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 #  AA3-TSS

SERIAL #

PURCHASE DATE

PURCHASED FROM
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1.0 GENERAL INFORMATION

The TWR Lighting Division Model AA3-TSS Controller is for towers 700’ to 1050’ above ground level. Beacons should be placed at top, 2/3, 1/3 intervals with respect to overall tower height. Obstruction lights should be placed at 5/6, 1/3, 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 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.

Each beacon requires (2) 620 watt or (2) 900 watt 120 volt bulbs. TWR recommends that you use only these bulbs. Each sidelight requires one (1), 120-volt bulb.

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

Power supplied to the controller shall be 120/240 volts wire single phase.

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

2.1 MOUNTING THE CONTROL CABINET
(Refer to Drawing 1098-R)

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 1098-R. Power wiring to the control cabinet should be in accordance with local methods and National Electrical Codes (NEC).

2.1.1 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 “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. The photocell should be positioned so that it does not “see” ambient light, which would prevent it from switching to the nightmode.

2.1.2 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 would prevent it from switching into the nightmode. The photocell wiring is the same as in 2.1.1.

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 strips and breakers located at the bottom of the controller. These connections are made as follows:
2.2 EXTERNAL PHOTOCELL WIRING
(Refer to Drawing 1098-R)

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

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

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

2.3 POWER WIRING
(Refer to Drawing 1098-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 40 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 the neutral wire to one (1) of the terminal blocks on TB1 marked “N.”

2.3.6 Connect the AC ground to the aluminum mounting plate.

2.4 RED BEACON & SIDELIGHT WIRING
(Refer to Drawing 1098-R, 261-31 and 261-32)

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

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

2.4.4 Connect the **RED** and **YELLOW** wires from sidelight group #1 and #2 to the breaker marked “S”.

2.4.5 Connect the **Neutral** wire to one of the terminals TB1 marked “N”.
3.0 THEORY OF OPERATION

3.1 Power Supply

120V/240V AC enters the controller from the circuit breaker panel. Lines (L1, L2) sit at the PRD waiting. When the 102FAA photocell is activated, line (L2) energizes the coil of the PRD relay. This can also be accomplished by using the photocell by-pass switch.

3.2 Sidelights

LD4 is sent to the breaker marked “S” which will power the three levels of the sidelights.

3.3 Beacons

LD1, LD2 and LD3 are sent to the flasher module M1 and the load contractor modules M5 and M6. M1 is a solid-state flasher that operates Beacon #1 and the coils of module M5 and M6, which makes the M5, and M6 flash beacon #2 and beacon #3 synchronized with beacon #1.
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 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. 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 (2) 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 Reinstall the lens; making sure it is seated properly on the base.

4.3.6 Reclasp the two (2) latches.

4.4 L-864 CONTROLLER

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

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>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>B12J2K5</td>
<td>2500 OHM 12W Resistor</td>
</tr>
<tr>
<td>2</td>
<td>FA155-2</td>
<td>Solid State Load Contractor</td>
</tr>
<tr>
<td>1</td>
<td>PM17AY120V</td>
<td>Mechanical Load Contractor PRD</td>
</tr>
<tr>
<td>2</td>
<td>5SX2120-8</td>
<td>20 Amp Breaker</td>
</tr>
<tr>
<td>3</td>
<td>8WA1204</td>
<td>Single Pole Terminal Block</td>
</tr>
</tbody>
</table>
## 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>
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<td>1</td>
<td>FA155-2</td>
<td>Solid State Load Contractor</td>
</tr>
<tr>
<td>2</td>
<td>5SX2120-8</td>
<td>20 Amp Breaker</td>
</tr>
</tbody>
</table>
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. #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. #100 HOUSTON TX 77041-8943
1. WHEN REPLACING MODULES USE HEAT SINK COMPOUND BETWEEN MODULE AND ALUMINUM PLATE.
2. PLUG 102 FAA PHOTOCELL INTO 43109 TWIST LOCK RECEPTACLE AND TWIST TO LOCK.
3. WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) S TO S TO S.
DO LIGHTS COME ON AT DUSK?

NO

DO LIGHTS BURN?

NO

DO BEACON #1 FLASH?

NO

CHECK/RESET 5 BREAKER

NO

CHECK/REPLACE BULBS

NO

CHECK/REPAIR TOWER WIRING

YES

CHECK/REPLACE PHOTOCELL

YES

IS 120/240VAC INPUT PRESENT?

NO

CHECK BREAKER AND INTERCONNECTION WIRES

YES
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)

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

No special tools required for maintenance.
NOTE:
1. FAA APPROVED LIGHT USES THE 116A21TS LAMP. OTHER LAMPS ARE AVAILABLE TO MEET YOUR APPLICATION.
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.

13-1/4" BOLT CIRCLE WITH 11/16" MOUNTING HOLES

BASE DETAIL

5 foot, 3 or 4 conductor SO Cord pigtail
Standard 4 bolt pattern, 90 degrees, 13-1/4"

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

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.
300MM BEACON

ASSEMBLY DETAIL (PART # BEACON)

TWR Lighting, Inc.
Enlightened Technology

30/7/08

DATE: 05/18/08

0803/08

REVISION

11.81”
GROUND WIRE (GREEN)
COMMON WIRE, NEUTRAL (WHITE)
LINE (BLACK)

30.5”

ITEM NO. | QTY. | TWR PART NO. | DESCRIPTION
--- | --- | --- | ---
1 | 1 | 100C | BEACON BASE
2 | 1 | 101C | LOWER HINGE
3 | 1 | 102C | UPPER HINGE
4 | 1 | 103C | CANTOY CAP
5 | 1 | 104C | CANTOY FLANGE
6 | 1 | AP5557 | CAP LENS RED
7 | 1 | AP5556 | MIDDLE LENS RED
8 | 2 | AP5555 | BOTTOM LENS RED
9 | 2 | 232X66 | BEACON LAMP RECEPTACLE
10 | 1 | 106C | WHITE TROTON WASHET PK M6
11 | 1 | G82835SA | CORR. CONDUCTOR 3/4 50 - 60
12 | 1 | TERMINAL K5 | TERMINAL BLOCK 5-PORT
13 | 1 | 6X7X5/8 | 3/8 X 5/8 SS RH SCREW
14 | 2 | 100G | GASKET, BEACON BASE
15 | 1 | 101G | GASKET, MIDDLE BEACON
16 | 1 | 102G | GASKET TOP HINGE
17 | 1 | 103G | GASKET TEFLON, TOP
18 | 16 | 516NUT | 5/16-18 HEX NUT
19 | 16 | 516NUTN | 5/16-18 NUT W/NYLON INSERT
20 | 3 | 1420X58RH | 1/4-20 X 5/8 SS RH SCREW
21 | 1 | 18RH | BEACON LH ROD BENT
22 | 1 | 18PIN | BEACON LH ROD STRAIGHT
23 | 1 | 8P | BEACON HINGE PIN W/COTTER PIN
24 | 1 | LBP | BEACON LATCH PIN
25 | 1 | 632X2RH | 6-32 X 2 SS RH SCREW
26 | 1 | 632NUT | 6-32 NUT HEX
27 | 1 | 632W | 6-32 WEDGE WASHER
28 | 1 | 1220M | HI-TEMP TY WRAPS
29 | 1 | 100Z28 | BEACON SERIAL NUMBER LABEL
30 | 1 | 16HTW | #16 HT-WIRE WHITE
31 | 1 | 16HTB | #16 HT-WIRE BLACK
32 | 1 | CU0173 | S.O. COPPER WIRE, #14
33 | 1 | 1032X1RH | CANTOY SURFACE HEAVY DUTY
34 | 1 | 1032X1BH | 10-32 X 1 SS RH SCREW
35 | 2 | 1032X58RH | 10-32 X 5/8 RH SCREW
36 | 1 | BEACON LAMP
37 | 1 | 1032X58PH | 10-32 X 5/8 PH

* = ITEM NOT SHOWN
~ = PART SOLD SEPARATELY
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.
J8–5 AND J8–0
3/4” JUNCTION BOX

J8–8 AND J8–8SR
1” JUNCTION BOX

NOTES:

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

2) THE NATIONAL ELECTRICAL CODE–ARTICLE 300–19–B3 REQUIRES CONDUCTORS IN A VERTICAL CONDUIT BE SUPPORTED TO RELIEVE STRAIN ON TERMINAL BLOCK CONNECTIONS.

3) SKETCH ILLUSTRATES METHOD OF STRAIN RELIEVING A SINGLE CONDUCTOR. SEVERAL CONDUCTORS MAY BE GROUPED TOGETHER.

4) CONDUCTORS MAY BE MIXED BUT SHOULD NOT TAKE UP MORE THAN 40% OF CONDUIT’S INSIDE AREA.

<table>
<thead>
<tr>
<th>AWG</th>
<th>MAX. NUMBER WIRES IN 3/4” CONDUIT</th>
<th>MAX. NUMBER WIRES IN 1” 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>
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<td>17</td>
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