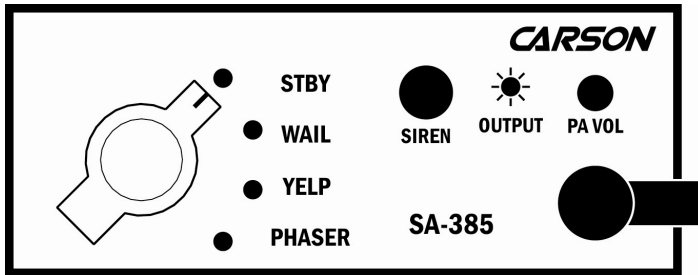


CARSON

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SA-385-10 SIREN AMPLIFIER



INSTALLATION AND OPERATING INSTRUCTIONS

Carson is a trademark of Carson Manufacturing Company, Inc.

WARNING **Sound Hazard** - Sound level from siren speaker (>120dBA @ 10 feet) may cause hearing damage. Do not operate siren without adequate hearing protection for you and anyone in immediate vicinity. (Ref. OSHA 1910.95 for occupational noise exposure guidelines)

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GENERAL DESCRIPTION

The SA-385 Siren Amplifier is designed for single 100W speaker use. The primary operating modes are Standby, Wail, Yelp, and Phaser, selected by a 4-position rotary switch. A Noise Canceling PA Override and push-button override are available in all modes. PA volume control provided on front panel. Auxiliary input is provided for connection to horn ring circuit or switch for additional siren control. The unit features instant-on allowing the unit to produce a tone or PA instantly when a control is activated. A DIP switch provides options such as Two-Tone, disable tones, HRC2 operation, Auxiliary function, etc. The unit utilizes short circuit, high voltage, and reverse polarity protection systems for maximum service life. Output indicator light on face for diagnostics.

SPECIFICATIONS

Speaker Load	Single 100W 11ohm				
Input Voltage	10 - 16 VDC (negative ground)				
Input Current	8 AMPS (@14 VDC - single 100W speaker)				
Standby Current	0 mA (20mA for backlight lamp)				
Audio Frequency	200Hz - 10kHz \pm 3db				
Audio Distortion	Less than 3% (@1 kHz - 100W speaker)				
Audio Output	40 watts (@14 VDC - 100W Speaker)				
Output Power	105 WATTS RMS MAX. (15 VDC - single 100W speaker)				
Siren Frequency	700Hz - 1500Hz (Two-Tone and Horn = 435 & 585Hz)				
Tones / Cycle Rates	Horn	Wail	Yelp	Phaser	Two-Tone
Cycle Rates	109 CPS	13 CPM	190 CPM	15 CPS	60 CPM
High Voltage Protection	16 - 18 VDC will cause siren output to cease, resume at normal voltage				
Short Circuit Current	50 AMPS (supply circuit must be capable of supplying this for 1 second)				
Operating Temp.	-15° F to +140°F				
Controls	4-position rotary selector switch (Standby, Wail, Yelp, and Phaser). Momentary push-button override switch (Manual siren control and Horn). Front panel PA volume control. Auxiliary input programmable for positive or negative activation. 8-position DIP switch option selector.				
Connections (6-Pin Conn)	Positive, Negative, (2) Speaker, Backlight Lamp, Auxiliary				
Size	4-1/2" Wide, 1-15/16" High, 5-9/16" Deep				
Weight	4 LBS.				

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.

Carson Manufacturing Co., 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.

Carson Manufacturing Co., Inc. 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.

See www.carson sirens.com for latest information.



INSTALLATION

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.

SAFETY PRECAUTIONS

For the safety of the installer, vehicle operator, passengers and the community please observe the following safety precautions. **Failure to follow all safety precautions and instructions may result in property damage, injury or death.**

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

		WARNING Sound Hazard - Sound level from siren speaker (>120dBA @ 10 feet) may cause hearing damage.
		Do not operate siren without adequate hearing protection for you and anyone in immediate vicinity. (Ref. OSHA 1910.95 for occupational noise exposure guidelines)

Mounting - Mount the unit for easy access by the vehicle operator. DO NOT mount in air bag deployment area. Assure clearances before drilling in vehicle. To prevent internal damage mounting bolts must not enter case more than 1/4"

Wiring - Use wiring capable of handling the current required. Make sure all connections are tight. Route wiring to prevent wear, overheating and interference with air bag deployment. Install and check all wiring before connection to vehicle battery.

Testing - Test all siren functions after installation to assure proper operation. Test vehicle operation to assure no damage to vehicle.

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.**

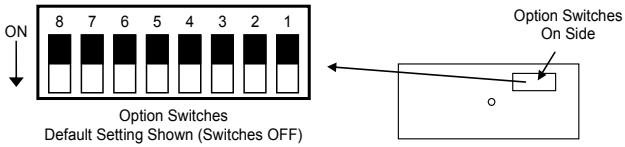
Contact supplier immediately if any items are missing.

Contents of box should include the following items:

Qty	Item
1	Amplifier Unit (SA-385-10 14)
1	Bracket, Microphone Clip with mounting screws (CP3633)
1	Bracket, 'U' Dash Mount (CP5037)
2	Bolts, 'U' Mounting Bracket (CP3966)
1	Connector, 6-P Terminal Block Plug (CP4688-06)
1	Instruction Manual (CP5042 This Manual)

OPTION SWITCHES

An 8-position DIP switch on the remote amplifier may be changed to select various options.



SW-1 Auxiliary Input Polarity - The auxiliary input is normally activated with positive, turn this switch ON for negative activation.

SW-2	SW-3	Auxiliary Input Function with Unit set to Standby
OFF	OFF	(Default) Produces Horn tone while activated.
ON	OFF	Produces Phaser tone while activated.
OFF	ON	Produces Manual siren tone.
ON	ON	Activates Horn Ring Cyclers 2 (HRC2) function.

SW-4 Two-Tone - Turn this switch ON to replace Phaser with Two-Tone.

SW-5 Phaser Inhibit - Turn this switch ON to disable Phaser tone. Phaser replaced with Yelp.

SW-4 and 5 Siren Tone Disable - All siren tones may be disabled except Horn by turning ON both switches. The Siren push-button switch and Auxiliary input will produce Horn tone.

SW-6 Horn Inhibit - Turn this switch ON to disable Horn tone. Horn replaced with Yelp.

SW-7 Short Manual - The manual tone normally falls and dies out when the manual switch is released. Turn this switch ON to have the tone stop immediately.

SW-8 Horn Override - While in standby mode, the Siren push-button switch will normally activate manual tone. Turn this switch ON to momentarily activate Horn tone.

HORN RING CYCLER 2 (HRC2) - Turn on DIP SW-2 and SW-3 to enable this feature. Also connect the auxiliary input to the horn ring or other switch. While the siren is in standby, tap the horn ring to bring the unit out of standby into Wail tone. Repeatedly tapping the horn ring will cycle through Wail, Yelp, and Phaser tones. Tapping the horn ring twice quickly will stop the siren tones and return the unit to standby. Pressing and holding the horn ring will produce Horn tone until released. Then the siren will return to its previous siren tone or standby.

MOUNTING

The mounting bracket supplied can be installed above or below the unit. Choose a mounting location convenient to the operator and away from any air bag deployment areas. Inspect behind mounting area for clearance. Assure adequate ventilation to prevent overheating. Consider wire routing and access to connections, as well as microphone bracket placement. Install mounting bracket to vehicle using 1/4" hardware (not supplied). If mounting in a rack or console, make sure that mounting bolts do not enter case more than 1/4".

ELECTRICAL CONNECTIONS

Electrical connections to the unit are made using a removable terminal block plug located on the back. A label on the unit identifies each terminal function. Install the plug on the unit before wiring. If the unit needs service the plug can be easily removed without unwiring. The power supply of the unit must be capable of delivering peak currents up to 50 amps for adequate short circuit protection and reliable operation. The preferred source is directly at the vehicle battery. The unit is fused near connector.

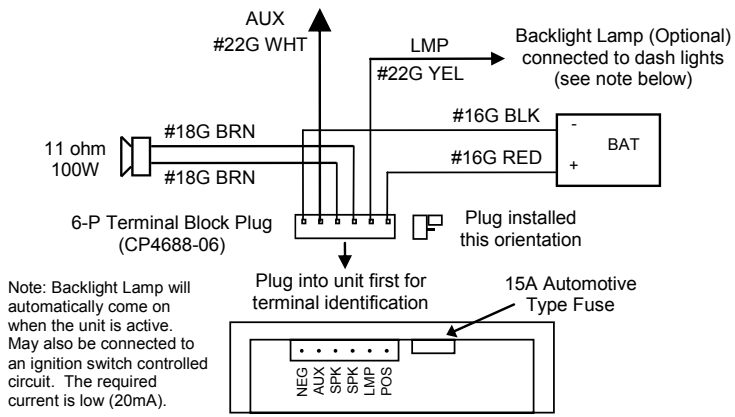
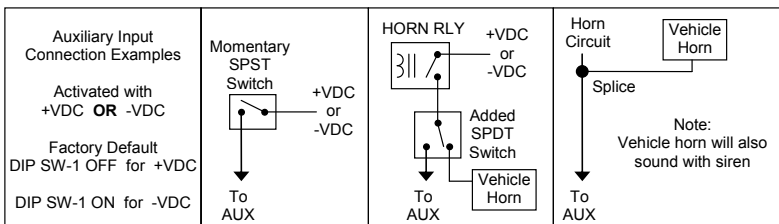
Attach leads by stripping 3/8", inserting into plug and clamp by tightening screw. Make sure the screw is tight and the wire can't be pulled out.

Failure to adequately tighten the screw can result in improper operation or burning the connector and wire.

Wire Size and Termination - The diagram shows the minimum wire size used for each connection, along with recommended lead color. If the wire is longer than 10 ft. use the next larger wire size. Use only high quality crimp connectors for installation on the vehicle.

Auxiliary Input Connection (AUX) (Optional) - A momentary input typically connected to the horn ring of the vehicle or other switch. The auxiliary input may be activated with positive or negative voltage. Input current is less than 10 mA. See OPTION SWITCHES section for polarity selection.

NOTE: Permanent disconnection of the vehicle horn is NOT recommended.



OPERATION

WARNING **Sound Hazard** - Sound level from siren speaker (>120dBA @ 10 feet) may cause hearing damage. Do not operate siren without adequate hearing protection for you and anyone in immediate vicinity. (Ref. OSHA 1910.95 for occupational noise exposure guidelines)

POWER ON/OFF

The unit is turned on/off automatically (instant on) with the siren, PA, or auxiliary input controls. The Backlight will also turn on automatically. The backlight may also turn on independently with vehicle ignition switch. See INSTALLATION section.

ROTARY SELECTOR SWITCH

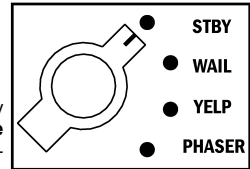
A rotary switch controls the primary operating mode of the siren.

Standby - A silent mode that may be overridden anytime.

Wail - A slower changing tone used on highways.

Yelp - A rapidly changing tone used in congested areas.

Phaser - A very rapid changing tone used at intersections or very highly congested areas. May be optionally replaced with **Two-Tone** or disabled. Two-Tone is two alternating frequencies like a European Hi-Lo. See OPTION SWITCHES section.



SIREN BUTTON

This momentary push-button switch provides Manual or Horn tones.

Manual - With selector switch in Standby, siren tone rises while pressed and falls when released until silenced. May be optionally replaced with **Horn** tone. See OPTION SWITCHES section.

Horn - With selector switch out of Standby, produces a simulated air-horn tone that can be used to supplement the normal vehicle horn. Used at intersections or in low noise areas.



AUXILIARY INPUT FUNCTIONS

The switch or horn ring attached is intended to be momentary.

When the selector switch is in **Wail, Yelp, or Phaser** activating auxiliary will produce Horn tone.

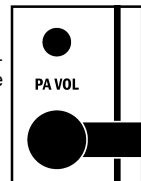
With selector switch in **Standby**, activating auxiliary will normally produce Horn tone. Different tones are available. See OPTION SWITCHES section.

Horn Ring Cyclor 2 (HRC2) - this feature may also be added by turning on the HRC2 option. HRC2 is only available while the unit is in **Standby**. Tapping the attached horn ring or other switch, will bring the unit out of standby into Wail tone. Repeatedly tapping the horn ring will cycle through Wail, Yelp, and Phaser tones. Tapping the horn ring twice quickly will stop the siren tones and return the unit to standby. Pressing and holding the horn ring will produce Horn tone until released. Then the siren will return to its previous siren tone or standby.

Selector Switch (Mode)	Siren Switch	Auxiliary Input (Horn Ring)
Standby	Manual (Default) or Horn	Horn (Default), Manual, Phaser, or HRC2
Wail, Yelp, or Phaser	Horn	Horn

PA (Public Address)

The noise canceling microphone is used for public address operation and overrides any siren mode when the button on the side is pressed (PTT). Adjust the PA Volume and hold the microphone close to your lips for proper operation.



SERVICE

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 or improper installation. The following chart shows typical symptoms and possible causes.

A blown siren fuse doesn't necessarily mean that the unit is bad. If a speaker or speaker lead is shorted the fuse will blow before the unit is damaged. Disconnect the SPK leads and replace the fuse. If the **OUTPUT** light on face of unit comes on with Yelp mode selected the amplifier is OK. Check the speaker or leads for possible shorting.

PROBLEMS

Symptom	Possible Cause	Check
No power or siren output	Bad speaker Connector loose Amplifier fuse blown Loose connection at power source	Is the OUTPUT light on face coming on in Yelp? Is an external fuse or circuit breaker used? Is the backlighting coming on. Are the negative leads connected to a good ground?
No siren tone - PA works	High Voltage Protection Mic button stuck All siren tones disabled	Input voltage must be less than highest rated voltage. Does mic button release properly? Are the option switches set properly?
No PA	PA volume not set properly.	Have you tried turning the PA volume control?
Distorted siren sound	Speaker assembly loose Intermittent Aux Input connection Low vehicle voltage	Is the speaker bell or tip loose? Is the Aux Input used and wired properly? Input voltage must be greater than lowest rated voltage.
Intermittent siren tone	High Voltage Protection Connector loose Bad power connection Mic button activation Circuit breaker in supply connection	Is the vehicle voltage regulator working properly? Are the connections tight on the back of the unit? Is there a loose connection on a power lead? Is something lying on the microphone? Is a circuit breaker used with at least a 50A rating?
Horn function stuck on or Manual stuck on	Siren button stuck Aux input improperly connected Aux input polarity set wrong	Does the siren button return fully when released? Is the auxiliary input used and wired properly? Is the auxiliary polarity option set properly?
Wrong siren tone	Two-Tone option selected Tones disabled	Check option switch settings.
Some siren tones not working	Particular siren tones disabled	Check option switch settings.

PARTS and ACCESSORIES

The following parts and accessories are available from Carson Manufacturing Company, Inc.:

Part	Description
CP4837	Button, Switch Cap Red (for push-button switch)
CP4684	Control, 1K Vertical w/ Knurled Shaft (PA Volume)
CP5041	Cover (not including chassis)
CP4990-150	Fuse, 15 Amp Mini Automotive
CP4852	Knob, Selector Switch
CP5043	Label, SA-385-10 Front Panel
CP4750	Microphone, Noise Canceling w/Connector
SR-15-1	Microphone Strain Relief
CP4685	Switch, Momentary Push Button (Siren)
CP4969	Switch, Rotary 4-Pos. Selector
CP4119	Transistor, output (replace in pairs, 2 required)
Accessory	Description * - standard accessory supplied with complete unit
CP3633 *	Bracket, Microphone Clip with mounting screws
CP5037 *	Bracket, 'U' Dash Mount
CP3966 *	Bolts, 'U' Mounting Bracket (typically 2 ea required)
CP4688-06 *	Connector, 6-pin Terminal Block Plug
CP5042 *	Instruction Manual

See www.carsonsirens.com for additional information
or contact our Service Department at:
E-mail service@carsonsirens.com or Phone (888) 577-6877

RETURN

If you have any questions concerning this or any other Carson product, please contact our **Technical Service Department** at (888) 577-6877. Many issues can be handled over the phone. We can also be reached via e-mail at **service@carsonsirens.com**

If a product must be returned for any reason, please contact our Technical Service Department to obtain a Returned Merchandise Authorization number (RMA#) before you ship the product to Carson. Please write the RMA# clearly on the package near the mailing label. Be sure to provide a return address, contact and phone number, along with a brief description of the problem.

LIMITED WARRANTY

Carson Manufacturing Company, Inc. warrants this new product to be free from defects in material and workmanship, under normal use and service, for a period of five (5) years from the date of delivery to the first user-purchaser.

During this warranty period the obligation of Carson Manufacturing is limited to repairing or replacing, as Carson Manufacturing may elect, any part or parts of such product which after examination by Carson Manufacturing is determined to be defective in material and/or workmanship.

This warranty does not cover labor charges for removal or re-installation of the product. Fuses and lamps are not covered under this warranty.

This warranty does not extend to any unit that has been subjected to abuse, misuse, improper installation or which has not been adequately maintained, nor to units which have problems related to service or modification at any facility other than Carson Mfg.

THERE ARE NO OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL CARSON MANUFACTURING COMPANY, INC. BE LIABLE FOR ANY LOSS OF PROFITS OR ANY INDIRECT OR CONSEQUENTIAL DAMAGES ARISING OUT OF ANY SUCH DEFECT IN MATERIALS OR WORKMANSHIP.