Universal T1 / E1 Analyzer PCI Cards
Universal T1/E1 Analyzer Cards

- Universal T1/E1 is an enhanced PC-Based T1 and E1 solution that is capable of both T1 and E1 interfacing.
- PCI versions are available with dual T1 / E1 interfaces.
- Includes optional features extend the capability far beyond the most expensive T1 / E1 testers.
What the unit does?

- Used for installation, test, and troubleshooting of T1 E1 lines - routine testing of errors, such as bit errors, frame errors, and bipolar violation.
- Capability of T1 or E1 PCM signal visualization, capture, storage, analysis, and emulation.
- Includes BERT, voice band analysis, data, signaling, and protocol analyzer all in one.
- Most all “Basic applications” and “Special applications” are available for Universal HD T1 E1 cards including Comprehensive Analysis / Emulation of voice, digits, tones, fax, modem, raw data, and Echo Testing.
- Capable of simulating as well as decoding and demodulating fax calls over T1/E1 lines using Fax Simulator and FaxScan™.
- Compares incoming T1 (E1) pulses against the pulse shape mask specified by the ITU G.703 standard.
- Emulates and decodes all 24 for T1 (32 for E1) channels simultaneously for signaling bits, power level, frequency, and multi-frame data.
Benefits

• Scalable
  ➢ Extremely simple to very complex configuration (with optional software).

• Upgradable
  ➢ Instant field upgradeable with software download.

• Cost effective
  ➢ Integrated hardware for T1 as well as E1 testing.
Benefits

• Compatibility with Windows 8 and above operating systems and user friendly real-time software.

• Boards can be plugged into either a 5 V or 3.3 V PCI bus.

• Boards are significantly faster, and significantly more efficient.

• CPU utilization with the newer boards is negligible.

• Adjustable transmit clock frequency (+/- 300ppm) for testing frequency lock sensitivity of T1 or E1 equipment.

• Supports two new port modes: Cross-port loopback mode and Through mode.
Cross-port Through Mode

- This mode is similar to the standard “Outward Loopback” which allows monitoring T1/E1 lines “in-line” while still being protected from loss of power to the board.
Cross-port Transmit Mode

- Used for Drop and Insert applications in which the board analyzes the traffic running between two pieces of T1/E1 equipment. This feature also eliminates complex cabling.
T1 / E1 Basic Software

- VF Options
- Monitoring Options
- Intrusive Testing
- Windows Client / Server – Remote access to T1/E1 server; Clients - C++, C#, TCL
• **VF Options**
  ➢ Speaker
  ➢ Drop and Insert
  ➢ VF In / Out TS settings

• **Monitoring Features**
  ➢ Monitor T1/E1 Line
  ➢ Byte Values & Binary Byte Values
  ➢ Signaling bits, Power Level, DC Offset, & Frequency
  ➢ Multiframes, and Real-time Multiframes
  ➢ T1/E1 Data as Real-time Bitmap
  ➢ Time-slot Window

• **Monitoring Features…**
  ➢ ASCII Timeslot Display
  ➢ Oscilloscope & Power Spectral
  ➢ Audio Monitoring
  ➢ Active Voice Level
  ➢ Jitter Measurement
  ➢ Pulse Mask Display
  ➢ Capture Dialed Digits
  ➢ Realtime Strip Chart
  ➢ Realtime Multichannel Audio Bridge
  ➢ Signaling Bit Transitions
Monitoring Features

Oscilloscope Display

Peak Amplitude 1791.0

Spectral Display

Total Power -10.0
Tone Freq 1005.0
Tone Power -10.0
Noise Power -93.6
S/N Ratio 83.6
Jitter Measurement and Pulse Mask

Pulse Shape Display

Jitter Measurement

Jitter Generation
• Intrusive Tests
  ➢ Bit Error Rate Test
  ➢ Enhanced Bit Error Rate
  ➢ ATM BERT
  ➢ Transmit Tone
  ➢ Transmit Gaussian Noise

➢ Transmit Multiframe
➢ Transmit Signaling Bits
➢ Precision Delay Measurement
➢ Rx-to-Tx Loop back
➢ Error Insertion
➢ Jitter Generation
➢ Transmit Dialling Digits
Enhanced BERT and TX Signaling BITS
• Allow the user (with an appropriate client) to operate analyzers remotely, write scripts for automation, or provide multi client connectivity to a single T1 E1 VF Data analyzer.
T1 / E1 Special Applications

• Protocol Analysis
  ➢ ISDN, HDLC, SS7, Frame Relay, TRAU, CDMA, DCME, T1 Facility Data Link.
  ➢ E1 Maintenance Data Link, UMTS, PPP, ATM, GSM, V5.x, GPRS, GR303, SS1.

• Protocol Emulation
  ➢ ISDN, HDLC, MLPPP, MLPPP Conformance, CAS, TRAU, SS7,
  ➢ SS7 conformance suite, GSM A, GSM Abis, MAP, CAMEL, Frame Relay, ATM IMA, and SS1.
T1 / E1 Special Applications

• Capture, Analysis, & Emulation
  ➢ BER, Playback
  ➢ Manual & Automated Record / Playback files
  ➢ Call Capture and Analysis (CCA)
  ➢ Multiple Call Capture and Analysis
T1 / E1 Special Applications

- Voice Band Analysis Software
  - Call Data Records (CDR)
  - Voice Band Analyzer (VBA)

- Fax Emulation and Analysis
  - Fax Simulator
  - Fax Analysis using GLInsight™ or FaxScan™

- Echo Cancellation Testing / Compliance
  - Manual
  - Semi-automated
  - Automated

- WCS Modules
  - Transmission/reception of files/digits
  - Multi-channel BERT
  - CAS Emulation
  - DSP operations, Dynamic DSP capability
  - SA Bits/ FDL/ HDLC/ TRAU/ MC-MLPPP/ SS7/ ISDN / ML Frame Relay

- Protocol Identifier

- Multi-Channel BERT

- Multiplex / Demultiplex Software

- Network Surveillance
Special Application

Protocol Identifier

SS1 Analyzer & Emulator
Call Capture and Analysis

Multiple Call Capture & Analysis
Protocol Analysis

TRAU Packet Data Analysis - Active Calls Graphs

TRAU Traffic Monitoring
## Protocol Emulation

### GSM Call Generation

<table>
<thead>
<tr>
<th>Sr No</th>
<th>Script Name</th>
<th>Profile</th>
<th>Call No</th>
<th>Script Execution</th>
<th>Status</th>
<th>Event</th>
<th>Event Profile</th>
<th>Result</th>
<th>Total Iterations</th>
<th>Completed Iterations</th>
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### GSM Call Reception

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Thank you

For more details refer https://www.gl.com/dual-t1-e1-universal-hd-pci-boards.html