TWR Lighting®, Inc. HARK
Enlightened Technology®

10810 W. LITTLE YORK RD. #130 - HOUSTON, TX 77041-4051
VOICE (713) 973-6905 - FAX (713) 973-9352
web: 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 # **AA0M-TSS 48V DC**

SERIAL # _____

PURCHASE DATE _____

PURCHASED FROM _____

TWR Lighting® Inc. HARK

Enlightened Technology®

AA0M-TSS 48V DC CONTROLLER

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AA0M-TSS 48V DC CONTROLLER

1.0 GENERAL INFORMATION

The TWR Lighting®, Inc. (TWR®) Model AA0M-TSS 48V DC Controller is for the application of one (1) LED double obstruction fixture.

The obstruction lights 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 turning "on" the toggle switch mounted on the panel of the controller.

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

Power supplied to the controller shall be 48V DC.

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

POWER FAILURE	Monitors 48V DC to the controller. Alarms in the event of power failure, or tripped circuit breaker.
LIGHTS "ON"	Gives an indication whenever the controller is activated.
OBSTRUCTION LIGHTS	Will give an alarm when one (1) of the two (2) lights in the double obstruction fixture fails.

2.0 INSTALLATION

2.1 MOUNTING THE CONTROL CABINET
(Refer to Drawing 1196-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 1196-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 blue wires. The black wire is connected to the socket terminal marked "N," the red wire is connected to the socket terminal marked "Li," and the blue wire is connected to the socket terminal marked "Lo." 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 battery, 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 breaker located at the bottom of the chassis. These connections are made as follows:

2.2 EXTERNAL PHOTOCELL WIRING
(Refer to Drawing 1196-R)

2.2.1 Connect the **BLACK** wire from the photocell to terminal block TB2 marked "-."

2.2.2 Connect the **RED** wire from the photocell to terminal block TB2 marked "SSR."

2.2.3 Connect the **BLUE** wire from the photocell to terminal block TB2 marked "+."

2.3 POWER WIRING

(Refer to Drawing 1196-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 Connect the positive 48V DC to terminal block TB1 marked "+."

2.3.3 Connect the negative wire to one (1) of the terminal blocks on TB1 marked "-."

2.3.4 Connect the ground to the aluminum mounting plate.

2.4 OBSTRUCTION FIXTURE WIRING

(Refer to Drawing 1196-R)

2.4.1 Connect the **RED** from the double obstruction light to the circuit breaker marked "S."

2.4.2 Connect the **BLACK** wire to the terminal block TB1 marked "-."

2.4.3 Connect the ground to ground lug marked "G" inside the controller.

2.5 OBSTRUCTION FIXTURE ALARM WIRING

(Refer to Drawings 1196-R and 1196-S)

2.5.1 Alarm relays K1, K2, and Module M1 are provided for independent contact closures for: Power Failure, Lights "ON," and Obstruction Fixture Burnout.

2.5.2 Alarm wiring: To utilize all of the obstruction fixture alarms, the customer will need three (3) pair of wires to interface with the alarm device.

Obstruction Fixture Burnout: Connect first wire from the first pair to Module M1, terminal #18, for normally open (or) terminal #16, for normally closed monitoring.

Connect second wire from the first pair to Module M1, terminal 15, for alarm common.

Power Failure Alarm: Connect first wire from the second pair to relay K1, terminal #3, for normally closed (or) terminal #4, for normally open monitoring.

Connect second wire from the second pair to relay K1, terminal #1.

Lights "ON" Alarm: Connect first wire from the third pair to relay K2, terminal #3, for normally closed (or) terminal #6, for normally open monitoring.

Connect second wire from the third pair to relay K2, terminal #1.

2.5.3 Testing: To test alarms, follow the procedures using the "ohm" meter between alarm common and alarm points.

Power Failure Open 48V DC circuit.

Lights "ON" Operate photocell by-pass switch (SW1) or cover the photocell.

Obstruction Fixture Trip circuit breaker on the controller panel.

3.0 THEORY OF OPERATION

3.1 POWER SUPPLY

48V AC enters the controller from the circuit breaker panel. Line sits at the 6589C-FAA photocell waiting to be switched and also keeps the power failure relay K1 energized. When the 6589C-FAA photocell is activated, line SSR energizes K2 "Lights On" relay. This can also be accomplished by using the photocell by-pass switch (SW1).

3.2 DOUBLE OBSTRUCTION LIGHTS

SSR is being sent to Module M1 and then to the circuit breaker "S." Module M1 is the current sensor for the obstruction fixtures. If one (1) obstruction fixture burns out, then Module M1 will send contact obstruction fixture alarm on pin 16, or pin 18.

4.0 MAINTENANCE GUIDE

4.1 RED OBSTRUCTION FIXTURE

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

4.2 CONTROLLER

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

4.3 PHOTOCELL

The photocell is a sealed unit. No maintenance is needed or required other than replacement as necessary.

5.0 MAJOR COMPONENTS PARTS LIST

QTY	PART NUMBER	DESCRIPTION
1	6589C-FAA (This replaces the PCS48 photocell)	Photocell 12-48V DC
1	VJ1008HPL1X004	Enclosure
2	PB27E122	Octal Sockets (K1 and K2)
6	8WA1204	Terminal Blocks (TB1 and TB2)
1	S261-D1	1 amp Circuit Breaker (S)
2	8WA1808	End Stop
1	KRPA11DG48VDC	DPDT Relay (K1 and K2)
1	SSPIGTAIL	20’ Photocell Pigtail
1	STJ01002	15 amp SPDT Switch (SW1)
1	RM22JA31MRSP01	Current Sensor (M1)

6.0 SUGGESTED SPARE PARTS LIST

QTY	PART NUMBER	DESCRIPTION
1	6589C-FAA (This replaces the PCS48 photocell)	Photocell 12-48V DC
1	KRPA11DG48VDC	48V DC DPDT Relay

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AA0M-TSS 48V DC CONTROLLER

Warranty & Return Policy

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

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

TWR Lighting®, Inc. ("TWR®") warrants its "LED Product" against light degradation for a period of five (5) years from the date of installation. TWR®, at its sole option, will, itself, or through others, repair, replace, or refund the purchase price paid for "LED Product" that TWR® verifies as failing to meet 75% of the minimum intensity requirements as defined in the FAA Advisory Circular 150/5345-43G dated 09/26/12. All warranty replacement "LED Product" is warranted only for the remainder of the original warranty of the "LED Product" replaced. Replacement "LED Product" will be equivalent in function, but not necessarily identical, to the replaced "LED Product."

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

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

- Improper Installation or Operation
- Misuse
- Abuse
- Unauthorized or Improper Repair or Alteration
- Accident or Negligence in Use, Storage, Transportation, or Handling
- Any Acts of God or Nature
- **Non-OEM Parts**
  The use of Non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published in Advisory Circular 150/5345-43.

AA0M-TSS 48V DC CONTROLLER

Warranty & Return Policy
(continued)

Field Service – Labor, Travel, and Tower Climb are not covered under warranty. Customer shall be obligated to pay for all incurred charges. An extensive network of certified and insured Service Representatives is available if requested.

Repair, Replacement or Product Return RMA 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 or
- The contact name and phone number of the contractor
- The site name and number
- The part number(s)
- The serial number(s) (if any)
- A description of the problem
- The billing information
- The Ship To address

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

All RMAs must be received by TWR LIGHTING®, INC., 10810 W. LITTLE YORK RD. #130, HOUSTON, TX 77041-4051, within 30 days of issuance.

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

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Warranty & Return Policy
(continued)

RMA Replacements – Replacement part(s) will be shipped and billed to the customer for product(s) considered as Warranty, pending return of defective product(s). When available, a certified reconditioned part is shipped as warranty replacement with a Return Merchandise Authorization (RMA) number attached. Upon receipt of returned product(s), inspection, testing, and evaluation will be performed to determine the cause of defect. The customer is then notified of the determination of the testing**.**

- Product(s) that is deemed defective and/or unrepairable and covered under warranty - a credit will be issued to the customer's account.
- Product(s) found to have no defect will be subject to a **$75.00 per hour testing charge (1 hour minimum), which will be invoiced to the customer.** At this time the customer may decide to have the tested part(s) returned and is responsible for the return charges.
- Product(s) under warranty, which the customer does not wish returned, the customer will be issued a credit against the replacement invoice.

RMA Repair & Return – A Return Merchandise Authorization (RMA) will be issued for all part(s) returned to TWR® for repair. Upon receipt of returned product(s), inspection, testing, and evaluation will be performed to determine the cause of defect. The customer is then notified of the determination of the testing. If the returned part(s) is deemed unrepairable, or the returned part(s) is found to have no defect, the customer will be subject to a **$75.00 per hour testing charge (1 hour minimum), which will be invoiced to the customer.** Should the returned parts be determined to be repairable, a written estimated cost of repair will be sent to the customer for their written approval prior to any work being performed. In order to have the tested part(s) repaired and/or returned, the customer must issue a purchase order and is responsible for the return shipping charges.

RMA Return to Stock – Any product order that is returned to TWR® for part(s) ordered incorrectly or found to be unneeded upon receipt by the customer, the customer may be required to pay a minimum **20% restocking fee**. Product returned for credit must be returned within 60-days of original purchase, be in new and resalable condition, and in original packaging. Once the product is received by TWR it's condition will be evaluated and a credit will be issued only once it is determined that the RMA Return Terms have been 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.

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Warranty & Return Policy
(continued)

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.

TWR Lighting® Inc. HARK

Enlightened Technology®

AA0M-TSS 48V DC 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: 10810 W. LITTLE YORK RD., #130 HOUSTON TX 77041-4051

TWR Lighting®, Inc. HARK

Enlightened Technology®

AA0M-TSS 48V DC 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:**_____

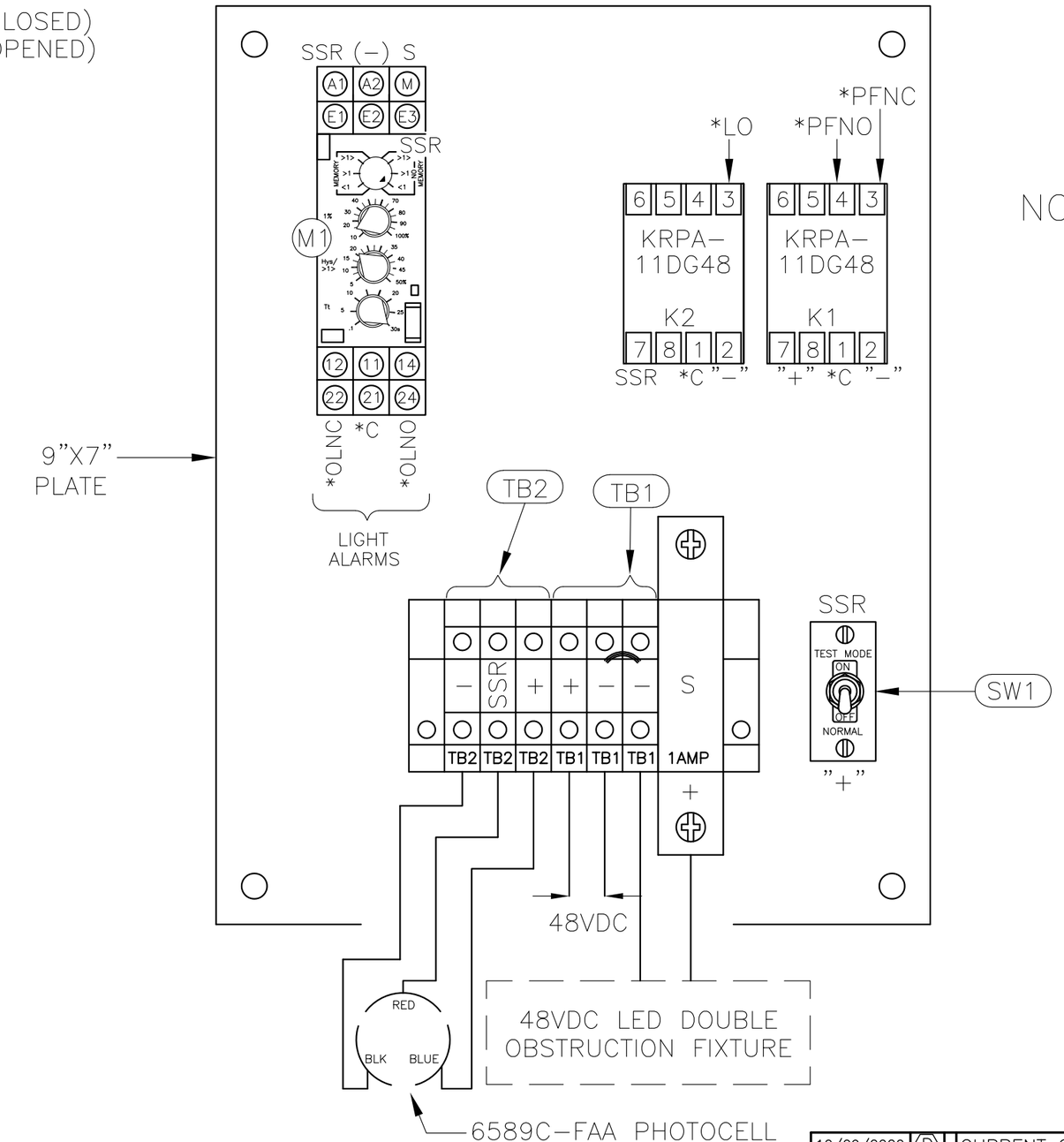
RETURN ADDRESS:_____

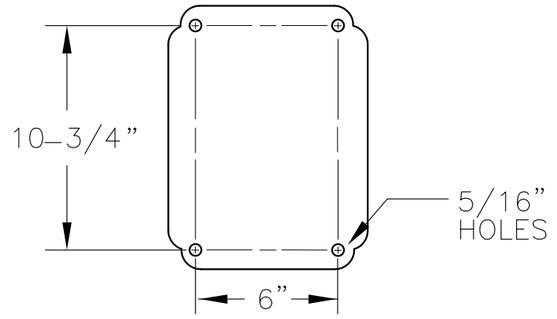
_____

PLEASE RETURN PRODUCT TO: 10810 W. LITTLE YORK RD., #130 HOUSTON TX 77041-4051

*CUSTOMER ALARM POINTS

OLNC = OBSTRUCTION LIGHT ALARM (NORMALLY CLOSED)
OLNO = OBSTRUCTION LIGHT ALARM (NORMALLY OPEN)
C = ALARM COMMON
LO = LIGHTS "ON" INDICATOR
PFNC = POWERFAIL (NORMALLY CLOSED)
PFNO = POWERFAIL (NORMALLY OPENED)





MOUNTING DIMENSIONS

(FOR CABINET)

NOTES:

1. PLUG 6589C–FAA PHOTOCELL INTO 43109 TWIST LOCK RECEPTACLE AND TWIST TO LOCK.
2. WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) S TO S...

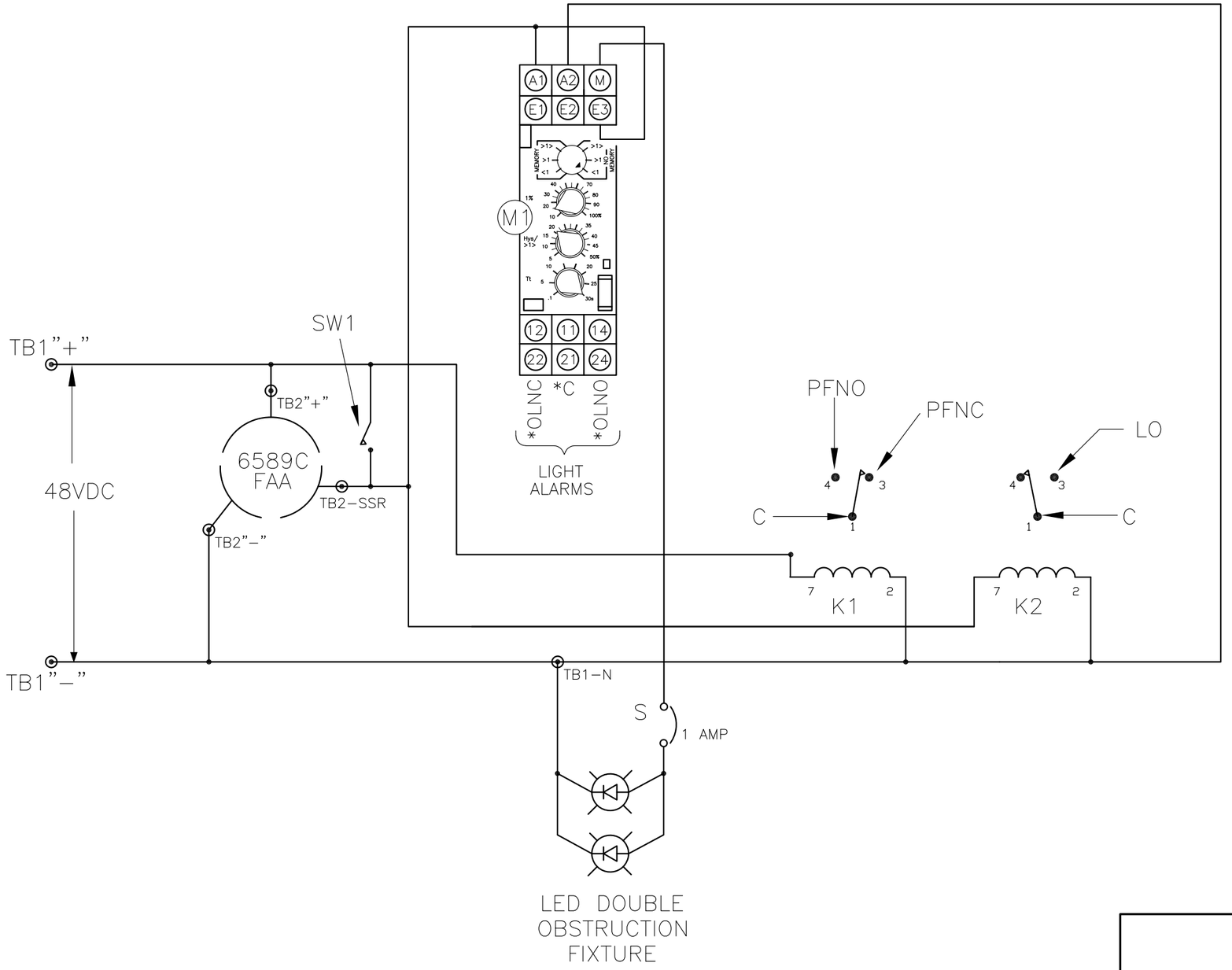
10/09/2020	D	CURRENT SENSOR
DATE:	LTR.	REVISION

AA0M–TSS 48VDC
CHASSIS LAYOUT

PROD DEPT
SERV DEPT
ENGINEER

TWR Lighting, Inc.
Enlightened Technology

DRAWN BY E.A.SALAZAR | SHEET SIZE B | SHEET QTY. 1 OF 1
DATE 05/27/2004 | SCALE N.T.S. | DWG. NO. 1196–R



10/09/2020	C	J.Z	CURRENT SENSOR
DATE:	LTR.		REVISION

AA0M-TSS 48VDC
SCHEMATIC LAYOUT

APP'D	
CHK'D BY	
ENGINEER	

TWR Lighting, Inc.
Enlightened Technology

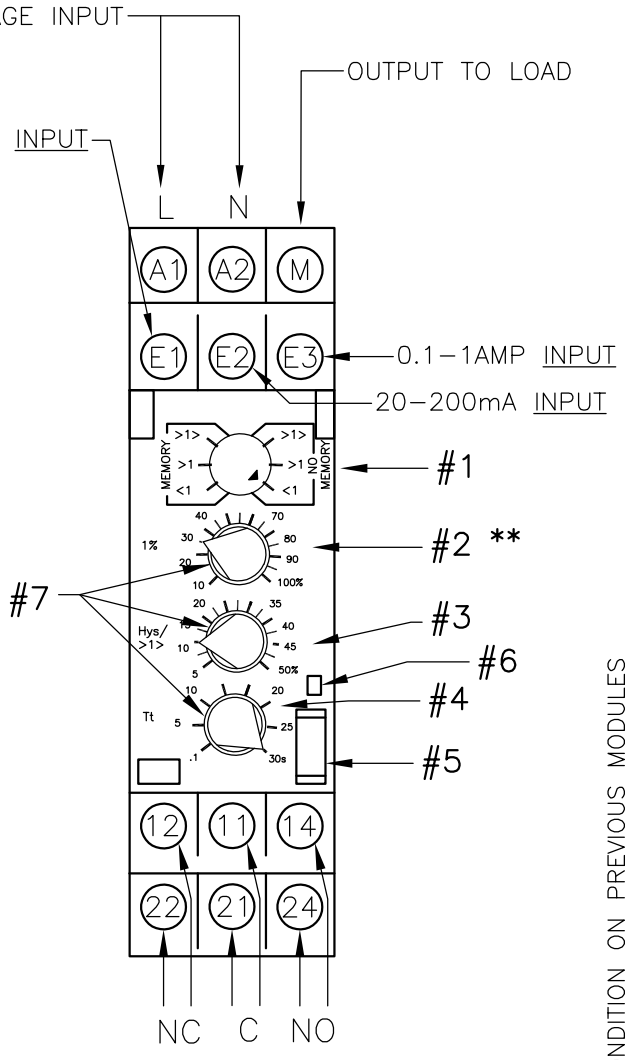
DRAWN BY E.A.SALAZAR		SHEET SIZE B	SHEET QTY. 1 OF 1
DATE 05/27/04	SCALE N.T.S.	DWG. NO.	1196-S

AC UNITS CURRENT MEASUREMENT RM22JA31MRSP01

120VAC PRODUCT SPECIFIC SETTINGS

QTY.	PART NO.	INPUT	#1	#2	#3	#4	#5
1	OL1_LED2	E2	*<1	30	20	30	OFF
2	OL1_LED2	E2	*<1	50	20	30	OFF
3	OL1_LED2	E3	*<1	**15**	20	30	OFF
4	OL1_LED2	E3	*<1	25	20	30	OFF
6	OL1_LED2	E3	*<1	35	20	30	OFF
8	OL1_LED2	E3	*<1	45	15	30	OFF
10	OL1_LED2	E3	*<1	60	10	30	OFF
1	LEDBEACON2	E3	*<1	**20**	20	30	OFF
1	LEDBEACON2A	E3	*<1	**15**	20	30	OFF
1	LEDBEACON2(T)	E3	*<1	**25**	20	30	OFF
1	STLDBEACON2	E3	*<1	**20**	20	30	OFF
1	STLDBEACON2A	E3	*<1	**15**	20	30	OFF
2	STLDBEACON2A	E3	*<1	**25**	20	30	OFF
2	STLDBEACON2A	E3	*<1	**25**	20	30	OFF

*NO MEMORY



FUNCTIONS

1) Configuration: Selection of operation mode (<1 / >1 / >1<) with or without memory.
2) Adjustment of current threshold as % of setting range.
3) Hysteresis adjustment from 5% to 50%.
4) Time Delay adjustment from 0.1 to 30sec.
5) Diagnostic button.
6) Yellow indicator light **(See conditions below)**
7) Dial Pointer (Green) LED
   - Steady green LED indicates that supply to the RM22 is present
   - Flashing green LED indicates a setting has been changed that requires a power cycle.

YELLOW LED CONDITIONS

NOTE: ( ) ASTERISK INDICATES LED CONDITIONS OPERATE OPPOSITE FROM RM22JA31MR MODULE

*****

→ Steady Burn Fixtures

- Yellow light *off : Normal condition (no alarm)
- Yellow light flashing : Undercurrent condition detected and time delay initiated
- Yellow light *on : Alarm condition

→ Flashing Fixtures

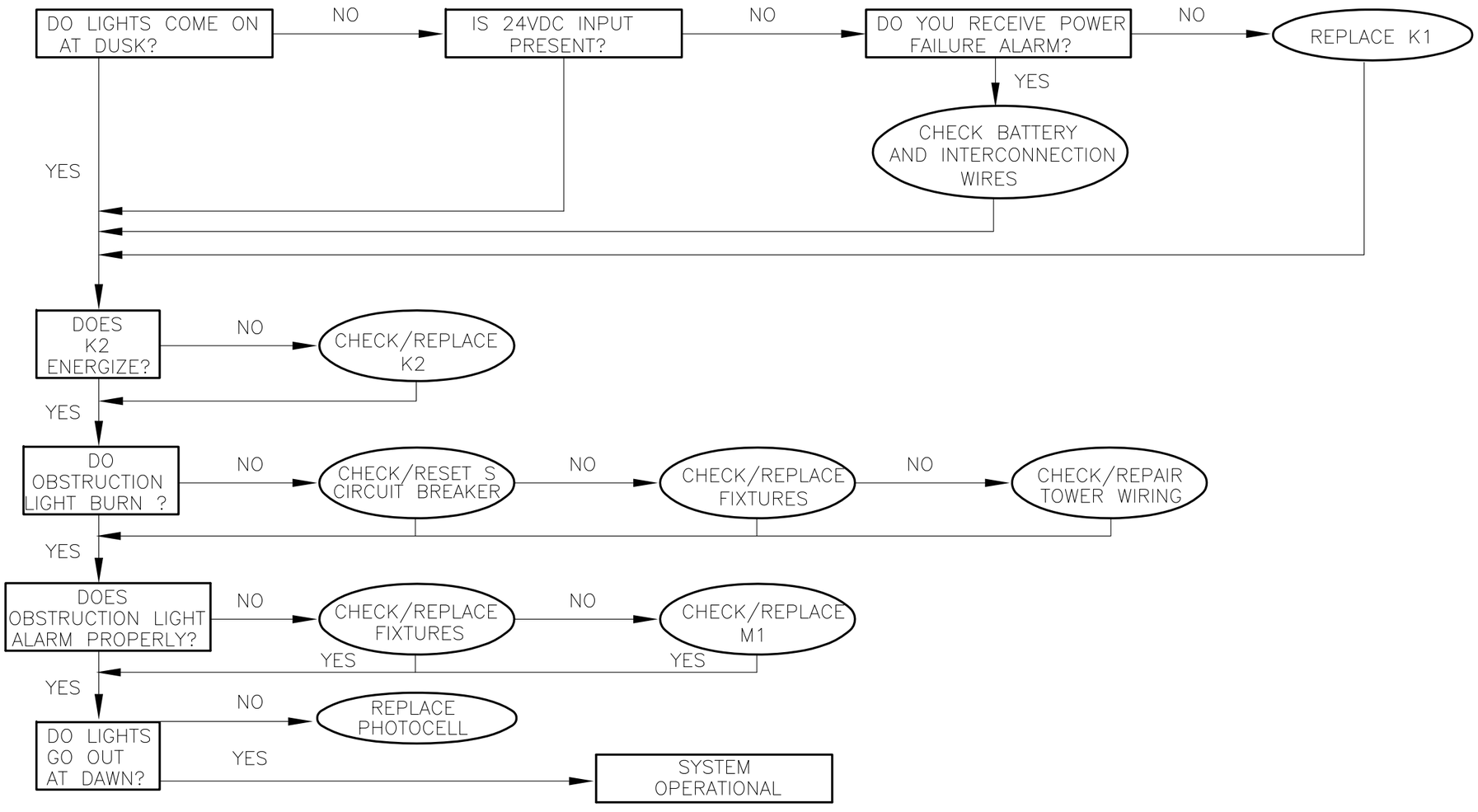
- Yellow light flashing inconsistent : Normal condition (no alarm)
- Yellow light flashing consistent : Under current condition detected and time delay initiated

NOTE : To help troubleshoot or to set the sense current, turn the time delay to 0sec. Adjusting the current setting should only be done if it is known that all the lights are functioning. For Steady Burn adjust the current until the yellow LED comes *off, and the relay is not dropping in and out. For Flashing Fixtures adjust the current setting until the yellow light starts to flash. This is the normal condition setting. Return the time delay back to 30sec.

- Yellow light *on : Alarm condition

** Due to current draw tolerances slight adjustments to setting #2 may be needed for proper alarming.

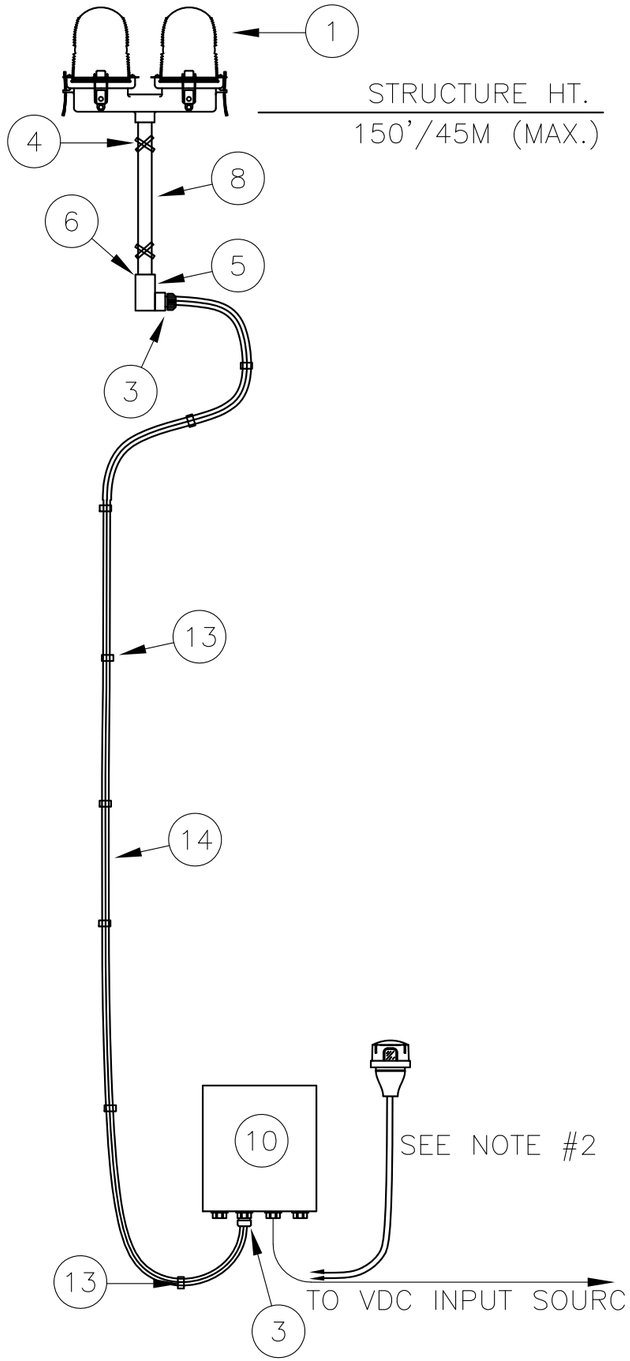
TWR Lighting, Inc. DWG#101088_RC *= OPPOSITE CONDITION ON PREVIOUS MODULES

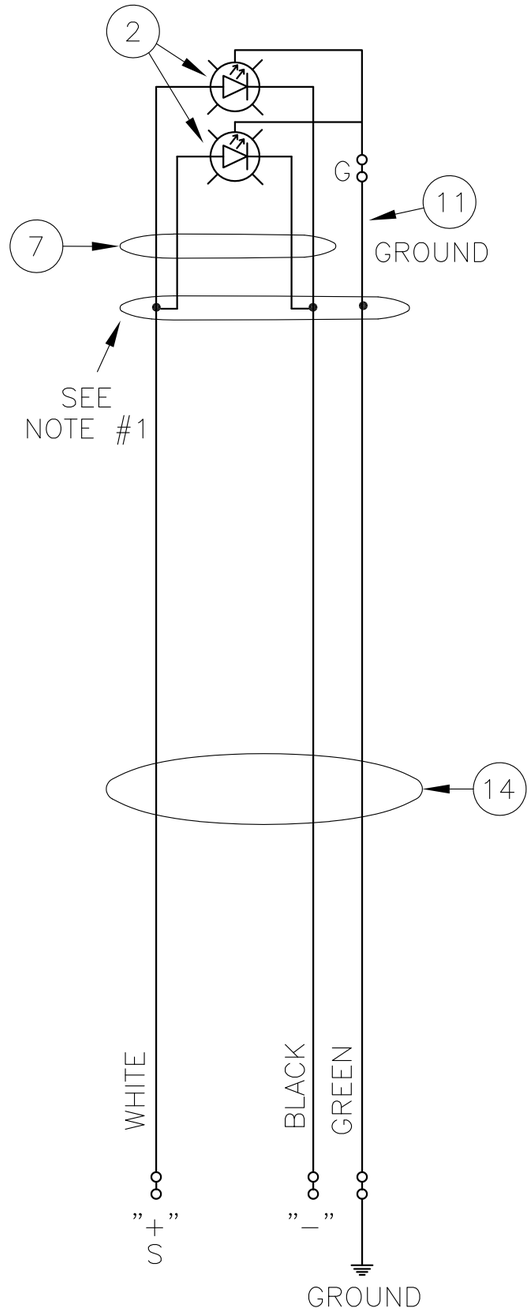


AA0M–TSS 48VDC TROUBLESHOOTING FLOW CHART

APP'D	**TWR Lighting, Inc.** *Enlightened Technology*
CHK'D BY	
ENGINEER	
DRAWN BY: E.A.SALAZAR	SHEET SIZE: B; SHEET QTY.: 1 OF 1
DATE: 07/07/05	SCALE: N.T.S.; DWG. NO.: 1196–F

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.





TOWER WIRING AND ASSEMBLY

BILL OF MATERIALS

	ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
	1	1	OL2–LED	LED DOUBLE SIDELIGHT 3/4 INCH
	2	–	––	–––
	3	2	CGB295SA	3/4" CORD CONNECTOR .5–.62
	4	1	SS5012	WRAPLOCK 50'
	5	1	TL27CG	L CONDULET W/COVER & GASKET
	6	2	A314	3/4" CONDUIT LOCKNUTS
	7	1	OL2PIGTAILG	18" OL2 PIGTAIL WITH GROUND
	8	1	N34T12	3/4" X 12" NIPPLE
*	9	6	WIRENUTRED	RED WIRE NUT
	10	1	AA0MTSS24VDC	AA0MTSS24VDC CONTROLLER
	11	2'	12THHNGRN	#12 THHN GREEN WIRE
*	12	1	TAPEL1	BLACK ELECTRICAL TAPE
	13	––	STCABLTIE	CABLE TIES (TWR. HT. ÷ 5)
	14	––	CS012/3	3–#12 AWG CABLE (TWR. HT.+ 30')

* = NOT SHOWN

NOTES:

1) USE TWR PART #WIRENUTRED AND TAPEL1 TO CONNECT CS012/3 WIRE TO OL2PIGTAILG IN THE TL27CG.
2) PHOTOCELL AND PIGTAIL PROVIDED WITH CONTROLLER. PHOTOCELL IS TO BE MOUNTED OUTDOORS TEEING OF CONDUIT RUN TO BREAKER BOX.
3) CABLE RUN NOT TO EXCEED 300'.

POWER CONSUMPTION

- ✓ 12HRS DAY - 3.0/0.0 - FOR AA0MTSS24VDC/L810 (3.0X12=0.036KWH)
- ✓ 12HRS NIGHT - 5.0/16.0 - FOR AA0MTSS24VDC/L810 (21.0X12=0.252KWH)
- ✓ "24HRS = **0.288 KWH"**

DC

AA0–MLED LIGHTING KIT W/ CABLE

12/14/2015	E	ZT	ADDED POWER CON.
DATE:	LTR.		REVISION

PROD DEPT
SERV DEPT
ENGINEER

TWR Lighting, Inc. Enlightened Technology® HARK®

DRAWN BY E.A.SALAZAR | SHEET SIZE B | SHEET QTY. 1 OF 1
DATE 03/04/03 | SCALE N.T.S. | DWG. NO. T1128