IMPORTANT !!!

PLEASE TAKE THE TIME TO FILL OUT FORM COMPLETELY. FILE 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 # .................................. AA3/5MB-UT

SERIAL # ....................................

PURCHASE DATE ............................

PURCHASED FROM ............................
# AA3/5MBUT CONTROLLER

## TABLE OF CONTENTS

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0 GENERAL INFORMATION</td>
<td>1</td>
</tr>
<tr>
<td>2.0 INSTALLATION INSTRUCTIONS</td>
<td>2</td>
</tr>
<tr>
<td>3.0 THEORY OF OPERATION</td>
<td>6</td>
</tr>
<tr>
<td>4.0 MAINTENANCE GUIDE</td>
<td>8</td>
</tr>
<tr>
<td>5.0 SUGGESTED SPARE PARTS</td>
<td>10</td>
</tr>
<tr>
<td>6.0 MAJOR COMPONENTS PARTS LIST</td>
<td>11</td>
</tr>
<tr>
<td>7.0 WARRANTY &amp; RETURN POLICY</td>
<td>12</td>
</tr>
<tr>
<td>8.0 RETURN GOODS AUTHORIZATION FORM (RGA)</td>
<td>14</td>
</tr>
</tbody>
</table>
CHASSIS COMPONENT LAYOUT ............................................................ 1136-R
SCHEMATIC LAYOUT ................................................................. 1136-S
TROUBLESHOOTING FLOW CHART .................................................. 1136-F
PHOTOCCELL HOUSING DETAIL ...................................................... 100239
L-864 300 MM BEACON ................................................................. FM10017
L-864 300 MM BEACON ASSEMBLY DETAIL ..................................... 275-B
L-864 300 MM BEACON WIRING DETAIL ............................................ 273-B
L-810 OL1 SINGLE OBSTRUCTION LIGHT DETAIL ................................. FM10018
L-810 OL1 ASSEMBLY DETAIL ........................................................ 279-OL
L-810 OL1 WIRING DETAIL ............................................................ 274-S
JUNCTION BOX DETAIL ................................................................. 100089
1.0 GENERAL INFORMATION

The TWR Model AA3/5MB-UT controller is for A3 Lighting of towers 701' TO 1050' AGL in accordance with the FAA A/C 70/7460-1K Change 2. One Beacon should be placed at the top of the structure with two beacons at the 2/3 and 1/3 intervals with respect to overall tower height. Obstruction lights should be placed at the 5/6, 1/2 and 1/6 intervals.

The flash rate of the beacons is thirty (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.

A Utility Outlet Switch (SW2) allows the operator to control voltage to the circuit of outlets on the tower. This circuit is fused at 20 amps.

Each beacon requires two (2) 620 watt or (2) 700 watt 120 volt 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 130 volt bulbs. Each sidelight requires (1) 116 watt 120 volt bulb. (620PS40P, 700PS40P and 116A21TS)

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

Power supplied to controller shall be 120/240 volts 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 120 volts AC to the controller. Alarms in the event of power failure or tripped circuit breaker.

LIGHTS "ON"-Gives an indication whenever controller is activated.

BEACONS-Will give an alarm in the event of one or both bulbs failing or flasher stalling.

OBSTRUCTION LIGHTS-Will give an alarm when 1 of 3 sidelights fail.
2.0 INSTALLATION INSTRUCTIONS

2.1 MOUNTING THE CONTROL CABINET
(Refer to drawing 1136-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 1136-R drawing. Power wiring to the control cabinet should be in accordance with local methods and electrical codes.

2.1.2 If the control cabinet is mounted inside an equipment building, the photocell should be mounted vertically on ½ inch conduit outside the building above the eaves facing north. Wiring from the photocell socket to the control cabinet should consist of one each, red, black and white wires. The white wire is connected to the socket terminal marked "COM", the black wire is connected to the socket terminal marked "B" and the red wire is connected to the socket terminal marked “R”. These socket connections are made by using .25" quick connect terminals, which must be crimped to the wires. As above, the photocell should be positioned so that it does not "see" ambient light, which would prevent it from switching to the night mode.

2.1.3 If the control cabinet is mounted outside an equipment building, the photocell should be mounted vertically on 1/2 inch 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 night mode. 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 beacon 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 strip and fuse blocks located at the bottom of the chassis. These connections are made as follows:
2.2 EXTERNAL PHOTOCELL WIRING
(Refer to drawing 1136-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 1136-R)

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

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

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

2.3.4 Connect incoming 120 volt 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 drawing 1136-R and S10049)

2.4.1 Connect the BLACK wire from beacon #1 to fuse holder marked B1.

2.4.2 Connect the first BLUE wire from beacon #2 to fuse holder marked B2.

2.4.3 Connect the second BLUE wire from beacon #3 to fuse holder marked B3.

2.4.4 Connect the BROWN wire from beacon #4 to fuse holder marked B4.
2.4.5  Connect the BROWN wire from beacon #5 to fuse holder marked B5.

2.4.6  Connect the RED wire from sidelight group #1 to fuse holder marked S1.

2.4.7  Connect the YELLOW wire from sidelight group #2 to fuse holder marked S2.

2.4.8  Connect the PURPLE wire from sidelight group #3 to fuse holder marked S3.

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

2.5  RED BEACON AND SIDEIGHT ALARM WIRING
(Refer to drawings 1136-R and 1136-S)

2.5.1 Red light failure alarm relays K1, K2, K3, K4, K5, K6, K7, K8, K9 and K10 are provided on the left hand side of the chassis. Independent contact closures are provided for: Power Failure, Tower Lights "ON", Sidelight Top Level Burnout, Sidelight 2nd Level Burnout, Sidelights 3rd Level Burnout, Top Beacon Burnout, Middle Beacon Burnout (B2), Middle Beacon Burnout (B3), Lower Beacon Burnout (B4) and Lower Beacon Burnout (B5).

2.5.2 Alarm wiring: To utilize all of the red light alarms the customer will need ten pairs of wires to interface with his alarm device. The relays have been jumpered to provide one common point. One wire from each of the ten pairs will terminate at the 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  Top Beacon Burnout (B1) - Connect to relay K6 terminal #6.
2.5.2.7  Middle Beacon Burnout (B2) - Connect to relay K7 terminal #6.
2.5.2.8  Middle Beacon Burnout (B3) - Connect to relay K8 terminal #6.
2.5.2.9  Lower Beacon Burnout (B4) - Connect to relay K9 terminal #6.
2.5.2.10 Lower Beacon Burnout (B5) - Connect to relay K10 terminal #6.

2.5.3  Alarm Testing
To test alarms, follow the procedures using an "ohm" meter between alarm common and alarm points. Meter should indicate continuity on failure.

2.5.3.1  Power Failure - Pull circuit breaker at electrical panel.
2.5.3.2  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).
2.5.3.3  Beacon and Sidelights - Pull fuse switches on controller panel.
3.0 THEORY OF OPERATION

3.1 POWER SUPPLY

120/240 VAC enters the controller from the circuit breaker panel. Lines (L1, L2) sit at the PRD waiting to be switched and also keeps 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.

3.2 SIDELIGHTS

LD1 is sent to the primary of the boost transformer T1. The boosted output voltage (126V at 120V nominal input) is sent to relay K3, which is a current sensing relay for the sidelight #1. LD4 (120V) is sent to relays K5 and K6. The output of each sidelight relay is connected to its corresponding fuse. Each 9KE-3LAMP monitors one level of sidelights and will hold the contact open when three lights are burning, but will give a contact closure if one or more lights fail.

3.3 BEACONS

LD1, LD2 & LD3 are sent to the primary of boost transformers T1, T2 and T3. The boosted output voltage (132V at 120V nominal input) is sent to the CS2620 current sensing modules M1, M3, M5, M7 and M9. The output of these current sensors is connected to the flasher module M2 and the load contactor modules M4, M6, M8 and M10. M2 is primary flasher that operates Beacon #1 and the coils of module M4 and M6, M8 and M10 which flashes beacon #2, beacon #3, beacon #4 and beacon #5 synchronized with beacon #1. If one or both bulbs within a beacon burns out, the CS2620 will send 120 volts 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 #1 load, the flasher would not try to stall on.

3.4 LOAD BALANCE RESISTORS

The output of module M2 (flasher) is sent to the auxiliary flasher module M11 for timing purposes. M11 output's operates Load Balance Resistor 1 (R1) and is connected to
modules M12 and M13. M12 and M13 operates Load Balance Resistor 2 (R2) and Load Balance Resistor 3 (R3) 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.

3.5 UTILITY CIRCUIT

Line L2 is sent to utility outlet switch SW2. Ones SW2 is turned on, voltage is sent through fuse UT to the outlets on the tower. SW2 allows the operator to control use of the utility outlet. Maximum current draw is 20 amps.
4.0 MAINTENANCE GUIDE

4.1 RED OBSTRUCTION LIGHTING

The only required maintenance needed to be performed is replacement of the lamps in the L-864 and L-810 fixtures. Lamps should be replace after being operated for not more than 75 percent of the rated life or immediately upon failure as per 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 so that it can recline.

4.2.2 Open the lens and tilt it back.

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 latches and let the bail recline back.

4.3.2 Lift the lens up and over the lamp letting the lens 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 needed.
## AA3/5MBUT CONTROLLER

### 5.0 SUGGESTED SPARE 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</td>
</tr>
<tr>
<td>1</td>
<td>CS2620-115FA</td>
<td>BEACON LAMP BURNOUT DETECTOR</td>
</tr>
<tr>
<td>1</td>
<td>FA155-2</td>
<td>SOLID STATE LOAD CONTACTOR</td>
</tr>
<tr>
<td>1</td>
<td>X9KE-115V</td>
<td>S.P.D.T. RELAY</td>
</tr>
<tr>
<td>1</td>
<td>9KE-3LAMP</td>
<td>SIDELIGHT BURNOUT DETECTOR (NOT INTERCHANGEABLE W/X9KE)</td>
</tr>
<tr>
<td>2</td>
<td>KTK 20</td>
<td>20 AMP FUSE</td>
</tr>
<tr>
<td>1</td>
<td>KTK 30</td>
<td>30 AMP FUSE</td>
</tr>
</tbody>
</table>
### 6.0 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>PHOTOCALL</td>
</tr>
<tr>
<td>1</td>
<td>PM17AY</td>
<td>CONTACOR</td>
</tr>
<tr>
<td>1</td>
<td>CR360L304</td>
<td>CONTACOR</td>
</tr>
<tr>
<td>1</td>
<td>FS155-30T</td>
<td>SOLID STATE FLASHER</td>
</tr>
<tr>
<td>6</td>
<td>FA155-2</td>
<td>SOLID STATE LOAD CONTACOR</td>
</tr>
<tr>
<td>1</td>
<td>B12J1K2</td>
<td>1200 OHM 12W RESISTOR</td>
</tr>
<tr>
<td>5</td>
<td>CS2620-115FA</td>
<td>BEACON LAMP BURNOUT DETECTOR</td>
</tr>
<tr>
<td>1</td>
<td>FA155</td>
<td>SOLID STATE AUXILIARY FLASHER</td>
</tr>
<tr>
<td>6</td>
<td>X9KE-115V</td>
<td>S.P.D.T. RELAY</td>
</tr>
<tr>
<td>3</td>
<td>9KE-3LAMP</td>
<td>SIDELIGHT BURNOUT DETECTOR (NOT INTERCHANGEABLE W/X9KE)</td>
</tr>
<tr>
<td>1</td>
<td>SPEC 224</td>
<td>DELAY ON MAKE RELAY</td>
</tr>
<tr>
<td>1</td>
<td>P-5546</td>
<td>BOOST TRANSFORMER 15 AMP</td>
</tr>
<tr>
<td>2</td>
<td>P-5512</td>
<td>BOOST TRANSFORMER 23 AMP</td>
</tr>
<tr>
<td>10</td>
<td>KTK 20</td>
<td>20 AMP FUSE</td>
</tr>
<tr>
<td>4</td>
<td>KTK 30</td>
<td>30 AMP FUSE</td>
</tr>
<tr>
<td>2</td>
<td>MOV524V15</td>
<td>VARISTOR</td>
</tr>
<tr>
<td>1</td>
<td>ZB2BD2</td>
<td>UTILITY SWITCH HANDLE</td>
</tr>
</tbody>
</table>
## AA3/5MBUT CONTROLLER

### MAJOR COMPONENTS PARTS LIST

<table>
<thead>
<tr>
<th>QUANTITY</th>
<th>PART NUMBER</th>
<th>DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>ZB2BZ101</td>
<td>UTILITY SWITCH CONTACTS</td>
</tr>
<tr>
<td>1</td>
<td>STJ01002</td>
<td>PHOTOCELL BYPASS SWITCH</td>
</tr>
<tr>
<td>1</td>
<td>SSPIGTAIL</td>
<td>20’ PHOTOCELL PIGTAIL</td>
</tr>
</tbody>
</table>
TWR Lighting, Inc.

Warranty & Return Policy

TWR Lighting, Inc. ("TWR") warrants its products (other than replacement parts) 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.

Replacement parts 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

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 subcontractors.

Return Policy

Return Terms – You must first contact our Product Support Administrative Assistant at (713-973-6905) to acquire a Return Goods Authorization (RGA) number in order to return the product(s). Please have the following information available when requesting an RGA 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
- The serial number (if any)
- A description of the problem
- The billing information
- The Ship To address

This RGA number must be clearly visible on the outside of the box. If the RGA 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 RGA’s must be received by TWR 4300 Windfern Rd., Suite 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 products
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 Goods Authorization (RGA) 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 un-repairable and covered under warranty, a credit will be issued to the customer’s account.
- Product(s) that are 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 Goods Authorization (RGA) 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 un-repairable 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 PRODUCTS TO OPERATE FOR ANY TIME, AND ALL OTHER DIRECT, INDIRECT, SPECIAL, INCIDENTAL, OR CONSEQUENTIAL DAMAGES, INCLUDING ALL PERSONAL INJURY PROPERTY DAMAGE DUE TO ALLEGED NEGLIGENCE, STRICTLY LIABLE, OR ANY OTHER LEGAL THEORY WHATSOEVER. THIS WARRANTY IS MADE BY TWR EXPRESSLY IN LIEU OF ALL OTHER WARRANTIES, WHETHER EXPRESS OR IMPLIED. WITHOUT LIMITING THE GENERALITY OF THE FOREGOING, TWR MAKES NO WARRANTY OF MERCHANTABILITY OR FITNESS OF THE PRODUCTS FOR ANY PARTICULAR PURPOSE. TWR EXPRESSLY DISCLAIMS ALL OTHER WARRANTIES.
RETURN GOODS AUTHORIZATION FORM (RGA)

RGA#:_________________ 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 PRODUCT TO: 4300 WINDFERN RD. SUITE 100 HOUSTON TX 77041-8943
RETURN GOODS AUTHORIZATION FORM (RGA)

RGA#: __________________________ 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 PRODUCT TO: 4300 WINDFERN RD. SUITE 100 HOUSTON TX 77041-8943
VOICE (713) 973-6905 FAX (713) 973-9352

I:/TWRMANUALS/AA3/5MBUT.doc
Rev.06.09.03

15
CUSTOMER ALARM POINTS

C = ALARM COMMON
PV = POWER FAILURE
LO = LIGHTS "ON"
SL1 = SIDELIGHTS TOP LEVEL BURNOUT
SL2 = SIDELIGHTS 2ND LEVEL BURNOUT
SL3 = SIDELIGHTS 3RD LEVEL BURNOUT
BB1 = TOP BEACON BURNOUT B1
BB2 = MIDDLE BEACON BURNOUT B2
BB3 = MIDDLE BEACON BURNOUT B3
BB4 = LOWER BEACON BURNOUT B4
BB5 = LOWER BEACON BURNOUT B5

* ALARM OUTPUTS ARE NORMALLY OPEN AND CLOSED UPON FAILURE.

NOTES:
1. WHEN REPLACING MODULES USE HEAT SINK COMPOUND BETWEEN MODULE AND ALUMINUM PLATE.
2. PLUG 102 FAA PHOTOCCELL INTO 43109 TWIST LOCK RECEPTACLE AND TWIST TO LOCK.
3. USE KTK 20 AND KTK 30 AMP FUSE.
4. WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) L1 TO L1 TO L1.
DO LIGHTS COME ON AT DUSK? NO

YES

IS 120/240 VAC INPUT PRESENT? NO

DO YOU RECEIVE POWER FAILURE ALARM? NO

REPLACE K1

YES

CHECK/REPLACE PRO

YES

CHECK/REPLACE PHOTOCELL

YES

CHECK BREAKER AND INTERCONNECTION WIRES

DOES K1 ENGAGE? NO

NO

YES

CHECK/REPLACE 7-15 FUSE NO

CHECK/REPLACE BULBS NO

CHECK/REPAIR TOWER WIRING NO

CHECK/REPLACE K5-16 NO

YES

DOES LIGHTS BURN & ALARM? NO

YES

DOES BEACON #1 FLASH? NO

CHECK/REPLACE M1 NO

CHECK/REPLACE B3 Fuse NO

CHECK/REPLACE M2 NO

CHECK/REPLACE B1 Fuse NO

CHECK/REPLACE M3 NO

CHECK/REPLACE M4 NO

CHECK/REPLACE T1 NO

YES

DOES BEACON #2 ALARM? NO

YES

DOES BEACON #1 ALARM? NO

YES

DOES BEACON #1 FLASH? NO

CHECK/REPLACE M3 NO

CHECK/REPLACE B3 Fuse NO

CHECK/REPLACE M4 NO

CHECK/REPLACE B1 Fuse NO

CHECK/REPLACE M5 NO

CHECK/REPLACE B2 Fuse NO

CHECK/REPLACE M6 NO

CHECK/REPLACE B3 Fuse NO

CHECK/REPAIR TOWER WIRING NO

YES

DOES BEACON #2 FLASH? NO

CHECK/REPLACE M7 NO

CHECK/REPLACE B4 Fuse NO

CHECK/REPLACE M8 NO

CHECK/REPLACE B5 Fuse NO

CHECK/REPAIR TOWER WIRING NO

YES

IS 120VAC PRESENT AT UTILITY POWER NO

CHECK SW2 FOR ON OR OFF NO

CHECK/REPLACE UT FUSE NO

CHECK WIRING BULBS NO

YES

DO LIGHTS GO OUT AT DAWN? NO

REPLACE PHOTOCELL

DO LIGHTS GO OUT AT DAWN? YES

SYSTEM OPERATIONAL

TWR Lighting, Inc.
Enlightened Technology
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

EXPLODED VIEW

BLACK
RED
WHITE

ASSEMBLY

PHOTOCCELL HOUSING DETAIL
TWR Lighting, Inc.
FAA Approved L-864
300 mm BEACON

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"

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.
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 WIRE

14/3 TYPE S.O. BEACON CORD

WHT.
GRN.
BLK.
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.

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

Neoprene gasket for weatherproofing.

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

High quality porcelain receptacle.

Stainless steel safety cable.

No special tools required for maintenance.

General Specifications

Height 7.5 inches (19.055 cm)
Weight 3 lbs (1360.442g)
Power 120, 230, or 240 volts AC
Uses 116W, 120V or 240V bulbs
Bulbs sold separately
**NOTE:**
1. FAA APPROVED LIGHT USES THE 116A21TS LAMP. OTHER LAMPS ARE AVAILABLE TO MEET YOUR APPLICATION.
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 300-19-83 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.

USING THIS JUNCTION BOX METHOD SPACING IS 100 FEET MAXIMUM.

<table>
<thead>
<tr>
<th>AWG WIRE SIZE</th>
<th>MAX. NUMBER WIRES IN 3/4&quot; CONDUIT</th>
<th>MAX. NUMBER WIRES IN 1&quot; CONDUIT</th>
<th>WIRE AREA SQ. INCHES</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>