

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

*Enlightened Technology<sup>®</sup>*

4300 WINDFERN RD #100 HOUSTON TX 77041-8943  
VOICE (713) 973-6905 FAX (713) 973-9352  
web: [www.twrlighting.com](http://www.twrlighting.com)

## **IMPORTANT!!!**

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

MODEL # AA4MDF

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

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

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

# **TWR Lighting, Inc.** **MARK**

*Enlightened Technology*

## **AA4MDF CONTROLLER**

---

### TABLE OF CONTENTS

<b>1.0</b>	<b>GENERAL INFORMATION</b> .....	<b>1</b>
<b>2.0</b>	<b>INSTALLATION</b> .....	<b>2</b>
<b>2.1</b>	<b>MOUNTING THE CONTROL CABINET</b> .....	<b>2</b>
<b>2.2</b>	<b>EXTERNAL PHOTOCELL WIRING</b> .....	<b>3</b>
<b>2.3</b>	<b>POWER WIRING</b> .....	<b>3</b>
<b>2.4</b>	<b>RED BEACON AND SIDELIGHT WIRING</b> .....	<b>3</b>
<b>2.5</b>	<b>POWER SUPPLY</b> .....	<b>4</b>
<b>2.6</b>	<b>SIDELIGHT</b> .....	<b>4</b>
<b>2.7</b>	<b>BEACONS</b> .....	<b>4</b>
<b>3.0</b>	<b>THEORY OF OPERATION</b> .....	<b>5</b>
<b>3.1</b>	<b>BEACON NOT FLASHING</b> .....	<b>5</b>
<b>3.2</b>	<b>SIDELIGHT OUT</b> .....	<b>5</b>
<b>3.3</b>	<b>CONTROLLER ALWAYS “ON”</b> .....	<b>5</b>
<b>4.0</b>	<b>MAJOR COMPONENTS PARTS LIST</b> .....	<b>6</b>
<b>5.0</b>	<b>SUGGESTED SPARE PARTS LIST</b> .....	<b>7</b>

**WARRANTY & RETURN POLICY**

**RETURN MATERIAL AUTHORIZATION (RMA) FORM**

# **TWR Lighting, Inc.** **MARK**

*Enlightened Technology*

## **AA4MDF CONTROLLER**

---

### APPENDIX

CHASSIS LAYOUT .....	1244-R (REV A)
SCHEMATIC LAYOUT .....	1244-S (REV A)
PHOTOCELL HOUSING DETAIL .....	100239 (REV G)
L-810 OL1 SINGLE OBSTRUCTION LIGHT .....	279-OL (REV C)
SIDELIGHT RECEPTACLE WIRING .....	274-S (REV A)
L-864 300 MM BEACON ASSEMBLY .....	275-B (REV E)
L-864 300 MM BEACON WIRE .....	273-B
JUNCTION BOX DETAIL .....	100089 (REV A)

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

*Enlightened Technology<sup>®</sup>*

## **AA4MDF CONTROLLER**

---

### **1.0 GENERAL INFORMATION**

The TWR Lighting, Inc. (TWR) AA4MDF Controller is for A4 lighting of towers 1,050' to 1,400' above ground level (AGL) in accordance with the FAA Advisory Circular 70/7460-1K. One (1) beacon should be placed at the top,  $\frac{3}{4}$ ,  $\frac{1}{2}$ , and  $\frac{1}{4}$  intervals with respect to overall tower height. Obstruction lights should be placed at  $\frac{7}{8}$ ,  $\frac{5}{8}$ ,  $\frac{3}{8}$ , and  $\frac{1}{8}$  intervals.

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

A photocell 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.

Each beacon requires two (2) 620W or two (2) 700W 120V bulbs. TWR recommends that you use only these bulbs. Do not try to use 130V bulbs. Each sidelight requires one (1) 116W 120V bulb (620PS40P or 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.

## **AA4MDF CONTROLLER**

---

### **2.0 INSTALLATION**

#### **2.1 MOUNTING THE CONTROL CABINET**

(Refer to Drawing 1244R)

- 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 1244-R. Power wiring to the control cabinet should be in accordance with local methods and National Electrical Codes (NEC).
- 2.1.2 If the control cabinet is mounted inside an equipment building, the photocell should be mounted vertically on ½” conduit outside the building above the eaves facing north. Wiring from the photocell socket to the control cabinet should consist of one (1) each; red, black, and white wires. The white wire is connected to the socket terminal marked “N.” The black wire is connected to the socket terminal marked “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 would 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 would prevent it from switching into the nightmode. The photocell wiring is the same as in 2.1.1.
- 2.1.4 The wiring from the photocell, the service breaker, the red incandescent beacon, and the sidelights should enter the control cabinet through the water tight connectors in the bottom of the cabinet. Inside the cabinet, the connections will be made on terminal strip and fuse blocks located at the bottom of the chassis. These connections are made as follows:

## **AA4MDF CONTROLLER**

---

### **2.2 EXTERNAL PHOTOCELL WIRING**

(Refer to Drawing 1244-R)

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

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

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

### **2.3 POWER WIRING**

(Refer to Drawing 1244-R)

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

2.3.2 Circuit breaker needs to be a two (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 neutral 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 AND SIDELIGHT WIRING**

(Refer to Drawing 1244-R)

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

2.3.8 Connect the **LINE** wire from beacon #2 to circuit breaker marked “B2.”

## **AA4MDF CONTROLLER**

---

- 2.3.9 Connect the **LINE** wire from beacon #3 to circuit breaker marked “B3.”
- 2.3.10 Connect the **LINE** wire from beacon #4 to circuit breaker marked “B4.”
- 2.3.11 Connect the **LINE** wires from all sidelight groups to circuit breaker marked “S.”
- 2.3.12 Connect the **NEUTRAL** wire(s) to one (1) of the terminals on TB1, marked “N.”

### **2.5 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. When the 6390-FAA photocell is activated, Line L2 energizes the coil of the PRD relay. This also can be accomplished by using the photocell by-pass switch (SW1).

### **2.6 SIDELIGHTS**

LD4 is sent to the “S” circuit breaker, which powers all three (3) sidelight circuits.

### **2.7 BEACONS**

Line LD1 is sent to the motorized flasher. Lines LD1, LD2, LD3, and LD4 are sent to the four (4) sets of contacts on the Model 30-T4 motorized flasher. When the controller is turned on, these contacts will deliver the voltage to circuit breakers B1 – B4, which will operate the beacons at 30 flashes per minute.

# **TWR Lighting, Inc.** **MARK**

*Enlightened Technology*

## **AA4MDF CONTROLLER**

---

### **3.0 THEORY OF OPERATION**

#### **3.1 BEACON NOT FLASHING**

Check for pulsing 120V AC at the four (4) beacon circuit breakers. If any of the circuit breakers are tripped, there may have been a surge or could be a short in the tower wiring. This can be checked by looking for a short between each beacon terminal and ground. If OK, and 120V AC is not present, check the Model 30-T4 motorized flasher to see if there is voltage. If OK, the coil is probably open. Replace the motor. If everything appears to be correct, but light still does not work, re-lamp that beacon.

#### **3.2 SIDELIGHT OUT**

Check for constant 120V AC at “S” circuit breaker. If tripped, check for a short in the tower wiring. If not, and voltage is present, re-lamp that sidelight.

#### **3.3 CONTROLLER ALWAYS “ON”**

If lights stay on in the day time, pull photocell out of the socket. If lights go out, replace the photocell. If not, check for welded contacts on the PRD. Replace if necessary.



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

*Enlightened Technology<sup>®</sup>*

## **AA4MDF CONTROLLER**

---

### **4.0 MAJOR COMPONENTS PARTS LIST**

<b>QTY</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>
1	VJ1412HWPL2	Controller Enclosure
1	6390-FAA	Photocell 120-240V
1	30-T4	Motor Flasher
1	CR36OL304	Mechanical Load Contactor
2	MOV524V15	Metal Oxide Varistor (MOV1 & MOV2)
1	SSPIGTAIL	20' Photocell Pigtail
1	STJ01002	SW1 Switch
3	8WA1204	Terminal Block (TB2)
6	8WA1205	Terminal block (TB1)
2	8WA1808	End Sections
6	S261D20	20 amp Circuit Breaker (B1-B4, S)

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

*Enlightened Technology<sup>®</sup>*

## **AA4MDF CONTROLLER**

---

### **5.0 SUGGESTED SPARE PARTS LIST**

<b>QTY</b>	<b>PART NUMBER</b>	<b>DESCRIPTION</b>
1	6390-FAA	Photocell
2	S261D20	20 amp Circuit Breaker (B1-B4, S)

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

*Enlightened Technology<sup>®</sup>*

## **AA4MDF CONTROLLER**

---

### **Warranty & Return Policy**

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

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

**TWR Lighting<sup>®</sup>, Inc. (“TWR<sup>®</sup>”)** warrants its “LED Product” against light degradation for a period of five (5) years from the date of installation. TWR<sup>®</sup>, at its sole option, will, itself, or through others, repair, replace, or refund the purchase price paid for “LED Product” that TWR<sup>®</sup> verifies as failing to meet 70% of the minimum intensity requirements as defined in the FAA Advisory Circular 150/5345-43G dated 09/26/12. All warranty replacement “LED Product” is warranted only for the remainder of the original warranty of the “LED Product” replaced. Replacement “LED Product” will be equivalent in function, but not necessarily identical, to the replaced “LED Product.”

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

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

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

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

# **TWR Lighting, Inc.** **MARK**

*Enlightened Technology*

## **AA4MDF CONTROLLER**

---

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

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

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

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

**All RMAs must be received by TWR LIGHTING®, 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).

# **TWR Lighting, Inc.** **HARK**

*Enlightened Technology®*

## **AA4MDF CONTROLLER**

---

### **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.

- x Product(s) that is deemed defective and/or unrepairable and covered under warranty - a credit will be issued to the customer's account.
- x Product(s) found to have no defect will be subject to a **\$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.
- x 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.

# **TWR Lighting, Inc.** **MARK**

*Enlightened Technology*

## **AA4MDF CONTROLLER**

---

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

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.

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

*Enlightened Technology<sup>®</sup>*

## **AA4MDF CONTROLLER**

---

### **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: 4300 WINDFERN RD. #100 HOUSTON TX 77041-8943

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

*Enlightened Technology<sup>®</sup>*

## **AA4MDF CONTROLLER**

---

### **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: 4300 WINDFERN RD. #100 HOUSTON TX 77041-8943