

INSTALLATION AND INSTRUCTION MANUAL

LCS880-016

SIREN AMPLIFIER & HAND-HELD LIGHT CONTROLLER



IMPORTANT: Please read all of the following instructions before installing your new light. Failure to follow these safety precautions may result in damage to your light or vehicle and may result in serious injury or death to you and your passengers.

STAR
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PLITSTR309 REV. R 9/28/23

After programming, fill in this chart to identify your button functions

Quick-Activation Progressive Button Functions (CYCLE 1/2/3 Button)

1st Press - Priority 1

F1 _____

2nd Press - Priority 2

F1 **Same as Priority 1**

F2 _____

3rd Press - Priority 3

F1 **Same as Priority 1**

F1 **Same as Priority 2**

F3 _____

Push Button Functions

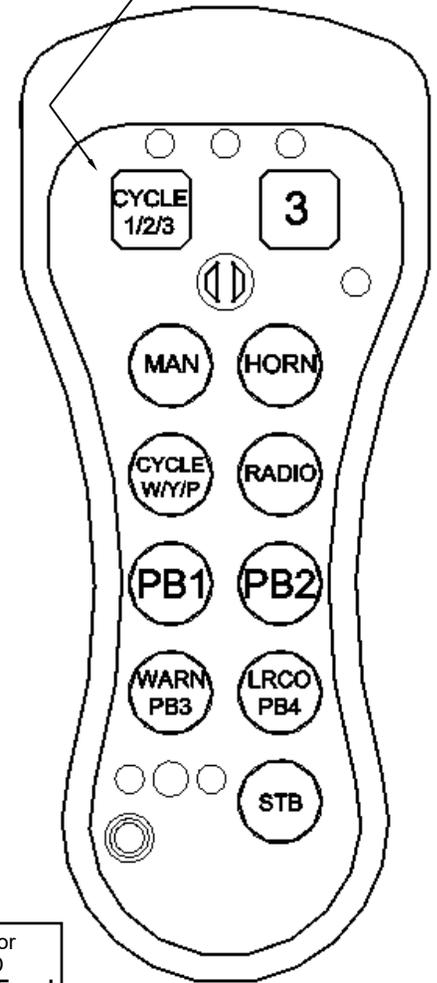
PB1 _____

PB2 _____

PB3 _____

PB4 _____

PROGRESSIVE PUSH BUTTON



If you are NOT using a traffic director with this unit, you MUST disable TD Mode. Please review the **TD MODE** and **PB4 FUNCTION** option on pages 5-6.

Important: This product is used to warn traffic. Improper use may result in vehicular collision, personal injury and/or death. Star Headlight & Lantern Co., Inc., and its subsidiaries shall not be held responsible for damages directly or indirectly caused by improper use of this product.

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General Description

The LCS880 utilizes a 200-watt remote siren amplifier and a hand-held remote control head with illuminated buttons that change color to indicate status. The amplifier is designed for single or dual 100W speaker use. By default, this siren is programmed to operate a *logic controlled* Traffic Director. This feature can be disabled to allow additional button use.

The hand-held controller contains a progressive pushbutton that allows the user to scroll up and down through three different Priority Modes. A second button allows for quick pursuit mode operation, jumping directly to Priority 3 (activation of maximum lights and siren for pursuit mode). There are also four push buttons to operate the siren audio functions and four push buttons to control four different lighting or auxiliary functions (two defaulted for Traffic Director).

Default siren operating modes include the tones of Wail, Yelp, and Phaser, as well as a Radio rebroadcast mode. A Noise Canceling PA Override is available in all modes. A Manual button allows tone toggle operation and manual siren control. The Air Horn button will override any siren tone. The vehicle horn switch may also perform the Manual push button function via an auxiliary input. Several option jumpers and programming buttons allow the unit to be fully customized to the operators' needs. A Park Kill option is provided for connection to a door switch, etc. to disable the siren when exiting the vehicle. Controls for both a PA volume and a Radio volume are provided.

The LCS880 series has been designed such that excessive high or low voltage detection will disable the siren output, protecting both the amplifier and the speaker. Speaker diagnostics provides user feedback as well as shutdown protection against speaker opens and shorts. Fused inputs provide safety against reverse polarity. The first four light output functions are individually protected with 20A fuses, while the Horn Ring Transfer (HRT) output function is protected with a 2A in-line fuse. CAUTION: These protection features will not guard against overloading the outputs.

Installation Notes

Proper installation of the unit is essential for years of safe, reliable operation. **Please read all instructions before installing the unit.** Failure to follow these instructions can cause serious damage to the unit or vehicle and may void warranties.

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

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

Contents should include:

- 1 - Hand Held Controller
- 1 - Amplifier and Light Control Box
- 1 - Amplifier Wire Harness with Connector
- 1 - 25' Amplifier Communication Cable (6-wire telephone style cable)
- 1 - Extended Cable Adapter
- 1 - Mounting Hardware
- 1 - Label Set
- 1 - RFI Filter
- 1 - Installation and Operating Instructions

Installer Selectable Options

The LCS880 has several options that can be selected during installation by the use of various DIP switches, jumpers, and through programming. **These options should be set before installation of the unit.**

Optional Traffic Director Control

This unit is pre-programmed to enable control of a logic-controlled traffic director. Standard compatibility is for units that activate Warn, Left, and Right through applying power to independent enable wires, with the Center-Out function displaying when Left and Right are activated together.

If your logic-controlled TD requires power to the Warn wire for the Left and Right functions to activate, you will need the optional TCD850 control box.

If you wish to control a traffic director that utilizes "dummy" heads then you will need to purchase an additional optional control module (P/N TDC-3).



CAUTION!!

If you are NOT using a traffic director with this unit, you MUST disable that option. Please review the **TD MODE and PB4 FUNCTION** section on pages 5-6.

SIREN OPTION DIP SWITCHES

- Auxiliary Input Polarity
- Park Kill Polarity

Both of these functions are activated by applying positive voltage (+12VDC). If this setting is acceptable, please skip to the Control Head Option Jumpers section.

Amplifier Cover Removal

Loosen the three **protruding** Philips head screws located on the **top** of the amplifier unit. Slide the cover off.



CAUTION:
DO NOT OVER
TIGHTEN SCREWS!

(Installer Selectable Options CONT'D)

Auxiliary Input Polarity

Applying a positive voltage to the green wire normally activates the auxiliary function (Air Horn standard/MANUAL function optional).

The wiring diagram on page 10 shows both connection examples.

To instead have the AUX function activate when the green wire is connected to ground (negative) .

1. Turn "AUX POS" DIP switch off.
2. Turn "AUX NEG" DIP switch on.

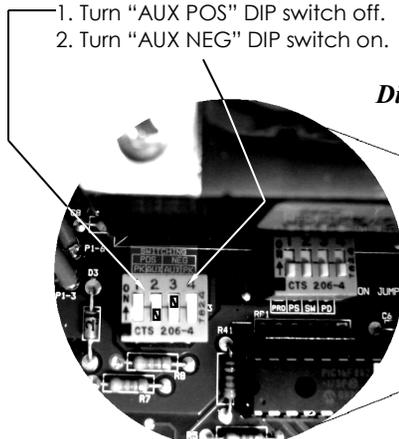
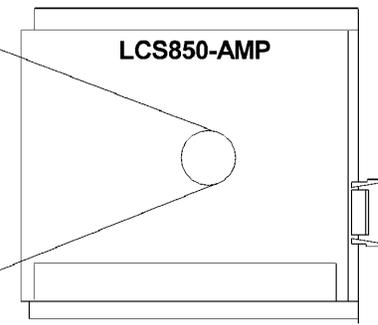


Diagram showing NEG AUX set up

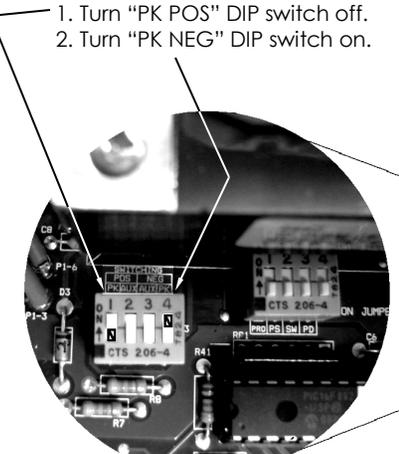


Park Kill Input Polarity

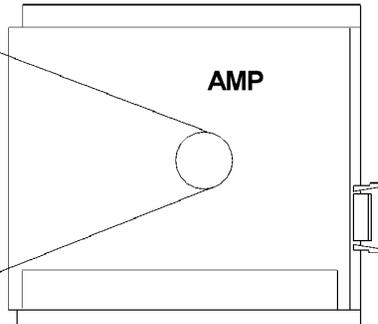
The Park Kill (Cutout) Input turns off any siren tone output when activated, and remains off until a control is activated or changed. The wiring diagram on page 10 shows two connection examples.

Connecting the white wire to positive (+12 VDC) normally activates the Park Kill input. To instead have it activate when the white wire is connected to ground (negative):

1. Turn "PK POS" DIP switch off.
2. Turn "PK NEG" DIP switch on.



AMP

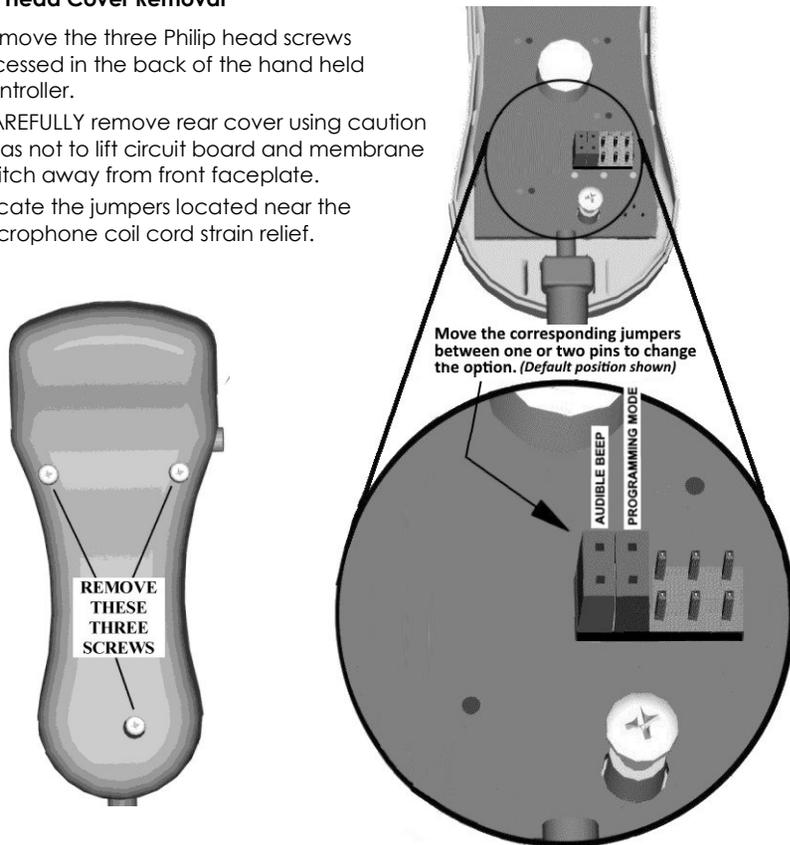


Control Head Option Jumpers

There are two jumpers located inside the hand held controller that are used when selecting/programming various options. Review the option charts below and on the following page to determine if you need to access the jumpers to change any of the default settings. If you do not need to change any, you can skip to **Mounting**.

Control Head Cover Removal

- Remove the three Philip head screws recessed in the back of the hand held controller.
- CAREFULLY remove rear cover using caution so as not to lift circuit board and membrane switch away from front faceplate.
- Locate the jumpers located near the microphone coil cord strain relief.



Jumper Controlled Options

	<u>Standard Setting</u>	<u>Optional Setting</u>
Audible Beep	Jumper on both pins - An audible beep is heard when the buttons on the control head are pressed.	Jumper on 1 pin only - No beep when the buttons on the control head are pressed.
Programming Mode	Jumper on both pins - Siren in standard operating mode.	Jumper on one pin (or removed) - Siren in Programming Mode.

Programmed Options

	<u>Standard Setting</u>	<u>Optional Setting</u>
TD Mode: On/Off	TD Mode is On	TD Mode is Off
PB4 Function:	PB4 controls Traf. Director Mode	PB4 controls Output S4
LRCO or Output S4	TD LED display active Output S3 and S4 used for TD Button PB3 controls Orange wire	TD display NOT active Output S3 controlled by PB3 Output S4 controlled by PB4
PB3 Function:	No TD WARN Option	TD WARN pattern available
Output S3 or TD Warn	PB3 controls Output S3	PB3 activates TD WARN (only if TD Mode is active)
TD WARN Auto-Activation in Priority 3	Priority 3 mode has no effect on TD WARN mode	The TD automatically activates in WARN mode whenever Priority 3 is selected on the controller (only if TD Mode is active and TD WARN pattern is available)
PB1 Auto-Activation in Priority 1	Priority 1 mode has no effect on PB1	PB1 automatically activates whenever Priority 1 is selected on the controller
PB2 Auto-Activation in Priority 1	Priority 1 mode has no effect on PB2	PB2 automatically activates whenever Priority 1 is selected on the controller
Phaser/Two-Tone Siren WAIL Auto-Activation in Priority 1	Third tone is Phaser Priority 1 mode has no effect on the siren	Phaser Tone replaced with Two-Tone The siren automatically activates in WAIL mode whenever Priority 1 is selected on the controller
PB1 Gunlock	Push button PB1 is a standard ON/OFF button	PB1 used for Gun Lock - Stays activated (On) for only 8 seconds when pressed
PB2 Momentary	Push button PB2 is a standard ON/OFF button	PB2 is a momentary switch, thus only being active while being held in
PB4=PB1+PB2+PB3	Push button PB4 has no effect on PB1, PB2, or PB3	PB1, PB2, & PB3 auto-activate anytime PB4 is activated
PB1 Auto-Activation in Priority 2	Priority 2 mode has no effect on PB1	PB1 automatically activates whenever Priority 2 is selected on the controller
PB2 Auto-Activation in Priority 2	Priority 2 mode has no effect on PB2	PB2 automatically activates whenever Priority 2 is selected on the controller
Phaser Disable	Phaser tone enabled	Phaser Tone disabled
Siren WAIL Auto-Activation in Priority 2	Priority 2 mode has no effect on the siren	The siren automatically activates in WAIL mode whenever Priority 2 is selected on the controller
Auxiliary Control (Horn vs. Manual)	The siren's green auxiliary (AUX) wire is connected to the vehicle horn ring, and activates the siren's AIR HORN for all siren modes except RADIO	AUX wire duplicates the function of the MAN push button instead of the HORN
Park Kill Lockout	The Park Kill function "Locks Out" all siren tones. They cannot be used until Park Kill is de-activated	The Park Kill function temporarily deactivates siren tones, but they can be reactivated using the buttons
STBY/Sleep	Buttons always illuminate at power up.	If button lighting was deactivated by STBY when the siren is powered off, the button lighting will still be deactivated upon power up.
PB1 Auto-Activation in Priority 3	Priority 3 mode has no effect on PB1	PB1 automatically activates whenever Priority 3 is selected on the controller
PB2 Auto-Activation in Priority 3	Priority 3 mode has no effect on PB2	PB2 automatically activates whenever Priority 3 is selected on the controller
Siren WAIL Auto-Activation in Priority 3	Priority 3 mode has no effect on the siren	The siren automatically activates in WAIL mode whenever Priority 3 is selected on the controller

(Installer Selectable Options CONT'D)

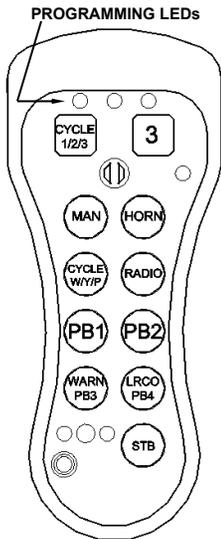
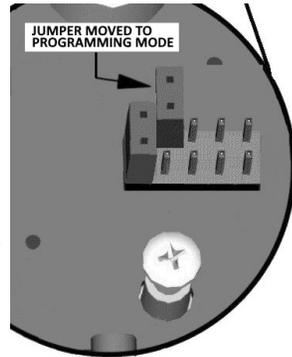
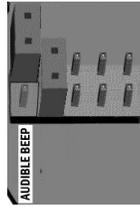
Audible Beep Jumper

If you would like to disable the keypad beep, move the Audible Beep jumper from both pins onto only one pin as pictured to the right.

PROGRAMMING

Programming of the options described on the previous page is done through the handset. Perform the following steps to change any of the options:

- Place the corresponding handset jumper in the "Programming" position as shown to the right and power up the unit.
- Use the CYCLE 1/2/3 button to illuminate one of the 3 PROGRAM LEDs (which are also the Priority LEDs).
- Refer to the chart below to see which option is controlled by each button. (**default setting in BOLD**)
- Press and release the button to toggle between the two options (RED or GREEN).
- After you have changed all options needed, place the Programming Jumper back on both pins.



BUTTON	IF RED	IF GREEN	SETS THIS OPTION
PROGRAMMING LED 1 ILLUMINATED			
HORN	LRCO	OUTPUT S4	TD MODE ON and PB4 CONTROLS LRCO or TD MODE OFF and PB4 CONTROLS OUTPUT S4
MAN	WARN	OUTPUT S3 ORA*	TD WARN AVAILABLE and PB3=warn or NO TD WARN and PB3=S3 OUTPUT/ORa*
RADIO	ON	OFF	TD WARN AUTO ON IN PRIORITY 3 †
PB1	ON	OFF	PB1 AUTO ON IN PRIORITY 1
PB2	ON	OFF	PB2 AUTO ON IN PRIORITY 1
PB4	TWO TONE	PHASER	PHASER or TWO TONE
W/Y/P	ON	OFF	SIREN WAIL AUTO ON IN PRIORITY 1
PROGRAMMING LED 2 ILLUMINATED			
HORN	ON	OFF	PB1 IS GUNLOCK (TIMED OPEN)
MAN	MOMENTARY	LATCHED	PB2 IS A MOMENTARY (OPEN WHILE HELD)
RADIO	ON	OFF	PB4 ACTIVATES PB1, PB2, & PB3 ▼
PB1	ON	OFF	PB1 AUTO ON IN PRIORITY 2
PB2	ON	OFF	PB2 AUTO ON IN PRIORITY 2
PB4	DISABLE	ENABLE	PHASER DISABLE
W/Y/P	ON	OFF	SIREN WAIL AUTO ON IN PRIORITY 2
PROGRAMMING LED 3 ILLUMINATED			
HORN	MANUAL	AIR HORN	AUX WIRE = AIR HORN or MANUAL
MAN	TOGGLE	LOCK OFF	PARK KILL LOCKS OUT SOUND or TOGGLES OFF
RADIO	ON	OFF	REMEMBER SLEEP IS ACTIVE ON POWER UP
PB1	ON	OFF	PB1 AUTO ON IN PRIORITY 3
PB2	ON	OFF	PB2 AUTO ON IN PRIORITY 3
W/Y/P	ON	OFF	SIREN WAIL AUTO ON IN PRIORITY 3

* If TD MODE is ON & TD WARN is OFF, PB3 controls the Orange wire (Output 5)

* If TD MODE is ON & TD WARN is ON, PB3 controls the Orange wire (TD WARN)

* If TD MODE is OFF & TD WARN is OFF, PB3 controls Output S3

† Only if TD MODE is ON and TD WARN MODE is ON

▼ Only if TD MODE is OFF

Mounting

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.**



WARNING!

DO NOT mount in air bag deployment area. Devices should be mounted only in locations listed in SAE standard J1849. Controls should be placed within convenient reach of the driver. Assure clearances before drilling in vehicle. Sound levels produced by attached speakers can cause permanent hearing loss. Never operate this unit without adequate hearing protection for you and others in the area. (OSHA 1910.95)

SIREN AMPLIFIER & RELAY CONTROL BOX

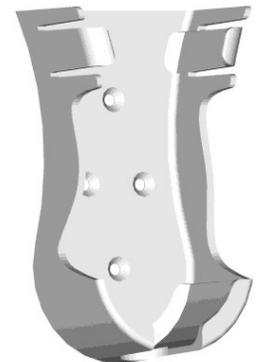
- The amplifier should be mounted in a location such as the driver compartment firewall, under the seat, or in the trunk.
- Do not mount the amplifier in the engine compartment or in an area that would be allowed direct exposure to weather elements.
- Choose a mounting location away from any air bag deployment areas.
- Assure adequate ventilation to prevent overheating.

Mount the amplifier unit through the four 1/4" holes located in the flanges (two visible and two not shown in the picture to the right).



CRADLE MOUNTING

- The LCS880 includes a cradle for storing the hand-held controller when it is not in use.
- Select a location so that the cable does not interfere with the vision of the driver or the operation of any controls, including, but not limited to, the steering wheel, gear shifter, and/or airbag.
- The cradle comes with four mounting holes predrilled in it. Only two screws are normally necessary to secure the cradle to the dash. Once you have selected a location, use the cradle as a template and mark the two mounting holes you will be using.
- Carefully drill two 1/16" pilot holes for your screws. Be sure to check for wiring and/or any other obstructions behind the mounting hole locations.
- Once the holes are drilled, use the two self-tapping Phillips head screws to secure your cradle.



Electrical Connections

WIRE SIZE AND TERMINATION

- The wiring diagrams on pages 10 and 14 show 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.
- Make sure all connections are tight.
- Route wiring to prevent wear, overheating and interference with air bag deployment.
- Use grommets and sealant when passing through compartment walls.
- Minimize the number of splices to reduce voltage drop.
- Ground connections should be made directly to the negative of the vehicle battery. If not possible, connect only to substantial chassis components.
- Install and check all wiring before connection to vehicle battery. SEE TABLE BELOW FOR CORRECT WIRE SIZING!
- All conductors should be constructed of stranded copper with thermoplastic insulation.



CAUTION: All wires should be rated for at least 125% of their maximum current load. All wires connected to the positive terminal of the battery should be fused at the battery for their rated load. The load can be calculated by adding all lamp wattages and dividing by 13. Load (Amps) = Total Watts / 13 volts. Do not use 1/4" diameter glass fuses, as they are not suitable for continuous duty above 20 amps.

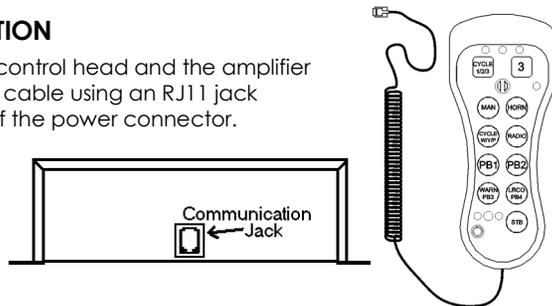
RECOMMENDED WIRE SIZE, AMP CAPACITY & CONSTRUCTION

Ampacity Range	SAE Wire Size	Gauge/No. of Strands
5A - 10A	#16	29/19
10A - 15A	#14	27/19
15A - 30A	#12	25/19
30A - 40A	#10	23/19
40A - 50A	#8	21/19

CONTROL HEAD CONNECTION

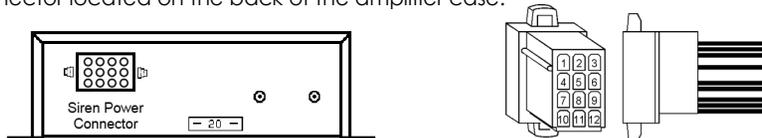
Communication between the control head and the amplifier is made via a communications cable using an RJ11 jack located on the opposite side of the power connector.

CAUTION: Please note that the cable used IS NOT a standard telephone cord and CANNOT be replaced with one.



12-WAY HARNESS

Several of the electrical connections to the amplifier are made using the removable connector located on the back of the amplifier case.



(Electrical Connections: Siren Amplifier CONT'D)

- The wiring diagram on the next page shows detail of how to wire the connector on the amplifier to the vehicle.
- The unit is internally fused.
- Make all electrical connections to the power connector before installing the connector on the unit.

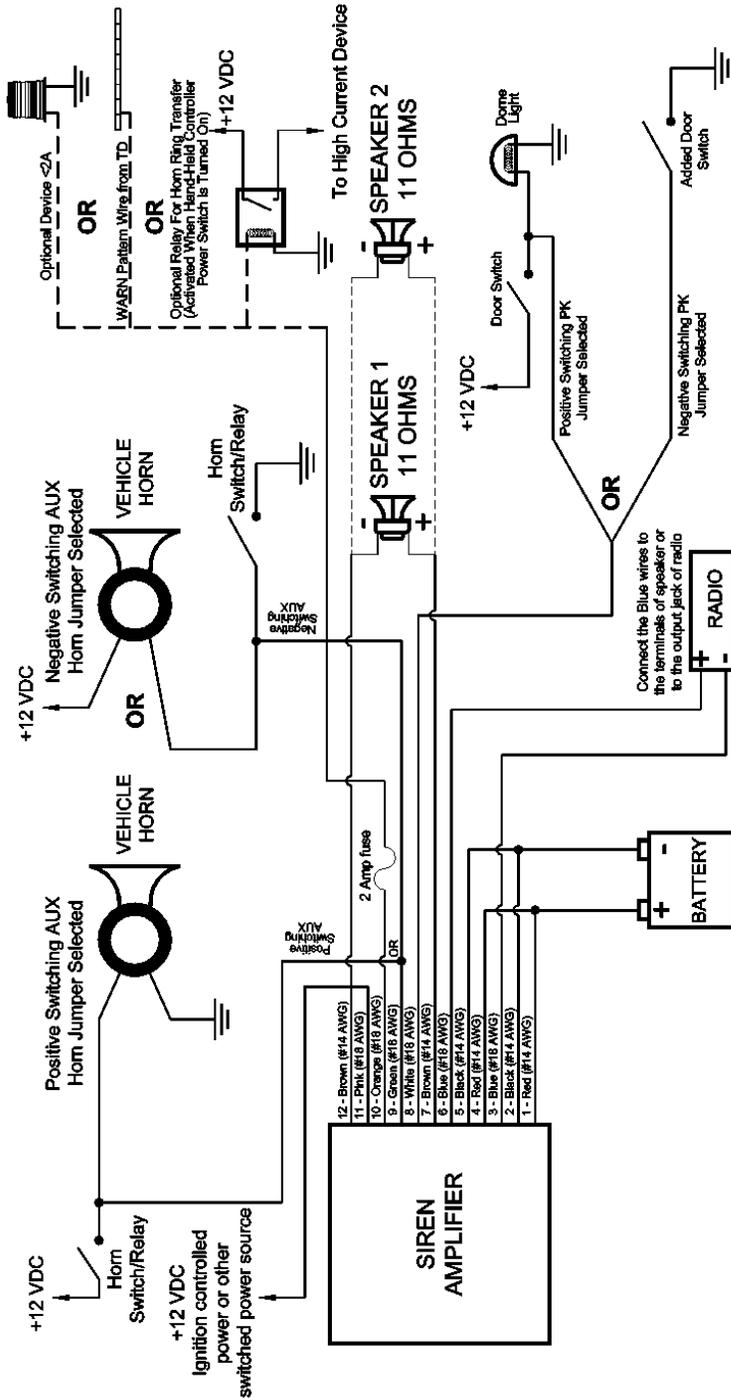
Mandatory Siren Wiring Connections:

- BLACK LEADS:** (GROUND) - Connect BOTH black wires to the negative of the battery, or to a good chassis ground. Be sure to use minimum size #14 AWG wire.
- RED LEADS:** (POWER/+12VDC) - Connect BOTH red wires to the positive of the battery, or to a high current power buss. Use minimum size #14 AWG wire. The power supply to the siren 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.
- BROWN LEADS:** (SPEAKER) - Connect one lead to each terminal or lead of the speaker. **If connecting a second speaker in parallel, you must observe the polarity of the speakers (phasing). Be sure that the positive terminals of both speakers are connected together to the same brown wire from the siren.**
- PINK LEAD:** (IGNITION SWITCHED POWER) - Connect the pink wire to your ignition-controlled power (or other switched power source). This will turn the power to your unit on and off.

Optional Siren Wiring Connections:

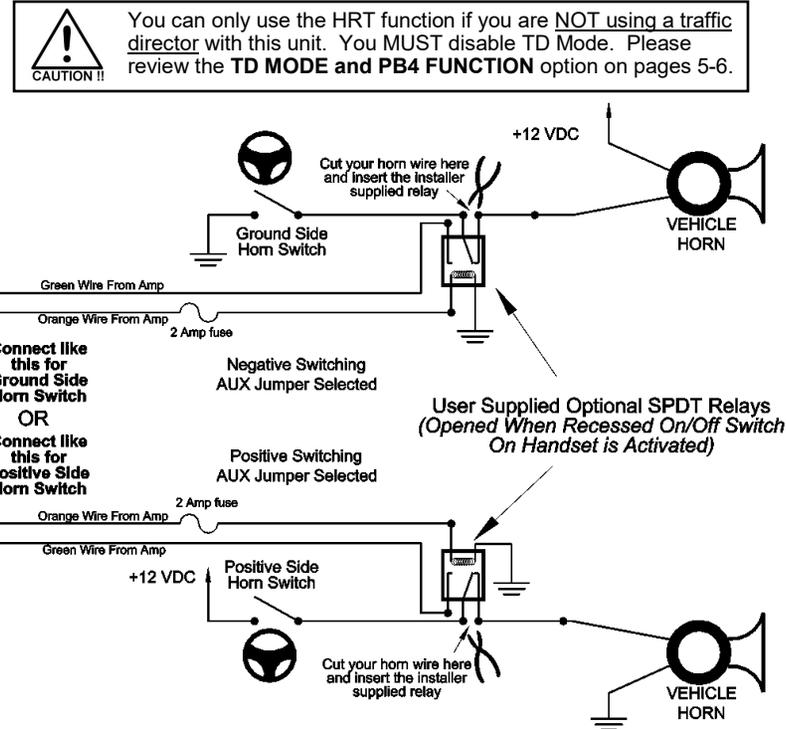
- BLUE LEADS:** (RADIO REPEAT) - Connect one blue lead to each terminal of the two-way radio speaker or output connector of the radio. Use #18 AWG wire.
- GREEN LEAD:** (AUX) - The Green wire is connected to the horn ring circuit or other remote switch. It can be activated by positive or negative voltage depending upon the jumper selection. See **Auxiliary Input Polarity** section on page 3 for jumper details.
The function of the Green wire changes depending upon which programming option you have selected for **Auxiliary Control** (pages 5-6).
AUX mode set for HORN (default): The siren's AIR HORN will activate whenever the vehicle horn is pressed (unless in RADIO mode).
AUX mode set for MAN: Pressing the steering wheel horn (or activating this wire through some other remote switch) will mimic the Manual button function when the vehicle's horn is pressed.
NOTE: Cut the Green lead short if not used & insulate with electrical tape.
- WHITE LEAD:** (PARK-KILL) - Connect to dome light or added door switch. Circuit may be positive or negative with proper jumper selection. See **Park Kill Input Polarity** section (page 3) for jumper details.
NOTE: If not used, cut lead short and insulate with electrical tape.
- ORANGE LEAD:** The function and connection of the Orange wire changes depending upon which programming options you have selected (pages 5-6).
With TD Mode ON (default): The Orange wire is an Output controlled by PB3. It can be connected to any device that draws less than 2A. Typically you would connect it to the WARN signal wire from your *logic controlled* Traffic Director. TD Warn would activate when PB3 was pressed. If TD Warn option (see page 5) is ON, the TD will also automatically go into Warn mode in SS Priority 3.
With TD Mode OFF: The Orange wire should be connected to the Horn Ring Transfer relay (not supplied). See page 11 for HRT details.
NOTE: If not used, cut lead short and insulate with electrical tape.

Siren Wiring Diagram



Wiring Diagram for OPTIONAL Horn Ring Transfer (HRT)

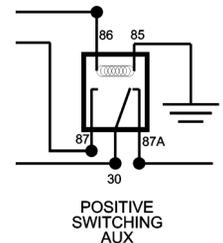
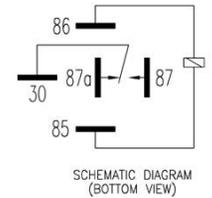
The Horn Ring Transfer Feature de-activates the vehicle horn when the handset is activated with the recessed On/Off switch on the side. This allows you to use the steering wheel horn switch to control your siren without sounding the vehicle horn. Use this wiring diagram for proper connection of the Orange and Green wires. The diagram below shows wiring for both positive and ground-side switched horns, using an installer-supplied relay.



Not all relays are labeled the same. The above diagram shows a very generic schematic which will be true for all relays.

For our relay (P/N P30153-6) the pin out is labeled to the right (top diagram). The terminals that correspond to the above wiring diagram (Positive Side Horn Switch) are labeled in the lower diagram to the right.

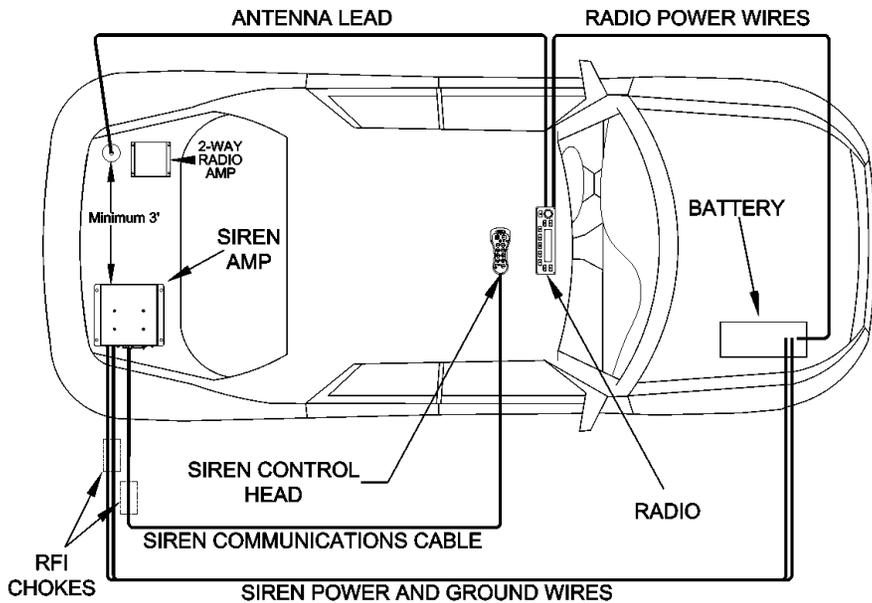
- The Green wire from the siren goes to the N.O. (Normally Open) relay contact (87).
- The cut wire from the steering wheel switch goes to the COM (Common) relay contact (30).
- The cut wire attached to the vehicle horn goes to the N.C. (Normally Closed) contact (87A).
- The Orange wire from the siren goes to the positive coil contact of the relay (86)
- The negative coil contact of the relay (85) should be connected to Ground.



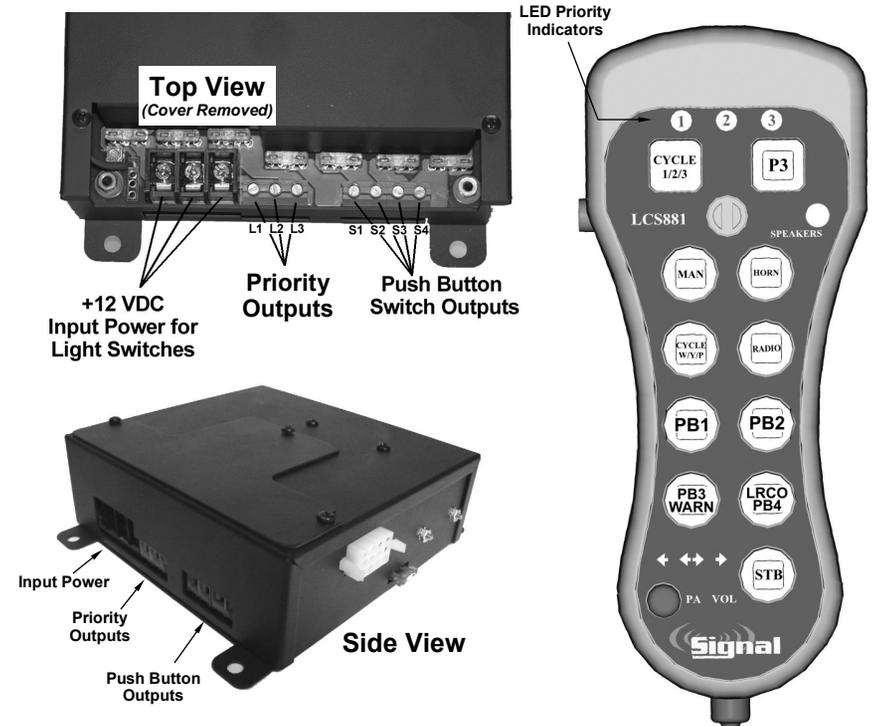
RFI REDUCTION AND RFI CHOKE INSTALLATION

The following steps are recommended when installing, to help reduce RFI:

1. Make sure that both the control head and amp are securely attached to good chassis ground (i.e. no paint in-between the chassis and the grounding terminal).
2. Keep the siren control head and amplifier as far away from the police radio as is practical.
3. Check that the police radio antenna wire makes a right angle from the back of the police radio and runs on one side of the vehicle. The communications cable for the siren should make a right angle out of the back of the control head and exit in the opposite direction from both the police radio antenna wire and the police radio power wires.
4. Excess communication cable from the control head to the amp should be tightly bound back near the amplifier box.
5. One of the RFI chokes (STAR P/N: P30039-57) should be placed around the communications cable at the back of the siren amplifier box.
6. The second RFI choke should be placed around the Red and Black wires exiting the siren amplifier box.



INPUT POWER AND SWITCH OUTPUT CONNECTIONS



(REFER TO LIGHT WIRE DIAGRAM ON NEXT PAGE, AS WELL AS TO WIRE SIZE TABLE ON PAGE 8 FOR PROPER WIRE SIZES!)

The electrical connections for input power, Priority outputs, and the push button outputs are made to the control box (amplifier) using the terminal blocks shown above.

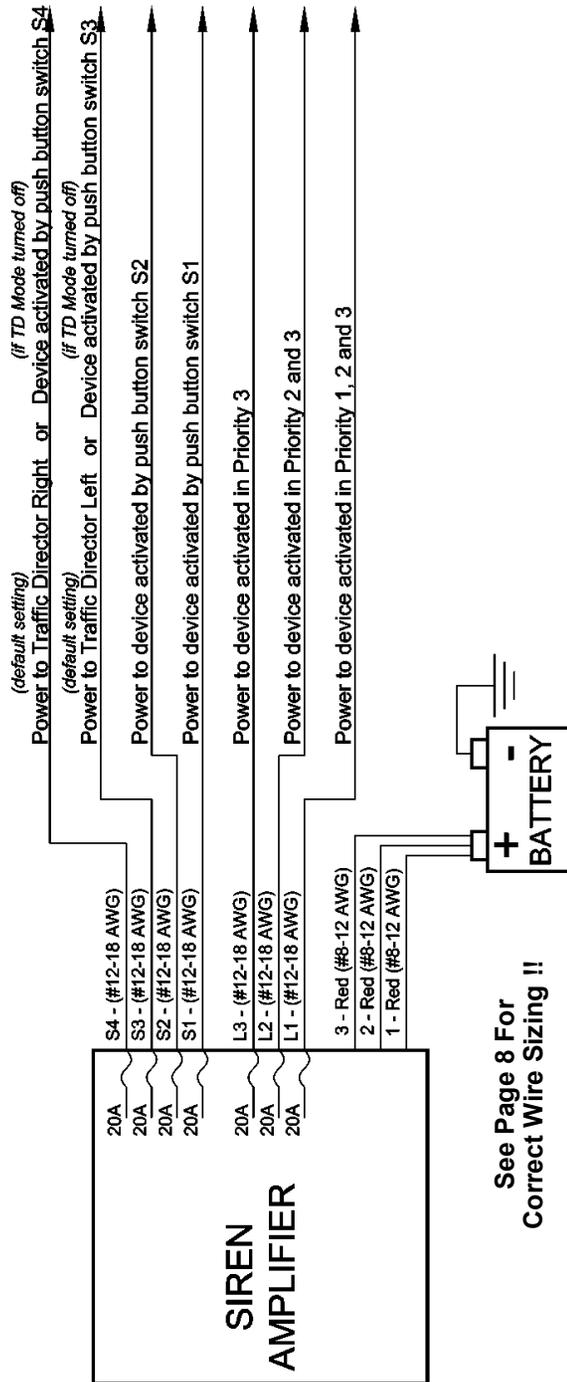
Input Power: (Left Terminal Block) Connect +12VDC to the 3 large barrier style terminals. When controlling lights with a large amount of current (>15A) power should be supplied to all three inputs.

Priority Outputs: (Center Terminal Block) Connect the lights that you wish to auto activate in the corresponding Priority Modes to the L1, L2, and L3 outputs (20A max each). (Note: Priority 1 mode activates L1, Priority 2 mode activates both L1 and L2 and Priority 3 Mode activates L1, L2, and L3).

PB1-PB2 Push Button Outputs: (Right Terminal Block) Connect the lights that you wish to activate with corresponding buttons PB1 and PB2 to the S1 and S2 outputs (20A max each).

PB3-PB4 Push Button Outputs: (Right Terminal Block) Under the default setting, the S3 output should be connected to your Traffic Director Left control wire, and the S4 output should be connected to your TD right output. If you disable the TD option, these two outputs will be activated independently by the PB3 and PB4 buttons.

Light Wiring Diagram

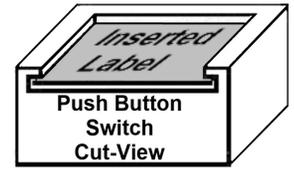


See Page 8 For Correct Wire Sizing !!

Label Insertion

Once the wire connections have been made, labels can be inserted into the switches. The product is shipped with 30 different labels for these push buttons. Select the desired label inserts (provided). Insert the label into each button and tuck it under the lip of the switch.

The siren labels come pre-installed and may be used for reference when inserting light function labels.



Operation

GENERAL

There are 11 pushbuttons on the face of the hand-held unit. When not activated, these buttons are backlit in green for nighttime viewing. When activated, an audible beep is heard, and the backlighting turns red.

POWER



The unit is turned On and Off by a recessed switch on the side of the hand held controller. All functions are disabled until the unit is switched on.



PRIORITY FUNCTIONS (CYCLE 1/2/3 and P3)

The **CYCLE 1/2/3** Priority button is designed for quick and easy activation of multiple lighting and siren functions. This button will progressively scroll through three different Priorities (indicated by the Priority LEDs), activating additional lights and/or the siren for increased warning power. It also scrolls back down, deactivating the corresponding functions (connected to Outputs L1-L3).

Priority 1: Activates the first set of lights (connected to L1).

Priority 2: Activates both the 1st and 2nd set of lights (connected to L1 and L2).

Priority 3: Generally used for the **FULL PURSUIT MODE**.

In **Priority 3**, the following will activate:

- All three sets of lights (connected to L1, L2, and L3)
- The siren (WAIL mode)
- Traffic Director WARN (when applicable)

Note: The auto-activation of the siren and the arrow stick may be disabled if desired. (Refer to the **Programming** section on pages 5-6)

P3 Button - The **P3** button allows for quick activation of Pursuit Mode. The controller automatically jumps directly to Priority 3.

(Operation CONT'D)

SIREN MODE BUTTONS

The four push buttons towards the top of the control head allow full siren operation.

MAN (Manual)

This button is used to temporarily change the siren output. Review the chart below for a description of the various outputs, depending upon which mode you are in.

MAN BUTTON FUNCTIONS		
Siren Mode Selected:	Speaker Output:	Pressing the MAN button Changes the Speaker Output to:
WAIL	Wail	Yelp
YELP	Yelp	Phaser
PHSR	Phaser	Two-Tone
RADIO	Radio Repeat	No Effect
NONE	No Output	Creates a manual WAIL tone while button is being held that sweeps down when the button is released.



HORN (Air Horn)

This momentary push button produces a simulated air-horn tone while pressed. This can be used to either replace, or to supplement the normal vehicle horn. This tone will override all other siren tones.

CYCLE W/Y/P

This button cycles through the three different siren tones, then back to Off.

Wail - A normal rise-fall tone used on highways and areas with low traffic or constant traffic flow.

Yelp - A rapid warble tone used in light to moderately congested areas.

Phaser - Ultra-fast warble tone used for maximum attention in highly congested areas.

RADIO

Also known as Radio Repeat, this function amplifies a two-way radio speaker input for re-broadcast outside the vehicle through the siren speaker(s). PA is available, but no siren tones are available when this function is activated.

LIGHTING PUSH BUTTONS

PB1 and PB2

PB1 and PB2 control the devices connected to the corresponding output terminals described on pages 13-14. Press once to activate, then press again to deactivate.

PB3 / WARN

Under the default setting (*TD Mode=ON and TD WARN=OFF, see pages 5-6*), the PB3 button will activate the Orange wire.

If you enable the TD WARN option, the WARN/PB3 button do three things:

- It will activate the Traffic Director WARN function (i.e. activates output S3).
- It will display the WARN pattern on the TD LED display located above the PA knob on the handset.
- It will deactivate PB4 (LRCO) when pressed.

If you disable the TD option, the PB3/WARN button will activate S3 (but will have no effect on the TD LED display or on PB4).

(Operation CONT'D)

LRCO / PB4

Under the default setting, the LRCO button will cycle through the traffic directing modes of the Traffic Director (Left ► Right ► Center Out).

If you disable the TD option, this button will activate the S4 output.

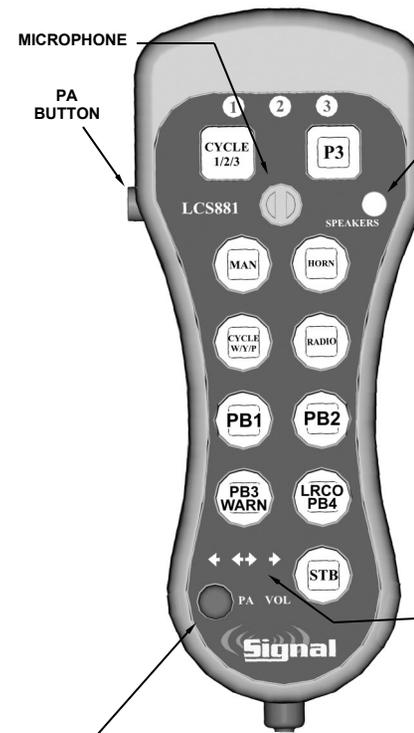
STB BUTTON

Standby - Press the STB button once to temporarily deactivate all functions and place the unit in Standby Mode until another function is activated.

Undercover Mode - Hold the STB button for several seconds to de-activate all button lighting.

MICROPHONE and MICROPHONE BUTTON

The integrated noise-canceling microphone is used for public address operation and overrides any siren tone when the push-to-talk/PA button is pressed.



SPEAKER DIAGNOSTICS

There is a diagnostic LED located in the upper right portion of the remote head controller. This LED will only turn on while a tone is trying to be generated. The status of the speakers is indicated as follows:

Steady - Speaker is connected and operating properly.

Flashing - There is an electrical short in the speaker or wires to the speaker.

Off - No speaker is connected, or
- The siren is not activated to output a tone to the speaker, or
- The speaker or wire connection is loose or is electrically open, or
- There is over/under voltage.

TRAFFIC DIRECTOR INDICATOR

The LED indicator "simulates" the selected pattern on your Traffic Director when activated by either the WARN or the LRCO button.

PA VOLUME

The PA volume control is provided for public address volume. This is in the bottom left corner of the control head. Turn it clockwise to increase the sound level.

AUXILIARY INPUT (Green Wire)

During installation the vehicle horn ring (or other switching device) can be connected to the Auxiliary input (AUX/Green wire). By default, activating the AUX input will produce the same output as pressing the HORN button (i.e. Air Horn).

Optionally, you can program the AUX function so that it mimics the MAN button rather than the HORN button. (See **PROGRAMMING** on pages 5-6).

(Operation CONT'D)

PARK KILL (White Wire)

During installation, the Park Kill input may be connected to a door switch or other 'trigger'. Using this feature will automatically deactivate any siren tone when the door is opened. All siren tones are 'locked out' until the door is closed and you change audio modes. Optionally, you can choose to only temporarily disable the siren tones, allowing them to be reactivated even if the door is still open. (See *Program Options and PROGRAMMING* on pages 5-6).

RADIO REPEAT VOLUME

The radio repeat volume is located within the rear access cover of the amplifier. This should be set during installation when the vehicle is parked. Under normal circumstances, you should not need to adjust it again.



First set the volume level of the vehicle's two-way radio to its normal operating volume. Turn on the On/Off switch of the hand held controller and press the RADIO button. The radio should be rebroadcasting through the siren speaker(s). Using a small flat blade screwdriver, adjust the potentiometer as desired.

FUSES

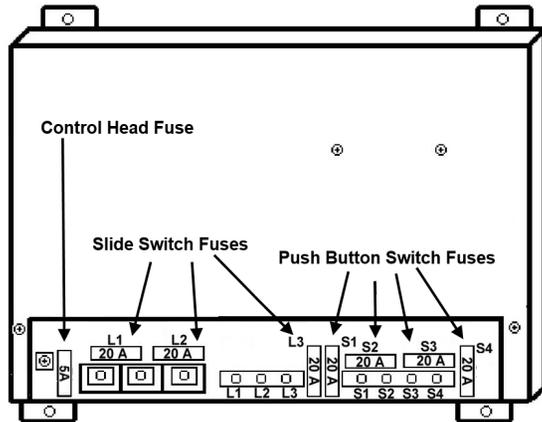
The siren amp itself is protected by a 20 amp fuse located next to the power connector.



Each high current light output is also protected with a 20A automotive blade fuse located inside the fuse panel. The fuse panel is accessible by loosening the two screws in the cover plate on the amplifier. Refer to the diagram for proper fuse location.

The control head is protected with a 5A automotive blade fuse located in the amplifier fuse panel as well.

Output 5/HRT (Orange wire) is protected with a 2A in-line fuse.



Service

TROUBLESHOOTING

Symptom	Possible Cause	Check
No power	No power supplied to +12 terminal block inputs in amplifier. Connector loose Amplifier 20A fuse or 5A fuse blown Loose connection at power source	Does back-lighting come on? Do you hear a "pop" when turned on? Is power hooked up backwards? Positive ground vehicle? 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 Low voltage protection Microphone button stuck Park Kill polarity option set wrong Park Kill activated	The input voltage must be less than 16 volts. The input must be greater than 10V with the siren turned on. Does microphone button release properly? Is the PK jumper option properly configured? Does the siren work when Park Kill input is disconnected?
No siren tone - No sound	Bad speaker or speaker wiring	Does either speaker diagnostic LED flash? Check for a short. Does neither speaker LED turn on steady? Check for an open.
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 or high vehicle voltage	Is the speaker bell or tip loose? Is the Aux. Input used and wired properly? Input voltage must be between 10 & 16 volts while siren is on.
Intermittent siren tone	High voltage protection Low voltage protection Microphone button activation Circuit breaker in supply connection Shorted speaker or speaker wire	Is the vehicle voltage regulator working properly? Is the connector tight on the back of the unit? Loose connection on a power lead? The input must be greater than 10V w/ the siren turned on. Is something lying on the microphone? Is a circuit breaker used with at least a 50A rating? Does the speaker have water damage, or is a wire pinched?
Horn function or Manual function stuck on	Siren push button switch stuck Aux. Input improperly connected Aux. Input Polarity Option set wrong	Does the Siren switch return fully when released? Is the AUX Input used and wired properly? Is the AUX jumper 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?
No or Low Radio	Radio outputs not isolated and polarity hooked up backwards	Have you tried turning the Radio volume control? Are the radio wires connected to the correct polarity from the radio output?
Wrong siren tone	Two-Tone option jumper installed Aux. Input set to wrong function	Is the TT jumper option properly configured? Is the AUX jumper option configured properly?
Phaser not working	Phaser disabled	Is the PD jumper option configured properly?
Lights not working	Overloaded or short circuit	Check fuse. Check wire connections.
Arrow stick not working Erratic arrow stick pattern Or 1 st or 8 th head not working	Fuse blown Arrow stick option jumpers not set properly Poor connection Using ignition switched power for arrowstick	Check fuses on arrow stick control box. Check communication cable. Is the 6 head stick option selected? Is 8 head stick option not selected? Is green connector screwed in tight to lock into arrow control box? Are all 12 terminal block connections tight? Use constant power source for arrowstick, rather than one that is ignition switched

(Service CONT'D)

PARTS

Part	Description
LCS850-AMP8	Amplifier Only
LCS880-CH	Hand-Held Controller for LCS880
P30255-43A	Amp Wiring Harness
30008-22	25' Communication Cable Between Control Head Cable and Amp*
30041-52	Female/Female RJ11 Connector for Communication Cables
30028-8	5 Amp Automotive Blade Fuse inside Amplifier
30028-1	20 Amp Automotive Blade Fuse for Amplifier
P30232-4	LCS880-CH Microphone
P30053-31	Amplifier Case Screws
P30032-8	TIP36C Power Transistor

* CAUTION: These are not a standard telephone cables and CANNOT be replaced with one.

Optional Parts for External TD Controller

Part	Description
TDC850	Arrowstick Power Supply
30008-30	7' Communications Cable Between TDC850 and Amp *
P30041-188	Control Head/TDC850 Splitter for Communications Cable
SWH-140	12" Communication Cable

SPECIFICATIONS

Input Voltage	10 - 16 VDC (negative ground)
Siren Input Current	8.0 Amps @ 13.6 VDC (single 100W speaker) 16 Amps @ 13.6 VDC (dual 100W speakers)
Siren Standby Current	Less than 10 mA when ignition is off
Audio Frequency	200Hz - 10 kHz ± 3db
Siren Output Power	105 WATTS RMS MAX. (15.0 VDC - single 100W speaker) 210 WATTS RMS MAX. (15.0 VDC - dual 100W speakers)
Siren Frequency	675Hz - 1633Hz
High Voltage Protection	16 - 18 VDC will cause siren output to temporarily cease, resume at normal
Short Circuit Current	50 AMPS (supply circuit must be capable of supplying this)
Operating Temperature	-15° F to +140° F
Diagnostic Indicators	An LED indicator provides diagnostic feedback for the speaker
Light Output Ratings	20A fuse on each of the 7 light outputs. (4 push buttons, 3 slide positions)
Siren Connections (12-Pin Connector) (Telephone Comm. Con.)	Detachable, 12-pin, positive locking connector with pigtail leads for Amplifier (2) Positive, (2) Negative, (2) Speaker, (2) Radio, Auxiliary, Park Kill Telephone style communication cable between Control Head and Amplifier
Light Control Connections	+12 - three position barrier style terminal block L1, L2, L3 (Slide Switch) 3-position Eurostyle terminal block PB1, PB2, PB3, PB4 (Push buttons) 4-position Eurostyle terminal block S5 (Push button) flying lead
Size	Amplifier: 2-1/2" High, 7" Wide, 7-3/8" Deep (plus 3/4" flange on each side) Hand Held Controller: 6" High X 2-1/2" Wide X 1-1/4" Deep
Boxed Weight	LCS880: 8.5 lbs.

(Service CONT'D)

ONE YEAR LIMITED WARRANTY

Star Safety Technologies, Inc. warrants each new product against factory defects in material and workmanship for one year after the date of purchase. The owner will be responsible for returning to the Service Center any defective item(s) with the transportation costs prepaid. Star Safety Technologies, Inc. will, without charge, repair or replace at its option, products, or part(s), which its inspection determines to be defective. Repaired or replacement item(s) will be returned to the purchaser with transportation costs prepaid from the service point. A copy of the purchaser's receipt must be returned with the defective item(s) in order to qualify for the warranty coverage. Exclusions from this warranty include, but are not limited to, bulbs, strobe tubes, domes, and/or the finish. This warranty shall not apply to any light, which has been altered, such that in Star Safety Technologies, Inc.'s judgment, the performance or reliability has been affected, or if any damage has resulted from abnormal use or service.

There are no warranties expressed or implied (including any warranty of merchantability or fitness), which extend this warranty period. **The loss of use of the product, loss of time, inconvenience, commercial loss or consequential damages, including costs of any labor, are not covered.** Star Safety Technologies, Inc. reserves the right to change the design of the product without assuming any obligation to modify any product previously manufactured.

This warranty gives you specific legal rights. You might also have additional rights that may vary from state to state. Some states do not allow limitations on how long an implied warranty lasts. Some states do not allow the exclusion or limitation of incidental or consequential damages. Therefore, the above limitation(s) or exclusion(s) may not apply to you.

Please Note: These instructions are provided as a general guideline only. **Some vehicles may require special mounting, wiring, and/or weather-sealing. This is the sole responsibility of the installer.** Star Safety Technologies, Inc. assumes no responsibility for the integrity of the installation for this or any of its products.

If you have any questions concerning this or any other product, please contact our **Customer Service Department** at (585) 226-9787.

If a product must be returned for any reason, please contact our Customer Service Department to obtain a Returned Materials Authorization number (RMA #) before you ship the product back. Please write the RMA # clearly on the package near the mailing label.

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. Star Safety Technologies, 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. Star Safety Technologies, Inc. and/or the manufacturer 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.



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