

TWR Lighting, Inc. HARK[®]

Enlightened Technology[®]

4300 WINDFERN RD #100 - HOUSTON TX 77041-8943
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 # AA0XFRMLED 48V

SERIAL # _____

PURCHASE DATE _____

PURCHASED FROM _____

TWR Lighting, Inc. **HARK**

Enlightened Technology

AA0XFRMLED 48V CONTROLLER

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WARRANTY & RETURN POLICY

RETURN MATERIAL AUTHORIZATION (RMA) FORMS

TWR Lighting, Inc. **HARK**

Enlightened Technology

AA0XFRMLED 48V CONTROLLER

APPENDIX

CHASSIS/SCHEMATIC LAYOUT	1256-R (REV A)
TROUBLESHOOTING FLOW CHART	1256-F (REV A)
LED SIDELIGHT CURRENT SENSORS	100694 (REV. G)
OL2VLED2 (L810 DOUBLE OBSTRUCTION LIGHT)	100698 (REV. B)
OL2VLED3 (L810 24V DC DOUBLE OBSTRUCTION LIGHT).....	100646
AA0 LIGHT KIT w/TRANSFER LED OL2	T1402 (REV B)

TWR Lighting[®], Inc. HARK[®]

Enlightened Technology[®]

AA0XFRMLED 48V CONTROLLER

1.0 GENERAL INFORMATION

The TWR Lighting[®], Inc. (TWR[®]) Model AA0XFRMLED 48V is for structures up to 150' above ground level (AGL). An OL-2 fixture should be placed at the top of the obstruction.

One (1) LED bulb within the OL-2 LED fixture will burn steady. When the main lamp extinguishes, the secondary lamp will light.

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

Power supplied to the controller shall be 24-48V DC.

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2.0 INSTALLATION INSTRUCTIONS

2.1 MOUNTING THE CONTROLLER CABINET

(Refer to Drawing 1256-R)

2.1.1 The power supply control cabinet can be located at the base of the structure or on an equipment building. Power wiring to the control cabinet should be in accordance with local methods and National Electrical Codes (NEC).

2.1.1.1 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 The wiring from the service breaker and the OL-2 LED fixture should enter the control housing through the $\frac{3}{4}$ “entrances.” Inside the housing, the connections will be made on the terminal strip. These connections are made as follows:

2.2 POWER WIRING

(Refer to Drawing 1256-R)

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

2.2.2. Connect the positive 24-48V DC to terminal block marked “+.”

2.2.3 Connect the negative side to terminal block marked “-.”

2.3 LED SIDELIGHT WIRING

(Refer to Drawings 1256-R, T1402, and 100698)

2.3.1 Connect the wire from the main lamp to the terminal block marked “ML.”

2.3.2 Connect the wire from the secondary lamp to the terminal block marked “SL.”

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2.3.3 Connect the “-“ (negative) wire from both the main lamp and secondary lamp to the terminal block marked “-.”

2.4 LED OBSTRUCTION LIGHTS ALARM WIRING

(Refer to Drawing 1256-R)

2.4.1 Connect to Module M1, terminal #28, for normally open (or) terminal #26, for normally closed monitoring.

2.4.2 Connect Common (C) to terminal #25.

AA0XFRMLED 48V CONTROLLER

3.0 THEORY OF OPERATION

24-48V DC enters the controller. Line sits at the 6589C-FAA photocell waiting to be switched on. When the 6589C-FAA photocell is activated, line (SSR) is energized. This can also be accomplished by covering the photocell.

Line (SSR) is then sent to module M1. M1 is the current sensor for the main LED lamp. If the main LED lamp burns out, the module M1 will transfer to the secondary LED lamp.

LED RED OBSTRUCTION LIGHTING

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

TOOLS REQUIRED: NONE

L-810 LED sidelight REPLACEMENT

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

CONTROLLER

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

PHOTOCELL

The photocell is a sealed unit. No maintenance is needed, nor required other than replacement as needed.

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AA0XFRMLED 48V CONTROLLER

4.0 MAJOR COMPONENTS PARTS LIST

QTY	PART NUMBER	DESCRIPTION
1	6589C-FAA	24-48V DC PHOTOCELL
.5	TERMBLK10	TERMINAL BLOCK
1	RM4JA31MW	LED CURRENT SENSOR (M1)

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5.0 SUGGESTED SPARE PARTS LIST

QTY	PART NUMBER	DESCRIPTION
1	6589C-FAA	24-48V DC PHOTOCCELL
1	RM4JA31MW	LED CURRENT SENSOR (M1)

TWR Lighting, Inc. **HARK**[®]

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AA0XFRMLED 48V 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 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.

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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).

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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.

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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.

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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: _____

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RETURN MERCHANDISE AUTHORIZATION (RMA) FORM

RMA#: _____ **DATE:** _____

CUSTOMER: _____

CONTACT: _____ **PHONE NO.:** _____

ITEM DESCRIPTION (PART NO.): _____

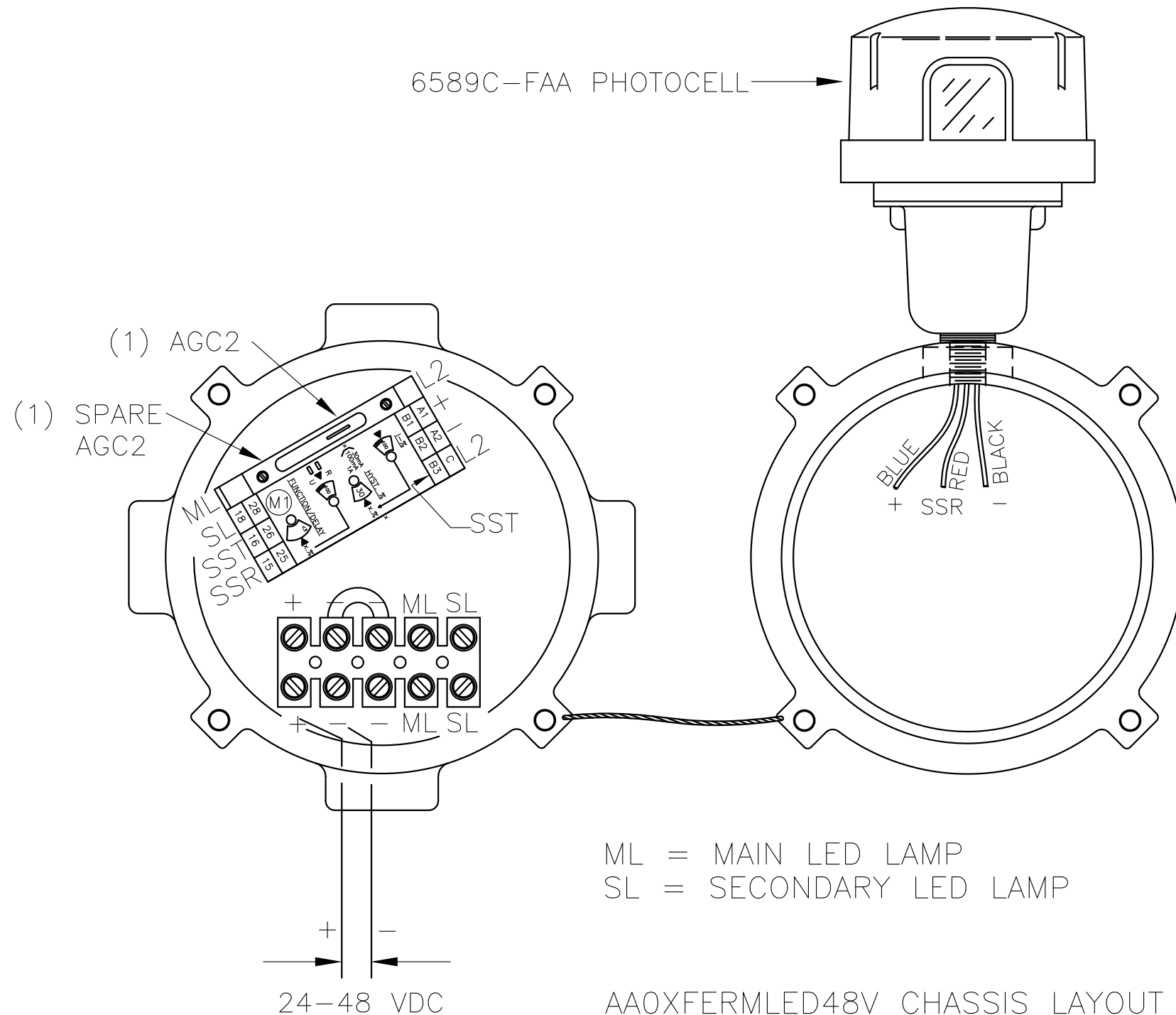
MODEL NO.: _____ **SERIAL NO.:** _____

ORIGINAL TWR INVOICE NO.: _____ **DATED:** _____

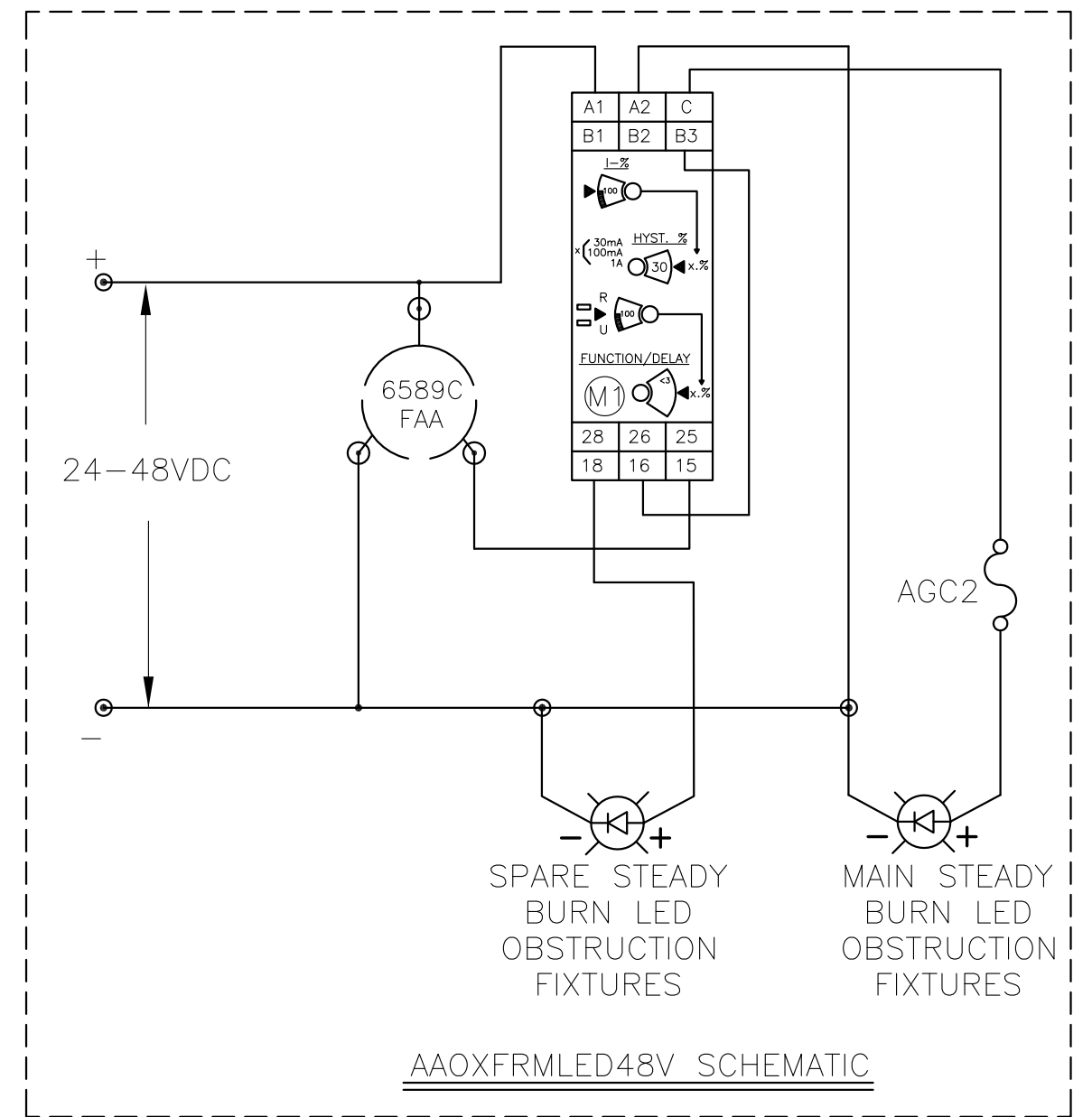
DESCRIPTION OF PROBLEM: _____

SIGNED: _____ **DATE NEEDED:** _____

RETURN ADDRESS: _____



AAOXFERMLED48V CHASSIS LAYOUT



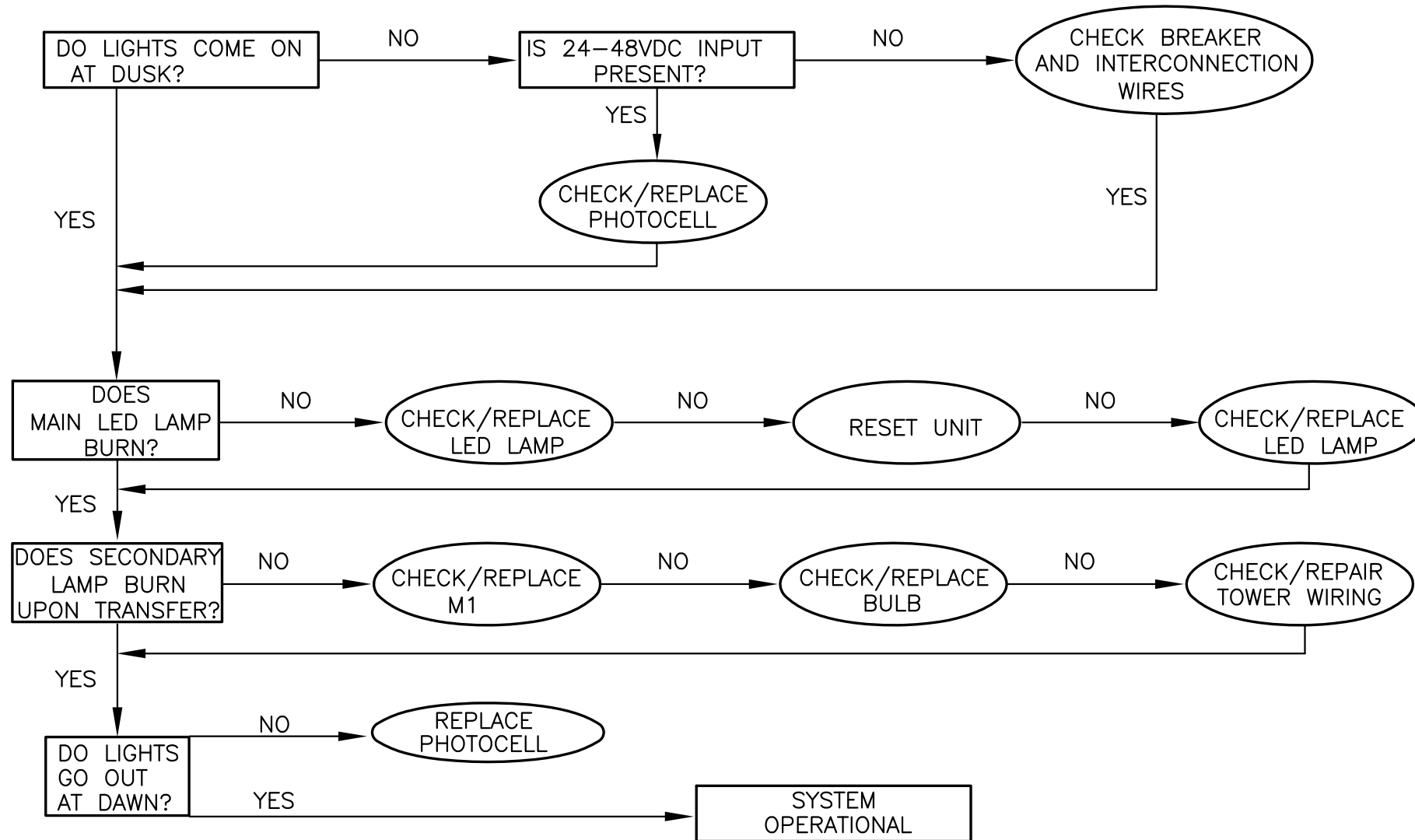
NOTE:

- 1) WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) L TO L.
- 2) XFER USED FOR LAMPS DRAWING BETWEEN 3MA AND 1AMP. TYPICAL USED FOR LED LIGHT FIXTURES.
- 3) WHEN MAIN LAMP FAILS, THE UNIT NEEDS TO BE RESET AFTER RELAMP.

AAOXFERMLED48V CONTROLLER			
24-48VDC			
PROD DEPT	TWR Lighting, Inc. <i>Enlightened Technology</i>		
SERV DEPT			
ENGINEER			
DRAWN BY	R.N.MORENO	SHEET SIZE	B
DATE	05/07/2009	SCALE	N.T.S.
		SHEET QTY.	1 OF 1
		DWG. NO.	1256-R

07/22/09	(A)	ADDED POLARITY
DATE:	LTR.	REVISION

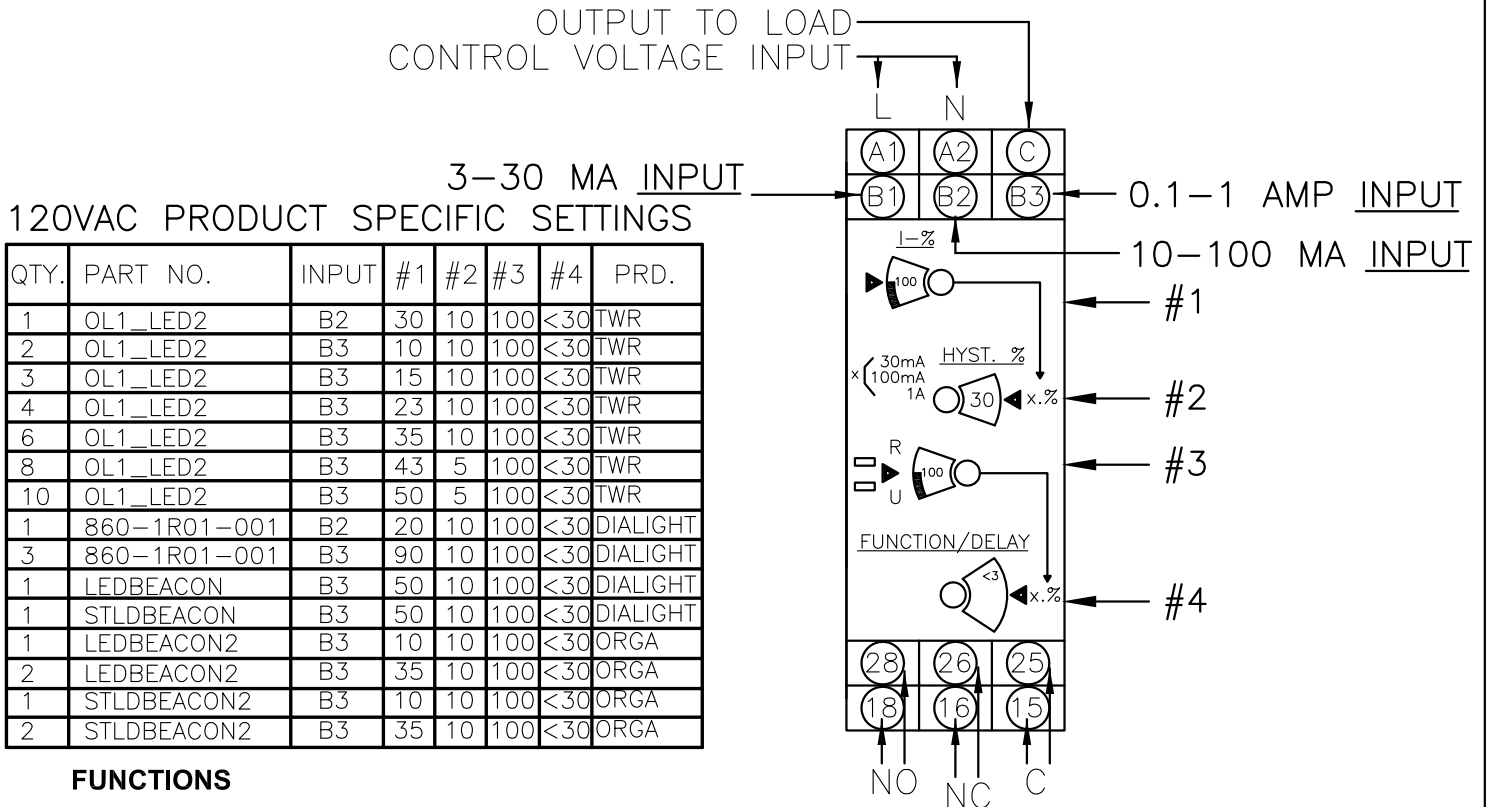
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TROUBLESHOOTING FLOW CHART			
AAOXFRMLE48V CONTROLLER 24-48VDC			
PROD DEPT	TWR Lighting, Inc. WORK <i>Enlightened Technology®</i>		
SERV DEPT			
ENGINEER			
DRAWN BY	R.N.MORENO	SHEET SIZE	SHEET QTY.
DATE	5/07/2009	B	1 OF 1
SCALE	N.T.S.	DWG. NO.	1256-F
<small>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.</small>			
<small>NOTICE: The drawings and photographic images contained herein are the sole property of TWR Lighting, Inc. All information contained herein that is not generally known shall be considered confidential except to the extent the information has been previously established. The drawings and photographic images contained herein may not be reproduced, copied or used as the basis for manufacture or sale or promotion or any other purpose without the expressed written permission of TWR Lighting, Inc.</small>			

07/22/09	(A)	ADD RESET UNIT
DATE:	LTR.	REVISION

AC UNITS CURRENT MEASUREMENT—RM4JA31M



FUNCTIONS

- 1 Adjustment of current threshold as % of setting range. ±5%
 - 2 Hysteresis adjustment from 5 to 30 % ▲.
 - 3 Fine adjustment of time delay as % of setting range max. value.
 - 4 10-position switch combining
 - selection of the timing range: 1 s, 3 s, 10 s, 30 s, no time delay.
 - selection of overcurrent (>) or undercurrent (<) detection. See table below.
- R Yellow LED: indicates relay state (Off for de-energized relay, On for energized).
U Green LED: indicates that supply to the RM4 is present.

Overcurrent Control
Yes

Overcurrent or Undercurrent Control ■
Yes

Measuring Range
3 MA - 1,000 MA

Detailed Positions for Switch 4

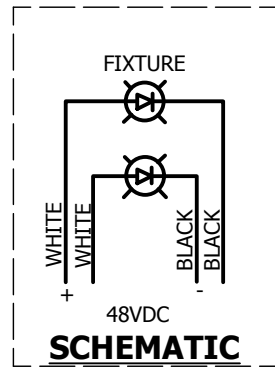
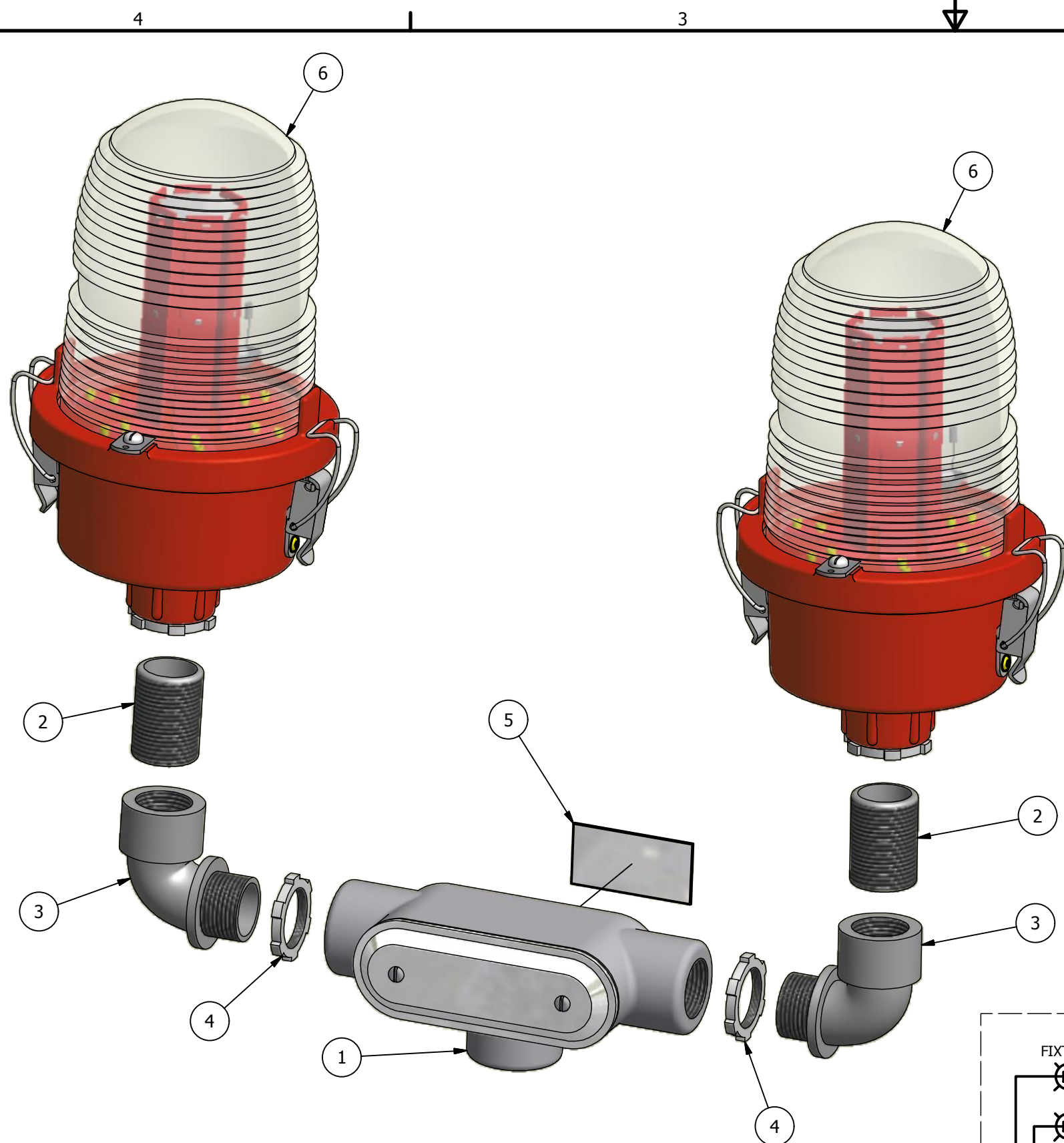
Switch Position	Function	Time Delay (t)
< 0	Undercurrent detection	No time delay
< 1	Undercurrent detection	0.05 to 1 s
< 3	Undercurrent detection	0.15 to 3 s
< 10	Undercurrent detection	0.5 to 10 s
< 30	Undercurrent detection	1.5 to 30 s
> 0	Overcurrent detection	No time delay
> 1	Overcurrent detection	0.05 to 1 s
> 3	Overcurrent detection	0.15 to 3 s
> 10	Overcurrent detection	0.5 to 10 s
> 30	Overcurrent detection	1.5 to 30 s

■ = Selection by switch on front face

▲ = Value of current between energization and de-energization of the output relay (% of the current threshold to be measured).

*Due to current draw tolerances slight adjustments to setting #1 may be needed for proper alarming.

Sign: _____



Parts List			
ITEM	QTY	STOCK NUMBER	DESCRIPTION
1	1	T27CG	T27 CONDULET W/COVER & GSKT
2	2	34CLNP	3/4" GALV CLOSED NIPPLE
3	2	EL3490	1" 90 DEGREE SHORT ELBOW GALV
4	3	A314	3/4" CONDUIT LOCKNUT GALV.
5	1	100680	OL1/2 LED SERIAL # LABEL
6	2	OL1VBH34LED4	FAA OL16LED 48VDC VALOX LED BH SL 3/4"
6.1	1	* 105RV	SINGLE SIDELIGHT BODY
6.2	1	* 106V	VALOX LENS HOLDER RING
6.3	2	* HC255SS	SIDELIGHT LATCH
6.4	1	* OLG2	OL1 6 LED GASKET
6.5	16	* 18PRSS	1/8 X .45 SS POP RIVET
6.6	.5	* 7X7SS	1/16 HOL 7X7 S.S. WIRE
6.7	2	* A1A	STAKON CRIMP
6.8	1	* A314	3/4" CONDUIT LOCKNUT GALV.
6.9	2	* 12V245	OL LENS CLIP
6.10	2	* 832X14PH	8-32 X 1/4 PH SS SLOT SCREW
6.11	1	* N400C	SIDELIGHT LENS CLEAR ACYRLIC
6.12	1	* PS48-54/24	48VDC POWER SUPPLY
6.13	6	* STE01-047	LED VERTICAL PCB
6.14	1	* 100588	OL 6LED BASE PLATE
6.15	1	* 100591	OL 6LED STAR DISK
6.16	6	* STD05006	LED EMITTER
6.17	1	* A10290	5/32" ID RUBBER GROMMET
6.18	.3	* 20RED	#20AWG RED WIRE
6.19	2	* WIRENUTRED	RED WIRE NUT FOR WIRE

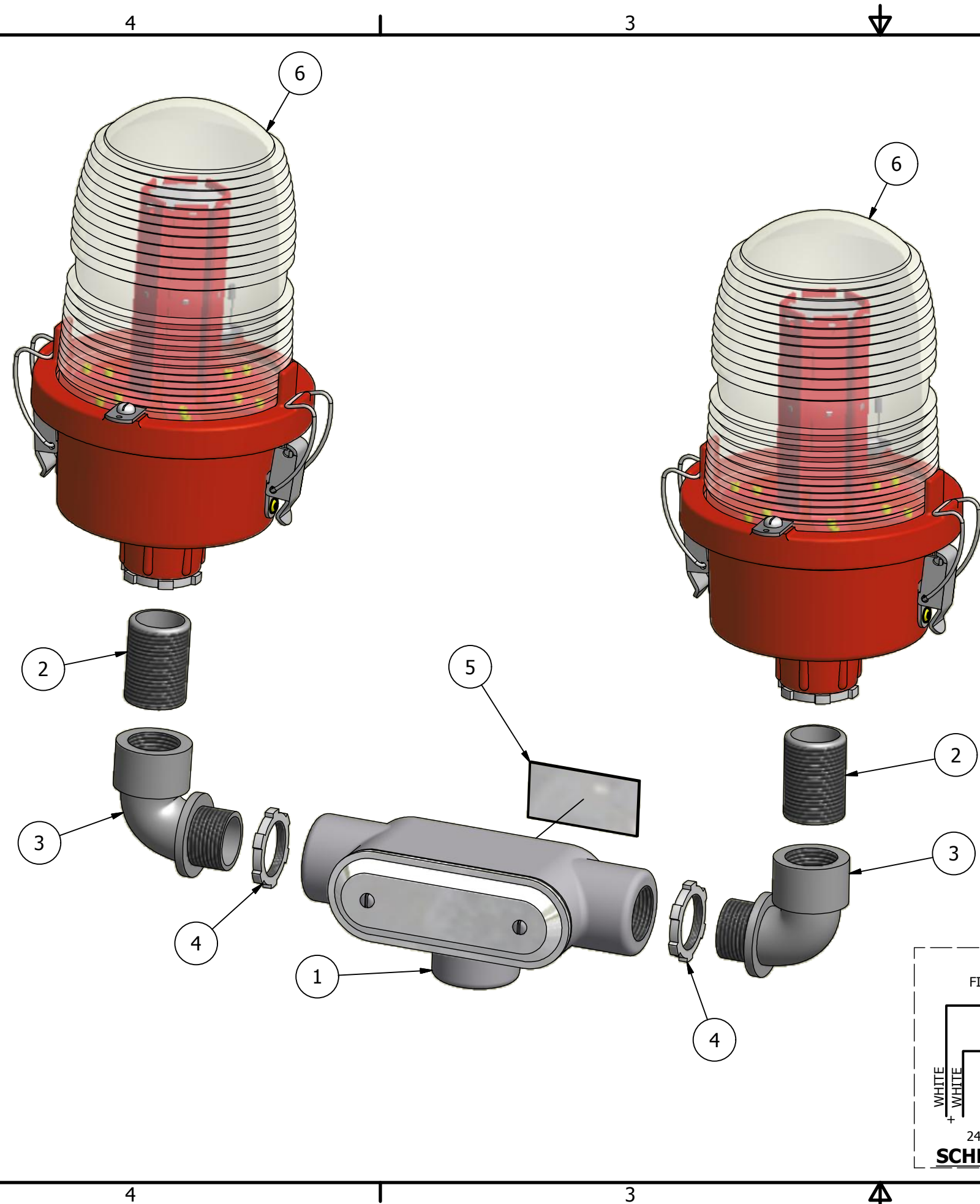
NOTES:

- 1. "WARNING" WHEN HOOKING THIS LIGHT FIXTURE TO DC VOLTAGE POLARITY MUST BE CORRECT. IF POLARITY IS REVERSED THE UNIT COULD BE PERMANENTLY DAMAGED.
- 2. "WARNING" INPUT VOLTAGE IS 48 DC VOLTAGE ± 10%. OVER VOLTAGE COULD PERMANENTLY DAMAGE THE UNIT.
- 3. SOME UNITS SUPPLIED WITH 16 OHM, 2 WATT RESISTOR INSTALLED ON INPUT SIDE OF UNIT, TO ACCEPT HIGHER THAN DESIGNED VOLTAGE.

* = ITEMS NOT SHOWN

DRAWN gsebek	6/9/2006	TWR Lighting, Inc. <i>MARK</i> Enlightened Technology®	
CHECKED			
QA		TITLE	
MFG		OL2VLED4 FAA-OL16LED 48VDC DOUBLE VALOX LED 3/4" (L8:10 LED DOUBLE OBSTRUCTION LIGHT)	
APPROVED		SIZE B	REV B
		DWG NO 100698	
		SCALE	SHEET 1 OF 1

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Parts List			
ITEM	QTY	STOCK NUMBER	DESCRIPTION
1	1	T27CG	T27 CONDULET W/COVER & GSKT
2	2	34CLNP	3/4" GALV CLOSED NIPPLE
3	2	EL3490	1" 90 DEGREE SHORT ELBOW GALV
4	3	A314	3/4" CONDUIT LOCKNUT GALV.
5	1	100680	OL1/2 LED SERIAL # LABEL
6	2	OL1VBH34LED3	FAA OL16LED 24VDC VALOX LED BH SL 3/4
6.1	1	* 105RV	SINGLE SIDELIGHT BODY
6.2	1	* 106V	VALOX LENS HOLDER RING
6.3	2	* HC255SS	SIDELIGHT LATCH
6.4	1	* OLG2	OL1 6 LED GASKET
6.5	16	* 18PRSS	1/8 X .45 SS POP RIVET
6.6	.5	* 7X7SS	1/16 HOL 7X7 S.S. WIRE
6.7	2	* A1A	STAKON CRIMP
6.8	1	* A314	3/4" CONDUIT LOCKNUT GALV.
6.9	2	* 12V245	OL LENS CLIP
6.10	2	* 832X14PH	8-32 X 1/4 PH SS SLOT SCREW
6.11	1	*AP100846	SIDELIGHT LENS CLEAR ACYRLIC
6.12	1	* PS10-3-/24	POWER SUPPLY
6.13	6	* STE01-047	LED VERTICAL PCB
6.14	1	* 100588	OL 6LED BASE PLATE
6.15	1	* 100591	OL 6LED STAR DISK
6.16	6	* STD05006	LED EMITTER
6.17	1	* A10290	5/32" ID RUBBER GROMMET
6.18	.3	* 20RED	#20AWG RED BELDON WIRE
6.19	2	* WIRENUTRED	RED WIRE NUT FOR #8 TO #12 WIRE

* = ITEMS NOT SHOWN

NOTES:

- "WARNING" WHEN HOOKING THIS LIGHT FIXTURE TO DC VOLTAGE POLARITY MUST BE CORRECT. IF POLARITY IS REVERSED THE UNIT COULD BE PERMANENTLY DAMAGED.
- "WARNING" INPUT VOLTAGE IS 24 DC VOLTAGE ± 10%. OVER VOLTAGE COULD PERMANENTLY DAMAGE THE UNIT.

DRAWN gsebek	6/9/2005	TWR Lighting, Inc. MARK <i>Enlightened Technology®</i>	
CHECKED			
QA		TITLE	
MFG		OL2VLED3 FAA-OL16LED 24VDC DOUBLE VALOX LED SL (L810 LED DOUBLE OBSTRUCTION LIGHT)	
APPROVED		SIZE B	DWG NO 100646
		SCALE	REV
		SHEET 1 OF 1	

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	1	5012902	BREATHER
10	1	AAOXFRMLED48V	AAOXFRMLED48V CONTROLLER
11	-	STCABLTIE	CABLE TIES (TWR. HT. ÷ 5)
12	-	STCABLEOB	WIRE CABLE (TWR HT. + 30')

* = NOT SHOWN

NOTES:

- 1) PHOTOCELL AND PIGTAIL PROVIDED WITH CONTROLLER. PHOTOCELL IS TO BE MOUNTED OUTDOORS.

INPUT 24-48VDC

- ✓ 12hrs day - 0.5/0.0 - for AAOXFRMLED48V/OL2VLED3 (1-lamp) (0.5x12=0.006KWh)
- ✓ 12hrs night - 0.5/7.9 - for AAOXFRMLED48V/OL2VLED3 (1-lamp) (8.4x12=0.100KWh)
- ✓ "24hrs = **0.106 KWh**"

AAO LIGHT KIT W/ TRANSFER FOR LED OL2 LIGHT			
PROD DEPT	TWR Lighting, Inc. <i>WORK</i> <i>Enlightened Technology®</i>		
SERV DEPT			
ENGINEER			
DRAWN BY	E.A.SALAZAR	SCALE	N.T.S.
DATE	05/29/2009	DWG. NO.	T1402
SHEET SIZE		SHEET QTY.	
B		1 OF 1	

03/18/14	(B)	POWER CONSUMPTION
DATE:	LTR.	REVISION

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