

WHELEN[®]

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Installation Guide: GAMMA2™ Self-Contained Siren Amplifier

DANGER! Sirens produce extremely loud emergency warning tones! Exposure to these tones without proper and adequate hearing protection, could cause ear damage and/or hearing loss! The Occupational Safety & Health Administration (www.osha.gov) provides information necessary to determine safe exposure times in Occupational Noise Exposure Section 1910.95. Until you have determined the safe exposure times for your specific application, operators and anyone else in the immediate vicinity should be required to wear an approved hearing protection device. Failure to follow this recommendation could cause hearing loss!

Warnings to Installers

Whelen's emergency vehicle warning devices must be properly mounted and wired in order to be effective and safe. Read and follow all of Whelen's written instructions when installing or using this device. Emergency vehicles are often operated under high speed stressful conditions which must be accounted for when installing all emergency warning devices. Controls should be placed within convenient reach of the operator so that they can operate the system without taking their eyes off the roadway. Emergency warning devices can require high electrical voltages and/or currents. Properly protect and use caution around live electrical connections. Grounding or shorting of electrical connections can cause high current arcing, which can cause personal injury and/or vehicle damage, including fire. Many electronic devices used in emergency vehicles can create or be affected by electromagnetic interference. Therefore, after installation of any electronic device it is necessary to test all electronic equipment simultaneously to insure that they operate free of interference from other components within the vehicle. Never power emergency warning equipment from the same circuit or share the same grounding circuit with radio communication equipment. All devices should be mounted in accordance with the manufacturer's instructions and securely fastened to vehicle elements of sufficient strength to withstand the forces applied to the device. Driver and/or passenger air bags (SRS) will affect the way equipment should be mounted. This device should be mounted by permanent installation and within the zones specified by the vehicle manufacturer, if any. Any device mounted in the deployment area of an air bag will damage or reduce the effectiveness of the air bag and may damage or dislodge the device. Installer must be sure that this device, its mounting hardware and electrical supply wiring does not interfere with the air bag or the SRS wiring or sensors. Mounting the unit inside the vehicle by a method other than permanent installation is not recommended as unit may become dislodged during swerving; sudden braking or collision. Failure to follow instructions can result in personal injury. Whelen assumes no liability for any loss resulting from the use of this warning device. PROPER INSTALLATION COMBINED WITH OPERATOR TRAINING IN THE PROPER USE OF EMERGENCY WARNING DEVICES IS ESSENTIAL TO INSURE THE SAFETY OF EMERGENCY PERSONNEL AND THE PUBLIC.

Warnings to Users

Whelen's emergency vehicle warning devices are intended to alert other operators and pedestrians to the presence and operation of emergency vehicles and personnel. However, the use of this or any other Whelen emergency warning device does not guarantee that you will have the right-of-way or that other drivers and pedestrians will properly heed an emergency warning signal. Never assume you have the right-of-way. It is your responsibility to proceed safely before entering an intersection, driving against traffic, responding at a high rate of speed, or walking on or around traffic lanes. Emergency vehicle warning devices should be tested on a daily basis to ensure that they operate properly. When in actual use, the operator must ensure that both visual and audible warnings are not blocked by vehicle components (i.e.: open trunks or compartment doors), people, vehicles, or other obstructions. It is the user's responsibility to understand and obey all laws regarding emergency warning devices. The user should be familiar with all applicable laws and regulations prior to the use of any emergency vehicle warning device. Whelen's audible warning devices are designed to project sound in a forward direction away from the vehicle occupants. However, because sustained periodic exposure to loud sounds can cause hearing loss, all audible warning devices should be installed and operated in accordance with the standards established by the National Fire Protection Association.

Safety First

This document provides all the necessary information to allow your Whelen product to be properly and safely installed. Before beginning the installation and/or operation of your new product, the installation technician and operator must read this manual completely. Important information is contained herein that could prevent serious injury or damage.

⚠ WARNING: This product can expose you to chemicals including Lead which is known to the State of California to cause cancer and birth defects or other reproductive harm. For more information go to www.P65Warnings.ca.gov.

- Proper installation of this product requires the installer to have a good understanding of automotive electronics, systems and procedures.
- Whelen Engineering requires the use of waterproof butt splices and/or connectors if that connector could be exposed to moisture.
- Any holes, either created or utilized by this product, should be made both air- and watertight using a sealant recommended by your vehicle manufacturer.
- Failure to use specified installation parts and/or hardware will void the product warranty.
- If mounting this product requires drilling holes, the installer MUST be sure that no vehicle components or other vital parts could be damaged by the drilling process. Check both sides of the mounting surface before drilling begins. Also de-burr the holes and remove any metal shards or remnants. Install grommets into all wire passage holes.
- If this manual states that this product may be mounted with suction cups, magnets, tape or Velcro®, clean the mounting surface with a 50/50 mix of isopropyl alcohol and water and dry thoroughly.
- Do not install this product or route any wires in the deployment area of your air bag. Equipment mounted or located in the air bag deployment area will damage or reduce the effectiveness of the air bag, or become a projectile that could cause serious personal injury or death. Refer to your vehicle owner's manual for the air bag deployment area. The User/Installer assumes full responsibility to determine proper mounting location, based on providing ultimate safety to all passengers inside the vehicle.
- For this product to operate at optimum efficiency, a good electrical connection to chassis ground must be made. The recommended procedure requires the product ground wire to be connected directly to the NEGATIVE (-) battery post (this does not include products that use cigar power cords).
- If this product uses a remote device for activation or control, make sure that this device is located in an area that allows both the vehicle and the device to be operated safely in any driving condition.
- It is recommended that these instructions be stored in a safe place and referred to when performing maintenance and/or reinstallation of this product.
- FAILURE TO FOLLOW THESE SAFETY PRECAUTIONS AND INSTRUCTIONS COULD RESULT IN DAMAGE TO THE PRODUCT OR VEHICLE AND/OR SERIOUS INJURY TO YOU AND YOUR PASSENGERS!

**ACTIVATION OF THIS
SIREN MAY DAMAGE
UNPROTECTED EARS!**



CAUTION

Loud siren noise can cause hearing damage and/or loss. Refer to OSHA Section 1910.95 prior to putting ANY siren into service!

This siren offers a unique and distinctive collection of features designed to allow the user to customize the operation of this siren to suit their individual needs. Features include:

- 100 watts of output power
- Scan-Lock™ siren tone programming
- Hands Free operation
- Compact design
- Harmonically rich composite air horn tones
- Title 13 compliant profiles
- Horn ring control inputs

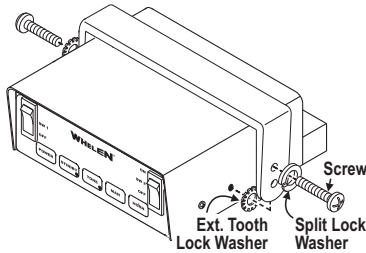
Mounting:

This siren is designed to be mounted directly onto the dash or other surface through the use of a bail-strap mounting bracket. The unit may also be mounted into your vehicle's console (if so equipped).

WARNING: Mounting this unit will require drilling. It is absolutely necessary to make sure that no other vehicle components could be damaged in the process. Check both sides of the mounting surface before starting. If damage is likely, select a different location.

Bail-strap mount:

1. Position bail strap in selected mounting location and drill mounting holes, then secure the bail strap to the vehicle.
2. Secure the siren to the bail strap as shown. Tighten the screws firmly.



Console Mount:

Console manufacturers offer mounting kits that include all the necessary hardware and brackets required to mount this unit into their console. The console mount brackets are secured onto the unit the same way the bail bracket is. Please refer to the manual included with your console.

Wiring:

Siren Input Connector - RED: Power - BLACK: Ground

WARNING: All customer supplied wires that connect to the positive terminal of the battery must be sized to supply at least 125% of the maximum operating current and FUSED at the battery to carry that load. DO NOT USE CIRCUIT BREAKERS WITH THIS PRODUCT!

Current Draw (AMPS)	Wire Gage / AWG					
	18	16	14	12	10	8
10	7.5	12	19.5	31	49	78
20	4	6	9.5	15.5	24.5	39
30	INS.	4	6.5	10.5	16.5	26
40	INS.	3	5	7.5	12.5	19.5

INS = Insufficient Distance in Feet

1. Extend the RED and BLACK wires toward the vehicle battery. To pass the RED and BLACK wires through, you may have to drill a hole in the fire wall. Insert a grommet to protect the wires.
2. Route the RED and BLACK wires along the factory harness towards the battery. Install a fuse block (user supplied) on the end of the RED wire. **Remove fuse from fuse block before connecting wires to battery.**
3. Connect fuse block wire to POSITIVE terminal on battery. There must not be more than 2 feet of wire between fuse block and battery. The wire between the fuse and battery is "unprotected", do not allow it to chafe and short to ground.
4. Connect the BLACK wire to the factory chassis ground.

YELLOW & BROWN - Speaker:

1. Route the YELLOW and BROWN wires toward vehicle siren speaker, along factory wire harness and through firewall at the same point as the RED and BLACK wires.
2. Connect the YELLOW wire to the POSITIVE terminal on the SPEAKER and the BROWN wire to NEGATIVE connection on the speaker.

WHITE/GREEN - Horn Relay:

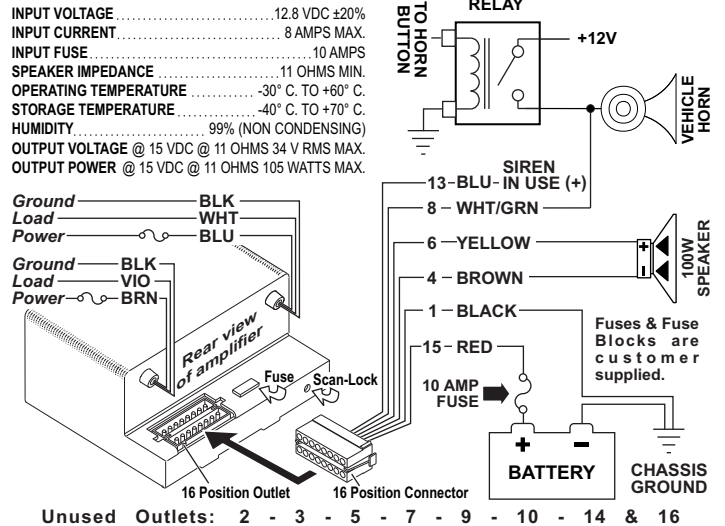
1. Route WHITE/GREEN wire along factory wire harness and through firewall at the same point as the RED and BLACK wires.
2. Route WHITE/GREEN wire to vehicle's horn relay. If possible, follow the factory wire harness to this relay.
3. Locate the wire that connects the vehicle horn to the horn relay.

4. Connect the WHITE/GREEN wire to the wire that runs from the horn relay to the horn.

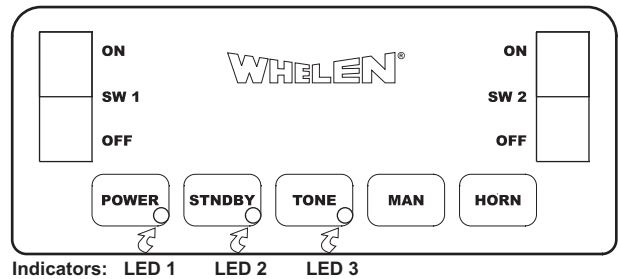
Operation:

Siren in use: This output will become active (+VBAT) whenever a tone is being produced by the siren.

WIRING DIAGRAM



Front Panel



PWR button: This button must be activated to enable any of the siren tones. To activate this button press and release, the button's LED will indicate a positive activation. To turn the siren off, press and release again.

STNDBY button: To activate this button press and release, the button's LED will indicate a positive activation. When this button is activated the siren will be in a standby mode. No tones will be enabled until another action is taken by the operator. Activating this button will also shut off an activated TONE button.

TONE button: To activate this button press and release, the button's LED will indicate a positive activation. When this button is activated the siren will produce a Wail tone. Activating this button will also shut off an activated STNDBY button.

MAN button: The MAN button generates a variety of tones, depending on what mode of operation has been chosen by the user (See "Operations").

HORN button: The Horn button generates an AIRHORN tone when pressed, however if one of the Title 13 modes has been chosen, AIRHORN does not override Wail and Yelp (See "Operations" section).

SW1 and SW2 Rocker Switches: Sw1 and Sw2 are Auxiliary Power switches with LED indicators to be used at the customers discretion. Each switch can handle up to 20 Amps at +Vbat. (See "WIRING DIAGRAM").

Operations:

The following tables show the factory default tone settings. See the "tone programming" section to make desired changes.

MODE 1

BUTTON	OPERATION	MAN BUTTON OR HORN RING INPUT	HORN*
STNDBY	HF-Standby	HF cycle (Wail, Yelp, Piercer)**	Airhorn
TONE	Wail	YELP	Airhorn
HORN*	Airhorn	Airhorn	Airhorn

* The HORN button produces airhorn as a main tone as well as an override tone.

** HF cycle: tones are activated by a single tap on the MAN button or HORN RING input. The first tap produces a WAIL tone (a steady rise and fall tone). A second tap produces a YELP tone (a fast rise and fall tone). A third tap produces a PIERCER tone (a extremely fast rise and fall tone). The next tap returns the siren to a WAIL tone and the cycle repeats itself. Two quick successive taps will stop the siren.

MODE 2

BUTTON	OPERATION	MAN BUTTON OR HORN RING INPUT	HORN*
STNDBY	Manual-Stndby	Manual Wail	Airhorn
TONE	Wail	YELP	Airhorn
HORN*	Airhorn	Airhorn	Airhorn

* The HORN switch produces airhorn as a main tone as well as an override tone.

MODE 3 / TITLE 13***

BUTTON	OPERATION	MAN BUTTON OR HORN RING INPUT	HORN*
STNDBY	HF-Stndby	HF Cycle (Wail, Yelp, Y249)**	Airhorn***
TONE	Wail	YELP	No Change
HORN*	Airhorn	Airhorn	Airhorn

* The HORN button produces airhorn as a main tone as well as an override tone.

** HF cycle: tones are activated by a single tap on the MAN button or HORN RING input. The first tap produces a WAIL tone (a steady rise and fall tone). A second tap produces a YELP tone (a fast rise and fall tone). A third tap produces a Y249 tone (a extremely fast rise and fall tone). The next tap returns the siren to a WAIL tone and the cycle repeats itself. Two quick successive taps will stop the siren.

*** Title 13 mode prevents Airhorn to override Wail and Yelp, but will allow Airhorn when in Standby.

MODE 4 / TITLE 13***

SWITCH	OPERATION	MAN BUTTON OR HORN RING INPUT	HORN*
STNDBY	Manual-Stndby	Manual Wail	Airhorn***
TONE	Wail	YELP	No Change
HORN*	Airhorn	Airhorn	Airhorn

* The HORN switch produces airhorn as a main tone as well as an override tone.

*** Title 13 mode prevents Airhorn to override Wail and Yelp, but will allow Airhorn when in Standby

Siren Tone Programming Procedures

Programming the Siren:

WARNING: Never try to program the siren while it is wired to the vehicle. A low level audio device is built into the siren so siren tones can be heard during programming.

There are two important operational characteristics of the siren that can be reconfigured; *Mode of Operation* and *Tone Selection*. The Scan-Lock™ button is used to place the unit in configuration mode as well as to select the desired changes. The Scan-Lock™ button is located as shown and can be activated with a pen or similar object. Three LEDs (See front panel) provide a visual indication of the currently selected mode of operation during the configuration process. The configuration procedure used to configure the *Mode of Operation* is different from the one used to configure *Tone Selection*. The procedure for each is outlined below.

Tone Programming:

To change the over-ride tone for the TONE button (for all MODES):

Activate the siren by pressing the TONE button. Press and hold the HORN RING or the MAN button. Press and release the Scan-Lock™ switch. Each time the Scan-Lock™ switch is pressed and re-leased, the next available

Tone Button OVERRIDE TONE LIST * = Title 13 Compliant

• TONE OFF	• PIERCER	• AIRHORN-HI/LO
• WAIL *	• Y249 *	• ALT. WAIL *
• YELP *	• WARBLE	• ALT YELP *
• HI/LO	• WHOOP	• PULSED PIERCER
• AIRHORN-HI	• MECHANICAL	• PULSE YELP/AIRHORN
• AIRHORN-LO	PULSED AIRHORN	

tone will be broadcast. When the desired tone is present, it will automatically be saved as the override tone for that control switch. Release the HORN RING or the MAN switch.

To change the primary tone for the TONE button (for all MODES):

Activate the siren by pressing the TONE button. Press and release the Scan-Lock™ switch. Each time the Scan-Lock™ switch is pressed and released, the next available tone will be broadcast. When the desired tone is generated, it is automatically saved for that control switch position.

TONE BUTTON PRIMARY TONE LIST * = Title 13 Compliant

• TONE OFF	• Y249*	• AIRHORN-HI/LO
• WAIL *	• WARBLE	• ALT. WAIL *
• YELP *	• WHOOP	• ALT YELP *
• HI/LO	• MECHANICAL	• PULSED PIERCER
• PIERCER	• PULSED AIRHORN	• PULSE YELP/AIRHORN

To change a tone in the hands free cycle (for MODE 1 & 3): Place the siren in HF standby,

by Activating the STNDBY button. Using the HORN RING or the MAN button, advance to the tone that you

wish to change. Press and release the Scan-Lock™ switch. Each time the Scan-Lock™ switch is pressed and released, the next available tone will be broadcast. When the desired tone is generated, it will automatically be saved for that hands-free cycle position.

HF TONE LIST

* = Title 13 Compliant

• WAIL *	• WARBLE	• AIRHORN-HI/LO
• YELP *	• WHOOP	• ALT. WAIL *
• HI/LO	• MECHANICAL	• ALT YELP *
• PIERCER	• PULSED AIRHORN	• PULSED PIERCER
• Y249*		• PULSE YELP/AIRHORN

To change the tone for the manual cycle (for MODE 2 & 4): Place the siren in MANUAL standby, by

Activating the STNDBY button. Press and hold the HORN RING or the MAN button. Press and release the Scan-Lock™ switch. Each time the Scan-Lock™ switch is pressed and re-leased, the next available tone will be broadcast. When the desired tone is present, it will automatically be saved as the MANUAL tone. Re-lease the HORN RING or the MAN switch.

MANUAL Tone List

• TONE OFF	• HI-WAIL-COAST
• WAIL-COAST	• HI-WAIL-STOP
• WAIL-STOP	• AIRHORN-HI
• MECHANICAL-COAST	• AIRHORN-LO
• MECHANICAL-STOP	

To change the tone for the HORN button (for all MODES): Press and hold the AIRHORN button.

Press and release the Scan-Lock™ switch. Each time the Scan-Lock™ switch is pressed and released, the next available tone will be broadcast. When the desired tone is present, it will automatically be saved as the AIRHORN tone. Release the AIRHORN switch.

AIRHORN tone list

• TONE OFF	• AIR HORN-HI	• AIR HORN-LO
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Mode Programming:

There are four modes of operation built into this siren. Mode 1 is the factory default mode, to change the "mode of operation" follow the instructions below. This section will outline how to select the "mode of operation".

TABLE 2

LED 1	LED 2	LED 3	MODE #
ON	OFF	OFF	MODE 1
OFF	ON	OFF	MODE 2
ON	ON	OFF	MODE 3
OFF	OFF	ON	MODE 4

1. Turn off the PWR button.
2. Press and hold the Scan-Lock™ button. Press and release the PWR button.
3. Release Scan-Lock™ button. The unit is now in Configuration Mode.
4. Using the Scan-Lock™ button, cycle through the four different modes of operation. The currently selected mode can be identified by the LED indicators. Refer to Table 2 for LED display information.
5. When the desired mode of operation has been selected, press and release the PWR button to exit the configuration mode.