

# PHILIPS

## STEEL LITE SERIES EMERGENCY UNIT EQUIPMENT

### IMPORTANT SAFEGUARDS

When using electrical equipment, basic safety precautions should always be followed, including the following:

### READ AND FOLLOW ALL SAFETY INSTRUCTIONS

All servicing should be performed by qualified personnel only.

Do not mount near any heat producing equipment. Equipment should be mounted in locations and at heights where it will not be readily subjected to tampering by unauthorized personnel.

The use of accessory equipment not recommended by the manufacturer may cause an unsafe condition. Do not use this equipment for other than intended use.

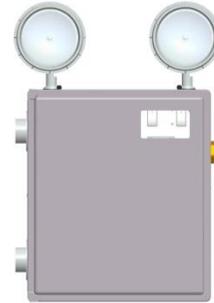
In Class I Division 2 locations, do not replace any non-metallic hardware with metal hardware. Contact authorized agent for factory replacement parts. In Class I Division 2 areas, install equipment in accordance with appropriate NEC articles plus any other applicable codes.

To avoid static discharge, do not attach any ungrounded metal hardware to the enclosure. Do not store or place flammable materials near lamp. Install only grounded wiring systems to supply this equipment

**CAUTION – ensure lamp heads are positioned so they are aimed below horizontal**

**CLASS I DIV 2  
HAZARDOUS LOCATION  
GROUPS A, B, C, AND D  
ZONE 2 GROUPS IIC, IIB AND IIA  
CLASS II DIV 2 GROUPS F AND G  
AND CLASS III DIV 1 AND 2**

### INSTALLATION AND OPERATING INSTRUCTIONS



Do not use this equipment outdoors.

**CAUTION:** Halogen cycle lamp(s) are used in this equipment. To avoid shattering: Do not operate lamp in excess of rated voltage, protect lamp against abrasion and scratches and against liquids when lamp is operating, dispose of lamp with care. Halogen cycle lamps operate at high temperatures. Do not store or place flammable materials near lamp.

**CAUTION:** “To avoid electrical overload, total connected lamp load (factory and field installed) should not exceed output rating”. Free installation area of hazardous atmospheres before wiring equipment or servicing, this reduces the risk of accidental explosion due to inadvertent battery shorting during installation.

**WARNING – Shut off AC power to branch circuits to which units will be connected. All wiring should be per NEC wiring methods for Hazardous locations.**

To maintain warranty, equipment with batteries must be installed or placed on charge within prescribed period after shipment.

### SAVE THESE INSTRUCTIONS

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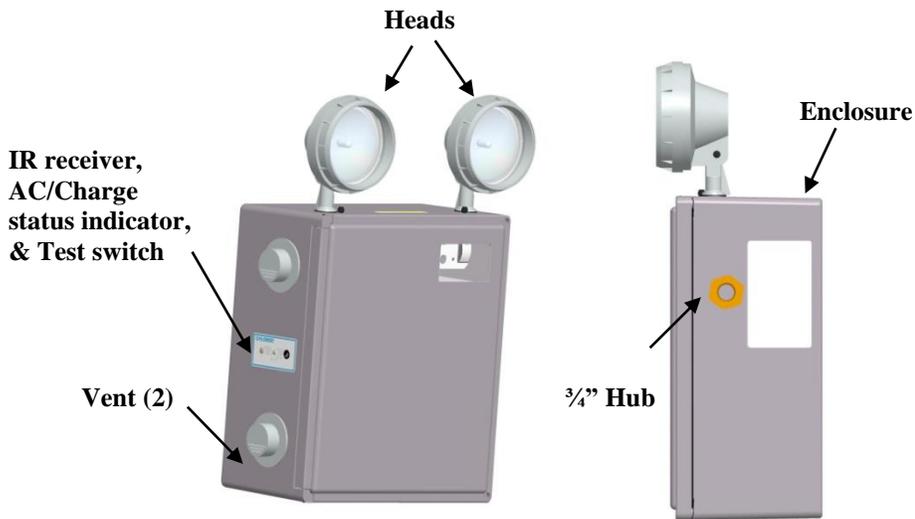


Figure 1

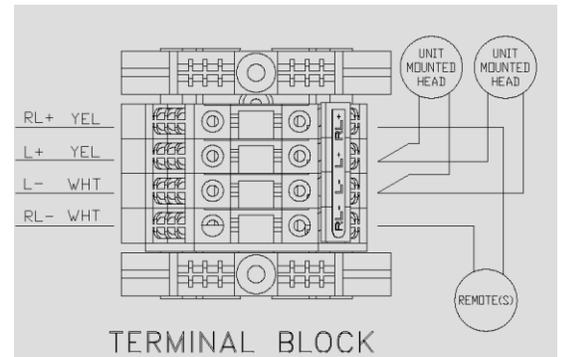


Figure 2

**INSTRUCTIONS – INSTALLATION**

1. Mount enclosure to wall using (4) thru holes or optional mounting feet. (See Figure 4).
2. Remove cover screws (2) and open cover. (See Figure 1).
3. Connect 3/4" conduit supply to 3/4" hub on unit.
4. Hookup AC service to the connector assembly as follows:

**240 VAC OPERATION**

XFMR Brown Wire	-To AC Fuse
AC Fuse Black Wire	-240V Line
Light Blue Wire	- Common
Green Wires	- Ground
Cap-off	-XFMR Violet & Black Wires

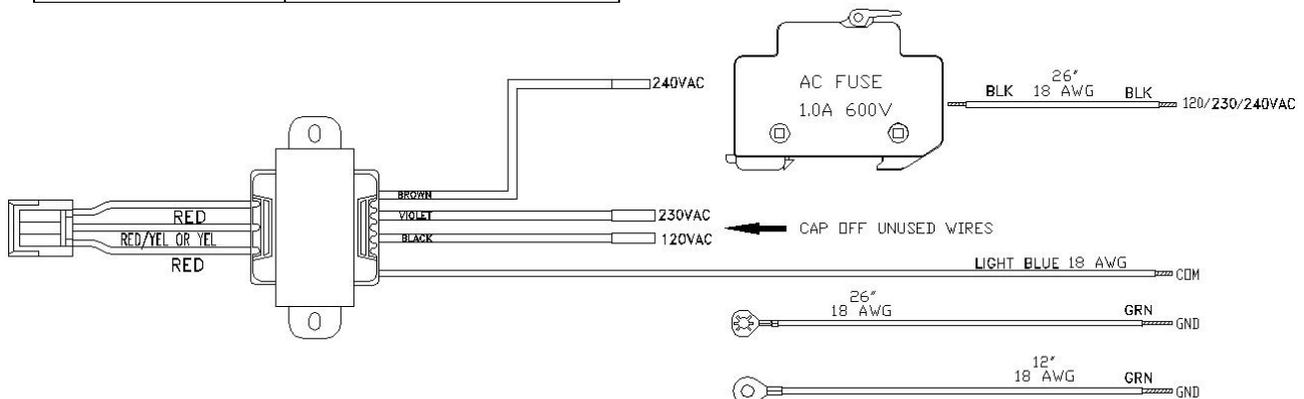


Figure 3

5. Connect Battery leads to the battery or batteries (See Figure 5).
6. Adjust head(s) as follows: (See Figure 4).
  - a. Rotation – Loosen head nut and rotate head to desired position. Retighten head nut. An antirotation screw has been provided to ensure proper rotation.
  - b. Angle – Loosen thumb screw passing through head swivel sufficiently to allow internal teeth to disengage. Position head to desired angle.
  - c. Retighten both head nut and thumb screw.

**CAUTION – ensure lamp heads are positioned so they are aimed below horizontal**



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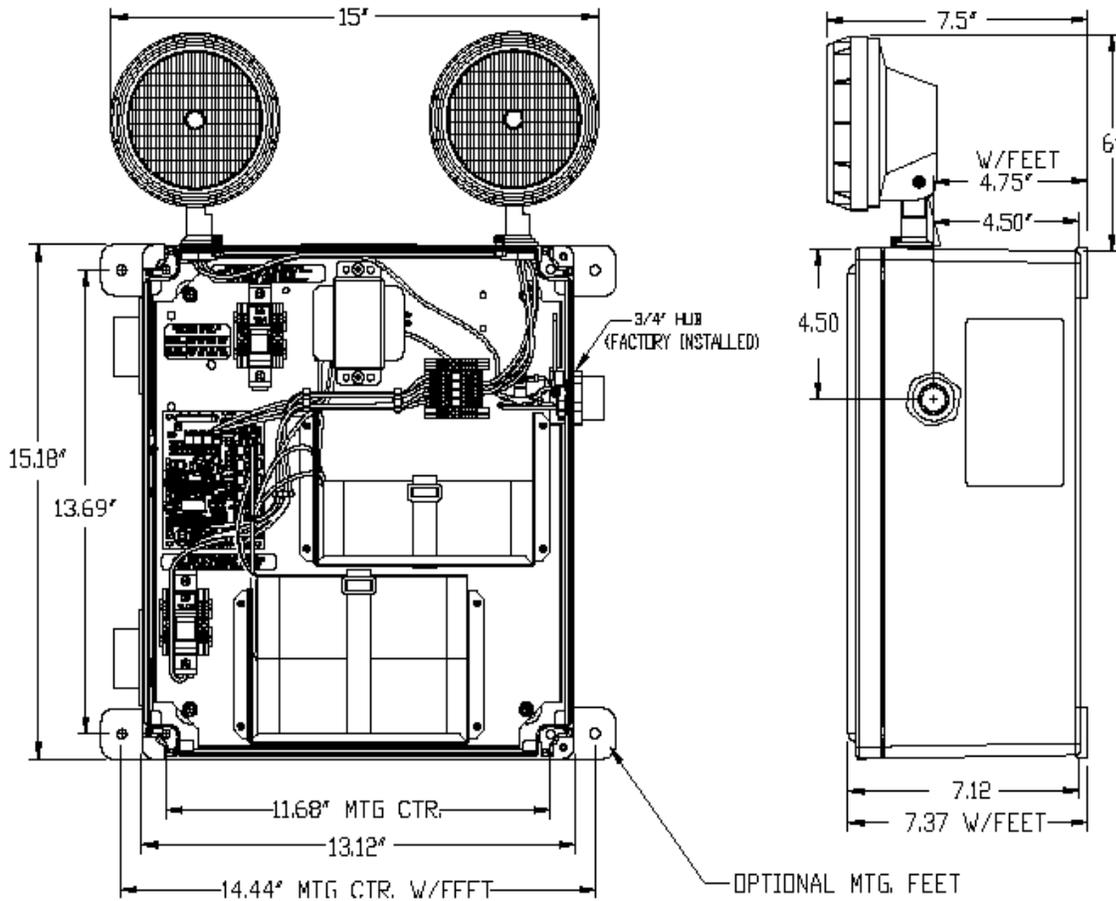
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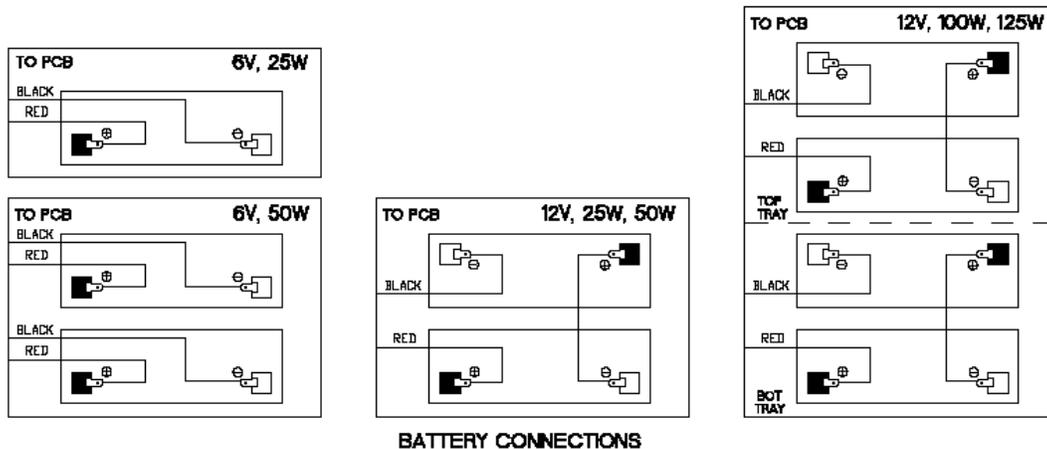
- 7. A dual load terminal block is provided for lamp hook-up. Ensure total wattage of heads, both unit mounted and remote (if applicable), does not exceed unit rating. Factory mounted lamps are wired to the terminal block at points L+ and L-. All remote loads should be wired to the terminal block at RL+ and RL- (See Figure 2). Use wire gauge that limits voltage drop to an acceptable level (See page 6)

**INSTRUCTIONS – OPERATION**

- 1. Energize AC power to unit equipment. Unit will initiate normal power-up sequence (See page 4).



**Figure 4**



**BATTERY CONNECTIONS**

**Figure 5**



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## Self Diagnostic System Operation – Emergency Light or EXIT Sign Products

### Normal Power Up Sequence

At power up the red and green LED indicators will alternately flash for one to two seconds. Next the product will execute a “Power Up Quick Test” causing the green LED indicator to flash rapidly. If any faults are detected during the “Power Up Quick Test” these will be evident by a flashing red LED indicator. If the audible diagnostic option has been ordered, the flashing red LED will be accompanied by a simultaneous beeping tone. **(Note: A continuous rapid alternating Red/Green flash with rapid beeping tone indicates incorrect voltage applied to input lead. TURN OFF POWER IMMEDIATELY!)**

### Emergency Operation

Emergency operation occurs when AC power fails. The product remains in emergency operation until AC power is restored or battery capacity is depleted. During emergency operation both red and green LED indicators are disabled.

### User Interface

#### **Green LED indicator**

- Slow Flash/Continuous ON = AC power present; normal operating condition
- Rapid Flash = product performing an automatic or manually initiated diagnostic test

#### **Red LED indicator**

- Single Flash = battery fault
- Two Flashes = lamp failure (light bar failure – EXIT signs)
- Three Flashes = charger fault
- Four Flashes = transfer fault

(If more than one fault condition is present simultaneously, the red LED will flash the indication pattern for each fault independently then repeat the cycle.)

#### **Pushbutton Test Switch**

- Long Press (longer than 0.5sec) transfers product to emergency operation during time the button is pressed.
- Short Press initiates self diagnostic activities as follows:
  - One Press cancels diagnostic test presently running.
  - Two Presses starts a one minute diagnostic test.
  - Three Presses starts a 90 minute diagnostic test.
  - Four Presses conducts a lamp load calibration (emergency light products only).
  - Seven Presses initiates a system reset.

(Note: the microprocessor will allow up to seven, one minute diagnostic tests within the first 24 hours of operation. Allow 24 hours of charging before performing any long duration testing.)

**Buzzer** (optional)– Sounds in unison with the flashing red LED if a fault condition is present. Buzzer may be silenced for up to 196 hours by a short press of either the test switch or the optional IR remote control device “silence” button. Correcting fault condition will cancel fault notification. Lamp failure indication requires a manually activated diagnostic test after lamp replacement to cancel notification.

**IR Remote Control** (optional)- is a hand held device that allows remote activation of diagnostic testing and silencing of the optional buzzer during fault conditions.





**SILENCE  
ALARM**



**1 MINUTE  
TEST**



**30 MINUTE  
TEST**



**90 MINUTE  
TEST**



**CANCEL**

### OPTIONAL REMOTE CONTROL

Front

Press appropriate button to perform the indicated test or silence the audible alarm.

Cancel stops any test currently in process.

**System Reset:** Two presses of "SILENCE ALARM" button followed by two presses of "CANCEL" button.

**Interpretation of flashing indicator lights on Equipment:**

**Green LED Indicator:**

- Steady On - Normal
- Slow Flash - Battery Charging
- Fast Flash - Unit is self-testing

**Red LED Indicator:**

- Single Flash - Battery Fault
- Double Flash - Lamp Failure
- Triple Flash - Charger Fault
- Quad Flash - Emergency Transfer Failure

**Red and Green LED Indicators flashing together:**

- Slow Flashing - Low Line Voltage
- Fast Flashing - High Line Voltage

**Unit Equipment Lamp Calibration**  
 Press "Silence Alarm" twice followed by one press of "Cancel" and one press of "Silence Alarm"  
 For Service Call (910)259-1000

Back

Explanation of indicator light flash sequences.

Refer to Table 2 above for further information.

# **STEEL LITE Series EMERGENCY UNIT EQUIPMENT**

## **WIRING CALCULATIONS FOR VOLTAGE DROP PROTECTION**

### IN EMERGENCY LIGHTING SYSTEMS

TO DESIGN A PROPER EMERGENCY LIGHTING SYSTEM, CIRCUIT RUNS MUST BE OF SUFFICIENT SIZE TO MAINTAIN A PROPER OPERATING VOLTAGE TO ALL LAMPS. MAXIMUM ALLOWABLE VOLTAGE DROP SHOULD NOT EXCEED 5%. PROPER WIRE SIZE IS DETERMINED FROM THE FOLLOWING FORMULA, TABLE AND EXAMPLE SHOWN BELOW.

$$L = \frac{CM \times EI}{I \times 22}$$

$$CM = \frac{I \times 22 \times L}{EI}$$

$$EI = \frac{I \times 22 \times L}{CM}$$

$$I = \frac{CM \times EI}{L \times 22}$$

CM = WIRE SIZE IN CIRCULAR MILLS  
 I = LOAD IN AMPERES (EMERGENCY MODE)  
 L = LENGTH OF WIRE RUN. (UNIT TO REMOTE LOAD)  
 EI = MAXIMUM ALLOWABLE VOLTAGE DROP. (5%)

USING THE ABOVE FORMULA AND HAVING CALCULATED THE CIRCULAR MILLS REQUIRED TO CARRY THE SPECIFIED LOAD AT A PREDETERMINED AND ALLOWABLE VOLTAGE DROP, THE FOLLOWING CHART WILL IDENTIFY THE NECESSARY WIRE GAUGE FROM THE CORRESPONDING CIRCULAR MILL SIZE LISTED.

WIRE GAUGE	AMPERE CAPACITY	OHMS PER 1000 ft	CIRCULAR MILL SIZE
12	20	1.586	6,530
10	25	.9972	10,380
8	35	.6271	16,510
6	50	.3944	26,250
4	70	.2480	41,740

**EXAMPLE:**

WHAT SIZE SHOULD BE USED FOR A 6-VOLT CIRCUIT TO TRANSMIT A CURRENT OF 4 AMPERES A DISTANCE OF 75 FEET WITH A VOLTAGE DROP OF NOT MORE THAN 5%?  
 EI = MAXIMUM ALLOWABLE VOLTAGE DROP 5% OF SELECTED VOLTAGE:

USING 6 VOLTS x .05 = .3 VOLTS.

USING THE FORMULA AND SUBSTITUTING THE GIVEN QUANTITIES:

$$CM = \frac{4 \times 22 \times 75}{.3} = 22000 \text{ CIRCULAR MILLS NEEDED. (USE \#6 WIRE)}$$

**NOTE:**

SMALLEST PERMISSIBLE WIRE SIZE FOR SYSTEMS UNDER 50 VOLTS IS #12 FOR EMERGENCY LIGHTING EQUIPMENT UNDER ARTICLE 720-4 OF THE NATIONAL ELECTRIC CODE.

6 VOLTS			
WIRE SIZE	WATTS		
	25	50	75
12	22	11	7
#10	24	18	12
#8	54	28	19
#6	86	45	30

12 VOLTS						
WIRE SIZE	WATTS					
	25	50	75	100	125	150
#12	90	41	30	21	17	15
#10	144	69	48	34	27	24
#8	229	108	76	54	43	38
#6	364	172	86	86	69	60

### WIRING DISTANCE IN FEET



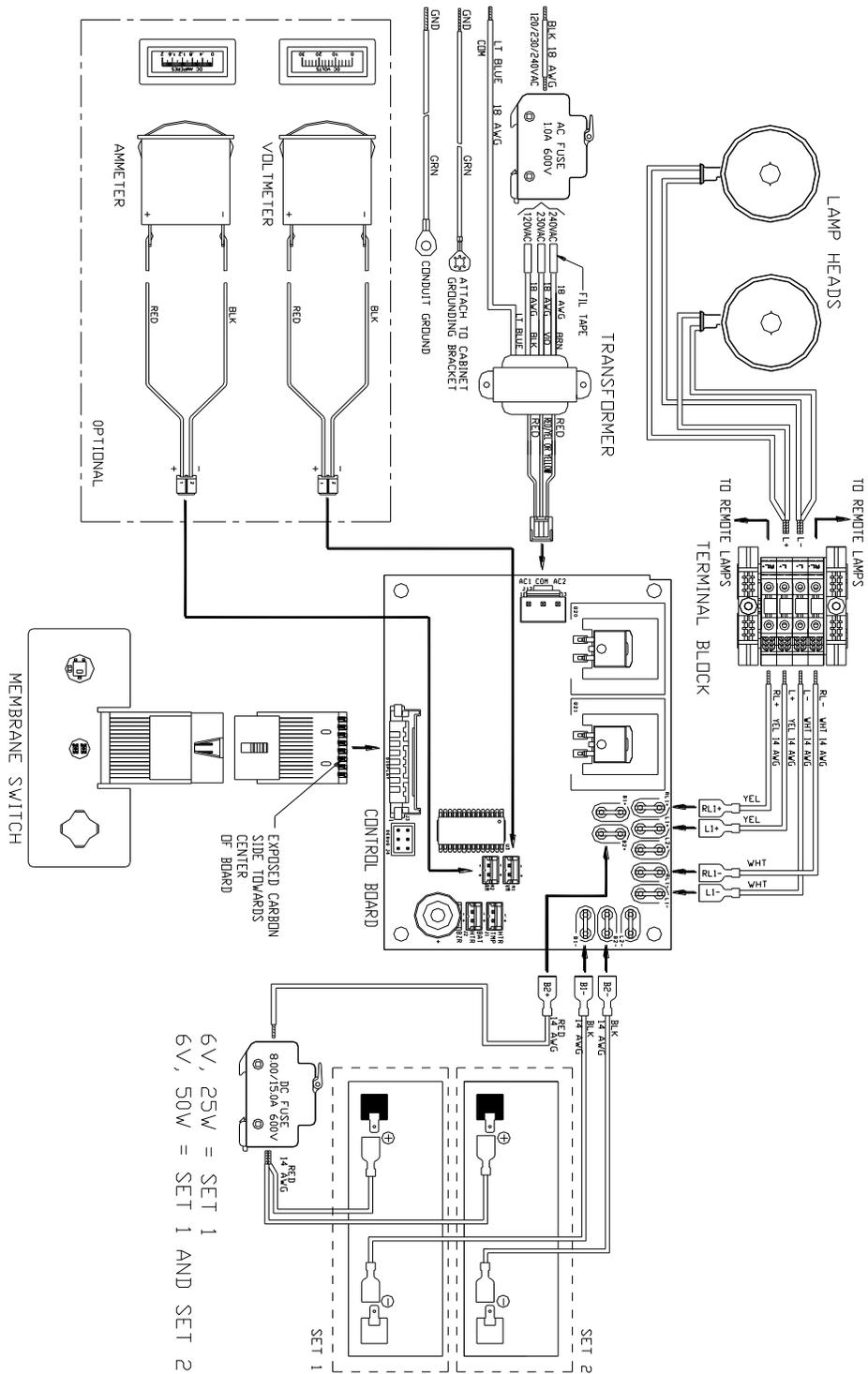
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# UNIT EQUIPMENT WIRING DIAGRAMS

## 6V, 25W, 50W & 75W



6V, 25W = SET 1  
 6V, 50W = SET 1 AND SET 2

Figure 6



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# UNIT EQUIPMENT WIRING DIAGRAMS

## 12V, 25W, 50W, 75W, 100W, 125W, & 150W

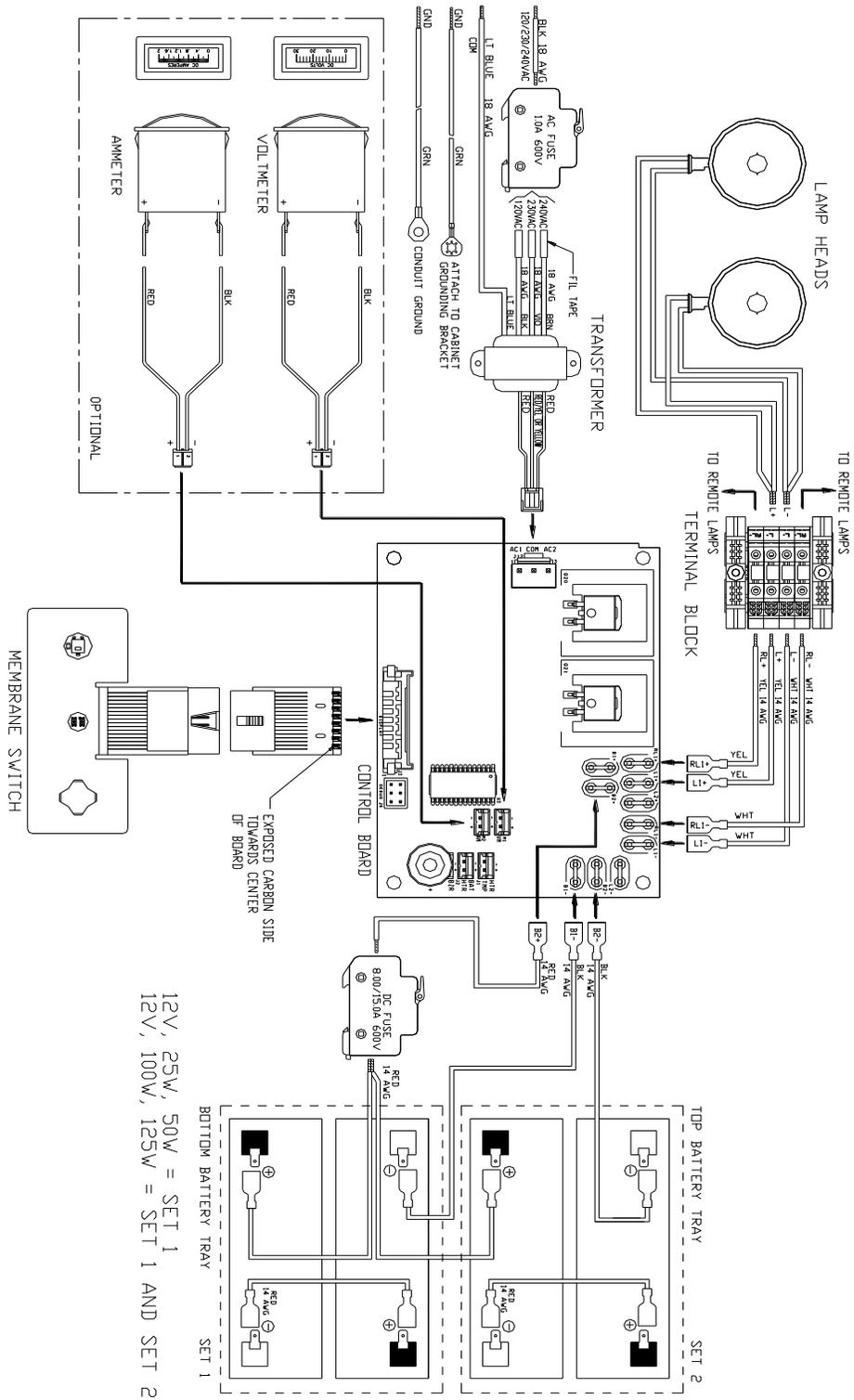


Figure 7