ParaScope WAN

ParaScope 2000 WAN Analyzer

The complete solution for telecom and datacom professionals that need to turn up, troubleshoot and maintain today's networks.

The ParaScope 2000 is a portable telecom and datacom analyzer that can capture and transmit up to 2.048 Mbps. It integrates comprehensive multi-interface testing functionality that is operated via a simple intuitive user interface. It has been especially designed for the technical engineer who has the responsibility of analyzing network problems on T1/E1, Frame Relay, ISDN PRI/BRI and SS7 circuits. Use it to resolve physical layer problems through it's ability to monitor, emulate and log vital signal parameters, alarms and error conditions. Pass/fail indicators along with Expert assistance software guarantee you will be the telecom expert. With 7-layer protocol analysis and a full suite of performance statistics included, ParaScope 2000 provides you with all the necessary tools you need to quickly resolve any datacom problem you are likely to face.

Combine the ParaScope 2000 with our world proven WinXL software and operate the most advanced multi-interface analyzer with sheer ease and simplicity. Load and and run your test applications at the click of a button. View the complete test results in a single window that provides a clear indication of errors, alarms and signal measurements that are out of tolerance. It comes with a custom carrying case, slim line power supply and software. In short, every thing you need and nothing you don't.

Product Features

Standard Interfaces

T1/ISDN PRI, E1/ISDN PRI, RS-232, X-21, V.35/36, RS-449, RS-530, RS-422/423

Optional Interfaces

ISDN BRI ST, ISDN BRI U and DDS

Telecom Analysis

- Pass/Fail Indicators
- Measure frequency, amplitude, and power
- Detect alarm conditions
- Detect & count errors and violations
- Bit error testing
- ISDN PRI/BRI call placement/answer with Call Expert
- DTMF call placement/answer with Call Expert
- 24x7 Alarm Logging
- Simulation

Datacom Analysis

- 7 layer encapsulated decodes
- GR-303, SS7 (ANSI & ITU), DPNSS/DASS2
- X.25, SNA, PPP, SLIP, V.110, V.120, V.5x
- Frame relay emulation with expert
- Frame simulator
- Comprehensive statistics
- Async, Sync, Bisync and BOP

ParaScope 2000 Technical Specifications

Hardware Specifications

PC Requirements - Pentium with minimum 16 MB Ram and VGA or SVGA monitor. Connects via PCMCIA. Operates with WinXL Software using Windows 2000/95/98 and NT.

Line Interfaces -Standard product supports T1/FT1, E1/FE1, ISDN PRI, RS-232, RS-530, V.35/V.36, X.21, RS-449, RS-422 and RS-423 interfaces. Optional interfaces for ISDN BRI S/T, ISDN BRI U and DDS are available. See interface specification for more details.

Expert Analysis - Frame Relay and ISDN connection problems are detected and identified. Where possible, an action is recommended.

Full Breakout - Bank of LED's, testpoints, and breakout DIP switches for all interface signals

LED's illuminate - RED to indicate a "mark" or active state. Green to indicate a "space" or inactive state.

Capture Buffer - Data is stored in integrated 8 MB Ram capture buffer.

Data Rate (max.) - Up to 2048 Kbps.

Data Clock - Selectable for internal and external.

Receiver - High input impedance receivers on all monitored lines.

Testpoints - Four testpoints each for Ground, +12 Volts, and –12 Volts.

Output Points - Four programmable unbalanced and 2 programmable balanced output points

Input Points - Four unbalanced and 2 balanced monitor points

Power - AC adapter provides AC powered operation

Dimensions - 10.25" long, 6.25" wide, and 2.5" tall

Packaging - Conveniently packaged in a custom carrying case, the ParaScope 2000 consolidates industry standard test and protocol analyzers for multiple interfaces into one single, easy-to-use unit. It includes the ParaScope hardware unit, WinXL Software, the slim-line power supply, and FE's standard one-year hardware maintenance agreement. Even with all hardware options installed, the basic hardware unit weighs a mere 5 lbs.

T1 Interface Specifications

Physical Interfaces - Bantam, RJ-48C, WECO 310, DB-15

Termination - Monitor, simulate, drop and insert

Framing - D4, ESF, SLC-96, unframed

Clock Type - n x 64 Kbps, n x 56 Kbps

Clock Source - internal, recovered

Line Code - AMI, B8ZS, jammed bit seven

Auto Config - Framing and Line Code

Monitoring - Single DSO, contiguous DSO's, non contiguous DSO's, AB/CD signaling.

Simulation - Single DSO, contiguous DSO's, non contiguous DSO's, AB/CD signaling. User defined idle code or drop and insert mode. Transmit yellow alarm, blue alarm, and loop-up/loop-down pattern.

Line Build Out - 0 dB, –7.5 dB, –15 dB

Measurements - Real-time display of received level (Vp), power/amplitude (dBsx), frequency and loop current

Status Indicators - Real-time and historical indicators of loss of sync, loss of carrier, yellow alarm, blue alarm, B8ZS detect, excessive zeros, bipolar violations (BPV), frame/CRC errors and slips, Loop Up/Loop Down. Log to disk.Pass/Fail indicators with user definable thresholds.

Statistics - Bipolar Violations (BPV), BPV error rate, frame/CRC errors, frame/CRC error rates, conveniently log them to disk.

VF/DTMF over T1 - Emulate ground start, loop start and e&m trunks. Send wink, ring and dial signals. Measure wink time. Detect and display DTMF digits. Measure digit and interdigit time. Decode signaling bits to show line status, call status and timestamp. Log call status, call states and signaling to comma-delimited file (vf.csv). Supervised and unsupervised call placement and answering. User-defined digit, interdigit and call state timing.

Voice Testing - Monitor and simulate via an external telephone handset. Select A-Law or μ-Law. Supports ISDN PRI.

Clear Channel - Monitor and capture synchronous data streams like PCM voice.

Tone Generator - Generate user defined tones from 1 to 3000 Hz

Scan for Active Channel - Scan manually or at user defined timed intervals for active channels. Active channels are highlighted in GREEN.

ParaScope 2000 Technical Specifications - continued

E1 Interface Specifications

Physical Interfaces - RJ-45, Coax, 120W, 75W

Termination - Monitor, simulate, drop and insert

Framing - Multiframe CAS, Multiframe CRC-4, CCS, Unframed

Clock Type - n x 64 Kbps, n x 56 Kbps

Clock Source - internal, recovered

Line Code - AMI, HDB3

Monitoring - Single timeslot, contiguous timeslots, noncontiguous timeslots, protected mode, and CAS/CCS signaling.

Simulation - Single timeslot, contiguous timeslots , noncontiguous timeslots and CAS/CCS signaling. User defined idle code or drop and insert mode. Transmit (AIS), AIS timeslot 16, Remote and Multiframe alarms.

Measurements - Real-time display of received level (Vp), power and amplitude (dBsx), frequency and loop current.

Status Indicators - Real-time and historical indicators of Loss of Sync, Loss of Carrier, AIS alarm, AIS timeslot 16 alarm, Remote alarm, Multiframe alarm, Excessive Zeros, Code Violations (CV)s, Frame/CRC errors and Slips. Log to disk. Pass/Fail indicators with user definable thresholds.

Statistics - Code Violations (CV), CV error rate, frame/CRC errors, frame/CRC error rates, conveniently log them to disk.

Voice Testing - Monitor and simulate via an external telephone handset. Select A-Law or μ-Law. Supports ISDN PRI.

Scan for Active Timeslots - Scan manually or at user defined timed intervals for active timeslots. Active timeslots are highlighted in GREEN.

ISDN BRI ST Interface Specifications

Physical Interfaces - RJ-45.

Monitoring - Monitor D, B1, B2, and B1+B2 channels from TE and NT devices.

Simulation - Simulate a TE or NT device. Place data or voice call on B1 or B2 channels. Receive calls on B1 or B2 channel. Call placement as user or CPE only

Bit Error Rate Tests - Perform BERT tests on B1, B2, or B1+B2 channels. Test B channels to and from the network by calling self and send pattern on one B channel and receive on other B channel.

Call Placement - Place a one-click call on D channel to set up voice, data or BERT on B channels.

Call Answering - Auto-answer incoming calls on D channel and automatically cut-through to the correct B channels for voice, data or BERT.

Call Expert - Step-by-step analysis of calls. Analyze and interpret cause codes Recommend corrective actions. Check timing between user and network

ISDN BRI ST Interface Specs - continued

Physical Line Analysis - Simultaneously monitor physical line status of link in both directions. Real-time indicators of Loss of Sync and Power source. Pass/Fail indicators with user definable thresholds.

Measurements - Real-time display of received level (Vp), power and amplitude (dBsx), frequency and loop current.

Protocol Analysis - Decode LAPD protocol Decodes layer 3 variants including Information Elements(IE's). Summary and Detailed views.

Statistics - % utilization, packets/second, throughput, errors, number of frames and frame size. Drag and zoom into any graph for more detail.

Voice Testing - Monitor and simulate via an external telephone handset. Select A-Law or μ-Law.

ISDN BRI U Interface Specifications

Physical Interfaces - RJ-45.

Monitoring - Monitor D, B1, B2, and B1+B2 channels from NT/CPE and LT/CO devices.

Simulation - Simulate a NT/CPE or LT/CO devices. Place data or voice call on B1 or B2 channels. Receive calls on B1 or B2 channel. Call placement as user or CPE only

Bit Error Rate Tests - Perform BERT tests on B1, B2, or B1+B2 channels. Test B channels to and from the network by calling self and send pattern on one B channel and receive on other B channel.

Call Placement - Place a one-click call on D channel to set up voice, data or BERT on B channels.

Call Answering - Auto-answer incoming calls on D channel and automatically cut-through to the correct B channels for voice, data or BERT.

Call Expert - Step-by-step analysis of calls. Analyze and interpret cause codes Recommend corrective actions. Check timing between user and network

Physical Line Analysis - Simultaneously monitor physical line status of link in both directions. Real-time indicators of superframe, linkup, activation, EOC decodes and errors.

Protocol Analysis - Decode LAPD protocol Decodes layer 3 variants including Information Elements(IE's). Summary and Detailed views.

Statistics - % utilization, packets/second, throughput, errors, number of frames and frame size. Drag and zoom into any graph for more detail.

Voice Testing - Monitor and simulate via an external telephone handset. Select A-Law or μ-Law.

ParaScope 2000 Technical Specifications - continued

DDS Interface Specifications

Physical Interfaces - RJ-45

Clock Type - 2400 bps, 3200 bps, 4800 bps, 9600 bps, 19.2 Kbps, 38.4 Kbps, 56.0 Kbps, 64.0 Kbps, 72.0 Kbps.

Clock Source - internal, recovered

Framing - Unframed and Primary Channel

Monitoring - Monitor DTE and DCE devices. Synchronization status.

Simulation - Simulate a DTE or DCE device.

Measurements - Real-time display of amplitude (dB), frequency and loop current.

Status Indicators - Real-time indicators of Loss of Sync, Loop Up/ Loop Down, Simplex Current, Frequency, Level and Power. Pass/ Fail indicators with user definable thresholds.

Loop Codes - Automatic or manual loop up and loop down.

BERT Specifications

Measurements - Simultaneously measures bit errors, block error, errored seconds and percent error free seconds for synchronous and asynchronous data lines.

Patterns - 63, 511, 2047, 4095, Alt 1/0, Mark, Space, ASCII FOX, Alt ASCII FOX, EBCDIC FOX, Alt EBCDIC FOX, 1 in 7, 3 in 24, (2**15) -1, (2**15) -1 inverted, (2**20) -1, (2**23) -1, O.151 QRSS, Loop Codes.

Presentation - Displays G.821 and bit/block errors.

Character Framing - Select Sync or Async 5, 6, 7 or 8 bits per character sequence.

Error Injection - Inject single or burst.

Flow Control - Select None, Leads or XON/XOFF.

General Specifications

Monitoring - Monitor DTE and DCE devices.

Simulation - Simulate DTE and DCE.

Data Line Analysis - Real time or post processing

Protocols - HDLC, SDLC, QLLC, LAPB, LAPD, Frame Relay, X.25, SNA, ISDN, SS7(ANSI & ITU), Async PPP, Sync PPP, GR-303 TMC/CSC/EOC, V.5x, TCP/IP suite, AppleTalk, Novell Netware suite, Custom protocol stack, Customized protocols, Async, Sync, BSC, IPARS and inverted IPARS. More protocols under development.

Frame/String Simulator - Traffic generator with user-defined % utilization, transmit period and idle period. Supports user-defined frames, canned messages, and frame relay headers.

Time Stamping - User may select to time stamp characters received, frames received, or lead transitions. Select absolute time of day or time relative for timestamp display format.

General Specifications - continued

Search/Display Filter - User selectable search for timestamp, frame length, error, display text, capture data and protocol-specific information.

Capture Filter - Capture only the data of interest. Set up separate filters for DTE, DCE or both.

Character Suppression - Allows elimination of characters, such as idle, sync or user-definable characters from the display.

Send String - Up to 1,024 characters per string.

Display Screen - Windowing technology, includes: move, size, minimize, maximize, tile cascade, and arrange.

Line Data Display - Chronological order of DTE/DCE data, lead states, and triggers. Display can be synchronized to Decode Display windows. Supports both CHAR and HEX

Data Codes - ASCII, EBCDIC, Baudot, Six Bit Transcode, IPARS (Line and Sabre), Inverted IPARS, HEX and EBCD.

Bit Sense - Normal or inverted.

Bit Order - MSB or LSB first.

Lead Status - 8 fully user programmable leads: 4 as output and 4 as input. Any input lead may be connected to any interface signal. Names are user-definable.

Triggers - Programmable triggers consisting of character strings, errors, interface lead transitions, timers, time of day, and keyboard. Bit and character masking, and" not" and don't care characters are supported. Trigger events can be selectively displayed and stored with "pre" and "post" trigger data.

Timers - Ten timers with a maximum count of 65,535 and a resolution of 1 msec.

Counters - Ten counters may be incremented up to 65,535.

Error Checking - CRC-CCITT, CRC-16, CRC-12, CRC-6, LRC, and Parity.

Parity - Odd, Even, None, Ignore.

Decode Data Display - DTE/DCE single and encapsulated protocols. Summary I, II, and Detail windows offer increasing decode information. Protocol Summary decomposes each frame by protocol type. Windows can be duplicated and synchronized to each other and to the Line Data Display window. Protocol filtering.

Character Framing - 5, 6, 7 or 8 information bits, plus parity. For asynchronous systems: 1, 1.5, or 2 stop bits per character.

Alarm Logging - Timestamp and log alarms, signal threshold violations, Frame Relay status, errors and BERT results to disk.

Printer Support - Standard printer support for generating hardcopy of data status and timing information (all data, DTE only, DCE only, DCE and DTE), analysis, programs, setups, and protocol decodes.

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