

TWR Lighting, Inc. **MARK**[®]

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 # AA7MTSSLED-230V

SERIAL # _____

PURCHASE DATE _____

PURCHASED FROM _____

TWR Lighting, Inc. **HARK**

Enlightened Technology®

AA7MTSSLED-230V CONTROLLER

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WARRANTY & RETURN POLICY

RETURN MERCHANDISE AUTHORIZATION (RMA) FORM

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AA7MTSSLED-230V CONTROLLER

APPENDIX

CHASSIS COMPONENT LAYOUT.....	1292-R (REV A)
SCHEMATIC LAYOUT.....	1292-S (REV A)
PHOTOCELL HOUSING DETAIL.....	100239 (REV G)
CURRENT MEASUREMENT RELAY.....	100694 (REV H)
TOWER LIGHTING KIT	T1581 (REV B)

TWR Lighting, Inc. **MARK** *Enlightened Technology*

AA7MTSSLED-230V CONTROLLER

1.0 GENERAL INFORMATION

The TWR Lighting®, Inc. (TWR®) Model AA7MTSSLED-230V Controller is for applications of seven (7) LEDBEACONS light fixtures.

The LEDBEACONS will 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, which is 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 230V AC.

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 (Form C) are as follows:

POWER FAILURE	Monitors 230V AC to the controller. Alarms in the event of power failure, or tripped circuit breaker.
LIGHTS “ON”	Gives an indication whenever the controller is activated.
LEDBEACONS	Will give an alarm in the event a LEDBEACON fails within any level.

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2.0 INSTALLATION

2.1 MOUNTING THE CONTROL CABINET

(Refer to Drawing 1292-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 1292-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 “N,” the black wire is connected to the socket terminal marked “L,” and the red 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 service breaker, 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 1292-R)

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

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

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

2.3 POWER WIRING

(Refer to Drawing 1292-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 rated at 7 amps.

2.3.3 Connect incoming 230V AC line to terminal block TB1 marked “L.”

2.3.4 Connect the neutral wire(s) to one (1) of the terminal blocks on TB1 marked “N.”

2.3.5 Connect the AC ground to the aluminum mounting plate.

2.4 LEDBEACON WIRING

(Refer to Drawings 1292-R and T1581)

2.4.1 Connect the **BLACK** wire from the first level LEDBEACON to the circuit breaker marked “BL1.”

2.4.2 Connect the **BLUE** wire from the second level LEDBEACONS to the circuit breaker marked “BL2.”

2.4.3 Connect the **SECOND BLUE** wire from the third level LEDBEACONS to the circuit breaker marked “BL3.”

2.4.4 Connect the **WHITE** neutral wire(s) to the terminal block TB1 marked “N.”

2.5 LEDBEACON ALARM WIRING

(Refer to Drawings 1292-R and 1292-S)

2.5.1 Alarm relays K1, K2, and Modules M1 – M3 are provided for independent contact closures for: Power Failure, Lights “ON,” and LEDBEACONS # 1 - 7 Burnout.

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2.5.2 Alarm wiring: To utilize all of the red light alarms, the customer will need five (5) pair of wires to interface with the alarm device. One (1) wire from each of the five (5) pair will terminate at the points marked common (c). The remaining wire from each pair will terminate as follows:

BL1 Burnout: Connect to Module M1, terminal #18, for normally open (or) terminal #16, for normally closed monitoring.

BL2 Burnout: Connect to Module M2, terminal #18, for normally open (or) terminal #16, for normally closed monitoring.

BL3 Burnout: Connect to Module M3, terminal #18, for normally open (or) terminal #16, for normally closed monitoring.

Power Failure Alarm: Connect to relay K1, terminal #3, for normally open (or) terminal #6, for normally closed monitoring.

Lights “ON” Alarm: Connect to relay K2, terminal #3, for normally open (or) terminal #6, for normally closed monitoring.

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

Power Failure Pull circuit breaker at electrical panel.

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

LEDBEACONS Trip circuit breaker on the controller panel.

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3.0 THEORY OF OPERATION

3.1 POWER SUPPLY

230V AC enters the controller from the circuit breaker panel. Line sits at the 6390-FAA photocell waiting to be switched and also keeps the power failure relay K1 energized. When the 6390-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 LEDBEACONS

Line (SSR) is also being sent to Modules M1 - M7, then to circuit breakers “BL1 - BL3.” Modules M1 - M3 are the current sensors for all of the LEDBEACONS. If one (1) LEDBEACON within the group burns out, then that particular module will detect a failure, which will cause a contact closure for LEDBEACON alarm for that circuit.

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4.0 MAINTENANCE GUIDE

4.1 RED OBSTRUCTION LIGHTING

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

TOOLS REQUIRED: NONE

4.2 L-810 LAMP REPLACEMENT

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

4.3 CONTROLLER

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

4.4 PHOTOCELL

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

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5.0 MAJOR COMPONENTS PARTS LIST

QTY	PART NUMBER	DESCRIPTION
1	6390-FAA	Photocell 120-230V AC
1	VJ1008HWPL1X004	Enclosure, NEMA 4x
2	PB27E122	Octal Sockets (K1 and K2)
7	8WA1204	Terminal Blocks (TB1 and TB2)
3	S261-D1	1 amp Circuit Breaker (BL1 – BL3)
2	8WA1808	End Stop
2	9KE240V	SPDT Relay (K1 and K2)
1	SSPIGTAIL	20' Photocell Pigtail
1	STJ01002	15 amp SPDT Switch (SW1)
3	RM4JA31MW	Current Sensor (M1 – M3)

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6.0 SUGGESTED SPARE PARTS LIST

QTY	PART NUMBER	DESCRIPTION
1	6390-FAA	Photocell 120-230V AC
1	9KE240V	SPDT Relay (K1 and K2)
1	RM4JA31MW	Current Sensor (M1 – M3)

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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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AA7MTSSLED-230V 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.

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AA7MTSSLED-230V 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.

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AA7MTSSLED-230V CONTROLLER

RETURN MATERIAL 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. **MARK**

Enlightened Technology

AA7MTSSLED-230V CONTROLLER

RETURN MATERIAL 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** _____

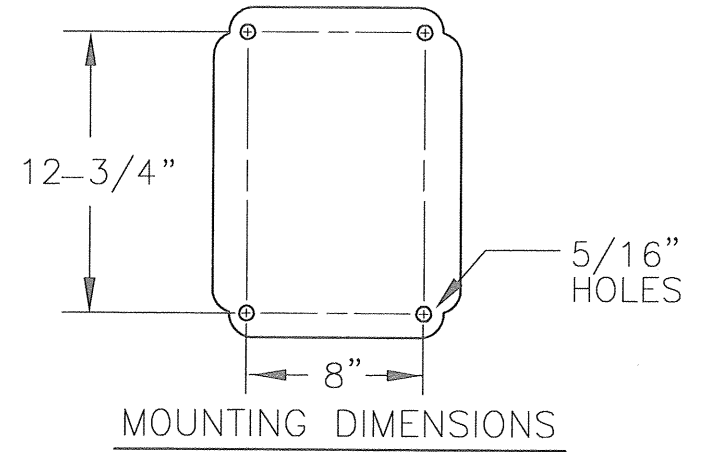
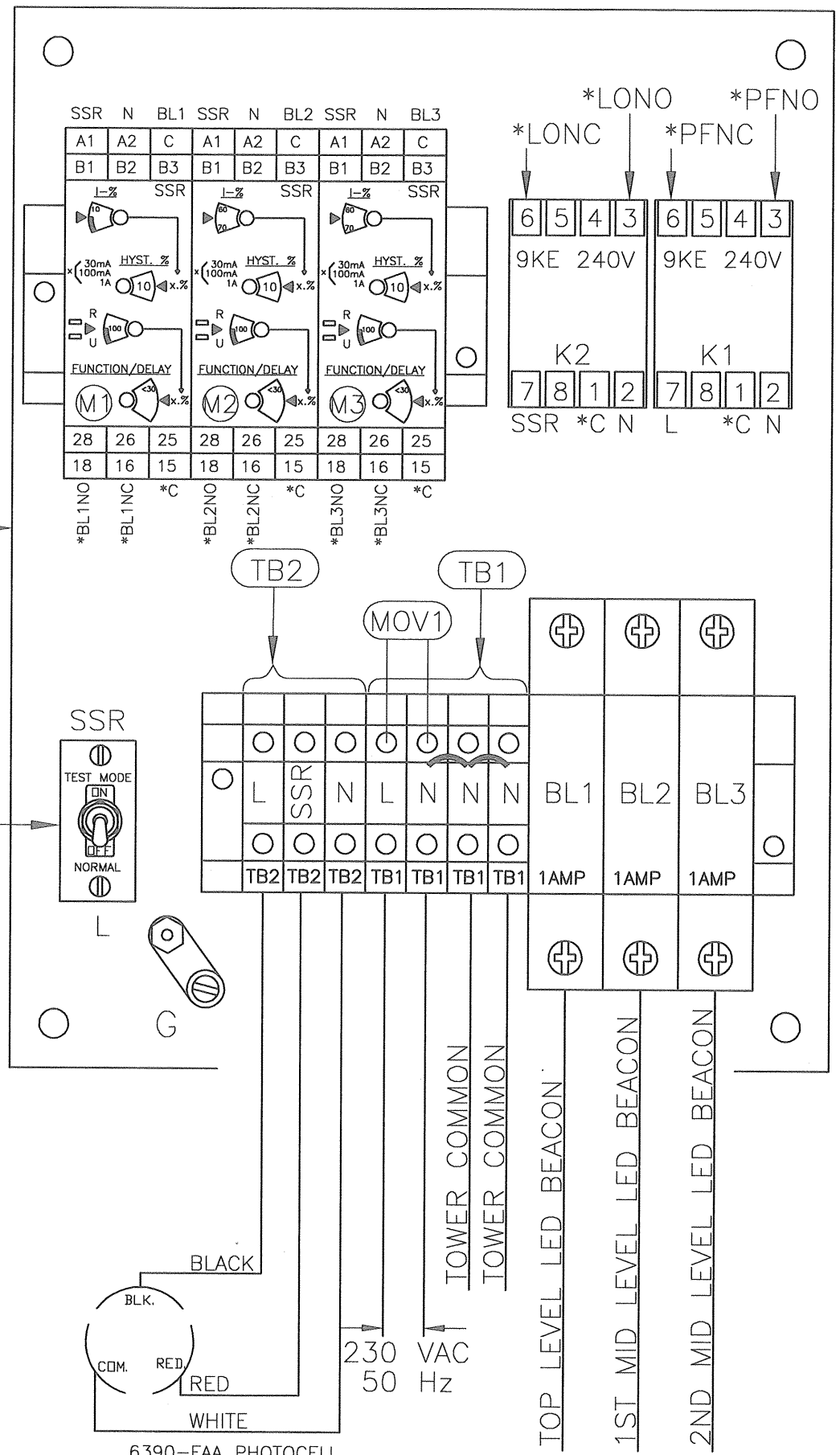
RETURN ADDRESS: _____

PLEASE RETURN PRODUCT TO: 4300 WINDFERN RD. #100 HOUSTON TX 77041-8943

*CUSTOMER ALARM POINTS

C=ALARM COMMON
 PFNC=POWERFAIL (NORMALLY CLOSED)
 PFNO=POWERFAIL (NORMALLY OPEN)
 LONC=LIGHTS "ON" INDICATOR (NORMALLY CLOSED)
 LONO=LIGHTS "ON" INDICATOR (NORMALLY OPEN)
 BL1NO/BL1NC=TOP LEVEL LED BEACON BURNOUT
 BL2NO/BL2NC=1ST MID LEVEL LED BEACON BURNOUT
 BL3NO/BL3NC=2ND MID LEVEL LED BEACON BURNOUT

10-7/8"x8-7/8"
 PANEL



NOTES:

1. PLUG 6390-FAA PHOTOCCELL INTO 43109 TWIST LOCK RECEPTACLE AND TWIST TO LOCK.
2. WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) N TO N...

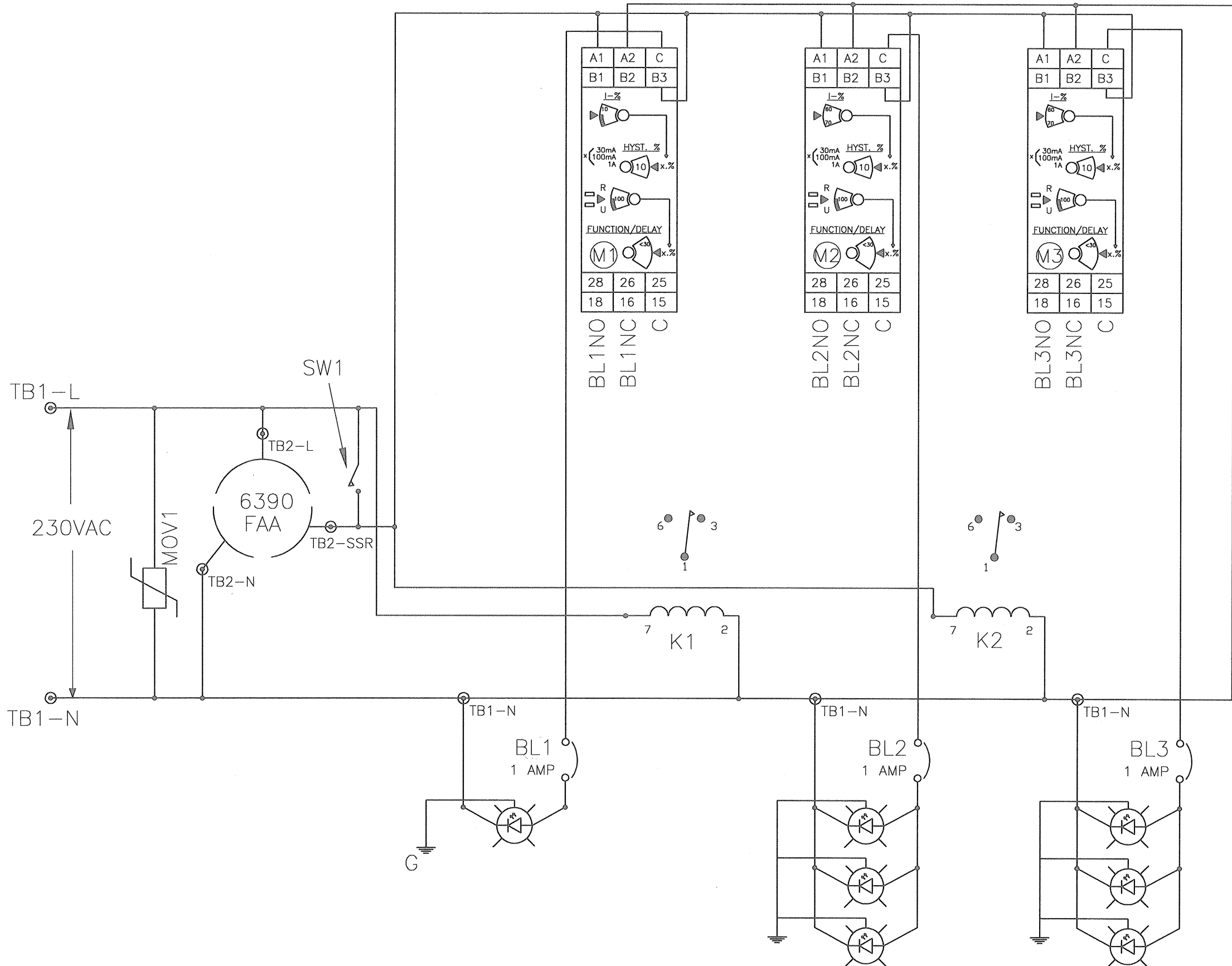
AA7MTSSLED-230V CONTROLLER
CONTROLLER CHASSIS LAYOUT

PROD/DEPT
 SERV/DEPT
 ENGINEER
 DRAWN BY M.PETERMAN

TWR Lighting, Inc. HAFK
 Enlightened Technology®

DATE 01/29/2014 SCALE N.T.S. SHEET SIZE B SHEET QTY. 1 OF 1 DWG. NO. 1292-R

12/03/14 (A) MOD. CONNECTIONS



AA7MTSSLED-230V

PROD. DEPT	TWR Lighting, Inc. <i>Enlightened Technology</i>	SHEET SIZE	SHEET QTY.
SERV. DEPT		B	1 OF 1
ENGINEER			
DRAWN BY	M. PETERMAN	DATE	01/29/2014
		SCALE	N.T.S.
		DWG. NO.	1292-S

12/03/14 A MOD. CONNECTIONS

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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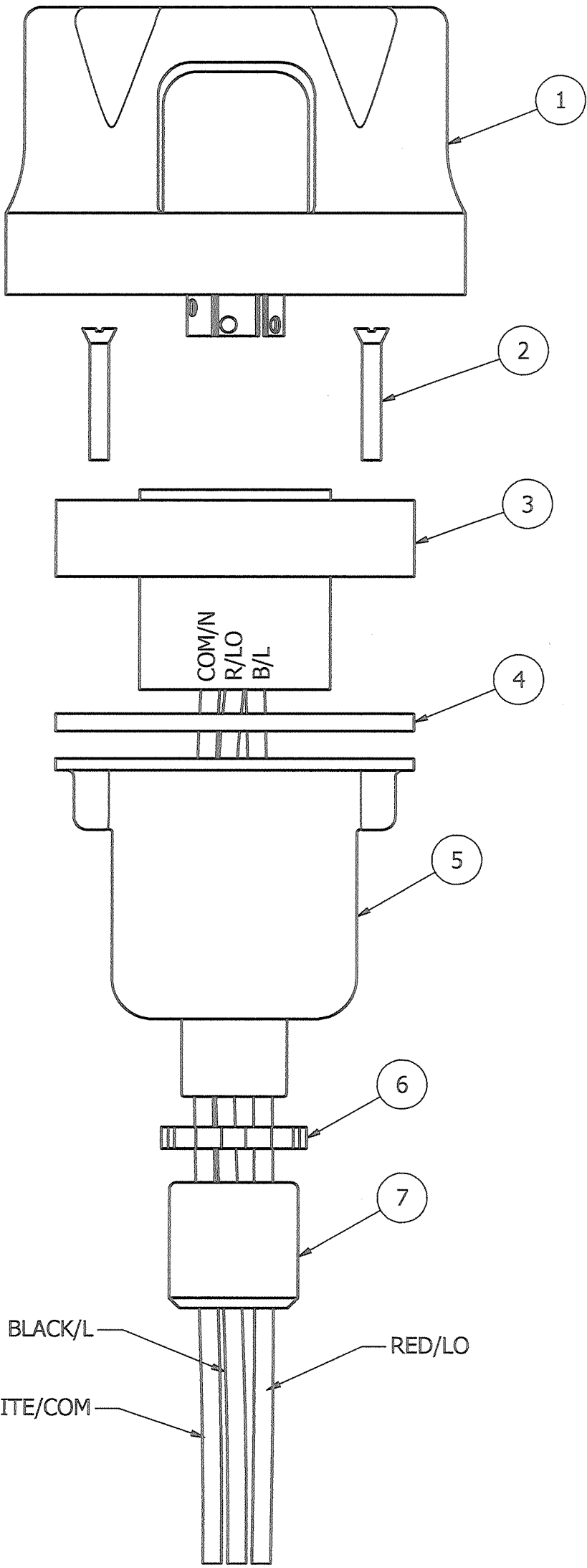
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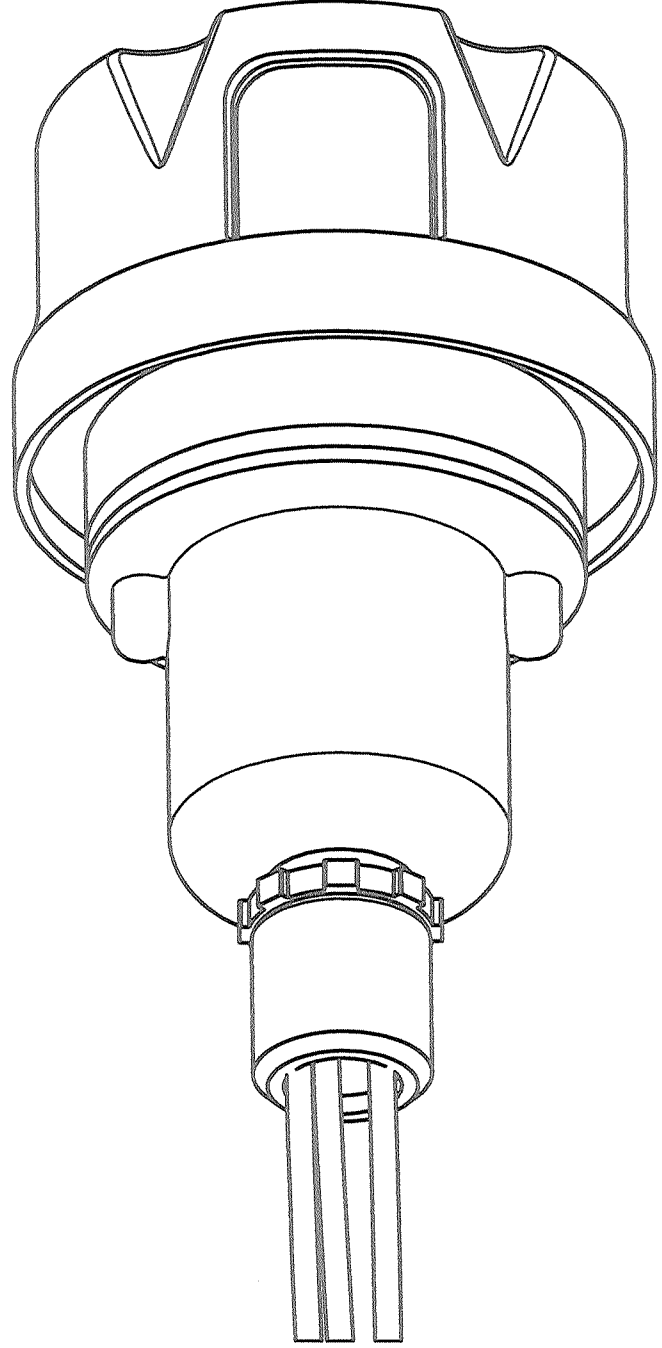
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PARTS LIST		
ITEM	QTY	PART NUMBER
1	1	PHOTOCELL
2	2	6-32 x 1" SCREW
3	1	RECEPTACLE SOCKET
4	1	RECEPTACLE GASKET
5	1	RECEPTACLE HOUSING
6	1	1/2" CONDUIT LOCKNUT
7	1	3/4" TO 1/2" REDUCER



EXPLODED VIEW



ASSEMBLY

NOTES:

- ITEM #7 CAN BE USED TO REDUCE 3/4" CONDUIT TO 1/2" CONDUIT AT THE HOUSING OR AT THE CONTROLLER ITSELF.
- 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
- WIRE CONNECTIONS ARE TO BE TINNED AT ITEM 3.

DATE	REV	AUTHOR	DESCRIPTION
11/7/2014	G	JZAMORANO	UPDATED BOM

DRAWN vhernandez	10/18/1995	TWR Lighting, Inc. HARK <i>Enlightened Technology®</i>
CHECKED		
QA		
MFG		
APPROVED <i>[Signature]</i>	11/7/14	

TITLE		
PHOTOCELL HOUSING DETAIL		
SIZE B	DWG NO 100239i	REV G
SCALE 1/1	SHEET 1 OF 1	

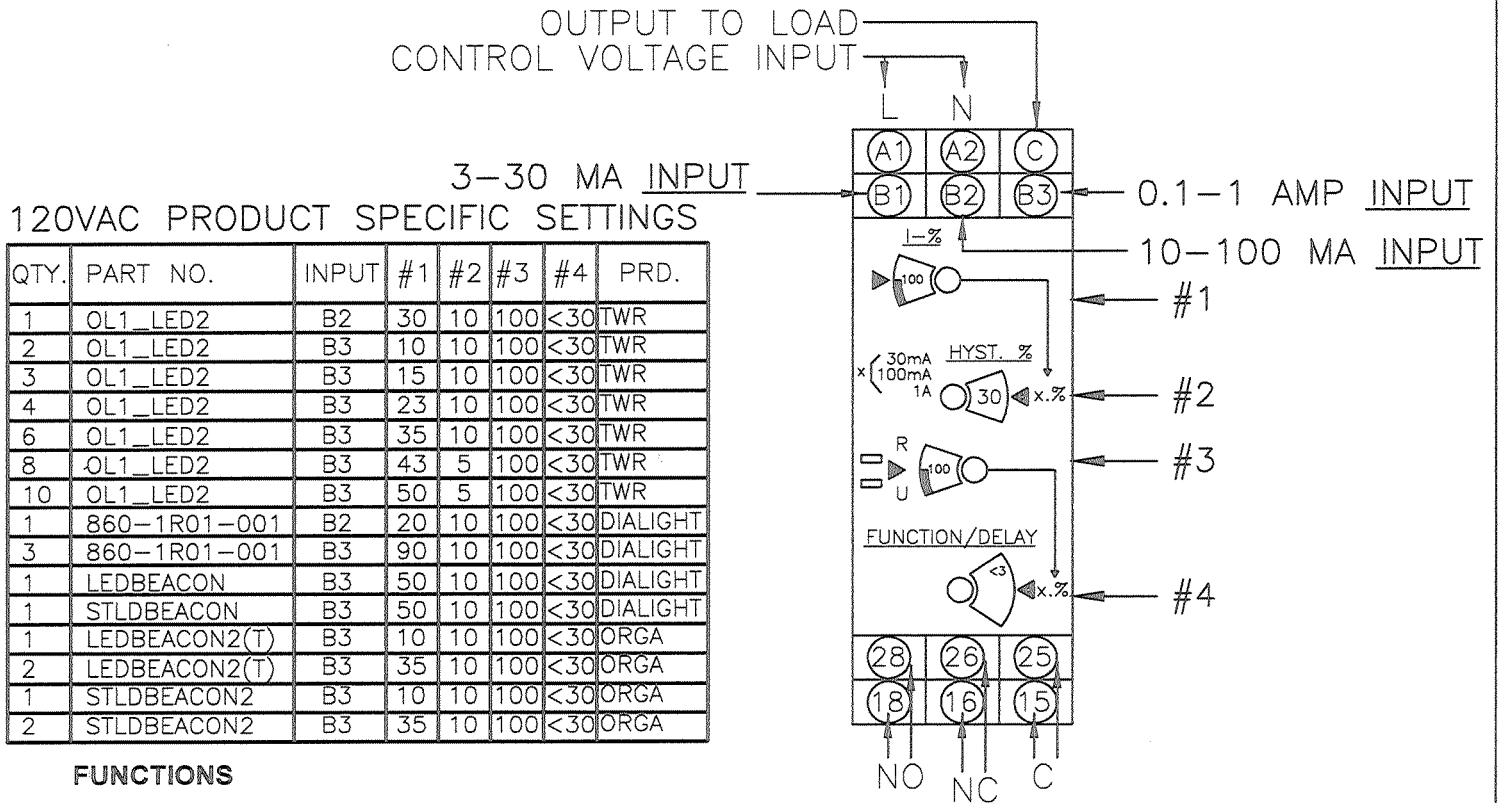
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2

1

AC UNITS CURRENT MEASUREMENT—RM4JA31M



FUNCTIONS

- 1 Adjustment of current threshold as % of setting range $\pm 5\%$
- 2 Hysteresis adjustment from 5 to 30 % Δ .
- 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	Overcurrent or Undercurrent Control	Measuring Range
Yes	Yes	3 MA - 1,000 MA

Detailed Positions for Switch 4

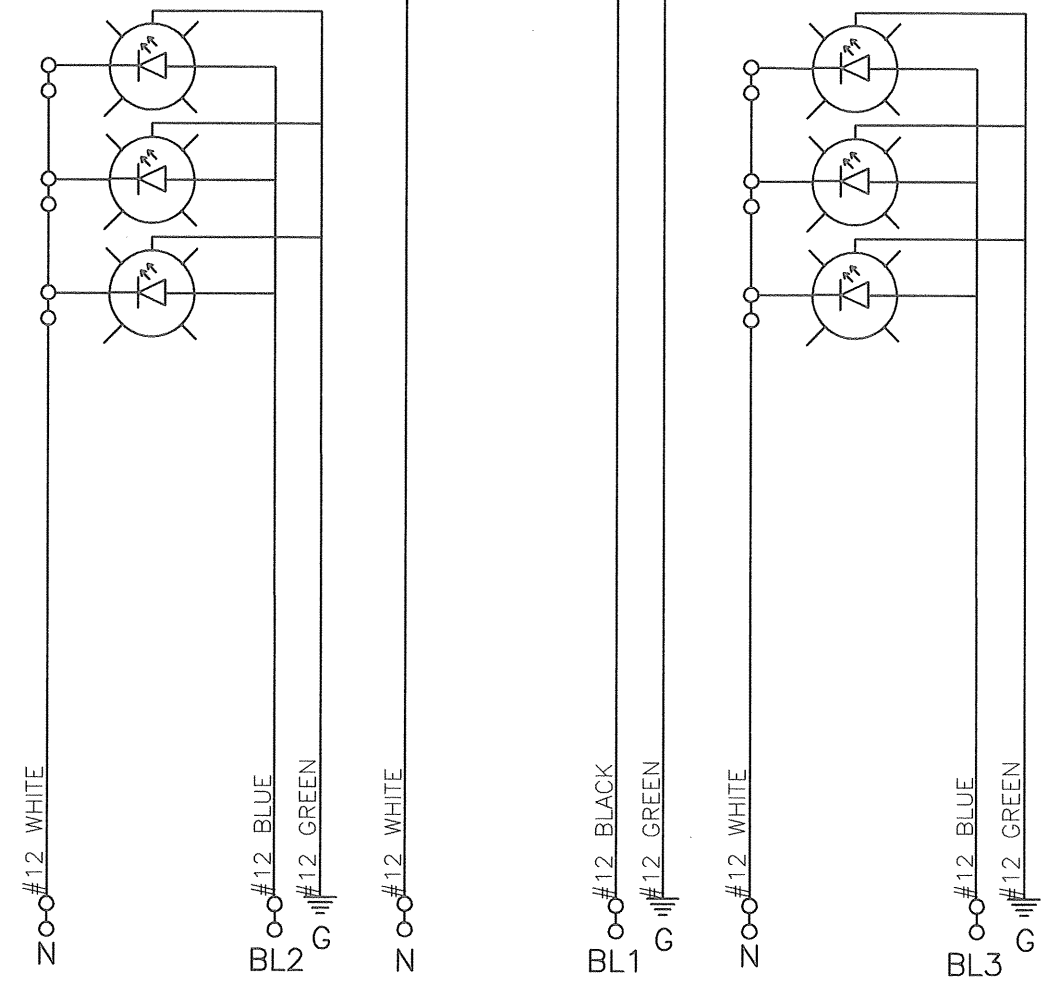
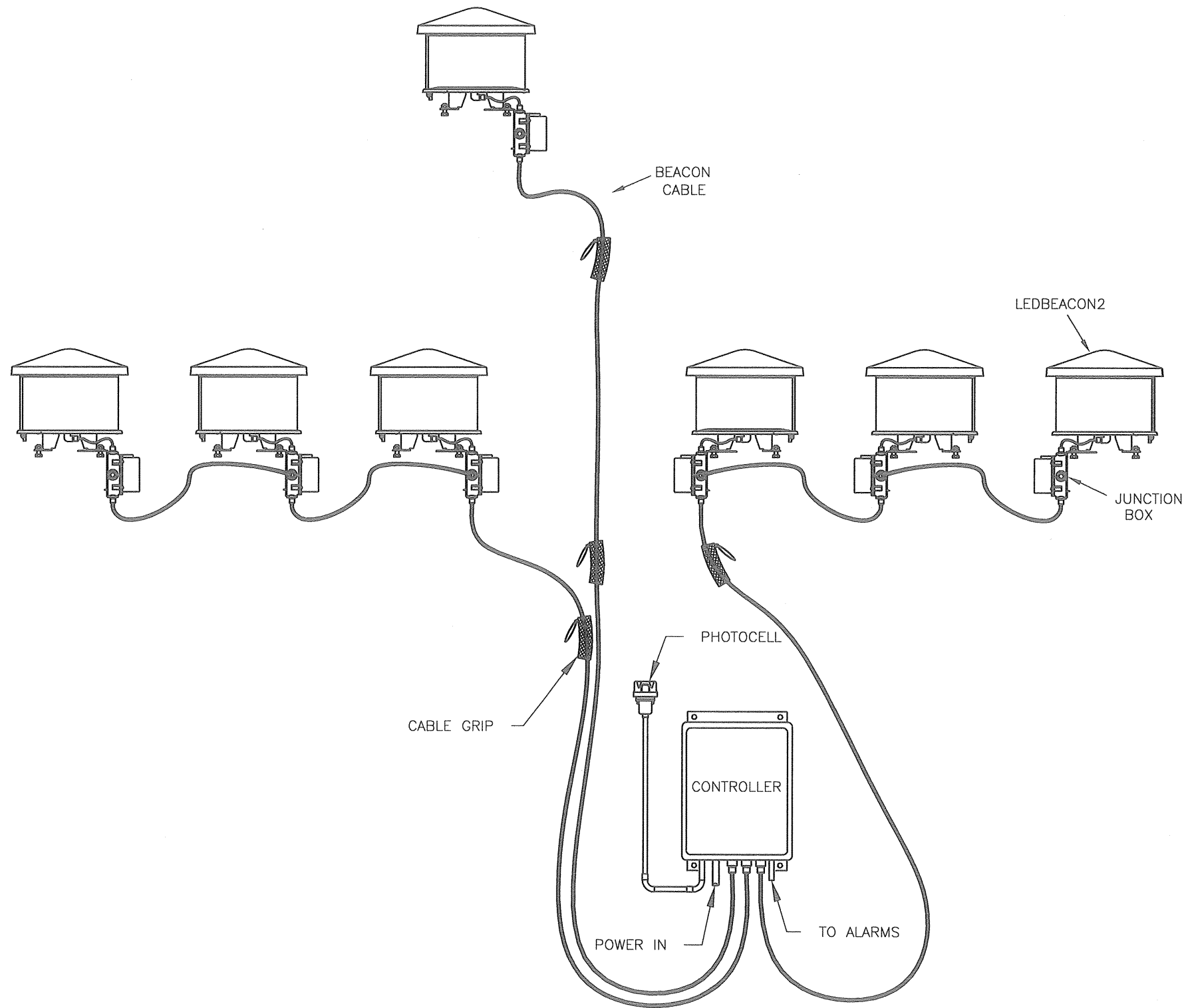
Switch Position	Function	Time Delay (t)
< 0	Undercurrent detection	No time delay
< 1	Undercurrent detection	0.05 to 1 s
< 3	Undercurrent detection	0.15 to 3 s
< 10	Undercurrent detection	0.5 to 10 s
< 30	Undercurrent detection	1.5 to 30 s
> 0	Overcurrent detection	No time delay
> 1	Overcurrent detection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

Δ = 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:



○ = TERMINAL

A7MTSSLED TOWER LIGHTING KIT
 CIRPROTEC/EXPDTE: AESA E12-0009

<i>[Signature]</i> PROD DEPT	TWR Lighting, Inc. MARK <i>Enlightened Technology®</i>			
<i>[Signature]</i> SERV DEPT				
<i>[Signature]</i> ENGINEER				
DRAWN BY M. PETERMAN		SHEET SIZE B	SHEET QTY. 1 OF 1	
DATE 01/30/2014	SCALE N.T.S.	DWG. NO.	T1581	

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12/03/14 (B) MOD. CONNECTIONS