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## **FTS 430/830-2EN Addendum to the Approach Lighting System**

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**Reference Manual**

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# Section 1 — FTS 430-2EN/830-2EN Description

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## System

The FTS 430-2EN/830-2EN Approach Lighting System operates in the same way as the FTS 430/830 System described in the parent manual. It controls the lights in the same way and the lights can be connected with the same configurations as described there. The enclosure and internal component locations are different as described following.

The FTS 430-2EN/830-2EN Approach Lighting System is designed to operate with the FTM 181 Monitor, which monitors the lights for flashing errors.

## Differences

The major difference between these systems are their respective power converters. The differences are as follows:

- The power converter is housed in a stainless steel enclosure.
- The power converter parts are arranged differently.
- The following parts are different.:
  - 18-position Terminal Strip TB1 — PN 4901930
  - Surge Suppressor Board PCB5 — PN 2865302
  - Lamp Outage Board — PN 2887801
  - R1 100Kohm — PN 6901761

## Specifications

### **Physical:**

**PC 430-2EN or PC 830-2EN Power Converter:**  
(H x W x D)

14.0 x 17.3 x 9.0 in., 51 lbs.  
356 x 438 x 229 mm, 23.2 kg.

Height, width, and depth include dimensions of the units as wall mounted.

## Component Removal and Replacement

Component location diagrams are provided in *Figure 1-4*. Internal wiring diagrams are provided in *Figure 1-3* and on the **Information Card** that is fastened inside the power converter cover.

Note the location and color of all wires that you disconnect. When you replace the wiring after you replace the components, ensure that the wiring conforms exactly to the wiring diagrams.

The general procedure for removing components is a logical one and is as follows:

1. Obtain access to the component in question:
  - a. Disconnect completely or partially the wiring to components first that prevent clear access.
  - b. Completely remove or relocate these components.
3. Disconnect the wiring to the component that you want to replace.
4. Remove this component.
5. Replace everything in the reverse order: first the component, then the wiring, then the components that allowed you access. In some cases, you may have to place some wires on the component before you fasten it in place, then replace the remaining wires.

Most components are relatively easy to access for removal. Only those that are more difficult are described.

## **Power Converter**

### **Capacitors**

Before removing or replacing a capacitor always ensure it is discharged by checking with a voltmeter directly across the terminals. Discharge a capacitor by placing a resistance (25 watts/10,000 ohms or greater) between its terminals. Direct shorting may damage the capacitor, and connecting the terminals to the equipment chassis may fail to discharge it.

Turn off power at the source before working on the equipment.

#### *Removal*

1. Disconnect the wires leading to capacitors.
2. Remove the hold-down screws.
3. Remove the top retaining rings if present.
4. Lift the capacitors from their receiving holes.

#### *Replacement*

1. Reverse the removal procedure.
2. Verify that wiring is in accordance with the wiring diagram on the Information Card. Wires must be replaced exactly as removed. In some instances, a quick-connect wire terminal does not seat properly if it is not placed on the terminal cluster exactly as it was before removal. This occurs by interference between the insulation on the wire terminal and the insulation surrounding their terminal cluster on the capacitor. FTCA recommends that you lightly squeeze the quick-connect wire terminals with pliers before reinstalling them over the capacitor terminal blades.

### **Component Bracket**

#### *Removal*

1. Remove PCB1.
2. Loosen the four truss-head screws in the base that fasten the bracket to the base.
3. Slide the bracket up off the screws. Be careful of the cable and cable connectors.

#### *Replacement*

1. Reverse the Removal sequence.
2. Verify that wiring matches the **Information Card** and restore the wire routing to its original state.

### **K1 High Mode Relay**

#### *Removal*

1. Remove the Component Bracket.
2. Carefully disconnect the wires from the terminals of K1 and note their locations so that you may more easily replace them.
3. Remove the screws that hold the K1 relay to the base.
4. Remove the K1 relay.

#### *Replacement*

1. Reverse the Removal sequence.

2. Verify that wiring matches the **Information Card** and restore the wire routing to its original state.

### **K2 Medium Mode Relay**

Removal and replacement of the K2 Medium Mode Relay are similar to those of the K1 High Mode Relay.

### **PCB1 Timing and Trigger Board**

PCB1 is mounted on the left side as you face the power converter.

#### *Removal*

1. Loosen the screws that hold PCB1 on TB3.
2. Loosen (but do not remove) the two screws located near the corners of the board.
3. Slide the board so that it clears the two screws and remove it from the power converter.

#### *Replacement*

1. Reverse the Removal sequence.

### **PCB2 HV Rectifier Board**

The HV rectifier board is mounted on the right side of the Component Bracket between the T1 Transformer and the Component Bracket. Use the following procedure:

#### *Removal*

1. If you have a right-angle Phillips-head screwdriver available, it is not necessary to remove the Component Bracket before doing Step 3. Otherwise, remove the Component Bracket.
2. Remove the screws holding the HV rectifier board to the terminal block TB4. Slide the circuit board out from under the terminal block screws.

#### *Replacement*

1. Reverse the Removal sequence.
2. Verify that wiring matches the **Information Card** and restore the wire routing to its original state.

### **PCB3 Sense Module**

#### *Removal*

1. Use a small 1/8" blade screwdriver to remove the yellow and wht/grn wires connected to the small terminal block on PCB3.
2. Disconnect the red wire on TB2-1 that passes through the coil on PCB3. Note the direction of this wire and the number of turns through the coil to replace it in the same way.

### *Replacement*

1. Reverse the Removal sequence.
2. Verify that wiring matches the **Information Card** and restore the wire routing to its original state.

### **PCB4 Light Outage Board**

#### *Removal*

1. See *Figure 1-4*.
2. Two 8-32 screws and two hexagonal standoffs fasten PCB5 to PCB4. Disconnect the wires from PCB5, remove these two holding screws, remove PCB5, and remove the two standoffs that supported PCB5 before removing PCB4.
3. Three remaining 8-32 screws fasten PCB4 to its support bracket. Five hexagonal standoffs hold PCB4 away from the support bracket.
4. Disconnect the wires from PCB4.
5. Remove the three remaining screws holding PCB4.

#### *Replacement*

1. Reverse the removal procedure.

### **R1 Resistor**

#### *Removal*

1. Remove the Component Bracket.
2. The screws that hold the wires to R1 also hold R1 in place. Carefully disconnect the wires from the terminals of R1 and note their locations so that you may more easily replace them.
3. Remove the resistors.

#### *Replacement*

1. Reverse the Removal sequence.
2. Verify that wiring matches the **Information Card** and restore the wire routing to its original state.

### **T1 Power Transformer**

#### *Removal*

1. Remove the four screws holding the transformer to the base plate and remove the transformer.

#### *Replacement*

1. Reverse the Removal sequence.
2. Verify that wiring matches the **Information Card** and restore the wire routing to its original state.

### **T3 Coupling Transformer**

#### *Removal*

1. Remove PCB1.
2. Loosen the four screws that hold the Component Bracket to the base.
3. Slide the Component Bracket up off the screws. Be careful of the cable and cable connectors.
4. Pay special attention to the orientation of the wires on the transformer and their connections. *Replace them in the same direction and with the same orientation.*

#### *Replacement*

1. Replace T3 in the reverse sequence to that of Removal. Note the connections to T3 as in Step 4 of the Removal, and replace the wires to their connections in the same way.
2. Verify that wiring matches the **Information Card** and restore the wire routing to its original state.

### **T4 Low Voltage Transformer**

#### *Removal*

1. Remove the Component Bracket.
2. Remove the wires that connect to T4.
3. Remove the two screws that fasten T4 to the baseplate.

#### *Replacement*

1. Reverse the removal procedure.
2. Verify that wiring matches the **Information Card** and restore the wire routing to its original state.

### **T5 Isolation Transformer**

#### *Removal*

1. Remove the Component Bracket.
2. Remove the wires that connect to T5.
3. Remove the two screws that fasten T5 to the baseplate.

#### *Replacement*

1. Reverse the removal procedure.
2. Verify that wiring matches the **Information Card** and restore the wire routing to its original state.

## **Parts**

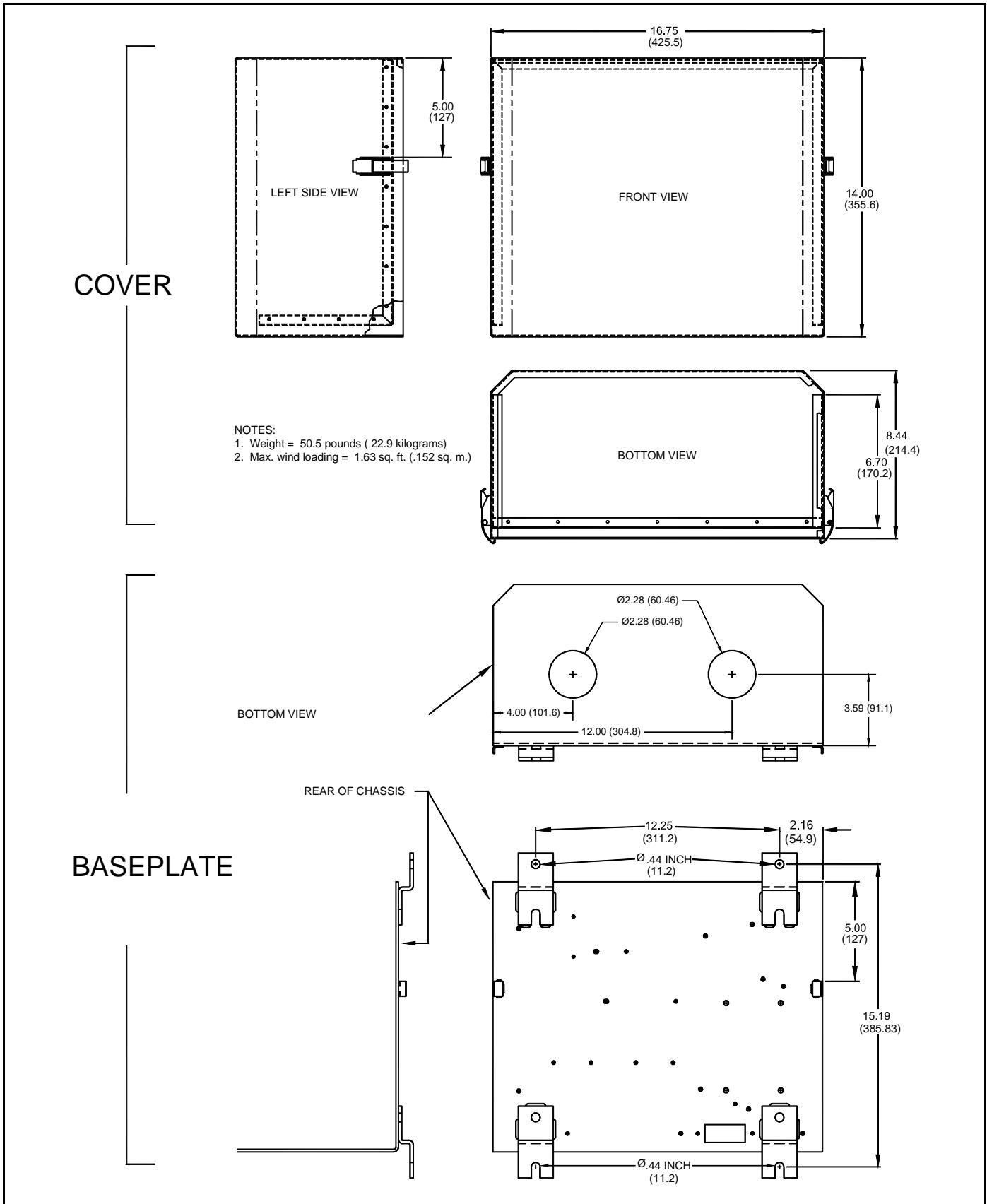
The following is the list of power converter  
replaceable parts for the FTS 430-830-3EN.

**Table 1-1 Power Converter Replaceable Parts**

Unit	Description	Part No.	Quantity
430	Capacitor, (C1), 20 mfd.	6731401	1
430	Capacitor, (C2), 40 mfd.	6386503	1
430	Capacitor, (C5), 15 mfd.	6731301	1
430	Capacitor, (C6), 15 mfd.	6731301	1
430	Capacitor, (C7), 8 mfd.	6731201	1
830	Capacitor, (C1), 20 mfd.	6731401	1
830	Capacitor, (C2), 70 mfd.	6720401	1
830	Capacitor, (C5), 15 mfd.	6731301	1
830	Capacitor, (C6), 15 mfd.	6731301	1
830	Capacitor, (C7), 5 mfd.	6731101	1
All	Choke, Flash (L2)	4175200	1
All	Enclosure	3727900	1
All	HV Rectifier Board (PCB2)	8711402	1 <sup>†</sup>
All	Lamp Outage Board (PCB4)	2887801	1
All	Surge Suppressor Board (PCB5)	2865302	1
All	Interlock Switch (S1)	4901220	1
All	Relay, Mode (K1, K2)	8328801	2 <sup>‡</sup>
All	Resistor, Bleed (R1), 35K	6900541	1
All	Resistor, Bleed (R2), 50K	6900542	1
All	Resistor, 1K 2W (R3)	8435211	1
All	Resistor, 1K 2W (R4)	8435212	1
All	Resistor, 1M 2W (R5)	8435206	1
All	Spacer, Ceramic	5900844	2
All	Terminal Strip, 18-position (TB1)	4901930	1
All	Terminal Strip, 8-Position (TB2)	8721008	1
All	Terminal Strip, 11-Position (TB3, TB4)	8721011	3
All	Timing and Trigger Board (PCB1)	2730300	1 <sup>†‡</sup>
All	Transformer, Power (T1)	8738302	1
All	Transformer, Trigger Coupling (T3)	8336710	1
All	Transformer, Low Voltage (T4)	8734500	1
All	Transformer, Isolation (T5)	4852801	1
All	Varistor (VR2)	8250801	1

<sup>†</sup> Recommended as a spare part.

<sup>‡</sup> Remove the programming matrix from the existing installed board and insert it into the new replacement board..



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**Figure 1-1 PC 430-2EN or PC 830-2EN Power Converter Mounting and Outline**

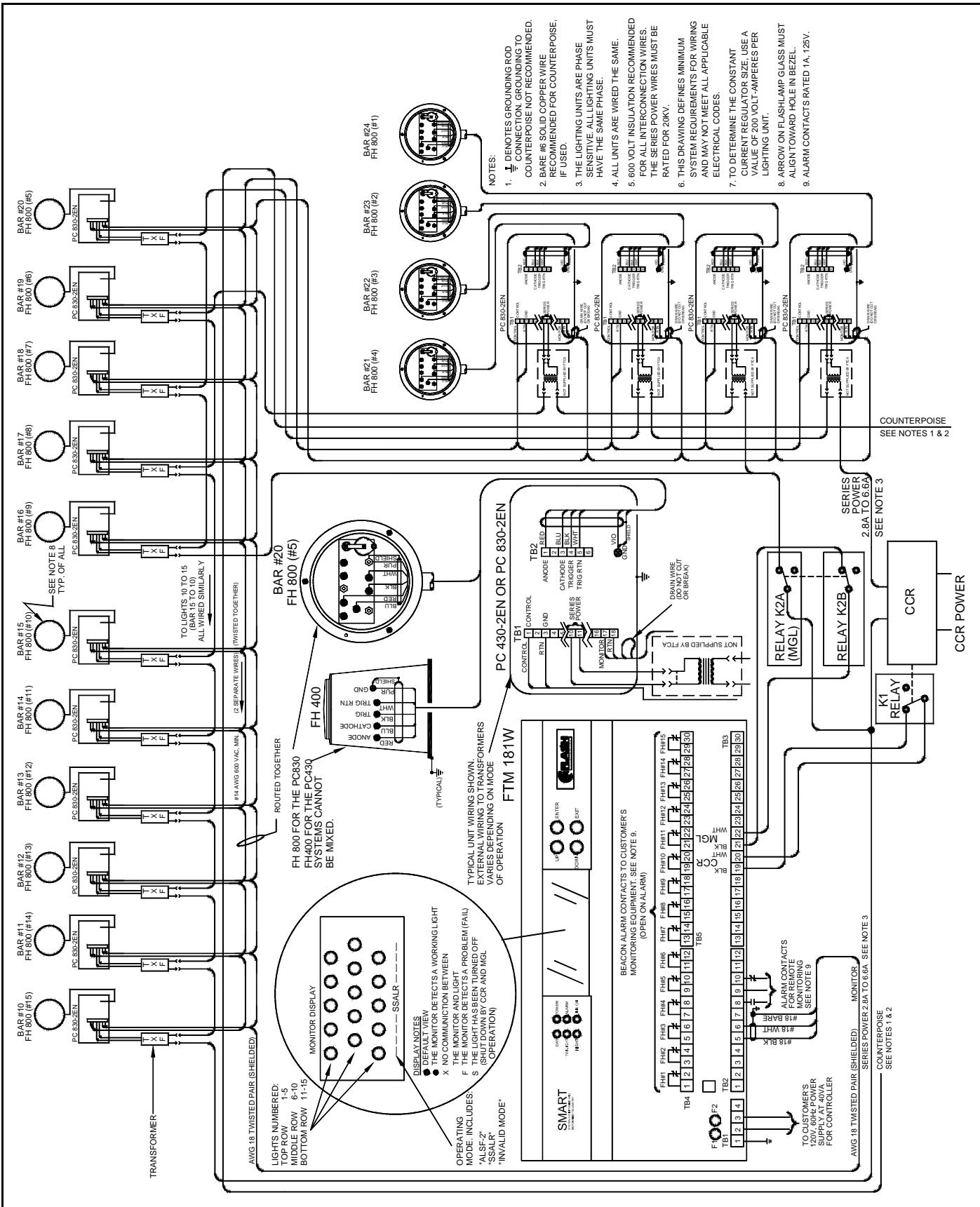
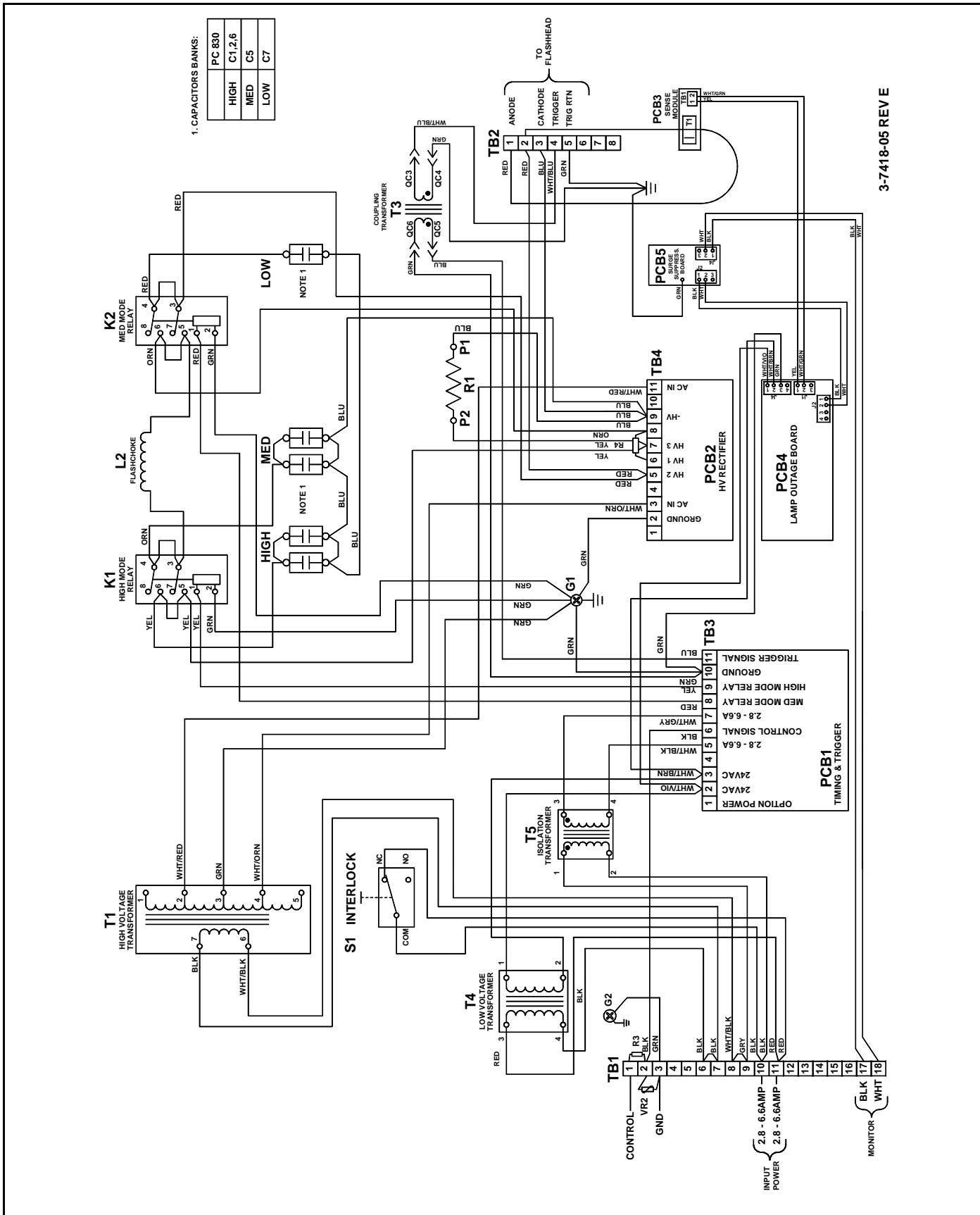


Figure 1-2 Typical FTS 430/830-2EN System Installation Wiring

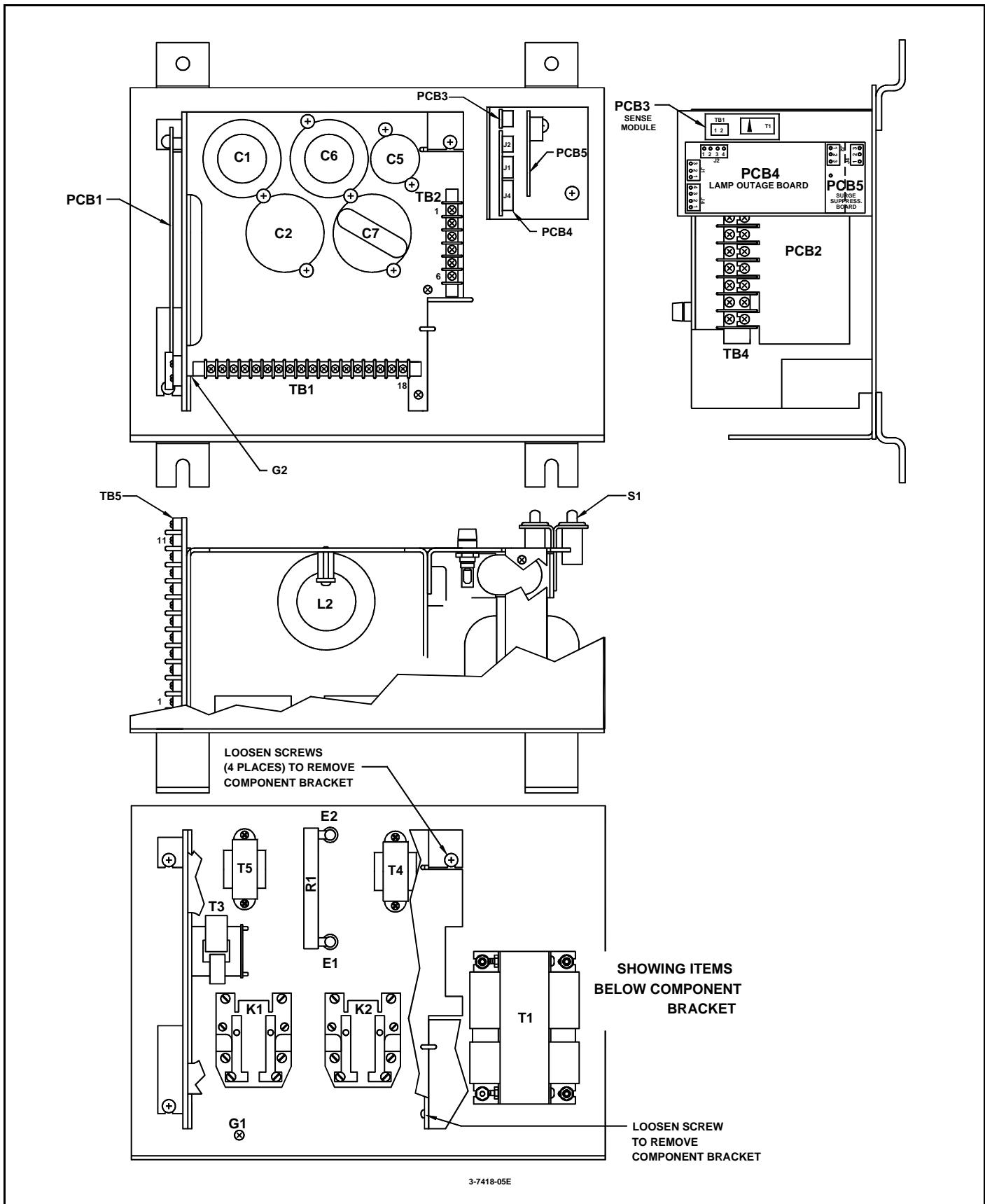


**Figure 1-3 PC 430-2EN or PC 830-2EN Power Converter Internal Wiring**

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**Figure 1-4 PC430-2EN or PC 830-2EN Power Converter Component Locations**