Data Sheet

Optimux-1553

STM-1/OC-3 Terminal Multiplexer

Any Traffic Over Fiber

- STM-1/OC-3 terminal multiplexer for grooming high order legacy traffic (TDM) over SDH/SONET networks
- Multiplexes up to three E3 or T3 data channels using a single hot swappable card
- Optional 1+1 redundant network interface (single-ended MSP/APS), as well as 1+1 protection of E3/T3 tributaries and power supply for complete carrier class hardware redundancy and serviceability
- Plug and play operability

Optimux-1553 is a unique STM-1/OC-3 terminal multiplexer for transport of high-order legacy PDH traffic over SDH/SONET. Three E3 or T3 tributary channels are mapped into a standard channelized STM-1/OC-3 uplink, extending the local loop up to 80 km (50 miles), while creating a transmission layer fully compatible with regional and national SDH/SONET networks.

Power supply and uplink modules in Optimux-1553 can be backed up and are field-serviceable. Main link 1+1 single-ended MPS/APS redundancy is supported in compliance with the G.841 and GR-253-CORE standards. Power supplies are also backed up and are hot-swappable. These features ensure that Optimux-1553 has no single point of failure, and is fully compatible with carrier class requirements.

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Optimux-1553 is available with either coaxial or with fiber optic short/long haul main link interfaces.

The unit provides high availability, high-quality performance monitoring of the traffic path, from the SDH/SONET network to the customer premises.

The simplicity, compact size and low power consumption of Optimux-1553 allow easy rack installation on both customer premises and telecommunication facilities.

Setup, control and monitoring of status and diagnostics information can be performed using one of the following means:

- ASCII terminal connected to the DB-9 control port
- Telnet host via a dedicated Ethernet port
- Network Management Station (NMS) running RADview-EMS, RAD's Client-Server CORBA-based SNMP network management application
- TFTP for software download and update
- ConfiguRAD – RAD's web-based remote access terminal application.

Figure 1. Optimux-1553 Back Panel Showing the Interface Ports

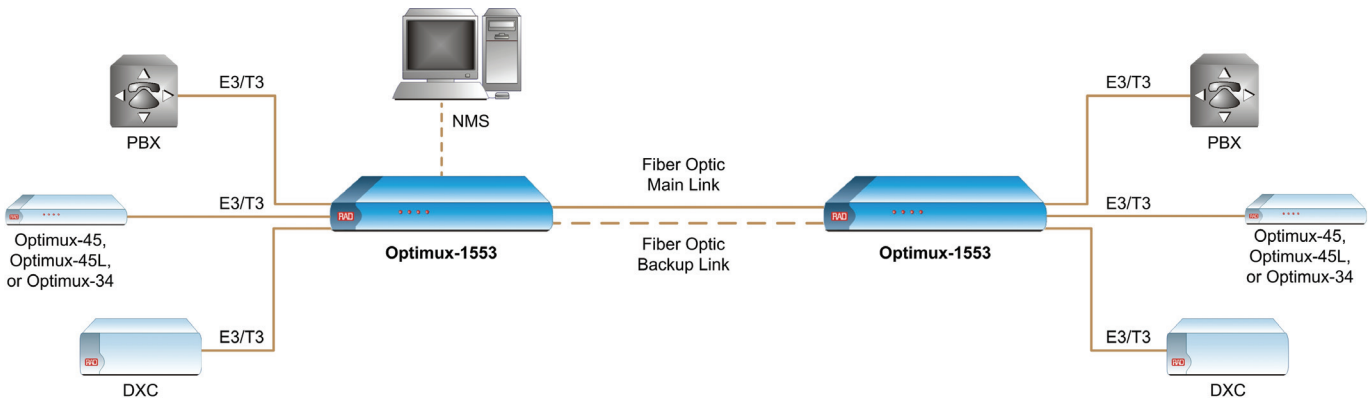

Figure 2. Optimux-1553 Units in a Point-to-Point Topology

Table 1. Main Link Interface Options

Module Name (Ordering Option)	Wavelength	Fiber Type	Transmitter Type	Power Coupled into Fiber	Receiver Sensitivity	Typical Max. Range		Connector Type
	[nm]	[μm]		[dBm]	[dBm]	[km]	[miles]	
OP-M/CX/155	-	Copper cable	-	-	-	135m	443 ft	Coax interface
OP-M/SC/85L OP-M/FC/85L OP-M/ST/85L	850	62.5/125 multimode	Laser (VCSEL)	-14 to -20	-26	2.0	1.2	SC, FC, ST
OP-M/SC/13M OP-M/ST/13M	1310	62.5/125 multimode	LED	-14 to -20	-31	2.0	1.2	SC, ST
OP-M/SC/13L OP-M/FC/13L OP-M/ST/13L	1310	9/125 single mode	Laser	-8 to -15	-31	20	12.4	SC, FC, ST
OP-M/SC/15L OP-M/FC/15L OP-M/ST/15L	1550	9/125 single mode	Laser	-8 to -15	-31	20	12.4	SC, FC, ST
OP-M/SC/13LH OP-M/FC/13LH OP-M/ST/13LH	1310	9/125 single mode	Laser (long haul)	0 to -5	-34	40	24.8	SC, FC, ST
OP-M/SC/15LH OP-M/FC/15LH OP-M/ST/15LH	1550	9/125 single mode	Laser (long haul)	0 to -5	-34	80	49.7	SC, FC, ST
OP-M/SC/SF1	Tx: 1310 Rx: 1550	9/125 single mode (single fiber)	Laser WDM	-8 to -15	-29	20	12.4	SC
OP-M/SC/SF2	Tx: 1550 Rx: 1310	9/125 single mode (single fiber)	Laser WDM	-8 to -15	-29	20	12.4	SC
OP-M/SC/SF3	Tx/Rx: 1310	9/125 single mode (single fiber)	Laser (SF3)	-8 to -15	-27	20	12.4	SC/APC

Notes: *1. For copper cables (coax interface), a range of 135m is attainable when using RG-59 B/U (at 78 MHz, in accordance with the square root frequency law).*

2. The ranges specified above were calculated according to the following typical attenuation rates (with a 3 dB margin):

- *3.5 dB/km for 850 nm multimode*
- *0.4 dB/km for 1310 nm single mode*
- *0.25 dB/km for 1550 nm single mode*

Specifications

STM-1/OC-3/STS-3 LINK (NETWORK)

Compliance
Bellcore GR-253-CORE,
Bellcore GR-499-CORE,
ITU-T G.783, ITU-T G.823,
RFC 2558

Redundancy
1+1

Line Rate
155.52 Mbps ±20 ppm

ELECTRICAL (COAX) INTERFACE

Line Code
CMI

Interface Connectors
BNC coax

Line Attenuation
Typically 12.7 dB at 78 MHz using RG-59-B/U cable

Impedance
75Ω

FIBER OPTIC INTERFACE

Line Code
NRZ scrambled

Interfaces
ST, SC, FC/PC or SC/APC

Range
See *Table 1*

E3/T3 INTERFACE

Compliance
Bellcore GR-253-CORE,
Bellcore GR-499-CORE,
ITU-T G.783, ITU-T G.823,
RFC2496

Data Rate
T3: 44.736 Mbps
E3: 34.368 Mbps

Line Code
B3ZS

Impedance
75Ω, unbalanced

Jitter
According to Bellcore GR-499-CORE and ITU-T G.823

Connectors
Three pairs of unbalanced BNC connectors (one Tx and one Rx for each E3/T3 tributary channel)

SUPERVISORY & MANAGEMENT PORTS

Control Port
Interface: V.24/RS-232
Connector: DB-9, female
Format: asynchronous
Baud rate: 9600 - 115,200 bps, Autobaud
Character: 8 bit no parity, 7 bit odd or even parity

Ethernet Ports
Interface: 10/100BaseT
Connector: RJ-45 shielded
Mode of operation: Autonegotiation, Full Duplex, Half Duplex

Alarm Relay Port
Dry contact via DB-9 female connector. Operates as Normally Open and Normally Closed, using different pins

GENERAL

Power
AC: 100 - 240 VAC (±10%), 50 to 60 Hz
DC: -48 VDC (-40 to -60 VDC)

Power Consumption
AC: 48 VA max.
Heat dissipation: 31W
Recommended fuse: 1A SB
Current: 0.4A (max)

DC: 23W max.
Heat dissipation: 23W
Recommended fuse: 3A SB
Current: 1A (max)

Physical
Height: 4.4 cm (1.75 in)
Width: 44.0 cm (17.3 in)
Depth: 30.0 cm (11.8 in)
Weight: 5.0 kg (11.0 lb)

Environment
Temperature: 0°–55°C (32°–131°F)
Humidity: Up to 90%, non-condensing

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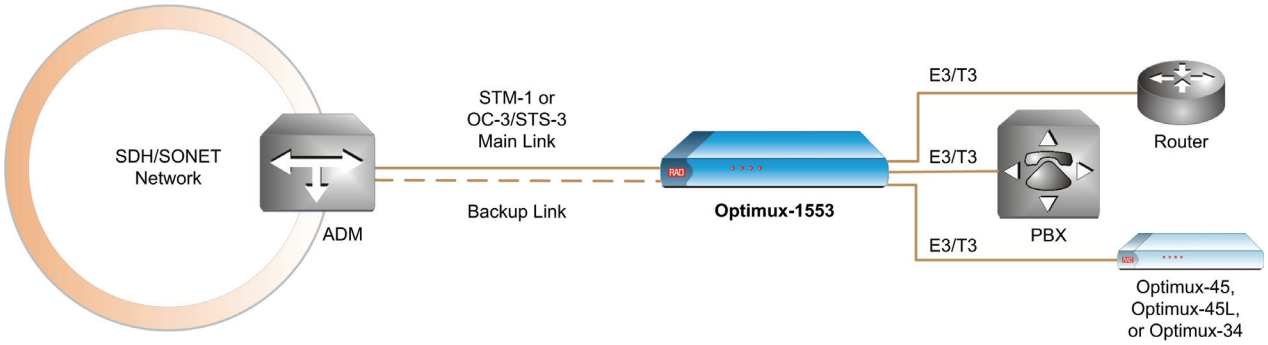

Figure 3. Optimux-1553 Extending an SDH/SONET Network Towards Remote Customers

Table 2. Optimux Comparison Chart

Feature	Optimux-4E1/4T1	Optimux-34	Optimux-XLT1	Optimux-45/45L	Optimux-1551	Optimux-1553
Uplink	Fiber Optic	E3, Fiber Optic	Fiber Optic	T3, Fiber Optic	Copper, STM-1/OC-3	Copper, STM-1/OC-3
Bandwidth (Mbps)	108/106	34	25	45	155	155
Number of trunks	4 E1 4 T1	16 E1	16 T1	21 E1 28 T1	21/42/63 E1 28/56/84 T1	3 E3 3 T3
Ethernet support	✓	✓	✓	–	–	–
Special features	Redundant, hot-swappable uplinks	SFP-based uplinks	Modular	Ring support (Optimux-45)	Full redundancy	Full redundancy

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Ordering

Main link modules and tributary modules are ordered separately.

OP-1553/*/$/#/!/?/+/^

Legend

* Tributary interface module:
- **3E3T3** Module with three E3/T3 links
- **2X3E3T3** Two 3E3T3 modules

$ Station clock:
- **STC** Optional station clock

Note: *For tributary module redundancy, order two modules. Each tributary module may be defined either as E1 or T1 channels.*

\# Power supply:
- **AC** 100 to 240 VAC
- **48** -48 VDC
- **AD** 100 to 240 VAC power supply plus redundant –48 VDC power supply

! Redundant power supply:
- **R** Redundant power supply of same type

? Main link connector type:
- **ST** ST type fiber
- **SC** SC type fiber
- **FC** FC type fiber

Note: *For single fiber connection, only SC type connectors are available. For 1310 nm multimode LED option, only SC and ST type connectors are available.*

\+ Optical wavelength and transmitter type (not relevant with CX option):
- **CX** Electrical interface with coaxial BNC connectors
- **13** 1310 nm, multimode LED
- **13L** 1310 nm, single mode, laser diode
- **15L** 1550 nm, single mode, laser diode
- **13LH** 1310 nm, single mode, long haul laser diode
- **15LH** 1550 nm, single mode, long haul laser diode
- **85L** 850 nm, multimode VCSEL
- **SF1** Transmit 1310 nm, receive 1550 nm
- **SF2** Transmit 1550 nm, receive 1310 nm
- **SF3** 1310 nm single wavelength laser

Note: *For single-fiber applications, a device with the SF-1 connector should always be used opposite the device with the SF-2 connector, and vice versa. The SF-3 connector can be used on both sides of the link.*

^ Second main link:
- **D** Optional second main link

SUPPLIED ACCESSORIES

AC power cord (with AC power supply only)

DC adapter plug (with DC power supply only)

CBL-DB9F-DB9M-STR
Control port cable

RM-34
Hardware kit for mounting one Optimux-1553 unit into a 19-inch rack

OPTIONAL ACCESSORIES

OP-1553-M/*/S
Additional tributary module
Note: *Each module should be ordered separately.*

OP-M/?/+
Main link interface module (see *Table 1*)

Power Supply
OP-1553-PS/AC: 100 to 240 VAC
OP-1553-PS/48: -48 VDC

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International Headquarters
24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel. 972-3-6458181
Fax 972-3-6498250, 6474436
E-mail market@rad.com

North America Headquarters
900 Corporate Drive
Mahwah, NJ 07430, USA
Tel. 201-5291100
Toll free 1-800-4447234
Fax 201-5295777
E-mail market@radusa.com

www.rad.com

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