

# Dual T1 Module

## SSxDSL-8

### Data Sheet



The Dual T1 Module is part of a family of Plug-In modules for the SunSet MTT® and xDSL test sets

The SSxDSL-8 Dual T1 Module, part of the SunSet Modular Test Toolkit (MTT) family of products, is a rugged, battery-operated handheld test solution for comprehensive T1 testing. The MTT product family features the SunSet MTT as the industry's premium handheld platform for access network service installation, verification, and troubleshooting applications. The Dual T1 Module, suited for everything from cable installation and maintenance to protocol monitoring, offers a full suite of tools for testing T1 circuits including pulse mask analysis, frequency and signal level measurement, error detection, alarm monitoring, voice frequency, and loopback control.

## FEATURES

- Full duplex T1 testing - bidirectional monitoring
- Frequency and signal level measurement
- CSU and NIU emulation and loopback control
- HDSL span control
- Intelligent repeater control
- ESF facility data link
- Voice frequency monitoring
- Pulse mask analysis
- MF/DTMF/DP dialing and analysis
- ISDN PRI call setup and analysis
- GR-303 analysis
- SS7 protocol analysis
- Frame relay testing
- DDS testing

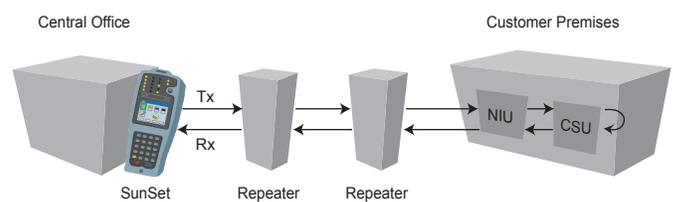
## BENEFITS

- Lightweight
- Flexible modular design
- Eliminates the need for multiple instruments
- Leverages existing MTT platform
- Cost-effective and future-proof

## APPLICATIONS

- Accept a new T1 span (out-of-service testing)
- Monitor an in-service circuit (in-service testing)
- Loop a CSU or NIU on a T1 line
- Check frame slip and frame synchronization
- Measure a T1 signal level and pulse shape
- Talk and listen on a voice channel on a T1 line
- Fractional T1 testing
- Place/receive an ISDN call
- Troubleshoot an ISDN PRI problem with protocol trace monitoring and decoding
- Monitor the TMC/CSC control channel in a GR-303 system
- Bidirectional monitoring of SS7 signaling links
- Verify frame relay services over a T1 line

### DS1 Loopback Testing



## 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  
    Clock: Internal, looped, external  
Receiver  
    Frequency range: 1542 to 1546 kHz

### Test Rates

Full and Fractional T1

### Test Patterns

Fixed and Pseudo random patterns

### Error Injection

### Measurements

Simplex current measurements (in SSMTT-C, SSMTT-ACM+, SSMTT-ACM only)  
Signal measurements  
Alarm statistics  
Error measurements  
Measurement record  
Frequency measurements  
Event and Record printing  
View received data

### CSU and NIU Loopback Control

### HDSL Span Control

### Westell & Teltrend Looping Device Control

### ESF Facility Data Link

Monitor and send T1.403 PRM and BPM on FDL  
Supports automatic HDLC protocol handling.

### SLC-96 Data Link

Send and receive message  
WP1, WP1B, NOTE formats  
Alarms, switch-to-protect, far end loop  
To TR-TSY-000008 specifications  
SLC-96 FEND loop

### CSU and NIU Emulation

Bidirectional  
Responds to loopback commands  
Graphic indication of incoming signal status  
Simultaneous display of T1 line measurements  
Automatic generation of AIS and Yellow alarm  
Loopbacks

### Voice Frequency Capabilities

Drop and Insert DS0 audio testing  
Voice insert & monitoring  
VF tone generation  
VF level and frequency measurements  
Signaling monitor

### VF Dialing and Analysis (SWxDSL-8VF)

Dialing  
    MF/DTMF/DP dialing up to 32 digits  
    Trunk type: E&M, ground/loop start, FXO/FXS  
Call analysis

### ISDN PRI Call Setup and Monitor (SWxDSL-8PR)

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  
Bit error rate test with G.821 analysis  
User programmable trace filter, view bidirectional real time message flow.  
Trace storage

### GR-303 Analysis (SWxDSL-8GR)

Bidirectional monitoring of TMC/CSC/EOC channels  
Telcordia GR-303-CORE  
TMC/CSC monitoring  
EOC verification

### GR-303 EOC Decode (SWxDSL-8EOC)

Complete decode of embedded operations channel to Layer 7  
Supports ASN.1, ROSE, CMISE, GR-303-IMD

### SS7 Protocol Analysis (SWxDSL-8SS7)

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 and 24 bits) standards  
Capture and store messages for decoding and protocol analysis  
Capture Layer 1 events  
Filters: PRE & POST  
Message storage

### SS7 TCAP Analysis (SWxDSL-8TCAP)

ANSI T1.114  
TCAP filter and decode

### Frame Relay Basic (SWxDSL-8FR)

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

### LMI Analysis

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

### **PING Test**

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

InARP support

Echo PING

IP encapsulation conforms to RFC1490 specification

### **FOX Test**

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

Frame relay performance and statistics

DLCI analysis and statistics

### **Frame Relay NNI (SWxDSL-8NR)**

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

Modes: NNI USER, NNI NETWORK

*LMI Analysis, PING Test, FOX Test, Statistic Analysis - as described in Frame Relay Basic section*

### **DDS Testing (SWxDSL-8DDS)**

Choose receive and transmit timeslots independently

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**

## PRODUCT DESCRIPTION

Module Size (WxLxH): 5.0 x 3.5 x 0.9 in (12.6 x 9 x 2.2 cm)

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

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

Humidity: 5% to 85% noncondensing

## ORDERING INFORMATION

SSxDSL-8	Dual T1 Module
SWxDSL-8VF	VF Dialing and Analysis
SWxDSL-8PR	ISDN PRI Call Setup and Monitor
SWxDSL-8GR	GR-303 Analysis
SWxDSL-8EOC	GR-303 EOC Decode
SWxDSL-8SS7	SS7 Protocol Analysis
SWxDSL-8TCAP	SS7 TCAP Analysis
SWxDSL-8FR	Frame Relay Basic
SWxDSL-8NR	Frame Relay NNI
SWxDSL-8DDS	DDS Testing

For more information or a directory of sales offices: [info@sunrisetelecom.com](mailto:info@sunrisetelecom.com) | [www.sunrisetelecom.com](http://www.sunrisetelecom.com)

