

R-STM-1E

STM-1 Synchronous Digital Multiplexer



FEATURES

- SDH transmission solution for access networks, expands local loops to 60 km/37 miles
- Low power consumption and high reliability optimized for installation in outdoor cabinets
- Flexible configuration as an STM-1 terminal or Add&Drop Multiplexer (ADM) with full cross-connectivity and PDH interfaces
- Supports centralized management, including configuration, service, performance, security and fault management
- Integrated management system also supports Multiservice Access Platform (MAP) equipment
- Accurate transfer of timing to access equipment
- Low cost per line
- Flexible configurations

DESCRIPTION

- R-STM-1E is a Synchronous Digital Hierarchy (SDH) multiplexer for deployment in the local loop.
- R-STM-1E can be deployed in access nodes as a Terminal Multiplexer (TM) or an Add&Drop Multiplexer (ADM). It enables expansion of the local loop up to 60 km/37 miles, creating a transmission layer fully compatible with regional and national SDH networks.
- R-STM-1E is available with either standard G.703 coaxial or fiber optical short/long haul aggregate interfaces.

R-STM-1E

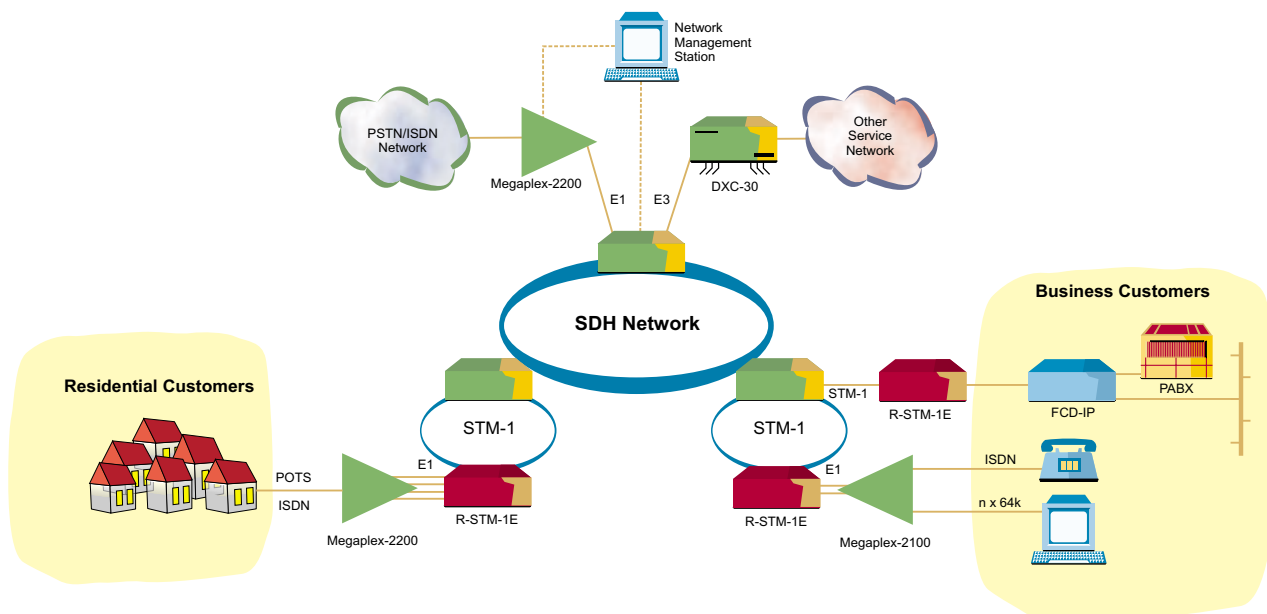
STM-1 Synchronous Digital Multiplexer

- The SDH transmission supports a full range of access systems, including Remote Subscriber Units (RSUs), Digital Line Carriers (DLCs), Digital Cross-Connect (DACs), and service multiplexers.
- R-STM-1E is fully compatible with 34 Mbps (E3) and 45 Mbps (T3) PDH signals, SDH microwave radio relays, and existing SDH infrastructure.
- R-STM-1E supports the whole range of SDH network topologies:
 - Point-to-Point
 - Chain
 - STM-1 ring / folded ring
 - STM-4/16 ring / STM-1 structured ring-star and ring-ring.
- The interface capacity of R-STM-1E can be expanded from its 21x2 Mbps basic configuration by adding extension modules (ordering options), to any of the following:
 - 63x2 Mbps (63xE1)
 - 3x34 Mbps (3xE3)
 - 3x45 Mbps (3xT3).
- DXC-STM-1, a hybrid unit combining the R-STM-1E multiplexer and the DXC digital cross-connect in a single integrated chassis, is also available. It features both DXC 1/0 cross-connect and SDH ADM capabilities (see the *DXC-STM-1* folder).
- The compact size and low power consumption of R-STM-1E allow easy rack or wall installation on customer premises, in telecommunications buildings, or in outdoor cabinets.
- A comprehensive array of installation accessories support vertical/horizontal rack installation, wall mounting, etc.
- R-STM-1E features a centralized management application, to facilitate management of the access network. The application combines both the powerful RADView and the SDH transmission layer network management applications. The centralized network management application uses embedded management channels for communication with remote access equipment. Centralized management enables the building

of flexible, responsive and optimized SDH access networks to fit any customer's needs.

- The 2 Mbps output signals of R-STM-1E can be resynchronized by the R-STM-1E multiplexer clock. In addition, pointer justification events can be filtered out, eliminating phase hits. This creates an accurate signal, clear of phase hits and suitable for synchronization of access equipment. Since the SDH network is usually synchronized by the national synchronization network, this accurate timing is transferred to the access equipment.

APPLICATION



Multiservice Access over SDH

STM-1 Synchronous Digital Multiplexer

SPECIFICATIONS

GENERAL

- **SDH Level**
STM-1 (155.520 Mbps)
- **Multiplexing Structure**
Complies with Figure 1.1 in G.709 standard
- **Cross-Connect Level**
VC-12 or multiples
- **Error Performance**
Complies with G.826 - High grade
- **Jitter**
Aggregate line:
complies with G.783, G.823, G.958
Tributary line:
complies with G.783, G.823
- **Diagnostics**
Performance monitoring according to G.826, G.784
External alarms
- **Indicators**
ACT – normal operation
FLT – malfunction detected or software downloading
PRG – management accesses NVM card
ALM – transmission alarm
ACK – current alarms acknowledged
LASER ON – optical aggregate is transmitting
- **Power Supply**
Input voltage:
-35 VDC to -75 VDC
Nominal power source:
-48 VDC to -60 VDC
Typical power consumption:
See Table 1.

- **Physical**
Compatible with ETSI rack
Height: 300 mm / 11.8 in
Width: 90 mm / 3.5 in
Depth: 220 mm / 8.7 in
Weight: 2.0 kg / 4.4 lb

ELECTRICAL AGGREGATE

- **Physical Level**
G.703, paragraph 12
- **Line Code**
CMI
- **Bit Rate**
155.520 Mbps
- **Connectors**
BNC

OPTICAL AGGREGATE

- **Physical Level**
G.957, Table 2 – optical aggregate
- **Transmission Line**
Dual fiber optic cable
- **Operating Wavelength**
As per G.707, G.958, see Table 2.
- **Bit Rate**
155.520 Mbps
- **Connectors**
FC/PC
- **Optical Transmit/Receive Characteristics**
See Table 2.

TRIBUTARIES

- **2 Mbps (E1)**
Physical Level
G.703, paragraph 6

- **Bit Rate**
2.048 Mbps
- **Line Code**
HDB3
- **Frame**
Unframed
- **Connectors**
DB-25

34 Mbps (E3)

- **Physical Level**
G.703, paragraph 8
- **Bit Rate**
34.368 Mbps
- **Line Code**
HDB3
- **Frame**
G.751
- **Connectors**
DIN 1.6/5.6 MS

45 Mbps (T3)

- **Physical Level**
ANSI T1.105.03-1994
- **Bit Rate**
44.736 Mbps
- **Line Code**
B3ZS
- **Connectors**
DIN 1.6/5.6 MS

MANAGEMENT

- **Complete Network Management**
RADView software on dedicated SUN workstation
- **Network Element Monitoring**
Element Manager software on PC or laptop

Note: For both UNIX and PC management a minimum of the RV-EEM-SW/1 is required for initial IP address assignment.

Table 1. Power Consumption of Aggregates and Extension Modules

| R-STM-1/1E Aggregate/Extension Module | Typical Power Consumption | Typical Power Dissipation |
|---|---------------------------|---------------------------|
| Optical modular ADM with 21x2 Mbps Channels | 38W | 35W |
| Electrical modular ADM with 21x2 Mbps Channels | 42W | 39W |
| Extension module 42x2 Mbps | 14W | 20W |
| Extension module 3x34 Mbps | 11W | 20W |
| Extension module 3x45 Mbps | 16W | 20W |
| Optical non-modular ADM with 21x2 Mbps Channels | 38W | 35W |

Table 2. Optical Transmit/Receive Characteristics

| Optical Interface | Wave-length [nm] | Receiver Sensitivity [dBm] | Output Power [dBm] |
|-------------------|------------------|----------------------------|--------------------|
| FC13L | 1310 | -30.0 | -14.0 to -9.0 |
| FC15L | 1550 | -35.0 | -4.5 to -0.5 |

R-STM-1E

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ORDERING

R-STM-1E/B/# +

Expandable STM-1 ADM with
21 x E1s balanced interfaces

+ Specify network interface:

- # **CX** for coax interface
- FC** for FC/PC type connector
- + **13L** for 1300 nm, single mode, laser diode
- 15L** for 1550 nm, single mode, laser diode

EXTENSION MODULES

R-STM-1E-EXT/?

Extension module for R-STM-1E

? Specify extension module type:

- 42** for 42 x 2 Mbps (E1) module
- 34** for 3 x 34 Mbps (E3) module
- 45** for 3 x 45 Mbps (T3) module

INSTALLATION ACCESSORIES

R-STM-1/~/*

Adaptor shelf for up to three AC-DC converters

R-STM-1/ADAPTOR/21BNC

Balanced to unbalanced converter

R-STM-1E/TRAY

Tray kit for single R-STM-1E on shelf

R-STM-1E/HOR

Horizontal mounting shelf for R-STM-1E

R-STM-1/SHELF

Shelf for three trays/units of R-STM-1E

R-STM-1/DOOR

Door kit for shelf

R-BASIC-INST-KIT

Includes RAP, circuit breakers, alarm and power cables and mounting kit for rack and subracks

* Specify number of converters on shelf:

- 1** for 1 AC-DC power converter
- 2** for 2 AC-DC power converters
- 3** for 3 AC-DC power converters

~ Specify power converter voltage:

- 115** for 115 VAC
- 230** for 230 VAC

MANAGEMENT SOFTWARE/HARDWARE

RV-EEM-SW/^

Element Manager for Win 95/98 PC and small networks of up to 10 network elements

RV-EINM-SW/%

Integrated Network & Element Manager for UNIX platform, supporting MAP products and unlimited network elements.

Note: When ordering RV-EINM-SW, please note that you must also purchase the adequate RV-IN-HW, RV-EEM-SW/1 for IP address configuration and HPOV license.

RV-IN-HW/\$

UNIX workstation (mandatory for RV-EINM-SW)

^ Specify number of network elements for RV-EEM to be managed: **1,2, ... , 10**

% Specify number of network elements for RV-EINM to be managed: **1,2, ...**

\$ Specify Integrated Network Workstation configuration
1 for Ultra 5, 256MB, 1 CPU, 2 ETH cards, RAID, UPS, modem, 21" monitor (up to 50 NEs)

2 for Ultra 2/60, 512MB, 1 CPU, 1 ETH card, RAID, UPS, modem, 21" monitor (up to 100 NEs)

21 for Ultra 80, 1GB, 1 CPU, 1 ETH card, RAID, UPS, modem, 21" monitor (up to 100 NEs)

3 for Ultra 60, 1GB, 2 CPU, 1 ETH card, RAID, UPS, modem, 21" monitor (up to 250 NEs)

31 for Ultra 80, 1GB, 2 CPU, 1 ETH card, RAID, UPS, modem, 21" monitor (up to 250 NEs)

4 for Ultra 80, 1GB, 4 CPU, 1 ETH card, RAID, UPS, modem, 21" monitor (up to 500 NEs)

41 for Enterprise 3500, 2GB, 4 CPU, 5 ETH cards, RAID, UPS, modem, 21" monitor (up to 500 NEs)

CABLES

CBL-R-STM-1

R-STM-1E splitter cable (splits the DB-25 tributaries connector into 11 x RJ-45). Cable length is 2m (6 ft).

Note: One cable is included with each R-STM-1E unit. Two cables are included with each EXT/42 module.

CBL-R-STM-1E/DIN/10

Open-ended coaxial cable with DIN 1.6/5.6 MS connector. Cable length is 10m (33 ft).

CBL-R-STM-1E/DIN/20

Open-ended coaxial cable with DIN 1.6/5.6 MS connector. Cable length is 20m (66 ft)

Note: Two CBL-R-STM-1E/DIN cables are required per port on EXT/34 and EXT/45 expansion modules.

CBL-R-STM-1/DC/S

DC power cable. Cable length is 2.7m (8.9 ft). Two cables are included with each R-STM-1E unit.

CBL-R-STM-1/ALM

Alarm cable for R-STM-1E. One cable is included in R-BASIC-INST-KIT.

RAD

data communications

www.rad.com

● **International Headquarters**
24 Raoul Wallenberg Street
Tel Aviv 69719, Israel
Tel: (972) 3-6458181
Fax: (972) 3-6498250, 6474436
Email: rad@rad.co.il

● **U.S. Headquarters**
900 Corporate Drive
Mahwah, NJ 07430
Tel: (201) 529-1100
Toll free: 1-800-444-7234
Fax: (201) 529-5777
Email: market@radusa.com

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