ENGINEERING COMPANY INC.

51 Winthrop Road

Chester, Connecticut 06412-0684
Phone: (860) 526-9504
Internet: www.whelen.com
Sales e-mail: autosale@whelen.com
Customer Service e-mail: custserv@whelen.com

Installation Guide:<br>Responder® HD Lightbar<br>Model: R2HD**, R9HD**, R10HD**

## 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.
$\lfloor$ WARNING: This product can expose you to chemicals including Methylene Chloride which is known to the State of California to cause cancer, and Bisphenol A, which is known to the State of California to cause 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.
- Do not attempt to activate or control this device in a hazardous driving situation.
- This product contains either strobe light(s), halogen light(s), high-intensity LEDs or a combination of these lights. Do not stare directly into these lights. Momentary blindness and/or eye damage could result.
- Use only soap and water to clean the outer lens. Use of other chemicals could result in premature lens cracking (crazing) and discoloration. Lenses in this condition have significantly reduced effectiveness and should be replaced immediately. Inspect and operate this product regularly to confirm its proper operation and mounting condition. Do not use a pressure washer to clean this product.
- 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!


IMPORTANT! The lightbar should be located a minimum of 16" from any radio antennas!

## Permanent Mounting:

First check to see that no vehicle components will interfere with the selected mounting location. If you are installing the lightbar on the roof you will need to remove the headliner from the vehicle. There may be a roof support member that runs from the drivers to the passengers side of the vehicle. Do not drill through this member. The mounting bolts can slide the length of the bar, however you should keep them as close to the outer edges of the bar as possible for stability. They must be on opposite corners of the base.

1. When you have determined the mounting location, remove one of the endcaps from the lightbar. Slide the two bolts in as shown then hold the lightbar onto the vehicle and mark the location of the 2 mounting holes onto the mounting surface.
2. Drill the 2 mounting holes using a drill bit sized for a $5 / 16$ " hole.
3. Replace the end cap then insert the mounting bolts into the mounting holes and secure them onto the lightbar with the mounting hardware as shown.
4. Cut a $5 / 16$ " hole for the lightbar cable, install a rubber grommet (customer supplied) to protect the cable then insert the cable onto the wire hole and connect to power.

## Temporary Mount (Optional)

WARNING: The use of any magnetically mounted warning device on the outside of a vehicle in motion is not recommended and is at the sole risk and responsibility of the user.
Magnetic/suction: Thoroughly clean the proposed mounting surface prior to mounting. For suction cup mounting, wipe the suction cup clean, place the beacon onto its mounting surface


NOTE: The cigar cord adaptor is equipped with an 8 Amp fuse. Use a replacement fuse with an identical value. idenical value.
Switch Functions: $\frac{\text { Switch Functions }}{\text { SW1 }}=$ ON/OFF SW1 = ON/OFF SW2 $=$ Scan-Lock ${ }^{\text {TW }} /$ Momentary and apply gentle pressure to ensure a good seal has been achieved. The Magnetic/Suction Cups mount the same way as standard suction cups but are best suited to a flat, steel surface. Magnetic: Place the beacon onto the mounting surface and plug it into the vehicle cigar lighter.

## Wiring:

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 the load. DO NOT USE CIRCUIT BREAKERS WITH THIS PRODUCT!

NOTE: See wiring diagrams on parts pages for wiring and fusing.

## Operation:

R2HD** / Rotator Model: Applying +12 volts to the RED wire activates the lightbar and rotators. No features are available for this lightbar.
R9HDM* / R9HDV* / R10HDM* / R10HDV*/Linear TIR ${ }^{\text {TM }} \&$ GEN
III Models: Plug cigar cord into vehicle lighter and turn the cigar plug switch on to activate the lightbar. Pressing the Scan-Lock ${ }^{\text {TM }}$ cigar cord switch activates Scan-Lock ${ }^{\text {TM }}$ flash pattern selection.
R9HDP* / R10HDP* / Linear TIR \& GEN III Models: Applying + 12 volts to the RED wire activates the lightbar. Refer to the wiring diagrams for functions for your model.

## WHT/VIO - Scan-Lock ${ }^{\text {TM }}$ / Flash Pattern Selection:

To operate Scan-Lock ${ }^{\text {TM }}$ switch the lightbar on. Cigar plug models have a momentary switch next to the on/off switch on the cigar plug. Permanent mount models have a Scan-Lock ${ }^{\text {TM }}$ function wire.

TO CHANGE PATTERNS: To cycle forward to the next available pattern apply +12 volts to the WHT/VIO wire (Or press the momentary switch on the cigar plug) for less than 1 second and release.
To cycle back to the previous pattern apply +12 volts to the WHT/VIO wire (Or press the momentary switch) for more than 1 second and release.
TO CHANGE THE DEFAULT PATTERN: When the desired pattern is displayed, allow it to run for more than 5 seconds. The lightbar will now display this pattern when initially activated.
TO RESTORE THE FACTORY DEFAULT PATTERN: With power to the lightbar off, apply +12 volts to the WHT/VIO wire (Or press and hold the momentary switch). With power applied to Scan-Lock ${ }^{\text {TM }}$, turn power to the lightbar on. The factory default pattern will be displayed.
A normally open momentary switch can be used to control ScanLock ${ }^{\text {TM }}$ operation.

## NOTE: The features listed below apply to R10HDP* only. GREY - Sync:

To SYNC two lightbars, configure both lightbars to display the same flash pattern. With the power off, connect the GREY wire from each lightbar together. When the lightbars are activated, their patterns will be synchronized. Only the flash patterns designated for SYNC in the flash pattern list may be used.

NOTE: Refer to parts pages for available flash pattern lists.

## VIOLET - Hi/Low Power:

Allows user to step the unit down to low power for nighttime use. Latching Mode: By applying +VBAT to the VIOLET wire for less than 1 second, the lightbar is "latched" into low power. The unit must be turned off and then back on to restore normal operation (Momentary switch).
Level Mode: Applying +VBAT to the VIOLET wire for more than 1 second keeps the lightbar in low power until voltage is removed (Toggle switch).

## ORANGE - Pattern Override:

Applying +VBAT to the ORANGE wire while lightheads are activated, will change the flash pattern to whatever pattern override is programmed for. To program the flash pattern activate the lightbar then activate pattern override by applying +VBAT to the ORANGE wire and select a flash pattern using Scan-Lock ${ }^{\text {TM }}$.
IMPORTANT! Before returning this vehicle to active service, visually confirm the proper operation of this product, as well as all vehicle components/equipment.
Caution: Permanent mounting of this product will require drilling. It is absolutely necessary to make sure that no other vehicle components could be damaged by this process. Check both sides of the mounting surface before starting. If damage is likely, select a different mounting location.

## IMPORTANT WARNING!

CAUTION! DO NOT LOOK DIRECTLY AT THESE LEDS WHILE THEY ARE ON. MOMENTARY BLINDNESS AND/OR EYE DAMAGE COULD RESULT!

Rotator \& Mirror Replacement:

The new rotator must be mounted in the same location as the old one to avoid interference with any existing parts. The illustration shows where to locate the fastex grommets in the base of the lightbar. The mirrors are mounted as shown. All electrical connections are the same as the old rotator. If you remove all of the adhesive tape that the old style rotator used for mounting.

## Halogen Bulb Replacement:

1. Remove the lens.
2. Insert flat-blade screw driver into the space between the lamp holder and the snap-in assembly.


Gently
rotate the screw driver as shown. Repeat this action until the bulb is loose.
3. Pull the bulb in an upward direction until it is free.
4. Verify that the replacement bulb is the correct wattage by the part numbers marked on the bulb assembly. Insert the alignment tab of the new bulb into the lamp holder and press downwards to lock the bulb into place.
CAUTION: Replacing any halogen bulb requires the use of safety glasses and gloves to prevent injury. Do not handle the bulb with bare hands. Be sure replacement bulb has same watt rating.

Replacing LED Lightheads



LED Replacement: 400 Series Linear TIR ${ }^{\text {TM }}$ LEDS are shown here for example.

Always disconnect the lightbar from power before starting. To replace or service your LED
lightheads, first remove the dome and endcaps as shown. To remove a lighthead from its mounting bracket, unscrew the 4 washer head screws, unplug the lighthead from its harness then remove the lighthead from the lightbar. If you are removing several lightheads make note of the which lightheads the connectors go to for easier reassembly.




