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Installation Guide:
Epsilon™ Siren Amplifier

Automotive: Sirens/Switches

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.

- **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.**
- **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!

Form No.14218B (092018)

***For warranty information regarding this product, visit* www.whelen.com/warranty**

Congratulations on selecting the Epsilon™ Siren. 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:

- **Speaker diagnostic indicator**
- **100 watts of output power**
- **Scan-Lock™ siren tone programming**
- **Hands-Free operation**
- **LED Backlighting**
- **7 position rotary switch function selector**
- **Compact design**
- **Harmonically rich composite air horn tones**
- **Title 13 compliant profiles**
- **Non-destructive short circuit protection.**
- **Horn ring control inputs**
- **PA Override**

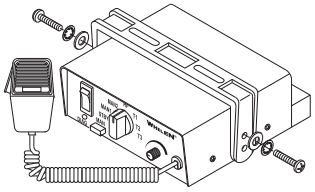
Mounting:

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: Regardless of the style selected, be sure to observe the Air Bag Warning on the cover of this manual.

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 as the bail bracket. Please refer to the manual included with your console.

Microphone Clip:

A microphone clip is included. Secure with provided hardware.
WARNING: Refer to the Air Bag Warning before installing this clip.

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!

TABLE 1

Current Draw AMPS	Wire Gauge / AWG						
	22	20	18	16	14	12	10
10	3	5	7.5	12	19.5	31	49
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 firewall. Insert a grommet to protect the wires.
2. Route the RED and BLACK wires along the factory harness towards the battery and install a fuse block (user supplied) on the end of the RED wire. **Remove fuse from fuse block before connecting any 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 Wires

1. Route the YELLOW and BROWN wires toward vehicle siren speakers, 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 Wires:

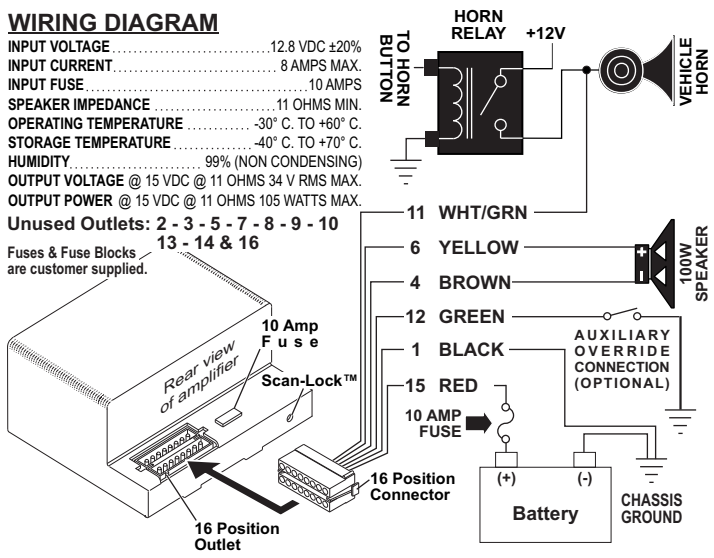
1. Route WHITE/GREEN wire along factory wire harness and through firewall at the same point as the RED and BLACK wires.
2. Route WHITE/GREEN wires to vehicle's horn relay. If possible, follow the factory wire harness to this relay.
3. Locate the wire that connects the vehicle horn to the horn relay.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

GREEN - Aux Override:

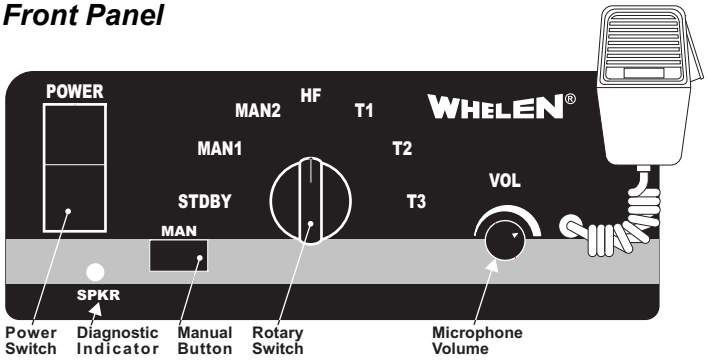
This wire is activated by switching it to ground (see page 3 for operation).

WIRING DIAGRAM

INPUT VOLTAGE.....12.8 VDC ±20%
INPUT CURRENT.....8 AMPS MAX.
INPUT FUSE.....10 AMPS
SPEAKER IMPEDANCE.....11 OHMS MIN.
OPERATING TEMPERATURE.....-30° C. TO +60° C.
STORAGE TEMPERATURE.....-40° C. TO +70° C.
HUMIDITY.....99% (NON CONDENSING)
OUTPUT VOLTAGE @ 15 VDC @ 11 OHMS 34 V RMS MAX.
OUTPUT POWER @ 15 VDC @ 11 OHMS 105 WATTS MAX.



Front Panel



Power Switch

This switch has two positions. Down (Off) and Up (On). When this switch is off, siren functions are disabled.

Rotary Switch

The Rotary Knob controls the siren functions of the *Epsilon*. There are 7 positions that may be selected *(see "Switch Operations")*.

Volume Knob

The Volume Knob controls the volume of Public Address function. Volume is increased by rotating the knob in a clockwise direction. Rotating the volume knob in a counter-clockwise direction decreases the volume produced by these features. The volume knob has no effect on siren tones.

MAN Button

The Manual button generates a variety of tones, depending on what position the rotary knob is in (see *"Switch Operations"*).

Diagnostic Indicator:

While this siren is under normal use the diagnostic indicator is used to indicate fault conditions with your siren system. The following table lists the type of fault and the indicators response. If the indicator is on steady while a tone is in use, this implies that there is no fault with the speaker output.

Fault Condition Diagnostic Indicators Response

Speaker Short Circuit: The speaker LED will be in a SingleFlash mode (the LED will be on and off an equal amount of time) and siren tones won't operate.

Speaker Undercurrent: Speaker LED will be off. All tones will continue to operate.

Microphone:

Whenever the siren is on, activating the microphone (pressing the switch on the side of the mic.) will shut down any other siren functions and enable public address operation regardless of the rotary switch position or any other switch or input.

Rotary Switch Operations:

This section will outline the operation of the siren in the **factory default configuration**. Refer to "Programming the Epsilon™ Siren") for information on how to customize the operation of this siren.

STDBY - Stand-by: When the rotary switch is in this position the siren is in standby. No tones will be activated until another action is taken by the operator.

With the Rotary Switch in this Position:

Pressing the MAN button or activating either the HORN RING or AUX OVERRIDE input will produce the AIRHORN tone. The AIRHORN tone will stop when the input is released.

MAN 1 - Manual Siren #1: When the rotary switch is in this position the siren is in standby. No tones will be activated until an action is taken by the operator.

With the Rotary Switch in this Position:

Pressing the MAN button or activating either the AUX ENABLE or HORN RING input will produce a WAIL tone. The WAIL tone will ramp up to peak frequency, then ramp back down and stop when the input is released.

MAN 2 - Manual Siren #2: When the rotary switch is in this position the siren is in standby. No tones will be activated until an action is taken by the operator.

With the Rotary Switch in this Position:

Pressing the MAN switch or activating either the HORN RING or AUX OVERRIDE input will produce a WAIL tone. This tone will ramp up to peak frequency and stop when the input is released.

HF - Hands-Free Operation - When the rotary knob is in the HF position, the siren functions are placed in a stand-by mode. Siren tones are activated by a single "tap" on the MAN button or the vehicle's steering wheel horn ring (if the vehicle's horn has been wired to the 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 (an 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.

With the Rotary Switch in this Position:

Pressing the MAN button or activating either the HORN RING or AUX OVERRIDE input will produce the HF cycle.

T1 - Tone #1: When the rotary knob is in the T1 position, a steady, rise and fall tone (WAIL) is produced.

With the Rotary Switch in this Position:

Pressing the MAN button or activating either the HORN RING or AUX OVERRIDE will change the siren tone to a YELP pattern (a fast rise and fall tone). Activating the input a second time returns the tone back to WAIL.

T2 - Tone #2: When the rotary knob is in the T2 position, a fast, rise and fall tone (YELP) is produced.

With the Rotary Switch in this Position:

Pressing the MAN button or activating either the HORN RING or AUX OVERRIDE input will produce the PIERCER tone. Pressing the MAN button a second time returns it back to YELP.

T3 - Tone #3: When the rotary knob is in the T3 position, an extremely fast, rise and fall tone is produced.

With the Rotary Switch in this Position:

Pressing the MAN button or activating the HORN RING or AUX OVERRIDE input will result in the AIRHORN tone until the input is released.

Programming the Epsilon™ Siren:

Siren Tone Programing Procedures

With Scan-Lock™ the tonal operation of the siren can be customized to fit your needs. Scan-Lock is used to change the default siren tones as shown below.

To change the primary tone for rotary switch positions T1, T2, & T3: Put the rotary switch in the position 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 is automatically saved for that rotary switch position.

TABLE 3
Tone List For Rotary Switch Positions T1, T2 & T3

- TONE OFF
- WAIL*
- YELP*
- PIERCER
- MECHANICAL
- HI/LO
- HI/LO
- Y-249*
- B-WAIL
- B-YELP
- B-HI/LO
- DOZER

* = *Title 13 Compliant Tones*

To change the override tone for rotary switch positions T1, T2. & T3: Put the rotary switch in the position that you wish to change. Press and hold the MAN button on the front panel on the siren. 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 override tone for that rotary switch position. Release the MAN button.

TABLE 4
Override Tone List For Rotary Switch Positions T1, T2 & T3

- TONE OFF
- WAIL*
- YELP*
- PIERCER
- MECHANICAL HI/LO
- AIRHORN
- Y-249*
- B-WAIL
- B-YELP
- B-HI/LO
- DOZER

* = *Title 13 Compliant Tones*

To change one of the tones in the hands free cycle. (See "Hands-Free Operation"): Put the rotary switch in the HF position. Using the MAN button on the front panel on the siren, 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.

TABLE 5
Tone List For Hands Free:

- WAIL*
- YELP*
- PIERCER
- MECHANICAL
- HI/LO
- Y-249*
- B-WAIL
- B-YELP
- B-HI/LO
- DOZER

* = *Title 13 Compliant Tones*

To change the tone for rotary switch positions MAN1 or MAN2:
Put the rotary switch in the position that you wish to change. Press and hold the MAN button on the front panel on the siren. 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 rotary switch position. Release the MAN button.

TABLE 6
Tone List For MAN1 & MAN2:

- TONE OFF
- MANUAL WAIL COAST-TO-STOP
- MANUAL WAIL STOP

To change the override tone for rotary switch position STDBY:
Put the rotary switch in the STDBY position. Press and hold the MAN button on the front panel on the siren. Press and release the Scan-Lock switch. Each time Scan-Lock is pressed and released, the next available tone will be broadcast. When the desired tone is generated, it will automatically be saved for that rotary switch position. Release the MAN button.

TABLE 7
Override Tone List For Rotary Switch Position STBY and the HORN button:

- TONE OFF
- AIRHORN

Title 13 Operation:

Airhorn will not override primary tones. To put the siren into Title 13 operation mode:

1. Turn the POWER switch OFF.
3. Place the ROTARY SWITCH into the MAN1 position.
4. Hold Scan-Lock switch in while turning power on. A set of Title 13 compliant tones have been programmed for use. Turn power off, then on to activate changes.

Re-Setting Factory Defaults:

To restore siren tones to the factory defaults:

1. Turn the POWER switch OFF.
3. Place the ROTARY SWITCH into the MAN2 position.
4. Hold Scan-Lock switch in while turning power on. Turn power off, then back on to activate the changes.