



AUDIOVOX®
ELECTRONICS CORP.

MODEL: ASH400

**OBSTACLE SENSING SYSTEM
FOR
TRAILER HITCH MOUNTING**

User's Manual

IMPORTANT:

**HITCHLOCK
KEY CODE**

ATTENTION: "REFER TO YOUR KEYS FOR CODE"
YOUR KEY CODE IS: _____

CUSTOMER SERVICE (800) 225-6074

Place in owner's glove box for future reference

Congratulations

Your purchase of the Hitch Mounted Wireless Reverse Obstacle Detection System will provide you with a state of the art, highly sophisticated, ultrasonic obstacle detection device for your vehicle and under normal circumstances requires little maintenance. Under no circumstances should you attempt to open the Sensing Unit or Chime Module. Doing so will void all manufacturer's warranties. (Step weight should be limited to less than 250 pounds or 110kgs.)

Kit Contents:

Your Obstacle Detection Kit contains the following items:

(1) Sensing Unit, with 2-pin Power harness, (Fig.A)

(1) 7-way Power Plug, with 18" 2-pin harness. (Fig.B)

(1) Chime Module (Fig.C)

Factory Programmed to match A and C

(1) Hitch Lock with (2) keys. (Fig.D)

(2) Foam Stabilizers (Fig. F)

(2) Hitch Lock Spacers (Fig. G)

(1) 2- Pin Reverse Power Hard Wire Kit: (Fig.E)

(1) 2-pin plug with 9 foot wire harness

(2) 22-18awg Red ScotchLock connectors

(6) 8" tie straps for securing wires

(1) inline mini blade fuse holder 2A

(2) spare blade fuses included

(2) butt splice red

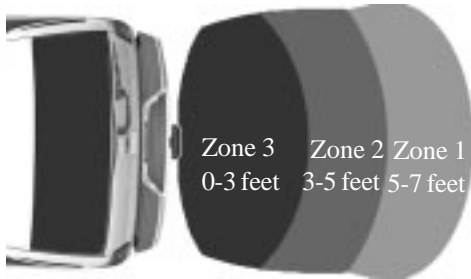


Understanding your Obstacle Detection System's functions

Your system sends and receives Ultrasonic Signals that are projected from sensors mounted in the Sensing Unit. As the signals “echo” off of objects in the detection field, and return to the sensors, the systems’s microprocessor exports them to its onboard, output signal transmitter. These signals are transmitted through **Radio Frequency Waves** to the Chime Module located in the vehicle. The detection signals are then translated into audible warnings for the driver.

Your system will detect and notify the driver with 3 distinct “Tones” (beeps), which correspond with your vehicle’s distance to objects in the detection zone. Upon engaging into reverse gear, you should hear 1 distinct tone. This serves multiple functions:

- 1) Notification that the system is active and is scanning for objects in the detection field.
- 2) As a reminder that you have selected the reverse gear.
- 3) As an indication that your system has performed a self check. If more than one “quick beep” occurs your system may need to be checked. If warning tones continue after reverse gear is initially selected, check for obstacles behind the vehicle. If nothing is behind the vehicle refer to the troubleshooting guide.



Overview of your detection Zones and Notifications

When reversing towards an object, your detection will be as follows:
ZONE 1: 7 to 5 feet, your system will alert you with slow beeps.
ZONE 2: 5 to 3 feet your system will alert you with rapid beeps.
ZONE 3: 3 feet and inward, your system will alert you with a solid tone.

Understanding Your Chime Module

Your Chime Module uses RF (radio frequency) technology to communicate with the control module. This receiver is installed under the driver's side dash board. The receiver features: (Fig C)

- A) Internal Piezo speaker for efficient audio warning tones (beeps).
- B) Reset style button access hole. Functions as the RF Receiver Hi/Lo volume toggle, and RF Receiver programming port.

How to Adjust the Volume and Reprogram the RF Receiver

Your RF Receiver features a programming port. This port has two programming functions:

- (1) Programming the RF Receiver to the sensing unit. (normally preset from factory).
- (2) Hi/Lo volume selector.

Hi/Lo Volume selection:

To change the Volume setting on the Receiver, the sensing unit should be connected and the vehicle ignition switch turned on, but “do not start the vehicle.” The shifter should be in the reverse gear with the parking brake set. Using a toothpick, or similar non-metal “probe”, insert into programming port and press and release quickly. The volume will change between high and low setting. Volume is preset at the time of installation. Please visit installing dealer for adjustment.

**** Programming: (Fig.B)***

To program your receiver, or an additional or replacement receiver to the sensing unit, the vehicle must be in reverse gear and the ignition switch turned on with the parking brake set. Using a toothpick, or similar non-metal “probe”, insert it into programming port and press and hold for at least 5 seconds, then release. Upon releasing the reprogramming button, you will hear one long confirmation chirp. After reprogramming, test the system by slowly backing toward a large object that will be detected in each zone. If you still experience problems, call: (800) 225-6074.

Troubleshooting

(For additional information, please contact your installation center.)

Symptom	Remedy
No Function in Reverse	Check power to receiver and transmitter Reprogram Receiver Check Fuse in Receiver Check in-line fuse in Sensing Unit Check 7-way harness Check Ground Wire
Inconsistent Operation	Refer to page 4 Reprogramming Wireless Receiver.
Constant Tone in Reverse	Always check for object behind vehicle Make sure sensors are clean of debris

Care

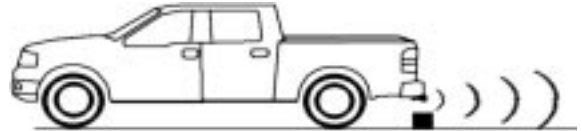
To prevent power wire harness damage, remove Hitch Unit and unplug all power wires prior to driving through automatic car washes.

Keep sensors clear of any solid mass or debris to maintain accurate performance.

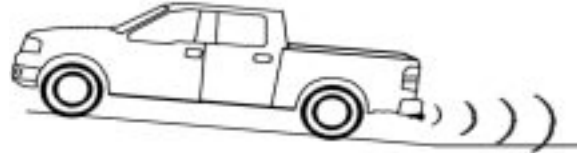
Situations Where Momentary, or No Detection is Experienced

Your system utilizes highly advanced Ultrasonic technology to locate objects in your vehicle's path. Under some circumstances however, an object may not be detected. Always use extreme caution when reversing, looking behind your vehicle and maintaining speeds of less than 3 miles-per-hour.

A small object, which is under your bumper or too close to the vehicle, may not be detected due to the dispersion of the sensor's signal.



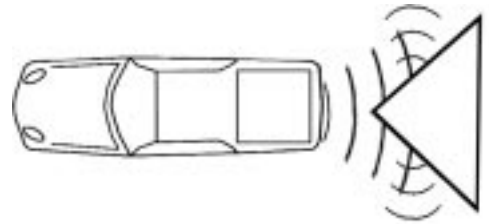
When reversing down a steep slope or driveway, gravel and/or the road surface may cause momentary detection signals due to the sensors following the sloping angle of the vehicle.



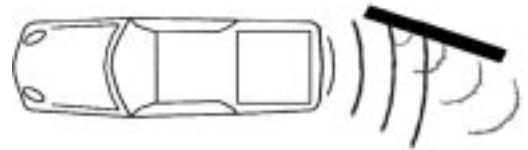
Reversing on loose gravel, rough surfaces, and pot holes may produce intermittent detection due to the signal bouncing off of reflective surfaces behind the vehicle.



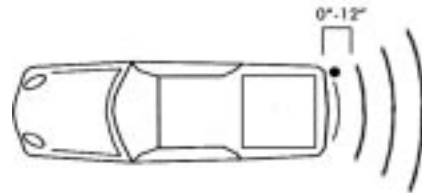
Reversing at an angle towards a partial wall or other large flat surface may refract ultrasonic signals, causing an object not to be detected.



If reversing towards a 90 degree angle, such as a corner of a wall or pillar, sensor detection pattern will refract as shown until vehicle is close enough to receive signal back from corners. In such situations, vehicle could reach very close distances before detecting.



Due to natural projection angle of the sensors, a natural “no coverage” area is common with the system at the outer corners of the vehicle. This may occur at about 0-10” from the bumper’s outer corners.



Installation Guide

This Hitch-Mounted Wireless Reverse Obstacle Detection System is for Trailer Hitch Heights Over 15" From Road Surface.

Your system can be installed with a few easy steps, providing your vehicle comes equipped with a 7-way connector socket and a standard 2" hitch receiver. If your vehicle is not equipped with a 7-way connector, you can obtain a power connection using the provided 2-pin reverse power hardwire kit and connect power at the reverse light harness.



Fig.A



Fig.B



Fig.C

You can begin by inserting the 7-way plug into the vehicle's 7-way socket, (Fig.A).

Insert the sensing unit into the trailer hitch of the vehicle, (Fig.B).

Use the hitch lock to secure the 2" sleeve and the sensing unit into the vehicle's trailer hitch receiver, (Fig.C).

The RF chime module must be connected to 12V ignition, and ground under the front dash.

INSTALLING THE PERMANENT CHIME MODULE

The Chime Module is designed to be installed under the dash. The tools required for this application are: -12 volt Meter for testing power. (use of a Test Light is NOT recommended)

- Pliers
- Wire Crimpers
- Electrical Tape



Please Read and Understand all Instructions Before Starting Installation.

This adapter kit will use true, non-switching 12 volt ignition power, and ground. True ignition is defined more with Step 1 and the chart below. Before starting the wiring process, find a suitable location to mount the Chime Module itself. Use the enclosed screws or tie straps for mounting the Chime Module. NOTE: Use of other ignition power sources will result in additional beeps while starting vehicle. This is a normal operation but some drivers may prefer to hear only one power-on beep.

- 1) Red Wire - +12V ignition source. Connect this wire to a source that is 12 volts when the ignition key is in the ON and start positions. Be sure that this source is off when the key is turned off.
- 2) Black Wire - Chassis Ground. Connect this wire to a solid metal part of the vehicle chassis. Be certain to remove any paint or grease. Secure this wire with a self-tapping screw and ring terminal. Do not confuse this wire with the thin green antenna wire that exits the Chime Module in the 3-pin connector.
- 3) Green Antenna Wire - Extend the green antenna wire as long as it will go, avoiding metal contact if possible.
- 4) For reprogramming and adjusting the Hi/Lo volume control, refer to page 4 in the User's Manual.



		Key Position			
		Off	Accessory	Ignition On	Start
WIRE TYPE	True Ignition			✓	✓
	Constant				✓
	Accessory			✓	
	Ignition 1 Start			✓	✓

"Check means there is 12v at "key position"



Hitch Receiver Conversion and Hardwire Kit

Most vehicles come equipped with a 1¼" or a 2" trailer hitch receiver. Your system can be converted to fit the vehicle's receiver by simply sliding the 2" sleeve (A), off the center of the 1¼" system shaft for use on 1¼" hitch receivers. The hitch-lock kit (C,D,E) comes with 2 sizes of pin shafts (C and D) to accommodate the 2" and 1¼" hitch pin holes. Included are rubber hitch lock spacers (G) designed to take up slack between the hitch receiver pin holes and hitch-lock. The foam stabilizers (F) are included to take up slack between unit and vehicle's hitch receiver.

If your vehicle does not have a 7-way trailer plug, your system includes a 2-pin reverse power harness kit (H). For instructions, please refer to install card included with hardwire install kit.



INSTALLING THE UNIVERSAL 2 PIN “REVERSE POWER” HARD WIRE KIT

This adapter is designed for use with vehicles without a 7-way factory trailer connection. The tools required for this installation are:

- 12Volt Meter for testing power (use of a Test Light is NOT recommended)
- Pliers
- Wire Crimpers
- Electrical Tape

WARNING: Do not plug 2 pin harness into factory (OEM) or aftermarket 4 pin connectors, and if used may cause damage to the unit and void any implied warranty.

This adapter kit will use the +12V power supply normally located at the reverse bulb and ground.

- 1.) Connect the hard wire 2-pin connector to the sensing unit 2-pin connector. Route the harness from the hitch receiver location into the vehicle and up to the reverse bulb location.
- 2.) Set the parking brake, Locate the wire that measures +12 volts when the vehicle ignition is turned on to the run position (do not start the vehicle) and the gear selector is placed into the reverse position. Move the gear selector back into the park position and the selected wire will measure 0 volts.
- 3.) Connect the orange wire from the inline fuse to the selected wire.
- 4.) Connect the red wire from the 2-pin harness to the opposite end of the orange wire of the inline fuse using the red butt connector supplied.
- 5.) Connect the black wire from the 2-pin harness to the vehicle's ground wire.



Use a 12 volt Meter
to test for wires.



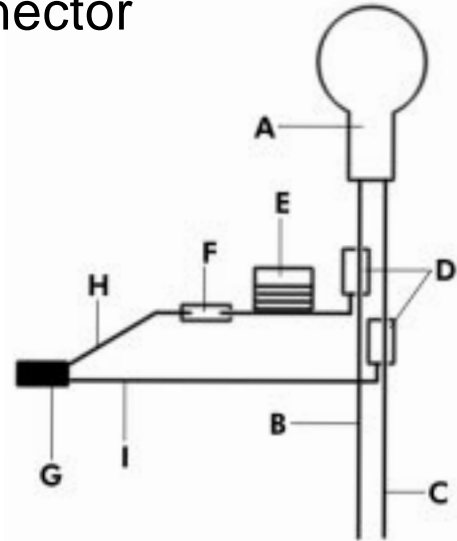
Reverse Light located
at Reverse Bulb.

Pliers for Scotch Lock



The Universal 2-Pin Hardwire Kit is For Use in Vehicles **NOT** Equipped with a Factory 7-Way Connector

- A. Reverse Bulb
- B. Reverse 12Volt Wire
- C. Reverse Ground Wire
- D. Scotch Locks
- E. Inline Fuse Holder
- F. Butt Connector
- G. 2 Pin Harness
- H. "Red" Wire from supplied harness
- I. "Black" Wire from supplied harness



Warranty & Limitations of Coverage

Congratulations on the purchase of your hitch mounted obstacle detection system. Your system is a highly sophisticated, ultrasonic obstacle detection device. It is manufactured to exacting standards, and under normal circumstances requires little maintenance. Under no circumstances should you attempt to open the sensing unit or chime module. Doing so will void all manufacturer's warranties.

Parts Policy

All products are warranted to the original owner for electrical component defects. Refer to your enclosed warranty registration card for warranty details. Defective parts are exchanged on a part for part basis. No returns will be accepted without an approved Return Authorization Number (R.A.#) from the company. Replacement parts will be issued upon receipt of returned goods and following verification of defective status unless other arrangements are approved. Whenever possible, return to your original selling dealer for warranty replacement or call: (800) 225-6074 for assistance.

FCC Information

This device complies with Part 15 of the FCC Rules and Operation, and is subject to the following two conditions: (1) This device may not cause harmful interference and (2) This device must accept any interference received, including interference that may cause undesired operation. Notice: The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Important Note: To comply with the FCC RF exposure compliance requirements, no change to the antenna or the device is permitted. Any change to the antenna or the device could result in the device exceeding the RF exposure requirements and void user's authority to operate the device.

Disclaimer

This reverse obstacle detection system is strictly a driver assistance aid device, and should not be relied upon as a substitute for safe driving practices. Use common sense when reversing, and always follow recommended safe driving guidelines from your local, State or County Department of Motor Vehicles regarding engagement of reverse gear and backing up of your vehicle. To help prevent accidents, always use caution when reversing, looking visually to ensure your path is clear and physically checking behind your vehicle, prior to reversing. Keep reversing speeds under 3 miles per hour. The Owner shall not be entitled to recover from the Company, its successors or assignees, incidental and consequential damages, such as personal injury, loss of income, loss of time, loss of profits, loss of vehicle use or property damage. When using the reverse obstacle detection system as a Support Step, the maximum weight bearing capacity of the unit is 250 pounds or 110kgs. It is recommended that when stepping on the support step, to also be holding on to a part of the vehicle for added support and balance. No employee, agent or representative of the Company or the Selling Retailer may modify, alter or extend this Warranty in any way. This Warranty gives you specific legal rights. You may also have other rights under this Warranty which may vary from state-to-state.

*** Caution:** To prevent power wire harness damage, remove Hitch Unit and unplug all power wires prior to driving through automatic car washes.

Keep sensors clear of any solid mass or debris to maintain accurate performance.

U.S. and Foreign Patent Pending

