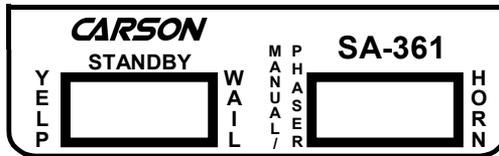
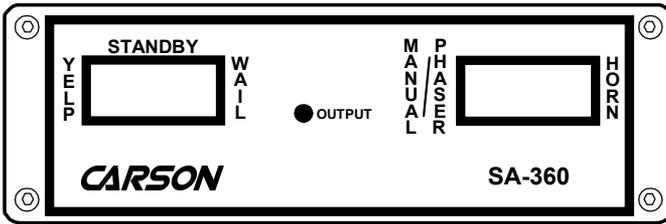


CARSON

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SA-360/361-10 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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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-360/361 Siren Amplifier is designed for single 100W speaker use. The primary operating modes are Yelp, Wail and Standby, selected by a 3-position rocker switch. Horn Override, push-on/push-off Phaser operation in the Yelp and Wail modes, and Manual siren control in the Standby mode are controlled by a momentary 3-position rocker switch. The SA-361 is a remote amplifier wired to a supplied switch panel or user supplied switches. An internal DIP switch provides options to select Two-Tone, disable tones, HRC2 operation, Auxiliary function, and Motorcycle mode. 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 - single 100W speaker)				
Standby Current	SA-360 < 75 ma ; SA-361 < 125 mA (@ 14 VDC w/ remote enable lead energized)				
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)				
Operating Temp.	-15° F to +140°F				
Controls	3-position rocker selector switch (Yelp, Wail and Standby). 3-position momentary rocker switch (Horn and Manual/Phaser toggle). 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 Remote Enable inputs. SA-361 has additional Wail, Yelp, Horn, Manual/Phaser switch inputs. SA-361 in Motorcycle mode has Wail/Yelp, Standby, Horn, Manual/Phaser switch inputs.				
Size	6" Wide, 6" Deep, 2" High				
Weight	3 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.

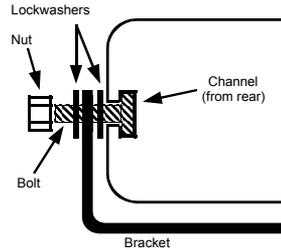
UNPACKING

Inspect contents for shipping damage. If found **alert carrier immediately**. Contents should include unit, mounting bracket, mounting hardware and these instructions. Contact supplier immediately if any components are missing. The **SA-361** is optionally supplied with a remote panel containing switches and six 3/16" quick-connect terminals.

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. Install mounting bracket to vehicle using 1/4" hardware (not supplied).

SA-361: The optional remote bracket of the SA-361 is mounted underneath the vehicle dashboard using #8 mounting hardware (not supplied). Mount the panel in a location away from the driver's or passenger's legs.



MOTORCYCLE LOCATION

A common location for the **SA-361** remote amplifier on a motorcycle is in the saddle bags. Make sure **road flares** are kept away from the amplifier in a separate container or compartment. The chemicals in the flares may corrode the amplifier and circuitry.

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.

Two-Tone - Replace Phaser tone with Two-Tone by turning on the switch labeled "T-T".

Phaser Disable - Disable Phaser and Two-Tone by turning on the switch labeled "P_I".

Horn Disable - Disable Horn tone by turning on the switch labeled "H_I". Horn will be replaced with Phaser.

Siren Tone Disable - Disable all siren tones (except Horn) by turning on the switches labeled "P_I" and "T-T".

Auxiliary Phaser - The auxiliary input normally activates Horn tone, turn on the switch labeled "AUX_F1" to activate momentary Phaser tone instead.

Horn Ring Cyler 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 on the switch labeled "AUX_F2" to enable this feature. See OPERATION section for further details.

Auxiliary Polarity - Auxiliary is normally activated with positive input. Turn **off** the switch labeled "AUX_P" for negative activation.

The following options should only be used on the **SA-361**.

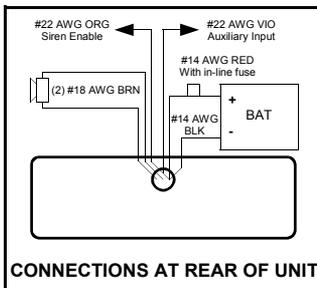
Remote Switch Polarity - The remote switch inputs (White, Yellow, Blue, and Green leads) are normally activated with negative input. Turn on the switch labeled "INPT_P" for positive activation on all remote switch inputs.

Motorcycle Mode - The Wail and Yelp remote switch inputs (White and Yellow leads) normally activate the Wail and Yelp modes of operation. Motorcycle mode changes the Wail input to Wail/Yelp toggle while the Yelp input is changed to activate Standby. Turn on the switch labeled "MOT_M" to enable this feature. See OPERATION section for further details.

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.**

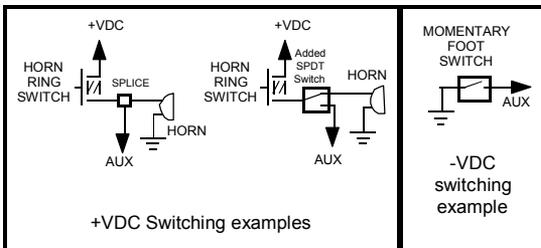
Wire Size and Termination - The diagram shows the minimum wire size used for each connection, along with recommended lead color. If the wire is longer than 10 ft. use the next larger wire size. Use only high quality crimp connectors for installation on the vehicle. Tape insulate lead to prevent accidental 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. The required current is low (15mA typ.). Permanent power connection is not recommended as this keeps unit on unattended and may drain battery.

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. Input current is 1 to 20 mA.



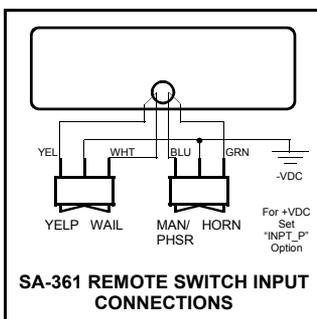
The **SA-360** does not necessarily need the orange Siren Enable and violet Auxiliary Input leads electrically connected. The switches on the face of the unit will power up the amplifier when activated. The Siren Enable lead is required for the Auxiliary Input to function when the "YELP - STANDBY - WAIL" switch is in standby.

The **SA-361** must have the orange Siren Enable lead electrically connected and activated when siren tones are required. The violet Auxiliary Input lead does not need to be electrically connected if this feature is not used.

SA-361 Remote Switch Connections - The optionally supplied remote panel is connected to the amplifier using butt splices, #22 lead wire and 3/16" quick-connect terminals (supplied loose). The adjacent diagram shows the proper lead color/terminal connections. The center terminal of each switch should be connected to negative VDC on vehicle. See **Remote Switch Polarity** under **OPTION SWITCHES** section if positive connection is preferred.

User supplied switches may require different connections. The "YELP - STANDBY - WAIL" switch should be a SPDT ON - OFF - ON. The "MAN/PHSR - HORN" switch should be a momentary SPDT (ON) - OFF - (ON).

In **Motorcycle Mode** the white and yellow input leads provide a different function. The switch used for these leads should be a momentary SPDT (ON) - OFF - (ON) or two momentary SPST OFF - (ON) switches for each lead. See **OPERATION** section for further details.



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)

SA-360

POWER ON/OFF

Power is turned on and off automatically with the switches on the face of the unit. The orange siren enable lead must be activated for falling manual tone and/or auxiliary input to function. See ELECTRICAL CONNECTIONS.

YELP or WAIL SELECTOR SWITCH

A 3-position rocker selector switch controls the primary operating mode of the siren.

Yelp - A rapidly changing tone used in congested areas.

Wail - A slower changing tone used on highways.

Standby - A silent mode that allows Manual and Horn operation.



MANUAL/PHASER or HORN SWITCH

This momentary rocker switch provides Manual, Phaser toggle, or Horn tones.

Manual - With selector switch in Standby, siren tone rises while pressed and falls when released until silenced.

Horn - Overrides all other siren tones when pressed. Provides a simulated air-horn tone that can be used to supplement the normal vehicle horn. Used at intersections or in low noise areas. May be optionally replaced with momentary Phaser. See OPTION SWITCHES section.

Phaser - With selector switch in Wail or Yelp, this tone override is toggled on and off by repeatedly pressing switch. A very rapid changing tone used at intersections and very highly congested areas. May be optionally replaced with **Two-Tone**. See OPTION SWITCHES section. Two-Tone is two alternating frequencies like a European.



AUXILIARY INPUT FUNCTIONS (orange siren enable lead must be activated)

The switch or horn ring attached is intended to be momentary. Depending on the **Auxiliary Phaser** option setting, activating this input gives a momentary Horn or Phaser tone. 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.

SA-361

POWER ON/OFF

Power is turned on with the orange siren enable lead. POWER indicator on face illuminates.

REMOTE SWITCH INPUTS

With the control switches connected as described in ELECTRICAL CONNECTIONS, the functions are the same as described for the SA-360 above.

MOTORCYCLE MODE

The remote amplifier may be setup to work with switches on a motorcycle. Turn on the **Motorcycle Mode** option switch for this mode. See OPTION SWITCHES section. The white lead input will change to Wail/Yelp mode while the yellow lead input changes to Standby mode. Momentarily pressing the Wail/Yelp switch will bring the unit out of Standby into Wail mode. Repeatedly pressing the Wail/Yelp switch will toggle modes between Wail and Yelp. Pressing the Standby switch will return the unit to Standby mode. The remaining features, options, and inputs including Auxiliary will function the same as normal mode.

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 Wail mode selected it is OK. Check the speaker or leads for possible shorting.

PROBLEMS

Symptom	Possible Cause	Check
No power or siren output	Connections loose In-line fuse blown Loose connection at power source No power to orange Enable lead Wrong polarity on remote switches	Does the OUTPUT or POWER (SA-361) light come on? Is an external fuse or circuit breaker used? Are the negative leads connected to a good ground? The SA-361 requires positive power to Siren Enable. Default setting for SA-361 remote switch polarity negative.
No siren tones	Bad Speaker High Voltage Protection All siren tones disabled	Is the OUTPUT light on face coming on in Wail? Input voltage must be less than highest rated voltage. Check option switch settings.
Distorted siren sound	Speaker assembly loose Intermittent remote switch connection Low vehicle voltage	Is the speaker bell or tip loose? Are the remote switches wired properly? Input voltage must be greater than lowest rated voltage.
Intermittent siren tone	High Voltage Protection Connection loose Bad power connection 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 a circuit breaker used with at least a 50A rating?
Horn function stuck on or Manual/Phaser stuck on	Horn switch stuck Manual/Phaser switch stuck Aux input improperly connected Aux input polarity set wrong	Does the horn switch return fully when released? Does Manual/Phaser switch 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 Motorcycle Mode option selected. Remote switches wired incorrectly	Check option switch settings? Are the remote switches wired properly?
Some siren tones not working	Particular siren tones disabled Remote switches wired incorrectly	Check option switch settings? Are the remote switches wired properly?

PARTS

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

Part	Description
ED1602	Hardware Kit (bolts, nuts, lockwashers)
CP4062-K2523	3/16" quick-connect terminal - AMP#2-520194-2 or equivalent (SA-361 only)
ATO/ATC 15A	15 Amp Automotive Fuse
ED1773	SA-361 Remote Panel Assembly (includes rocker switches)
CP4748-2	Red Rocker Switch, ON - OFF - ON (Wail - Standby - Yelp)
CP4751-2	Momentary Red Rocker Switch, (ON) - OFF - (ON) (Man/Phsr - Horn)
CP4197-02	Output Power Transistor (replace in pairs, 2 required)
CP3571	Mounting Bracket
CP4919	SA-360/361 Installation Instructions

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.