



USA Office
 321-254-8118
 Melbourne, FL USA
 www.asttechlabs.com

www.TSA6000.COM



Canada Office
 403-516-0700
 Calgary, AB Canada
 www.espi.ca

TSA6000-USB™

USER GUIDE

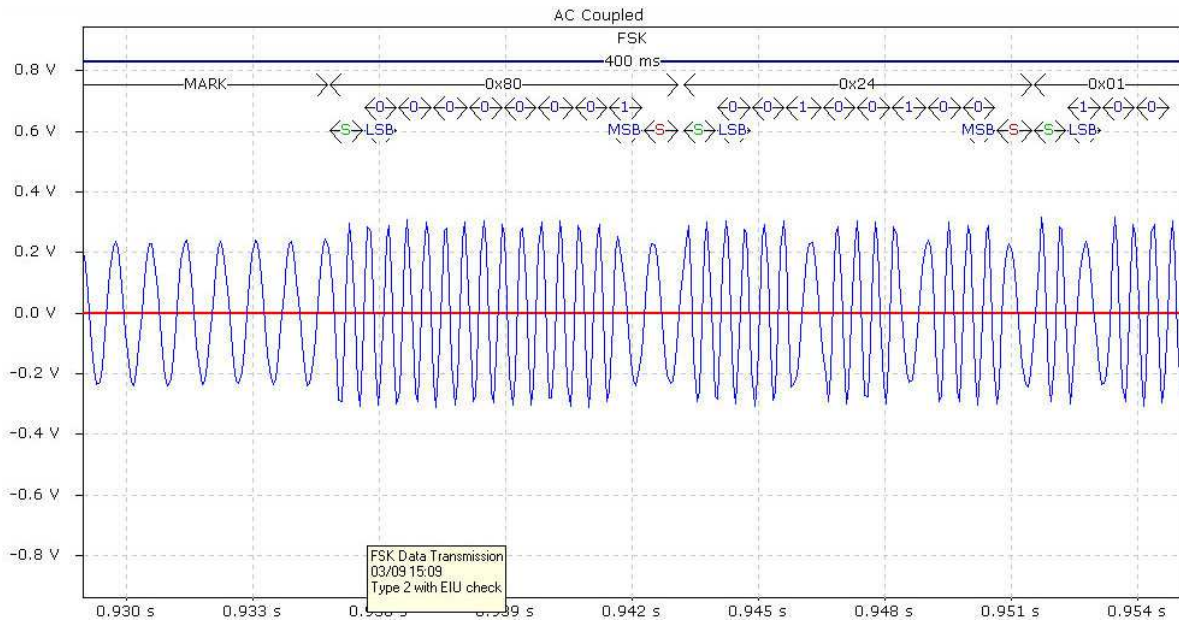


TABLE OF CONTENTS

- 1. Quick Start..... 1**
 - 1.1 Activating the TSA 6000-USB 1
 - 1.2 Recording a Data file 2
 - 1.3 Sending files to a PC..... 2
 - 1.4 Analyzing files 2
- 2. System Set-up..... 3**
 - 2.1 Packing List 3
 - 2.2 Software Installation 3
 - 2.3 System Overview 3
- 3. Front Panel..... 5**
 - 3.1 Audio and Data interfaces..... 5
 - 3.2 Menu Items and Dialog Box 5
- 6. Features and Specifications 6**
- 6. Features and Specifications 7**
- 7. Product Safety & Regulatory 9**
 - 7.1 Product Approvals 9
 - 7.2 Safety 9
 - 7.3 FCC & Industry Canada Notices 10
 - 7.4 EU Directive Compliance 10
 - 7.5 Copyright 10
 - 7.5 Revisions..... 11
- 8. TSA 6000 Support 12**

TSA 6000-USB™

1. Quick Start

1.1 Activating the TSA 6000-USB

Do NOT connect the TSA 6000 USB hardware to a PC until you install the TSA Software. You will be asked for an activation code to register the TSA 6000 software.

TSA 6000 Software Registration

This software has NOT been activated. You have 5 days left until the software will be disabled. Once the software is activated you will no longer see this message.

To activate the software goto <http://www.tsa6000.com>. You will be asked to fill in a form and the activation code will be sent to you immediatly.

The form will ask you for your software ID to identify the software for activation. Your Software ID is:

22222M2X42F3N3UE2

Once you have recieved your activation code type it in below to activate your software.

Activation Code :



Software ID. Copy this and paste into online registration form.

Copy the Activation code from the online registration form here

You have 5 days to register the software

1. Go to www.tsa6000.com, click 'Software Registration'. Fill out the contact information.
2. Software ID:
 - a. Run the tsa6000 software, a Software id will be generated as shown above, copy and paste this into the 'Software ID' box on the web form
3. Hardware Serial #:
 - a. Locate the hardware id from the back of the TSA 6000 unit, enter it in the 'Hardware serial #' box on the registration form
4. Click on 'Register' after filling in registration form, an activation code will be generated.
5. Copy Activation code and paste into the activation code box in the TSA software as shown above. Press Activate.

1.2 Recording a Data file

Press the  button. The status bar will indicate the unit is recording and display the elapsed time. Press the  button to end the recording process. The data is displayed on the screen for analysis.

1.3 Sending files to a PC

Files are transferred from the TSA 6000 USB hardware as soon as a recording is stopped. They will appear in the analysis window as they are transferred.

1.4 Analyzing files

Once a file has been downloaded, click  on the menu bar to analyze the file.

2. System Set-up

2.1 Packing List

- TSA 6000-USB Signal Collection Unit
- USB cable for connecting the TSA 6000-USB to your computer
- AC adapter for powering your TSA 6000-USB

2.2 Software Installation

Make sure you have the following ready:

- CD containing the TSA 6000 software.
- A PC running Windows 95, 98, 2000, XP or NT4.
- Internet Access to www.tsa6000.com

Then:

- Insert the TSA 6000 CD into your computer.
- Follow on screen directions to install the TSA 6000 software

Note: Your software will run for 5 days after installation before you must register. If not registered, after 5 days, the software is disabled.

2.3 System Overview

The TSA 6000 test system includes two parts. The data capture is handled by the TSA 6000 hardware. Data Analysis is handled by the TSA 6000 software application.

Data Capture

The TSA Test device interfaces to a local telephone loop. It collects data through dual 16-bit analog to digital converters and transfers it to a PC. The TSA 6000 USB device has a USB connection and the TSA 6000 software facilitates all control of the data capture via a dialog box on the PC.

Data Analysis

The TSA 6000 software displays and manipulates data graphically. There are also functions to analyze files for the presence of telephony signals. Filters can be applied to the data to remove single frequency interference tones from the signals of interest.

Calibration

The TSA 6000 USB runs a calibration routine on the AC channel when the calibrate button is clicked. Remove any telephone cables connected to the TSA 6000 USB 'Line' or 'Telephone' jacks before calibrating. Calibration need only be run once after Software initialization. Calibration data is stored on the PC, therefore you must calibrate the TSA 6000-USB for each PC that you install the software on.

3. Front Panel

3.1 Audio and Data interfaces

RJ-11 Jacks

The TSA6000-USB has 2 parallel RJ-11 jacks on the front panel.


USB Connector

The TSA6000-USB has a USB jack for connection to a PC

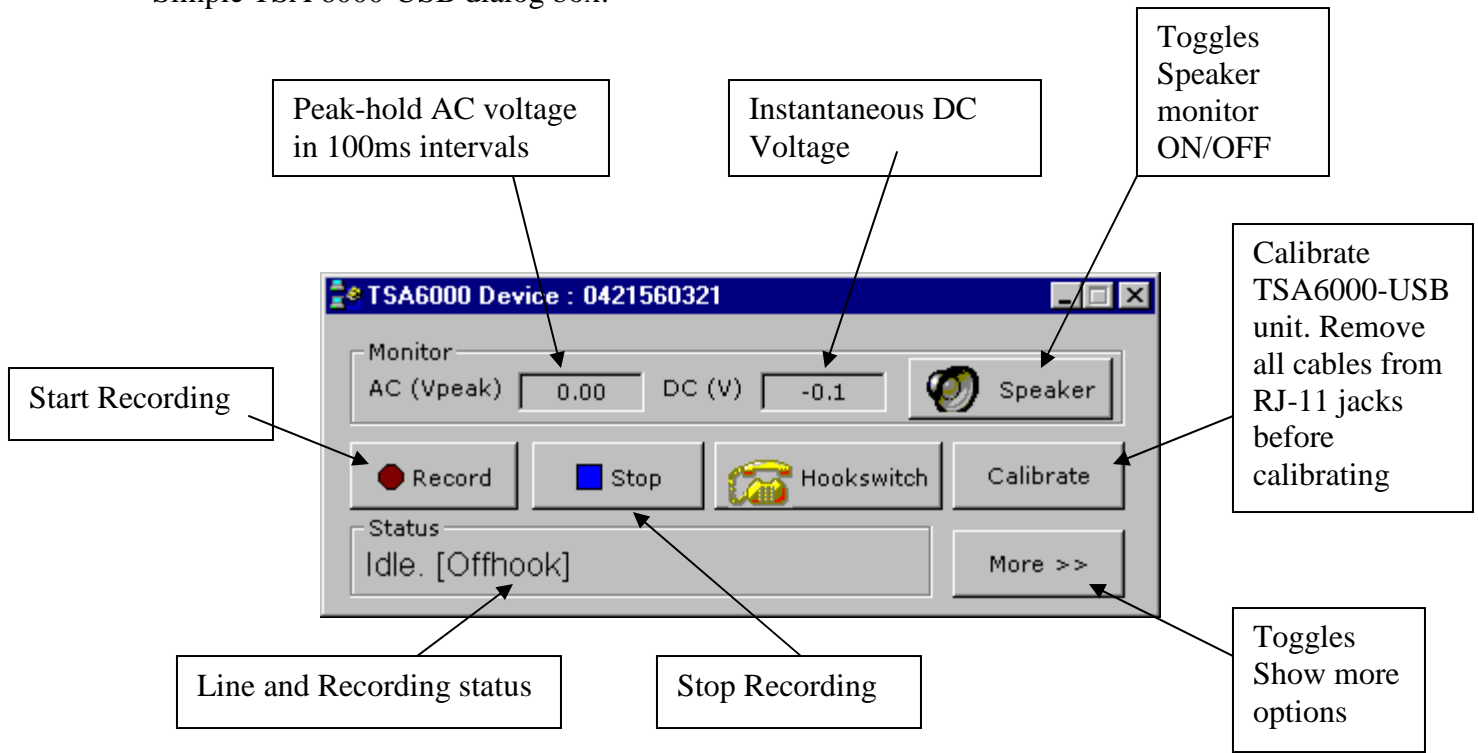
Status LED

When the TSA 6000 USB is powered on and not recording, the Status LED will flash with a 10% duty cycle and a 2Hz rate (“blip” flash). When a file is being recorded the green Status LED will flash with 50% duty cycle at a 2Hz rate (steady on/off). When the unit is not connected to the PC with the USB cable, the LED will be on solid to indicate there is power to the unit.

3.2 Menu Items and Dialog Box

The menu items for the TSA 6000 USB appear in a dialog box on the TSA 6000 software. Pressing the connect  icon will bring up this menu when a USB device is connected.

Simple TSA 6000-USB dialog box:



Advanced TSA 6000-USB dialog box:

The screenshot shows the 'TSA6000 Device : 0421560321' dialog box. It features a 'Monitor' section with 'AC (Vpeak)' at 0.00 and 'DC (V)' at -0.1, and a 'Speaker' icon. Below are 'Record', 'Stop', 'Hookswitch', and 'Calibrate' buttons. The 'Status' section shows 'Idle. [Offhook]' and a 'More <<' button. The 'Trigger Duration' section has two sliders: the top one for 'Pretrigger Duration' (500 ms) and the bottom one for 'Total Trigger Duration' (5 s). The 'Trigger Settings' section includes checkboxes for 'None', 'Ring' (7 s Ring Gap), 'FSK Type I', 'CAS', 'A/C Level' (200 mV), 'D/C Level' (21 V), 'Offhook/Ring', and 'DTMF' (ALL Digit). The 'Phone Functions' section has a 'Dial' button, a numeric keypad, and an 'Auto Answer' checkbox. Callout boxes provide detailed explanations for these settings.

Amount of signal to capture before a trigger event

Total recording duration, including Pre-trigger duration

Event Triggers. See Help file in TSA software for details. If a trigger is detected a recording of 'Total Trigger Duration' is generated.

Pre-dial window, displays digits dialed.

Dials any digits shown in the Pre-dial window

If enabled, TSA6000 goes off-hook 1.5s after a power ring event is detected

6. Features and Specifications

The TSA 6000 is designed to collect and analyze the following signals:

- Caller-ID Timing and Signaling
- VMWI Timing and Signaling
- DTMF
- Pulse Dialing
- Call Progress Tones
- Power Ringing
- On Hook and Off Hook Caller-ID Timings and Protocols
- Single frequency interference signals
- Power line harmonics
- ADSI Timing and Signaling
- Wireline SMS Timing and Signaling
- Any FSK signaling (Bell-202 and V.23)
- DC impairments including Open Switch Intervals, Line Reversals, Line States

TSA 6000 Features:

- Capture and record line signaling at the customer premise or anywhere on the customer loop
- Simple to use one button recording
- Graphic display of signaling parameters
- Trigger modes to capture specific signals
- Line Termination and hook switch control to terminate line and decode Type 2 (Off-Hook) Caller-ID
- Monitor mode - Listen to telephone signals on speaker, play back recorded signals
- Separate AC and DC coupled signal capture channels
- Field Upgradeable Firmware and Software

TSA 6000 Specifications:

- Operating Temperature: 0°C to +40°C.
- Storage Temperature: -20°C to +60°C.

- **AC Coupled Channel**

Dynamic Range	Sample Rate	Bandwidth	Tolerance	Sensitivity
4 V _{pp}	16,000 samples/sec	100-7000 Hz	+/- 1.0 dB	-60 dBm

- **DC Coupled Channel**

Dynamic Range	Sample Rate	Bandwidth	Tolerance
+/- 400 V	1,000 samples/sec	DC -150 Hz	+/- 250mV

- **Telephone Interface Impedance**

	<u>On-hook</u>	<u>Off-hook</u>
AC	200 k ohm (min.)	600 ohm +/- 5%
DC	1 M ohm (min.)	200 ohm +/- 5%

7. Product Safety & Regulatory

7.1 Product Approvals

SAFETY	EMC / IMMUNITY
CSA60950	FCC Part 15 (Class A)
UL60950	ICES-003, CISPR22 (Class A)
IEC60950: 1999-04, EN 60950:2000	EN 55022, CISPR22 (Class A)
	EN 61000-3-2 (Class A)
	EN 61000-3-3 (Class A)
	EN 50082-1:1997

7.2 Safety

The TSA6000 is intended for use by trained technical, service, field, and lab personnel. When using the TSA6000, follow these safety precautions to reduce the risk of electric shock and personal injury:

1. Read and understand all instructions.
2. Unplug the unit from the wall outlets before cleaning. Do not use liquid cleaners or aerosol cleaners. Use a damp cloth for cleaning.
3. Do not use this unit near water.
4. This unit should not be placed near or over a radiator or heat register.
5. Do not overload wall outlets and extension cords as this can result in the risk of fire or electric shock.
6. Use only the power source supplied with the unit.
7. Do not disassemble this unit; call the manufacturer when service or repair is required. Opening or removing covers may expose you to dangerous voltages or other risks.
8. Do not use this unit to report a gas leak in the vicinity of this unit.
9. Unplug this product from the wall outlet and refer servicing to qualified service personnel under the following conditions:
 - a. When the power supply cord or plug is damaged or frayed.
 - b. If the product has been exposed to rain, water or liquid has been spilled on the product, disconnect the unit and allow it to dry out. Once dry, it may be tested too see if it still operates; however, do not open up the product.
 - c. If the product housing has been damaged.
 - d. If the product exhibits a distinct change in performance.
10. Avoid using the product during an electrical storm. There may be a remote risk of electric shock from lightning.
11. For trained service personnel only: “Disconnect Unit From Telecommunication Network Before Replacing Battery”, “Bevor Sie die Batterien ersetzen, trennen Sie die Einheit vom Telekommunikationsnetz”.

7.3 FCC & Industry Canada Notices

This unit has been tested and found to comply with the limits for a Class A digital device as specified in Part 15 of FCC rules. These limits provide reasonable protection against radio and TV interference in a residential, commercial, or light industrial area. However, your equipment might cause TV or radio interference even when operating properly. To eliminate interference, try one or more of the following corrective measures:

- Relocate or reorient the TV or radio.
- To the extent possible, increase the distance between the equipment and the TV or radio.
- Use outlets on different electrical circuits for the equipment and the TV or radio.

This Device complies with Part 15 Class A of the FCC Rules and ICES-003 Class A Canadian EMI requirements. Operation 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.

Cet appareil numérique de la Classe A est conforme à la norme NMB-003 du Canada.

Warning: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

7.4 EU Directive Compliance



The CE mark is affixed to this product to confirm compliance with the following European Community Directives:

1. Council Directive 89/336/EEC of 3 May 1989 on the approximation of the laws of Member States relating to electromagnetic compatibility; and
2. Council Directive 72/23/EEC of 19 February 1973 on the harmonization of the laws of Member States relating to electrical equipment designed for use within certain voltage limits.

7.5 Copyright

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7.5 Revisions

Revision Level	Date	Description
1.0	November, 2004	First Revision
1.1	March, 2006	Edits
1.2	Oct, 2007	Updated image

8. TSA 6000 Support

Visit our web site at www.tsa6000.com for useful tips and updates.

If you are having trouble with any aspect of your TSA 6000 contact:

tsa6000support@espi.ca

