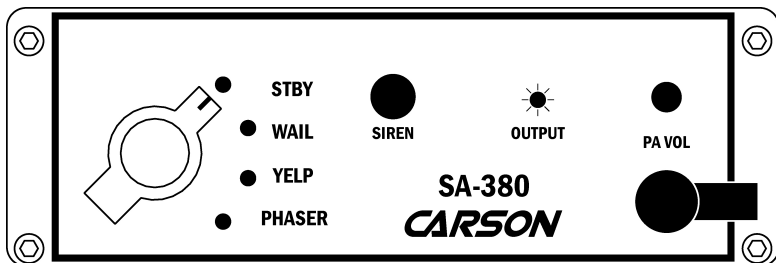


CARSON

Carson Manufacturing Co., Inc.
5451 North Rural Street
Indianapolis, IN 46220
Phone: (888) 577-6877 Fax: (317) 254-2667
www.carsonsirens.com

SA-380-10 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)

TABLE OF CONTENTS

- GENERAL DESCRIPTION 3
- SPECIFICATIONS 3
- INSTALLATION 3
 - SAFETY PRECAUTIONS 3
 - UNPACKING 4
 - MOUNTING 4
 - OPTION SWITCHES 4
 - ELECTRICAL CONNECTIONS 5
- OPERATION 6
 - POWER ON/OFF 6
 - ROTARY SELECTOR SWITCH 6
 - SIREN BUTTON 6
 - AUXILIARY INPUT FUNCTIONS 6
 - PA (Public Address) 6
- SERVICE 7
 - PROBLEMS 7
 - PARTS 7
 - RETURNS 8
 - WARRANTY 8

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.

GENERAL DESCRIPTION

The SA-380 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. Power for the unit is controlled by an enable input or optional instant on feature with the front panel controls. An internal DIP switch provides options to select Two-Tone, disable tones, HRC2 operation, Auxiliary function, etc. The front panel is backlit with LED's for night visibility. The unit utilizes short circuit, high voltage, and reverse polarity protection systems for maximum service life. An output light indicates siren signal output for troubleshooting.

SPECIFICATIONS

Input Voltage	9 - 16 VDC (negative ground)				
Input Current	8 AMPS (@14 VDC - 100W speaker)				
Standby Current	Less than 150 mA (@ 14 VDC w/ enable lead energized)				
Audio Frequency	200Hz - 10 kHz + 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 - 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)				
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. Internal 8-position DIP switch option selector.				
Connections (leads)	Positive with in-line fuse, Negative, (2) Speaker, Auxiliary and Enable inputs.				
Size	6" Wide, 6" Deep, 2" High				
Weight	4 LBS.				



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.

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.

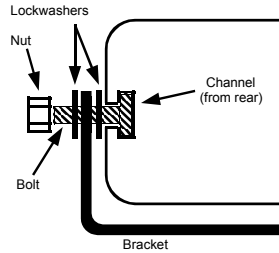
Keep These Instructions - Keep these instructions in the vehicle or other safe place for future reference. Advise the vehicle operator of the location.

UNPACKING

Inspect contents for shipping damage. If found **alert carrier immediately**. Contents should include unit with attached microphone, mounting bracket, microphone bracket with 2 screws, mounting hardware and these instructions. Contact supplier immediately if any components are missing.

MOUNTING

The mounting bracket supplied can be installed above or below the unit. Mounting bolts slide into channels on each side of the case. Lockwashers should be used between the case and bracket as well as between the bracket and nut. 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).



OPTION SWITCHES

An internal 8-position DIP switch on the circuit board may be changed to select various options.

Accessing Option Switches - the DIP switch is located just behind the front panel of the amplifier. Use a 7/64" allen wrench to remove the 4 corner screws and front panel. Be careful not to unplug internal microphone connection.

1 (AUX_P) Auxiliary Input Polarity - The auxiliary input is normally activated by positive. Turn switch off to activate with negative.

2 (AUX_F) Auxiliary Function - The auxiliary input normally activates Manual siren tone while in standby, turn switch on to activate Horn tone instead.

3 (HRC) Horn Ring Cyclor 2 (HRC2) - While the siren is in standby, the auxiliary input can cycle through Wail, Yelp, and Phaser tones by repeatedly activating the auxiliary input. Turn switch on to enable this feature. See OPERATION section for further details.

4 (T-T) Two-Tone - Two-Tone replaces Phaser tone by turning on switch.

5 (P_I) Phaser Disable - Phaser and Two-Tone tones are disabled by turning on switch.

4 & 5 Siren Tone Disable - Disable all siren tones (except Horn) by turning switch 4 and 5 on.

6 (H_I) Horn Disable - Horn tone is disabled by turning on switch.

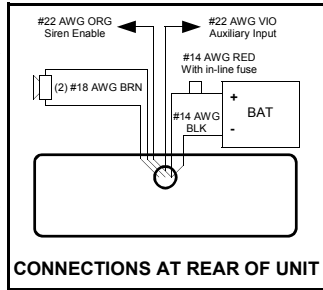
7 (SM) Short Manual - The Manual siren tone will normally die out and stop when activation is released. Turn switch on to have the Manual siren tone stop immediately.

8 (INST_ON) Instant On - The Enable input is normally required to turn on the unit. With this switch on, the siren controls will instantly power on the unit even without the Enable input active. See OPERATION section.

ELECTRICAL CONNECTIONS

Electrical connections to the unit are made using common butt splices (not supplied) attached to the leads provided. A label on the unit identifies the lead function. 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 provided with an in-line fuse. **Failure to adequately crimp splices can result in improper operation or burning the wire.**

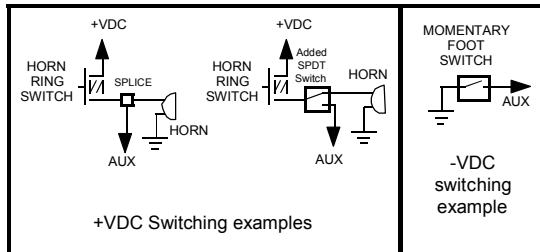
Wire Size and Termination - The diagram shows the minimum wire size used for each connection, along with recommended lead color. If the wire is longer than 10 ft. use the next larger wire size. Use only high quality crimp connectors for installation on the vehicle. Tape insulate lead to prevent accidental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



Siren Enable Connection (orange lead) - This is like a power switch for the unit. Connect to a positive circuit controlled by the vehicle ignition switch, usually a terminal at the vehicle fuse block. Permanent power connection is not recommended as this keeps unit on unattended and may drain battery.


Note: The Siren enable lead may not be necessary if **Instant On** option is used. See OPTION SWITCHES section.

Auxiliary Input Connection (violet lead) - A momentary input typically connected to the horn ring of the vehicle. See **Auxiliary Polarity** under OPTION SWITCHES section for proper activation polarity. The orange Siren Enable lead connection is required for the Auxiliary Input to function when the rotary switch is in Standby.



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

Power is turned on and off by switching the orange siren enable lead. If the **Instant On** option is selected (See OPTION SWITCHES section), then changing rotary switch from Standby, pressing the Siren button, or keying the Microphone will power up the unit even if orange siren enable lead is not activated.

ROTARY SELECTOR SWITCH

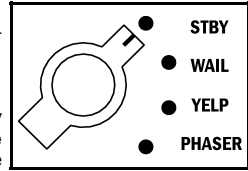
A rotary switch controls the primary operating mode of the siren.

Standby - A silent mode that allows Manual or Horn or PA operation.

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 Hi - Lo, a common European tone) or disabled entirely. 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.

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 (orange siren enable lead must be activated)

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

Manual - With selector switch in Standby, activates Manual siren tone or Optional Horn tone. See OPTION SWITCHES section.

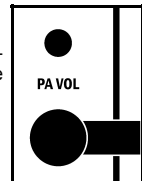
Horn - With selector switch out of Standby, produces Horn tone.

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.

Rotary Position	Normal Tone	Siren Push-Button	Auxiliary Input (Horn Ring)
Standby	Silent	Manual Siren	Manual Siren or Momentary Horn or HRC2
Wail	Wail	Momentary Horn	Momentary Horn
Yelp	Yelp	Momentary Horn	Momentary Horn
Phaser	Phaser	Momentary Horn	Momentary 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 in-line fuse doesn't necessarily mean that the unit is bad. If a speaker or speaker lead is shorted the in-line fuse will blow before the unit is damaged. Disconnect the SPKR leads and replace the fuse. If the **OUTPUT** light comes on with siren power enabled and Yelp mode selected it is OK. Check the speaker or leads for possible shorting.

PROBLEMS

Symptom	Possible Cause	Check
No power or siren output	No power to orange Enable lead Bad Speaker Connections loose In-line fuse blown Loose connection at power source	Does backlighting come on? Is the OUTPUT light on front panel coming on in Yelp? Is an external fuse or circuit breaker used? 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? Check option switch settings.
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 Auxiliary input used and wired properly? Input voltage must be greater than lowest rated voltage.
Intermittent siren tone	High Voltage Protection Connection 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 Aux function option set wrong	Check option switch settings?
Some siren tones not working	Particular siren tones disabled	Check option switch settings?

PARTS

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

Part	Description
CP3571	Bracket, Mounting
ATO/ATC 15A	Fuse, 15 Amp Automotive
CP4852	Knob, selector switch
CP4750	Microphone, Noise Canceling w/Connector
CP3633	Microphone Bracket with mounting screws
SR-15-1	Microphone Strain Relief
CP4119	Transistor, output (2 required) (Industry standard TIP36C, Not Texas Instruments)
ED1602	Hardware Kit (bolts, nuts, lockwashers)
CP4964	Instruction Manual

RETURNS

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.