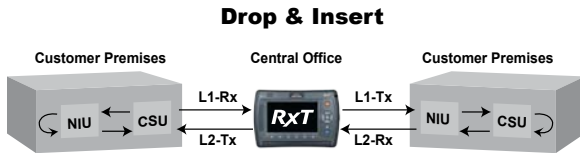


Applications (continued)



- Place a call: checks the service and signaling
- Troubleshoot transmission problems on channelized circuits
- Troubleshoot signaling problems between PBX and switch
- Troubleshoot live fractional circuits

Specifications

Connectors

DS1 L1 Tx/Rx: Bantam (f)
DS1 L2 Tx/Rx: Bantam (f)
Handset: RJ-9 (f)

DS1 Interface

Frame structure: ESF, SF-D4, SLC-96, Unframed
Line code: AMI, B8ZS

Transmitter

Pulse shape: Per Telcordia TR-TSY-000499, ref. to CB113, CB119, CB132, CB143, PUB62508, PUB62411, G.703
Clock: Internal (1.544 MHz \pm 5 ppm), looped, external
Line Build Out (LBO): 0, -7.5, -15, -22.5 dB

Receiver

Impedance

- Termination: 100 Ω \pm 1%
- Bridge: > 1000 Ω
- DSXMON: 100 Ω \pm 1%

Dynamic level range

- Termination: +3 to -36 dB cable loss
- Bridge: +3 to -36 dB cable loss
- DSXMON: -15 to -25 dB resistive

Frequency range: 1542 to 1546 kHz

Test Rates

Full T1: 1544 kbps
Fractional T1

Nx64 kbps, Nx56 kbps, N = 1 to 24, contiguous or random channel selection, separate Tx & Rx channel selection
Auto scan receive and auto configure transmit channel(s)

Test Patterns

Fixed: 1-in-4, 1-in-8 (1:7), 1-in-16, 3-in-24, Alt 1010, All 0s, All 1s, 55 Octet, 55 Daly, FOX, Yellow, Idle
Pseudo random: QRSS, 2ⁿ-1, n = 6, 7, 9, 11, 15, 20, 23
Pattern transmit: Normal or inverted

Error Injection

Error type: Bit, BPV, Bit + BPV, Frame, CRC
Injection

Frame/CRC: Single error

Bit/BPV/Bit + BPV: Burst 1 to 9999 or rate at 2×10^{-3} to 1×10^{-9}

Measurements

Simplex current measurements (in SSMITT-C, SSMITT-ACM+, SSMITT-ACM only)

Range: 1 to 100 mA \pm 2 mA

Signal measurements

Signal amplitude: -peak, +peak, peak-to-peak in volts and dBDSX

Alarm statistics: AIS seconds, loss of signal seconds, yellow alarm seconds, loss of frame seconds, excessive zeros seconds, low density seconds

Error measurements

Types: BPV, Frame, CRC-6, Bit error

Counters

- BPV: Error count, error ratio
- Frame: Error count, error ratio, out-of-frame seconds, loss of frame seconds, frame slip count
- CRC-6: Error count, error ratio
- Bit error: Error count, error ratio, loss of sync seconds
- Analysis: ES, %ES, SES, %SES, UAS, %UAS, AS, %AS per G.821

Measurement record: Up to 100 test records w/user defined record label

Frequency measurements

Current, max and min frequency
Moving bar graph of slip count
Clock slip count, frame slip count
Max positive wander, max negative wander

General

Event printing: On alarm or event with timestamp
Record printing: Stored test record

Other Measurements

View received data

View channel data by timeslot in binary, hex & ASCII formats
Display 60 pages of data, 8 timeslots per page

CSU and NIU Loopback Control

In-band codes: CSU, NIU, 100000, 10 user programmable codes each up to 24 bits

ESF-FDL: Payload, line, network, 10 user programmable codes

Westell & Teltrend Looping Device Control

Automated looping of Westell and Teltrend line & central office repeaters

In-band and ESF-FDL Codes: Arming, loop up/down, loopback query, sequential loopback, power loop query, span power down/up, unblocking

CSU and NIU Emulation

Bidirectional
Responds to loopback commands, in-band and out-of-band (ESF datalink T1.403)
Graphic indication of incoming signal status in both directions
Simultaneous display of T1 line measurements
Automatic generation of AIS and Yellow alarm
Loopbacks
Line 1: Line & payload loopback; Line 2: Line loopback
Simultaneous loopbacks in both directions
Local and remote loopback control

Voice Frequency Capabilities

Drop and Insert DSO audio testing
Voice insert & monitoring through built-in speaker with volume control and microphone on the SunSet MTT/xDSL or handset interface
VF tone generation
Frequency
– Fixed: 404, 1004, 1804, 2713, and 2804 Hz
– Programmable: 50 to 3950 Hz @ 1 Hz steps
– Level: +3 to -60 dBm @ 1 dBm steps
VF level and frequency measurements
Frequency: 50 to 3950 Hz, 1 Hz resolution
Level: +3 to -60 dBm, 0.1 dB resolution
Signaling monitor: Display A, B (C, D) supervision bits for all 24 channels of Line 1 and 2

VF Dialing and Analysis (RXT2080SW-VF)

Dialing
MF/DTMF/DP dialing up to 32 digits
10 user programmable quick dial numbers for each dial type
User selectable en-bloc or overlap dialing
MFR1 digits, 0-9, KP, ST, ST1-3, Pause
DTMF digits, 0-9, *, #, A, B, C, D, Pause
DP digits, 0-9, Pause
Programmable MF/DTMF interdigit period, tone period, tone level
Programmable DP %break and interdigit period @ 10 pps
Trunk type: E&M, ground/loop start, FXO/FXS
Call analysis
MF/DTMF
– Decode: Up to 40 received digits
– Analysis: High/low tone frequencies, high/low tone levels, twist, tone period, interdigit time
– Tone level dynamic range: 0 to -25 dBm
DP
– Decode: Up to 40 digits
– Analysis: %break, PPS, interdigit time
– Line signaling tracer
Tracer: A, B (C, D) bits state changes for Line 1 & 2
Timestamp: Real-time with 1 ms resolution
Signal-to-noise measurements
– Noise filters: 3 kHz flat, C-message, C-notch

ISDN PRI Call Setup and Monitor (RXT2080SW-PR)

Bidirectional monitoring and call analysis
National ISDN-2, AT&T 5ESS, and Northern Telecom DMS-100 compatible NT and TE emulation
Voice and data call setup and receive
Built-in microphone and speaker for B-channel talk/listen
Supports multirate Nx64k data calls
Generates 2047, 511, 127, 63, All 1s, All 0s, and user programmable 8-bit test patterns
Bit error rate test with G.821 analysis
Supports 23B+D, 47B+D, and 46B+2D
Test for back up D-channel in 46B+2D
User programmable trace filter, view bidirectional real time message flow. Messages interpreted up to layer 3 or displayed in hex format.
Trace storage holds up to 1000 messages with timestamps
On-screen help for special optional call feature programming

GR-303 Analysis (RXT2080SW-GR)

Bidirectional monitoring of TMC/CSC/EOC channels
Telcordia GR-303-CORE
TMC/CSC monitoring
Decode to Layer 3
Statistics counters for each cause value
1000 messages can be stored with date and timestamp, direction, and full Layer 3 decode
Trace filters for: Call Reference Value, DSO, DS1, Cause Value
EOC verification
Decode to Layer 2
Error or discarded frame counters
Filter on SAPI/TEI combination

GR-303 EOC Decode (RXT2080SW-EOC)

Complete decode of embedded operations channel to Layer 7
Supports ASN.1, ROSE, CMISE, GR-303-IMD
ROSE services: RO-INVOKE, RO-REJECT, RO-ERROR, RO-RESULT
ROSE decode: Invoke ID, operation value, result/argument
CMISE messages: M-ACTION, M-GET, M-SET, M-CANCEL-GET, M-CREATE, M-DELETE, M-EVENT-REPORT
M-ACTION service: Action Argument, Managed Object Class, Object Instance, Action Info, Action Type
M-CANCEL-GET service: GetInvoke ID
M-CREATE service: Create Argument, Managed Object Class, Object Instance
M-DELETE service: Delete Argument, Managed Object Class, Object Instance, Access Control
M-EVENT-REPORT service: Event Report Argument, Managed Object Class, Object Instance, Event Type, Event Info
M-GET service: Get Argument, Managed Object Class, Object Instance
M-SET service: Set Argument, Managed Object Class, Object Instance, Modification List, and Attribute Value

SS7 Protocol Analysis (RXT2080SW-SS7)

Supports protocol analysis for SS7 TUP, ISUP, SCCP, SNM, SNT messages
Supports Bellcore TR-NWT-000246, ITU-T Q.700 series (General, Message Transfer Part, SCCP, TUP, ISUP, TCAP), Chinese (14 & 24 bits) standards

Interfaces: Dual T1

Mode: MONITOR

OPC and DPC in HEX or decimal format

Trunk rate: 64k or 56k

Capture and store messages for decoding and protocol analysis

Capture Layer 1 events (alarms), capture and decode Layer 2, 3, and 4 protocol messages, display in HEX or English decoded format, with decoding of Layer 4

Filters: PRE & POST for Layer 1, 2, and 3 (DPC, OPC, SI)

- SI: SNM, SNT, SCCP, TUP, ISUP
- For SNT, SNM: SLS Code, HEAD CODE
- For TUP: CIC, HEAD CODE, Address signal, Address No.
- For ISUP: CIC, Message type, Address signal, Address No.
- For SCCP: SSN, SLS Code, Message type, Address signal, Address number, TCAP OTID, TCAP DTID, INVOKE ID (when applicable based on the SCCP SSN type)

Detailed trace (HEX and/or decoded messages) printing via serial port to printer or to computer

Message storage capacity

Trace storage for 1000 messages

SS7 TCAP Analysis (RXT2080SW-TCAP)

ANSI T1.114

TCAP filter: Filter on origination and/or destination transaction ID

TCAP decode: Transaction, dialog, and component portions

Transaction: Package type and transaction ID

Dialog: Information element filter and context

Component: Component type, correlation ID, operation code (operation family & operation specifier), and parameter identifier and contents

Frame Relay Basic (RXT2080SW-FR)

LMI standards: ITU-T Q.933, ANSI T1.617, LMI (DLCI 1023, GOF Vendors), NO LMI

Modes: UNI DTE, UNI DCE

Rates: 1.544 Mbit/s, N (contiguous) and M (noncontiguous) x 64 and 56 kbit/s (N & M=1 to 24)

LMI Analysis

Settings: T391 Status Inquiry, T392 Status, N391 Full Status Polling, N392 Error Threshold, N393 Monitor Events

Results: Link OK Total, Link Errored Total, Timeout Error, Response Sequence Number, Wrong Message

PVC Status: New, Active, or Inactive DLCI indication (keep the status for up to 60 DLCI)

PING Test

Settings: DLCI Header length (2/3/4 bytes), DLCI Value, Local IP @, Destination IP address, Network Layer Protocol Identifier (NLPID: IP or SNAPIP), Timeout, Number of PINGS

Results: Number of PINGS, Number of PINGS sent, PING status (Received, Unreached, Errored), Round Trip Time (Current, Average, Maximum, Minimum)

InARP support

Conforms to RFC2390 (IETF)

Settings: Mode [Timed (selectable), Manual Request, No InARP], Timeout (selectable)

InARP statistics: InARP requests sent, InARP response received, InARP response Timeout, InARP requests received, InARP response sent, last IP address assigned

Echo PING: Echo/response to PING request to local IP address

- Results: Total PING request received, IP address of PING requestor, Number of PING requested by IP address timestamped
IP encapsulation conforms to RFC1490 specification

FOX Test

Settings: DLCI Header length (2/3/4 bytes), DLCI Value, CIR, Frame length (Nx64 bytes N = 1 to 64), Forward Explicit Congestion Notification (FECN), Backward Explicit Congestion Notification (BECN), Discard Eligibility (DE)

Results: PVC Status, Current Rate, Errored Frames, RSN Error, SSN Error, Frame Check Sequence (FCS) Error, Count of Frame Received with FECN, with BECN, with DE, Count of transmit frames, Count of received frames

Statistics Analysis

T1 monitoring via dual receiver

Selectable short frame length, long frame length

Frame relay performance: Avg/Max/Min Utilization (%), Avg/Max/Min Throughput (%), Avg/Max/Min Frame/Sec

Frame relay statistics: Avg octet, Total frame, FECN frames, BECN frames, DE frames, Short frames, Long frames, Aborted frame, FCS errors

DLCI analysis: Total active DLCI count, Active DLCI listing (up to 100 DLCI)

DLCI statistics: Avg octet, Total frames, FECN frames, BECN frames, DE frames, Short frames, Long frames, Aborted frames, FCS errors

Frame Relay NNI (RXT2080SW-NR)

Requires SWxDSL-8FR

LMI standards: ITU-T Q.933, ANSI T1.617, LMI (DLCI 1023, GOF Vendors), NO LMI

Modes: NNI USER, NNI NETWORK

Rates, LMI Analysis, PING Test, FOX Test, Statistic Analysis

- as described in Frame Relay Basic section

DDS Testing (RXT2080SW-DDS)

Test from T1 interface

Choose receive and transmit timeslots independently

Test rates: 2.4, 4.8, 9.6, 19.2, 56, 64 kbps

Patterns: 2047, 511, 127, 63, All 1s, All 0s, Alt 1010, DDS-1, DDS-2, DDS-3, DDS-4, DDS-6, 8-bit user

Loopbacks: Latching, interleaved; CSU, DSU, OCU, DS0-DP, 8-bit user

Measurements: Bit errors, Bit error rate

Control code send/receive: Abnormal, mux out-of-sync, idle

Pulse Mask Analysis

Scan period: 800 ns

Measurements: Pass/Fail, rise time, fall time, pulse width, %overshoot, %undershoot

Resolution: 1 ns or 1%, as applicable

Masks: ANSI T1.102, T1.403; AT&T CB119, Pub 62411

Pulse/mask display: Test set screen and SS118B printer

Product description

Size:208 W x 152 L x D 30 mm
(8.2 W x 6.0 L x 1.2 H in)

Module Weight:.....0.84 kg (1.85 Lb)

Environmental:

Operating Temperature: ...0° to 50°C (32° to 122°F)

Storage Temperature:-20° to 70°C (-4° to 158°F)

Humidity:.....5% to 90% non-condensing

Ordering Information

RXT2080 RxT DS1 – Dual T1 Test Set with Bantam Connectors Dual T1 Module. Provides basic T1 CSU/NIU loopback testing, Fractional T1, and full duplex drop and insert for talk/listen. Includes CSU/NIU Emulation (RXT2080SW-EM), DS1 Intelligent NE Control (RXT2080SW-NE), and Pulse Mask analysis (RXT2080SW-PM) test features.
Includes: RxT Platform (RXT1000A-GW), RxT Carrier (RXT2000A), Dual T1 Module (SSMTT-08), RXT2080SW-GUI, stylus (SA142), hand and shoulder straps, Li-ion battery pack (SA991), AC/DC charger (SA1580), soft carrying case (SA605), calibration statement, and one year basic warranty.

RXT2080-W1 RxT DS1 Test Set Standard Basic 1-Year Warranty

RXT2080-EW1 RxT DS1 Test Set Warranty Extension:
1 additional year extends RxT test set's basic warranty to 2 years

RXT2080-EW2 RxT DS1 Test Set Warranty Extension:
2 additional years extends RxT test set's basic warranty to 3 years

SOFTWARE OPTIONS (RXT2080 Series)

RXT2080SW-DDS Provides support for basic DDS applications involving interleaved loopbacks, latched loopbacks, and error measurements.

RXT2080SW-GR GR-303 Analysis. Provides ability to monitor TMC/CSC and EOC channels. Decodes TMC/CSC to layer 3; eoc to layer 2. Trace fillers and performance statistics included.

RXT2080SW-EOC GR-303 EOC Decode. Requires RXT2080SW-GR.

RXT2080SW-FR Frame Relay Option.

RXT2080SW-NR Frame Relay NNI. Requires RXT2080SW-FR.

RXT2080SW-PR ISDN PRI Call Setup and Monitor. Provides the ability to monitor D-channel messages, place/receive calls, and talk/listen/BERT.

RXT2080SW-VF VF Dialing and Analysis. Provides dialing, decoding and digit analysis for DTMF, MFR1 and pulse dialing. Bi-directional signaling bits analysis.

RXT2080SW-SS7 SS7 Protocol Analysis. Provides decoding of SS7 messages up to Layer 4 including statistics and tracer.

RXT2080SW-TCAP ... SS7 TCAP Analysis. Provides decoding for TCAP Layer of SS7 messages including a filter. Requires RXT2080SW-SS7.



SUNRISE TELECOM®

Productivity Rising™

For more information or a directory of sales offices: Phone: +1-800-701-5208 or +1-408-363-8000
info@sunrisetelecom.com | www.sunrisetelecom.com