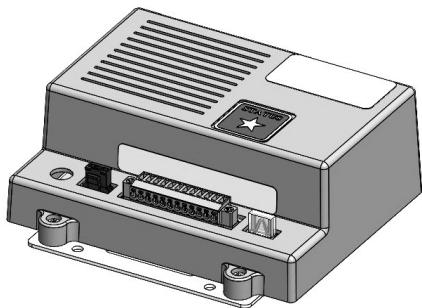


COMPACT REMOTE SIRENS



SS651-023



LCS653-023



LCS654-023

Input Voltage	10 - 16 VDC (negative ground)
Audio Input Current	8 Amps @ 13.6 VDC (100W speaker)
Standby Current	Enable wire off 0mA Backlighting off: 8 mA
Output Power	105 WATTS RMS MAX. (15.0 VDC - single 100W speaker)
Siren Frequency	675Hz - 5kHz
High Voltage Protection	> 16 VDC will cause siren output to cease, resume at normal < 10 VDC will cause siren output to cease, resume at normal
Short Circuit Current	50 AMPS (supply circuit must be capable of supplying this)
Operating Temperature	-15° F to +140° F

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PLITSTR248 REV. L 4/10/24

Installation Information

MODELS: SS651-023 LCS653-023 LCS654-023

SERIAL NO: _____

OPTIONS

PURCHASE DATE: _____

Negative Aux. Polarity

DEALER: _____

Hands Free Enabled

INSTALLATION DATE: _____

INSTALLER: _____

Model and serial number located on the bottom of the amplifier unit

General Description

These sirens are designed for single 100W speaker use. They come standard with the amplifier unit as well as a remote control head (switch panel). The primary operating modes are Wail, Yelp, Standby, Manual, and Horn. Both the Manual Control and the Horn function will override all other functions, and can be utilized at any time via a rocker switch. The Phaser function can be optionally disabled (reprogrammed) for any necessary applications.

These units are designed to allow maximum versatility in mounting. The control head is remote from the siren amplifier box creating a compact user interface panel that can be easily mounted under the dashboard. The amplifier box can then be mounted remotely in the trunk, under the dashboard, under the seat, or wherever convenient. The SS651MT-023 offers a waterproof switch assembly for motorcycle and marine applications.

The siren amplifier has been designed with several protection features to provide exceptional field service. Excessively high voltage detection will disable the siren output to protect both the amplifier and the speaker. Fused inputs provide safety against reverse polarity. Speaker protection shuts down the output if the speaker output becomes electrically shorted. CAUTION: These protection features will not guard against overloading the outputs.

Installation Notes

Proper installation of the unit is essential for years of safe, reliable operation. Please read all instructions **before** installing the unit. Failure to follow these instructions can cause serious damage to the unit or vehicle and may void warranties.

Qualifications

The installer must have a firm knowledge of basic electricity, vehicle electrical systems and emergency equipment.

Keep These Instructions

Keep these instructions in the vehicle or other safe place for future reference. Advise the vehicle operator of the location.

Unpacking

Inspect contents for shipping damage. If any damage is found, alert the carrier immediately.

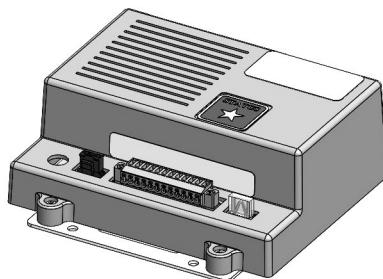
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Mounting

AMPLIFIER BOX

The amplifier box should be mounted through its flanges using four #8 screws (not included) or other suitable fastener.

- Using the amplifier as a template, mark the location of the four mounting holes to be drilled. Be sure to check for obstructions behind the mounting hole locations.
- Drill the four mounting holes and secure the amplifier box using appropriate hardware (not supplied).



!!! CAUTION !!!

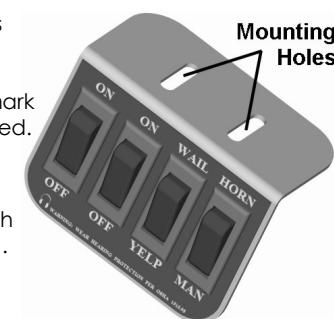
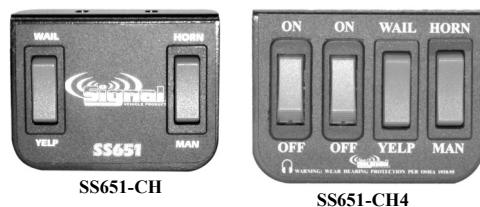
- Mount in a location with adequate ventilation to prevent overheating.
- Devices should be mounted only in locations listed in SAE standard J1849.
- Controls should be placed within convenient reach of the driver.
- Assure clearances before drilling in vehicle.
- Sound levels produced by attached speakers can cause permanent hearing loss.
- Never operate this unit without adequate hearing protection for you and others in the area. (OSHA 1910.95)

CONTROL HEADS

The control head is designed to be mounted in an easily accessible location such as under the dash, in the overhead console, or in a center console.

Choose a mounting location convenient to the operator and away from any air bag deployment areas. Be sure to choose a location that has at least two inches of depth to accommodate the control head and cables. Consider wire routing and access to connections when selecting location as well.

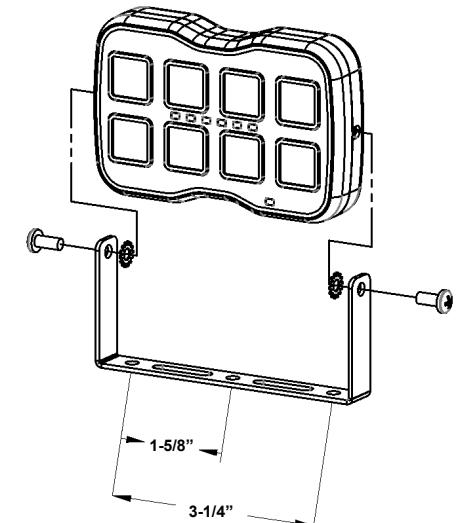
- Using the switch panel unit itself as a template, mark the location of the two mounting holes to be drilled. Be sure to check for obstructions behind the mounting hole locations.
- Drill the two mounting holes and secure the switch panel using appropriate hardware (not supplied).
- Permanently mount the control using two screws (not provided).



(Mounting CONT'D)

LCS654-CH23 CONTROL HEAD

- Select a place to mount your controller that is a dry location out of direct sunlight, free of dirt and dust. Under the vehicle's instrument panel is usually the best choice.
- After identifying where your lights will be mounted, determine the path(s) the wires will take.

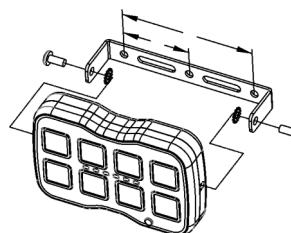


A U-bracket (P/N 274-SB44-U) is included for mounting.

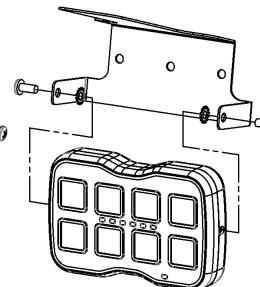
Attach the U-Bracket to the controller as shown to the right. The bracket is designed such that it can be swiveled in any direction depending upon your mounting location. Use appropriate hardware (not included) to attach the U-Bracket to your mounting surface.

Optional Mounts (Sold Separately)

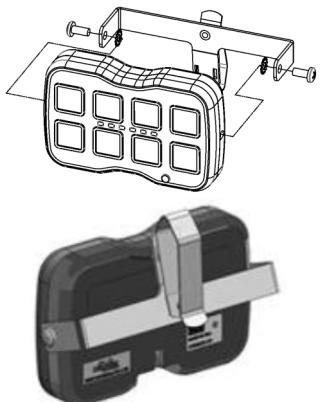
Low Profile U-Bracket 274-SB44-ULP



Headliner Bracket 274-SB44-H



Visor Clip Bracket 274-SB44-VC



Electrical Connections

Wire Size and Termination

Electrical connections to this unit are made through the green 12-terminal connector (P/N P30041-231) that plugs into the mating receptacle on the top of the unit.

Examine the charts below to determine the proper gauge of the wire you should use. Please review the following recommendations to follow when making your installation:

- Use only high quality crimp connectors. Make sure all connections are tight.
- Minimize the number of splices to reduce voltage drop.
- Route wiring to prevent wear, overheating, and interference with air bag deployment.
- Use grommets and sealant when passing through compartment walls.
- Ground connections should only be made to substantial chassis components, preferably directly to the negative of the vehicle battery.
- Install and check all wiring before connection to the battery.
- **CAUTION: All wires should be rated for at least 125% of their maximum current load. All wires connected to the positive terminal of the battery should be fused at the battery for their rated load.**
- Review the charts below that indicate the recommended wire gauge, based upon the length of the wire run and the current that will pass through the wire.
- Wiring packages are available from your distributor.

P30041-231

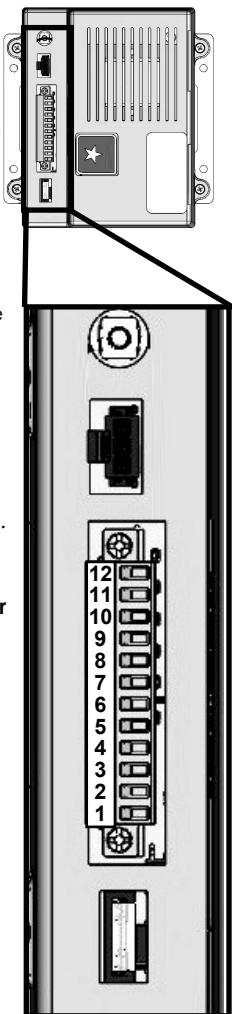


AMPLIFIER WIRING GUIDE

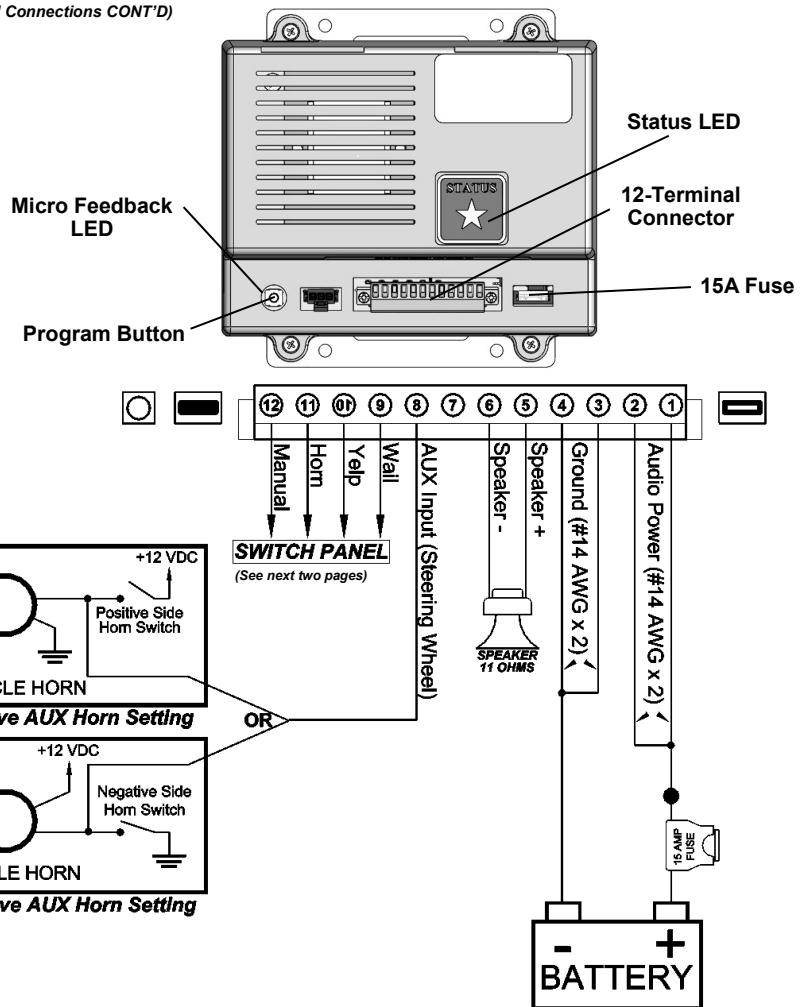
Input/Output	Description	Typical Color	Typical Current
12	Manual Switch	Blue	0.001A
11	Horn	Gray	0.001A
10	Yelp	Violet	0.001A
9	Wall	White	0.001A
8	AUX	Green	0.002A
7	NOT USED		
6	Speaker -	Brown	4A
5	Speaker +	Brown	4A
4	Battery Negative/Ground	Black	10A
3	Battery Negative/Ground	Black	10A
2	Audio/Siren Power	Red	10A
1	Audio/Siren Power	Red	10A

RECOMMENDED WIRE GAUGE

Current	10'	20'	25'
< 2.0A	22 AWG	18 AWG	18 AWG
4.0A	18 AWG	16 AWG	16 AWG
5.5A	18 AWG	16 AWG	14 AWG
8.0A	16 AWG	14 AWG	14 AWG
12.0A	16 AWG	12 AWG	12 AWG



(Electrical Connections CONT'D)



MANDATORY ELECTRICAL CONNECTIONS

Ground - Connect terminals 3 & 4 to the negative terminal of the battery.

⚠ (You MUST connect this wire!!)

Audio Power - Connect terminals 1 & 2 to 10-16VDC through a 15A fuse.

⚠ (You MUST connect this wire!!)

Speaker - Connect terminals 5 and 6 to your speaker.

OPTIONAL ELECTRICAL CONNECTIONS

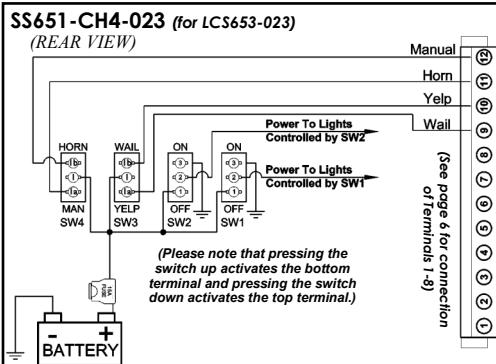
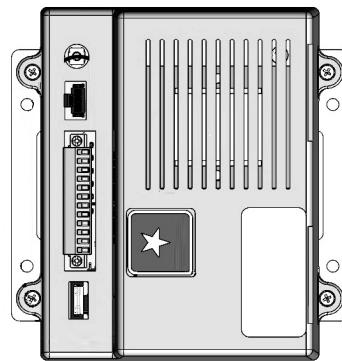
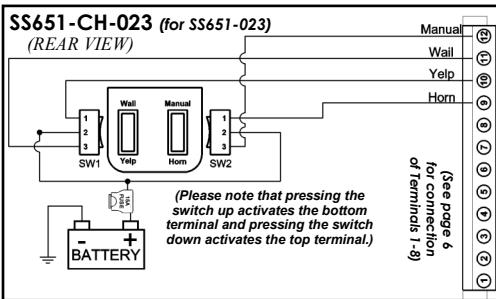
AUX Input - If you will be using the Hands Free option (see pages 9 and 11) to activate and change siren tones with the vehicle horn, connect terminal 8 to the horn switch. Be sure that you have programmed the correct polarity (see page 9).

(Electrical Connections CONT'D)

CONNECTION OF CONTROL HEADS

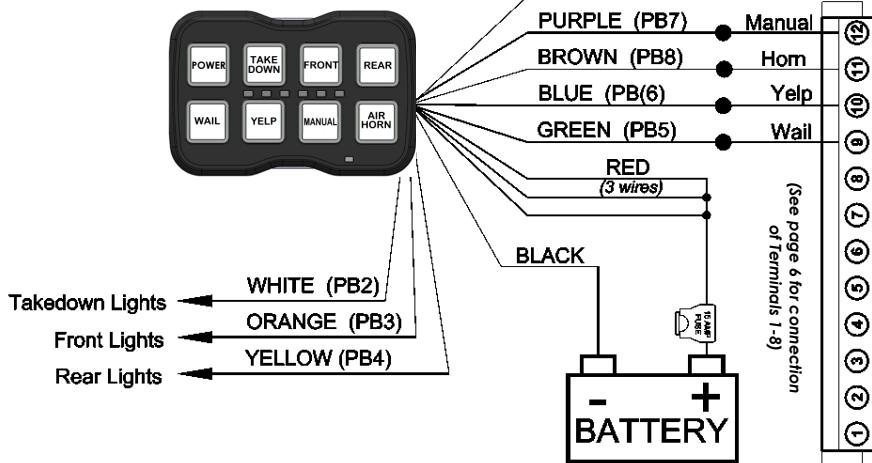
(See page for connection of Terminals 1-8)

- After your wires are run from the location of the siren amp to the location of the control head, crimp the enclosed 1/4" quick connect terminals (excluding the LCS654-CH) on to the ends of the wires and plug them into the appropriate terminals on the back of the control head.



Note that the switches used with the SS651-023 are wired differently from previous versions. They are switched through POWER rather than GROUND.

LCS654-CH23 (for LCS654-023)

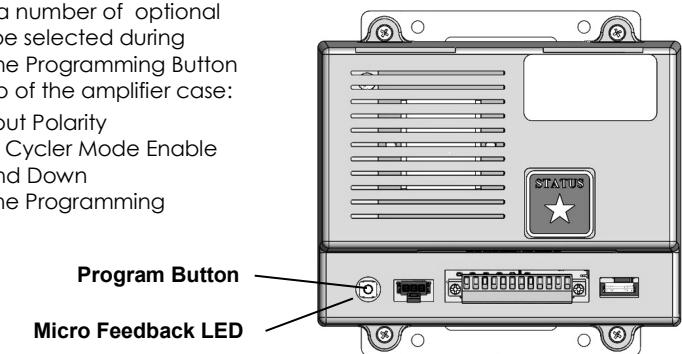


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Option Programming

These sirens have a number of optional settings that can be selected during installation using the Programming Button located on the top of the amplifier case:

- Auxiliary Input Polarity
- Hands Free Cycler Mode Enable
- Manual Wind Down
- Custom Tone Programming



Auxiliary Input Polarity (AUX Function)

Applying a positive voltage to the AUX input (Terminal 8 of the green connector shown on page 6) normally activates the auxiliary function (Air Horn standard, or Hands Free Cycler optional). To have the AUX function instead activate when Terminal 8 is connected to ground (negative), with the siren connected to Power and Ground, hold the Program button down until the Micro Feedback LED flashes twice (approximately 6 seconds). Repeat to toggle back to positive switching.

Note: The Micro Feedback LED will flash if you have the Aux Polarity set for POSITIVE. The LED will not flash if the AUX Polarity is set for NEGATIVE.

Hands Free Cycler Mode Enable

This siren is shipped with the Hands Free Cycler mode DISABLED. To enable Hands Free Cycler mode, with the siren connected to Power and Ground, activate the AUX function and hold down the Program Button until the Micro Feedback LED flashes once (approximately 3 seconds). Repeat to deactivate Hands Free Cycler Mode.

See page 11 for additional details on Hands Free Cycler mode.

Manual Wind Down

Pressing the Manual button will activate the Manual tone until released. By default, the Wail and Manual tones on the next page indicated by the "†" will "wind down" when they are de-activated. If instead, you would like them to immediately stop when you release the Manual Button (hard stop), toggle this option.

With the siren connected to Power and Ground, press and hold the Manual button. Then hold down the Program Button until the Micro Feedback LED flashes once (approximately 3 seconds). Release both buttons. Repeat to change back to the "wind down" option.

Auxiliary Input Polarity (AUX Function)

This siren has six different programmable audio output functions:

Function	Default Tone
Wail	Wail
Yelp	Yelp
Yelp Step Up	Phaser
Manual	Ramp Up
Horn	Air Horn
Auxiliary	Air Horn

Each **Function** listed above can be programmed for a different tone. If you would like to change the tone for any of the six functions, follow the instructions below.

1. **Power the unit** up.
2. Activate the function you wish to change. The tone that is currently programmed for that function will sound.
3. Press and release the **Program** button on the top of the siren to cycle through the list of optional tones. Review the chart below for a list of optional tones.
4. De-activate the function to save the new tone.

Tones For Wail, Yelp, and Yelp Step-Up Function	Tones For Manual Button and AUX terminal	Tones for Horn Button
1 WAIL (Wail default) §, *, †	1 STANDARD AIR HORN (AUX default)	1 STANDARD AIR HORN (default)
2 YELP (Yelp default) §, *	2 LOW FREQUENCY AIR HORN	2 LOW FREQUENCY AIR HORN
3 PHASER (Yelp Step Up default)	3 RAPID AIR HORN	3 RAPID AIR HORN
4 FAST PHASER	4 AIR HORN II	4 AIR HORN II
5 TWO TONE	5 RAPID AIR HORN II	5 RAPID AIR HORN II
6 MECHANICAL WAIL (FIRE ENGINE) †	6 DOUBLE POST POP AIR HORN	6 DOUBLE POST POP AIR HORN
7 MAX YELP §, *	7 SINGLE AIR HORN	7 SINGLE AIR HORN
8 HOOT	8 SINGLE QUICK AIR HORN	8 SINGLE QUICK AIR HORN
9 RAPID HOOT	9 TWO TONE AIR HORN	9 TWO TONE AIR HORN
10 AIR HORN & YELP	10 MANUAL (MN default) *, †	
11 GHOST	11 MECHANICAL MANUAL (FIRE ENGINE) †	
12 RAPID GHOST		
13 SINGLE AIR HORN		
14 SINGLE QUICK		
15 DOUBLE POST POP AIR HORN		
16 TWO TONE AIR HORN		
17 STANDARD AIR HORN		

§ = SAE approved
* = California Title 13 approved
† = See below



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▶▶▶▶ System Reset ◀◀◀◀

If you would like to reset all of the siren programming options to their defaults, with the siren powered up and no functions active, press the **Program Button** until the **Micro Feedback LED** flashes 3 times (approximately 9 seconds). If you would like to reset just one tone to its default, activate that tone and press the **Program Button** until the **Micro Feedback LED** flashes 3 times (approximately 9 seconds).

Operation

Wail/Off/Yelp Button

This is the 3-position button used for basic operation of the siren. While in the Wail or Yelp positions the siren will produce the tone programmed for that function (see previous page). The Wail and Yelp functions are defaulted for the Wail and Yelp tones.

Wail Tone: A normal rise-fall tone used on highways and areas with low traffic or constant traffic flow.

Yelp Tone: A rapid warble tone used in light to moderately congested areas.

Center Off Position: (Manual/Standby) - A silent mode that allows momentary push-button activation of the Manual and Horn functions.

SS651-CH
(for SS651-023)



SS651-CH4
(for LCS653-023)



Manual Button

When the unit is powered up with the Wail/Off/Yelp button in the **Off position** (not producing any siren tones), by default this momentary push button switch provides a manually rising and falling siren tone while being pressed. The siren output winds down when the Manual momentary switch is released.

With the **Wail or Yelp mode selected**, pressing the Manual button will "step" the siren up to the next button's programmed tone:

(Wail ➔ Yelp ➔ Yelp Step Up)

These quicker tones are used to momentarily alert motorists at intersections and very highly congested areas. Pressing the button once changes to the next faster tone. Pressing the Manual button again, reverts the siren back to the original tone. (See previous page to program optional tones.)

Horn Button (some models)

This momentary push button switch provides a simulated air-horn tone while pressed. It is useful at intersections or in high noise areas. This tone will override all other siren tones. (See previous page to program optional tones.)

Auxiliary Function (AUX Terminal) and Hands Free Cycler Mode

Note: Requires connection of the AUX terminal (see page 6 and 9).

The AUX terminal is typically connected to the vehicle horn switch. See page 9 to select positive (+12VDC) or negative (ground) activation.

Normally when the unit is on and in any mode, activating the AUX terminal (i.e. pressing the vehicle's horn) will produce the programmed Air Horn tone (see previous page to program optional Air Horn tones).

If you enable **Hands Free Cycler mode** (described on page 9), pressing the vehicle's horn continuously for 3 seconds will activate the **Hands Free Cycler mode**. This mode allows you to use the vehicle's horn to cycle through the siren tones associated with the following functions:

(Wail ➔ Yelp ➔ Yelp Step Up ➔ Silent)

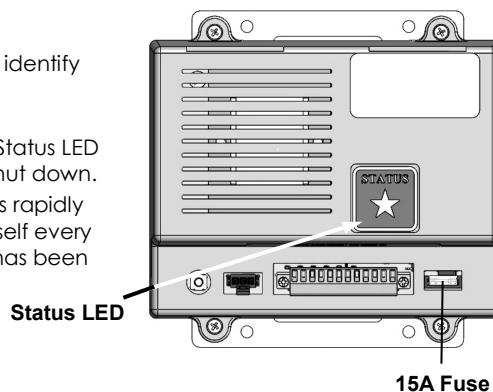
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Troubleshooting

Status LED

The Status LED will flash to help you identify certain issues:

- Over Voltage/Under Voltage - Status LED flashes slowly and the unit will shut down.
- Over Current - Status LED flashes rapidly and the audio output will test itself every few seconds to see if the issue has been resolved.



LED Pattern	Diagnosis
Steady On	Speaker functioning properly
Off	No Siren Tone Active or Speaker open (faulty connection)
Slow Flash	Over Voltage/Under Voltage—unit shuts off
Rapid Flash	Over Current

Symptom	Possible Cause	Check
No power	Check power Wires	When activated, power to both Terminals 1 and 2? Is power hooked up backwards? Positive ground vehicle? Are the negative leads connected to a good ground? Measure voltage between ground & +12v terminal Measure voltage between ground & ignition switched terminal. Check Fuse under amplifier cover. Check external fuses or circuit breakers
	Fuse or circuit breaker blown	
No siren tone	Bad speaker or speaker wiring	Does the Status LED flash rapidly when siren tone is selected? (Indicates overcurrent or a short) Disconnect the speaker at the amplifier, and turn a tone on. If you hear sound, the siren is working correctly and you have a failed speaker or faulty speaker wiring. Is the Status LED slowly flashing?
	High voltage or low voltage protection	Measure voltage between ground & ignition switched terminal. The input voltage must be between 10 & 16V
	Blown Fuse	Check fuse inside amp housing
Distorted siren sound	Speaker assembly loose	Is the speaker loose?
	Intermittent AUX input connection	Is the Aux. Input used and wired properly?
Intermittent siren tone	Low or high vehicle voltage	Is the Status LED flashing? Input voltage must be between 10 & 16 volts while siren is on.
	Low voltage protection	Wires connected tightly to the back of the unit? Loose connection on a power lead?
	Circuit breaker in supply connection	Input greater than 10V with the siren turned on? Is a circuit breaker used with at least a 30A rating?
Horn function or Manual function stuck on	Shorted speaker or speaker wire	Does the speaker have water damage, or is a wire pinched?
	Aux. Input improperly connected or Aux. Input Polarity Option set wrong	Remove the Aux input wire at the amp. Does the problem stop? If so the aux polarity DIP switch may be set wrong or the AUX terminal may be wired incorrectly
Wrong siren tone	Option accidentally changed	See programming and setting to defaults section

Service

PARTS

Part	Description
P30214-8	Amplifier Top Cover
S30147-118-3	Amplifier Bottom Mounting Plate
P30028-27	15 Amp Mini Automotive Blade Fuse for Amplifier
30032-8	TIP36C Power Transistor
30007-41	3-Position Rocker Selector Switch (WAIL/YELP)
30007-42	Momentary Rocker Switch (HORN/MAN)
SW-40	Lighted ON/OFF Rocker Switch (LCS633)

ONE YEAR LIMITED WARRANTY

Star Safety Technologies, Inc. warrants each new product against factory defects in material and workmanship for one year after the date of purchase. The owner will be responsible for returning to the Service Center any defective item(s) with the transportation costs prepaid. Star Safety Technologies, Inc. will, without charge, repair or replace at its option, products, or part(s), which its inspection determines to be defective. Repaired or replacement item(s) will be returned to the purchaser with transportation costs prepaid from the service point. A copy of the purchaser's receipt must be returned with the defective item(s) in order to qualify for the warranty coverage. Exclusions from this warranty include, but are not limited to, bulbs, strobe tubes, domes, and/or the finish. This warranty shall not apply to any light, which has been altered, such that in Star Safety Technologies, Inc.'s judgment, the performance or reliability has been affected, or if any damage has resulted from abnormal use or service.

There are no warranties expressed or implied (including any warranty of merchantability or fitness), which extend this warranty period. **The loss of use of the product, loss of time, inconvenience, commercial loss or consequential damages, including costs of any labor, are not covered.** Star Safety Technologies, Inc. reserves the right to change the design of the product without assuming any obligation to modify any product previously manufactured.

This warranty gives you specific legal rights. You might also have additional rights that may vary from state to state. Some states do not allow limitations on how long an implied warranty lasts. Some states do not allow the exclusion or limitation of incidental or consequential damages. Therefore, the above limitation(s) or exclusion(s) may not apply to you.

If a product must be returned for any reason, please contact our Repair Department at (585) 226-9500 to obtain a Returned Materials Authorization number (RMA #) before you ship the product back. Please write the RMA # clearly on the package near the mailing label.

If you have any questions concerning this or any other product, please contact our **Customer Service Department** at (585) 226-9500.

NOTICE

Due to continuous product improvements, we must reserve the right to change any specifications and information, contained in this manual at any time without notice. Star Safety Technologies, Inc. makes no warranty of any kind with regard to this manual, including, but not limited to, the implied warranties of merchantability and fitness for a particular purpose. Star Safety Technologies, Inc. and/or the manufacturer shall not be liable for errors contained herein or for incidental or consequential damages in connection with the furnishing, performance, or use of this manual.

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