Safety Message to Installers of Siren Speakers

⚠ WARNING

People's lives depend on your proper installation and servicing of Federal Signal products. It is important to read and follow all instructions shipped with this product. Listed below are some other important safety instructions and precautions you should follow.

- To properly install or service this equipment, you must have a good understanding of automotive mechanical and electrical procedures and systems, along with proficiency in the installation and service of safety warning equipment. Always refer to the vehicle's service manuals when performing equipment installations on a vehicle.

- To be an effective warning device, this product produces bright light that can be hazardous to your eyesight when viewed at a close range. Do not stare directly into this lighting product at a close range, or permanent damage to your eyesight may occur.

- Do not install the light system in an area that would block, impair, or blind the driver's vision. Ensure that the light system is mounted in a position that is outside the driver's field of vision so the driver can safely operate the vehicle.

- A light system is a high current system. For the system to function properly, a separate negative (–) connection and positive (+) connection must be made. All negative connections should be connected to the negative battery terminal, and a suitable fuse should be installed on the positive battery terminal connection as close to the battery as possible. Ensure that all wires and fuses are rated correctly to handle the device and system amperage requirements.

- Never attempt to install aftermarket equipment that connects to the vehicle wiring without reviewing a vehicle wiring diagram available from the vehicle manufacturer. Ensure that your installation will not affect vehicle operation or mandated safety functions or circuits. Always check the vehicle for proper operation after installation.

- The lighting system components, especially the outer housing, get hot during operation. Disconnect power to the system and allow the system to cool down before handling any components of the system.

- Do not mount a radio antenna within 18 inches (45.7 cm) of the lighting system. Placing the antenna too close to the lighting system could cause the lighting system to malfunction or be damaged by strong radio fields. Mounting the antenna too close to the lighting system may also cause the radio noise emitted from the lighting system to interfere with the reception of the radio transmitter and reduce radio reception.

- Do not attempt to wash any unsealed electrical device while it is connected to its power source.

- DO NOT connect this system to the vehicle battery until ALL other electrical connections are made, mounting of all components is complete, and you have verified that no shorts exist. If the wiring is shorted to the vehicle body or frame, high current conductors can cause hazardous sparks, resulting in electrical fires or flying molten metal.

- DO NOT install equipment or route wiring (or the plug-in cord) in the deployment path of an airbag.

- Before drilling into a vehicle structure, ensure that both sides of the surface are clear of anything that could be damaged. Remove all burrs from drilled holes. To prevent electrical shorts, grommet all drilled holes through which wiring passes. Ensure that the mounting screws do not cause electrical or mechanical damage to the vehicle.

- Because vehicle roof construction and driving conditions vary, do not drive a vehicle with a magnetically mounted warning light installed. The light could fly off the vehicle, causing injury or damage. Repair of damage incurred because of ignoring this warning shall be the sole responsibility of the user.

- Locate the light system controls so the VEHICLE and CONTROLS can be operated safely under all driving conditions.

- After installation, test the light system to ensure that it is operating properly.

- Test all vehicle functions, including horn operation, vehicle safety functions, and vehicle light systems to ensure proper operation. Ensure that the installation has not affected the vehicle operation or changed any vehicle safety function or circuit.

- Scratched or dull reflectors or lenses will reduce the effectiveness of the lighting system. Avoid heavy pressure and the use of caustic or petroleum-based products when cleaning the lighting system.

- Replace any optical components that may have been scratched or crazed during system installation.

- Do not attempt to activate or deactivate the light system controls while driving in a hazardous situation.

- Frequently inspect the light system to ensure that it is operating properly and that it is securely attached to the vehicle.

- After installation and testing are complete, provide a copy of these instructions to instructional staff and all operating personnel.

- 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.

Introduction

The light head uses an LED light source to provide a reliable signal with 25 selectable flash patterns. The light head may be flush mounted or attached to brackets. The light can operate on a nominal 12 or 24 Vdc power source. A five-conductor cable protrudes from the base. This light head features FSLink™. It can be synchronized with up to eight other FSLink products.

Table 1 Specifications

| Input Voltage	11 TO 28 Vdc
Nominal Current Draw	MPS3U 0.4 A at 12 V, 0.2 A at 24 V MPS6U 0.8 A at 12 V, 0.4 A at 24 V MPS12U 1.5 A at 12 V, 0.8 A at 24 V
Dimensions (With Bezel)	MPS3U 3.5 x 1.3 x 0.4 inches (8.89 x 3.30 x 1.02 cm)
	MPS6U 5.2 x 1.3 x 0.4 (13.21 x 3.30 x 1.02 cm)
	MPS12U 5.3 x 1.9 x 0.4 (13.46 x 4.83 x 1.02 cm)
Product Weight	MPS3U 0.10 lb (0.05 kg)
	MPS6U 0.13 lb (0.06 kg)
	MPS12U 0.20 lb (0.09 kg)

Unpacking the Kit

After unpacking the kit, inspect it for damage that may have occurred in transit. If it has been damaged, do not attempt to install or operate it. File a claim immediately with the carrier, stating the extent of the damage. Carefully check all envelopes, shipping labels, and tags before removing or destroying them. Ensure that the parts in the Table 2 are included in the package. If you are missing any parts, contact Customer Support at 1-800-264-3578, 7 a.m. to 5 p.m., Monday through Friday (CT).

Table 2 Kit contents

Qty.	Description	Part Number
2	#6 Phillips Pan Head Stainless Steel Screw	7011205-12
1	MPS3U Gasket	861302855
	MPS6U Gasket	861302587
	MPS12U Gasket	861302850
1	MPS3U Bezel, Black	861302854-B
	MPS6U Bezel, Black	861302130-B
	MPS12U Bezel, Black	861302849-B

Figure 1 Exploded view

POS. 1: RED
POS. 2: BROWN
POS. 3: WHITE
POS. 4: GREEN
POS. 5: BLACK
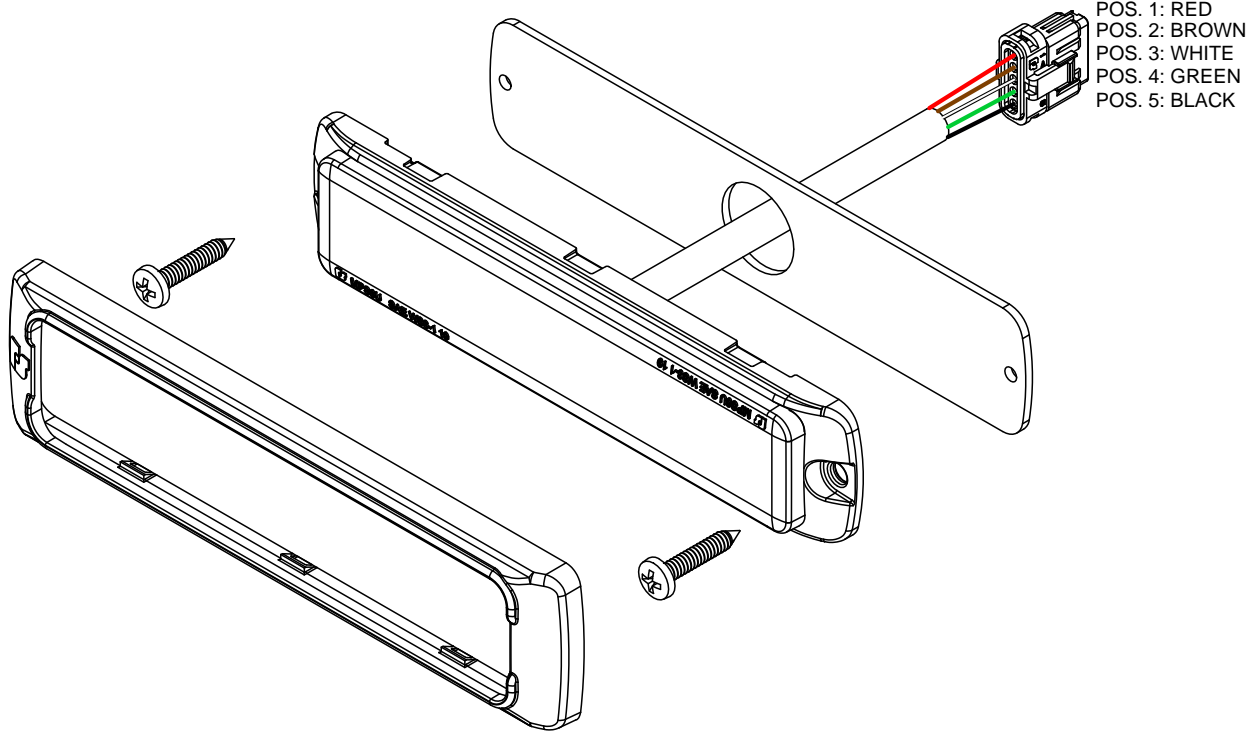
Mounting the Light Heads

⚠ WARNING

AIRBAG DEPLOYMENT: Do not install equipment or route wiring in the deployment path of an airbag. Failure to observe this warning will reduce the effectiveness of the airbag or potentially dislodge the equipment, causing serious injury or death.

To mount the light head:

1. Using the light head as a guide or the dimensions in Figure 2, scribe the three drill position marks at the selected mounting location.

Figure 2 Drilling

3.05 in

MPS3U

4.72 in

MPS6U

4.72 in
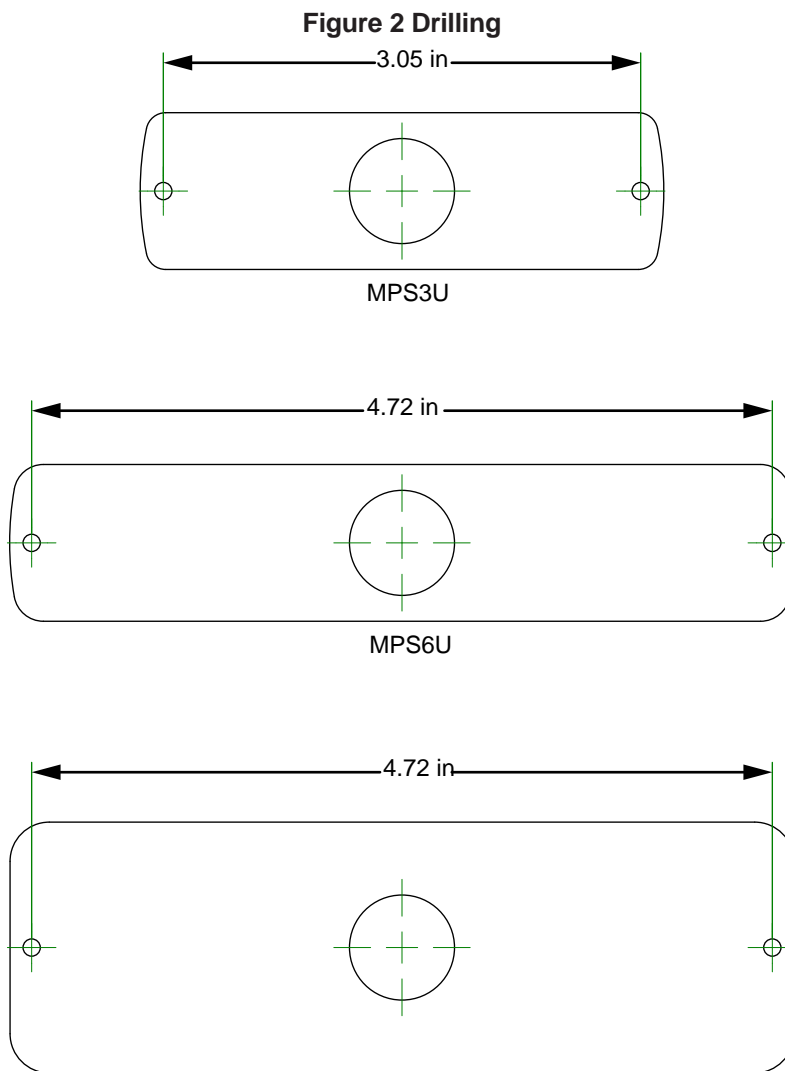
NOTICE

DRILLING PRECAUTIONS: Before drilling holes, check the area you are drilling into to be sure you do not damage vehicle components while drilling. All drilled holes should be de-burred and all sharp edges should be smoothed. All wire routings going through drilled holes should be protected by a grommet or convolute/split loom tubing.

2. Drill two 1/8-inch mounting holes and an 11/16-inch wire routing hole at the marked positions.

Installing and Maintaining the Light Head
Wiring the Light Head

NOTICE

REVERSE POLARITY/MISWIRING: To avoid damage to the light, ensure that the input voltage is the same as the voltage rating of the light. Ensure that correct polarity is observed.The unit must be properly fused with a 2 A fuse.

To wire the light head without the included waterproof connector:

1. Determine the required functions and the length of wires needed to access them. A five-conductor cable can be selected for a full-featured installation. For lengths up to 15 feet (5 m), use a minimum of 18 AWG (1 mm^2) wire. For lengths over 15 feet, use a minimum of 16 AWG (1.5 mm^2) wire. Before wiring the light head, refer to Table 3 for the function of each wire.

Table 3 Wire connections

Color	Description	Connection Point
Black	Ground	Battery Negative
Red	Mode 1	Switched Positive 12-24 Vdc
White	Mode 2	Switched Positive 12-24 Vdc
Brown	Mode 3	Switched Positive 12-24 Vdc
Green	Program/FSLink	12-24 Vdc (for Programming Only)

2. Strip 1/4 inch (5 mm) of insulation from the ends of the installer-supplied wires.

3. Use insulated butt connectors to connect the wires to the power cable of the light head. Ensure that the connectors are securely crimped and properly insulated.

4. Connect the end of the fuse holder to the positive (+) terminal of the voltage source.

5. Connect the black wire from the light head to a known good vehicle ground as close to the light head as practical.

6. The black wire is ground and must be connected to a suitable chassis ground if it cannot be taken directly to the negative terminal of the battery.

7. The green wire has multiple functions: If using the light head with an external flasher, this wire is tied directly to chassis ground. This allows an external flasher to control each color independently via the Mode wires. If using the light head's internal flasher, it is the runner wire that synchronizes FSLink$_{TM}$ equipped products, and it serves as the function/pattern programming wire.

8. The red wire powers the light head in Mode 1 when connected to a fused, positive voltage.

9. The white wire powers the light head in Mode 2 when connected to a fused, positive voltage.

10. The brown wire powers the light head in Mode 3 when connected to a fused, positive voltage.

 NOTE: Mode 3 overrides Mode 2, which overrides Mode 1.

Configuring the Light Head

If the light head's operating functions are to be changed from the default perform the following steps.

Selecting a Flash Pattern

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For available flash patterns, see Table 7 on page 9.

To select a flash pattern:

1. Select Mode 1 (red wire), Mode 2 (white wire), or Mode 3 (brown wire).

2. Apply power (+12-24 Vdc) to that wire.

3. To activate FSLink™, tap the green wire to + 12-24 Vdc until the desired pattern is reached.

NOTE: When tapping the green wire to change patterns, do not hold power for longer than one second, or other features of the light head can change.

Selecting FSLINK Sync or Alt Flash

The light head can synchronize with other light heads. It will either flash with or alternate the timing of the flashes with other light heads. Select this feature separately for each mode.

To synchronize your selected flash pattern:

1. Activate a Mode.

2. Connect and hold the green wire to the positive voltage source until the light head pulses twice, and then release it.

   The light head switches from its initial setting to its opposite. "Sync Flash" becomes "Alternate Flash" or vice versa.

3. To synchronize, after setup, connect the green wires together.

For this feature to operate, permanently connect all green wires after all light heads in the system are configured.

NOTE: For sync to work properly, all light heads connected via FSLink must have the same pattern selected for all modes used.

Selecting Flash Color(s) (if equipped with more than one color)

The light head can be made to either flash a single, dual, or triple color. This is done separately for each Mode.

To select the number of colors for a mode's flash pattern:

1. Activate the mode for which this color feature is to be set.

2. Connect and hold the green wire to the power until the light head pulses three times, and then release it.

3. The light head switches from its initial setting to add the next available number of colors.

4. Repeat until the desired color(s) are flashing.

NOTE: Changing the Flash Color(s) also resets the Color Order (see below).

Selecting the Color Order (if "Flash Colors" is set to flash more than one color)

You can set the order in which a light head flashes the colors. The order is selected separately for each Mode.

To select the color order:

1. Activate the Mode for which this color feature is to be set.

2. Hold the green wire to the positive voltage source until the light head pulses four times, and then release the wire. The light head switches color from the initial setting to the next color. For example, a dual-color, amber-red light head set to flash amber and then red will change to flashing red and then amber.

Selecting the Split Zone Flash Settings (MPS6U and MPS12U Only)

You can set whether the light head flashes all zones together or alternates them. The split zone setting is selected separately for each Mode.

To select the split zone settings:

1. Activate the Mode for which this split zone feature is to be set.

2. Hold the green wire to the positive voltage source until the light head pulses five times, and then release the wire. The light head switches zone settings from the initial setting to the next available split zone setting. For example, the MPS6U can switch from all zones simultaneous flashing to vertical split flashing. The MPS12U includes vertical, horizontal, and quad-x split zone settings.

Selecting the Brightness

You can set one of three brightness settings for each mode (Full, Dim, and Cruise).

To select the brightness setting:

1. Activate the Mode for which this feature is to be set.

2. Hold the green wire to the positive voltage source until the light head pulses six times, and then release the wire. The light head switches intensity from the initial setting to the next available intensity setting.

Resetting the Light Head to the Default Settings

To reset the light head mode to the default settings, apply power to the green wire while any Mode is powered.

Hold the wire to the power source until the light head pulses seven times and then remove power. All Modes and options will reset to the default configuration.

NOTE: If the green wire is held for more than 8 seconds, no change occurs and the light head will resume normal operation.

Cleaning the Light Heads

Periodically cleaning the light heads using proper procedures and compatible cleaners will prolong their service life.

NOTICE

CRAZING/CLEANING SOLUTIONS: The use of cleaning solutions, such as strong detergents, solvents, and petroleum products, can cause crazing (cracking) of the light bar lens and reflectors. To clean the reflectors, use a soft, damp cloth. To clean the lens, use a soft cloth and a solution of water and a mild detergent.

⚠ WARNING

CRAZING/CHEMICALS: Crazed, cracked or faded lenses or reflectors reduce the light output and the effectiveness of the lighting system. A lens or reflectors showing this type of aging must be replaced. Failure to follow this warning may result in bodily injury or death.

Quick Reference

Table 4 Light Head Wiring

Wire	Internal Flasher Mode	External Flasher Mode
Red	To +VDC for Mode 1	To +VDC for Color 1 Steady
White	To +VDC for Mode 2	To +VDC for Color 2 Steady
Brown	To +VDC for Mode 3	To +VDC for Color 3 Steady
Green	FSLink Sync	To - Chassis Ground
	+VDC for Programming	
Black	To - Chassis Ground	To - Chassis Ground

Table 5 Programming Quick Reference

Program Wire Held	Feedback	Programming Sel.
Less than 1 Second	1 Flash	Pattern Select
Between 1-2 Seconds	2 Flashes	FSLink Sync or Alt
Between 2-3 Seconds	3 Flashes	Flash Color(s) Select
Between 3-4 Seconds	4 Flashes	Color Order Select
Between 4-5 Seconds	5 Flashes	Split Flash Select
Between 5-6 Seconds	6 Flashes	Brightness Select
Between 6-7 Seconds	7 Flashes	Default ALL Modes

Table 6 Internal Flasher Mode Defaults

Mode 1 - Flash Pattern #10	Steady Burn, Cruise Intensity
Mode 2 - Flash Pattern #1	Triple 92.3 FPM, All Colors
Mode 3 - Flash Pattern #10	Steady Burn, Full Intensity

Table 7 Flash Patterns

No.	Description	Flash Pattern Compliance
1	Triple 92.3	SAE/NFPA/TRIPLE-K
2	Triple 90	SAE/NFPA/TRIPLE-K
3	Single 122	SAE/R65/NFPA/TRIPLE-K
4	Single 75	SAE/TITLE13/NFPA/TRIPLE-K
5	Single 90	SAE/TITLE13/NFPA/TRIPLE-K
6	Single 113	SAE/TITLE13/NFPA/TRIPLE-K
7	Cruise Flicker	n/a
8	Mega 375	-
9	Random	SAE/TITLE13
10	Steady Burn	n/a
11	Single 75	SAE/TITLE13/NFPA/TRIPLE-K
12	Single 120	SAE/TITLE13/NFPA/TRIPLE-K
13	Double 80	SAE/TITLE13/NFPA/TRIPLE-K
14	Double 120	SAE/TITLE13/R65/NFPA/ TRIPLE-K
15	Triple 80	SAE/TITLE13/NFPA/TRIPLE-K
16	Triple 120	SAE/TITLE13/NFPA/TRIPLE-K
17	Quad 60	SAE/TITLE13
18	Quad 75	SAE/TITLE13/NFPA/TRIPLE-K
19	Quad 95	SAE/TITLE13/NFPA/TRIPLE-K
20	FedPulse 75	SAE/TITLE13
21	Quint 75	SAE/TITLE13/NFPA/TRIPLE-K
22	Seven X 80	SAE/TITLE13/NFPA/TRIPLE-K
23	SingleQuad 120	SAE/TITLE13/NFPA/TRIPLE-K
24	Decelerating 60	SAE/TITLE13
25	Accelerating 60	SAE/TITLE13

Getting Technical Support

For technical support, please contact:

Federal Signal Corporation
Service Department
Phone: 1-800-433-9132
Email: empserviceinfo@fedsig.com

Getting Repair Service

The Federal Signal factory provides technical assistance with any problems that cannot be handled locally. Any product returned to Federal Signal for service, inspection, or repair must be accompanied by a Return Material Authorization (RMA). Obtain an RMA from a local Distributor or Manufacturer's Representative. Provide a brief explanation of the service requested or the nature of the malfunction.

Address all communications and shipments to the following:

Federal Signal Corporation
Service Department
2645 Federal Signal Dr.
University Park, IL 60484-3167

Limited Warranty

This product is subject to and covered by a limited warranty, a copy of which can be found at www.fedsig.com/SSG-Warranty. A copy of this limited warranty can also be obtained by written request to Federal Signal Corporation, 2645 Federal Signal Drive, University Park, IL 60484, email to info@fedsig.com or call +1 708-534-3400.

This limited warranty is in lieu of all other warranties, express or implied, contractual or statutory, including, but not limited to the warranty of merchantability, warranty of fitness for a particular purpose and any warranty against failure of its essential purpose.

FEDERAL SIGNAL
Safety and Security Systems

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