SunSet® OCx

Powerful SONET Testing and Service Verification

Data Sheet

The SunSet OCx offers DS0 to OC-48 testing, along with all the service verification tools you need. Technicians can increase efficiency, consolidate training, and save time and money by testing all these rates and services with a single handheld unit. Incorporating the most popular and powerful features for testing T-carrier (T1 and T3) and Synchronous Optical Networks (SONET), the SunSet OCx analyzes Internet Protocol (IP), Asynchronous Transfer Mode (ATM), Primary Rate Integrated Services Digital Network (ISDN PRI), Bellcore GR-303-CORE, Frame Relay, and Signaling System 7 (SS7), as well as traditional voice frequency (VF) and Trunk conditioning functions.

FEATURES

Basic Testing

- BERT up to 2.5 Gbps
- Bidirectional DS1 drop/insert
- Loopback and span control
- VF/DS0 and fractional T1
- Full complement of test patterns
- Error injection and alarm generation
- 16 MB data storage

Advanced Testing Tools

- Mux/Demux Testing and Emulation
- Pulse Mask Analysis
- SONET Overhead Control
- DS3 FEAC and C-bit Monitoring
- DS1 Data Link
- Remote Control
- Jitter Measurement on DS3, DS1

Protocol Analysis/Emulation

- ATM/IP
- VF Dialing
- ISDN PRI
- GR-303
- SS7
- Frame Relay

BENEFITS

- OCx/T-Carrier/ATM feature-rich
- Lightweight and highly portable
- Eliminates the need for multiple and heavier instruments without compromising test features or accuracy
- Intitive and easy-to-use
- Cost-effective and future-proof
- Increases efficiency
- Consolidates training and shortens the learning curve
- Handles multiple tasks including installation, maintenance, troubleshooting, and commisioning

APPLICATIONS

Installation, Maintenance, Troubleshooting and Commissioning

The SunSet OCX is the ideal product for installation and bringing into service tasks in the field and central office. Commissioning and acceptance tests can be performed with the same test set, as jitter features are part of the conformance procedures. Maintenance and troubleshooting in-service tasks can also be completed with the same handheld test set saving time and money.

Out-of-Service Testing

- End-to-end BERT
- ATM testing
- Trace generation
- Round trip delay
- NE verification
- Pulse mask analysis at 1.5M and 45M
- Voice frequency testing: Talk/listen, send/receive tones
- MuxTest
- Jitter tests
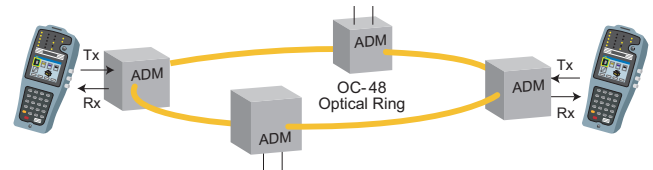 – Jitter measurement

In-Service Monitoring

- Through protected monitoring points or optical splitters
- Line through and payload through mode
- Error performance analysis
- SDH overhead bytes decode
- Pointer monitoring
- APS timing measurement and APS capture
- In-service tributary scan
- Voice traffic monitoring
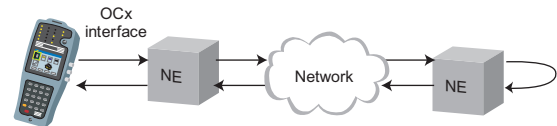- Troubleshooting synchronization problems

SPECIFICATIONS

Connectors

Optical: SCPC-SM-F (Default), FCPC-SM-F (Optional)
STS-1 and DS3: BNC
DS1: Bantam, Line 1 and Line 2
DS1 External Clock: BNC
Handset Port: 4-pin modular plug (N/A on SSOCx-E)
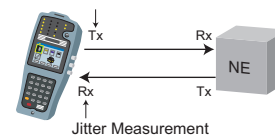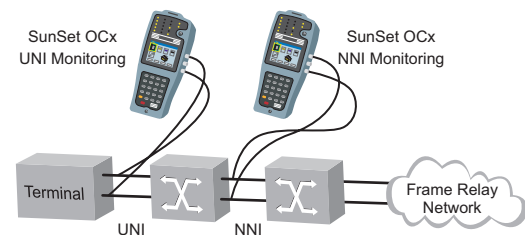Serial Port: 8-pin Mini DIN RS-232C (V.24), DTE
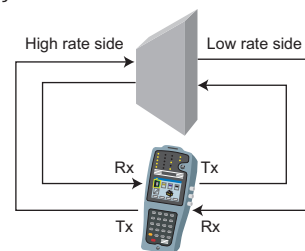DC Power

Out-of-Service testing
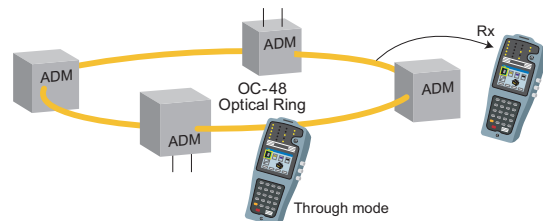

Round trip delay

Jitter measurement

Service verification

MuxTest, Pointer jitter tests

In-Service monitoring

SONET
Rates: STS-1, OC-1, OC-3, OC-12, and OC-48
Payloads: From DS1/VTI-5 to STS-48c
Clock Source: Internal, Loop, BITS (T1 Line 2 Rx)

SSOCx-E Optics
Rates: OC-48/12/3

SSOCx-D/C/B/A Optics
Rates: OC-12/3/1
Single Mode Transmitter, Multimode-compatible Receiver
STS-1 Transmitter/Receiver
Optical Through Mode Operation
   Line Through
   Path Through (SSOCx-E only)
Test Patterns: PRBS, Fixed, User programmable
Error Injection
Alarm Generation

DS3
Payloads: DS3, DS3/DS1
Clock Source: Internal, Loop
Test Patterns: PRBS, Fixed, User programmable
Error Injection
Alarm Generation

Dual DS1
Payloads: DS1, Nx56k, Nx64k
Clock Source: Internal, Loop, External DS1, External TTL
Test Patterns: PRBS, Fixed, and User programmable
Error Injection
Alarm Generation

Measurements
SONET Defects

SSOCx-E Pointer Measurements
SONET STS Pointer
SONET VT Pointer

SSOCx-D/C/B/A Pointer Measurements
SONET STS Pointer
SONET VT Pointer
SONET Signal, Electrical
SONET Signal, Optical
DS3 Defects
DS3 Path
DS3 Signal
DS1 Defects
DS1 Path
DS1 Signal
Bit Performance (G.821)
Service Disruption Measurement (SSOCx-E only)
Event Status Screen

Loopback and Span Control
DS1 Loopback
HDSL Loopback
DS3 and DS3/DS1 Loopback

SONET Features
Overhead Monitor
Overhead Control
J0/J1/J2 Traces

Pointer Control (SSOCx-E only)
Tributary Scan
Orderwire (SSOCx-E only)
   Talk/Listen over E1 or E2 byte
   Built-in microphone/speaker

DS3 Features
View Received Data
C-Bit Monitor
Propagation Delay

DS1 Features
View Received Data
Bridge Tap Detect
Quicktest I/II
Propagation Delay

Voice Frequency Functions
Talk/Listen
VF Measurements
View Supervision Bits
Noise Measurements

Other Features
Auto Configuration
Graphic Screen
Data Storage Card
System Profiles

SOFTWARE OPTIONS

VF Dialing (SWOCx-C)
Place/Receive Calls
   MF/DTMF/DP Dialing
Bidirectional Call Analysis
   ABCD signaling transition analysis
   MF/DTMF Digit Analysis/Decode

DS3 FEAC (SWOCx-D)
Monitor FEAC Codewords
Send FEAC Codeword

Pulse Mask (SWOCx-E) [n/a SSOCx-E]
DS1 and DS3 Pulse Mask

ISDN PRI (SWOCx-F)
Protocol: National ISDN-2, Northern Telecom, AT&T 5ESS
Emulation: NT and TE
Place/Receive up to 2 simultaneous calls
   Data Calls
   – Perform a BERT test with a data call towards loopback number or in self-call mode
   – BERT (G.821) Measurements
   Protocol Analysis
   Pre and Post Filters
Backup D-Channel test for 46B+2D circuits (NFAS)

Remote Control (SWOCx-M1, M2)

VT100 (SWOCx-M1)

Windows (SWOCx-M2)

Intelligent Span Control (SWOCx-N)

DS1 Data Link (SWOCx-O)

CSU/NIU Emulation (SWOCx-P)

Histogram Analysis (SWOCx-T)

APS Measurement (SWOCx-U)
APS Switch Timing
K1/K2 Byte Capture

Pointer Test Sequences (SWOCx-X, SSOCx-E only)

Jitter Measurement
Interfaces: DS3, DS1

Frame Relay Basic (SWOCx-R1)
Interfaces: Dual T1
LMI Standards: ITU-T Q.933, ANSI T1.617, LMI (DLCI 1023, GOF Vendors),
    NO LMI
Modes: UNI DTE, UNI DCE
LMI Analysis
PING Test
FOX Test
Statistics Analysis

Frame Relay NNI (SWOCx-R2)
Requires SWOCx-R1
Modes: NNI USER, NNI NETWORK

GR-303 Analysis (SWOCx-G1)

GR-303 EOC Decode (SWOCx-G2)

SS7 Protocol Analysis (SWOCx-S1)
Supports protocol analysis for SS7 TUP, ISUP, SCCP, SNM, and 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
Interfaces: Dual T1

SS7 TCAP Analysis (SWOCx-S2)
ANSI T1.114
TCAP Filter, TCAP Decode

ATM Testing
Mapping
    DS1: HEC-based per ITU-T G.804
    DS3: PLCP-based per ITU-T G.804
    SONET: HEC-based per GR-253-CORE
Interface: UNI and NNI per ITU-T I.361
Quality of Service
DSLAM Testing
ATM/IP PING Test
Traffic Generation
Traffic Supervision

GENERAL

Display: Backlit transflective 320 x 240 pixel color display; indoor and
    direct sunlight viewable
Operating temperature: 32˚F to 104˚F (0˚C to 40˚C)
Operating humidity: 5% to 90%, noncondensing
Storage temperature: -4˚F to 158˚F (-20˚C to 70˚C)
Size: 4.3 x 2.8 x 10.5 in (11 x 7 x 27 cm)
Weight: 3.3 lb (1.5 kg)
Battery
    Built-in NiMH rechargeable battery pack
    Operation time: 0.5 to 3 hours
AC operation: 100 to 240 VAC, 50/60 Hz universal charger

ORDERING INFORMATION

Test Set

SSOCx-L	SunSet OCx Lite: DS1 to DS3, Not field-upgradeable to SONET and optical testing
SSOCx-A	SunSet OCx: DS1 to DS3
SSOCx-B	SunSet OCx: DS1 to STS-1
SSOCx-C	SunSet OCx: DS1 to OC-3c
SSOCx-D	SunSet OCx: DS1 to OC-12c
SSOCx-E	SunSet OCx: DS1 to OC-48c

Hardware Option

SSOCx-FC-3	FC Optical Connector (SSOCx-C)
SSOCx-FC-12	FC Optical Connector (SSOCx-D)
SSOCx-FC-48	FC Optical Connector (SSOCx-E)
SSOCx-LR-3	Long Reach 1310 nm (SSOCx-C)
SSOCx-LR-12	Long Reach 1310 nm (SSOCx-D)
SSOCx-LR-48	Long Reach 1310 nm (SSOCx-E)
SSOCx-1550	Long Reach 1550 nm (SSOCx-C/D)
SSOCx-1550-48	Long Reach 1550 nm (SSOCx-E)
SSOCx-DW48-1	Long/Short Dual Wavelengths (SSOCx-E)
SSOCx-DW48-3	Long/Long Dual Wavelengths (SSOCx-E)

Software Option

SWOCx-C	VF Dialing and Analysis
SWOCx-D	DS3 FEAC
SWOCx-E	Pulse Mask Analysis (N/A for SSOCx-E)
SWOCx-F	ISDN PRI Call Set Up and Monitor
SWOCx-G1	GR-303
SWOCx-G2	GR-303 eoc Decode
SWOCx-H	ATM Analysis at DS1
SWOCx-I	ATM Analysis at DS3
SWOCx-J	ATM Analysis at OC-3c
SWOCx-K	ATM Analysis at OC-12c
SWOCx-M1	Remote Control, VT-100
SWOCx-M2	Remote Control, Windows-based
SWOCx-N	Intelligent Span Control
SWOCx-O	DS1 Datalink
SWOCx-P	CSU/NIU Emulation
SWOCx-R1	Frame Relay
SWOCx-R2	Frame Relay NNI
SWOCx-S1	SS7 Protocol Analysis
SWOCx-S2	SS7 TCAP Analysis
SWOCx-T	Histogram Analysis
SWOCx-U	APS Timing
SWOCx-W	ATM Analysis at OC-48c (SSOCx-E only)
SWOCx-X	Pointer Test Sequences (SSOCx-E only)
SWOCx-Y	VT-100 Emulation
SWOCx-Z	DS3 and DS1 Jitter Measurement

For more information or a directory of sales offices: **info@sunrisetelecom.com** | **www.sunrisetelecom.com**