The REF TEK 125A Miniature Seismic Recorder "Texan" is an important advancement in the seismology industry. The Texan's self-contained, compact design allows greater flexibility and the ability to easily integrate into system operations.

### Related REF TEK Sub-systems:
- Third Generation Broadband Seismic Recorders, 130S-01
- Strong Motion Accelerographs, 130-SMHR & 130-SMA
- Accelerometers, 147-01 & 131B
- Broadband Seismometers, 151B-120, 151B-60, 151B-30
- Advanced Seismic Networks

### Applications:
- Active Source Crustal Studies
- Refraction and Reflection
- Exploration 3-D Noise Testing
- Tomographic Arrays
- Aftershock Studies
- Micro-Zonation Survey

### Ordering Information

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<td>97121-00</td>
<td>125A-03: Miniature Seismic Recorder, Texan</td>
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<td>97119-00</td>
<td>125A-HUB: Hub, Assembly, 15 Ports, USB</td>
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<td>97160-00</td>
<td>125A-GPS-DISTRIBUTION: Distribution Box, 125 GPS to 125A-HUB</td>
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<td>125A-PC INTERFACE: Interface, PC to three 125A-HUBs</td>
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<td>97163-00</td>
<td>130-8015-33: Cable, 130 to GPS, 33 ft (~10m)</td>
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<td>130-8039A: Power Cable AC w/Ext. Bat., A&amp;B</td>
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### Specifications

**In crustal scale refraction experiments, hundreds of instruments are deployed over several hundred kilometers for two to four days duration. Recordings are made based on pre-set time windows at a rate of 100 samples per second (sps).**

Because explosions are typically being recorded, a maximum of 50 time windows of 120-second duration will also be recorded.

The Texan's data storage requirement for this application is about 2 MB. Timing accuracy for the four day period must be within ±5 msec relative to the shot time.

For crustal scale refraction experiments, instruments are deployed for three to five days with six to eight hour continuous recordings using a vibrator energy source. After each day's recording, data is downloaded, and the Texan is initialized for the next day's recording. Because the data may be stacked, time accuracy must be within ±2 msec.

**Applications:**
- Active Source Crustal Studies
- Refraction and Reflection
- Exploration 3-D Noise Testing
- Tomographic Arrays
- Aftershock Studies
- Micro-Zonation Survey
The self-contained Texan features a low-noise differential input amplifier, 24-bit analog-to-digital converter (ADC), solid-state data storage, and batteries, all in a sealed aluminum case. Up to 15 Texans are stored, setup, and transported. For setup, the Texans are connected to a hub that provides power, connection to the host computer via Hi-Speed USB2.0, and timekeeping signals from a GPS receiver.

The hub provides several important functions:

1. The hub provides for 15 Texan connections, a connection to the USB host, and one port for daisy-chaining additional hubs. Several hubs can be operated in parallel allowing simultaneous connection between a single host computer and numerous Texans.

2. Routes the 130-GPS Receiver/Clock signals to each Texan for synchronizing internal time to UTC and precisely setting the internal oscillator frequency.

3. Supplies power to the Texans for setup and data retrieval.

After setup, the Texans are deployed for recording. A state LED displays the operating condition of the Texan. This feature clearly informs the user that the battery voltage is sufficient, time is set, the acquisition program loaded, and the unit is either ready to acquire or is acquiring data. During the recording session, the Texan can be retimed or data may be downloaded to a laptop PC. At the conclusion of the experiment, the Texans are returned to the setup facility, retimed, and the data downloaded to the workstation for processing.

How The Name “Texan” Came About

The Miniature Seismic Recorder is a joint project between the Texas Universities Seismic Instrumentation Alliance with funds from the State of Texas Advanced Technology Program thus the name “Texan.” In addition, support is provided by IRIS/PASSCAL and several Texas-based energy companies.

1 The Texas Universities Seismic Instrumentation Alliance includes the University of Texas at El Paso, Rice University, and the University of Texas at Dallas.

2 Program for the Array Seismic Studies of the Continental Lithosphere under the Incorporated Research Institutions for Seismology, an international consortium with 100 member institutions.

System Operation

Water geyser from under water explosion during CTBT tests in Wyoming, summer 1997.

Demonstrating the installation of a 125A station.