGHT BURNOUT
FF1NO/FF1NC = FLASHER FAILURE 1
FF2NO/FF2NC = FLASHER FAILURE 2
FF3NO/FF3NC = FLASHER FAILURE 3
B1NO/B1NC = TOP BEACON BURNOUT
S2NO/S2NC = MIDDLE BEACON BURNOUT
B3NO/B3NC = MIDDLE BEACON BURNOUT

* ALARM OUTPUTS ARE FORM C.

MOUNTING DIMENSIONS
(FOR CABINET)

NOTES:
1. WHEN REPLACING METAL BASE MODULES
   USE HEAT SINK COMPOUND BETWEEN
   MODULE AND ALUMINUM PLATE.
2. PLUG 102 FIA PHOTOCELL INTO
   43109 TWIST LOCK RECEPTACLE AND
   TWIST TO LOCK.
3. WIRES ARE CONNECTED LETTER TO
   LETTER. (EXAMPLE) B1 TO B1 TO B1.
<table>
<thead>
<tr>
<th>ITEM</th>
<th>QTY.</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
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<td>1</td>
<td>PHOTOCELL</td>
</tr>
<tr>
<td>2</td>
<td>2</td>
<td>6-32 x 1/2&quot; SCREW</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>RECEPTACLE SOCKET</td>
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<td>4</td>
<td>1</td>
<td>RECEPTACLE GASKET</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>RECEPTACLE HOUSING</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
<td>1/2&quot; CONDUIT LOCKNUT</td>
</tr>
<tr>
<td>7</td>
<td>1</td>
<td>3/4&quot; TO 1/2&quot; REDUCER</td>
</tr>
</tbody>
</table>

**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
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>QTY</th>
<th>TWR PART NO.</th>
<th>DESCRIPTION</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>1</td>
<td>300 MM BEACON RED</td>
<td>300 MM BEACON RED</td>
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<tr>
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<td>600 WATT 120 VOLT LAM</td>
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<td>621</td>
<td>1/4&quot; OBSTRUCTION LIGHT</td>
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<td>6</td>
<td>116A21TS</td>
<td>1/8&quot; WATT 120 VOLT LAM</td>
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<td>620P5030A</td>
<td>1/4&quot; CORD CONNECTOR</td>
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<td>9</td>
<td>620S407</td>
<td>1/4&quot; JUNCTION BOX (W/ 7 TERMINALS)</td>
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<td>7</td>
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<td>620S409</td>
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<td>7</td>
<td>620Y20S</td>
<td>1/4&quot; UNION</td>
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<td>9</td>
<td>3</td>
<td>6210B</td>
<td>3/4&quot; CONDUIT /COVER AND GASKET</td>
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<tr>
<td>10</td>
<td>10</td>
<td>6214B0</td>
<td>3/4&quot; 90 DEG ELBOW</td>
</tr>
<tr>
<td>11</td>
<td>2</td>
<td>6214G0</td>
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<td>12</td>
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<td>6212H02</td>
<td>3/4&quot; BREATHER</td>
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<tr>
<td>13</td>
<td>2</td>
<td>6211C10</td>
<td>3/4&quot; WRAPLOCK</td>
</tr>
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<td>14</td>
<td>2</td>
<td>6212P01</td>
<td>3/4&quot; PIPE DOME</td>
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<td>15</td>
<td>6214L1</td>
<td>3/4&quot; CONDUIT LOCKNUTS</td>
</tr>
<tr>
<td>16</td>
<td>4</td>
<td>6214E1</td>
<td>3/4&quot; GALVANCED COUPLING</td>
</tr>
<tr>
<td>17</td>
<td>12</td>
<td>6214G1</td>
<td>1/2&quot; X 1&quot; NIPPLE</td>
</tr>
<tr>
<td>18</td>
<td>12</td>
<td>6214G2</td>
<td>1/2&quot; X 1&quot; NIPPLE</td>
</tr>
<tr>
<td>19</td>
<td>6</td>
<td>6214G4</td>
<td>1/4&quot; X 1/2&quot; NIPPLE</td>
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<td>20</td>
<td>4</td>
<td>6214G6</td>
<td>1/4&quot; X 1/4&quot; NIPPLE</td>
</tr>
<tr>
<td>21</td>
<td>4</td>
<td>6214G8</td>
<td>1/4&quot; X 1/4&quot; NIPPLE</td>
</tr>
<tr>
<td>22</td>
<td>4</td>
<td>6214G10</td>
<td>1/4&quot; X 1/4&quot; NIPPLE</td>
</tr>
</tbody>
</table>

ITEM NUMBERS 24-30 ARE NOT INCLUDED IN THE KIT BUT ARE AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.

NOTES:
1) CONDUIT SIZE BASED ON USING THIN WIRE.
2) USE RIGID GALVANCED STEEL CONDUIT.
3) BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.
4) MIDDLE LEVEL BEACONS CANNOT BE MOUNTED AT LESS THAN 200'/61M.
5) ITEMS #17-20 TO BE USED IN VARIOUS COMBINATIONS FOR OIL RUN. EXTRA NIPPLES TO BE CUT TO FIT IF FACE WIDTH IS LARGER THAN 6".
6) USE ITEM #16 TO COUPLE CONDUIT NIPPLES. APPROPRIATE OIL EXTENSION IS 12".

FOR MORE DETAIL REFER TO DRAWING 10018B

TWR Lighting, Inc.
Enlightened Technology

LK142/35 TOWER LIGHTING KIT W/300W (TOWERS 35'/107M TO 400'/122M)
BILL OF MATERIALS

<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>QTY.</th>
<th>TWR PART NO.</th>
<th>DESCRIPTION</th>
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<tbody>
<tr>
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<td>3</td>
<td>OL1</td>
<td>3/4&quot; OBSTRUCTION LIGHT</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>127</td>
<td>3/4&quot; CONDUIT W/Cover and Gasket</td>
</tr>
<tr>
<td>3</td>
<td>1</td>
<td>CL3440</td>
<td>3/4&quot; 90° ELBOW</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
<td>LNY205</td>
<td>3/4&quot; UNION</td>
</tr>
<tr>
<td>5</td>
<td>1</td>
<td>NS473</td>
<td>3/4&quot; x 3&quot; NIPPLE</td>
</tr>
<tr>
<td>6</td>
<td>1</td>
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<td>3/4&quot; NIPPLE = (FACE + 6&quot;)</td>
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<tr>
<td>7</td>
<td>1</td>
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<td>3/4&quot; NIPPLE = (FACE + 2 + 36&quot;)</td>
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<tr>
<td>8</td>
<td>1</td>
<td></td>
<td>3/4&quot; NIPPLE = (FACE + 2)</td>
</tr>
<tr>
<td>9</td>
<td>5</td>
<td>A314</td>
<td>3/4&quot; CONDUIT LOCKNUTS</td>
</tr>
<tr>
<td>10</td>
<td>2</td>
<td></td>
<td>#14 RED &amp; WHI. WIRE (FACE + 2 + 36&quot;)</td>
</tr>
<tr>
<td>11</td>
<td>1</td>
<td></td>
<td>#14 RED &amp; WHI. WIRE (FACE x 1.5 + 24&quot;)</td>
</tr>
</tbody>
</table>

NOTES:
1. THIS DRAWING IS A TYPICAL INSTALLATION DETAIL FOR 3 OL-1 PER LEVEL SYSTEM.
2. IN VIEW C ITEM NUMBER 3 MAY BE OMITTED WHEN ARRANGING FOUR LEG TOWERS.
3. LENGTHS FOR SIDELIGHT RUNS MAY BE ACHIEVED BY MULTIPLE PIECES OF ITEM NUMBERS 6-8.
4. ITEMS 10 & 11 MAY COME IN BULK LENGTHS.

TWR Lighting, Inc.
Enlightened Technology

3-OL-1 LIGHT LEVEL
DETAIL (EACH)

DATE: 6/06/96
ADDED NOTES (GDS): (A)
LTR: REVISION
For use as an obstruction light on towers, building, bridges, cooling towers. Meets or exceeds all FAA specs as found in AC 150/5345-43 Type L-810.

Our most popular light. The side hub allows for a straight run of conduit from the junction box for hook up.

High temperature, ultra pure FAA approved Aviation red, blue, yellow, or clear glass fresnel lens.

Can be used steady burning or flashing.

Neoprene gasket for weatherproofing.

Copper free aluminum casting and all stainless steel latches and hardware for corrosion protection.

Specify conduit size
3/4", 1", 1-1/4" NPT
(19.055mm), (25.407mm), (31.756mm)

No special tools required for maintenance.

General Specifications
Height 7.5 inches (19.055 cm)
Weight 3 lbs (1360.5442g)
Power 120, 230, or 240 volts AC
Uses 116W, 120V or 240V bulbs
Bulbs sold separately

TWR Lighting, Inc.
4300 Windfern Rd. #100
Houston, Tx., 77041-8943
Phone: (713)973-6905
Fax: (713)973-9352
WEB SITE: http://www.twrlighting.com
©2003 TWR Lighting, Inc.
**NOTE:**

1. FAA APPROVED LIGHT USES THE 116A21TS LAMP. OTHER LAMPS ARE AVAILABLE TO MEET YOUR APPLICATION.
SIDELIGHT RECEPTACLE WIRING

GOLD SCREW
BLACK LEAD
LAMP RECEPTACLE
SILVER SCREW
WHITE LEAD (NEUTRAL)
TO JUNCTION BOX

7/2/98 (A) CHANGED LABEL
DATE: LTR REVISION

TWR Lighting, Inc.
Enlightened Technology
Flashing 300 mm Code Red Beacon is used to light aviation obstructions taller than 150 feet AGL. ETL approved to meet or exceed all FAA specifications as found in AC 150/5345-43 Type L-864.

Porcelain receptacles with nickel plate brass bayonet shell. Neoprene and Teflon gaskets for superior weather seal.

High grade copper free aluminum castings and stainless steel hardware for corrosion protection. Stainless steel wingnut means no special tools required to change bulbs.

High temperature resistant wire and tie wraps. Silicone fused lenses eliminates gasket "dead spot" at light focus.

**General Specifications**
- Height 30.5 inches (77.47 cm)
- Weight 68 lbs (30.8 kg)
- Power 120 to 240, 50 or 60 cycle
- Uses two 620W or 700W, 120V or 500W, 230V bulbs
- Bulbs sold separately

5 foot, 3 or 4 conductor SO Cord pigtail
Standard 4 bolt pattern, 90 degrees, 13-1/4"
<table>
<thead>
<tr>
<th>ITEM NO.</th>
<th>QTY.</th>
<th>PART NO.</th>
<th>DESCRIPTION</th>
</tr>
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<tr>
<td>1</td>
<td>1000</td>
<td>BEACON</td>
<td>BASE</td>
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<tr>
<td>2</td>
<td>101C</td>
<td>LOWER HINGE</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>102C</td>
<td>UPPER HINGE</td>
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</tr>
<tr>
<td>4</td>
<td>105C</td>
<td>CANOPY LIP</td>
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<td>104G</td>
<td>CANOPY FLANGE</td>
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<td>AF5557</td>
<td>COP LENS</td>
<td>RED</td>
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<td>RED</td>
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<td>RED</td>
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<td>WHITE TAP CO. WASH 1/8H MIN</td>
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<td>112X258H</td>
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<tr>
<td>14</td>
<td>100G</td>
<td>GASKET, BEACON BASE</td>
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<tr>
<td>15</td>
<td>101C</td>
<td>GASKET, MIDDLE BEACON</td>
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<td>102R</td>
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<td>17</td>
<td>102G</td>
<td>GASKET FLAT, TOP</td>
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<td>516NUT</td>
<td>5/16-18 HEX NUT</td>
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<td>1/4-20 X 5/8 SS FH SCREW</td>
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<td>25</td>
<td>63X2RH</td>
<td>6-32 X 2 SS FH SCREW</td>
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<td>63LW</td>
<td>6-32 LOCK WASHER</td>
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<td>(10-32 X 1) SS FH SCREW</td>
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<td>1032X1RH</td>
<td>(10-32 X 1) SS FH SCREW</td>
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<td>36</td>
<td>1032X58RH</td>
<td>10-32 X 5/8 FH</td>
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* = ITEM NOT SHOWN
~ = PART SOLD SEPARATELY

300MM BEACON
300 MM BEACON
ASSEMBLY DETAIL (PART # BEACON)

TWR Lighting, Inc.
Enlightened Technology

DATE: 05/18/06 UPDATED 3D M.
DATE: 05/18/06 REVISION: 0

G.D. SABBEK
309.06.0165 TSWL NTS...
1) WHITE WIRE IS NEUTRAL TO BOTH LAMPS.
2) BLACK WIRE IS LINE TO BOTH LAMPS.
3) GREEN WIRE IS EARTH GROUND.

300 MM BEACON

14/3 TYPE S.O. BEACON CORD

WHT.
GRN.
BLK.
**NOTES:**

1) DRAWING ILLUSTRATES METHOD OF STRAIN RELIEVING WIRE. USE THIS METHOD ON ALL JUNCTION BOXES.

2) THE NATIONAL ELECTRICAL CODE—ARTICLE 300-19-83 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.

---

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<thead>
<tr>
<th>AWG Size</th>
<th>Max. Number</th>
<th>Max. Number</th>
<th>Wire Area</th>
<th>Weight Per 100 Feet</th>
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<td>26</td>
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**JUNCTION AND STRAIN RELIEF BOXES**

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