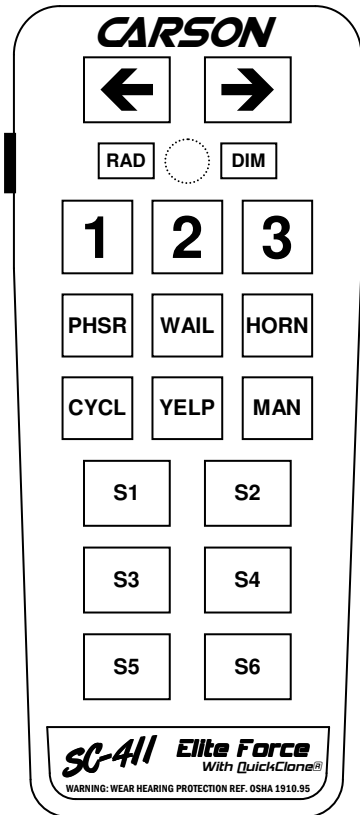


CARSON

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



SC-411HD-20 14 REMOTE SIREN AMPLIFIER WITH LIGHT CONTROL

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 4
 - SAFETY PRECAUTIONS 4
 - UNPACKING 4
 - MOUNTING - Handheld Controller..... 4
 - MOUNTING - Amplifier..... 4
 - ELECTRICAL CONNECTIONS - Amplifier 4
 - OPTIONAL CONNECTIONS - Amplifier 4
 - AMPLIFIER WIRING DIAGRAM 5
- OPTION SETTINGS..... 6
 - Enter/Exit Program Mode, Reset..... 6
 - S1 - S6 Button Operation 7
 - Primary Button / S1 - S6 Switch Linkage 7
 - Option Set 1 (Input polarity, timed override, sweep/intersection, auto siren) 8
 - Option Set 2 (Tone enables, short manual, primary progression) 8
 - Option Set 3 (Alert, siren/lever video, center only, instant on)..... 9
 - Second Tone Control..... 9
 - PA Volume Programming 10
- OPERATION 11
 - POWER ON/OFF..... 11
 - SIREN CONTROLS..... 11
 - Siren Mode..... 11
 - Manual Button..... 12
 - Horn Button..... 12
 - PA 12
 - SIRCTRL Input (Optional)..... 12
 - LITCTRL Input (Optional) 12
 - CUTOUT Input (Optional)..... 12
 - Timed Override (Optional) 12
 - Sweep/Intersection Function (Optional) 12
 - Second Speaker Output (Dual Tone) 12
 - LIGHT SYSTEM CONTROLS 13
 - Primary Buttons 13
 - Automatic Siren..... 13
 - Auxiliary Control Buttons 13
 - Arrow Stick Control Buttons..... 13
 - Button Legends..... 13
 - DIM..... 13
 - Video Trigger Output 13
 - Alert..... 13
 - DIAGNOSTICS 13
 - PROGRAM TRANSFER..... 13
- SERVICE 14
- PROBLEMS..... 14
- PARTS 14
- RETURN..... 15
- LIMITED WARRANTY..... 15
- INSTALLATION CONFIGURATION RECORD 16

NOTICE

This Carson siren is intended for use by authorized personnel only. It is the user's responsibility to ensure they understand and operate this emergency warning device in compliance with all applicable city, state and federal laws and regulations.

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 SC-411HD Remote Light Control/Siren is a premium unit designed for 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 inputs are 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 is programmable on the handheld controller while Radio volume control is on the amplifier. The front panel is backlit with LED's for night visibility, dimmable with a front panel button and/or connection to dash lights. The siren circuits utilize short circuit, high voltage, and reverse polarity protection for maximum service life. An indicator light on face is provided for siren output diagnostics.

The SC-411HD also provides 3 primary buttons (equivalent to lever switch operation) with LED indicators for primary lighting system control of up to 50 amps total and automatic siren tone in last position. Six programmable lighted push buttons with replaceable legends provide auxiliary lighting or other device control up to 10 amps per switch. Each output is 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 unintentionally. A video camera trigger output is activated with the primary buttons or programmed auxiliary buttons. Two buttons are dedicated to arrow stick control (left, right, center) with function indication and specific control outputs.

All optional settings are programmed from the handheld controller face. These settings are synchronized between the handheld controller and amplifier using our QuickClone® duplication technology, a quick-copy feature for simple transfer of option setting among multiple handheld controllers and amplifiers for efficient fleet installations.

Siren Section											
Input Voltage	10 - 16 VDC (negative ground)										
Input Current	16 AMPS (@14 VDC - dual 100W speakers)										
Standby / Off Current	Less than 300 ma / less than 20 ma										
Audio Frequency	200Hz - 10 kHz ± 3db										
Audio Distortion	Less than 7% (@1 kHz - dual 100W speakers)										
Audio Output	80 watts (@14 VDC - dual 100W speakers)										
Audio Input	400 ohms ± 10%										
Output Power	210 WATTS RMS MAX. (15 VDC - dual 100W speakers)										
Siren Frequency	700Hz - 1500Hz (Two-Tone and Horn = 435 & 585Hz)										
Tones / Cycle Rates	<table style="display: inline-table; border: none;"> <tr> <td style="padding: 0 10px;">Horn</td> <td style="padding: 0 10px;">Wail</td> <td style="padding: 0 10px;">Yelp</td> <td style="padding: 0 10px;">Phaser</td> <td style="padding: 0 10px;">Two-Tone</td> </tr> <tr> <td style="padding: 0 10px;">109 CPS</td> <td style="padding: 0 10px;">13 CPM</td> <td style="padding: 0 10px;">190 CPM</td> <td style="padding: 0 10px;">15 CPS</td> <td style="padding: 0 10px;">60 CPM</td> </tr> </table>	Horn	Wail	Yelp	Phaser	Two-Tone	109 CPS	13 CPM	190 CPM	15 CPS	60 CPM
Horn	Wail	Yelp	Phaser	Two-Tone							
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	5 - siren mode buttons (Radio, Cycler, Yelp, Wail, and Phaser). Momentary push-button Horn button. Momentary push-button Manual/Tone toggle button. Momentary push-button Dimming button. Enable input (positive) to turn on unit. Auxiliary siren input programmable for positive or negative operation. Auxiliary light control input programmable for positive or negative operation. Cutout input programmable for positive or negative latching operation. Face-programmable option settings.										
Connections (Rem. 12-Term Blk)	(2) Neg, (3) Spkr, (2) Radio, Power, Siren Ctrl, Light Ctrl, Cutout, Backlit (#28-#12 AWG)										
Light Control Section											
Controls	3 - primary buttons with button 3 siren activation and LED indicators 8 - on/off lighted push-buttons with replaceable legends										
Current (Primary outputs)	20 AMPS per circuit, 50 AMPS total										
Current (Aux. outputs)	10 AMPS per switch, 30 AMPS total										
Connections (Removable 3-Term Block) (Removable 10-Term Block)	Power Input - (2) screw terminal inputs (#22 to #6 AWG) 50A max each, external fuse reqd. Primary Button outputs - (3) outputs (#22 to #10 AWG), 20A max each Aux. Button outputs - (6) outputs (#22 to #12 AWG), 10A max each Left, right & center arrow stick control outputs (#22 to #12 AWG), 0.2A max each Video control output (#22 to #12 AWG), 0.2A max										
General											
Controller/Amplifier Interconnect	CAT 5e cable - 10ft coiled + 25ft extension (supplied)										
Handheld Controller Mounting	Surface - Velcro® and custom magnetic cradle supplied										
Size	Handheld Controller : 2-1/4" X 5-3/8" X 1-1/8" Amplifier: 8-3/4" X 8-1/4" X 2-1/8"										
Shipping Weight	7 LBS.										

SPECIFICATIONS

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.

Mounting - Mount the control handle for easy access by the vehicle operator. DO NOT mount in air bag deployment area. Assure clearances before drilling in vehicle. Mount the amplifier in a protected area with at least 1" clearance on all sides for heat dissipation.

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.

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)

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 handheld controller, amplifier, Velcro mounting strips, legend sheet, (4) connectors, 25ft CAT 5e interconnect cable and these instructions. Contact supplier immediately if any components are missing.

MOUNTING - Handheld Controller (if required)

The handheld controller can be surface mounted using the supplied Velcro® strips. A custom magnetic cradle is supplied for more durable mounting (inspect behind mounting area for clearance).

Choose a mounting location convenient to the operator and away from any air bag deployment areas. Consider cable routing.

MOUNTING - Amplifier

Choose a mounting location that will assure at least 1" clearance on all sides with adequate ventilation to prevent overheating. Inspect behind mounting area for clearance. Consider wire routing and access to connections. Make all wiring connections prior to mounting.

ELECTRICAL CONNECTIONS - Amplifier

Electrical connections to the unit are made using removable terminal blocks and screw terminals. Labels on the unit identifies each terminal function. A CAT-5e cable connects between the control handle and the amplifier. If the unit needs service the plugs can be easily removed without unwiring. Connect all wires prior to applying power to the unit and prior to final mounting. 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.**

POWER Input - 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.

OPTIONAL CONNECTIONS - Amplifier

SIRCTRL Input - This input allows activation by an external source of either the Horn or other function. Settable for +12 (default) or ground activation.

LITCTRL Input - This input allows cycling by an external source through the lever switch positions. Settable for +12 (default) or ground activation.

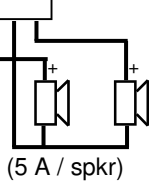
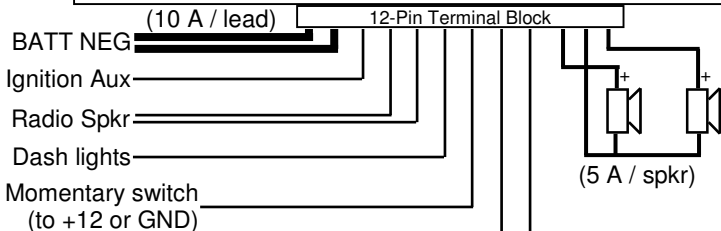
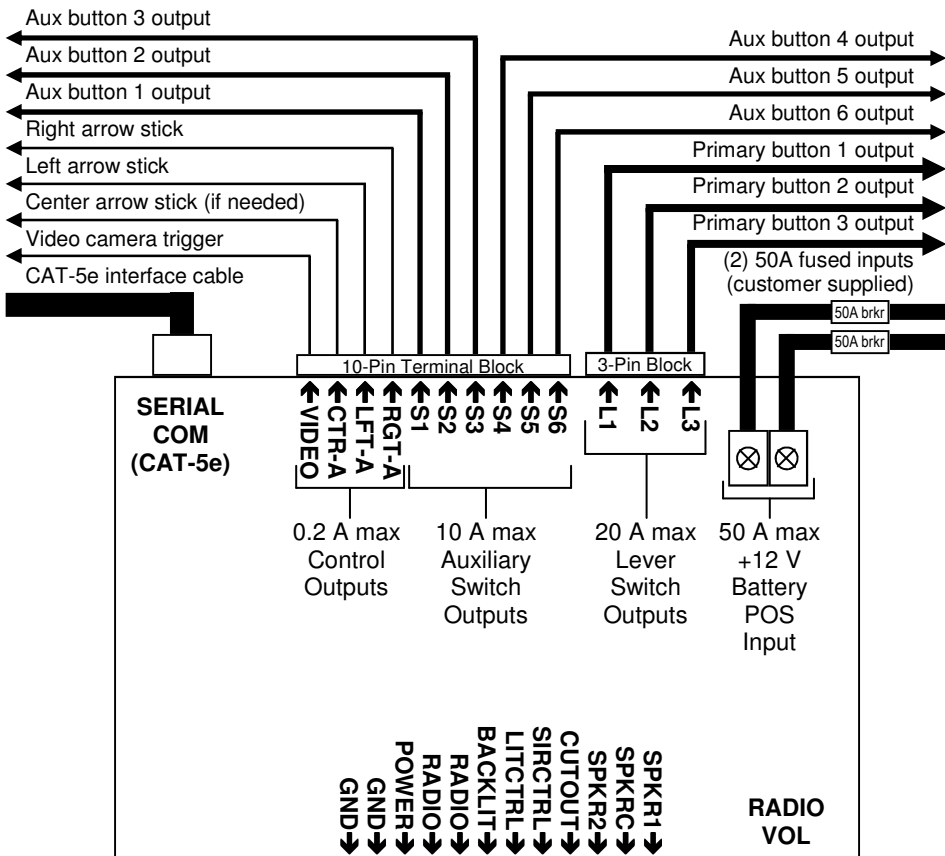
CUTOUT Input - The Cutout Input turns off any siren tone output when activated, and remains off until a control is activated or changed. Settable for +12 (default) or ground activation.

RADIO Input - Connect to radio output terminals or its speaker. The **Radio Volume** control is on the amplifier and is a one time setting depending on the radio connected.

VIDEO Output - A video camera trigger output is activated high (+12) with the lever switch or programmed auxiliary switches. See OPTION SETTINGS section.

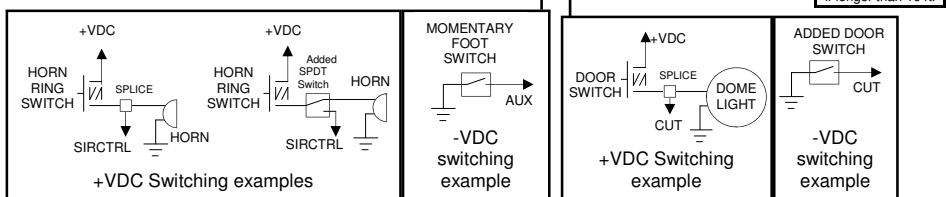
LFT-A, RGT-A, CTR-A Outputs - These 3 active high (+12) outputs are available for arrow stick control. LFT-A, RGT-A AND CTR-A outputs are active when center selected.

AMPLIFIER WIRING DIAGRAM



Recommended Wire Size	
Amps	Size
<1	#22
1 - 5	#18
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.



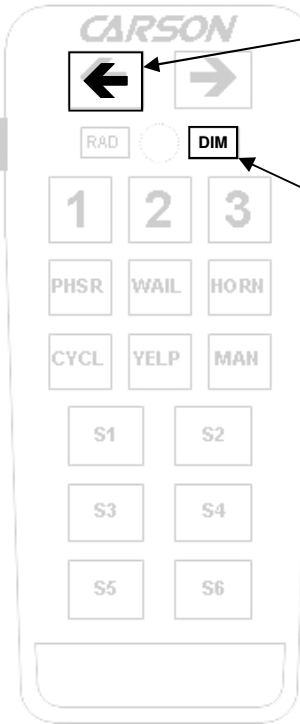
OPTION SETTINGS

Enter/Exit Program Mode, Reset

Option setting (programming) is done from the face of the handheld controller. Unit must be turned on with POWER input. Make sure that all buttons are off.

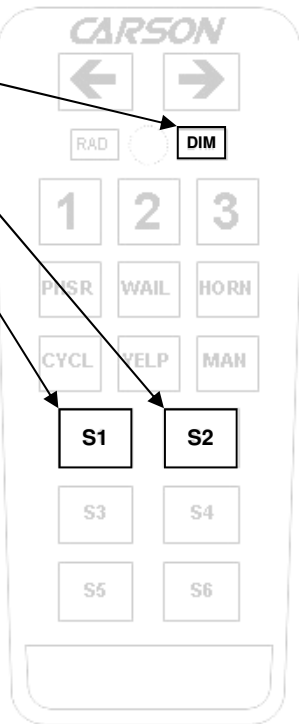
Enter the program mode by pressing and holding S1, S2 and DIM for 3 seconds

The unit will beep 3 times and the backlighting will begin flashing to indicate that the unit is in program mode. It will continue to flash until program mode is stopped by pressing and holding DIM for 3 seconds, saving the settings—the unit will emit a long beep.



Press and hold for 3 seconds to reset to factory default.

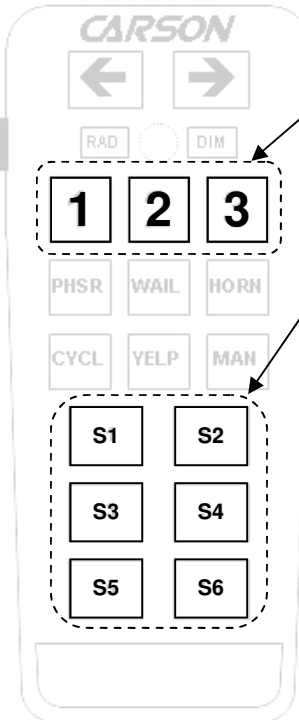
Press for next step. Press and hold for 3 seconds to exit.



Program Mode Sections

Press DIM	Display	Programming
0↓	1+2+3, 1 or 2 or 3	S1-S6 Button Operation, Primary / S1-S6 Button Linkage
1↓	1 blinking	Option Set 1 (Input polarity, timed, swp/int, auto)
2↓	2 blinking	Option Set 2 (Tone enables, short manual, lever progression)
3↓	3 blinking	Option Set 3 (Alert, siren/lever video)
4	H + M blinking	Second Tone Control

S1 - S6 Switch Operation



Primary buttons 1, 2 & 3 all lighted

Change each switch's operation by momentarily pushing the button. See the table below for button status definition.

1. Light ON - Push On / Push Off with video output trigger active (default)
2. Light OFF - Push On / Push Off with video trigger output deactivated.
3. Light flashing continuously - Momentary.
4. Light flashing with double pulse - Timed Momentary (Gun Lock Timer) for duration of 10 seconds.
5. Light flashing with triple pulse - Timed Momentary (Gun Lock Timer) for duration of 20 seconds.
6. The options will cycle through and repeat with each push of the button.

Note: Timed Momentary (Gun Lock Timer) is not be available for Primary Button linkage.

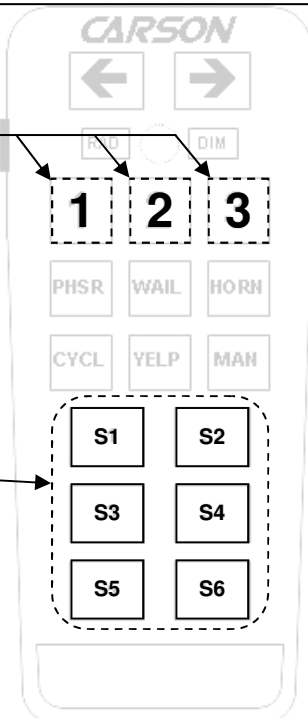
Primary Button / S1 - S6 Button Linkage

Primary buttons set to 1, 2 or 3 → 1, 2 or 3 lit

Press the desired auxiliary switch to turn on or off the light, linking it to the lever switch position.

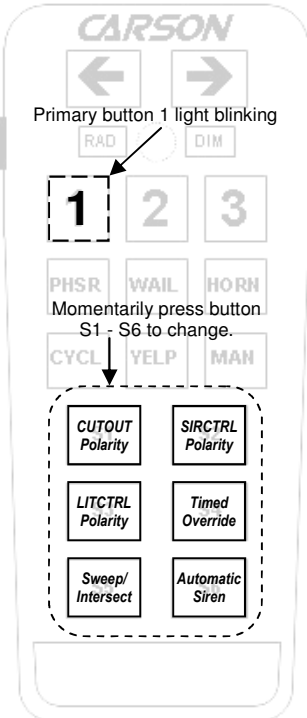
NOTE: Timed Momentary (Gun Lock Timer) programmed switches cannot be used.

Press the DIM button momentarily to move into next section, or DIM for 3 seconds to save & exit.



Option Set 1

(Input polarity, timed override, sweep/intersection, auto siren)



S1	S2	S3	S4	S5	S6	BUTTON
CUTOOT Polarity	SIRCTRL Polarity	LITCTRL Polarity	Timed Override	Sweep / Intersection	Automatic Siren	FUNCTION
ON - Pos Blink - Neg OFF - Disable	ON - Pos Blink - Neg OFF - Disable	ON - Pos Blink - Neg OFF - Disable	OFF ON	OFF ON	ON OFF	OPTIONS (Top is default)

S1 (CUTOOT Input), S2 (SIRCTRL Input), S3 (LITCTRL Input) - These inputs are normally activated by a 12V input (ON). Press the button once until it FLASHES to change to ground activation. Press the button again for OFF to disable.

S4 (Timed Override) - While the siren mode in Wait, Yelp or Phaser, momentarily pressing the Manual button will override the Wait, Yelp or Phaser tone. With this option ON the unit automatically goes back to the previous tone after 10 seconds.

S5 (Sweep/Intersection Function) - While the siren mode is in Wait, Yelp, or Phaser, momentarily activating the siren control input (SIRCTRL) will change the unit into sweep mode, where the tone automatically changes every few seconds. Press again to triple the change rate (intersection mode). Press again to go back, or press twice to cancel.

S6 (Automatic Siren) An Automatic Siren feature turns on the siren in the Wait mode when Primary button 3 is on.

Press the DIM button momentarily to move into next section, or DIM for 3 seconds to save & exit.

Option Set 2

(Tone enables, short manual, primary progression)

S1	S2	S3	S4	S5	S6	BUTTON
TWO-TONE	PHASER Enable	Short MANUAL	HORN Enable	Progressive Primary	Non-Progressive Override	FUNCTION
OFF - Phaser ON - Two-Tone	ON - Phaser OFF - Disable (Yelp)	OFF - Normal Manual ON - Short Manual	ON - Horn Enabled OFF - Disabled	ON - Progressive Primary OFF - Non-Progressive Operation	OFF - Normal Progression ON - Non-Progressive Override	OPTIONS (Top is default)

S1 (Two-Tone Enable) - Two-Tone replaces Phaser tone when ON.

S2 (Phaser Enable) - Phaser (or Two-Tone) is disabled and replaced with Yelp when OFF.

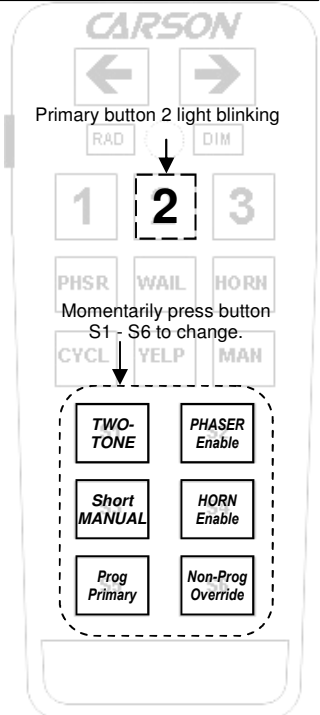
S3 (Short Manual Enable) - The Manual siren tone will normally die out and stop when the Manual button is released. Turning option ON forces the Manual siren tone to stop immediately upon release.

S4 (Horn Enable) - Horn tone is disabled when turned OFF.

S5 (Progressive Primary) - As the Primary buttons are moved from off to position 3 outputs 1 and 2 stay on. Turn this option OFF For isolated operation, where each output is independent.

S6 (Non-Progressive Override) - With Progressive Primary option off, turning this option ON will turn on all 3 outputs when Primary button 3 is active. Otherwise there is no effect.

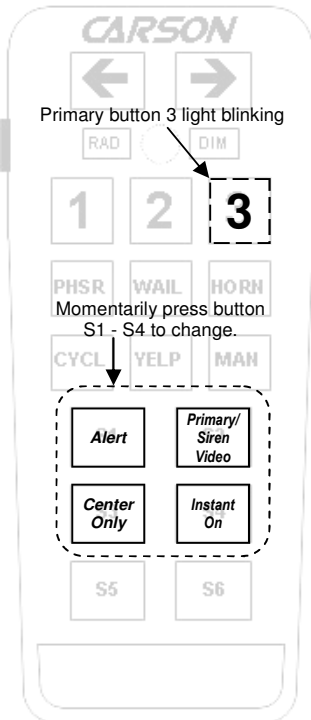
Press the DIM button momentarily to move into next section, or DIM for 3 seconds to save & exit.



Option Set 3

(Alert, siren/lever video)

S1	S2	S3	S4	SWITCH
Alert	Primary/ Siren Video	Center Only	Instant On	FUNC- TION
ON - Alert Active OFF - Disable	ON - Lever/ Siren Video OFF - Disable	OFF ON	OFF ON	OPTIONS (Top is default)



S1 (Alert Enable) - Alert provides a periodic "beep" at the control head to remind that a light is on. Turn off to disable this feature.

S2 (Primary Siren Video) - VIDEO output is normally on when a Primary button and/or Siren is active. Press button to disable. (NOTE: this does not control the VIDEO Output for S1 - S6. See S1 - S6 Operation)

S3 (Center Only) - Only CTR-A output is on when center arrow stick selected.

S4 (Instant On) - Primary buttons operate even when ENABLE input is off. Arrow stick buttons active when Primary button active.

Press the DIM button momentarily to move into next section, or DIM for 3 seconds to save & exit.

Second Tone Control

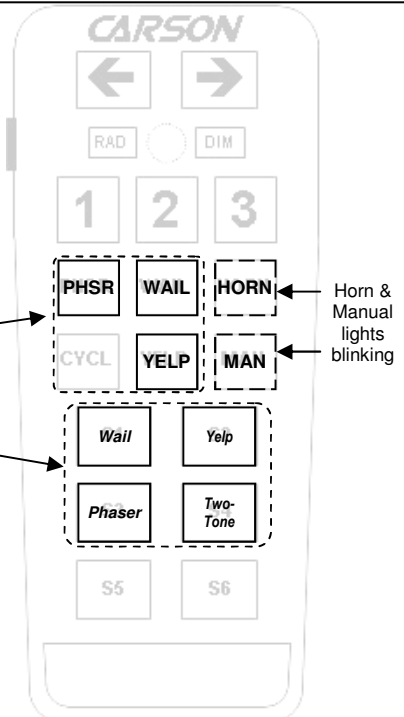
S1	S2	S3	S4	SWITCH
Wail	Yelp	Phaser	Two-Tone	2nd Tone

Default Settings (1st/2nd): Wail/Wail, Yelp/Wail, Phaser/Yelp

Press Wail, Yelp or Phaser button to set primary tone,

then press S1, S2, S3 or S4 for the corresponding second tone.

Press the DIM button momentarily to go back to beginning, or DIM for 3 seconds to save & exit.



NOTE: These option settings can be easily transferred to another vehicle. See PROGRAM TRANSFER.

PA VOLUME PROGRAMMING

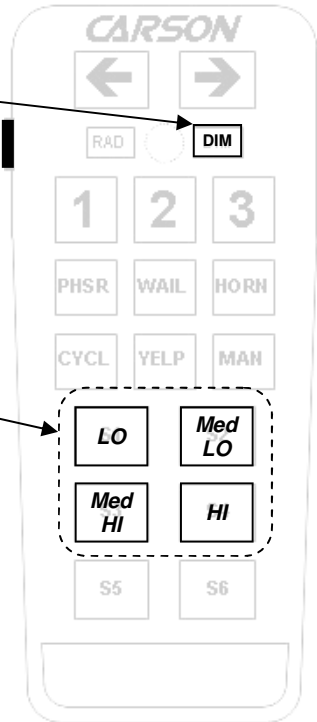
PA volume setting (programming) is done from the face of the handheld controller. Unit must be turned on with POWER input. Make sure that all buttons are off.

Enter the program mode by pressing and holding the PA button and DIM button for 3 seconds.

The unit will beep 3 times and the backlighting will begin flashing to indicate that the unit is in program mode. It will continue to flash until program mode is stopped by pressing and holding DIM for 3 seconds, saving the settings—the unit will emit a long beep.

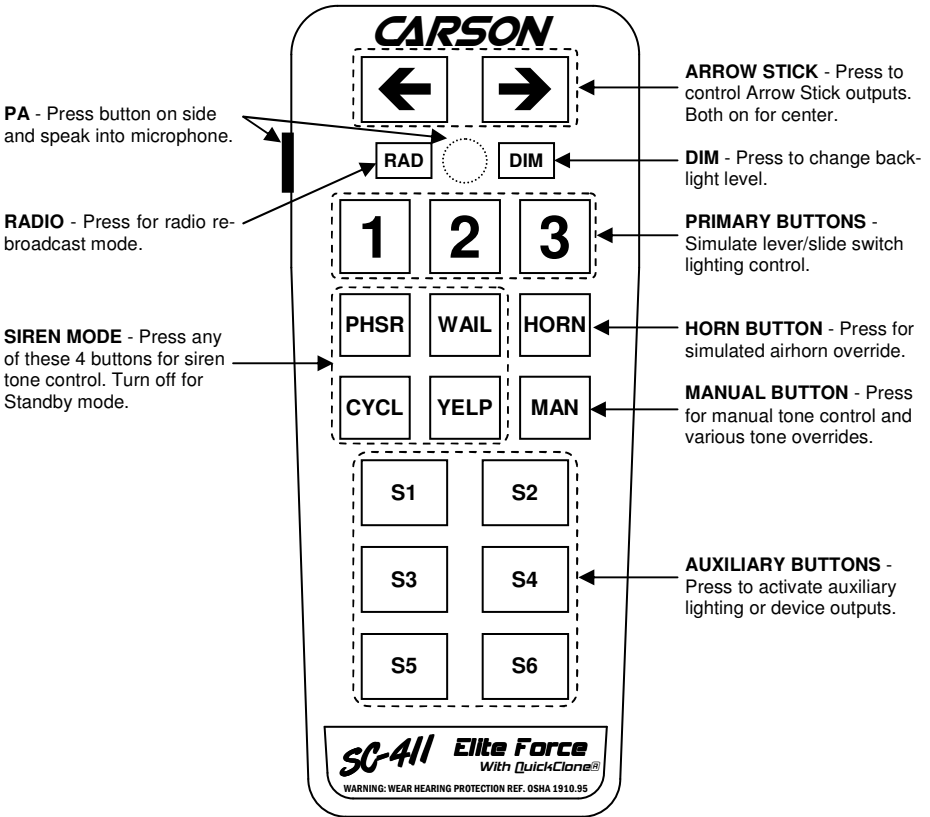
Set the volume by momentarily pressing S1, S2, S3 or S4. The corresponding light will turn on.

Press the DIM button for 3 seconds to save & exit.



OPERATION

This unit is designed for easy operation under the stress associated with high-speed pursuit. Most siren functions are accessible with one simple motion. Certain operational features or controlled by option settings and/or installation connections.



POWER ON/OFF

The unit is powered by the ignition switch.

SIREN CONTROLS

SIREN MODE - These buttons select the primary operating mode of the siren.

CYCL - A standby mode dedicated for Horn Ring Cyclers 2 (HRC2). During installation, the siren control 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.

WAIL - A slower changing tone used on highways.

YELP - A rapidly changing tone used in congested areas.

PHSR - 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.

RAD - Also known as Radio Repeat, this mode 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 PA are available in this mode.

STANDBY (All buttons off) - Turns off siren output, allowing Manual, Horn and Public Address operation.

OPERATION

(Continued)

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. With siren modes WAIL, YELP, or PHSR 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.

PA - The noise-canceling microphone is used for public address operation and overrides any siren tone when the button on the side is pressed. Hold the microphone close to your lips for proper operation.

SIRCTRL Input (Optional) - During installation, the siren control 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 the Siren mode as shown in the table below.

Siren Mode	Normal Tone	Horn Push-Button	Manual Push-Button	Siren Control 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)

LITCTRL Input (Optional) - During installation, the light control input may be connected to a momentary switch. Activation of this input will cycle through the Primary button positions, with the Primary button overriding if moved.

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 mode is changed.

Timed Override (Optional) - With Siren mode in Wail, Yelp, or Phaser, 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.

Sweep/Intersection Function (Optional) - 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 Siren mode in WAIL, YELP, or PHSR, tap the horn ring to start Sweep function. Tap the horn ring again to start the faster 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 tone. Pressing and holding the horn ring will produce Horn tone until released. Then the siren will return to the Sweep or Intersection sequence.

Second Speaker Output (Dual Tone) - This unit provides a second siren amplifier that will produce independent siren tones based on option settings. Radio Repeat and PA are reproduced through both amplifiers.

OPERATION

(Continued)

LIGHT SYSTEM CONTROLS

3 Primary buttons control the primary lighting functions. Six additional programmable buttons are provided for auxiliary lighting or other device control. Two dedicated buttons operate directional control lights ("Arrow Stick"). An optional Instant On feature allows use of the Primary buttons with the ignition off.

Primary Buttons - These buttons by default provide progressive (additive) control of lighting functions. The third button also provides Automatic Siren. The installer can change to non-progressive operation.

Automatic Siren - Primary button 3 provides Automatic Siren control. If the siren mode is 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. This feature may be disabled.

Auxiliary Control Buttons - Six lighted pushbuttons are provided for various other lighting functions or device control. The button lights Red when activated. The buttons may also be programmed for different functions, and these buttons may be combined with each Primary button to automatically turn on and off.

Arrow Stick Control Buttons - Two dedicated buttons are provided to control traffic director lights on the vehicle. Press left or right buttons to set the direction. Turning on both will set the output to left, right and center. These buttons can be used if any Primary button is active with the Instant On feature turned on.

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

DIM - The backlighting and indicator lights can be dimmed or turned off by repeatedly pressing the DIM button. An optional connection to the vehicle dash lights may also control this level. This button will light whenever a siren tone is produced.

Video Trigger Output - A video camera trigger output is activated with Primary buttons 1, 2, or 3 active. Programmed auxiliary control switches may also activate the output.

Alert - While the Primary buttons or auxiliary control buttons are on, an alert beep is sounded every 15 seconds. This can be optionally disable.

DIAGNOSTICS

The unit monitors all outputs for faults, which are usually traced to shorted circuits. The unit indicates these faults by flashing one or more lights and beeping. The following table shows fault indications and likely causes.

Control	Fault Indication	Likely Cause
Primary Button 1, 2 or 3	1, 2 or 3 flashes	Blown fuse at L1, L2 or L3
Button S1 - Button S6	Button flashes	Blown fuse at S1 - S6
Arrow Stick Button	Button flashes	LFT-A, RGT-A or CTR-A output shorted (auto-reset)
Siren output 1	DIM flashes	Blown fuse at siren CH1
Siren output 2	DIM double flashes	Blown fuse at siren CH2
Both siren outputs	DIM triple flashes	Blown fuses at siren CH1 & CH2

PROGRAM TRANSFER (QuickClone®)

To facilitate programming of multiple vehicles this unit automatically synchronizes option settings between the handheld controller and amplifier on power-up as shown. Transfer the settings to multiple vehicles by temporarily installing with a common handheld controller, power-up/down (transferring options to the amplifier), then permanently install the supplied handheld controller. On power-up the options are transferred from the amplifier to the handheld controller.

Option Settings	Action
Controller = Amp	Normal power-up
Controller not Default and Amp not Default	Controller settings transferred to Amp, power-up
Amp is Default and Controller not Default	Controller settings transferred to Amp, power-up
Amp not Default and Controller is Default	Amp settings transferred to Controller , power-up

If a handheld controller or amplifier is sent in for service it will be set to default prior to return, and will automatically synchronize with the mating part on power-up.

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 **DIM** light comes on solidly 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 POWER input Bad speaker Connector(s) loose Amplifier 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 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 Cutout Input option properly configured?
Distorted siren sound	Speaker assembly loose Intermittent SIRCTRL Input connection Low vehicle voltage	Is the speaker bell or tip loose? Is the SIRCTRL 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 pressing the microphone button? Are circuit breakers used with at least a 50A rating?
Horn function stuck on or Manual stuck on	Horn or Manual button stuck SIRCTRL Input improperly connected SIRCTRL Input Polarity Option set wrong	Does the horn or manual button return when released? Is the SIRCTRL Input used and wired properly? Is the Siren Control option properly configured?
No Radio	Unit not connected to radio Radio volume too low	Is the radio connected properly to the unit? Can you hear the radio in the vehicle? Have you tried adjusting the radio volume control (amplifier)?
Wrong siren tone	Two-Tone option installed Aux Input set to wrong function	Is the Two-Tone option selected? Is the Sweep/Intersection option selected?
Phaser or Horn not working	Tone disabled	Is Phaser/Two-Tone Enable option selected? Is the Horn Enable option selected?
Automatic Siren not working	Automatic Siren disabled	Is the Automatic Siren Enable option selected properly?
Primary buttons not working at all	No power to lever switch No ground at siren connector	Do the Primary button indicators light? Does the siren work?
Primary buttons not working in some positions	Loose lever switch output connection	Does the Primary button light in those positions? Is the corresponding fuse blown?
Aux control buttons not working	No power to aux buttons Loose aux switch output connection	Do the aux buttons light? Is the corresponding fuse blown?

PARTS

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

Part	Description
CP5090-25-BK	Cable, CAT5e 25ft Black
CP5128	Connector, RJ45 Coupler
CP4688-10	Connector, 10-Pin Removable Terminal Block
CP4688-12	Connector, 12-Pin Removable Terminal Block
CP5086-03	Connector, 3-Pin Removable Terminal Block
CP4990-150	Fuse, ATM 15 Amp Automotive Mini
CP4990-250	Fuse, ATM 25 Amp Automotive Mini
ED1952	Kit, SC-411 Handheld Cradle
CP4895	Label, Aux Output Legends
SC-411RD-20AMP	SC-411 Dual Tone Amplifier
SC-411HX-20CH	SC-411 Handheld Controller
VELCRO	3" Mounting Strip
CP4119	Transistor, Output (2 required) (Industry Standard TIP36C, must have metal tab)
CP5130	Manual, SC-411HD-20 Installation and Operating

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.

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 the manufacturer.

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.

INSTALLATION CONFIGURATION RECORD

Terminal	AWG	Color	Connected to	Terminal	AWG	Color	Connected to
POS (2)				L1			
GND (2)				L2			
POWER				L3			
RADIO (2)				S1			
BACKLIT				S2			
LITCTRL				S3			
SIRCTRL				S4			
CUTOUT				S5			
SPKR1				S6			
SPKR2				RGT-A			
SPKRC				LFT-A			
VIDEO				CTR-A			

S1—S6 Operation:						
Blank=Default, V=No Video, M=Momentary, 10 or 20=Hold Time						
Primary Button / S1 - S6 Switch Linkage: Blank=None, #=Pos						
	S1	S2	S3	S4	S5	S6
Operation						
Association						

Option Set 1			Option Set 3		
Option	Default	Setting	Alert Enable	ON	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Cutout Input	POS	<input type="checkbox"/> POS <input type="checkbox"/> NEG <input type="checkbox"/> OFF	Primary/Siren Video	ON	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Siren Control	POS	<input type="checkbox"/> POS <input type="checkbox"/> NEG <input type="checkbox"/> OFF	Center Only	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Light Control	POS	<input type="checkbox"/> POS <input type="checkbox"/> NEG <input type="checkbox"/> OFF	Instant On	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF
Timed Override	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Second Tone Control		
Sweep/Intersection	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Siren Mode	Default	Second Tone
Automatic Siren	ON	<input type="checkbox"/> ON <input type="checkbox"/> OFF	WAIL	Wail	<input type="checkbox"/> Wail <input type="checkbox"/> Yelp <input type="checkbox"/> Phaser <input type="checkbox"/> Two-Tone
Option Set 2			YELP	Wail	<input type="checkbox"/> Wail <input type="checkbox"/> Yelp <input type="checkbox"/> Phaser <input type="checkbox"/> Two-Tone
Two-Tone	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF	PHASER	Yelp	<input type="checkbox"/> Wail <input type="checkbox"/> Yelp <input type="checkbox"/> Phaser <input type="checkbox"/> Two-Tone
Phaser Enable	ON	<input type="checkbox"/> ON <input type="checkbox"/> OFF	General Information		
Short Manual	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Vehicle ID		
Horn Enable	ON	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Handheld Ctrl S/N		
Primary Progressive	ON	<input type="checkbox"/> ON <input type="checkbox"/> OFF	Amplifier S/N		
Non-Prog Override	OFF	<input type="checkbox"/> ON <input type="checkbox"/> OFF			

Notes:

Installed by: _____ Date: _____