TransitHound
Cellphone Detector

User Manual Version 1.3

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INTRODUCTION

The purpose of this document is to help the user set up the TransitHound Cellphone Detector (THCD) unit and associated graphic user interface software (TransitHound Controller-Serial) To set up the system, the user needs the following components:

1. PC/Laptop/Notebook host running Windows (XP, Vista or 7) (provided by customer)

2. THCD unit with antenna, integral DC Power and Dry Contact lead pairs (provided by BVS)

3. Serial Interface cable (USB/Hirosi 4 pin (round)) (provided by BVS)

4. TransitHound Controller-Serial software package (SD provided by BVS)

Components 1 through 4 are further discussed below:

PC/Laptop/Notebook running Windows (XP, Vista or 7)

The PC/Laptop/Notebook hardware platform needs to meet the following *minimal* requirements:

Windows OS (XP, Vista or 7)

512MB RAM

20GB storage space

800 MHz processor speed

TransitHound Cellphone Detector (THCD) Unit Description

The THCD unit (see Figure 1) can be field-programmed to scan either the North American or the EU cell phone up-link frequency bands listed in Table 1:

Table 1.

North	824 - 849
American	890 - 915
Bands	1850 - 1910
EU	880 - 915
	1710 - 1785
Bands	1920 - 1980

The THCD unit comes with a monopole omni-directional antenna covering the above frequency bands. This compact antenna is well-suited for deployment in cramped spaces with multiple reflecting boundaries and/or metal surfaces.

The THCD unit has the following electrical interfaces:

1. RF input port with SMA connector can directly support the compact antenna or connect to a cable delivering RF output from a non co-located antenna.

2. RS232 Serial port (Hirosi 4-pin round connector)

3. DC Supply port, 10 - 40VDC (RED(+) and BLACK(-) wired EMI feedthrough terminals

4. Dry Contact Pair port EMI feedthru terminals (contact pair stays closed for a duration of 20 seconds. Dry contact opens after 20 seconds or sooner if the signal falls below threshold.

5. Ground (un-insulated terminal)

The THCD unit is enclosed in a specially designed metal box consisting of a tubular

body, two end covers and two conducting gaskets constituting an external EMI shield. The unit also has an inner secondary shield enclosing the RF receiver stages for extra attenuation of disproportionately strong ambient electromagnetic fields.

USB to Serial Interface Cable (Provided by BVS)

The THCD unit is controlled by the PC over a USB to Serial port, via the USB to Serial Interface Cable provided by BVS. This cable is terminated by USB and Hirosi 4-pin round type connectors at its ends. The Hirosi 4-pin round end of the cable fits on the RS232 serial port of the THCD unit. The USB end of the cable fits on the corresponding USB of the PC.
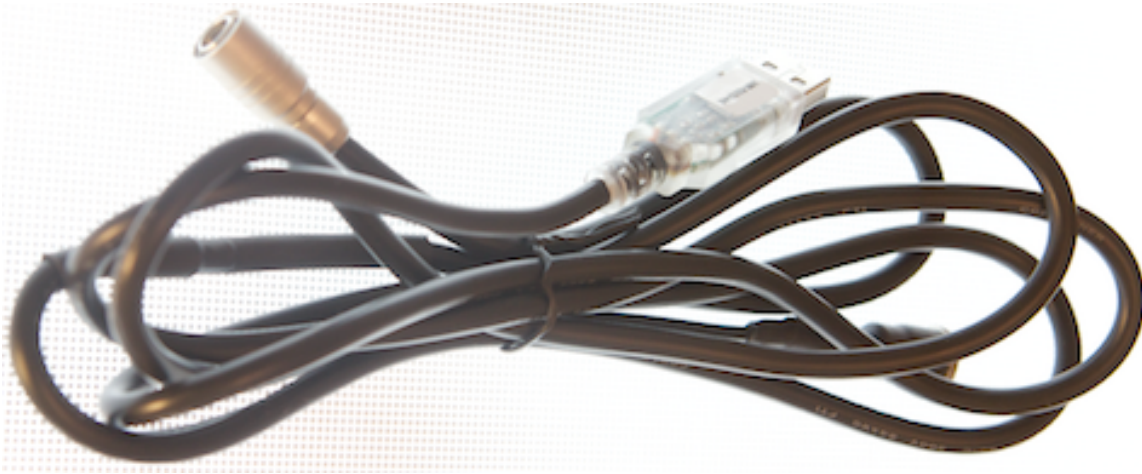
TransitHound Controller-Serial User Interface software Installation

The driver for the THCD unit and the graphic user interface program for using the system are installed by initiating the *TransitHound Controller-Serial* program on the BVS-supplied SD. The installation is relatively straightforward; it starts by running setup and following menu instructions.
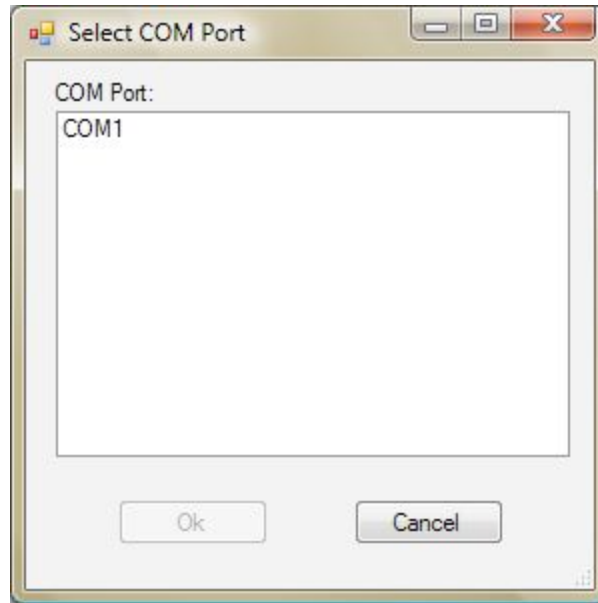
Installing Software

Run the TransitHound Controller-Serial program, which should display the user graphic interface screen in Figure 3:
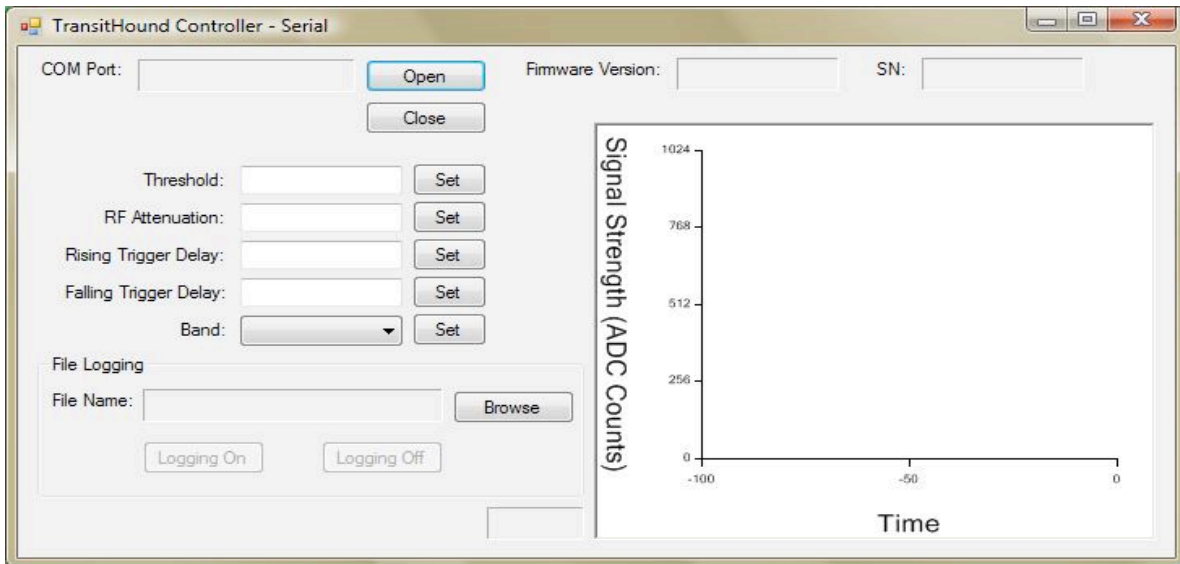
Figure 3. Graphic User Interface screen

Enter COM Port and click "Open" in Figure 3; then select a listed port in Figure 4, then click "OK":

Figure 4. Selecting Com port

Following the COM port selection, the monitoring screen will display the detected signal in real-time on the graph at right hand side, as seen in Figure 5:
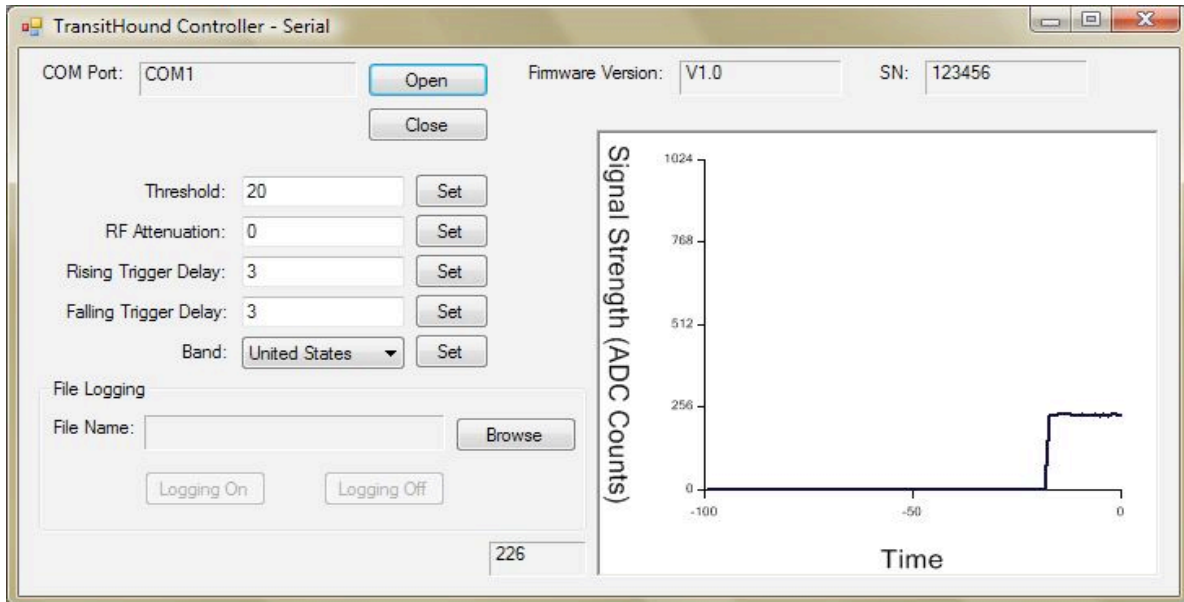
Figure 5. Monitoring Screen Displaying Real-Time Data

Auto threshold is currently on. User selectable auto trigger margin – currently set to 50. Threshold level(0-10 ADC Counts), RF Attenuation(0-30dB), Rising/Falling Trigger

Delays(sample durations in time) and Band (North America or EU) variables will automatically be set to their last settings, unless one or more are changed by the user to any value(s) within the indicated intervals. The instantaneous signal level (in ADC Counts) and current threshold is displayed in the lower center of the screen in figure 5.

Data may be logged by clicking the "Browse" button and specifying a file name and path in Figure 5. Indicator above the graph changes color to red when the dry contact closes.

Overall Specifications

Cell Phone Detector Unit

Sensitivity -80 dBm

Dynamic Range 60dB

Resolution Bandwidth 4MHz

Selectivity 50dB at 1MHz from band edge

Frequency Bands

824 – 849 MHz
896 – 901 MHz
1850 – 1910 MHz
880-915 MHz
1710-1785 MHz
1920-1980 MHz

Electrical Interfaces

Serial RS23 Port

DC Supply

Dry Contact

Antenna Port (coaxial/SMA)

Ground

Receive Antenna

Omni-directional

Power Source

10-50VDC

PC/Laptop/Notebook Platform

Windows XP, Vista or 7

512MB RAM

20GB storage space

800 MHz processor speed

TRANSIT-HOUND RAILROAD CABLE