TWR Lighting, Inc.
Enlightened Technology

HARK

4300 WINDFERN RD STE 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 # AA2/6MLEDCMI

SERIAL # _____

PURCHASE DATE _____

PURCHASED FROM _____

TWR Lighting, Inc.®
Enlightened Technology®

HARK®

AA2/6MLEDCMI CONTROLLER

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TWR Lighting, Inc.®
Enlightened Technology®

HARK®

AA2/6MLEDCMI CONTROLLER

APPENDIX

AA2/6MLEDCMI CONTROLLER

1.0 GENERAL INFORMATION

The TWR Lighting®, Inc. Model AA2/6MLEDCMI Controller is made for A2/6 lighting of towers 1,401' to 1,750' above ground level (AGL), in accordance with the FAA A/C 70/7460-1K. Three (3) LED Beacons should be placed at the top of each structure. Three (3) Obstruction LED Sidelights should be placed at the 1/2 intervals.

The flash rate of the LED Beacons is 30 per minute. The LED Beacons flash synchronized to one another. The LED Sidelights steady burn.

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.

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

Power supplied to the controller shall be 120V AC 50/60 Hz single phase.

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 are as follows:

POWER FAILURE — Monitors 120V AC to the controller. Relay K1 alarms in the event of power failure, or tripped circuit breaker.

LIGHTS ON — Relay K2 will give an indication whenever the controller is activated.

LED BEACONS — Will give an alarm in the event one (1) out of the six (6) LED Beacons fail on any structures. Also, a **RED** indicator will illuminate for that circuit.

FLASHER FAILURE — Relay K3 will give an alarm in the event of flasher failure.

OBSTRUCTION LIGHTS — Will give an alarm when one (1) out of six (6) LED Sidelights fail on any level. Also, a **RED** indicator will illuminate for that circuit.

2.0 INSTALLATION INSTRUCTIONS

2.1 POWER SUPPLY CONTROL CABINET MOUNTING

(Refer to Drawing 1290-R)

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 1290-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 "W," the black wire is connected to the socket terminal marked "B," and the red wire is connected to the socket terminal marked "R." 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 LED Beacons, and the LED 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 breakers located at the bottom of the chassis. These connections are made as follows:

2.2 EXTERNAL PHOTOCELL WIRING

(Refer to Drawing 1290-R)

2.1.1 Connect the **BLACK** wire from the photocell to terminal block TB2, marked "L."

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

2.1.3 Connect the **WHITE** wire from the photocell to terminal block TB2, marked "N."

2.3 POWER WIRING

(Refer to Drawing 1290-R)

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

2.3.2 Circuit breaker needs to be rated at 10 amps.

2.3.3 Connect incoming 120V AC "Hot" to terminal block TB1, marked "L."

2.3.4 Connect the neutral wire to one (1) of the terminal blocks on TB1, marked "N."

2.3.5 Connect the AC ground to the aluminum mounting lug bolt located to the left of TB2.

2.4 LED BEACON AND LED SIDELIGHT WIRING

(Refer to Drawings 1290-R, T1562, and T1572)

Install wiring between the controller and the LED Beacons utilizing conduit method. Refer to drawings 1290-R, T1562, and T1572, for installation of light kits. Always work safely and adhere to all OSHA Safety Guidelines when lifting wiring or working on the structure or tower itself. It is the installer's responsibility to install the lighting kit in a safe manner. Installers can request from OSHA their requirements 29CFT 1926.21, and 20CFR 1926.105, to ensure compliance to regulations.

2.4.1 Connect the **BLACK** wire from LED Beacon #1, from Unit #11 to circuit breaker marked "B1/11."

2.4.2 Connect the **BLACK** wire from LED Beacon #2, from Unit #11 to circuit breaker marked "B2/11."

2.4.3 Connect the **BLACK** wire from LED Beacon #3, from Unit #11 to circuit breaker marked "B3/11."

2.4.4 Connect the **BLACK** wire from LED Beacon #1, from Unit #12 to circuit breaker marked "B1/12."

2.4.5 Connect the **BLACK** wire from LED Beacon #2, from Unit #12 to circuit breaker marked "B2/12."

2.4.6 Connect the **BLACK** wire from LED Beacon #3, from Unit #12 to circuit breaker marked "B3/12."

2.4.7 Connect the **RED** wire from LED Sidelight #1, from Unit #11 to circuit breaker marked "S1/11."

2.4.8 Connect the **RED** wire from LED Sidelight #2, from Unit #11 to circuit breaker marked "S2/11."

2.4.9 Connect the **RED** wire from LED Sidelight #3, from Unit #11 to circuit breaker marked "S3/11."

2.4.10 Connect the **RED** wire from LED Sidelight #1, from Unit #12 to circuit breaker marked "S1/12."

2.4.11 Connect the **RED** wire from LED Sidelight #2, from Unit #12 to circuit breaker marked "S2/12."

2.4.12 Connect the **RED** wire from LED Sidelight #3, from Unit #12 to circuit breaker marked "S3/12."

2.4.13 Connect the **WHITE** neutral wire(s) to one (1) or more of the terminal blocks on TB1, marked "N."

2.4.14 Connect the **GREEN** wires to the ground lugs located to the right of the circuit breakers.

2.5 LED BEACONS AND LED SIDELIGHTS ALARM WIRING

(Refer to Drawings 1290-R, and 1290-S)

2.5.1 Alarm relays K1 – K15, and alarm Modules M7 – M18, are provided for independent contact closures for: Power Failure, Lights "ON," Flasher Failure, LED Beacon Burnout, and LED Sidelight Burnout.

2.5.2 Alarm Wiring - To utilize all of the red light alarms, the customer will need fifteen (15) pairs of wires to interface with the alarm device. One (1) wire from each of the fifteen (15) pairs will terminate on terminal block TB6, terminals 1-6 for common (C). The remaining wire from each pair will terminate as follows:

2.5.3 Power Failure Alarm – Connect to terminal block TB3, terminal #5, for normally open, or terminal #6, for normally closed monitoring.

2.5.4 Lights "ON" – Connect to terminal block TB3, terminal #7, for normally open, or terminal #8, for normally closed monitoring.

2.5.5 Flasher Failure – Connect to terminal block TB3, terminal #9, for normally open, or terminal #10, for normally closed monitoring.

2.5.6 S1 Unit 11 Burnout – Connect to terminal block TB4, terminal #1, for normally open, or terminal #2, for normally closed monitoring.

2.5.7 S2 Unit 11 Burnout – Connect to terminal block TB5, terminal #2, for normally open, or terminal #1, for normally closed monitoring.

2.5.8 S3 Unit 11 Burnout – Connect to terminal block TB5, terminal #4, for normally open, or terminal #3, for normally closed monitoring.

2.5.9 S1 Unit 12 Burnout – Connect to terminal block TB5, terminal #6, for normally open, or terminal #5, for normally closed monitoring.

2.5.10 S2 Unit 12 Burnout – Connect to terminal block TB5, terminal #8, for normally open, or terminal #7, for normally closed monitoring.

2.5.11 S3 Unit 12 Burnout – Connect to terminal block TB5, terminal #10, for normally open, or terminal #9, for normally closed monitoring.

2.5.12 B1 Unit 11 Burnout – Connect to terminal block TB3, terminal #3, for normally open, or terminal #4, for normally closed monitoring.

2.5.13 B2 Unit 11 Burnout – Connect to terminal block TB3, terminal #1, for normally open, or terminal #2, for normally closed monitoring.

2.5.14 B3 Unit 11 Burnout – Connect to terminal block TB4, terminal #9, for normally open, or terminal #10, for normally closed monitoring.

2.5.15 B1 Unit 12 Burnout – Connect to terminal TB4, terminal #7, for normally open, or terminal #8, for normally closed monitoring.

2.5.16 B2 Unit 12 Burnout – Connect to terminal block TB4, terminal #5, for normally open, or terminal #6, for normally closed monitoring.

2.5.17 B3 Unit 12 Burnout – Connect to terminal block TB4, terminal #3, for normally open, or terminal #4, for normally closed monitoring.

2.6 ALARM TESTING

To test alarms, follow the procedures using an “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.

LED BEACONS and LED SIDELIGHTS
Pull circuit breakers on controller panel.

3.0 THEORY OF OPERATION

3.1 POWER SUPPLY

120V AC enters the controller from the circuit breaker panel. Line "L" sits at the PRD, waiting to be switched, and also keeps the power failure Relay K1 energized. When the 6390-FAA photocell is activated, Line "L" energizes the coil of the PRD and K2 "Lights On" Relay. This also can be accomplished by using the photocell by-pass switch (SW1).

3.2 LED SIDELIGHTS

Line LDS is sent to Modules M7 – M12, which are current sensing modules for the LED Sidelights. Each RM4JA31MW monitors one (1) LED Sidelight, and will provide a contact closure along a visual **RED** indication in front of the door if one (1) fails.

3.3 LED BEACONS

Line LDB is sent to Modules M1 - M6, and M13 – M18. Module M1 is the primary flasher for the B1/11 LED Beacon which provides control voltage to Modules M2 – M6, which are auxiliary flashers for B2/11, B3/11, and B1/12-B3/12 LED Beacons. The output of these modules are sent through the current sensing Modules M13 – M18, then to the circuit breaker outputs B1/11 – B3/11 and B1/12 – B3/12. If Modules M13 – M18 detect a burnout, then the that particular module would provide a contact closure along with a visual **RED** indication in front of the door for that LED Beacon circuit.

Relay K3 is a Flasher Failure Relay for the B1/11 LED Beacon. If Relay K3 detects a Flasher Failure, it would then provide a contact closure for the flasher circuit.

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-864 LED BEACON REPLACEMENT

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

4.3 L-810 LED SIDELIGHT REPLACEMENT

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

4.4 L-864 CONTROLLER

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

4.5 PHOTOCELL

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

5.0 MAJOR COMPONENTS PARTS LIST

QTY	PART NUMBER	DESCRIPTION
1	PF-250	SOLID STATE FLASHER (M1)
1	PRD 7AGO	120V AC LOAD CONTACTOR (PRD)
2	KRPA5AG120V	S.P.S.T. RELAY (K1 & K2)
1	6390-FAA	120V – 240V PHOTOCELL
1	MOV524V15	MOV1 VARISTOR
1	SPEC 224	TIME DELAY RELAY (K3)
1	STJ01002	SWITCH (SW1)
10	8WA1204	TERMINAL BLOCK (TB1 & TB2)
2	8WA1808	TERMINAL BLOCK END STOP
12	RM4JA31MW	LED BEACON AND LED SIDELIGHT CURRENT SENSORS (M7 – M18)
12	S261D1	1 amp CIRCUIT BREAKERS
12	KRPA11AG120V	D.P.D.T. Relay (K4 – K15)
5	SF-250	SOLID STATE LOAD CONTACTOR (M2 – M6)
12	Q8P1BXXR110E	LED BEACON AND LED SIDELIGHT FAILURE INDICATORS (PL1 – PL12)
1	N242410HWT	ENCLOSURE
6	TERMBLK141-10	10 PART TERMINAL BLOCK (TB3 – TB8)

6.0 SUGGESTED SPARE PARTS LIST

QTY	PART NUMBER	DESCRIPTION
1	PF-250	SOLID STATE FLASHER (M1)
1	PRD 7AG0	120V AC LOAD CONTACTOR (PRD)
1	KRPA5AG120V	S.P.S.T. RELAY (K1 & K2)
1	6390-FAA	120V – 240V PHOTOCELL
1	MOV524V15	MOV1 VARISTOR
1	SPEC 224	TIME DELAY RELAY (K3)
2	8WA1204	TERMINAL BLOCK (TB1 & TB2)
2	RM4JA31MW	LED BEACON AND LED SIDELIGHT CURRENT SENSORS (M7 – M18)
2	S261D1	1 amp CIRCUIT BREAKERS
2	KRPA11AG120V	D.P.D.T. Relay (K4 – K15)
1	SF-250	SOLID STATE LOAD CONTACTOR (M2 – M6)

TWR Lighting®, Inc.
Enlightened Technology®

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AA2/6MLEDCMI 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:

- 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.

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.

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AA2/6MLEDCMI CONTROLLER

Warranty & Return Policy
(continued)

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:

- 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(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., 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).

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 **$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.

TWR Lighting, Inc.®
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AA2/6MLEDCMI CONTROLLER

Warranty & Return Policy
(continued)

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.

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.®
Enlightened Technology®

HARK®

AA2/6MLEDCMI 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.®
Enlightened Technology®

HARK®

AA2/6MLEDCMI 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:_____

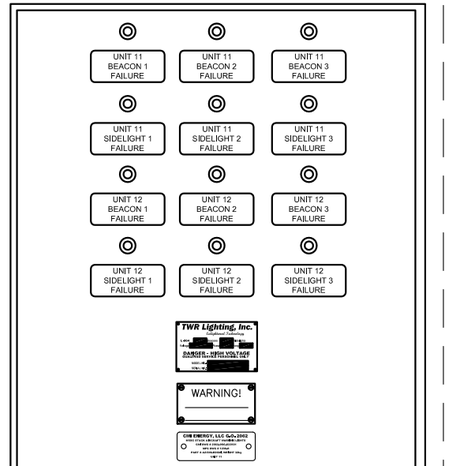
_____

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

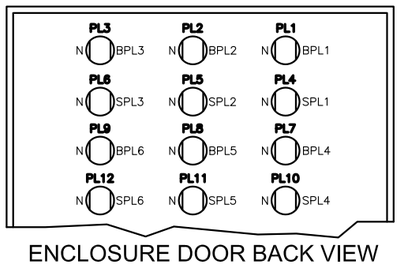
*CUSTOMER ALARM POINTS

C = ALARM COMMON
PFNO/PFNC = POWER FAILURE
LONO/LONC = LIGHTS "ON"
FFNO/FFNC = FLASHER FAILURE
(B1NO/B1NC)/11 = BEACON #1 BURNOUT
(B2NO/B2NC)/11 = BEACON #2 BURNOUT
(B3NO/B3NC)/11 = BEACON #3 BURNOUT
(B1NO/B1NC)/12 = BEACON #4 BURNOUT
(B2NO/B2NC)/12 = BEACON #5 BURNOUT
(B3NO/B3NC)/12 = BEACON #6 BURNOUT
(S1NO/S1NC)/11 = SIDELIGHT #1 BURNOUT
(S2NO/S2NC)/11 = SIDELIGHT #2 BURNOUT
(S3NO/S3NC)/11 = SIDELIGHT #3 BURNOUT
(S1NO/S1NC)/12 = SIDELIGHT #4 BURNOUT
(S2NO/S2NC)/12 = SIDELIGHT #5 BURNOUT
(S3NO/S3NC)/12 = SIDELIGHT #6 BURNOUT
*ALARM OUTPUTS ARE FORM C.

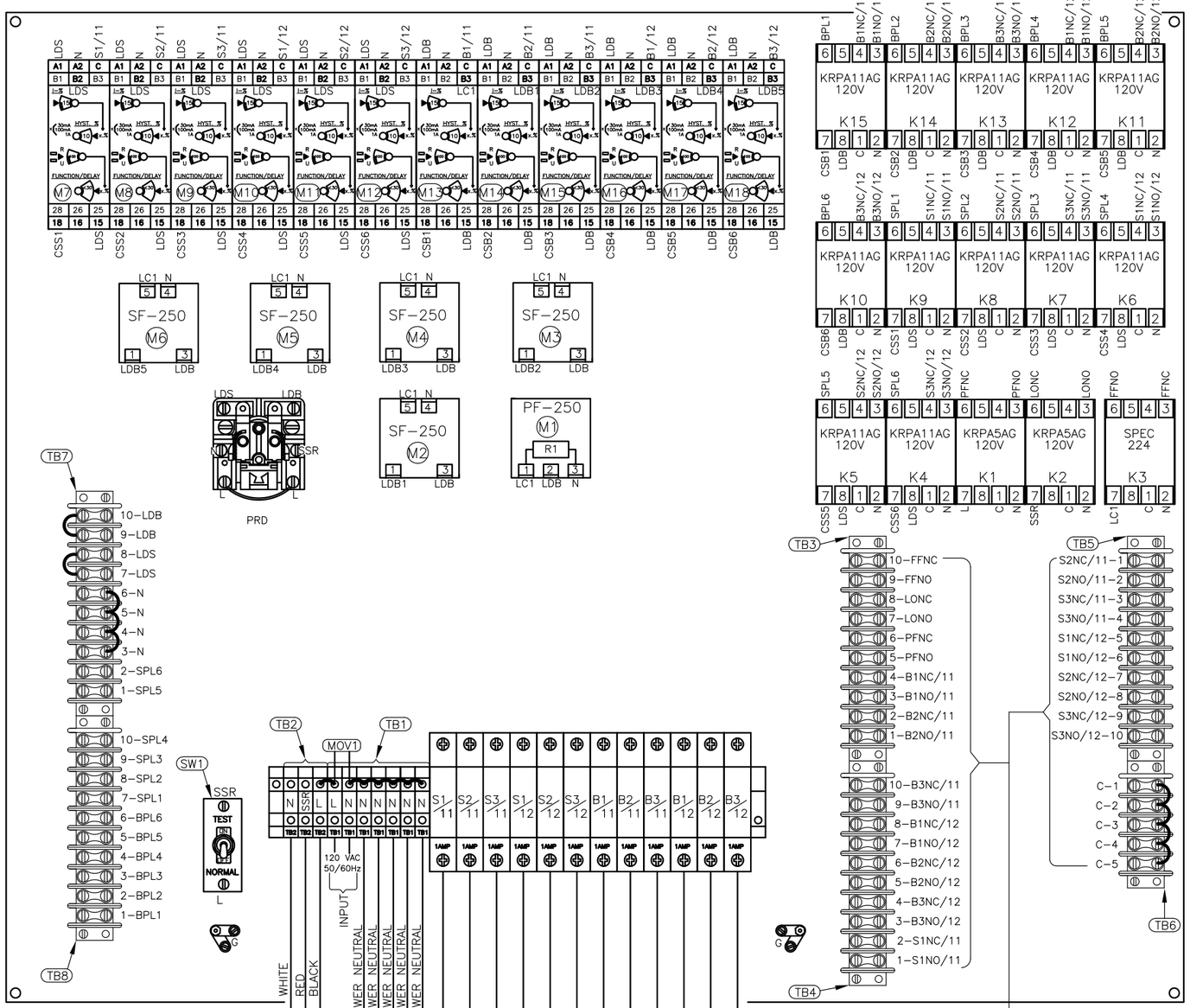
ENCLOSURE DOOR FRONT VIEW

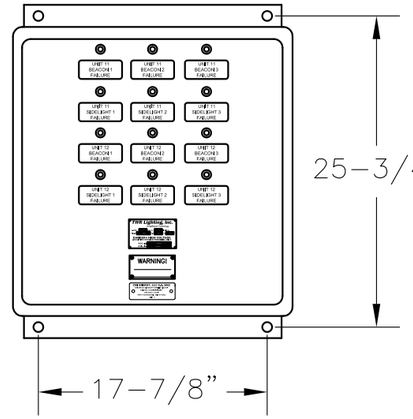


SCHEMATIC TAG	DESCRIPTION
PL1	BEACON 1 UNIT 11 FAILURE (RED)
PL2	BEACON 2 UNIT 11 FAILURE (RED)
PL3	BEACON 3 UNIT 11 FAILURE (RED)
PL4	SIDELIGHT 1 UNIT 11 FAILURE (RED)
PL5	SIDELIGHT 2 UNIT 11 FAILURE (RED)
PL6	SIDELIGHT 3 UNIT 11 FAILURE (RED)
PL7	BEACON 1 UNIT 12 FAILURE (RED)
PL8	BEACON 2 UNIT 12 FAILURE (RED)
PL9	BEACON 3 UNIT 12 FAILURE (RED)
PL10	SIDELIGHT 1 UNIT 12 FAILURE (RED)
PL11	SIDELIGHT 2 UNIT 12 FAILURE (RED)
PL12	SIDELIGHT 3 UNIT 12 FAILURE (RED)



ENCLOSURE DOOR BACK VIEW





MOUNTING DIMENSIONS
(FOR CABINET)

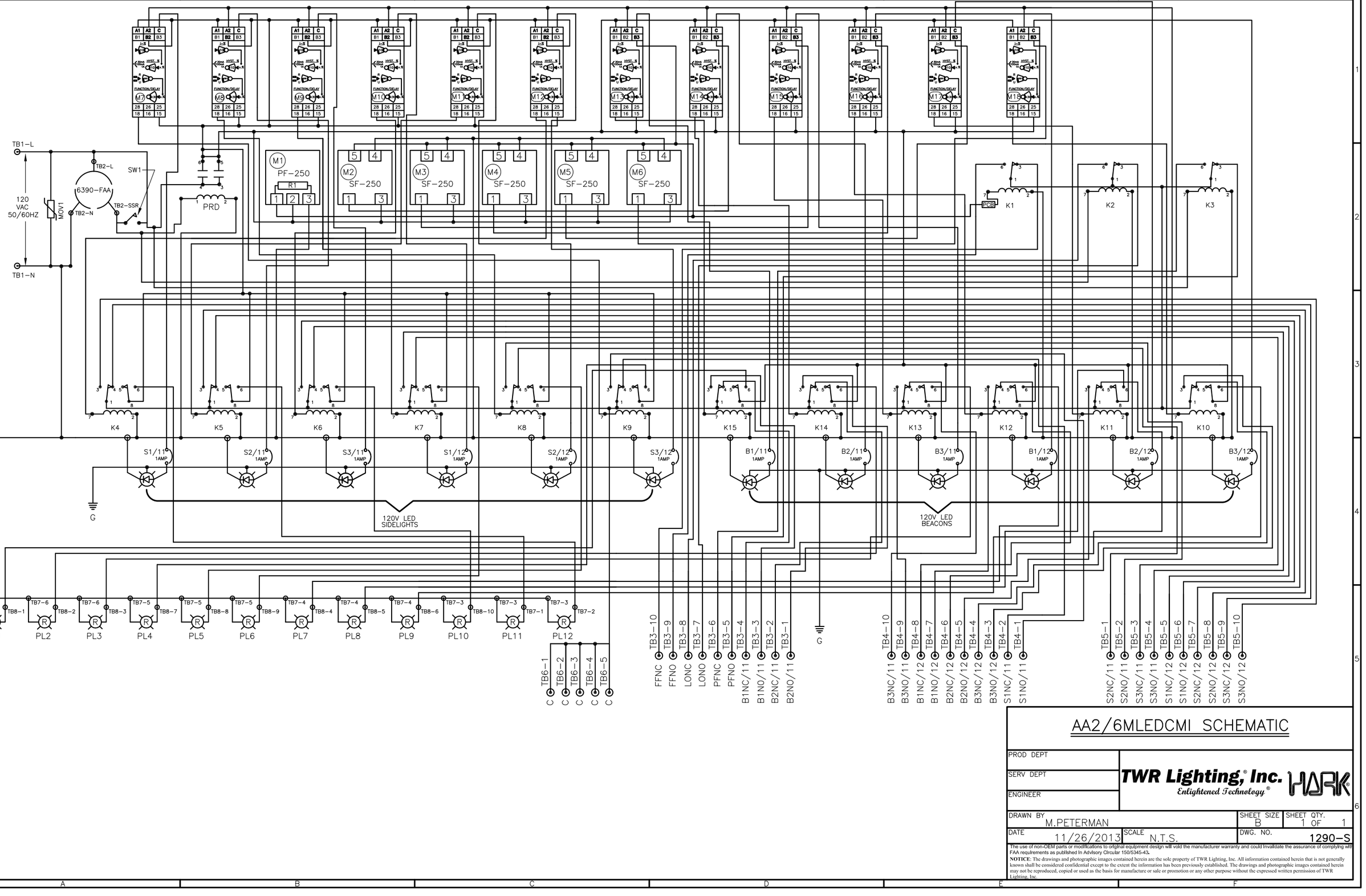
NOTES:

1. WHEN REPLACING MODULES USE HEAT SINK COMPOUND BETWEEN MODULE AND ALUMINUM PLATE.
2. PLUG 6390 FAA PHOTOCELL INTO 43109 TWIST LOCK RECEPTACLE AND TWIST TO LOCK.
3. WIRES ARE CONNECTED LETTER TO LETTER. (EXAMPLE) S TO S TO S.

AA2/6MLEDCML 120V 50/60Hz CHASSIS COMPONENT LAYOUT

PROD DEPT	TWR Lighting, Inc. Enlightened Technology® HARK
SERV DEPT	
ENGINEER	
DRAWN BY: M.PETERMAN	SHEET SIZE: B / SHEET QTY.: 1 OF 1
DATE: 11/25/2013	SCALE: N.T.S. / DWG. NO.: 1290-R

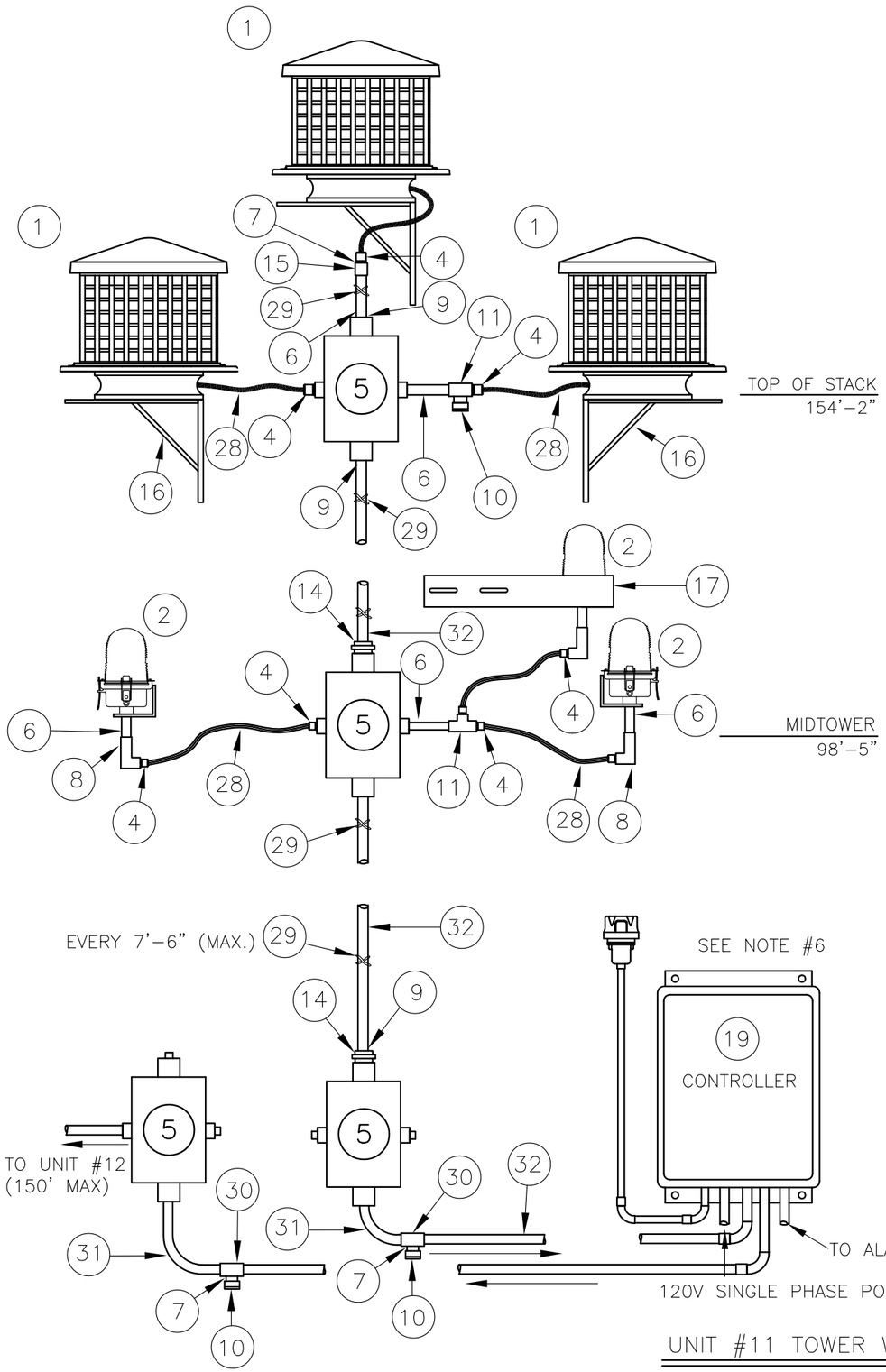
The use of non-OEM parts or modifications to original equipment design will void the manufacturer warranty and could invalidate the assurance of complying with FAA requirements as published In Advisory Circular 150/5345-43.

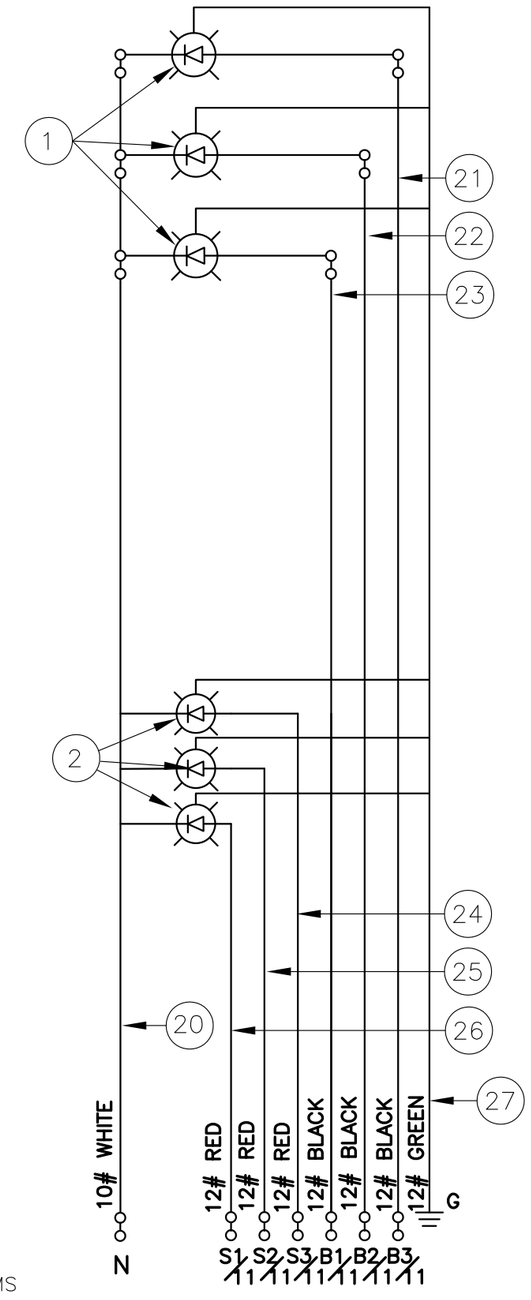


AA2/6MLEDCMI SCHEMATIC

PROD DEPT	TWR Lighting, Inc. Enlightened Technology® HARK®
SERV DEPT	
ENGINEER	
DRAWN BY: M.PETERMAN	SHEET SIZE: B; SHEET QTY.: 1 OF 1
DATE: 11/26/2013	SCALE: N.T.S.
	DWG. NO.: 1290-S

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.





UNIT #11 TOWER WIRING AND ASSEMBLY

BILL OF MATERIALS

	ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
	1	3	LEDBEACON2	LED BEACON RED w/ 60' PIGTAILS
	2	3	OL1CBH34LED2	FAA OL16LED 120-240VAC LED RED
*	3	3	SLPIGTAIL50G	SIDELIGHT PIGTAIL W/GROUND 50'
	4	12	CPCFST03	3/4" FLEX CONDUIT LIQUID TITE
	5	4	JB82TC	1" CAST JUNCTION BOX
	6	6	N34T3	3/4" X 3" GALV CONDUIT NIPPLE
	7	3	RE32	1" TO 3/4" REDUCER
	8	3	TL27CG	3/4" CONDULET W/COVER AND GASKET
	9	3	A314	3/4" CONDUIT LOCKNUTS
	10	3	5012902	3/4" BREATHER
	11	2	T27CG	3/4" CONDULET W/COVER AND GASKET
*	12	9	WIRENUTRED	RED WIRE NUT
*	13	1	TAPEL1	BLACK ELECTRICAL TAPE 3M
	14	2	UNY305	1" UNION
	15	1	CPLG1	1" GALV COUPLING
	16	3	BMSIDE-1	UNIVERSAL BEACON SIDEMOUNT
	17	3	100455M-0	OL MOUNT
*	18	1	PIPDOP	4 oz. PIPE DOPE
	19	1	AA2/6MLEDCMI	AA2/6MLEDCMI CONTROLLER
~	20	–	10THHNWHT	#10 THHN WHT. WIRE (TOWER HT.+100')
~	21	–	12THHNBLK	#12 THHN BLK. WIRE (TOWER HT.+100')
~	22	–	12THHNBLK	#12 THHN BLK. WIRE (TOWER HT.+100')
~	23	–	12THHNBLK	#12 THHN BLK. WIRE (TOWER HT.+100')
~	24	–	12THHNRED	#12 THHN RED WIRE (TOWER HT.+100')
~	25	–	12THHNRED	#12 THHN RED WIRE (TOWER HT.+100')
~	26	–	12THHNRED	#12 THHN RED WIRE (TOWER HT.+100')
~	27	–	12THHNGRN	#12 THHN GRN. WIRE (TOWER HT.+100')
	28	200'	COF03	SEALTITE CONDUIT
	29	1	SS5012	STAINLESS STEEL WRAPLOCK

ITEM NUMBERS #30-#32 ARE NOT INCLUDED IN THE KIT BUT ARE AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.

30	2	T37CG	1" CONDULET W/COVER AND GASKET
31	4	EL190	1" 90° SWEEP ELBOW
~ 32	–	CONDUIT1	1" CONDUIT (TOWER HT. + 50')

* = ITEMS NOT SHOWN
~ = ITEMS QUANTITY CALCULATED ACCORDING TO STRUCTURE HEIGHT.

NOTES:

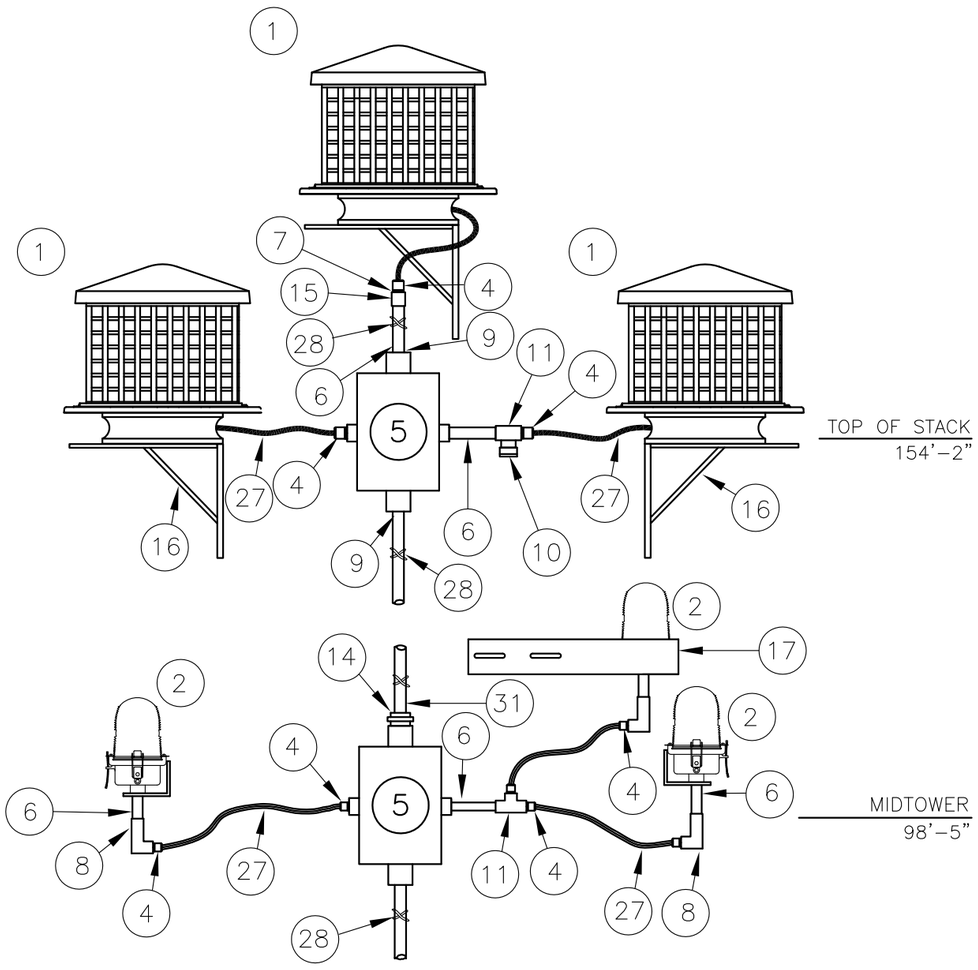
1) CONDUIT SIZE BASED ON USING TYPE THHN WIRE.
2) USE RIGID GALVANIZED STEEL CONDUIT.
3) BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.
4) EACH LEVEL OF LIGHTS SHOULD BE SPACED 120°.
5) BEACONS TO HAVE 50' PIGTAILS.
6) PHOTOCELL AND PIGTAIL PROVIDED WITH CONTROLLER. PHOTOCELL IS TO BE MOUNTED OUTDOORS TEEING OF CONDUIT RUN TO BREAKER BOX.
7) **CONDUIT PROVIDED BY OTHER**

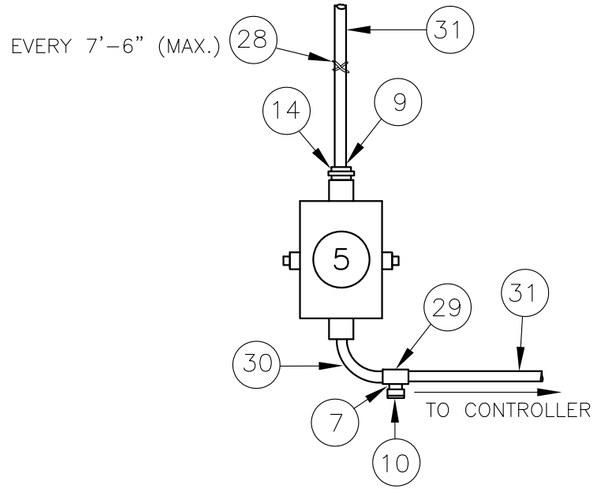
A1/3 LED TOWER LIGHTING KIT

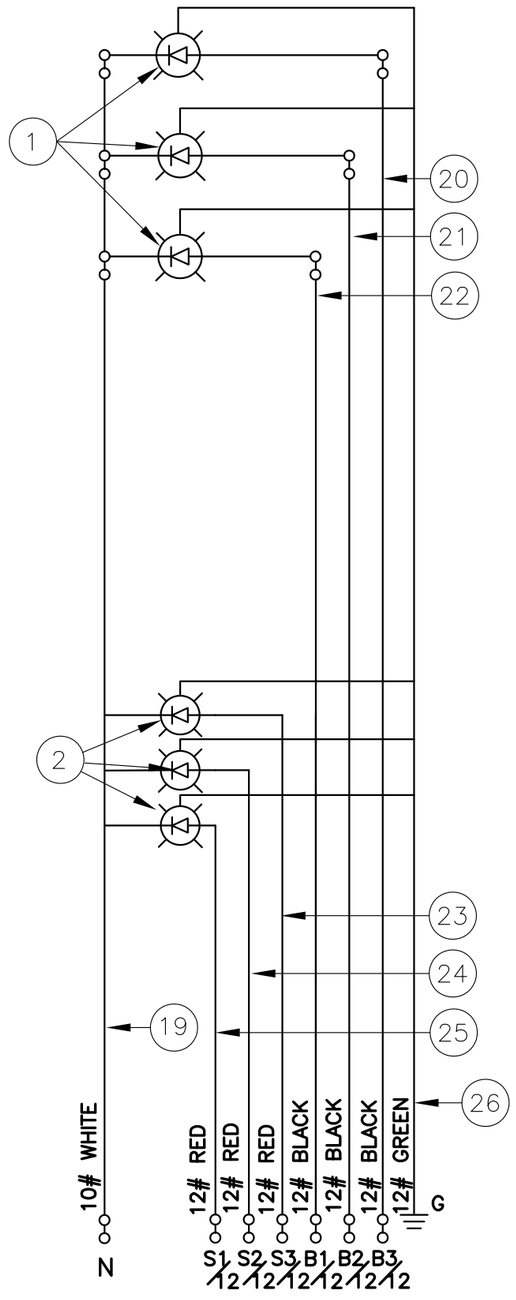
PROD DEPT
SERV DEPT
ENGINEER

TWR Lighting,® Inc. *Enlightened Technology®* HARK

DRAWN BY M.PETERMAN | SHEET SIZE B | SHEET QTY. 1 OF 1
DATE 08/23/13 | SCALE N.T.S. | DWG. NO. T1562







UNIT #12 TOWER WIRING AND ASSEMBLY

BILL OF MATERIALS

	ITEM NO.	QTY.	TWR PART NO.	DESCRIPTION
	1	3	LEDBEACON2	LED BEACON RED w/ 60' PIGTAILS
	2	3	OL1CBH34LED2	FAA OL16LED 120-240VAC LED RED
*	3	3	SLPIGTAIL50G	SIDELIGHT PIGTAIL W/GROUND 50'
	4	12	CPCFST03	3/4" FLEX CONDUIT LIQUID TITE
	5	3	JB82TC	1" CAST JUNCTION BOX
	6	6	N34T3	3/4" X 3" GALV CONDUIT NIPPLE
	7	2	RE32	1" TO 3/4" REDUCER
	8	3	TL27CG	3/4" CONDULET W/COVER AND GASKET
	9	3	A314	3/4" CONDUIT LOCKNUTS
	10	2	5012902	3/4" BREATHER
	11	2	T27CG	3/4" CONDULET W/COVER AND GASKET
*	12	9	WIRENUTRED	RED WIRE NUT
*	13	1	TAPEL1	BLACK ELECTRICAL TAPE 3M
	14	2	UNY305	1" UNION
	15	1	CPLG1	1" GALV COUPLING
	16	3	BMSIDE-1	UNIVERSAL BEACON SIDEMOUNT
	17	3	100455M-0	OL MOUNT
*	18	1	PIPDOP	4 oz. PIPE DOPE
~	19	-	10THHNWHT	#10 THHN WHT. WIRE (TOWER HT.+100')
~	20	-	12THHNBLK	#12 THHN BLK. WIRE (TOWER HT.+100')
~	21	-	12THHNBLK	#12 THHN BLK. WIRE (TOWER HT.+100')
~	22	-	12THHNBLK	#12 THHN BLK. WIRE (TOWER HT.+100')
~	23	-	12THHNRED	#12 THHN RED WIRE (TOWER HT.+100')
~	24	-	12THHNRED	#12 THHN RED WIRE (TOWER HT.+100')
~	25	-	12THHNRED	#12 THHN RED WIRE (TOWER HT.+100')
~	26	-	12THHNGRN	#12 THHN GRN. WIRE (TOWER HT.+100')
	27	200'	COF03	SEALTITE CONDUIT
	28	1	SS5012	STAINLESS STEEL WRAPLOCK

ITEM NUMBERS #29-#31 ARE NOT INCLUDED IN THE KIT BUT ARE AVAILABLE UPON REQUEST, AND REQUIRED FOR INSTALLATION.

29	2	T37CG	1" CONDULET W/COVER AND GASKET
30	1	EL190	1" 90° SWEEP ELBOW
~ 31	-	CONDUIT1	1" CONDUIT (TOWER HT. + 50')

* = ITEMS NOT SHOWN
~ = ITEMS QUANTITY CALCULATED ACCORDING TO STRUCTURE HEIGHT.

NOTES:

1) CONDUIT SIZE BASED ON USING TYPE THHN WIRE.
2) USE RIGID GALVANIZED STEEL CONDUIT.
3) BREATHERS ALLOW FOR CIRCULATION OF AIR TO PREVENT CONDENSATION.
4) EACH LEVEL OF LIGHTS SHOULD BE SPACED 120°.
5) BEACONS TO HAVE 50' PIGTAILS.
6) **CONDUIT PROVIDED BY OTHER**

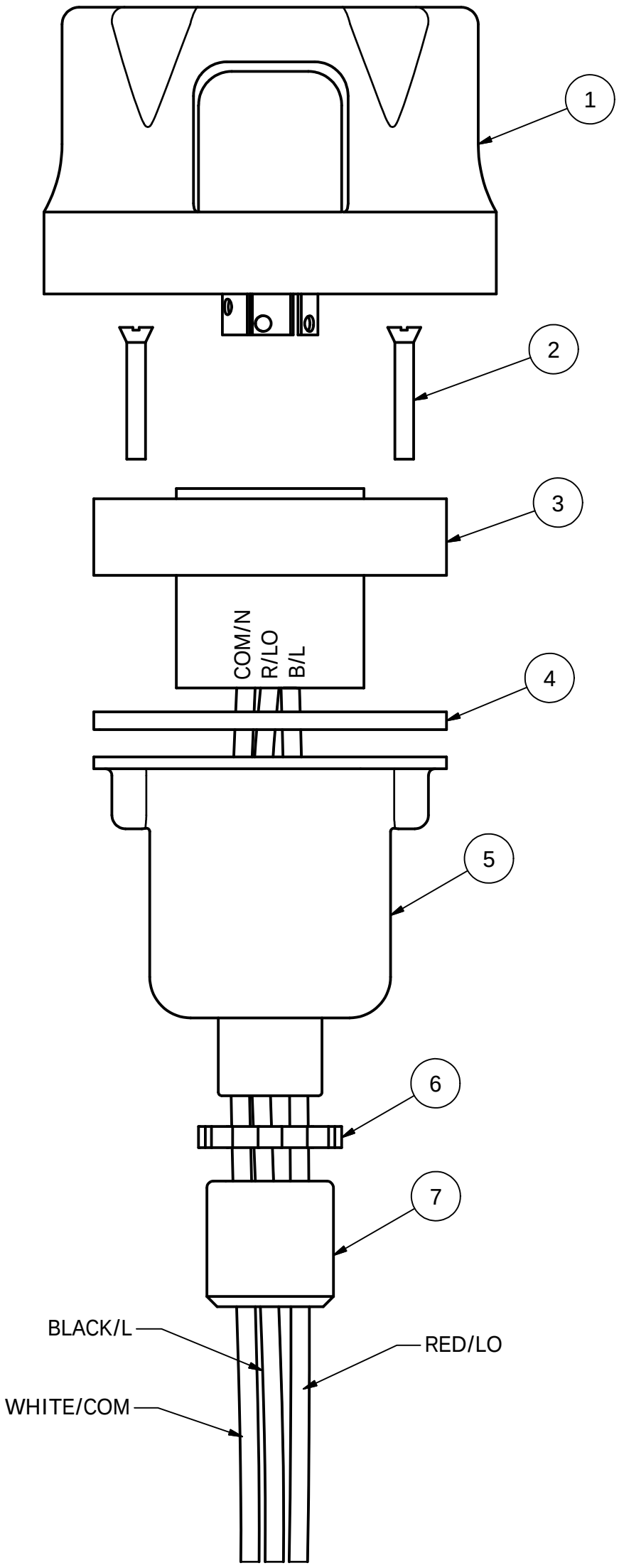
A1/3 LED TOWER LIGHTING KIT

PROD DEPT
SERV DEPT
ENGINEER

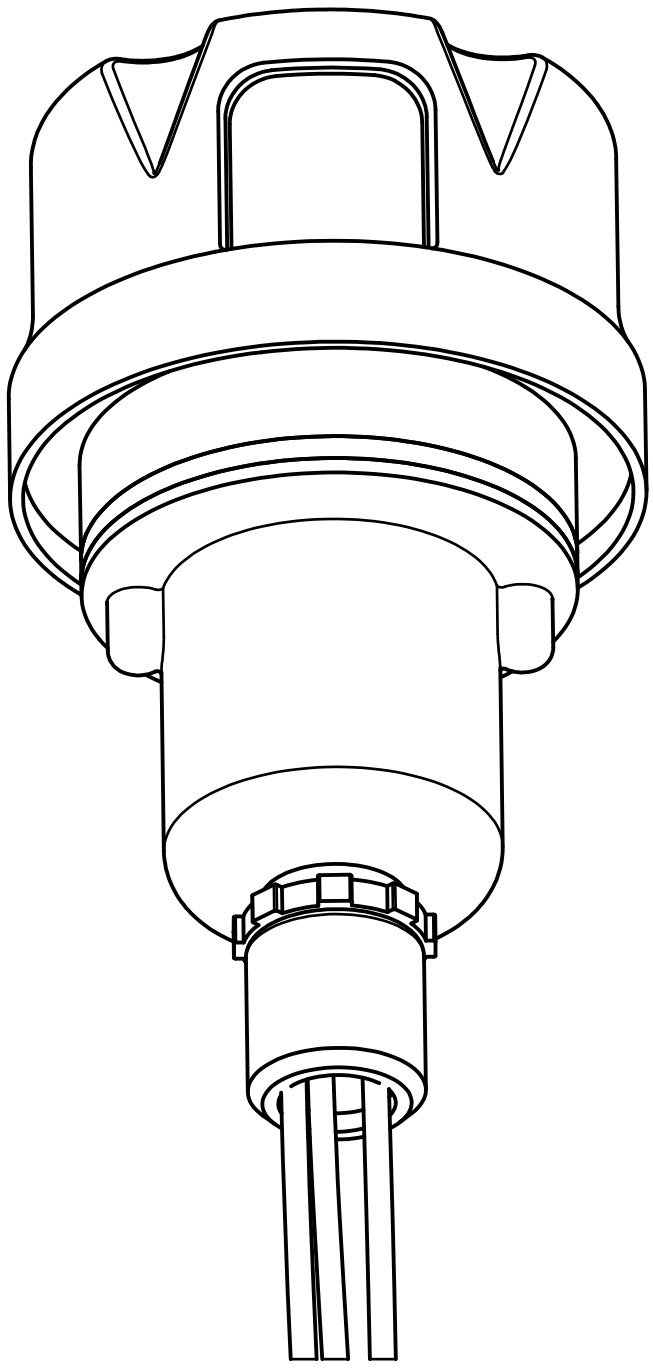
TWR Lighting,® Inc. *Enlightened Technology®* HARK

DRAWN BY M.PETERMAN | SHEET SIZE B | SHEET QTY. 1 OF 1
DATE 08/23/13 | SCALE N.T.S. | DWG. NO. T1572

PARTS LIST		
ITEM	QTY	PART NUMBER
1	1	PHOTOCELL
2	2	6-32 x 1/2" 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

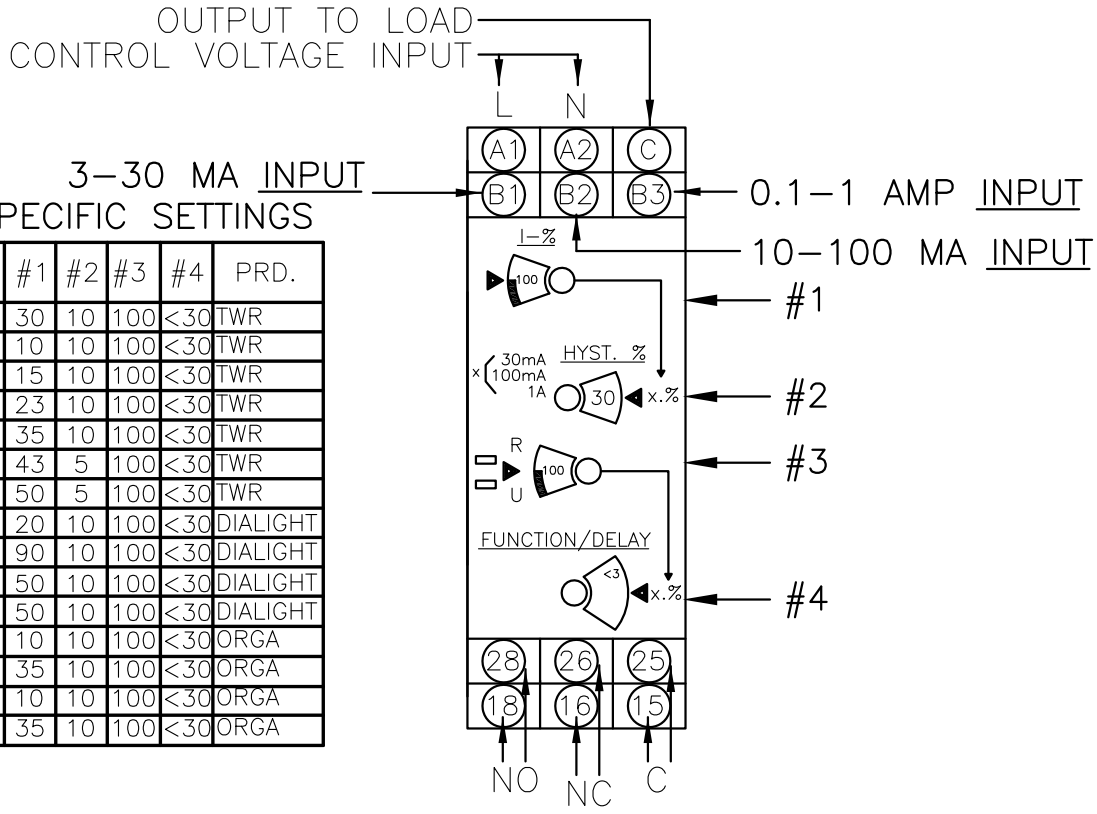


ASSEMBLY

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

DRAWN vhernandez	10/18/1995	TWR Lighting,® Inc. Enlightened Technology®
CHECKED		TITLE: PHOTOCELL HOUSING DETAIL
QA		
MFG		
APPROVED		
		SIZE B / DWG NO 100239 / REV E
		SCALE 1/1 / SHEET 1 OF 1

AC UNITS CURRENT MEASUREMENT–RM4JA31M



120VAC PRODUCT SPECIFIC SETTINGS

QTY.	PART NO.	INPUT	#1	#2	#3	#4	PRD.
1	OL1_LED2	B2	30	10	100	<30	TWR
2	OL1_LED2	B3	10	10	100	<30	TWR
3	OL1_LED2	B3	15	10	100	<30	TWR
4	OL1_LED2	B3	23	10	100	<30	TWR
6	OL1_LED2	B3	35	10	100	<30	TWR
8	OL1_LED2	B3	43	5	100	<30	TWR
10	OL1_LED2	B3	50	5	100	<30	TWR
1	860–1R01–001	B2	20	10	100	<30	DIALIGHT
3	860–1R01–001	B3	90	10	100	<30	DIALIGHT
1	LEDBEACON	B3	50	10	100	<30	DIALIGHT
1	STLDBEACON	B3	50	10	100	<30	DIALIGHT
1	LEDBEACON2	B3	10	10	100	<30	ORGA
2	LEDBEACON2	B3	35	10	100	<30	ORGA
1	STLDBEACON2	B3	10	10	100	<30	ORGA
2	STLDBEACON2	B3	35	10	100	<30	ORGA

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	**Overcurrentor Undercurrent Control ■**	**Measuring Range**
Yes	Yes	3 MA - 1,000 MA

Detailed Positions for Switch 4

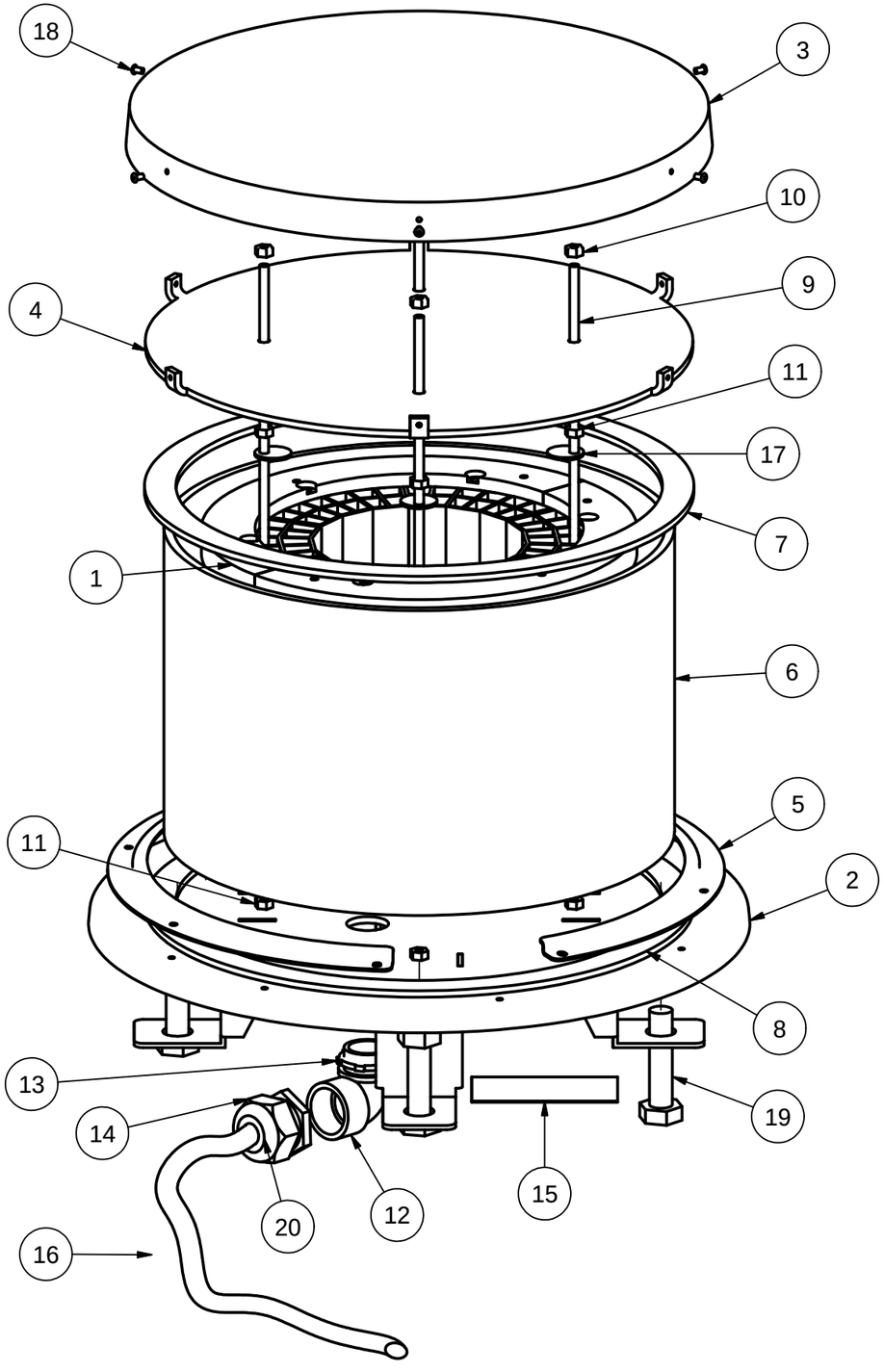
Switch Position	**Function**	**Time Delay (t)**
< 0	Undercurrent detection	No time delay
< 1	Undercurrent detection	0.05 to 1 s
< 3	Undercurrent detection	0.15 to 3 s
< 10	Undercurrent detection	0.5 to 10 s
< 30	Undercurrent detection	1.5 to 30 s
> 0	Overcurrent detection	No time delay
> 1	Overcurrent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

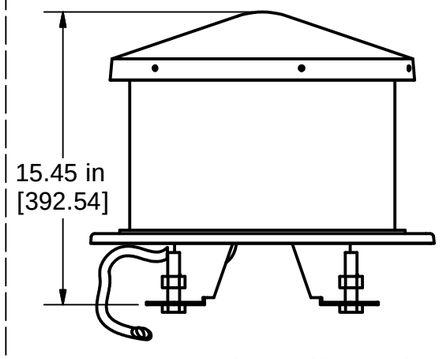
■ = Selection by switch on front face
▲ = Value of current between energization and de-energization of the output relay (% of the current threshold to be measured).

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

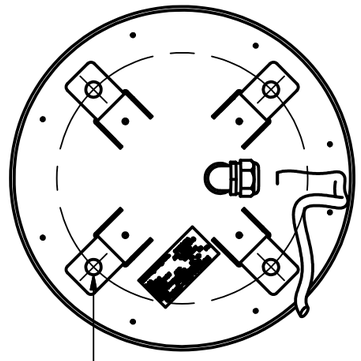
Sign:_____

TWR Lighting, Inc. DWG#100694_RG





WEIGHT: 46 LBS. (20.9 KG)



.812" HOLES SPACED
90˚ ON 13.25" BOLT CIRCLE

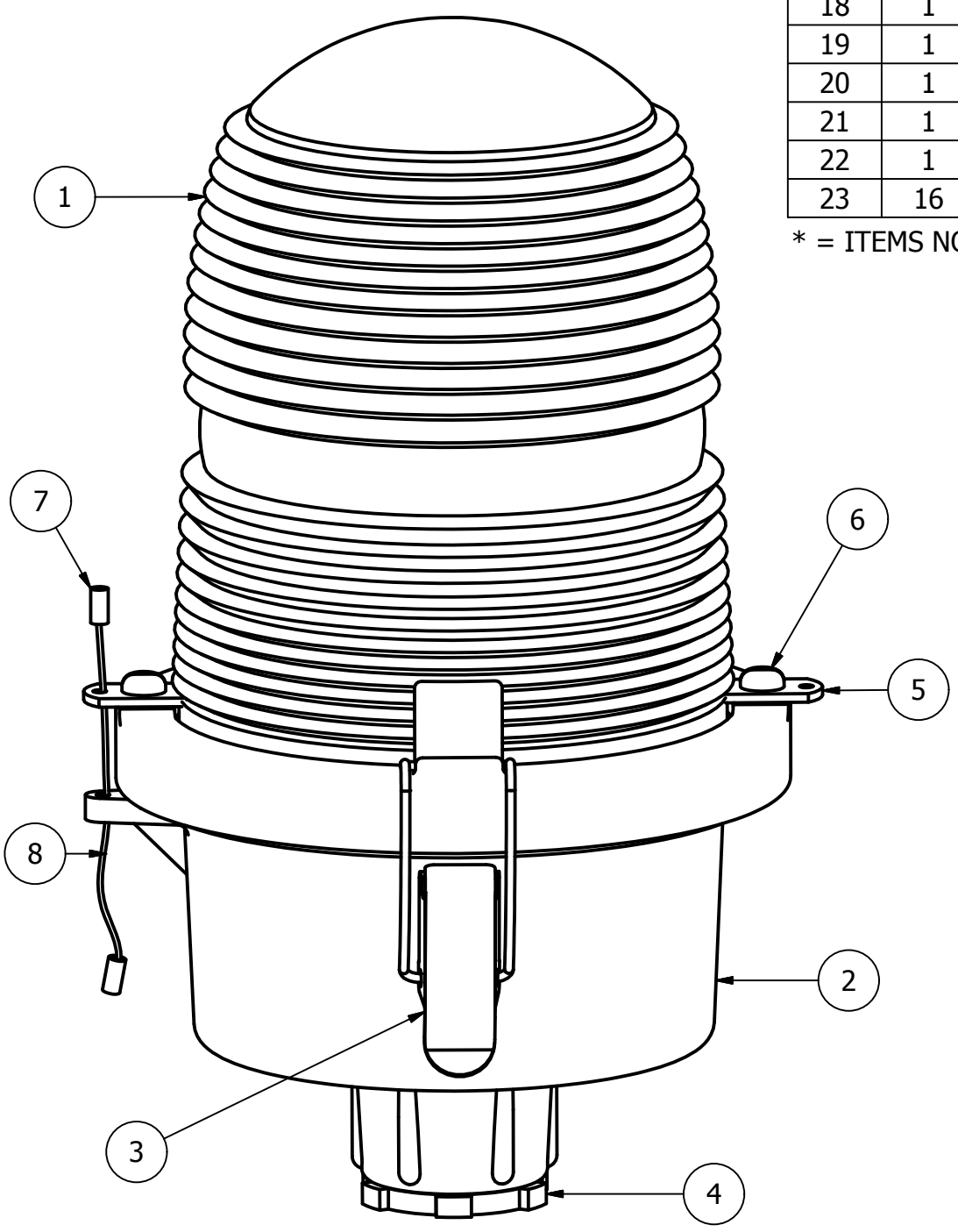
Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	LEDLITEENG2	ORGA L-864 LED LIGHT ENGINE 120/240VAC
2	1	100672	LEDBEACON BASE PLATE
3	1	100344	CAP DUAL BEACON
4	1	100673	LEDBEACON LID PLATE
5	2	100337	LENS RETAINER RING
6	1	STLDBCTUBE2	CLEAR ACRYLIC TUBE
7	1	STBEAGSK4	GASKET NEOPRENE 13 1/8 X 15 OD X
8	1	STBEAGSKT	GASKET NEOPRENE 13 1/4 x 15
9	4	100727	14-20 X 9.875" DE 304 S.S. ORG
10	4	1420SSNUTN	1/4-20 NUT W/NYLON INSERT 304
11	4	1420NUT	1/4-20 NUT 304 S/S
12	1	EL190S	1" 90 DEGREE SHORT ELBOW GALV.
13	1	A315	1" CONDUIT LOCKNUT GALV.
14	1	CC-NPT34-G	3/4" NPT CORD CONNECTOR .500"
15	1	STCONLAB2	100223 PRODUCT LABEL
16	21'	CSO14-3	S.O. CORD 14AWG/3 CONDUCTOR
17	2	100606M	LED LIGHT ENGINE TIE DOWN WASH
18	6	18PRSS-2	1/8 X .400 SS POP RIVET #44
19	4	58X112	5/8 X 2-3/4 HEX BOLT
20	1	RE32	1" TO 3/4" REDUCER, GALV.
* 21	8	1032X38PHW	10-32X3/8 PHILLS HD CAPTIVE SCREW

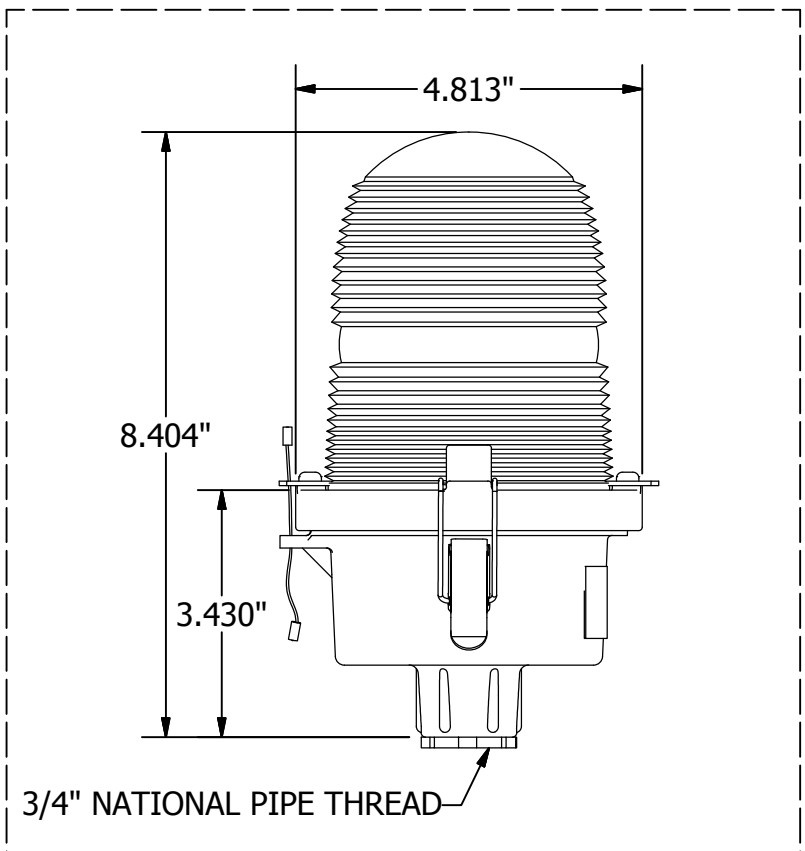
* = ITEMS NOT SHOWN

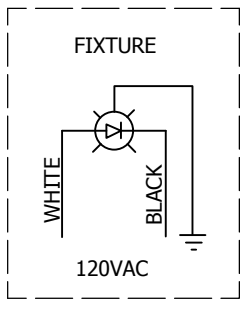
DRAWN VHernandez	9/4/2007	TWR Lighting® Inc. Enlightened Technology®
CHECKED		
QA		TITLE: LEDBEACON2 ASSEMBLY
MFG		
APPROVED		SIZE B | DWG NO 100761_RA | REV A
		SCALE 1/4 | SHEET 1 OF 1

Parts List			
ITEM	QTY	PART NUMBER	DESCRIPTION
1	1	N400C	SIDELIGHT LENS CLEAR ACYRLIC
2	1	105RCP	RED CAST SINGLE BOTTOM HUB BODY
3	2	HC255SS	SIDELIGHT LATCH
4	1	A314	3/4" CONDUIT LOCKNUT GALV.
5	2	12V245	OL LENS CLIP
6	2	832X14PH	8-32 X 1/4 PH SS SLOT SCREW
7	2	A1A	STAKON CRIMP
8	.5	7X7SS	1/16 HOL 7X7 S.S. WIRE
9	1	*PS90-260/24	POWER SUPPLY
10	6	*STE01-047	LED VERTICAL PCB
11	1	*100588	OL 6LED BASE PLATE
12	1	*100591	OL 6LED STAR DISK
13	6	*STD05006	LED EMITTER
14	1	*A10290	5/32" ID RUBBER GROMMET
15	.3	* 20RED	#20AWG RED BELDON WIRE
16	3	*632X14PHH	6-32 X 1/4 PH PH SCREW
17	3	* WIRENUTBLU	WIRE NUT FOR #6 WIRE
18	1	*100680	OL1/2 LED SERIAL # LABEL
19	1	* 14GREEN	#14AWG GREEN BELDON WIRE
20	1	* 14RB6R	RING TERMINAL (GROUND WIRE)
21	1	*106CP	RED CAST LENS HOLDER RING
22	1	*OLG2	OL1 6 LED GASKET
23	16	*18PRSS	1/8 X .45 SS POP RIVET

* = ITEMS NOT SHOWN

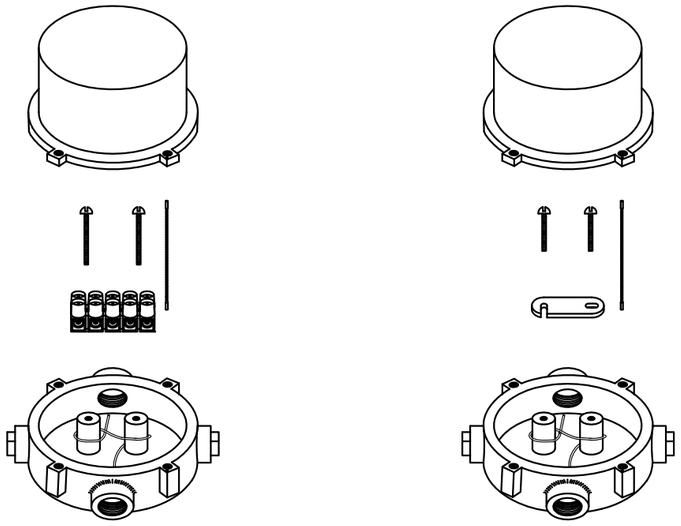




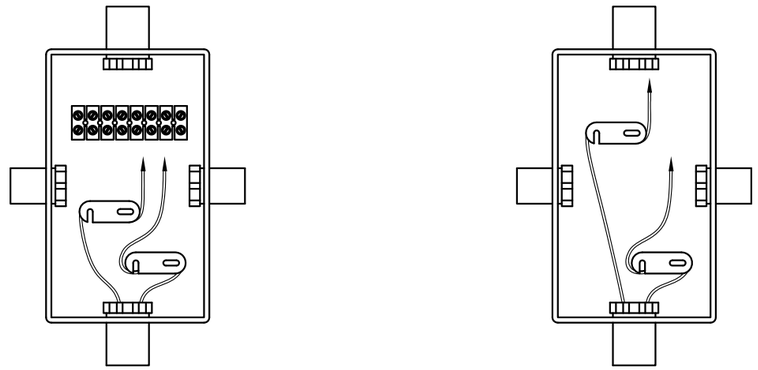


* GROUND WIRE MUST BE CONNECTED TO PROPERLY PROTECT POWER SUPPLY. FAILURE TO GROUND WILL VOID ALL WARRANTIES.

DRAWN JBUSTAMANTE	6/14/2007	TWR Lighting, Inc. Enlightened Technology® HARK
CHECKED		TITLE: OL1CBH34LED2 120VAC FAA-OL16LED (L810 OBSTRUCTION LIGHT)
QA		
MFG		
APPROVED		SIZE B / DWG NO 100749i / REV A
		SCALE / SHEET 1 OF 1



JB–5 AND JB–0
3/4" JUNCTION BOX



JB–8 AND JB–8SR
1" JUNCTION BOX

USING THIS JUNCTION BOX METHOD SPACING IS 100 FEET MAXIMUM.

AWG WIRE SIZE	MAX. NUMBER WIRES IN 3/4" CONDUIT	MAX. NUMBER WIRES IN 1" CONDUIT	WIRE AREA SQ. INCHES	WEIGHT PER 100 FEET
12 THHN	16	26	0.0117	2.50
10 THHN	10	17	0.0184	4.10
8 THHN	6	9	0.0373	6.70
6 THHN	4	7	0.0519	10.30
4 THHN	2	4	0.0845	16.20

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.

DATE:	LTR.	REVISION
9/29/00	A	UPDATED NOTES

JUNCTION AND STRAIN RELIEF BOXES

PROD DEPT
SERV DEPT
ENGINEER

TWR Lighting,® Inc.
Enlightened Technology®

DRAWN BY G.D. SEBEK | SHEET SIZE B | SHEET QTY. 1 OF 1
DATE 07/26/93 | SCALE N.T.S. | DWG. NO. 100089