SS700-016 SIREN

(Also applies to SS700-016-28 and SS700-016-28W)

Installation and Operating Instructions

MODEL: SS700-013 or SS700-013-28   Serial #:_____

PURCHASE DATE: _____

INSTALLATION DATE: _____

INSTALLER: _____

DEALER: _____

Model and serial number located on bottom of unit

TABLE OF CONTENTS

General Description

The SS700 Siren Amplifier is a premium 200W unit designed for dual 100W speaker use. The primary operating modes are Phaser, Yelp, Wail, Hands Free, Manual, Alert, and Radio. A Noise Canceling PA Override and push-button Horn Override are available in all modes. A manual push-button is provided for push-on/push-off tone toggle operation in the Phaser, Yelp, and Wail modes. It also allows manual siren control in the Manual or Alert modes. Any siren tone can be re-programmed to a more desired tone. Another feature allows cycling through Wail, Yelp, Phaser, and Standby by providing a signal to the horn ring auxiliary wire when the function switch is in the Hands Free (HF) position. A Park Kill option is provided for connection to a door switch, etc. to disable the siren when exiting the vehicle. Radio and PA volume controls are provided on the front panel. The front panel is backlighted with LED's for night visibility. This compact unit utilizes short circuit, high voltage, low voltage, and reverse polarity protection systems for maximum service life.

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455 Rochester Street   Avon, NY 14414
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Proper installation of the unit is essential for years of safe, reliable operation. Please read all instruction **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 found, alert carrier immediately. Contents should include unit with microphone, mounting bracket w/ hardware, microphone bracket with 2 screws, wiring connector, and these instructions. Contact your supplier immediately if any components are missing.

Mounting

⚠ **WARNING!** Care should be taken when positioning this unit and cord so that the unit and/or cord does not interfere with the proper operation of the driver-side or passenger- side airbag! Failure to heed this warning may result in serious or fatal injury!!!

- 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)
- Consider wire routing and access to connections.

1. Mount the unit by using the two 1/4"-20 hex head bolts included in the hardware kit.
2. Slide the head of one bolt into the channel on both sides of the housing from the rear of the siren.
3. Attach the siren to the enclosed U-bracket (or other user supplied bracket) with the bolts using the enclosed 1/4"-20 hex nuts.
4. Install mounting bracket to vehicle using 1/4" hardware (not supplied).

Wire Size and Termination

Electrical connections to this unit are made through the green 12-terminal connector located in the rear of the unit *(See below - Part # CPSS-153)*.

Examine the charts below to determine the proper gauge of the wire to use. Please review the following recommendations when making your electrical connections:

- For safety and reliability we highly recommend that you always use both Power terminals (1 & 2) and both Ground terminals (3 & 4).

- 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 be made *directly to the negative of the vehicle battery*. Where not possible, only connect to substantial chassis components.

- Install and check all wiring before connection to vehicle 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 chart to the right that indicates the recommended wire gauge, based upon the length of the wire run and the current that will pass through the wire.

WIRING GUIDE

Terminal	Description	Typical Color	Typical Current	
1	Power	Red	10A	20A Total
2	Power	Red	10A	
3	Ground	Black	10A	20A Total
4	Ground	Black	10A	
5	Speaker 1	Brown	4A	
6	Speaker 2	Brown	4A	
7	AUX In	Green	3A	
8	AUX Out	Orange	3A	
9	Radio Repeat	Blue	0.1A	
10	Radio Repeat	Blue	0.1A	
11	Backlighting	Yellow	0.1A	
12	Park/Kill Input	White	0.1A	

CPSS-153

RECOMMENDED WIRE GAUGE

Current	10'	20'	25'
< 2.0A	22 AWG	18 AWG	18 AWG
2.0-4.0A	18 AWG	16 AWG	16 AWG
4.1-5.5A	18 AWG	16 AWG	14 AWG
5.6-8.0A	16 AWG	14 AWG	14 AWG
8.1-12.0A	16 AWG	12 AWG	12 AWG

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WARNING: ENSURE CONNECTOR IS FULLY INSERTED & SCREWS LOCKED

(SIREN TOP)

1 — Power — Ignition Switch
2 — Power
3 — Ground
4 — Ground
20A Fuse — BATTERY 12VDC
5 — SPEAKER(s) 100/200W
6 — Factory Horn Relay
7 — AUX In
Cut Factory Wire →
8 — AUX OUT
9 — 2 Way Radio Speaker — Factory Horn
10 — 2 Way Radio Speaker
11 — Backlighting Power
12 — + OR – — Park Kill

TONE SELECT
AUX POLARITY
NEG POS
PK POLARITY

-3-

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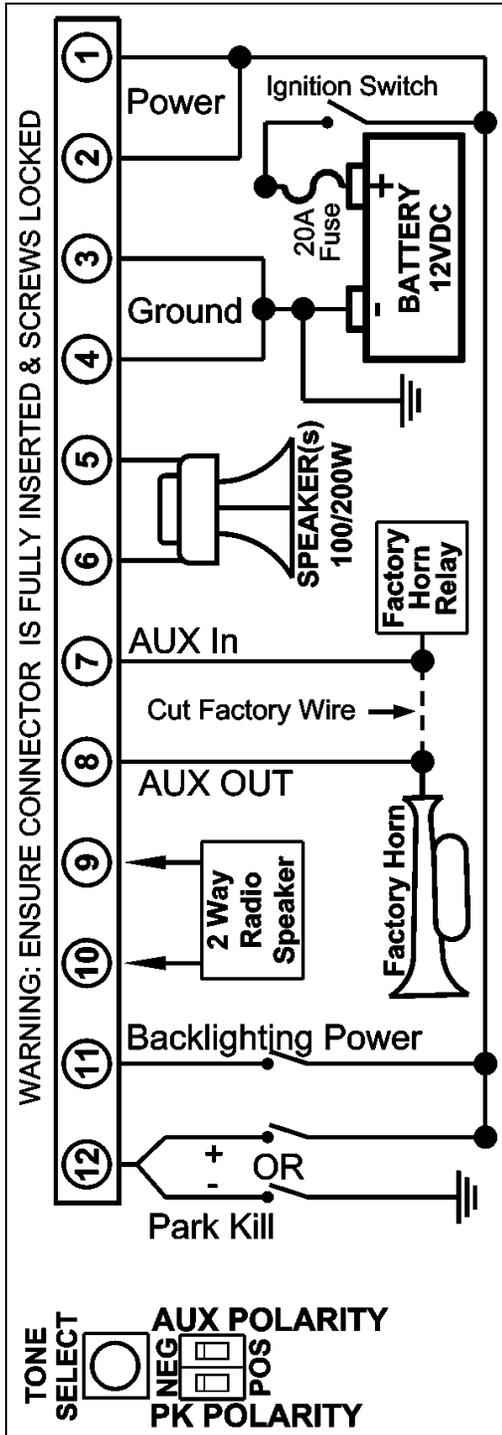
For ease of installation, you can remove the green connector from the siren while connecting your wires. Please note that when referencing terminal numbers using the wiring diagram on the previous page, the screw heads face **DOWN**, as pictured to the right.

CPSS-153

12 11 10 9 8 7 6 5 4 3 2 1
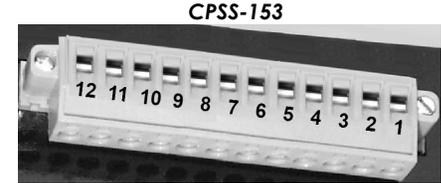
Connections to the terminal block are summarized both in the chart and in the wiring diagram on page 2. For more detailed information, review the section below.

Mandatory Electrical Connections

Ground - Connect terminals 3 & 4 to the negative terminal of the battery.
⚠ *(You MUST connect both of these terminals!!)*

Power - Connect terminals 1 & 2 to a 10-16VDC ignition switched power source capable of supplying 20A. Be sure to use minimum size #14 AWG wire.
⚠ *(You MUST connect both of these terminals!!)*

Speaker - Connect terminals 5 and 6 to your siren speaker.
⚠ *(You MUST connect both of these terminals!!)*

OPTIONAL ELECTRICAL CONNECTIONS

AUX IN/OUT - Terminals 7 and 8 are typically connected to the steering wheel horn relay. They allow for siren operation in HF mode *(see **Manual** on page 6),* Air Horn activation, or Manual "step up" function *(see **Auxiliary-Manual Function** page 5).*

If you will be using any of these features, cut the wire that connects the horn relay to the horn. Connect the cut wire from the relay to terminal 7. Connect the cut wire from the horn to terminal 8. Review the wiring diagram on the previous page and ensure that you have the **AUX Polarity** DIP switch set for the correct polarity *(see page 5).*

⚠ *(You MUST connect <u>both</u> of these terminals as described above for proper operation of your vehicle horn!!)*

Radio Repeat - To re-broadcast your <u>two-way</u> radio over your siren speaker, connect terminals 9 & 10 to the two-way radio speaker or output connector of the two-way radio (Max input voltage = 7VRMS).

Backlighting - Connect terminal 11 to the dash lights, ignition switched power, or other switched 10-16VDC power source. This controls the backlighting for the face of the siren.

Park/Kill Feature - If you would like the siren to automatically disengage when the vehicle door is opened or when the vehicle is placed into park, connect terminal 12 to the dome light, added door switch, or added park switch. Review the wiring diagram on the previous page and ensure that you have the **PK Polarity** DIP switch set for the correct polarity *(see next page).*

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Siren Backlighting Jumper:

The siren backlighting is automatically activated when terminal 11 of the green connector is powered up. If you would like the backlighting to only come on whenever the PA/Volume knob is turned on, then change the jumper shown below. *If you change this jumper, DO NOT connect Terminal 11.*

1. Remove the 4 screws in the rear of the unit that secure the cover and slide it off towards the front.
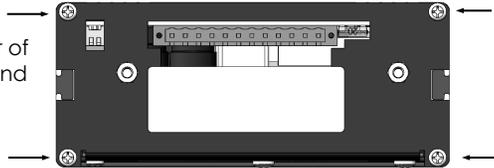
2. Remove the jumper from its current location and reposition it over the two pins shown to the right.
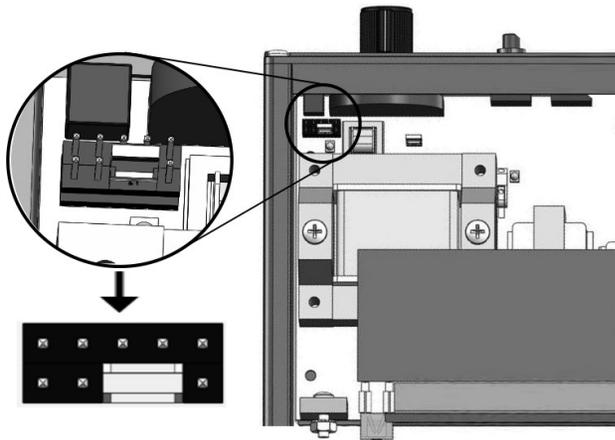
DIP Switch Settings:

Auxiliary AND Park-Kill Input Polarity

The Auxiliary input (terminal #7) and Park Kill input (terminal #12) are normally activated by applying a positive voltage to the wire. If you would like to activate either function by connecting to ground (negative) instead, use the DIP switches located on the back of the siren.

The default setting for both switches (Positive Switching) is such that the DIP switches are flipped AWAY from the closest edge of the siren *(i.e. DOWN in the picture to the right)*.

To have either function activated when the input is grounded, flip the corresponding switch in the opposite direction (TOWARDS the edge of the siren).
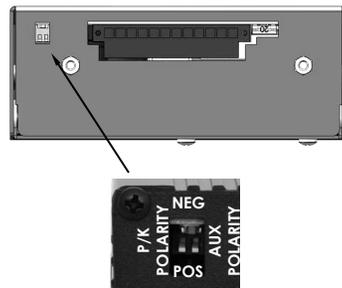
Optional Tone Programming

The SS700 will produce 7 different tones/sounds by activating its various functions:

| Function	Default Tone
Phaser Step Up (PHSR+MAN)	Two-Tone
PHSR	Phaser
YELP	Yelp
WAIL	Wail
MAN	Ramp Up
HORN	Air Horn
AUX	Air Horn

Proceed below if you wish to reprogram any of these functions for a different tone.

1. Power up the unit.

2. Activate the function you wish to change.
   - For PHSR, WAIL, and YELP functions, rotate the selector knob into the corresponding position.
   - For the MAN, HORN, or AUX functions, rotate the selector knob into the MANUAL or ALERT position, then press **and hold** the **MAN** button, **HORN** button, or **steering wheel horn**, respectively.
   - For the *Phaser Step Up function*, rotate the knob into the **PHSR** position, then press and release the **MAN** button.

   The tone currently programmed for that function will sound.

Tone Program Button

3. The *Tone Program* button can be found above the DIP switches on the rear of the siren. Using a paper clip, press and release it to cycle through the list of optional tones. *Review the chart below for the list of optional tones.*

4. De-activate the function to save the new tone.
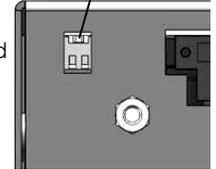
Tones For WAIL, YELP, and PHSR, and Phaser Step-Up Function		Tones For MAN Button and AUX Wire		Tones for Horn Button	
1	WAIL *(Wail default) §, *, †*	1	STANDARD AIR HORN *(AUX default)*	1	STANDARD AIR HORN *(default)*
2	YELP *(Yelp default) §, **	2	LOW FREQUENCY AIR HORN	2	LOW FREQUENCY AIR HORN
3	PHASER *(PHSR default)*	3	RAPID AIR HORN	3	RAPID AIR HORN
4	TWO-TONE *(PHSR Step Up default)*	4	AIR HORN II	4	AIR HORN II
5	MECHANICAL WAIL *(FIRE ENGINE) †*	5	DOUBLE POST POP AIR HORN	5	DOUBLE POST POP AIR HORN
6	MAX YELP *§, **	6	SINGLE AIR HORN	6	SINGLE AIR HORN
7	HOOT	7	SINGLE QUICK AIR HORN	7	SINGLE QUICK AIR HORN
8	RAPID HOOT	8	TWO TONE AIR HORN	8	TWO TONE AIR HORN
9	AIR HORN & YELP	9	MANUAL *(MAN default) **		
10	GHOST	10	MECHANICAL MANUAL *(FIRE ENGINE)*		
11	RAPID GHOST				
12	SINGLE AIR HORN				
13	SINGLE QUICK				
14	DOUBLE POST POP AIR HORN				
15	TWO TONE AIR HORN				
16	STANDARD AIR HORN				
17	CONTINUOUS TONE				
18	CONTINUOUS BEEP				

►►►► System Reset ◄◄◄◄

If you would like to reset ALL of the siren programming options to their defaults, activate any tone and press the *Program button* for six (6) seconds. The LED will flash once, then twice, then three times, and all siren tones will stop.

§ = SAE approved
* = California Title 13 approved when configured properly
† = See Wind Down or Hard Stop option on next page

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Wind Down or Hard Stop Option

By default, the Wail tones indicated by the "†" in the chart on the previous page will "wind down" when they are de-activated. If you prefer to have them immediately stop (i.e. hard stop), hold the Program Button for 3 seconds (until the LED flashes once). This will change it to a hard stop. Repeat to change back to the wind down option.

Tone Disable Option

Some municipalities may ban the use of specific tones, such as the *Phaser* tone. The *Phaser Disable* jumper option (found in our previous versions of the SS700) has been replaced with the *Optional Tone Programming* feature described on the previous page. Use that option to reprogram the **PHSR** default tone from **Phaser** to any of the other tones listed above.

Auxiliary-Manual Function Option

By default, when the siren is in **PHSR**, **YELP**, or **WAIL** modes, and the AUX function is activated (typically by the steering wheel horn relay), the siren will produce the standard Air Horn Tone (#1 in the chart on the previous page) and temporarily override the siren tone. If you would rather have the AUX function (i.e. steering wheel horn) mimic the MAN button *(see MAN button functions on pages 8-9)*, then you should program the AUX function for tone #9 (Manual) or #10 (Mechanical Manual).

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General

This unit is designed for easy operation under the stress associated with high-speed pursuit. Most siren functions are accessible with one simple motion without repetitive activation of switches or automatic timed switching that can interfere with desired operation.

Power/PA Knob

The **PA** knob is located in the upper right hand corner of the front face. It has two functions:

ON/OFF - This knob turns the siren on and off. While in the OFF position none of the siren functions will work. Also, the vehicle horn will function normally, if connected properly. The position of this knob does NOT affect the siren backlighting.

PA Volume Control - This knob also provides you the ability to adjust the public address volume. It should be set when the vehicle is parked. Typically you should set the PA volume to the maximum possible level with no feedback (squeal).

Selector Switch

The rotary selector switch controls the primary operating function of the siren.

PHSR - Ultra-fast changing tone used for maximum attention.

YELP - A rapidly changing tone used in congested areas.

WAIL - A slower changing tone used on highways.

HF - Hands Free - A silent standby mode also known as Horn Ring Cycler. Allows the user to cycle through the tones programmed for the WAIL, YELP, PHSR, and OFF by repeatedly pressing the horn or other switch connected to the AUX input. Changing the rotary knob to any other mode will resume normal siren operation.

MAN - A silent standby mode that allows push-button Manual, push-button Horn, and Public Address operation. The siren output winds down when the MAN button is released.

ALERT - A silent standby mode that allows push-button Manual, push-button Horn and Public Address operation. The siren output terminates immediately when the MAN button is released.

RADIO - Also known as Radio Repeat, this function amplifies a radio speaker input for re-broadcast outside the vehicle. The PA remains functional, but <u>no siren tones are available in this position</u>.

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The front panel of the SS700 contains two momentary push-button switches for the Manual function and the Air Horn.
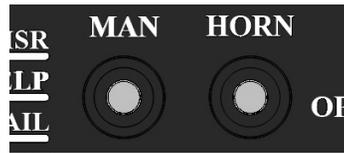
MAN Button

Rotary Switch
Position — *Function When MAN Pressed*

MAN or HF — Produces a rising siren tone while being pressed. The siren output "winds down" when the MAN button is released.

ALERT — Also produces a rising tone, but the siren output immediately stops when the button is released.

PHSR/YELP/WAIL — The MAN button will "step" the siren up to the tone programmed for the next function:

(**WAIL➡YELP➡PHSR➡Phaser Step Up**)

These quicker tones are used to momentarily alert motorists at intersections and very highly congested areas. Pressing the MAN button once changes to the next faster tone. Pressing the MAN button again, reverts the siren back to the original tone.

HORN Button

Pressing the HORN button provides a simulated air-horn tone while pressed. This can be used to either replace or to supplement the normal vehicle horn and is useful at intersections. This tone will override all other siren tones. *See pages 4-5 for programming optional Air Horn tones.*

Radio Volume

The radio repeat volume (Radio) control is recessed in the upper left hand corner of the front face. This should be set when the vehicle is parked. First set the volume level of the vehicle's two-way radio to its normal operating volume. Adjust the siren's rotary selector switch into the RADIO position. Insert a small, flat blade screwdriver into the RADIO volume adjustment port. Turn in a clockwise direction to increase the sound level.

Microphone

The attached microphone is used for public address operation and overrides any siren tone when its push-to-talk (button on the side) is pressed.

Auxiliary Input

During installation an auxiliary input may be connected to the vehicle horn ring or other switching device *(see page 3)*. It provides the same operation as pressing the HORN button or can be programmed to function like the MAN button *(see page 5)*.

Park-Kill Cutout

During installation, the Park-Kill input may be connected to a door switch *(see page 3)*. It will automatically turn off any siren tone when the door is opened. The siren tone will continue to be cut off even when the door is closed. Changing any switch or input will restore normal function.

Troubleshooting

Speaker Diagnostics

There is a diagnostic LED shaped like a speaker located in the upper right hand corner of the front panel. This LED will only turn on while a tone is trying to be generated. It can be used to help identify the siren/speaker status.

Steady - Speaker is connected and operating properly.
Single Flash - Standby Mode
Double Flash - Short/Over Current
Triple Flash - Park-Kill Activated
Quad Flash - Improper Voltage (too high or low)
Off - No speaker is connected, or
- The siren is Off, or
- The speaker or wire connection has come loose or is electrically open

This unit is designed to provide years of reliable service under even the worst conditions. Many times there may appear to be a problem with the unit when the true problem is in the speaker(s) or improper installation. The following chart shows typical symptoms and possible causes.

Symptom	Possible Cause	Check
No power	Connector loose	Check connector
	Siren 20A fuse blown	Is power hooked up backwards? Positive ground vehicle?
		Is an external fuse or circuit breaker used?
	Loose connection at power source	Are the negative leads connected to a good ground?
No siren tone - PA works	High voltage protection	The input voltage must be less than 16 volts for SS700-013 or less that 34 volts for SS700-013-28.
	Low voltage protection	The input must be greater than 10V (SS700-013) or 19V (SS700-013-28) with the siren turned on.
No siren tone - No sound	Microphone button stuck	Does microphone button release properly?
	Park Kill polarity option set wrong	Is the PK jumper option properly configured?
	Park Kill activated	Does the siren work when Park Kill input is disconnected?
	Bad speaker or speaker wiring	Check for a short.
		Check for an open.
No PA	PA volume not set properly	Have you tried turning the PA volume control?
Distorted siren sound	Speaker assembly loose	Is the speaker bell or tip loose?
	Intermittent Aux. Input connection	Is the Aux. Input connected properly to horn relay?
	Low or high vehicle voltage	Input voltage must be between 10-16 volts (SS700-013) or 19-30volts (SS700-013-28) while siren is on and drawing full current.
Intermittent siren tone	High voltage protection	Is the vehicle voltage regulator working properly?
	Low voltage protection	Is the connector tight on the back of the unit? Is there a loose connection on a power lead? The input must be greater than 10V (SS700-013) or 19V (SS700-013-28) with the siren on and drawing full current.
	Microphone button activation	Is something lying on the microphone?
	Circuit breaker in supply connection	Is a circuit breaker used with at least a 50A rating?
	Shorted speaker or speaker wire	Does the speaker have water damage, or is a wire pinched?
Horn function or Manual or Phaser stuck on	Manual or Horn push buttons stuck	Does the switch return fully when released?
	Aux. Input improperly connected	Is the Aux. Input used and wired properly?
	Aux. Input Polarity Option set wrong	Is the AUX polarity jumper option properly configured?
No Radio	Unit not connected to radio	Is the radio connected properly to the unit?
	Radio volume too low	Can you hear the radio in the vehicle?
		Adjust the Radio volume control
Wrong siren tone	Siren tones programmed incorrectly?	Re-program tones/Use System Reset (page 5)

Fuse Replacement

On the back of the unit you will find a 20 amp automotive type blade fuse. If your siren fails to power up, please check that the fuse has not blown. If it has blown, check your wiring for shorts and replace the fuse only with another 20 amp fuse.
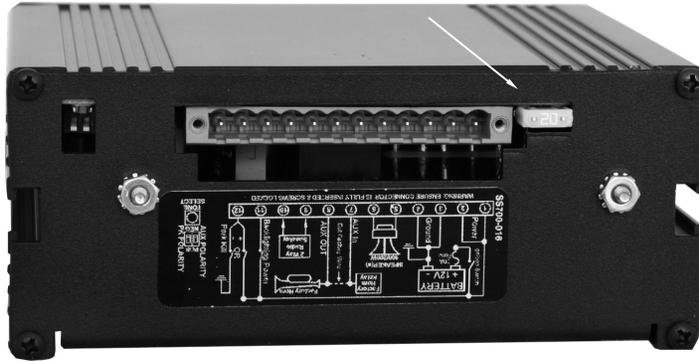
If the fuse continues to blow, please contact our Customer Service Department to obtain a Returned Materials Authorization number (RMA #) so that you can ship the siren back to us for service.

Specifications

Input Voltage	10 - 16 VDC (SS700-013) or 19-30VDC (SS700-013-28) - Negative ground
Input Current (SS700-016)	8.0 Amps @ 13.6 VDC (single 100W speaker) 16 Amps @ 13.6 VDC (dual 100W speakers)
Input Current (SS700-016-28)	4.0 Amps @ 28 VDC (single 100W speaker) 8 Amps @ 28 VDC (dual 100W speakers)
Standby Current	Switch Off/Backlighting Off - Less than 4 mA Switch On/Backlighting Off - Less than 7 mA Switch Off/Backlighting On - Less than 18 mA Switch On/Backlighting On - ≈ 22 mA
Audio Frequency	200Hz - 10 kHz $\pm$ 3db
Output Power	105 WATTS RMS MAX. (15.0 VDC - single 100W speaker) 200 WATTS RMS MAX. (15.0 VDC - dual 100W speakers)
Siren Frequency	675Hz - 1633Hz
High Voltage Protection	16-18 VDC will cause siren output to cease, resumes at normal voltage (30-34 VDC for the SS700-013-28)
Short Circuit Current	50 AMPS (supply circuit must be capable of supplying this)
Operating Temperature	-22° F to +140°F
Diagnostic Indicator	LED indicator provides diagnostic feedback
Connections	Detachable 12-terminal connector
Size	6" Wide, 5.8" Deep, 2-1/2" High
Shipping Weight	6 lbs.

Service

Parts

Part	Description
S30161-18	Siren Top Extrusion
P30234-11-1P	Siren Bottom Mounting Plate
SWH-152	Optional Wiring Harness
P30069-38	Microphone Bracket with Screws
P30056-16	1/4-20 x 3/8" Hex Locking Bolt
P30028-23	20 Amp Automotive Fuse
P30232-1	Noise Cancelling Microphone
P30208-10	Microphone Strain Relief
P30032-8	TIP36CPowerTransistor
S30239-11	Rotary Selector Switch Knob
30239-2	PA Volume Knob
P30147-44	Mounting Bracket
P30052-40	Case Screws

If you have any questions concerning this or any other product, please contact our **Customer Service Department** at (585) 226-9787.

If a product must be returned for any reason, please contact our Customer Service Department 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.

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