CARSON

SC-409-10
SIREN AMPLIFIER
WITH LIGHT CONTROL

OFF	1	2	3			PA VOL	OUTPUT

STBY — WAIL
CYCLER — YELP
RADIO — PHASER

CARSON
SC-409

MANUAL

HORN

AUX 1	AUX 2	AUX 3	AUX 4	AUX 5	AUX 6
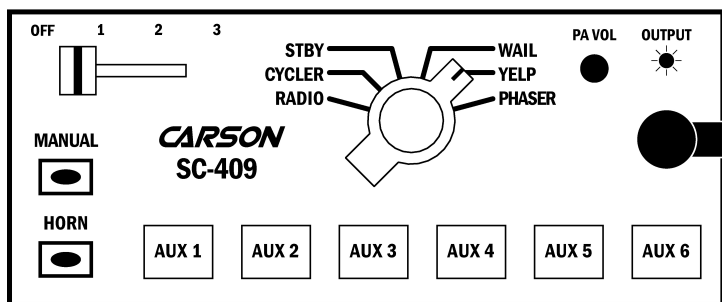
INSTALLATION AND OPERATING
INSTRUCTIONS

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NOTICE

GENERAL DESCRIPTION

The SC-409 Light Control/Siren is a premium unit designed for single or dual 100W speaker use. The primary operating modes are Radio, Cycler, Standby, Yelp, Wail, and Phaser. A Noise Canceling PA Override and push-button Horn Override are available in all modes except Radio. A push-button is provided for toggling between Wail, Yelp, and Phaser tones, and Manual siren control in silent modes. The Phaser tone can be optionally replaced by Two-Tone or disabled entirely. Auxiliary input is provided for connection to horn ring circuit or switch. A latching siren cutout input is provided for connection to a door switch, etc. to stop siren tones when exiting the vehicle. PA volume control on the front panel while Radio volume control is on rear panel. The front panel is backlit with LED's for night visibility. The siren circuits utilize short circuit, high voltage, and reverse polarity protection systems for maximum service life. Output indicator light on face for siren output diagnostics.

The SC-409 also provides a 4-position lever switch with LED indicators for primary lighting system control of up to 60 amps total and automatic siren tone in last position. Six programmable lighted push-button switches with replaceable legends provide auxiliary lighting or other device control up to 20 amps per switch. Each output fused and monitored with visual and audible indicators for diagnostics. An alert periodically sounds (may be disabled) when outputs are on to help prevent leaving lights on unintentially. A video camera trigger output is activated with the lever switch or programmed auxiliary switches.

SPECIFICATIONS

Siren Section	
Input Voltage	9 - 16 VDC (negative ground)
Input Current	8 AMPS (@14 VDC - single 100W speaker) 16 AMPS (@14 VDC - dual 100W speakers)
Standby Current	Less than 300 ma
Audio Frequency	200Hz - 10 kHz $\pm$ 3db
Audio Distortion	Less than 3% (@1 kHz - single 100W speaker)
Audio Output	40 watts (@14 VDC - single 100W speaker)
Audio Input	400 ohms $\pm$ 10%
Output Power	105 WATTS RMS MAX. (15 VDC - single 100W speaker) 180 WATTS RMS MAX. (15 VDC - dual 100W speakers)
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	6-position rotary mode switch (Radio, Cycler, Standby, Yelp, Wail, and Phaser). Momentary push-button Horn switch. Momentary push-button Manual/Tone toggle switch. Enable input (positive) to turn on unit. Auxiliary input programmable for positive or negative operation. Cutout input programmable for positive or negative latching cutout operation. Internal DIP switch option selectors.
Connections (Removable 12-Term Block)	(2) Positive, (2) Negative, (2) Speaker, (2) Radio, Enable, Auxiliary, Cutout Also location for Video output associated with light controls.
Light Control Section	
Controls	4-position lever switch with position 3 siren activation and LED indicators 6 - on/off lighted push-button switches with replaceable legends
Current (Lever Switch)	20 AMPS per circuit, 60 AMPS total
Current (Aux. Sw.)	20 AMPS per switch, 80 AMPS total
Connections	Lever Switch - (1) #10 AWG input (up to #6 AWG), (3) screw terminal outputs Aux. Switches - (1) #10 AWG input (up to #6 AWG), (6) screw terminal outputs
General	
Size	6-1/8" Wide, 8" Deep, 2-3/4" High
Weight	6 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 screws, mounting bolts, connectors and these instructions. Contact supplier immediately if any components are missing.

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".

OPTION SWITCHES

Various options may be selected by turning on or off DIP switches internally mounted on the printed circuit board inside the case.

Accessing Option Switches - Remove the 12-Pin plug to prevent shorting then remove the case cover by removing two screws at the bottom rear corners of the unit.

SIDE VIEW   COVER REMOVED

A - SWITCHES (SWA)

B - SWITCHES (SWB)

SWA-1 (CUT_P) Cutout Input Polarity - The cutout input is normally activated by positive. Turn switch off to activate with negative.

SWA-2 (AUX_P) Auxiliary Input Polarity - The auxiliary input is normally activated by positive. Turn switch off to activate with negative.

SWA-3 (TO) Timed Override - While in Wail, Yelp, or Phaser mode, momentarily pressing the Manual push-button will toggle between tones overriding the Wail, Yelp, or Phaser tone. With this option selected (turn on switch) the unit automatically goes back to the previous tone after 10 seconds without having to press Manual push-button again. In summary, press Manual button once to override tone, then unit automatically goes back to previous tone.

SWA-4 (SWP) Sweep/Intersection Function (SWP/INT) - While in Wail, Yelp, or Phaser mode, momentarily activating the auxiliary input will change the unit into sweep and intersection function. See OPERATION section for further details. Turn this switch on to enable this function.
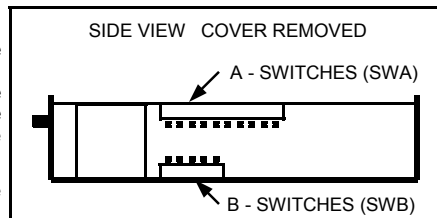
SWA-5 (T-T) Two-Tone - Two-Tone replaces Phaser tone by turning this switch on.

SWA-6 (P_I) Phaser Inhibit - Phaser and Two-Tone tones are disabled by turning this switch on.

SWA-7 (H_I) Horn Inhibit - Horn tone is disabled by turning this switch on.

SWA-8 (SM) Short Manual - The Manual siren tone will normally die out and stop when Manual push-button is released. Turn this switch on to have the Manual siren tone stop immediately.

SWA-9 (IN_ON) Instant ON - The Enable input is normally required to turn on the unit. Turning this switch on allows the lever switch to turn on the unit without the Enable input.

SWA-10 (AUT_S) Automatic Siren Disable - The Automatic Siren feature on the lever switch may be disabled by turning this switch off.

SWB-1 (NPO) Non-Progressive Override - See OPERATION section. Turn this switch on to override non-progressive lever switch in position 3.

SWB-2 (NPL) Non-Progressive Lever - See OPERATION section. Turn this switch on for a non-progressive lever switch.

SWB-3 (PRG) Program Mode - See LEVER AND AUXILIARY CONTROL SWITCH PROGRAM-MING section. Do not move this switch until ready to program.

SWB-4 (ALRT) Alert Disable - Turn this switch on to disable the alert feature.

SWB-5 (TMR) Timer - Normally the timed momentary auxiliary output is on for 10 seconds. Turn this switch on for a 20 second timed momentary.

ELECTRICAL CONNECTIONS

Electrical connections to the unit are made using terminal block plugs and screw terminals located on the back. A label on the unit identifies each terminal function. You should install the plug on the unit before wiring. If the unit needs service the plugs can be easily removed without unwiring.
The power supply for the amplifier (12-P plug) 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 amplifier is fused.
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.

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

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.

Unit Enable Input Connection - This is like a power switch for the entire unit. Connect to a positive circuit controlled by the vehicle ignition switch, usually a terminal at the vehicle fuse panel. Permanent power connection is not recommended as this keeps unit on unattended and may drain battery. The lever switch may also be setup like a power switch for the entire unit. See **Instant On** under OPTION SWITCHES section.

Auxiliary Input Connection - The Auxiliary Input allows activation by an external source of either the Horn or other function. See OPTION SWITCHES section for polarity selection.
NOTE: Permanent disconnection of the vehicle horn is NOT recommended.

Cutout Input Connection - The Cutout Input turns off any siren tone output when activated, and remains off until a control is activated or changed. See OPTION SWITCHES section for polarity selection.

Radio Input Connection - Connect to radio output terminals or its speaker. The **Radio Volume** control is on the back side of the unit and is a one time setting depending on the radio connected. Set the volume on the radio itself for normal sound level on its own speaker. Then with Rotary switch at Radio and unit powered up, adjust the **Radio Volume** control for desired output level.

Video Trigger Output Connection - A video camera trigger output is activated with the lever switch or programmed auxiliary switches. See LEVER AND AUXILIARY CONTROL SWITCH PROGRAMMING section.

AMPLIFIER CONNECTIONS

+VDC Switching examples

MOMENTARY FOOT SWITCH

HORN RING SWITCH

SPLICE

HORN

AUX

+VDC

HORN RING SWITCH

Added SPDT Switch

HORN

AUX

AUX

-VDC switching example
Must set AUX_P option switch

#22 AWG WHT

#22 AWG GRN

(2) #22 AWG BLU
Connect to output jack, terminals, or speaker of radio

RADIO

#22 AWG YEL
Connect to camera input

CAMERA

DOOR SWITCH

SPLICE

DOME LIGHT

CUT

+VDC

ADDED DOOR SWITCH

CUT

-VDC switching example
Must set CUT_P option switch

+VDC Switching example

#14 AWG RED
Use second lead for dual speaker

BAT + −

#14 AWG BLK
Use second lead for dual speaker

#22 AWG ORG
Unit Enable (like an ON/OFF switch)
Connect to positive circuit (fuse panel)
controlled by ignition or other switch

(2) #18 AWG BRN
(#16 AWG dual speaker)

+   +

dual speaker connect + to +

Plug installed this orientation

12-P Terminal Block Plug
(CP4688-12)

20A Automotive Type Fuse

RAD VOL

NEG NEG VID ENA AUX RAD RAD CUT POS POS SPK SPK

SIREN FUSE

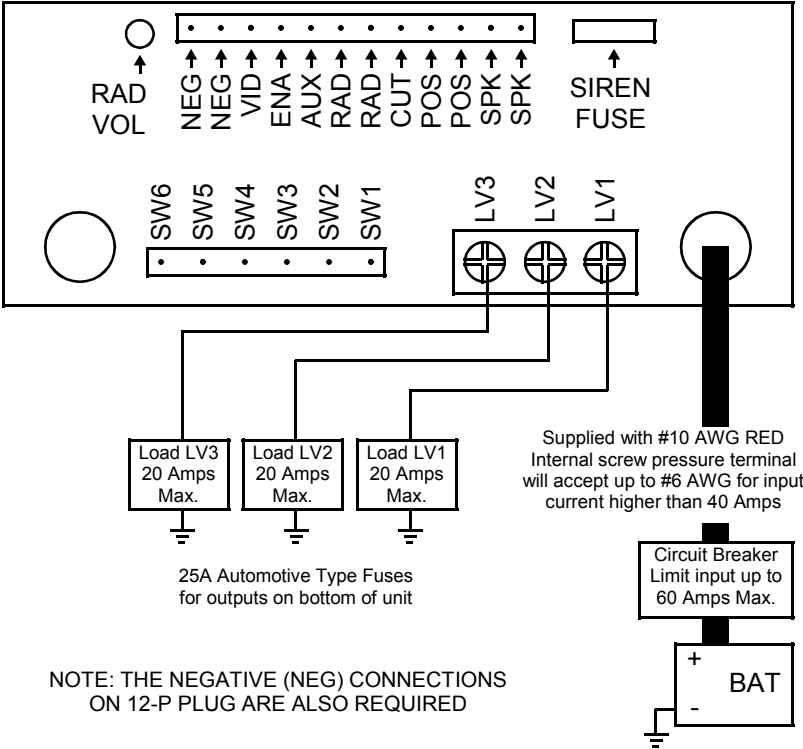SW6 SW5 SW4 SW3 SW2 SW1

LV3 LV2 LV1

LIGHT CONTROL CONNECTIONS

The power inputs for the light controls are separate from the power input for siren. Also the power inputs for the lever switch and six auxiliary control switches are separate. This helps prevent a fault in one main circuit from affecting another main circuit.

Fuses / Breakers

Each light control output is fused and should be limited to 20 Amps. Properly rated circuit breakers should be connected between the power source and light control power inputs. **Failure to install proper circuit breakers or fuses can result in damage to the unit and/or vehicle.**
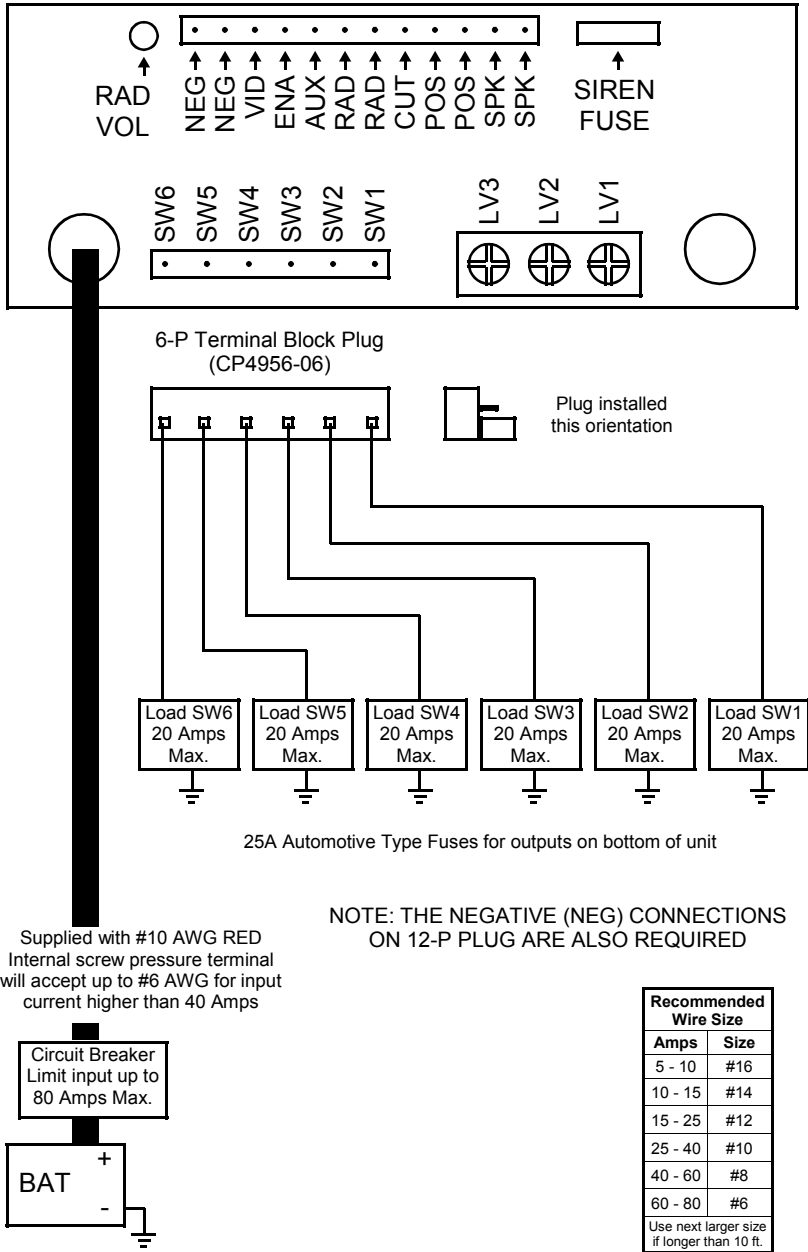
Lever Switch Connections

RAD VOL   NEG NEG VID ENA AUX RAD RAD CUT POS POS SPK SPK   SIREN FUSE

SW6 SW5 SW4 SW3 SW2 SW1   LV3 LV2 LV1

Load LV3 20 Amps Max.   Load LV2 20 Amps Max.   Load LV1 20 Amps Max.

Supplied with #10 AWG RED Internal screw pressure terminal will accept up to #6 AWG for input current higher than 40 Amps

25A Automotive Type Fuses for outputs on bottom of unit

Circuit Breaker Limit input up to 60 Amps Max.

+ BAT -

NOTE: THE NEGATIVE (NEG) CONNECTIONS ON 12-P PLUG ARE ALSO REQUIRED

Off   1   2   3

Lever Position	Outputs Turned On		
	Option NPL Off (Default)	Option NPL On Option NPO Off	Option NPL On Option NPO On
Off	All off		
1	Load LV1 only	Load LV1 only	Load LV1 only
2	Loads LV1, 2	Load LV2 only	Load LV2 only
3	Loads LV1, 2, 3	Load LV3 only	Loads LV1, 2, 3

Recommended Wire Size	
Amps	Size
5 - 10	#16
10 - 15	#14
15 - 25	#12
25 - 40	#10
40 - 60	#8
60 - 80	#6
Use next larger size if longer than 10 ft.	

Auxiliary Control Switch Connections

RAD VOL — NEG NEG VID ENA AUX RAD RAD CUT POS POS SPK SPK — SIREN FUSE

SW6 SW5 SW4 SW3 SW2 SW1 — LV3 LV2 LV1

6-P Terminal Block Plug
(CP4956-06)

Plug installed this orientation

Load SW6 20 Amps Max.
Load SW5 20 Amps Max.
Load SW4 20 Amps Max.
Load SW3 20 Amps Max.
Load SW2 20 Amps Max.
Load SW1 20 Amps Max.

25A Automotive Type Fuses for outputs on bottom of unit

Supplied with #10 AWG RED
Internal screw pressure terminal
will accept up to #6 AWG for input
current higher than 40 Amps

NOTE: THE NEGATIVE (NEG) CONNECTIONS
ON 12-P PLUG ARE ALSO REQUIRED

Circuit Breaker
Limit input up to
80 Amps Max.

BAT + -

Recommended Wire Size	
Amps	**Size**
5 - 10	#16
10 - 15	#14
15 - 25	#12
25 - 40	#10
40 - 60	#8
60 - 80	#6
Use next larger size if longer than 10 ft.	

LEVER AND AUXILIARY CONTROL SWITCH PROGRAMMING

Each position of the lever switch and the six auxiliary control switches may now be programmed once electrical connections are made and power is available to the unit. The programming mode is entered by changing an internal DIP switch.

Note: The unit must be turned on and off with the switch on the enable input to program the function of each auxiliary control switch. See Unit Enable Input Connection under ELECTRICAL CONNECTIONS section. The **Instant On** feature will only allow programming of the lever switch positions when the lever switch is in 1, 2, or 3.

Note: Any lights and devices including **Automatic Siren** will operate like normal when the lever switch positions change or the auxiliary control switches are activated. Temporarily disabling the **Automatic Siren** or disconnecting speaker(s) while programming is recommended. See OPTION SWITCHES section.

Follow these steps to program the unit.

Access the internal DIP switch.
1.   Turn unit off (backlight LEDS and Auxiliary Control Switches dark)
2.   Optionally detach the 6-P plug from the back of the unit to prevent activating lights and devices while programming.
3.   Detach the 12-P plug from the back of the unit to prevent shorting while removing cover.
4.   Remove the case cover by removing two screws at the bottom rear corners of the unit.
5.   Re-attach the 12-P plug onto the back of the unit.

Get into program mode.
1.   Turn unit on with enable input or lever switch.
2.   Enter the program mode by turning SWB-3 (PGM) DIP switch ON. Two beeps sound confirming the unit entered program mode. See OPTION SWITCHES section for location.

Set Auxiliary Control Switch Operation (Lever Switch in OFF Position).
1.   With lever switch in off position, each auxiliary switches current operation program status is indicated on the face of the unit using colors and flashing. See the table below for switch status definition.
2.   Change each switches operation by momentarily pushing the switch.

Switch Status	Auxiliary Control Switch Operation
Constant RED	Push On / Push Off and activate Video Trigger output (Default)
Constant GREEN	Push On / Push Off
Flashing	Momentary
Flashing 2X Rate	Timed Momentary (Gun Lock Timer) (On for 10 seconds or 20 seconds See **Timer** option)

Loop

Note: The **Timed Momentary** operation, typically used as a Gun Lock Timer, must begin with switch 6. If switch 6 is programmed as timed momentary only then may switch 5 be programmed also as a timed momentary and so on.

Each lever switch position 1, 2, or 3 may be programmed to also automatically turn on any of the auxiliary switch controls except Timed Momentary (Gun Lock Timer). These auxiliary switch controls may still be operated manually even if they were turned on automatically. Each time the lever switch changes position, the combined auxiliary switch controls are turned on or off. When the lever switch is turned OFF, all of the auxiliary switch controls tied to a position(s) on the lever switch are turned off while the other auxiliary switches are unaffected.

Set Lever Switch and Auxiliary Switch Combination (Lever Switch in Position 1, 2, or 3).
1.   Set the lever switch to desired position to program.
2.   Press the desired auxiliary switch to change color to RED and tie it to the lever switch posi-
     tion Press the auxiliary switch to change color to GREEN and remove from combination.
Note: The Timed Momentary (Gun Lock Timer) may not be added to combination.

Lever Switch and Auxiliary Switch Combination Programming Example

Lever Position	Aux 1	Aux 2	Aux 3	Aux 4	Aux 5	Aux 6 Gun Lock
1	Red	Green	Green	Green	Green	N/A Green
2	Red	Red	Red	Green	Green	N/A Green
3	Red	Green	Red	Green	Green	N/A Green

Resulting Operation as Lever Switch is moved to different positions

Lever Position	Aux 1	Aux 2	Aux 3	Aux 4	Aux 5	Aux 6 Gun Lock
OFF	Off	Off	Off	No Change	No Change	No Change
1	On	Off	Off	No Change	No Change	No Change
2	On	On	On	No Change	No Change	No Change
3	On	Off	On	No Change	No Change	No Change

Save program and get out of program mode.
1.   Once the switches are programmed as desired, save the program and exit programming
     mode by turning SWB-3 (PGM) DIP switch OFF. Should hear two beeps sound confirming
     the program is saved.
2.   Turn unit off (backlight LEDS and Auxiliary Control Switches dark).
3.   Detach the 12-P plug from the back of the unit to prevent shorting while installing cover.
4.   Re-install the case cover and two screws at the bottom rear corners of the unit.
5.   Re-attach the 12-P plug onto the back of the unit.
6.   Re-attach the 6-P plug onto the back of the unit.
7.   Programming is finished.

Note: If the unit is turned off before the SWB-3 (PGM) DIP switch is turned OFF, the new pro-
gramming will not be saved.

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)

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.

POWER ON/OFF
The unit is enabled (turned on) by applying positive voltage to the orange enable lead. This is normally controlled with the ignition switch on the vehicle. See INSTALLATION section.

An **Instant On** feature may be selected so that the unit is turned on with the lever switch without activating the orange enable lead. See OPTION SWITCHES section.

SIREN CONTROLS

The **Rotary Switch** selects the primary operating mode of the siren.

Radio - Also known as Radio Repeat, this function amplifies a radio speaker input for re-broadcast outside the vehicle. A radio must be connected and the Radio Volume Adjusted.

No siren tones or are available in this position.

Cycler - A standby position dedicated for Horn Ring Cycler 2 (HRC2). During installation, the auxiliary input must be connected to the horn ring or other switching device. 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.

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

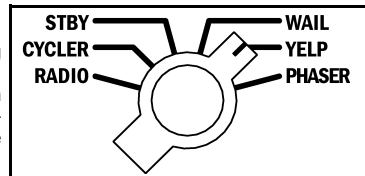**Wail** - A slower changing tone used on highways.

Yelp - A rapidly changing tone used in congested areas.

Phaser - A very rapidly changing tone used at intersections or in highly congested areas. May be replaced with Two-Tone (or Hi - Lo, a common European Tone) or disabled entirely. See OPTION SWITCHES section.

Manual Button - Provides manual control of siren tone rise and fall while in Cycler or Standby. The falling tone may be stopped immediately by setting the Short Manual option. See OPTION SWITCHES section. With rotary in Wail, Yelp, or Phaser, this button toggles between tones.

Horn Button - Produces a simulated Air-Horn tone while pressed. Overrides all siren tones except Radio. Horn tone may be disabled entirely. See OPTION SWITCHES section.

Auxiliary Input (Optional) - During Installation, the auxiliary input may be connected to the horn ring or other switching device. Activation of this input will produce Horn tone or other functions depending on Rotary Switch position.

| Rotary Position	Normal Tone	Horn Push-Button	Manual Push-Button	Auxiliary Input (Horn Ring)
Radio	Radio	Radio (No Effect)	Radio (No Effect)	Radio (No Effect)
Cycler	Silent	Momentary Horn	Manual Siren	HRC2
Standby	Silent	Momentary Horn	Manual Siren	Momentary Horn
Wail	Wail	Momentary Horn	Wail/Yelp Toggle	Mom. Horn (Opt. SWP/INT)
Yelp	Yelp	Momentary Horn	Yelp/Phaser Toggle	Mom. Horn (Opt. SWP/INT)
Phaser	Phaser	Momentary Horn	Yelp/Phaser Toggle	Mom. Horn (Opt. SWP/INT)

PA - The noise-canceling microphone is used for public address operation and overrides any siren mode when the button on the side is pressed. Adjust the PA Volume and hold the microphone close to your lips for proper operation.
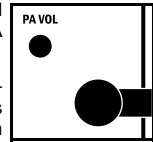
Cutout Input (Optional) - During Installation, the cutout input may be connected to the vehicle door switch or other switching device. Activation of this input will turn off any siren tone and remains off when deactivated until a siren control is changed.

Timed Override (TO) (Optional) - Must be selected, see OPTION SWITCHES section. With Rotary Switch in Wail, Yelp, or Phaser mode, momentarily pressing the Manual push-button will toggle between tones overriding the Wail, Yelp, or Phaser tone. With this option selected the unit automatically goes back to the Wail, Yelp, or Phaser tone after 10 seconds. In summary, this is intended for intersections, just press Manual button once to override tone, then unit automatically goes back to previous tone.

Sweep/Intersection Function (SWP/INT) (Optional) - Must be selected, see OPTION SWITCHES section. Also the auxiliary input must be connected. The Sweep function is an automatic sequence of Yelp, Phaser, and Horn tones allowing hands free operation. The Intersection function is a more rapid automatic sequence of Yelp, Phaser, and Horn tones allowing hands free operation through intersections.

With Rotary Switch in Wail, Yelp, or Phaser mode, tap the horn ring to start Sweep function. Tap the horn ring again to start Intersection function. Repeatedly tapping the horn ring will switch between Sweep and Intersection functions. Tapping the horn ring twice quickly will return to Wail, Yelp, or Phaser mode. Pressing and holding the horn ring will produce Horn tone until released. Then the siren will return to the Sweep or Intersection sequence.

LIGHT SYSTEM CONTROLS

A 4-position lever switch provides control of primary lighting functions. It also provides automatic activation of the siren. Six additional programmable pushbuttons provided for auxiliary lighting or other device control.

Lever Switch

The lever switch by default provides progressive (additive) control of lighting functions. The third position also provides Automatic Siren. The installer determines actual function. See OPTION SWITCHES section.

Automatic Siren

Position 3 of the lever switch provides Automatic Siren control. If the siren controls are set where there is no siren tone output, the Automatic Siren will override with Wail or other tone. The cutout input will stop the siren tone.

Lever Position	Outputs Turned On		
	Option NPL Off (Default)	Option NPL On Option NPO Off	Option NPL On Option NPO On
Off	All off		
1	Load LV1 only	Load LV1 only	Load LV1 only
2	Loads LV1, 2	Load LV2 only	Load LV2 only
3	Loads LV1, 2, 3	Load LV3 only	Loads LV1, 2, 3

Automatic Siren may be disabled. See OPTION SWITCHES section.

Auxiliary Control Switches

Six lighted pushbutton switches are provided for various other lighting functions or device control. The switch changes from Green to Red when activated. Also

| AUX 1 | AUX 2 | AUX 3 | AUX 4 | AUX 5 | AUX 6 |
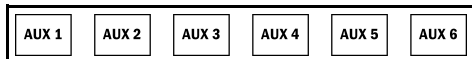
the switches may be programmed for different functions. These switches may also be combined with each lever switch position to automatically turn on and off.

See LEVER AND AUXILIARY CONTROL SWITCH PROGRAMMING section.

Auxiliary Control Switch Legends

Different legends may be selected to match the device controlled. A sheet of labels is supplied.

Video Trigger Output
A video camera trigger output is activated with the lever switch in position 1, 2, or 3. Programmed auxiliary control switches will also activate trigger. See LEVER AND AUXILIARY CONTROL SWITCH PROGRAMMING section.

Alert
While the lever switch or auxiliary control switches are on, an alert beep is sounded every 15 seconds. Set **Alert Disable** option to disable. See OPTION SWITCHES section.

Light Control Diagnostics
The unit monitors the light control output connectors on the back of the unit. If there is not output voltage when there should be, the unit beeps 5 times. Then the switch will do the following.

Switch	Fault Indication	Action
Lever Switch Position 1, 2, and 3	Particular Pos. LED flashes	Output relay remains on
Aux. On / Off Switch	Switch turns off (GREEN)	Output Relay turns off
Aux. Momentary Switch	Switch turns off (GREEN)	Output Relay turns off
Aux. Timed Mom. Switch (Gun Lock)	Beeps until timed out	Output Relay on until timed out

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(s), controlled devices, 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 internal fuse will blow before the unit is damaged. Disconnect the speaker leads and replace the fuse. If the **OUTPUT** light comes on with power on and Yelp selected it is OK. Check the speaker(s) or leads for possible shorting.

PROBLEMS

Symptom	Possible Cause	Check
No power or siren output	No power to enable input Bad speaker Connector(s) loose Rear panel fuse blown Loose connection at power source	Does backlighting come on? Do you hear a "pop" when turned on? With siren on and Yelp selected, listen for tone in amplifier. 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 Microphone button stuck Cutout activated Cutout Polarity Option set wrong	Input voltage must be less than highest rated voltage. Does microphone button release properly? Does the siren work when Cutout input is disconnected? Is the CUT_P option properly configured?
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 Microphone button activation Circuit breaker in supply connection	Is the vehicle voltage regulator working properly? Is the connector 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	Horn or Manual switch stuck Aux Input improperly connected Aux Input Polarity Option set wrong	Does the horn or manual switch return when released? Is the Aux Input used and wired properly? Is the AUX_P option properly configured?
No Radio	Unit not connected to radio Radio volume too low	Is the radio connected properly to the unit? Can you here the radio in the vehicle? Have you tried adjusting the rear radio volume control?
Wrong siren tone	Two-Tone option installed Aux Input set to wrong function	Is the T-T option selected? Is the SWP option selected?
Phaser or Horn not working	Tone disabled	Is the P_I option selected? Is the H_I option selected?
Automatic Siren not working	Automatic Siren disabled	Is the AUT_S option selected properly?
Lever switch not working at all	No power to lever switch No ground at siren connector	Do the lever switch indicators light? Does the siren work?
Lever switch not working in some positions	Loose lever switch output connection	Does the lever switch indicator work in those positions? Is the corresponding fuse blown?
Aux control switch not working	No power to aux switches Loose aux switch output connection	Do the aux switch indicators light? Is the corresponding fuse blown?

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

Part	Description
CP3966	Bolt, mounting, 1/4-20 X 3/8" (2 required)
CP3571	Bracket, mounting
CP4688-12	Connector, 12-Pin power
CP4956-06	Connector, 6-Pin Aux Output
CP4952	Cover (not including chassis)
ATO/ATC 20A	Fuse, 20 Amp Automotive (Siren Amp)
ATO/ATC 25A	Fuse, 25 Amp Automotive (Light Controls)
CP4960	Knob, Black Lever Switch
CP4852	Knob, Black Rotary Switch
CP4895	Label, Aux Output Legends
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)
CP4958	Instruction Manual

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@carson-mfg.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.