



INSTRUCTION SHEET FOR FEDERAL SIGNAL LITESTAK™ SOUND MODULE MODELS LSS-024 AND LSS-120

SAFETY NOTICES

WARNING

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

SAFETY MESSAGE TO INSTALLERS, USERS, AND MAINTENANCE PERSONNEL

It is important to follow all instructions shipped with this product. This device is to be installed by a trained electrician who is thoroughly familiar with the National Electrical Code and will follow the NEC Guidelines as well as local codes.

This device may be considered a part of the signalling system and not the entire signalling system.

The selection of the mounting location for the device, its controls and the routing of the wiring is to be accomplished under the direction of the facilities engineer. In addition, listed below are some other important safety instructions and precautions you should follow:

- Read and understand all instructions before installing or operating this equipment.
- Do not connect this unit to the system when power is on.
- After installation, ensure that all screws and threaded joints are properly tightened.
- After installation, test the unit to ensure that it is operating properly.
- After testing is complete, provide a copy of this instruction sheet to all operating personnel.
- Establish a procedure to routinely check the unit installation for integrity and proper operation.

A. General.

The FEDERAL Sound Module is a microcontroller-based audible signalling device. Designed for use as the top module on the LITESTAK, this plug-in unit is capable of producing one of eighteen different tones. It contains all of the circuitry necessary to generate and amplify the selected tone, as well as a one watt speaker to produce the signalling tone. Tone selection is accomplished by programming the 5 position DIP switch on the circuit board contained inside the module. The module can be programmed at a later time to produce a different tone simply by changing the settings of the DIP switch. The FEDERAL Sound Module is available in 24VDC and 120VAC, Models LSS-024 and LSS-120, respectively. This device is UL (Underwriters Laboratories) Listed for indoor use and CSA (Canadian Standards Association) certified.

B. Unpacking.

After unpacking the Sound Module, examine it carefully for possible damage that may have occurred in transit. If the equipment has been damaged, immediately file a claim with the carrier stating the extent of damage. Carefully check all shipping labels and tags for special instructions before removing or destroying them.

C. Power Requirements.

1 Sound Module	0.18A, 24VDC 0.07A, 120VAC
4 Light Modules and 1 Sound Module	2.5A, 24VDC 1A, 120VAC

D. Electrical Connections.

WARNING

To avoid electrical shock hazards, do not connect wires when power is applied.

The Sound Module is a plug-in unit completely wired at the factory and does not require any additional wiring. The Sound Module is controlled by the white/black wire in the Base (Model LSB). See Table 1. Since the white/black wire also provides control to the Clear Light Module, a Clear Light Module cannot be installed in a LITESTAK which contains a Sound Module. The control wire for the Sound Module and each Light Module in the LITESTAK must be connected to a control device. See figures 1, 2, and 3 for examples of wiring the modules to a control device. Control device rating must be capable of handling the power requirements shown in paragraph C. above. For additional information on Base and Light Module installation and electrical connections, refer to the appropriate instruction sheets.

NOTE

The Sound Module is not intended for operation with the flasher provided with Litestak Base Assembly LSB-120.

E. Sound Module Installation.

CAUTION

Do not install the Sound Module, or any of the Light Modules, when power is on.

NOTE

The Sound Module must be the top module on the LITESTAK.

After wiring of the base is complete, any Light Modules to be installed are assembled to the Base in the color sequence determined by the user. To install the Light Modules, refer to the appropriate instruction sheet. The Sound Module is designed to be plugged-in as the top module on the

Module Model No.	Lens Color	Control Wire Color (in Base)
LSL-024, 120G, 240G	Green	WHT/GRN
LSL-024A, 120A, 240A	Amber	WHT/YEL
LSL-024R, 120R, 240R	Red	WHT/RED
LSL-024B, 120B, 240B	BLue	WHT/BLU
LSL-024C, 120C, 240C	Clear	WHT/BLK
LSS-024, 120	Black grille	WHT/BLK

Power Connections: For HOT (+), NEUTRAL (-), and GROUND connections to the LITESTAK, see figures 1, 2, and 3 (wiring diagrams).

Table 1.

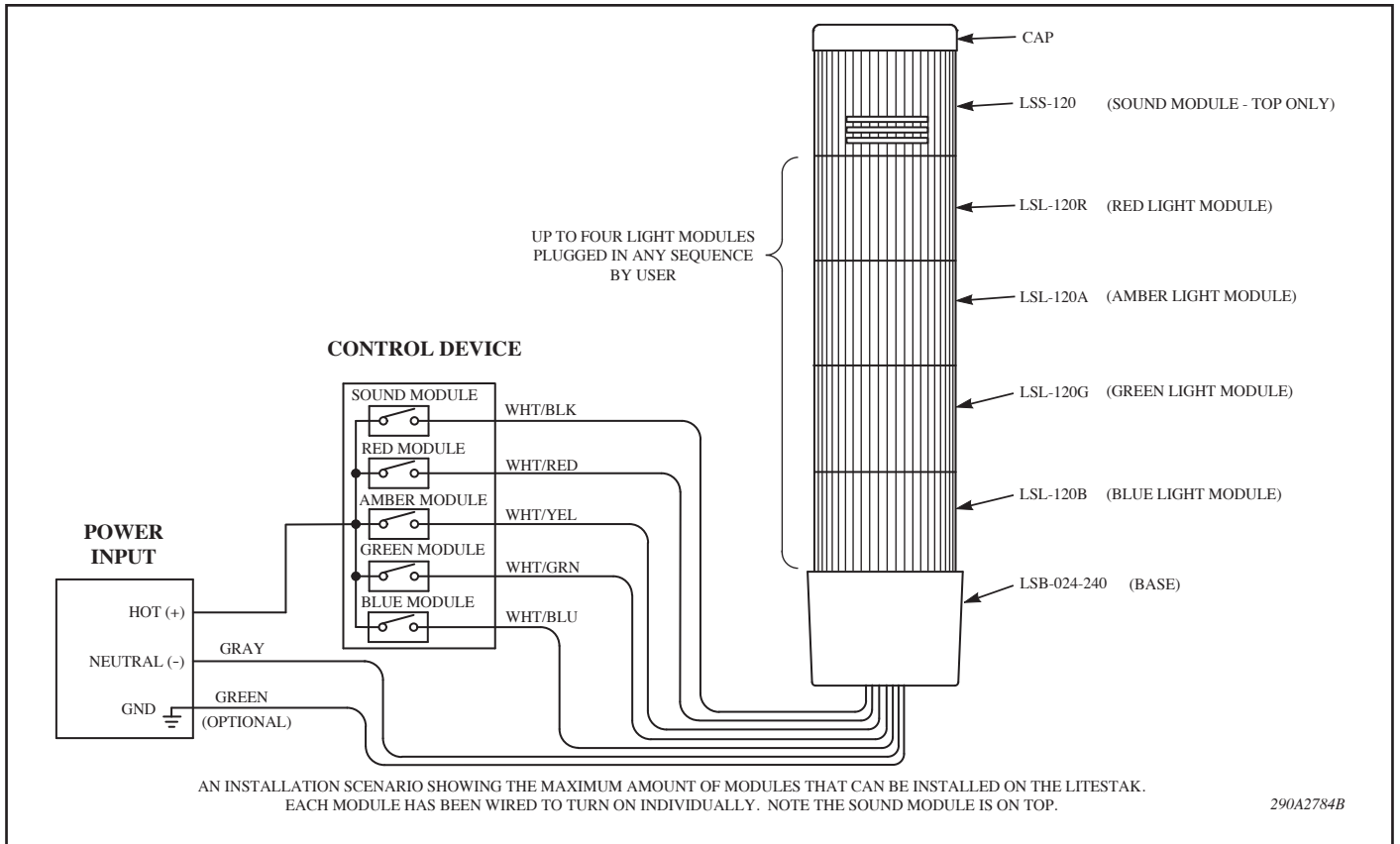


Figure 1.

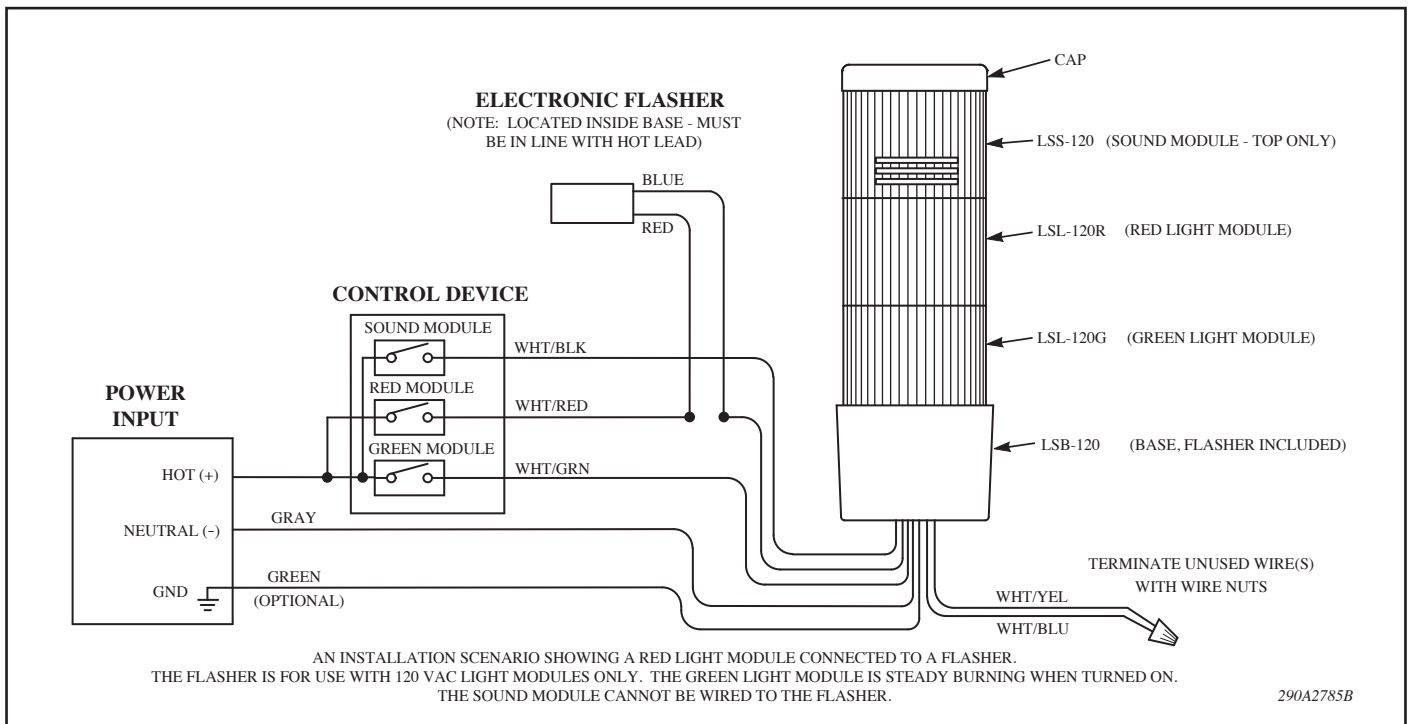


Figure 2.

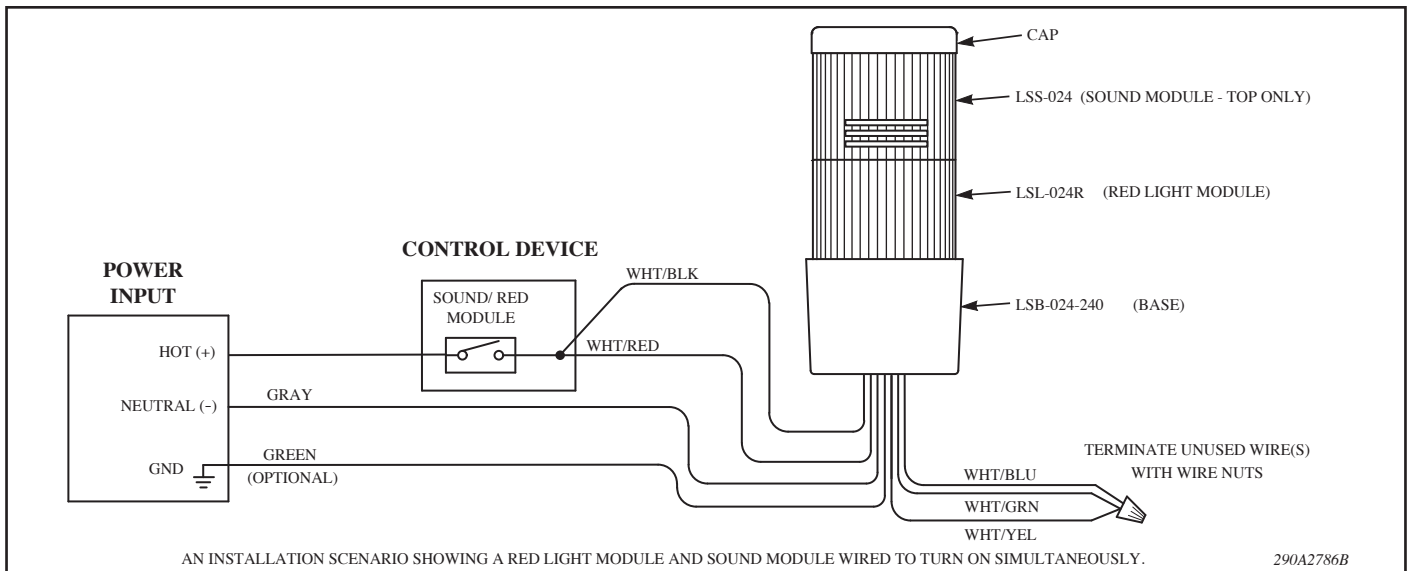


Figure 3.

LITESTAK. Up to four Light Modules (LSL's) may be assembled on the Base with the Sound Module (LSS) installed on top of the uppermost Light Module. The Sound Module can be assembled directly on the Base provided it is the only module installed. See figures 1, 2, and 3 for examples of mounting the Sound Module. To install the Sound Module, proceed as follows:

1. Observe the orientation of the two 3-pin connectors. Position the Sound Module on top of the Base if it will be the only module, or on top of the uppermost Light Module. Make sure that the male and female connectors are properly oriented. Align the connectors, and press the Sound Module until it snaps into place.
2. See figure 4. There are four holes located near the edges of the Sound Module's clear bottom plate which align with the holes in the Base or Light Module beneath it. To secure the units together, fully install one snap rivet (supplied with grille kit) in each of the 4 holes. Press the head of each rivet until it snaps in place.

CAUTION

Damage to the LITESTAK can occur if the modules are improperly secured. Check that all four snap rivets are completely installed in the Sound Module and in each of the Light Modules on the LITESTAK.

NOTE

The snap rivets may be pried out with a flat blade screwdriver.

3. Retain the four plastic pins that come with the cap (supplied with the Base unit). Install the cap on top of the Sound Module by aligning the two split pins on the cap with the snap rivet holes in the Sound Module's top plate. Press down on the cap until it snaps in place. See figure 4. Secure the cap in place by fully inserting one plastic pin in the center of each of the cap's split pins through the hole in the circuit board.

NOTE

Two (2) of the four (4) plastic pins provided with the cap are spares.

4. The Sound Module is factory set and tested with the DIP switches set to produce a Beep tone. If another tone is preferred, simply set the DIP switches to one of the positions indicated in Table 2 to obtain the corresponding sound. If the DIP switches are set to a position not shown in Table 2, the Sound Module will produce a Wail tone by default.

5. Included with the Sound Module is a grille kit. As an added convenience, a tone selection chart is provided on a label inside one of the grilles. Position a grille on the widely spaced pins with the slots on the grille facing downward. Push the grille over the slanted pins until the grille snaps in place. Repeat with the other grille.

NOTE

For proper sound output, ensure that the grille is installed correctly.

6. Test the LITESTAK to ensure that it operates as intended.

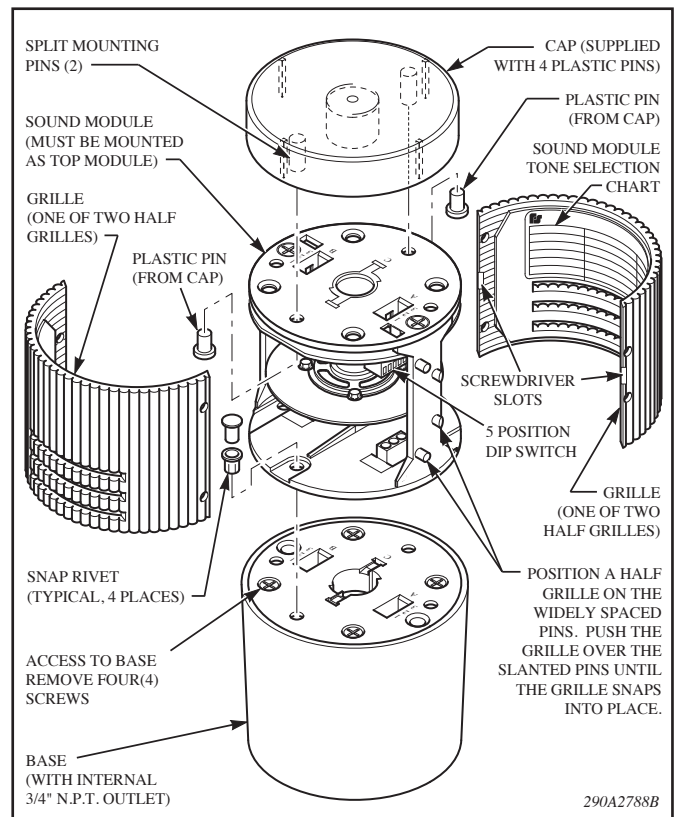


Figure 4.

DIP Switch Setting	Tone	Sound	Audible Frequency	Repetition Rate
□□□□ 1 2 3 4 5	Wail TM1	Conventional Siren	560-1055 Hz	11 Cycles/min.
□□□□ 1 2 3 4 5	Yelp TM2	Rapid Siren	560-1055 Hz	3.3 Cycles/sec
□□□□ 1 2 3 4 5	Hi-lo TM3	Alternating High & Low	Low Tone 561 Hz Hi Tone 760 Hz	50 Cycles/min.
□□□□ 1 2 3 4 5	Bell TM4	Bell, Struck Rapidly	801 Hz	50 Cycles/min
□□□□ 1 2 3 4 5	Yeow TM5	Descending high to low-repeated	High freq. 1295 Hz Low freq. 545 Hz	36 Cycles/min
□□□□ 1 2 3 4 5	Horn TM6	Steady Horn	470 Hz	Continuous
□□□□ 1 2 3 4 5	Beep TM7	Slow intermittent horn	470 Hz	50 Cycles/min
□□□□ 1 2 3 4 5	Stutter TM8	Rapid intermittent horn	470 Hz	5 Cycles/sec.
□□□□ 1 2 3 4 5	Slow Whoop TM9	Slow ascending, low to high repeated	Low freq. 424 Hz Hi freq. 1163 Hz	15 Cycles/min
□□□□ 1 2 3 4 5	Gradual Horn TM10	Steady horn-Gradually increasing in volume	514 Hz	Continuous
□□□□ 1 2 3 4 5	Temporal Slow, Whoop TM11	NFPA coded slow Whoop	Low freq. 424 Hz Hi freq. 774 Hz	15 Cycles/min
□□□□ 1 2 3 4 5	Westminster Chime TM12	Westminster Chime	Musical Tones	1 Cycle, 8 notes
□□□□ 1 2 3 4 5	Evac TM13	Amplitude modular horn	479 Hz	4.3 Cycles/sec
□□□□ 1 2 3 4 5	Air horn TM14	Steady Horn	Low Tone 400 Hz Hi Tone 800 Hz	Continuous
□□□□ 1 2 3 4 5	Chime TM15	Single Strike Chime	Musical Tone	49 Cycles/min
□□□□ 1 2 3 4 5	Phaser TM16	Rapid Siren	600 Hz-1200 Hz	15 Cycles/sec
□□□□ 1 2 3 4 5	Alternate Hi-lo TM17	Alternating hi-lo	Low Tone 363 Hz Hi Tone 518 Hz	60 Cycles/min
□□□□ 1 2 3 4 5	Warble TM18	Extremely Rapid Siren	560-1055 Hz	6.3 Cycles/sec

NOTE: TM12 (Westminster Chime) is not a repeating tone.

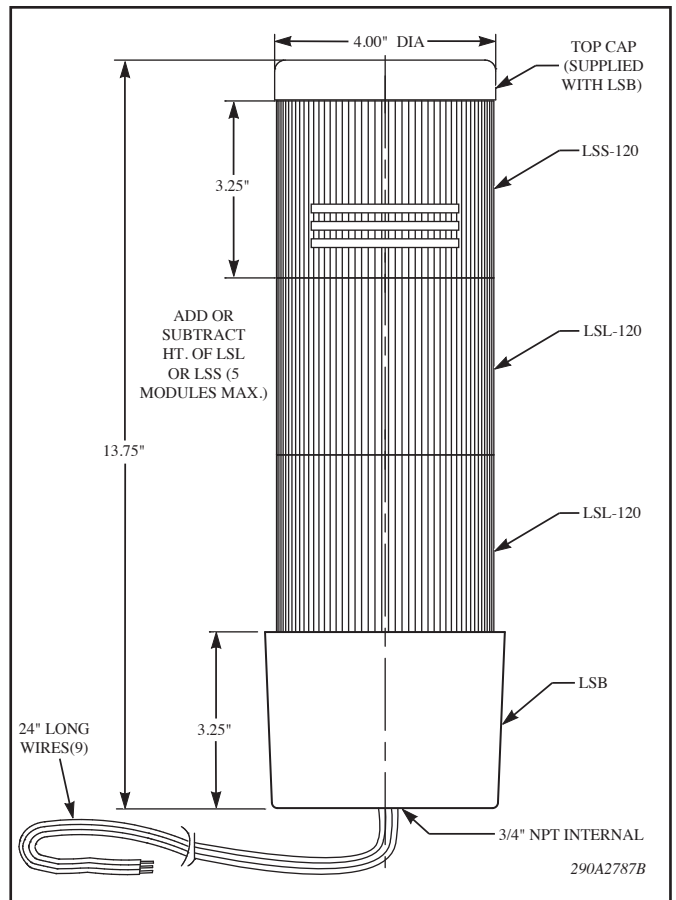


Figure 5.

F. Service.

The Sound Module contains no user serviceable parts inside. Federal Signal will service your equipment or provide technical assistance with any problems that cannot be handled locally. Any units returned to Federal Signal for service, inspection, or repair must be accompanied by a Return Material Authorization. This R.M.A. can be obtained from the local distributor or manufacturer's representative. At this time a brief explanation of the service requested, or the nature of the malfunction, should be provided. Address all communications and shipments to:

Service Department
 Electrical Products Division
 Federal Signal Corporation
 2645 Federal Signal Drive
 University Park, IL 60466-3195