GLOBAL GRAB TECHNOLOGIES

YOUR COMPLETE SECURITY SOLUTIONS PARTNER

Owner / Operator Manual

ODDS 2.0®

(Overspeed and Directional Detection System)

GLOBAL GRAB TECHNOLOGIES

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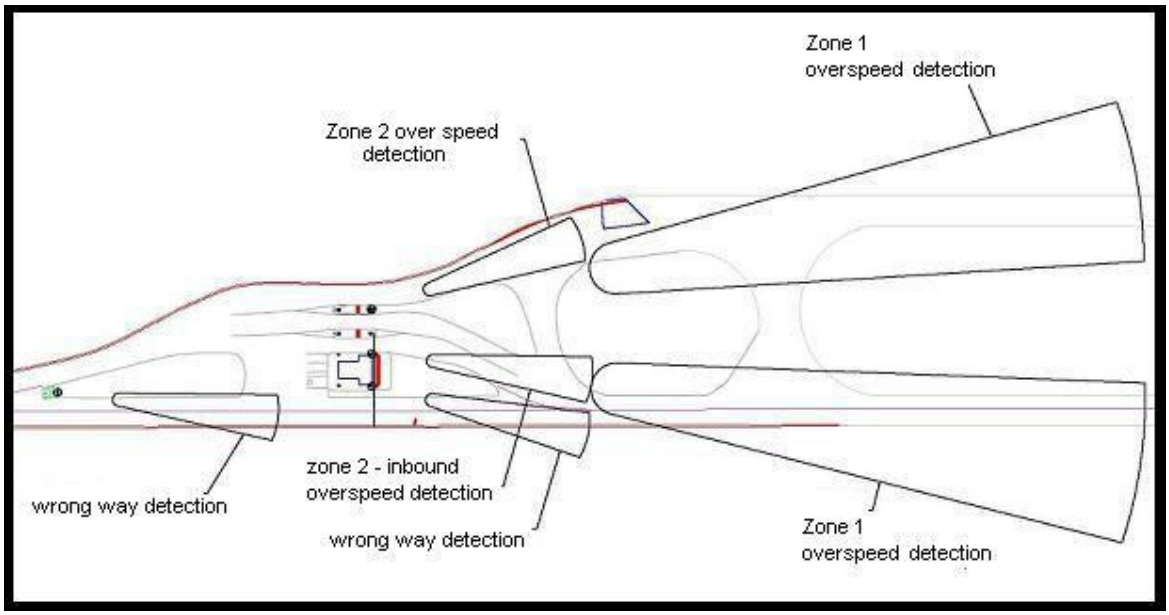
O.D.D.S.® OVERVIEW

OVERVIEW

The Purpose of the O.D.D.S.® (Over-speed and Directional Detection System) System is to provide advanced warning of potential threats from either vehicles traveling above a predetermined speed or the wrong direction in a single directional lanes.

This provides an advanced alert presence for potential vehicle threats to increase response/reaction time to employ the GRAB® barrier which adds safety and reducing risks. The O.D.D.S.® package emits an audible alarm and displays a message to give increased time to effectively reduce potential risks.



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O.D.D.S.® FEATURES

PRODUCT FEATURES

O.D.D.S.® FEATURES

• **Remote Display Unit:** Each guard booth will have a LED full matrix sign that will display the text “OVER SPEED” or “WRONG WAY” depending on the situation.

• **Radar Speed Sensor:** The O.D.D.S.® package includes sensors to detect a vehicle exceeding the speed limit or a vehicle traveling the wrong way into the ACP. Sensor systems for over-speed and wrong-way utilize proven RADAR sensor technology and equipment capable of detecting a speeding vehicle over a continuous range between the ID check point and the ACP entrance

• **Audible Alarm:** Each O.D.D.S.® package includes an audible alarm which sounds with 2 distinct tones upon receiving an over speed or wrong way alert. The horn sounds continuously while the condition exists and extinguishes automatically.

• **Loop Sensors:** Each O.D.D.S.® package typically includes loop sensors for wrong-way detection. In some cases, radars sensors are used for this application.

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THREAT SCENARIOS

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THREAT SCENARIO #1

"High Speed attack from outside installation"

- An incoming vehicle approaches at a high rate of speed with no indication of slowing down for the checkpoint.
- The vehicle could use the out-bound or in-bound lanes
- The USR O.D.D.S.® solution installed at the ACP (Access Control Point) to detect these conditions.

In this threat scenario:

- The threat vehicle enters the ACP at whatever speed it can attain at the ACP entrance.
- The vehicle could be using the in-bound or outbound lanes.
- For a straight roadway coming into the ACP, the threat vehicle's entrance speed can be quite high.

THREAT SCENARIO #2

"High Speed attack after entrance."

- A vehicle approaches the checkpoint and appears to slow for an eventual stop; but accelerates, passing thru the checkpoint without stopping.
- This scenario has the least amount of reaction time.

In this threat scenario:

- The threat vehicle enters the ACP at a speed slightly below the setting of the over-speed detector at the ACP entrance.
- Once past the over-speed detector, the threat vehicle then begins its attack by accelerating toward the final barriers.

THREAT SCENARIOS (CONTINUED)

THREAT SCENARIOS

THREAT SCENARIO #3

"Covert attacks at ID check area."

- A vehicle stops at the checkpoint and is rejected, but instead of turning and exiting in the installation, the vehicle continues on the incoming lanes. The vehicle could also appear to be turning onto the outbound lanes, but instead keeps going and accelerates at a high rate of speed.

In this threat scenario:

- The driver of the threat vehicle attempts to gain authorization using false credentials.
- The security personnel deny access and direct the driver to either the Search Area or the Turn-around Lane.
- The driver then defies guard instructions and immediately bolts toward the final barrier.

THREAT SCENARIO #4

"Covert attack at the end of the turn-around lane."

- A rejected vehicle appears to be turning around to exit the installation, but instead of making the U-turn, the vehicle continues or turns into the outbound lanes going the wrong way.

In this threat scenario:

- The driver of the threat vehicle attempts to gain authorization using false credentials as in Threat Scenario #3.
- The security personnel again deny access and direct the driver to either the Search Area or the Turn-around Lane.
- However, in this threat scenario, the driver feigns compliance with the security personnel instruction and approaches the Response Zone at the ACP speed limit (usually 25 mph).
- Instead of turning into the Search Area or Turn-around lane when reaching the Response Zone entrance, the driver bolts toward the final barrier.

SAFETY

WARNING: 120VAC This equipment contains hazardous voltages. Death, serious personal injury, or property damage can result if safety instructions are not followed.

Only qualified personnel should work on or around this equipment after becoming thoroughly familiar with all warnings, safety notices, and maintenance procedures contained herein. The successful and safe operation of this equipment is dependent upon proper handling, installation, operation and maintenance.

QUALIFIED PERSON

For the purpose of this manual and product labels, a qualified person is one who is familiar with the installation, construction and operation of the equipment, and the hazards involved. In addition, he or she has the following qualifications.

- Is trained and authorized to energize, de-energize, clear, ground and tag circuits and equipment in accordance with established safety practices.
- Is trained in the proper care and use of protective equipment such as rubber gloves, hard hat, safety glasses and face shields, flash clothing, etc., in accordance with established safety practices.
- Is trained in rendering first aid.

HAZARD DEFINITIONS

For your safety and to prolong the life of your equipment, understand and heed the following safety words that may be seen throughout this manual:

DANGER: Danger is used to indicate the presence of a hazard which *will* cause *severe* injury, death or substantial property damage if the warning is ignored.

WARNING: Warning is used to indicate the presence of a hazard which *can* cause *severe* injury, death or substantial property damage if the warning is ignored

CAUTION: Caution is used to indicate the presence of a hazard which *will* or *can* cause injury or property damage if the warning is ignored.

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SAFETY (CONTINUED)

OSHA REQUIREMENTS

OSHA Regulation 1910.147(c)(1) states that the employer shall establish a program consisting of energy control procedures, employee training and periodic inspections to ensure that before any employee performs any servicing or maintenance on a machine or equipment where the unexpected energizing, startup or release of stored energy could occur and cause injury, the machine or equipment shall be isolated from the energy source and rendered inoperative.

Qualified personnel must follow the lockout / tagout procedures established by the Employer as required by *OSHA*.

NFPA GUIDELINES

The following minimum *NFPA* steps must be taken to ensure an electrically safe work condition:

1. Determine all sources of energy by reviewing up-to-date drawings
2. Disconnect all sources of energy by operating adequately rated disconnecting means.
3. Inspect, whenever possible, energy-isolating devices for visible breaks in the power conductors.
4. Perform a voltage test to determine the absence of voltage.
5. Install grounding devices, if determined necessary.
6. Install locks and tags per facility lockout / tagout procedures.

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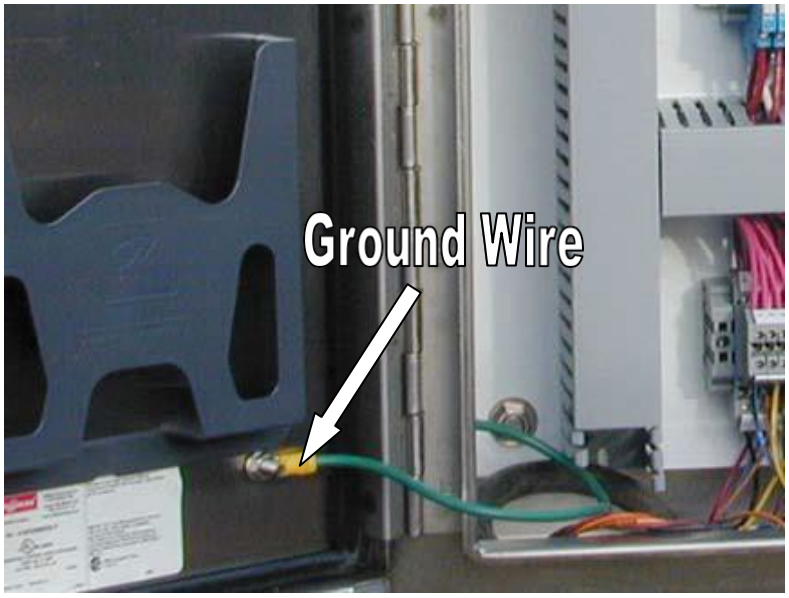
SAFETY (CONTINUED)

PROTECTIVE GROUND OR EARTH GROUND (PROTECTIVE EARTH)

EARTH GROUND

Never disconnect the grounding wire from the O.D.D.S.® control panel.



The ground wire provides protection against unequal potential between panel components and the surface on which a maintenance technician may stand while working in the control panel. While the voltage at this connection point may rise above zero volts-to-earth-ground under fault conditions, the entire system will also rise at the same rate to the same voltage. This helps minimize any circulating currents between components from lightning or power surges.

The removal of this conductor or wires to/from the conductor will impede the protection for which it is designed to provide.

SAFETY (CONTINUED)

GENERAL SAFETY

This manual should be read and understood by the person performing maintenance on the equipment. Extra copies are available from FNSS.

WARNING: Do not modify the equipment in any way. Modifications made to this equipment can be dangerous and could result in serious injury or death. Making changes to the equipment also voids the warranty.

- Never defeat a safety guard or device to make a task easier.
- When operating the equipment, always wear proper apparel. Loose clothing could get caught in moving parts.
- Never operate equipment with guards or covers removed. Moving parts can cause severe injury. Keep hands, feet, hair, jewelry and clothing away from all moving parts.
- If guards or covers are removed, place warning signs or caution tape to alert others of the hazard.
- Keep walking or driving surfaces around the barrier clean and uncluttered to prevent a slip or trip hazard.

Never operate the equipment if you are under the influence of drugs, alcohol or medications that may make you less alert or affect your judgment.

OPERATIONAL SAFETY

- Make sure all mechanical guards and safety devices are in place and are working properly.
- Check that all hardware, fasteners, etc. are in good condition and tightly fastened. (Check this manual for a listing of required scheduled maintenance.) Replace any worn or damaged items with replacements supplied by the manufacturer.
- Personnel who are not required to be in the work area should be kept away. Never operate the equipment unless you are absolutely certain that all personnel are clear of the barrier and are made aware it is about to move.
- Follow the recommended start-up procedure described in your operations manual.

SAFETY (CONTINUED)

MAINTENANCE SAFETY

HORN

The horn operates at decibel levels that may require the use of hearing protection. Prolonged exposure can cause permanent hearing damage if hearing protection is not utilized.

WARNING: Never remove guards while power is ON at the control panel.

WARNING: Before maintenance work is performed, ensure power is off and the main ON/OFF switch or button is locked in the O.D.D.S.® interface panel. For exact location, check the drawings for the unit you are performing maintenance on.

- Following maintenance work, ensure all mechanical guards and other safety devices are installed and are in proper workingorder.
- Never clean, lubricate or adjust the equipment while any parts are moving or while the equipment power is ON.

OPERATION

OPERATING THE O.D.D.S.®

Operation of the O.D.D.S.® system is simple and requires no physical interaction with the system.

- Vehicles approaching the checkpoint above the preset limit will trigger an alarm.
- As long as the vehicle remains above the preset limit, the alarm will remain triggered.
- If the vehicle drops below the preset limit at any time, the alarm will automatically silence.
- Vehicles traveling backward in the outbound traffic lane will also trigger an alarm.
- If the vehicle stops and turn's around, the alarm will automatically silence.

ALARMS

The alarms are communicated several ways.

In an **OVER SPEED** condition:

1) The LED Display Board will display the text "OVER SPEED"
2) A distinct audible alarm will be annunciated from horn mounted at the Gatehouse or Guardbooth(s).

In a **WRONG WAY** condition:

1) The LED Display Board will display the text "WRONG WAY"
2) A distinct audible alarm will be annunciated from horn mounted at the Gatehouse or Guardbooth(s).

DEFINITION OF ZONES

The entrance of the checkpoint is divided into zones.

ZONE 1: Covers the area from the checkpoint entrance to 200 feet in front of the ID check area.

ZONE 2: Covers the area from 200 feet in front of the ID check area to the ID check area.

POINT OVER SPEED: If necessary, point over speed detector(s) may be used at the checkpoint entrance.

WRONG WAY: Any vehicle traveling the wrong way in the outbound traffic lane.

MAINTENANCE

The Global Grab Technologies ™ O.D.D.S.® system requires minor preventive maintenance, cleaning, and periodic testing for proper function.

Global Grab Technologies recommends that the following actions be performed once per quarter:

CLEANING

NOTE: The LCD monitor should only be cleaned with a soft, dry cotton cloth. If necessary, use a small amount of rubbing alcohol to assist in cleaning the screen.

1. Using a portable vacuum cleaner, clean the induction fan on the computer enclosure.
2. Visually inspect each O.D.D.S.® Radar Speed Sensor. With power secured at the interface panel, carefully remove any debris or dirt that has accumulated on the Sensor or the mounting hardware.
3. Using a soft cloth and water (where necessary), clean each Remote Display Unit.

FUNCTION TEST

CAUTION: Proper traffic control measures must be in place to close inbound and outbound roadways during a function test.

1. Noting proper zone distances and speed thresholds, verify the following by approaching the ID Check area in a vehicle:
    a. Proper operation of the Audible Alarm.
    b. All Radar Speed Sensors on the inbound and outbound lanes are operable and aimed properly. Perform minor elevation and azimuth adjustments at the mounting hardware as required.
    c. All speed thresholds are set as designed. Contact Global Grab Technologies if adjustments are required.
    d. All Displays Units function properly.
    e. Accurate speed is displayed on the LCD Monitor.

	ENVIRONMENTAL CONDITIONS
TEMPERATURE	**-20 ºF to + 130ºF**
RELATIVE HUMIDITY	0% to 100%

	SPARE PARTS GUIDE
ITEM	**DESCRIPTION**
Display Sign	**OVERSPEED / WRONGWAY FULL MATRIX LED SIGN**
Radar Head	**RADAR SPEED SENSOR UNIT**
Horn	**ANNUNCIATOR / HORN ASSEMBLY**

Note: Contact Global Grab Technologies for replacement parts. Job specific information is required to determine actual part number.

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Contact Information

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Attachments

ODDS 2.0 Setup and Configuration Procedure

1.) Unzip and install the Houston Radar Configuration Tool software.

2.) Most computers do not have serial ports anymore. If you do have a serial port, then you can skip this step. Otherwise, plug in the USB to Serial Adapter. In the lower left-hand corner of the desktop it should say that new hardware is found, and it is installing the driver. If your converter requires special software, then install that software before proceeding. Allow plenty of time for the driver to install. Assuming that driver is installed correctly, then it should setup a COM port on the PC. It is best to verify this. Click on Start, Control Panel, System and Security, System, Device Manager. Under Ports (COM & LPT) you should see a COM port for the adapter. In this example the adapter is using COM6. See Figure 1.

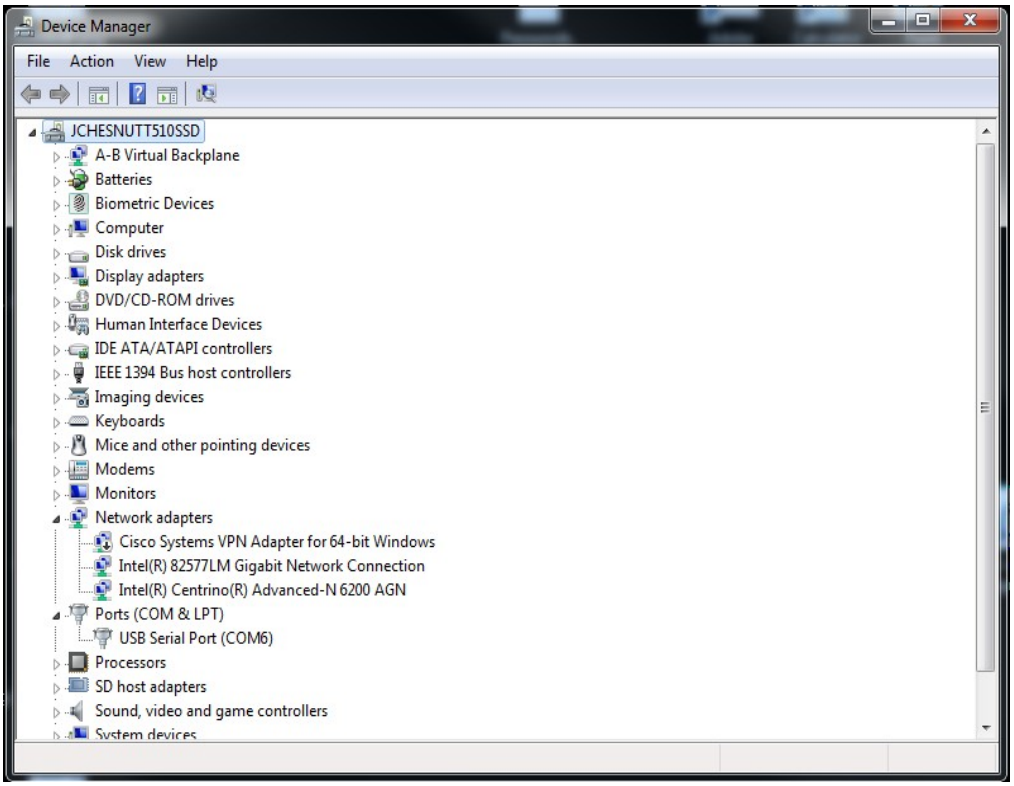

Figure 1

The USB to Serial Adapter is using COM6

3.) Wire in the Breakout board. See Figure 2 for wiring. IMPORTANT- PIN 5 IS THE RS-232 GROUND AND PIN 9 IS THE DC COMMON FOR THE 15V POWER SUPPLY. THEY ARE NOT THE SAME! The Green and White wires are the RS-232 signal wires. The Black wire is the RS-232 ground. The purple wire is the alarm signal wire which wires back to the relay in the panel. The Red wire goes to the +15VDC supply. The Brown and Yellow are not used.

DB9 PINOUT		
PIN #	COLOR	
1	RED	PWR
2	GREEN	PRI 232TX
3	WHITE	PRI 232RX
4	BROWN	AUX 232RX
5	BLACK	GND
6	YELLOW	AUX 232TX
7	PURPLE	TRIG
8	N/A	N/A
9	BLUE	GND

Figure 2

Wiring the Breakout Board.

The trigger output is a sinking output at 15VDC. Since our Input Cards on the PLC need a source input at 24V, we solve this problem by using a relay. See Figure 3. In this example, 42081 is the wire from the Trigger. When the radar triggers, the coil of the relay is energized, and an input is seen at the PLC.

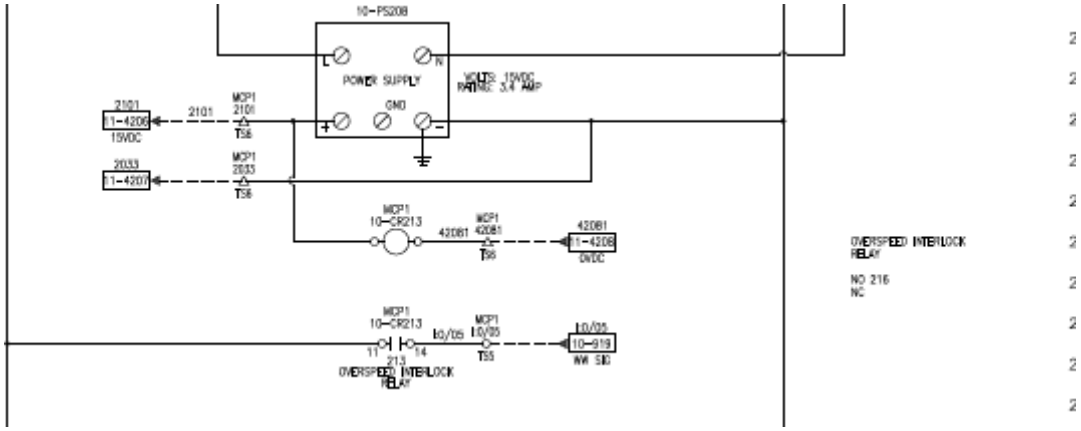

Figure 3

Typical trigger input wiring.

4.) Plug in the cable from the adapter (or serial port) to the breakout board. The cable is a straight through DB-9 Cable.

5.) Double Click on the Icon for the Houston Radar Configuration Tool software. You should see a popup screen shown in Figure 4. In some cases, the software may use Auto Detect and connect automatically, but if not the click the Connect to Radar button.

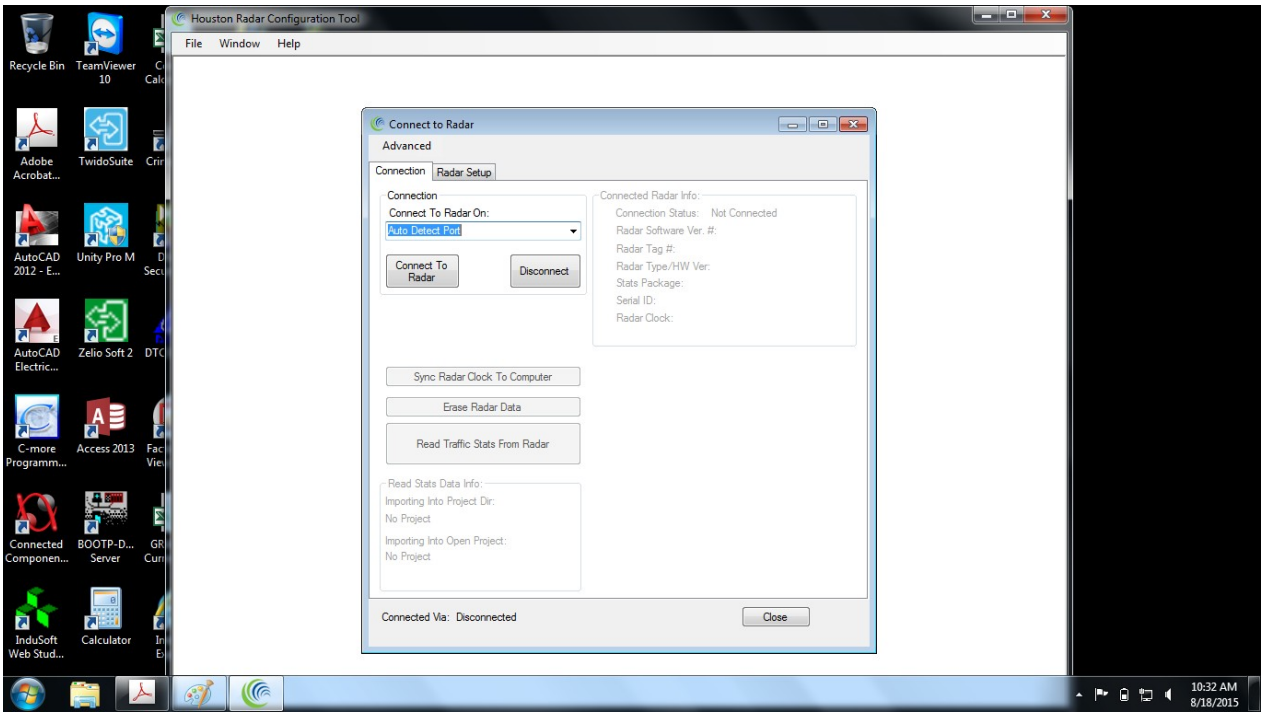

Figure 4

The initial Startup Screen for the Software

If all goes well, you should see that the Radar was found on the designated COM port. See Figure 5.

Click OK.

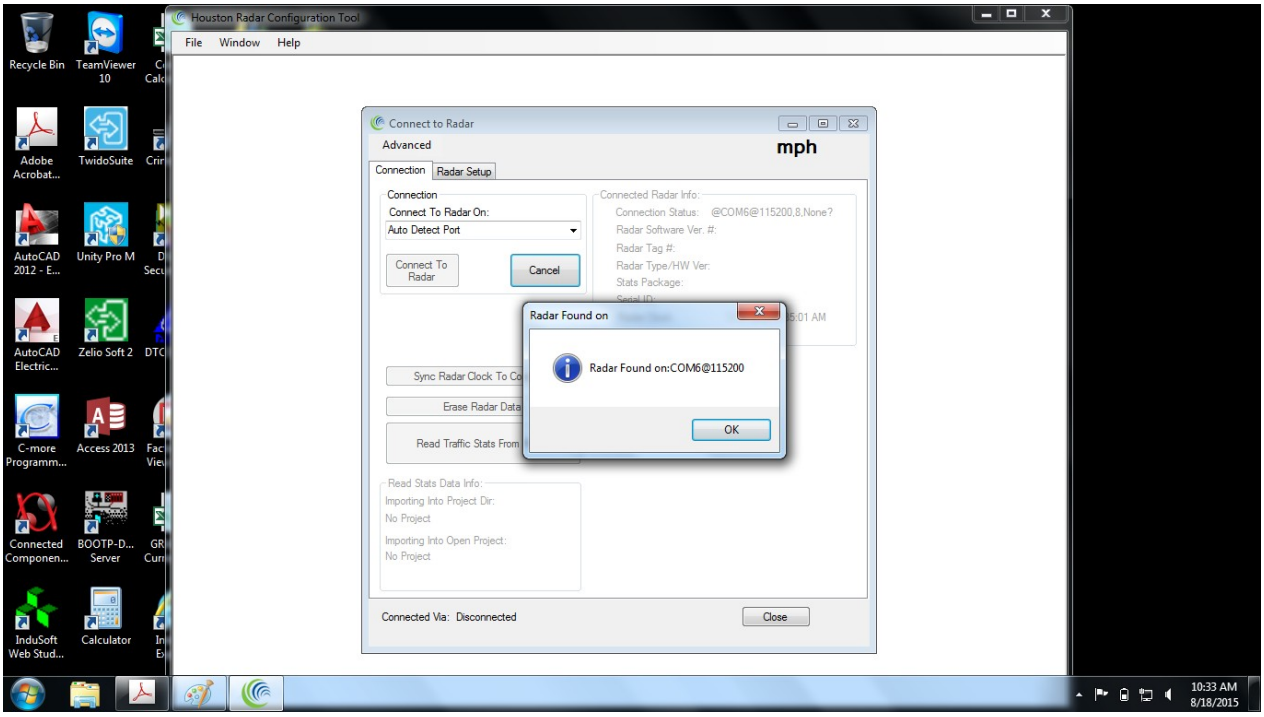

Figure 5
The radar is Connected to the COM port

The radar should then display the Radar system information. Click OK. Notice that bottom left hand side of the screen says Connected Via: COM6. Now you are connected to the radar. See Figure 6

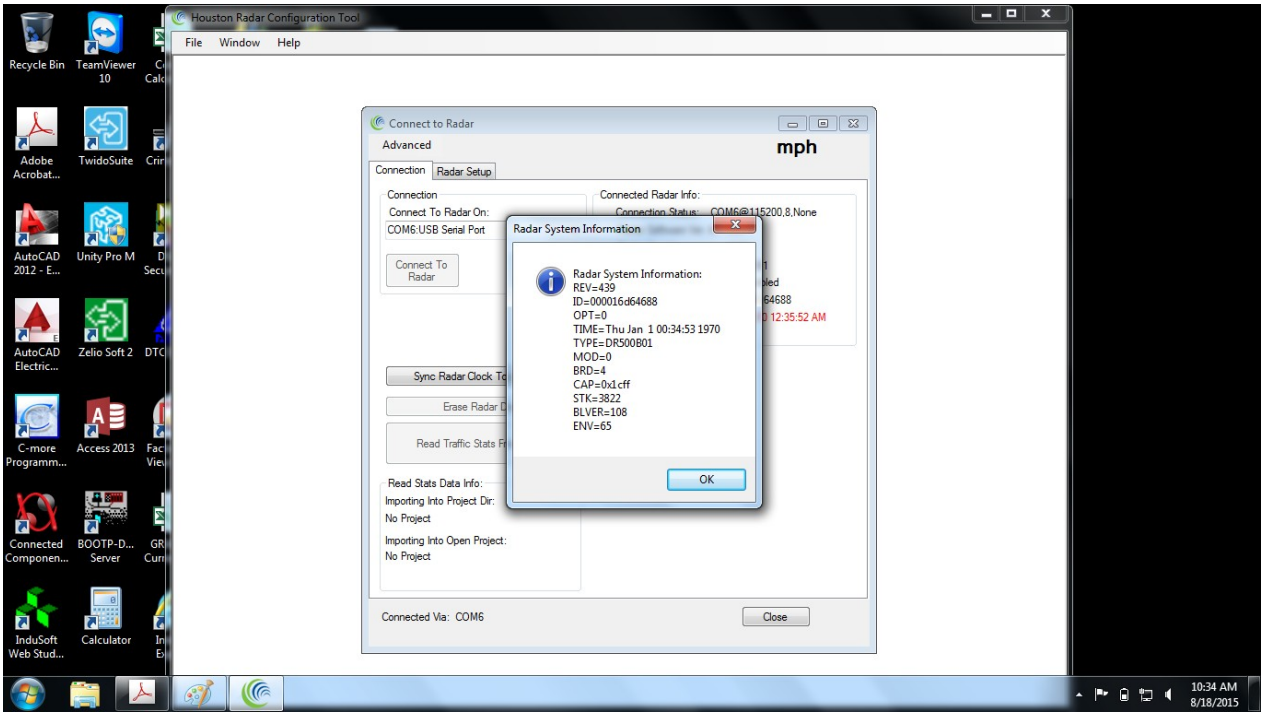

Figure 6

Connection to the Radar is being established and the Radar System Information is Displayed.

If the radar cannot connect make sure the cable is connected and the adapter is connected. Make sure the breakout board is wired correctly. Figure 7 shows the example screen with proper connection.

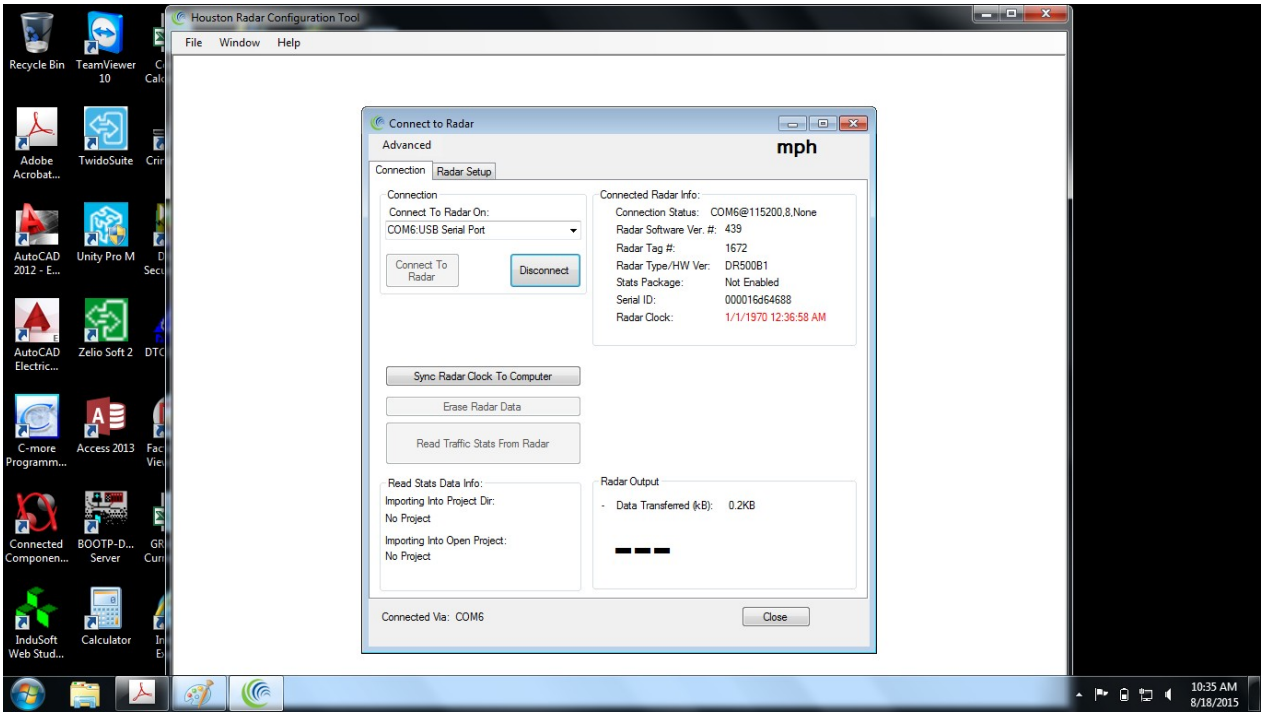

Figure 7

The radar is connected properly

6.) Click on the Radar Setup Tab. The existing parameters that are currently loaded in the radar will be uploaded. See Figure 8.

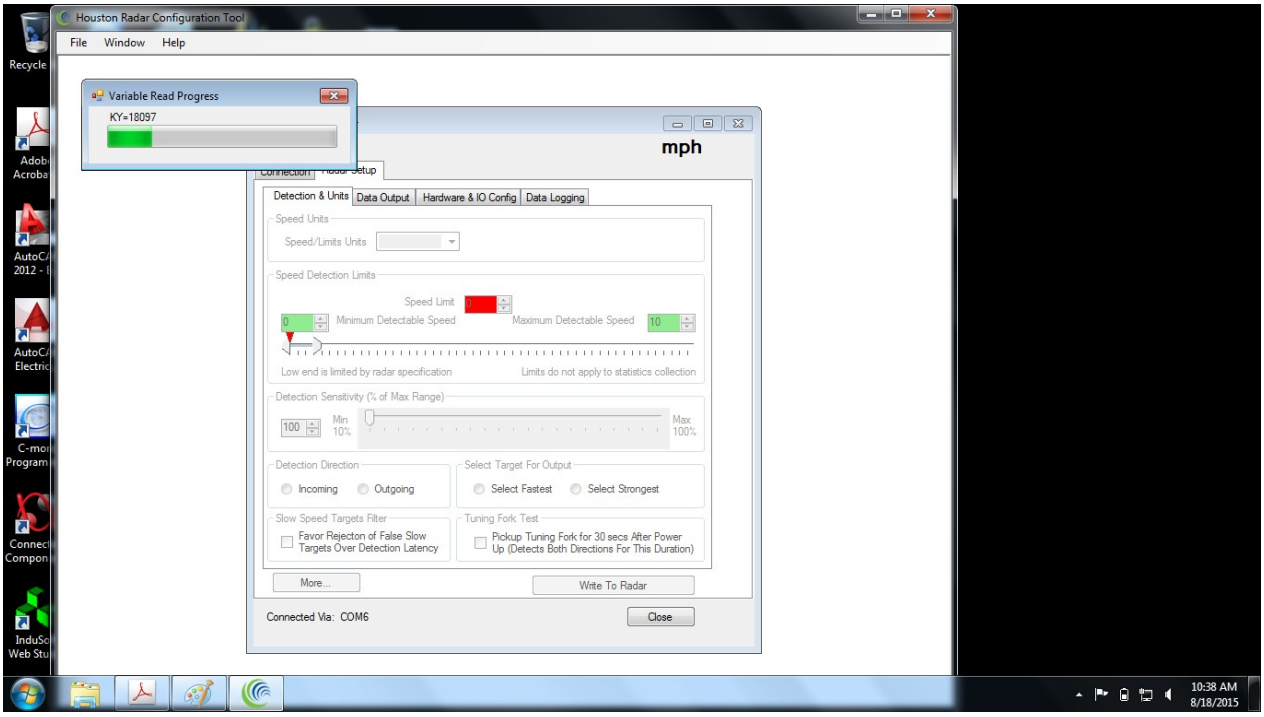

Figure 8

The Radar Setup Tab is clicked, and the existing parameters are uploaded.

7.) Click on the Detection and Units Tab. See Figure 9.

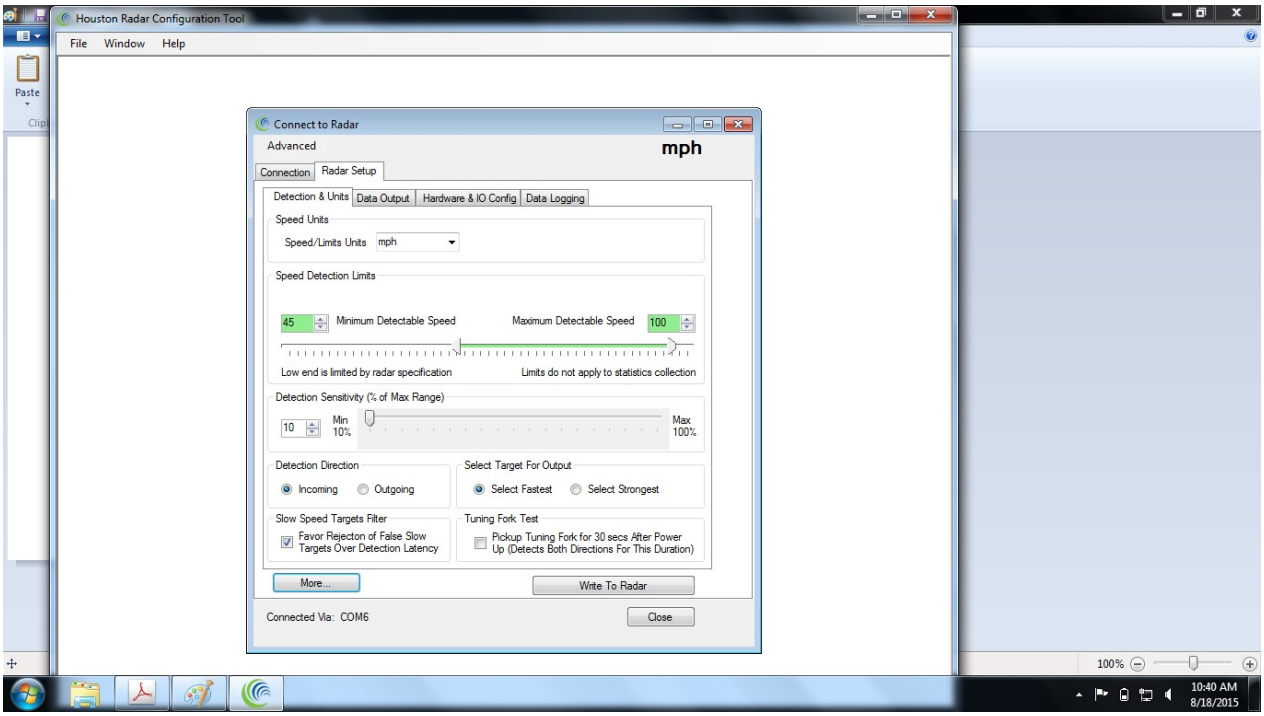

Figure 9

The Detection and Units Tab

This is where most of the parameters are entered.

Set the speed units for *mph*.

Speed Detection Limits-*Set the Minimum Detectable Speed at the speed limit shown in the Civil drawings. Set the Maximum Detectable Speed at 100.*

Detection Sensitivity-This parameter may take some effort to set correctly. First let's discuss a little about the radar. The radar emits a cone shaped emission. The higher the sensitivity, the larger the angle of the cone. *Start with 10% and make sure the radar is pointed in the proper direction and alignment. If this does not work, keep adding 10% to the setting and repointing the radar until the proper setting is achieved.* Important-You should never need a setting of 100%. With that much sensitivity, the radar will be so sensitive that it will detect light waves.

Detection Direction-*Set to Incoming if the threat vehicle is moving toward the radar. Set to Outgoing if the threat vehicle is moving away from the radar.*

Select Target for Output-*Set for Select Fastest*.

Slow Speed Targets Filter-Make sure this checkbox is *checked*.

Tuning Fork Test-Make sure this checkbox is *NOT checked.*

Click on the More…. Button. Three choices are now available (See Figure 10)-

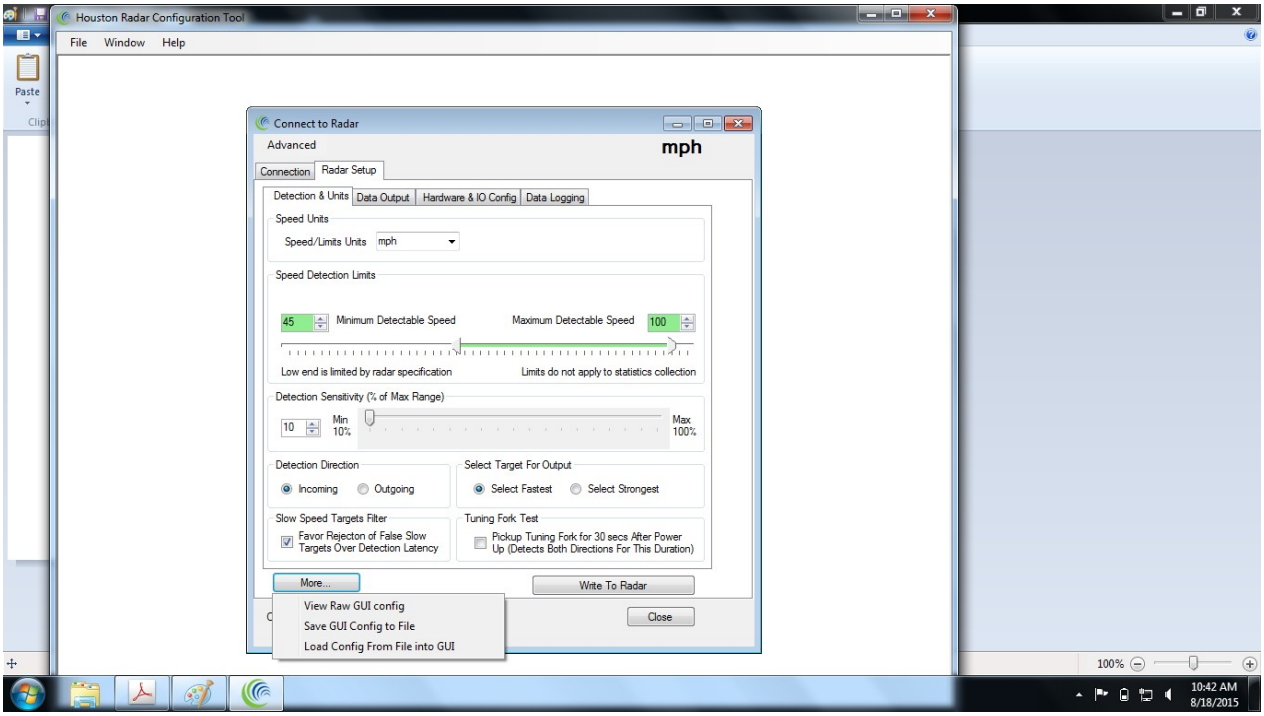

Figure 10

The More… button has been clicked on.

a.) View Raw GUI Configuration-Select this and a Notepad file will pop up. This is the parameters in its most raw form. Close the Notepad File.

b.) Save GUI Config to File-You can save the current parameters to a file and load them into another radar. This is helpful if you have two or more radars that are configured the same.

c.) Load Config from File into GUI-Load a previously saved configuration into the GUI.

8.) Save the configuration to the Radar. **IMPORTANT-YOU MUST WRITE TO THE RADAR WHENEVER A CHANGE IS MADE IN THE GUI.** Click the Write to Radar button. If successful, you should see a screen like Figure 11.

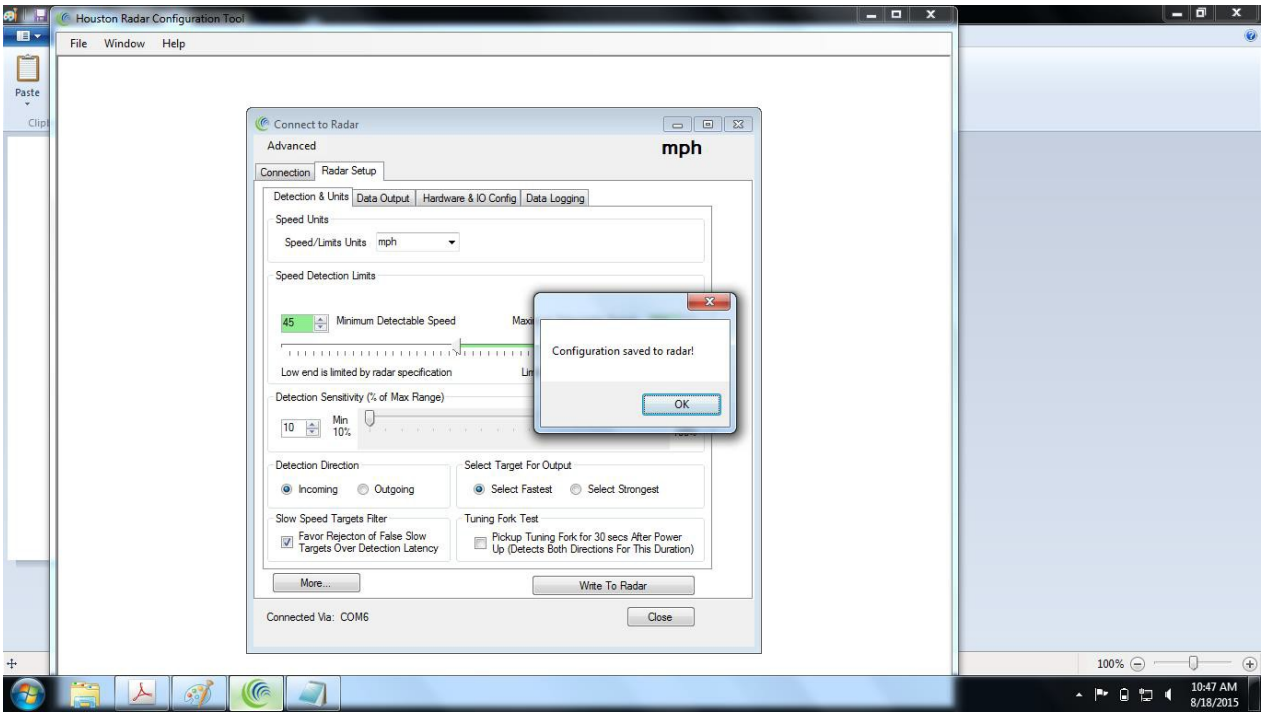

Figure 11

The radar has been written to successfully.

9.) Click on the Data Output Tab-The serial communications can be changed if you wish. The one parameter that needs to be set is the Speed Output Rate. Set this too Fast. Click the Write to Radar when done. See Figure 12.

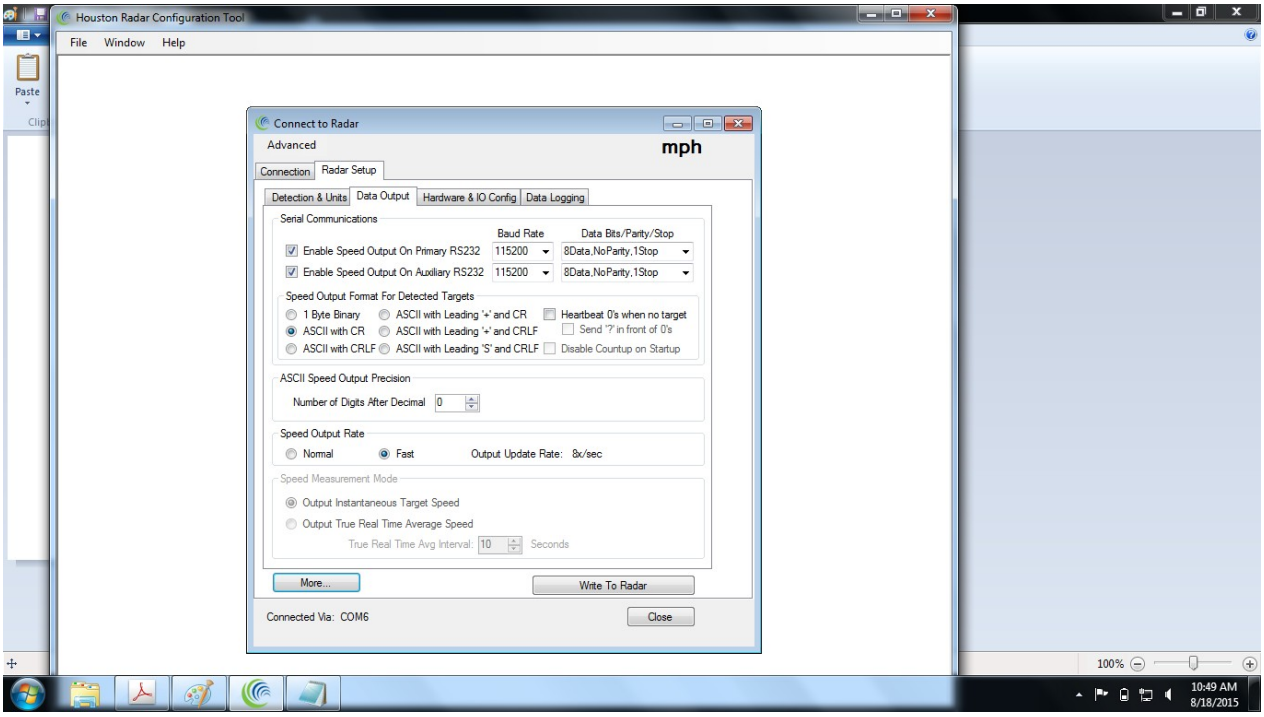

Figure 12

The Data Output Tab

10.) Click on the Hardware & IO Config Tab. Click on the Read now and note the values for the Input Voltage and Ambient Temperature. The Input Voltage should be between 9.6V and 21V. If the Input Voltage is less than 9.6 volts, then excessive voltage drop has occurred. The cause is almost always that the radar wiring is too long and a high wire resistance. See Figure 13.

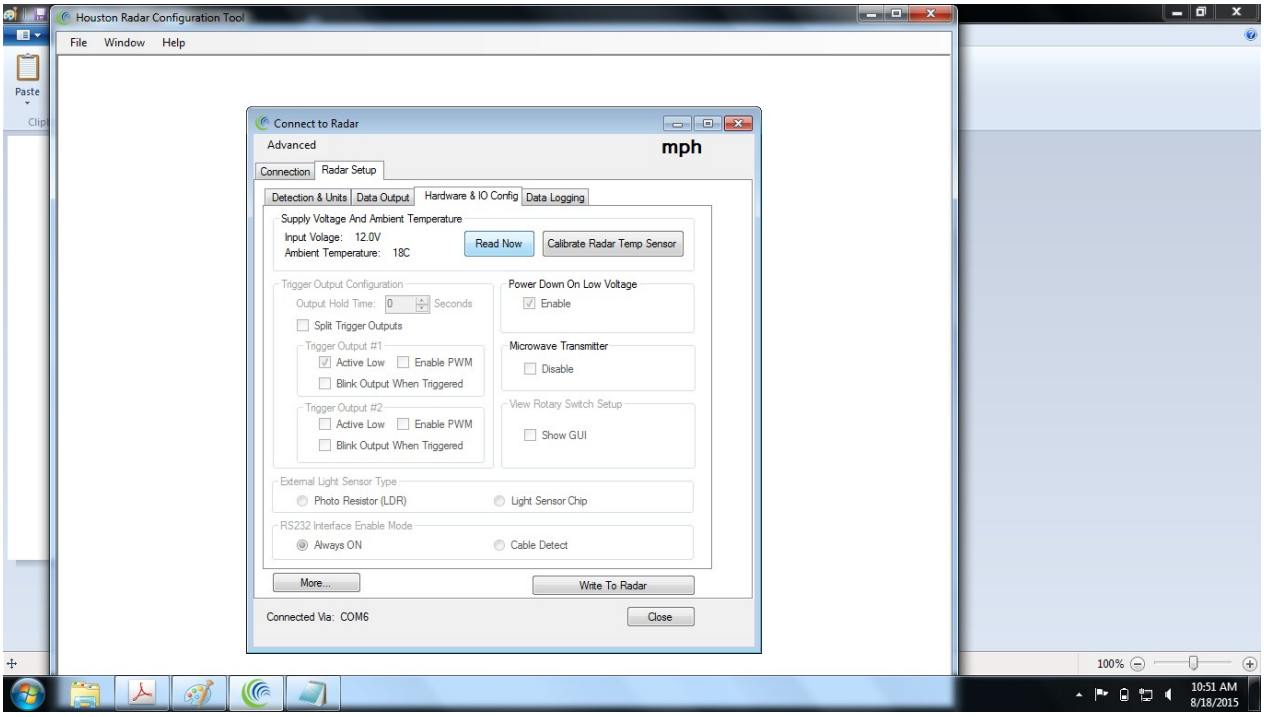

Figure 13

The Hardware & IO Config Tab

11.) Just be sure, Click the Write to Radar button again. Now the radar is configured.

Radar Testing and checkout-

Now it is time to check the operation of the radar. Power off then on the radar. The relay in the panel should cycle three times. If necessary, the radar can be tested using a person instead of vehicle. This test can be done by changing a few parameters in the radar. Click on the Detection and Direction Tab. Write down the existing parameters. Now change the Sensitivity to 100% (just for test purposes), change the Minimum Detectable Speed to 1. Now Click the Write to Radar button. Click on the Connection Tab. Have a person walk toward (for incoming) or away from (for outgoing) the radar. In lower right-hand corner, you should see the 000 briefly change to 001 or higher as the person is detected. Once the test is complete, change the sensitivity and Minimum Detectable Speed back to the original settings and Click the Write to Radar button. See Figure 14.

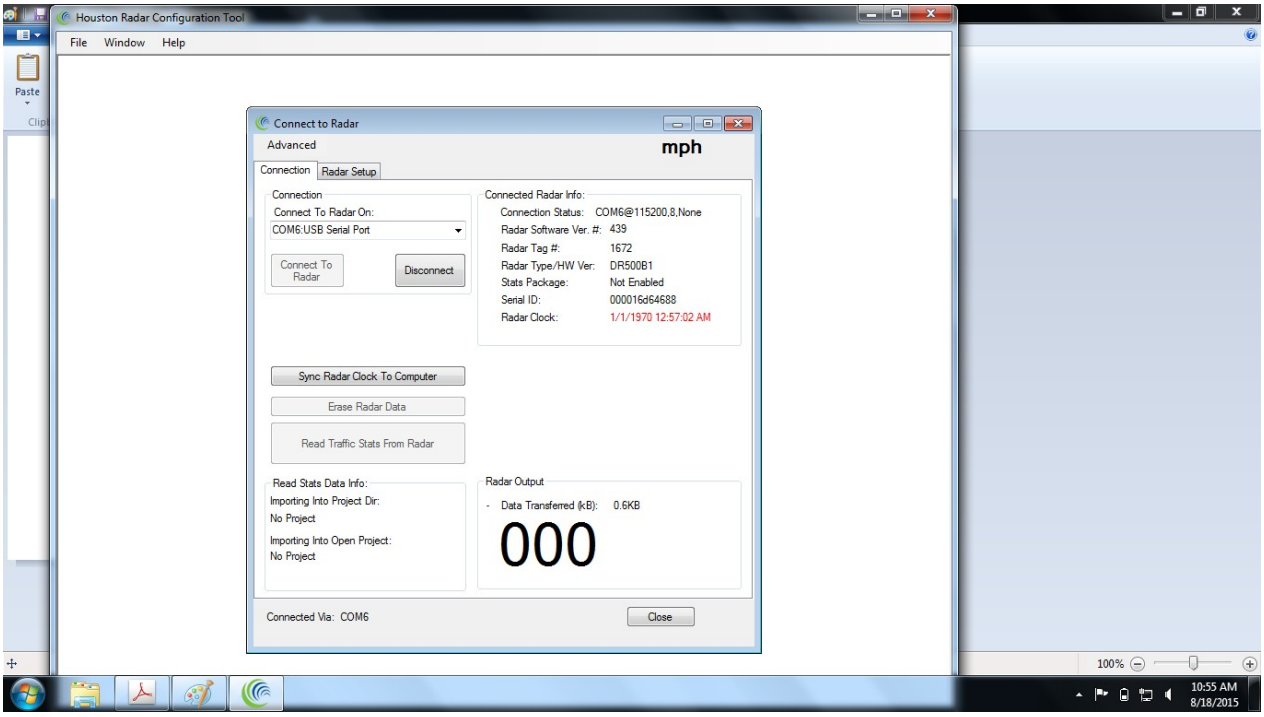

Figure 14

The Radar Output is displayed in the lower right-hand corner of the Connection Tab.

Congratulations, you have successfully completed the setup of the radar.

Troubleshooting

This radar has a self-test function that can be useful. Click on the Advanced button at the top left-hand side of the screen and Click Show Ascii Command Terminal. See figure 15

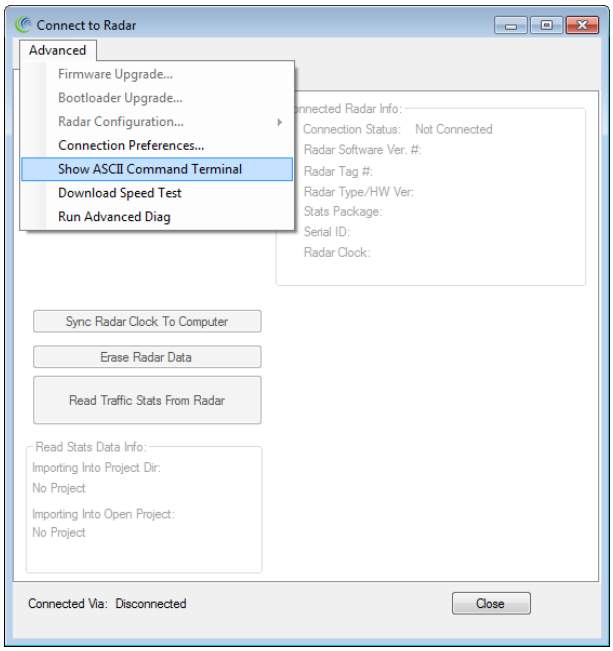

Figure 15-Click Advanced button and Show ASCII Command Terminal

Click in the Radar CMD box and type in bist:0 and press enter.

Figure 16 shows the command. This will perform a self-test and give the results.

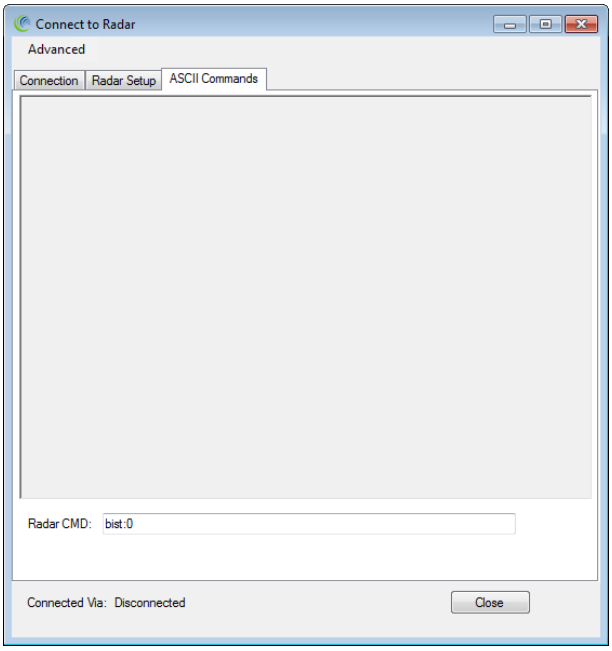

Figure 16- Type in bist:0 and press enter.

If you do continue to have issues and cannot solve the problem, then our contact at Houston Radar is Jake Bailey. His number is 832-540-6611.