

# WHELEN<sup>®</sup>

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## Installation Guide WS2100-series Siren

**DANGER!** Sirens produces 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](http://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!**

### 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.
- 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 any 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 owners 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.
- If this product uses a remote device to activate or control this product, make sure this control is located in an area that allows both the vehicle and the control to be operated safely in any driving condition. **DO NOT ATTEMPT TO ACTIVATE OR CONTROL THIS DEVICE IN A HAZARDOUS DRIVING SITUATION.**
- 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!

**For warranty information regarding this product, visit [www.whelen.com/warranty](http://www.whelen.com/warranty)**

## Installation:

An aftermarket center console is recommended for the mounting location. This not only allows the driver to reach the controls easily, but also keeps the unit safely out of the path of the vehicle's SRS air-bag. Follow the console manufacturer's instructions for mounting. If a console mount isn't possible, a bail strap mounting kit is included for over or under dash mounting.

### **Power & Ground Wires: RED: Power / BLACK: Ground**

1. Remove the front, driver's side rocker sill plate and kick panel.
2. Fold back the floor covering so that access is gained to the factory wire harness routed under the driver's seat.
3. Insert the wiring harnesses into it's port as shown below.

**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 & be fused at the battery to carry that load. (See "Recommended Wire Sizes")

4. Splice the 2 RED (Power) wires together, then extend this single RED wire toward the vehicle battery. Splice the 2 BLACK (Ground) wires together and extend this single BLACK wire toward the vehicle battery. To pass the RED and BLACK wires through, you may have to drill a hole in the firewall. Be sure there are no components that could be damaged. Insert a grommet in the hole to protect the wires.
5. Route the RED and BLACK wires along the factory harness towards the battery and install a 25 amp fuse block (user supplied) on the end of the RED wire. **NOTE:** Remove the fuse from the fuse block before connecting any wires to the battery.
6. Connect the fuse block wire to the POSITIVE (+) terminal on the battery. There must not be more than 2 feet of wire between fuse block and battery. The wire between the fuse and the battery is "unprotected", don't allow it to contact with any wires.
7. Connect the BLACK wire to the factory chassis ground.

### **Speaker Wires: Orange & Brown**

1. Route the ORANGE and BROWN wires toward the vehicle siren speakers, along the factory wire harness and through the firewall at the same point as the RED and BLACK wires.
2. Connect the ORANGE wire to the POSITIVE connection on speakers #1 & 2.
3. Connect the BROWN wire to the NEGATIVE connection on speakers #1 & 2.

### **Horn Relay Wires: White & Grey**

1. Route the WHITE and GREY wires along the factory wire harness and through the firewall at the same point as the RED and BLACK wires.
2. Route the WHITE and GREY wires to your 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 and cut it.
4. Connect the WHITE wire to the wire coming from the horn relay.
5. Connect the GREY wire to the wire coming from the horn.

### **Radio Re-broadcast (optional): 2 Blue wires**

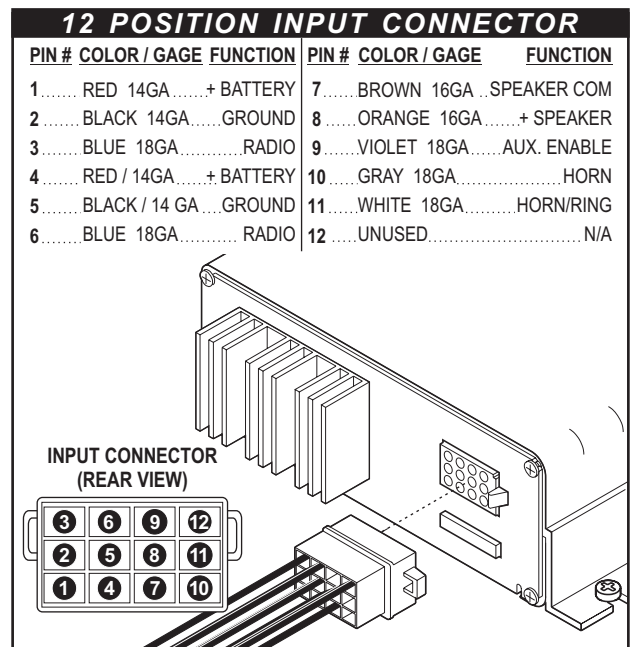
The two remaining BLUE wires are used to connect your two-way radio's external speaker for radio re-broadcast, an optional connection.

**NOTE:** If your remote speaker is amplified (has a power amp circuit in the speaker), Radio re-broadcast won't work. Do not enable the radio re-broadcast feature.

1. Locate the two wires that connect the external speaker to the two-way radio, cut one of them and splice one of the BLUE wires into this circuit.
2. Now cut the remaining speaker wire and splice the remaining BLUE wire into this circuit.

## **READ BEFORE INSTALLING!!!**

Do not install this product or route any wires in the deployment area of your airbag. Equipment mounted or located in the airbag deployment area will damage or reduce the effectiveness of the airbag, or become a projectile that could cause serious personal injury or death. Refer to your vehicle owners 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. Whelen Engineering Co. assumes no liability or responsibility for determining individual applications or exact installation location criteria.



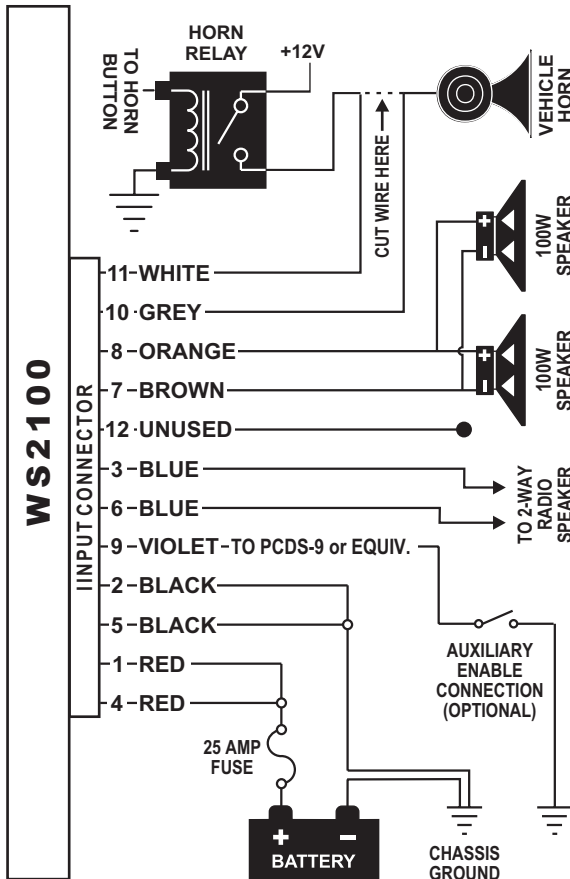
## Connecting to a Remote Control-Head: (Optional)

This unit may be connected to an existing control-head, such as the Whelen PCDS-9 or equivalent. This is an optional connection that enables the WAIL tone to be activated through the use of a PCDS-9 button or switch. If this connection is not chosen, cut the VIOLET wire and cap it to prevent accidental grounding of the wire.

### Recommended Wire Sizes:

Length of Wire	Wire Gauge
For up to 15.5 feet of wire . . . . .	12 AWG
For up to 24.5 feet of wire . . . . .	10 AWG
For up to 39 feet of wire . . . . .	8 AWG

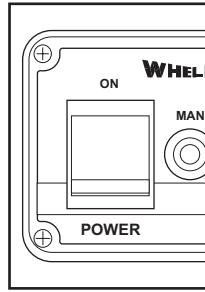
## WIRING DIAGRAM NOTE: All Fuses & Fuse Blocks are to be supplied by the Customer.



## OPERATING THE CONTROLS:

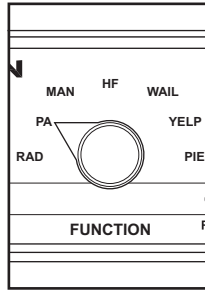
### POWER SWITCH

This switch has two positions. Down-Off, Up-On. When this switch is Off, the unit will not function. When the switch is On, the siren is functional and may be activated at the operator's discretion. **NOTE:** If the unit is connected to the vehicle's horn ring circuit, the vehicle horn is disabled when the power switch is in the ON position.



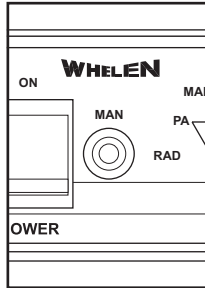
### ROTARY SWITCH

The Rotary Knob controls the siren and PA (Public Address) functions. There are 7 positions that may be selected. Each position and it's function is outlined under "Rotary Switch Operations".



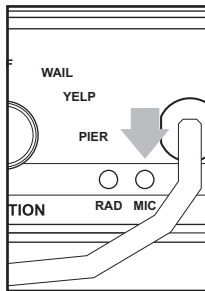
### MAN BUTTON

The Manual button generates a variety of tones, depending on what position the rotary knob is in. For further explanation of this button's function, refer to Rotary Switch Operations.



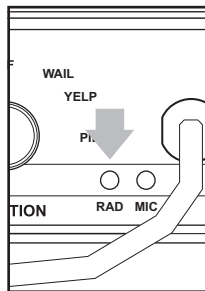
### PA VOLUME (MIC)

If your model uses a potentiometer, locate the MIC adjustment port as shown. With the vehicle in an enclosed area, turn the Rotary Knob to PA and speak into the microphone. While speaking, insert the screwdriver and turn clockwise to increase the volume. Continue to increase the PA volume until audio feedback occurs. Turn the screwdriver counter clockwise to eliminate feed back. For models with a PA Volume knob, follow the same procedures, without a screwdriver.



### RADIO REPEAT VOLUME (RAD)

Locate the Radio Repeat adjustment port as shown. Set the volume level of the vehicle's two-way radio to it's normal operating volume. Turn the Rotary Knob to RAD to activate Radio Repeat. Insert the screwdriver in the Radio Repeat adjustment port and turn clockwise to increase the volume.



## Rotary Switch Operations

**RAD (Radio Repeat)** - When the rotary knob is in the RAD position, any signal that is received by the vehicle's two-way radio will be simultaneously broadcast over the vehicle's loud-speaker (Unit must be connected to the two-way radio as outlined in this manual).

**With the Rotary Switch in this Position:**

- Pressing the MAN button has no effect.
- Activating the HORN RING input has no effect.
- Activating the AUX ENABLE input has no effect.

**PA (Public Address)** - When the rotary switch is in this position the siren is in a standby state where no tones have been activated, but is waiting for another action to be taken by the operator. This position is often the best choice when public address is required.

**With the Rotary Switch in this Position:**

- Pressing the MAN button will result in the AIRHORN tone until the MAN switch is released.
- Activating the HORN RING input will result in the AIRHORN tone until the HORN RING input is released.
- Activating the AUX enable input will result in a repeating WAIL tone.

**MAN (Manual Siren)** - When the rotary switch is in this position the siren is in a standby state where no tones have been activated, but is waiting for another action to be taken by the operator. This position is often the best choice when manual operation of the siren is desired.

**With the Rotary Switch in this Position:**

- Pressing the MAN switch will result in a WAIL tone ramping up to peak frequency and stopping when the MAN switch is released.
- Activating the HORN RING input will result in a WAIL tone ramping up to the peak frequency and stopping when the HORN RING input is released.
- Activating the AUX enable input will result in a repeating WAIL tone.

**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 a single tap on 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 will result in the HF cycle as described above.
- Activating the HORN RING input will result in the HF cycle as described above.
- Activating the AUX ENABLE input will start the HF cycle. Releasing the AUX ENABLE will stop the cycle.

**WAIL (Wail Tone)** - When the rotary knob is in the WAIL position, a steady, rise and fall tone (wail) is produced.

**With the Rotary Switch in this Position:**

- Pressing the MAN button will change the siren tone to a yelp pattern. (a fast rise and fall tone) Pressing the MAN button a second time returns it back to a wail tone.
- Activating the HORN RING input will change the siren tone to a yelp pattern. (a fast rise and fall tone) Activating the HORN RING input again returns it back to a wail tone.
- Activating the AUX ENABLE input has no effect.

**YELP (Yelp Tone)** - When the rotary knob is in the YELP position, a fast, rise and fall tone is produced.

**With the Rotary Switch in this Position:**

- Pressing the MAN button will result in the AIRHORN tone until the MAN switch is released.
- Activating the HORN RING input will result in the AIRHORN tone until the HORN RING input is released.
- Activating the AUX ENABLE input has no effect.

**PIER (Piercer™ Tone)** When the rotary knob is in the T3 position, an extremely fast, rise and fall tone is produced. May be used for HI / LO and auto sequence in some applications.

**With the Rotary Switch in this Position:**

- Pressing the MAN button will result in the AIRHORN tone until the MAN button is released.
- Pressing the HORN RING input will result in the AIRHORN tone until the HORN RING input is released.
- Activating the AUX ENABLE will have no effect.

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<b>INPUT VOLTAGE</b> .....	12.8 VDC ±20%
<b>INPUT CURRENT @15 VDC @ 5.5 OHMS</b> . . . . .	16 AMPS TYP.
<b>INPUT FUSE</b> .....	20 AMPS
<b>SPEAKER IMPEDANCE</b> .....	11 OHMS MIN.
<b>OPERATING TEMPERATURE</b> .....	-30° C. TO +80° C.
<b>STORAGE TEMPERATURE</b> .....	-40° C. TO +70° C.
<b>HUMIDITY</b> .....	99% (NON CONDENSING)

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