

tScan16™ - T1/E1 Analysis Hardware

(16 T1/E1 Rx Only Ports)

High Density T1/E1 Board



Windows & Linux Drivers



Software Selectable 16 Rx Only T1/E1 Interfaces



Newer PCIe (x1) Bus Interface



Terminate & High Impedance Interfaces



Compatible with almost all T1/E1 Rx Applications



Overview

GL's tScan16™ is a high-density T1/E1 board with 16 ports and the newer PCIe (x1) bus interface. The sixteen T1/E1 ports are **Receive-only** ports optimized for high performance voice and data capture, monitoring, and analysis requirements. tScan16™ extends the family of GL's T1/E1 platforms with greater density, increased ports, and reduced power. Possible applications include (see Figures - below).

- Software selectable 16 Rx Only T1 or E1 interfaces
- PCI Express x1 Lane/Board
- Convenient High Density Cabling
- Monitor T1/E1 line conditions such as frame errors, bipolar violations, alarms, frequency, power level, and clock (or frame/bit) slips
- Comprehensive analysis of ISDN, SS7, Multilink Frame Relay, Multilink PPP, HDLC, GSM, GPRS, UMTS, and many more protocols
- Comprehensive analysis of Voice, Data, Fax, Modem, including Echo and Voice Quality testing
- Call Recording, Analysis, and Monitoring for hundreds to thousands of calls in one platform
- Most all "[Rx Applications](#)" are available for tScan16™ cards.
- Compatible with Windows 7 and 8 OS and GL's user friendly real-time software

Physical Specifications

6.60" long, 2.71" high (2U high) –from the top to the bottom of the PCIe tab, the lowest point on the board

tScan16 Full Height bracket (for normal standalone PCs): 4.725" high

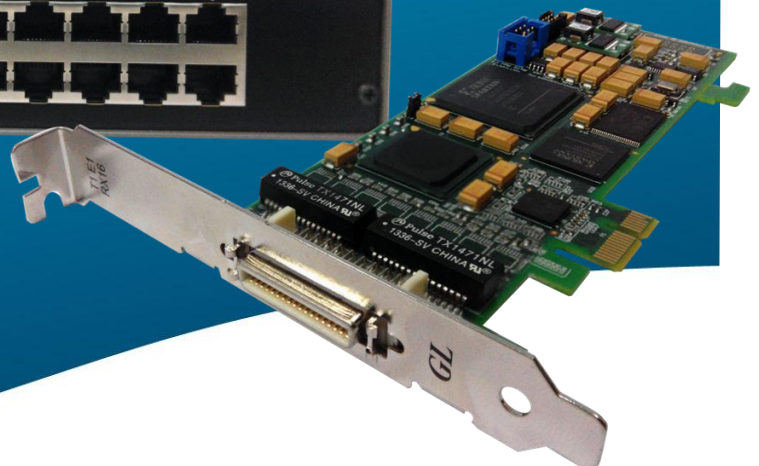
tScan16 Half Height bracket (for 2U rack PCs): 3.118" high

tScan16 Breakout Box: 7.29" wide, 1.52" high, 2.5" deep

16 Dual RJ45c Jacks Breakout Box



tScan16 PCIe Board



For more information, visit <http://www.gl.com/16-port-t1-e1-analysis-pcie-card-tscan16.html>

 **GL Communications Inc.**

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Basic and Optional Applications

Available with user-friendly GUI for Windows 7 and 8 Operating Systems with support for almost all existing T1/E1 Analyzer applications including comprehensive analysis of Voice, Data, Protocol, Analog, and Echo Testing.

For detail information on the available applications for the tScan16™ cards, please refer to <http://www.gl.com/t1e1applications.html> webpage.

Basic Software

Monitoring Options

- Monitor T1/E1 Line
- Byte Values & Binary Byte Values
- Signaling bits, Power Level, DC Offset, & Frequency
- Multi-frames, and Real-time Multi-frames
- T1/E1 Data as Real-time Bitmap
- Timeslot Window
- ASCII Timeslot Display
- Oscilloscope & Power Spectral
- Audio Monitoring & Active Voice Level

Intrusive Testing

- BERT

Windows Client / Server—w/ Remote access to T1/E1 server using Clients - C++, TCL, C#

Record Files—Manual, Automated

Optional Software

Protocol Analysis

ISDN, HDLC, SS7, GSM, GPRS, UMTS, Frame Relay, ATM, PPP, TRAU, T1 Facility Data Link, E1 Maintenance Data Link (Sa HDLC, and SSM), and more.

WCS Modules

- Rx files, digits
- Multi-channel BERT,
- DSP operations, Dynamic DSP capability

Capture & Analysis - DTMF / MF / MFCR2, Digits, Tones, Voice, Modem, Raw Data

Call Data Records

Voice Band Analysis Software

Multi-Channel BERT

Protocol Identifier

Signaling Transitions Recording

Real-time Strip Chart

Real-time Multichannel Audio Bridge

Multiplex / Demultiplex Software

Network Surveillance, Voice Quality Testing



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tScan16™ T1/E1 Boards – Specification

Physical Interface

T1/E1	(16) Dual RJ45c Jacks on the Breakout Box
Connector	MDR 36-Pin Connector (3M Mini D Ribbon cable) to interface Breakout Box with Main Board
PC Interface	PCI Express X1 Lane Compliant to PCI Express Base Specification v1.1

Environmental Specifications

Temperature	Operating: 0 to 50° C Storage: -50 to 70° C
Relative Humidity	Operating: 10% to 90% (non-condensing) Storage: 0% to 95% (non-condensing)
Altitude	Operating: -100 to 12,000 ft. Storage: -100 to 40,000 ft.

T1/E1 Line Interface

Framing Formats	Unframed, D4 (T1) , ESF(T1), ESF(J1), CAS (E1), FAS(E1), CRC4 Hardware Compliant: SLC96, T1ESF ZBTSI
Line Code format	AMI, B8ZS (T1) or HDB3 (E1)
Altitude	Operating: -100 to 12,000 ft. Storage: -100 to 40,000 ft.
Internal Clock Specification	Standard: +/- 3ppm Optional: +/- 1ppm

PCM Interface

Receive	Displays for All Channels: Signaling Bits, Power Level, Frequency, & Data. Graphical displays: Oscilloscope, Spectral, Spectrogram, Signal-to-Noise Signaling: DTMF/MF Dialed Digit Detection and Analysis, ISDN, MFC-R2 Recorder: Record Full/Fractional T1/E1 Timeslots to hard disk file.
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Specification Compliance

T1/E1 Interface Hardware Compliance	ANSI: T1.403.1995, T1.231-1993, T1.408 AT&T: TR54016, TR62411 ITU: G.703, G.704, G.706, G.736, G.775, G.823, G.932, I.431, O.151, Q.161 ITU-T: Recommendation I.432-03/93 B-ISDN User-Network Interface-Physical Layer Spec ETSI: ETS 300 011, ETS 300 166, ETS 300 233, CTR12, CRT4 Japanese: JTG.703, JTI.431
Facility Data Link	T1 ESF Mode: Transmit/Receive Messages, Bit-Oriented Messages, and Files.
Zero Suppression	B7 Stuffing, Transparent, & B8ZS (T1)
Signaling	Robbed-Bit or Clear Channel



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tScan16™ T1/E1 Boards – Specification (contd...)

Receive

Input Impedance	100 ohms for Terminate and Monitor (T1) 120 ohms for Terminate and Monitor (E1)
Terminations	Terminate and Monitor
T1 Input Frequency	1.544MHz +/- 20 KHz
E1 Input Frequency	2.048MHz +/- 20 KHz
Frequency Measurement	+/- 1ppm
Error Detection	Frame Error, CRC Error, CAS Multiframe Error, BPV Error, Frame Alignment Error, 10 or 24 bits for sync time, 2/4, 2/5, or 2/6 frame bit in error frame select, Frame error bit corruption for 1 or 3 frame bits
Alarm Detection	T1 - D4 Yellow Alarm, ESF Yellow Alarm, Yellow Alarm (B2 Suppressed-2nd MSB), Yellow Alarm (S-Bit), Yellow Alarm (00FF in FDL), Blue Alarm (Framed or Unframed All Ones), E1 - Remote Alarm, Distant Multiframe Alarm, Signaling All Ones, Unframed All Ones, Hardware Compliant: J1 Yellow Alarm
Input Range	T1: Terminate: 0 to 36dB (Long Haul), 0 to 15dB (Limited Long Haul), DSX Monitor: 20dB E1: Terminate, 0 to 43dB (Long Haul), 0 to 13dB (Short Haul), DSX Monitor: 20dB

Display and Logging

BERT	Bit Errors, Bit Error Rate, Error Seconds, Error Free Seconds, %EFS, Severely Error Seconds, % SES, Degraded Minutes, %Dmin, Loss Pattern Sync Count, Loss of Sync Seconds, Available Seconds, %Available Seconds, Unavailable Seconds, Bipolar Violations, BPV Rate, BPV Seconds, BPV Free Seconds, Frame Errors, FE Rate, FE Seconds, FE Free Seconds, with Detailed logging into disk file.
Alarms	Resync In Progress, Loss of Signal, Blue Alarm, Change of Frame Alignment, Bipolar Violation, Frame Error, Carrier Loss, Yellow Alarm, Out of Frame Events Counter, Error Super frame Counter, Bipolar Violations, Remote Alarm, Distant Multiframe Alarm, Signaling All Ones, CAS Multiframe Error, CRC4 Error.

Computer Requirements

Core i3 or higher with MS-Windows® 7 or 8 with PCIe expansion slots (3.3V or 5.0V) .

Buyer's Guide

[TTE001](#) – tScan16™ T1/E1 Boards

[TUT001](#) – T1 16 Port License for Basic Software

[TUE001](#) – E1 16 Port License for Basic Software

For complete buyers' list visit <http://www.gl.com/t1e1applications.html#BuyerGuide>

Other popular forms of T1/E1 analysis hardware -

- [Dual Portable USB T1/E1 Analyzer](#),
- [USB tProbe™T1/E1 VF Datacom Analyzer](#)
- [Octal/Quad T1/E1 Analyzer Boards](#),
- [Dual Express T1/E1 \(PCIe\) Boards](#)
- [Universal T1/E1 Analyzer Boards](#)