

## INSTALLATION INSTRUCTIONS FOR MODEL SPS8 STROBE POWER SUPPLY

### SAFETY MESSAGE TO INSTALLERS

People's lives depend on your safe installation of our products. It is important to read, understand and follow all instructions shipped with the products. In addition, listed below are some other important safety instructions and precautions you should follow:

- To properly install this unit: you must have a good understanding of automotive electrical procedures and systems, along with proficiency in the installation and use of safety warning equipment.
- When drilling into a vehicle structure, be sure that both sides of the surface are clear of anything that could be damaged.
- A light system is a high current device. In order for it to function properly, a separate ground connection must be made. If practical, it should be connected to the negative battery terminal. At a minimum, it may be attached to a solid metal body or chassis part that will provide an effective ground path as long as the light system is to be used.
- Do not drill any holes in the power supply housing.
- Locate light control so the VEHICLE and CONTROL can be operated safely under all driving conditions.
- You should frequently inspect the light system to ensure that it is operating properly and that it is securely attached to the vehicle.
- File these instructions in a safe place and refer to them when maintaining and/or reinstalling the product.

Failure to follow all safety precautions and instructions may result in property damage, serious injury, or death to you or others.

### WARNING

This power supply is designed to power various strobe heads designed by Federal Signal. Consult local codes and regulations to determine if the power supply/strobe head combination complies.

### I. GENERAL.

The Federal Model SPS8 strobe power supply is designed to operate on 11 to 16-volts DC (12.8, 13.6Vdc, or 14.2Vdc nominal). It is designed to power up to eight remote Federal strobe heads (Models GS2, GS2F, 141SH, 131SH, and GS5). Two synchronized SPS8's will provide a strobe system solution that complies with the KKK specification minimum lighting requirements. The SPS8 also has a diagnostic indication output to aid in troubleshooting power supply and strobe head failures.

This power supply can produce six different flashing patterns. The typical flashing pattern provides 75 alternating strobe flash clusters per minute with flash energy of up to 20.2 joules per flash cluster. In the primary and secondary mode, one of four types of flash patterns is available. These are: the traditional triple flash, the high power triple flash, the quadruple flash, and the action flash. In the low-power mode a double-flashing pattern or an action double-flashing pattern is available.

### II. SPECIFICATIONS.

Input Voltage	11Vdc to 16Vdc.
Input Current @ 14.2Vdc primary mode	15.6 amperes (traditional triple flash pattern) 17.5 amperes (high power triple flash pattern) 17.5 amperes (quadruple flash pattern) 16.7 amperes (action pattern) 9.7 amperes (low power pattern).
Input Current @ 12.8Vdc primary mode	16.4 amperes (traditional triple flash pattern) 18.3 amperes (high power triple flash pattern) 18.4 amperes (quadruple flash pattern) 17.9 amperes (action pattern) 9.9 amperes (low power pattern).
Fuse	25 amperes (automotive type).
Flash Energy Per Head/ Watts Per Head	
Traditional triple pattern	17.2 joules @ 14.2Vdc (per triple flash). 22 Watts.
High power triple pattern	20.0 joules @ 14.2Vdc (per triple flash). 25 Watts.
Quad pattern	20.2 joules @ 14.2Vdc (per quadruple flash). 25 Watts.
Action pattern	19.3 joules @ 14.2Vdc (per triple flash). 24 Watts.
Low power	11.6 joules @ 14.2Vdc (per double flash). 15 Watts.
Flash Rate	75 triple flashes per minute (triple and action patterns). 75 quadruple flashes per minute (quad pattern). 75 double flashes per minute (low power).
Dimensions:	
Length	8.9 inches
Width	10.8 inches
Height	2.8 inches
Net Weight	3 lbs. 6 oz.
Shipping Weight	4 lbs. 9 oz.

### III. INSTALLATION.

#### CAUTION

The power supply housing is NOT waterproof. It must be mounted in a location which is sheltered from falling rain, snow, standing water, etc. Also, it must be installed in an adequately ventilated area. Never install near heater ducts.

Do not mount the power supply unit under the vehicle's hood.

Plan all wiring and cable routing before performing any installation.

A. Mechanical.

1. Use the power supply as a template and scribe four drill positioning marks at the selected mounting location.

**CAUTION**

Before drilling holes in ANY part of a vehicle, be sure that both sides of the mounting surface are clear of parts that could be damaged; such as brake lines, fuel lines, electrical wiring or other vital parts.

**WARNING**

**DO NOT** drill holes in ANY part of the power supply chassis or cover. Damage to the unit, serious injury or death to you or others may result.

2. Drill four mounting holes at the position marks.
3. Secure the power supply to the mounting surface.
4. Install the strobe units as described in the instructions packed with the units.

B. Flashing Patterns.

When primary or secondary mode is activated, the strobe heads connected to the SPS8 will flash in one of four synchronized patterns. The flash pattern activated by the primary and secondary mode is selected by switches 3 and 4. These switches are labeled and may be accessed through the top cover (see figure 1). Table 1 shows the proper switch setting to select the appropriate flash pattern. When either of the triple flash patterns or the quad flash pattern is selected, the default low power flash pattern is a double flash. If the action flash pattern is selected, the default low power pattern is an action double flash. See figure 2 for relationship of flash pattern to strobe head outlets on SPS8.

In primary mode, all strobe head outlets on the SPS8 are enabled. When in secondary mode, strobe head outlets 4, 6, and 8 are disabled. Strobe head outlet 2 is enabled when switch 2 is ON, and disabled when switch 2 is off. Refer to table 1.

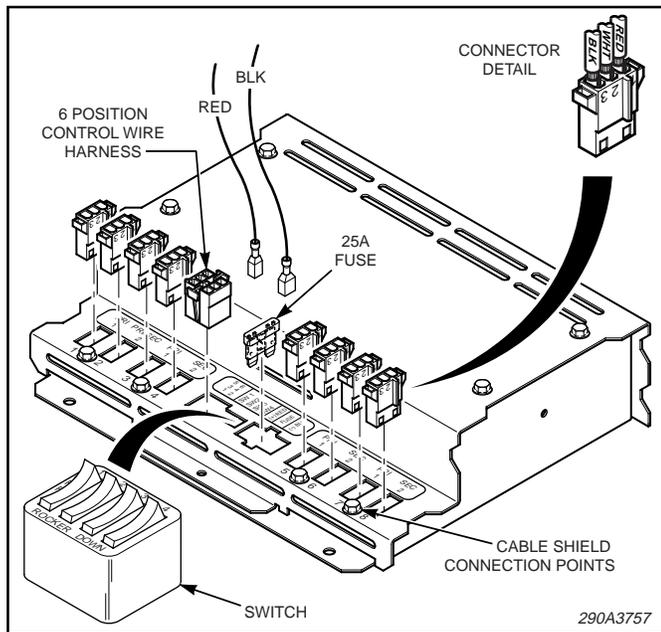


Figure 1.

Table 1. Flash Pattern.

Switch 1	Switch 2	Switch 3	Switch 4	Function
X	OFF	X	X	Outlet 2 disabled in secondary mode
X	ON	X	X	Outlet 2 enabled in secondary mode
X	X	OFF	OFF	Action Flash Pattern
X	X	OFF	ON	Quad Flash Pattern
X	X	ON	OFF	High Power Triple Flash Pattern
X	X	ON	ON	Traditional Triple Flash Pattern

**Note:** X signifies that the particular switch setting has no influence on the given function.

C. Electrical Connections.

**WARNING**

Failure to observe this WARNING may result in fire, burns or blindness.

If shorted to vehicle frame, high current conductors can cause hazardous sparks resulting in electrical fires or molten metal.

**DO NOT** connect this system to vehicle battery until ALL other electrical connections are made and mounting of all components is complete.

Verify that no short circuits exist, before making connection to the vehicle battery.

**CAUTION**

Electromagnetic radiation from interconnecting cables may adversely effect operation of sensitive electronic equipment. Ensure that all cable which connects the power supply unit to the strobe heads is shielded and that the shield is electrically connected only at the cable's power supply end.

1. Disconnect vehicle battery. Ensure that power is disconnected from all vehicle lighting control systems.
2. Ensure that the power supply chassis is grounded to the vehicle chassis. If necessary, connect a wire from the power supply chassis (mounting screw) to a known good vehicle chassis ground.

**IMPORTANT**

See figure 1 while completing the electrical connections.

3. Connect the user-supplied 12AWG black wire to the power supply's -/BLK terminal. Note that the quick-connect female terminal for the black wire connects to the PCB quick-connect male terminal. Dress the wire neatly, allowing for a drain loop and maintenance. Connect it to a known good vehicle chassis ground.

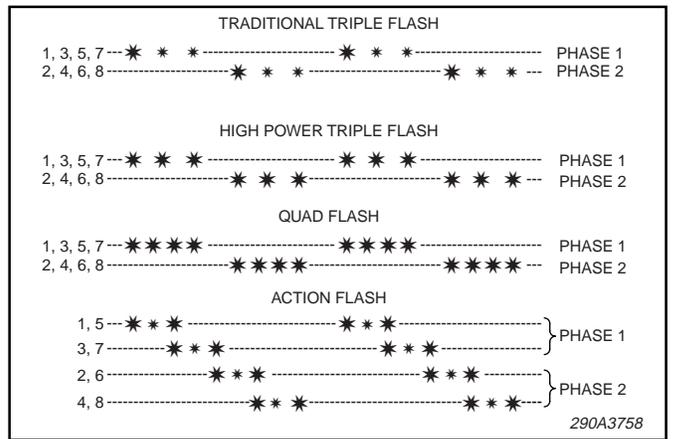


Figure 2.

### IMPORTANT

It is the installer's responsibility to determine an appropriate location in the vehicle circuitry to connect the mode control wires and the diagnostic wire.

4. See figure 3 for control wire harness connections.

a. Connect the control wire harness to the power supply.

b. Connect the LOW POWER (blue), SECONDARY (green), and PRIMARY (yellow) wires to the appropriate switches, relays, and/or vehicle lighting controller that are capable of applying a 12 volt source (0.1-ampere minimum).

c. If more than one SPS8 is required for the vehicle, they may be configured to generate synchronized flash patterns by connecting the gray wires together and the purple wires together.

### IMPORTANT

When the installed SPS8's are close to each other (less than 12-inches), connect the gray wires together. At distances greater than 12-inches, connect both the purple wires together and the gray wires together. At extreme distances, it may be necessary to twist the gray and purple wires together before connecting the purple wires together and the gray wires together.

d. The SPS8's status indication output provides an open collector output capable of switching 100-milliamperes (maximum) to ground. For diagnostic status indication of the warning light system, the brown wire should be wired to a self-powered status indicator.

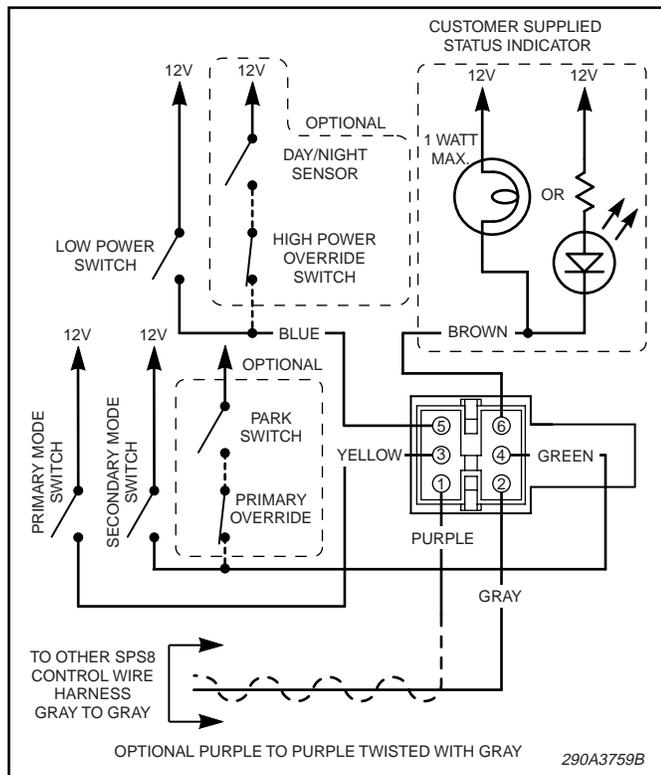


Figure 3.

### IMPORTANT

Ensure that the cable's shield is connected to ground **only** at the cable's power supply end.

5. Connect strobe head outlets to strobe head cables while noting proper configuration per vehicle application. See figure 3. Ensure that all strobe head cable's shields are grounded at the SPS8 cover. Allow for a drain loop and maintenance. If configuring the system to meet minimum KKK specifications, see figure 4 for suggested strobe head connections.

6. Connect the user-supplied 12AWG red wire to the power supply's RED/+ terminal. Note that the quick-connect male terminal for the red wire connects to a PCB quick-connect female terminal. Dress the wire neatly, allowing for a drain loop and maintenance. Connect it to the vehicle's 12 volt power source.

7. Check all connections and wiring. Ensure that there are no short circuits and that all wires are protected from any sharp edges. Reconnect the vehicle battery. Test for proper operation of the strobe system. Check all the flashing functions. If necessary, adjust the positions of the strobe head plugs connected to the power supply. When satisfied with the flashing patterns, use a permanent marker and mark the strobe plugs with the appropriate outlet numbers.

### IV. OPERATION.

#### SAFETY MESSAGE TO OPERATORS

Peoples' lives depend on your safe use of our products. Listed below are some important safety instructions and precautions you should follow:

- Do not attempt to activate or deactivate light control while driving in a hazardous situation.
- Although your warning system is operating properly, it may not be completely effective. People may not see or heed your warning signal. You must recognize this fact and continue driving cautiously.
- Also, situations may occur which obstruct your warning signal when natural or man-made objects are between your vehicle and others, such as: raising your hood or trunk lid. If these situations occur, be especially careful.
- At the start of your shift, you should ensure that the lights are securely attached and all units are operating properly.
- If a selected function does not perform properly or if any of the lamps remain illuminated when the control is off, disconnect the power connector from the control unit and contact the nearest service center.

Failure to follow these safety precautions may result in property damage, serious injury, or death to you, to passengers, or to others.

#### RETAIN AND REFER TO THIS MESSAGE

##### A. Primary Mode.

All strobe heads connected to the SPS8 are active. Strobe heads flash in the pattern selected by switches 3 and 4.

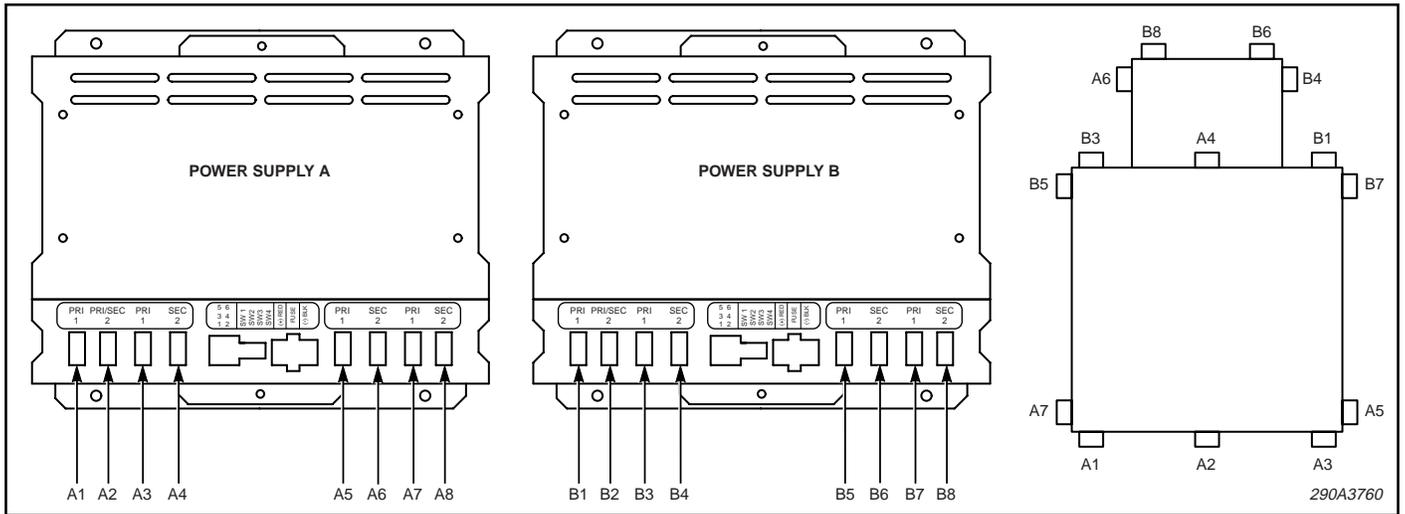


Figure 4.

**B. Secondary Mode.**

All phase 1 strobe heads are active. One phase 2 strobe head may be active depending on setting of switch 2. All other phase 2 strobe heads are inactive. Active strobe heads flash in the pattern selected by switches 3 and 4.

**C. Low Power Mode.**

All strobe heads activated by primary or secondary mode flash in a double flash pattern.

**D. Diagnostics.**

If used, the status indicator may provide visual information of normal operation and fault conditions. This information may be used to assist in troubleshooting a malfunction with the strobe light system. Refer to table 2 for description of status indication types.

**V. SERVICE.**

**WARNING**

High voltages are present in a strobe light system. Wait at least five (5) minutes, after shutting off power, before servicing the unit. Failure to do so may result in property damage, serious injury, or death to you and others.

Servicing should be performed by a qualified Federal Signal service center. If the power supply is not working properly,

Table 2. Status Indication and Fault Description.

Status Ind.	Primary/Secondary	Fault
OFF	OFF	None.
OFF	ON	No power at SPS8, blown fuse or power supply not operational.
ON	ON	None, normal operation.
Slow Flash	ON	Strobe head or heads not operating properly.
Fast Flash	ON	Low battery power ( below 11 Vdc) or power supply not operational.

disconnect power and ground to the unit. Next, disconnect the electrical connections to the strobe tubes. Remove the power supply from the vehicle. Send the unit to the nearest authorized service center or to the Federal Signal service department.

Communication and shipments should be addressed to:

Service Department  
 Federal Signal Corporation  
 2645 Federal Signal Drive  
 University Park, IL 60466

1-800-433-9132  
 (In Illinois) 708-534-3400

**WARNING**

The fuse **MUST** be replaced with an exact replacement only.

After servicing is complete, perform a test to ensure the power supply is operating properly.

**VI. REPLACEMENT PARTS.**

Description	Part No.
Fuse, 25 Ampere	148A142-07
Printed Circuit Board Assy.	2005048
Power Supply Unit	8575159
Accessory Kit	8575160

**VII. KIT CONTENTS LIST.**

Qty.	Description	Part No.
1	Terminal, Female	224A216-05
1	Terminal, Male	224253
1	Control Harness/Plug	1461204