2 Mbps Testing in the Palm of Your Hand

Fulfill your 2.048 Mbps transmission testing needs by using the world's smallest full-feature 2.048 Mbps transmission test set, the SunLite™ E1.

Among its capabilities are:

- 2.048 Mbps transmit & receive, external clock
- Bit error rate testing (G.821, M.2100)
- Level and frequency measurements
- +6 to -43 dB receiver input sensitivity
- Term, PMP (Monitor) , High Impedance
- Drop and insert capability (N or Mx64k)
- Programmable NFAS Word
- CAS signaling
- Histogram analysis
- Propagation delay
- Store up to 10 test results and 3 configurations
- 75Ω and 120Ω models
- Powered by 2 AA alkaline batteries or rechargeable NimH battery pack

Carry the economical, yet powerful SunLite E1. For more information and the name of your local Sunrise Telecom distributor, visit our website at http://www.sunrisetelecom.com/

SUNRISE TELECOM
INCORPORATED

a step ahead . . .

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The SunLite E1 gives you the choice of 75Ω unbal. or 120Ω bal. connectors.

A bright backlit LCD display is ideal for often encountered low light working conditions.

Bright LED indicators provide immediate circuit status and history at a glance.

With a single keystroke you can configure the SunLite E1 to your circuit and call up the menu for the test you wish to perform.

This speaker and microphone let you monitor the channel or talk-and-listen.

The test set operates continuously off the charger. Two AA alkaline batteries can also be used.

Specifications

CONNECTORS/PORTS
2.048 Mbps E1 interfaces: Tx, Rx, Ext Clock
Standard: BNC (f), 75 Ω unbalanced connectors
Optional: Inquire as to availability
Serial Port: RS232/v.24, RJ11, 6-pins connector
Charger: 1 mm, DC jack

STATUS/ALARM INDICATORS
13 super-bright LED indicators.
Current status and alarm history
Signal: red, no signal; green, signal; flash red, history PCM-30 (bi-color), CRC-4 (bi-color), SYNC (bi-color)
TX: solid green, transmitter activated; flash green in self loop mode; off, transmitter deactivated
RUN: green, measurement running; off measurement stop
RAI: red, MFAS RAI or FAS RAI; flash red, history
AIS: red, AIS; flash, history
CODE: red, code error; flash, history
ERROR: red, CRC-4, E-bit, FAS E, MFAS E; flash, history
BIT: red, logical bit error; flash red, history
Power/low batt: slow flash green, power on and battery fully charged; solid green, battery being charged; red, low battery.

E1 GENERAL
Bit Error test rates: 2.048 Mbps, N (contiguous) and M (non-contiguous) x64 kbps (N & M=1 to 31).
Drop and insert to internal test circuitry N or Mx64 kbps µ/A-law decoded VF channel to built-in speaker
Line Coding: HDB3 & AMI
Framing: Unframed, PCM-30, PCM-30C, PCM-31, PCM-31C. Conforms to ITU-T G.704

TEST PATTERN GENERATOR
General: 1111..., 0000..., 0101...
PRBS: 2^n-1, n= 9, 11, 15, 20, 23. Conforms to ITU-T O.151, O.152, O.153, and ANSI V.52, V.57
Programmable: 3 patterns, up to 16 bits long each
Test pattern inversion

TRANSMITTER
Clock source:
Internal clock: 2.048 MHz ± 25 ppm
Received: locked to received signal
External: locked to Reference clock input signal
Line coding: HDB3 & AMI
Pulse shape: Conforms to ITU-T G.703. 75Ω/Unbal.: ±2.37Vbp (±10%)
Programmable Time slot 0: Programmable loop-up/loop-down code, programmable NFAS word.
Set idle channel code and ABCD bits (IDLE/NOT IDLE state)
Transmit signal can be turned ON/OFF or internally looped
Error injection: BIT, CODE, BIT+CODE, single or rate of $1x10^{-7}$ to $1x10^{-2}$
CRC-4, FRAME, E-bit: single
0-128 bit zero insertion in 8 bits steps

RECEIVER
Frequency range: 2.048 Mbps ±6000 bps for SLE1
Input Sensitivity:
Terminate Hi-Z: 6 to -43 dB with Automatic Line Build Out (ALBO)
Monitor: -20 to -30 dB resistive loss combined with 0 to -6 dB cable loss
Auto configuration for framing (PCM-30, PCM-30C, PCM-31, PCM-31C, Unframed), and test pattern
Impedances:
Terminate Monitor: 75Ω unbalanced
Hi-Z: >5000Ω
Return loss performance according to ITU-T G.703
Jitter tolerance according to ITU-T G.823

EXTERNAL CLOCK INTERFACE
Input Impedance: 75Ω Unbalanced
Input Sensitivity: 0 to -30dB (term or protected monitoring point, cable or resistive loss)
Line Coding: HDB3 & AMI

MEASUREMENTS
E1 signal level: +0 to -43dB resolution: 1 dB
Frequency measurement (Hz and ppm): Current, Max, Min
Clock slips count
Code errors: error count and ratio
Frame errors: FAS, MFAS and CRC-4 errors count and error ratios
Count of LOS, Loss of Sync (SYLS), LOF, AIS, FAS RAI, and MFAS seconds
Bit errors: G.821 analysis
G.826 measurements
M.2100 measurements (in conformance with M.2101)
E-bit errors: error count and ratio
Setup and test results printing
Print interval programmable: NOW, 5 min., 1 hr., 24 hrs., continuous
Delay timer settable up to 99 hrs., 59 min.
Audible alarm: indicates an error or alarm, programmable ON/OFF

OTHER MEASUREMENTS
Save 10 test results, available to screen view or print
Histograms: G.821 basic measurements, up to 60 days of histograms, 1 day resolution and the last 24 hrs. with 1 min. resolution. 2 HISTOGRAMS stored; CURRENT and SAVED
Propagation Delay measurements in UI and µs, 1 µs resolution
Range: from 100 µs to 10 seconds

VOICE FREQUENCY CAPABILITY
Talk/listen by using the built-in microphone/speaker
Commanding: A-law or µ-law (selectable)
Monitor and CAS modes
ABCD bits display for a selected time-slot
CAS signaling monitoring (IDLE/NOT IDLE state)
Set ABCD bits to 1 or 0 of selected time-slot
Set CAS state IDLE/NOT IDLE
Set Idle Channel code

FRAME WORD SETTINGS
Sa bits read, write with all 40 bits independently settable
Selectable loopback/release commands
Set Loop Up/Loop Down Sa4-8 bit code or transmit pattern

SLE-01 CLOCK OFFSET OPTION
Transmitter:
Frequency settable to 2.048 Mbps ± 24,400 ppm: 2.048 MHz
Accuracy: ± 2 ppm (after external calibration)
Receiver:
Frequency range: 2.048 Mbps ± 24,400 ppm
Other measurements:
Transmit stress: simultaneous display of code and bit errors, propagation delay. Set external clock over ± 50 Kbps with 1 bps step
Automatic stress automatically determines the receiving equipment's upper and lower frequency capture range.

SLE1-02 VF MEASUREMENT OPTION
VF Measurement: 50 Hz to 3950 Hz, 1 Hz Resolution; + 3 dBm0 to -60 dBm0, 1 dB resolution
Send/Receive tone: 50 to 3950 Hz, res. 1 Hz; +3 to -60 dBm0, res. 1 dB
Noise (S/N, psophometric, 3 K) level measurement: +3 to -60 dBm0
Digital representation of sinusoidal signals in a selected timeslot: A-law and M-law coding to ITU-T G.711
Coder offset and peak code measurement

GENERAL
Store and recall 3 instrument configurations
122x32 dots (4x20 characters, 6x8 dots size) graphic display screen with LED backlight
Internal Battery: 2xAA Alkaline, NimH (switch selectable)
Battery operation time: 4 hrs for NimH, transmitter off
Unit charging time: 14 hr
Charger: 5V @ 2A, 90 to 265 VAC, 50-60 Hz
Printer/Communication port: RS232, RJ11, 6-PIN asynch
TIL output available for calibration.

ENVIRONMENTAL
Operating temperature: 0° C to 50° C
Storage temperature: -20° C to +70° C
Humidity: 5% to 90% non-condensing
Size: 7.5 cm (W) x 5.4 cm (H) x 3.5 cm (L) (approx)
Weight: 0.4 kg (approx)

NOTE:
1. Features that are written in italic style, will be available at the end of the year.
2. This information is subject to change.

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