AVIAN HEARTBEAT DETECTOR™
(Advanced Vehicle Interrogation And Notification)

USERS MANUAL

Manufactured by:

Geovox Security Inc.

For more information, please see www.Geovox.com

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AVIAN Heartbeat Detector™

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Introducing AVIAN

The AVIAN Heartbeat Detector™ quickly and efficiently detects the presence of persons hidden inside vehicles of any variety. Using data from special sensors, the AVIAN locates the shock wave generated by a human's beating heart, which couples to any surface or object with which the body is in contact.

The AVIAN collects data and analyzes it using advanced signal processing algorithms to detect a hidden person in less than one minute. The system consists of an industrial-grade, military-spec personal computer, standard Windows operating system, custom AVIAN software, a touch-screen monitor, and sensors attached to retractable cables. The operator places the sensors on the vehicle then uses the touch-screen to initiate a vehicle inspection. The processed data provide the operator with a PASS or SEARCH indication. The completed test can take as little as 10 seconds after the test is initiated.

You should continue your existing vehicle search procedures and use the AVIAN as an additional level of security.

System Components
The hardware system consists of the following:

- Industrial-grade, military spec computer

- Data acquisition/signal conditioning software and hardware

- Geophone sensors

- Optional sensor cabinet containing reel-mounted cables

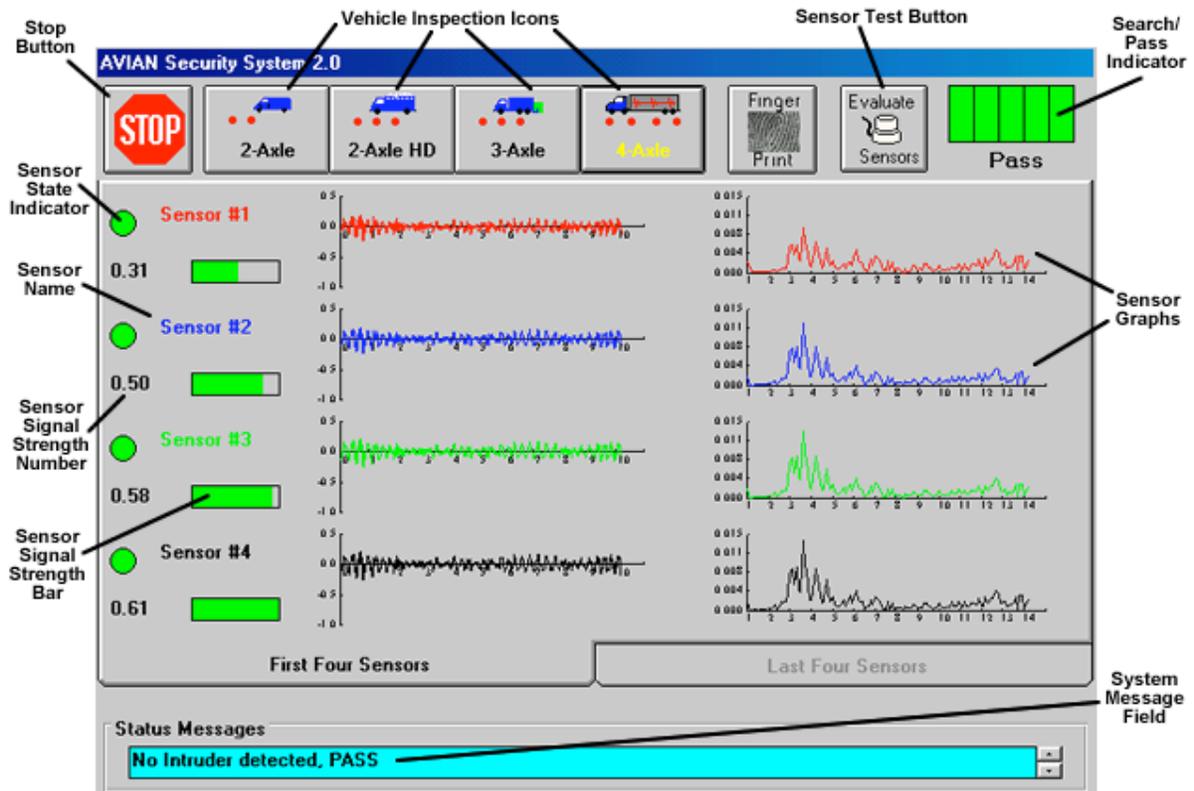The system requires 90-132 VAC or 180-264 VAC, 50-60 Hz, and consumes 70 VA of power.

Getting Started

Starting AVIAN
As shipped, the system is configured to automatically start with the AVIAN software upon power-up. To power the system up, press the power button to the ON position. If, after using the system, the program has terminated, double-clicking the AVIAN icon on the desktop screen will restart the program. Or, the user may press the power button OFF and then ON again to re-start the program.

Understanding the Main Screen
Carefully study the picture below of the main screen of the AVIAN System. Pertinent parts are labeled and described in more detail in the following paragraphs.

Stop Button — **Vehicle Inspection Icons** — **Sensor Test Button** — **Search/Pass Indicator**

AVIAN Security System 2.0

STOP

2-Axle | 2-Axle HD | 3-Axle | 4-Axle | Finger Print | Evaluate Sensors | Pass

Sensor State Indicator

Sensor #1
0.31

Sensor #2
0.50

Sensor #3
0.58

Sensor #4
0.61

Sensor Name

Sensor Signal Strength Number

Sensor Signal Strength Bar

Sensor Graphs

First Four Sensors | Last Four Sensors

System Message Field

Status Messages
No Intruder detected, PASS

Stop Button. An operator can touch the stop button at any time to terminate a vehicle inspection. Such uses might occur if one realizes that the wrong vehicle icon has been selected, if insufficient sensors may have been placed on the vehicle, or if the driver is still located in the vehicle

Vehicle Inspection Icons. There are four vehicle icons that initiate AVIAN's vehicle inspection process. Touch the vehicle icon that most closely resembles the vehicle to be inspected. For example, use the 2-AXLE button for passenger vehicles and other small, light duty 2-axle vehicles. For 2-axle heavy-duty vehicles, use the 2-AXLE HD button. Examples of 2-axle heavy-duty vehicles include van-style delivery trucks, small box trucks and laundry trucks. Use the 3-AXLE button for vehicles such as dump trucks and garbage trucks. The 4-AXLE button is used for tractor-trailer vehicles. Note the red dots listed on each vehicle button. These red dots indicate the minimum number of sensors that must be used on a vehicle of this type, e. g., all four sensors must be used on a tractor-trailer.

Search/Pass Indicator. Once an inspection is complete, this bar indicates the result of the inspection. A RED indicator with the word "Search" below it is the result for vehicles that test positive for the presence of a heartbeat signal, and a GREEN bar with the word "Pass" below it is the result for vehicles that test negative and do not have anyone in the vehicle. A YELLOW indicator is the result for insufficient data; please see the "Inspecting a Vehicle" section below for more information.

Sensor Names. Sensors are named sequentially from Sensor #1 to Sensor #4. Each sensor has a different color. The color of a sensor's respective graph on the screen also matches the color of its name.

Sensor State Indicators. These indicators display the current state of the sensor. A GREEN circle indicates that the sensor has passed the sensor test and is available for use while a RED circle indicates the sensor has failed the test and has been disabled, or put offline, by the system. **Do not use sensors with red** state indicators! Those

sensors have failed the sensor evaluation test and should be replaced. In order to place a sensor back online, it must successfully pass the Sensor Test. See "Running the Sensor Test" below for more information.

Sensor Signal Strength Numbers. These numbers display the confidence values that each sensor has detected a heartbeat signal. They can be used to help locate the likely position of the person within the vehicle. Higher numbers indicate a greater probability that a person is near that sensor.

Sensor Signal Strength Bars. These bars reflect the relative confidence levels among all sensors. The scale for each sensor ranges from zero to the highest reading obtained and is different for each test. The sensor with the highest reading will display full-scale while all others display proportionately. This relationship can be used in helping determine the likely location of a person(s) detected in a vehicle. For example, if three of the sensors on a tractor-trailer read approximately one-half scale while the fourth sensor reads full-scale, the person is likely near where the fourth sensor is placed. The word "likely" is used here because other variables may factor into the readings, such as placement of sensors on less than optimum surfaces.

Sensor Signal Graphs. The signal graphs provide quick feedback to the operator that the sensors are functional. The signal plots on the left side of the display should be signals that vary with time.

System Message Field. This field displays messages regarding the system's operation. After a vehicle inspection, the message displayed is of primary importance. If the inspection tests positive, then an "INTRUDER DETECTED, SEARCH" message is displayed while a negative test displays, "No intruder detected, Pass."

Shutting Down AVIAN

The AVIAN system can be left on indefinitely (i. e. 24-hour operation). If desired, pressing the on/off button will shut down the system. Note that you do not have to exit the AVIAN program prior to shutting down the computer.

The Basics

Inspecting a Vehicle

A vehicle inspection can be performed in a matter of minutes by the following procedure.

1. After the vehicle stops, the driver must turn off the engine, refrigeration units, etc. All known persons must get out of the vehicle. No one should touch the vehicle during the test. Close all doors, hoods, and the trunk.

2. Place as many sensors on the vehicle as is indicated by the red dots in the appropriate vehicle icons. For example, a two-axle delivery truck requires two sensors. Any two of the four sensors may be used. **While sensors may be placed on any flat surface of the vehicle, best performance is realized when the sensors are located as close to the vehicle's frame as possible, preferably on metal surfaces.** Leaf springs and vehicle frames are excellent locations. Try to avoid placing the geophones on the rear bumper. Pull out as much cable as needed. **The cable should touch the ground as much as possible so that it is not suspended.** While inspecting a vehicle, do not place the sensor in a location where other metal is within one inch of the top of the sensor.

3. Press the vehicle button that most resembles the vehicle to be tested. The test will begin taking 10 seconds of data. The screen indicates that data is being taken with an indicator bar showing the progress.

4. If the system indicates that an intruder is present (SEARCH) and the physical inspection does not reveal anyone, repeat the test 1-2 additional times. If any test indicates a PASS, then you can safely pass the vehicle.

If the system indicates a person is present and the physical search locates a person, then remove the person and repeat the test. AVIAN cannot determine the number of persons present in the vehicle. Therefore, the test should be repeated until a PASS indication is achieved.

False searches (i.e. SEARCH results when, in fact, no one is present) may result from wind, animal and other sources of vibration.

Note that the AVIAN will produce false search indications for unshielded wind speeds over 5 m.p.h. The reason for this is that the vibrations produced by the wind overwhelm the heartbeat signal. Please speak with a Geovox representative for additional options for dealing with windy conditions.
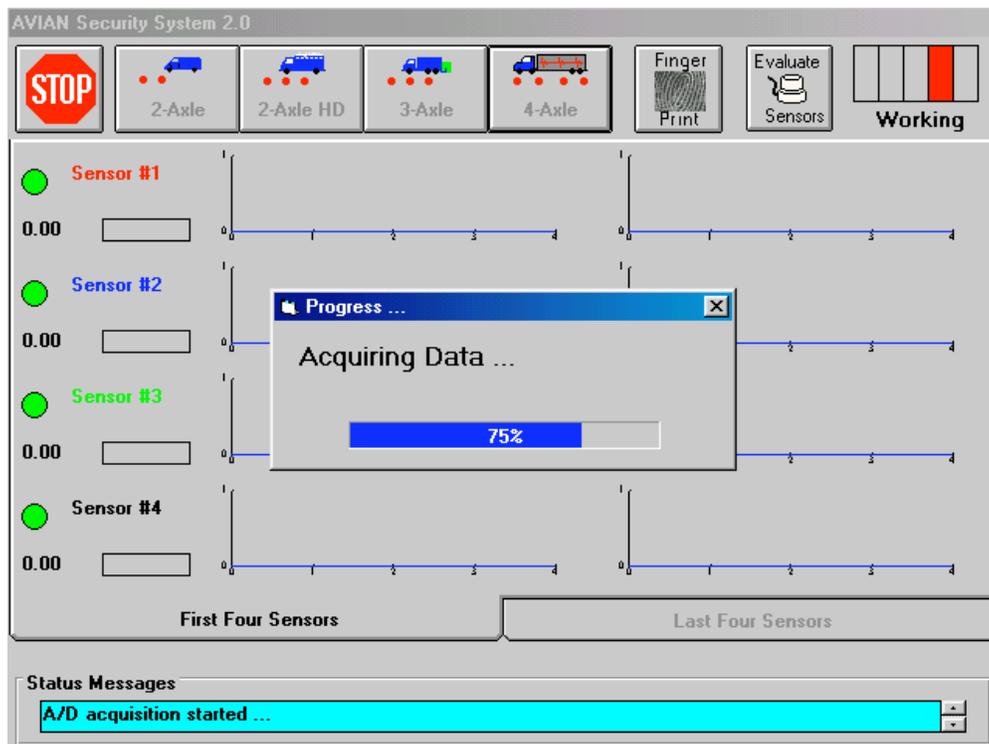
After the data is taken, then several validity tests are applied to the data. If the data passes the validity tests, then analysis will follow; however, if the data fails the validity test, then another 10 seconds of data will be taken. The data may not pass the validity test because of a gust of wind or someone brushing up against the vehicle. The automatic retaking of data may continue up to 6 times. Should this continue, the last sample of data will be analyzed regardless of the validity check.

The acquired data is also used to determine if an appropriate number of sensors have been used for the selected vehicle. If fewer sensors have been used than are required, or if sensors do not appear to be functioning properly, then the INSUFFICIENT SENSORS screen will appear. The INSUFFICIENT SENSORS screen is warning that fewer sensors appear to be functioning than the number required for the selected vehicle.

This may be caused by:

- The wrong vehicle button was selected for the vehicle being inspected.

- Fewer sensors have been used than the number required by the vehicle being inspected.

- Sensors have not been properly placed upon the vehicle (perhaps upside-down).

- A sensor used in the test has been placed offline by the automated SENSOR EVALUATION test. A RED circle near the sensors name indicates this sensor is offline.

Correct any of the above problems and repeat the test.

The data analysis takes about four seconds and is also conveyed with the progress window. After analyzing the data, a result indication is shown in the upper right corner of the screen as well as printed in the lower left portion of the screen. A red SEARCH indicates that the system has identified a possible intruder in the vehicle, while a green PASS indicates that no one is in the vehicle. Note that the signal strength bars may provide an indication as to where the person(s) are located. If the red-labeled sensor is on the front of the vehicle while the blue-labeled sensor is on the rear, and the greatest signal is registered on the front sensor; the person(s) is most likely near the front. The color of these bars also shows the red for search and green for pass indication.

It is recommended that you replace your geophone sensors every 5,000 uses or 2 years, whichever comes first. When needed, please contact Geovox to schedule your replacement.

Troubleshooting

Technical Support

For Technical Support, contact Geovox Security at any of the following

Voice: (713) 521-9404 or (866) 4-GEOVOX (866-443-6869)

Fax: (713) 521-9404 or (713) 521-9428

Email: Technical support may be obtained via e-mail at the following address:

Colin@Geovox.com
or
Andrew@Geovox.com

You will receive a response within 24 hours.