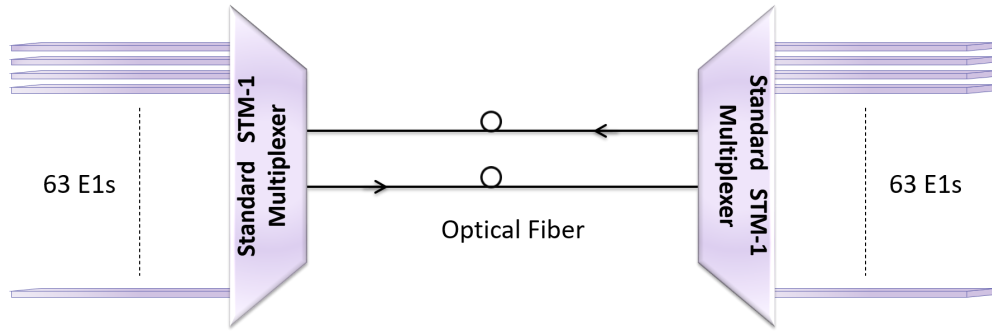


# STM-1 Multiplexer Traffic Capture and Analysis

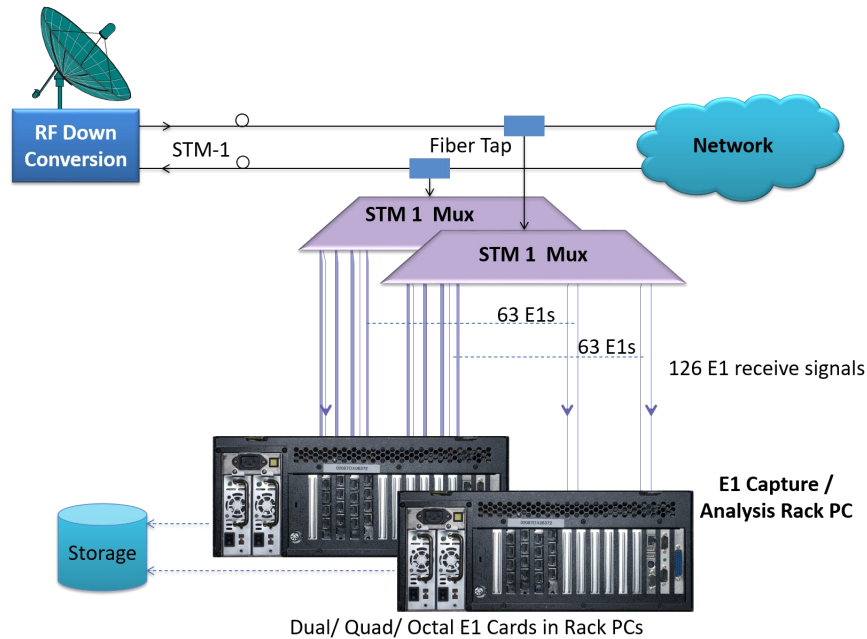
(63 E1 over STM-1 Multiplexer)



## Overview

STM-1 Mux is a cost-effective, compact (only 1U high) Synchronous Digital Hierarchy (SDH) multiplexer designed for applications in metro and access networks, facilitating the efficient transport of traditional TDM and emerging data traffic. It provides 63 E1 TDM interfaces in a standard 1U, 19" platform. This multiplexer is applicable for SDH TDM point-to-point network transmission and switching and can be used in various network topologies, including point-to-point, chain, ring, hub, and mesh networks.

The STM-1 MUX multiplexes 63 E1 signals into an STM-1 stream with TU-12 cross-connect capability. As a standard and compact SDH TDM device, the STM-1 multiplexer is best suited for applications requiring high-density E1 ports to interface with an SDH network through STM-1 fiber optic connections. The device can be managed either through the embedded DCC channel within the STM-1 signal or through the local RJ-45 management interface on the equipment panel. When multiple 63 E1 over STM-1 multiplexers are stacked together, an RS-485 bus may be used to link the units, forming a single managed object. Additionally, the equipment panel includes alarm indication lights and an LCD screen for operational monitoring.



## Typical Applications Using GL's Dual, Quad, and Octal E1 Cards

Below is a typical application utilizing GL's Dual, Quad, and Octal E1 Cards. In this scenario, both directions of an STM-1 signal are received non-intrusively from a satellite link. These signals are subsequently demultiplexed by the STM-1 Mux. The resulting E1s are then routed to GL's E1 Cards for framing and access to voice timeslots. This configuration allows for the analysis, recording, or listening to all 126 E1s, resulting in a total of 3780 timeslots (126\*30).

For more information, refer to [STM-1 Mux and Traffic Capture/Analysis](#) webpage.

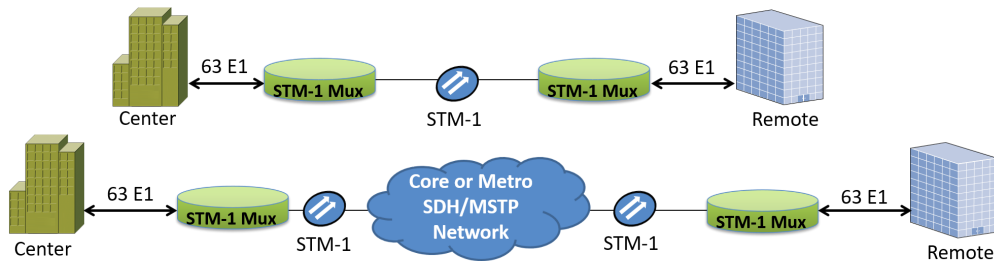


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## Main Features

- Cost-effective access to all 63 E1s within an STM-1 optical signal; two (2) units are required for non-intrusive access to both directions of the optical signal
- Standard 63 E1 Mux configuration for point-to-point applications
- Compact 1U height, 19" rack-mount design with high integration
- Supports various network topologies, including point-to-point, chain, ring, hub, and mesh
- Excludes ADM (Add Drop Mux) functionality
- Optional redundant and online STM-1 optical interfaces for protection switching
- Optical interface features ALS (Auto Laser Shutdown) support
- Interoperates with leading SDH products from different vendors, including Motorola, Lucent, and Huawei
- Supports [TUG3-TUG2-TU12](#) tributary channel numbering and time slot numbering
- Offers multiple clocking modes: internal, STM-1 line clock, external, and tributary clocking
- Includes an LCD display for system configuration and alarm monitoring
- Supports remote power-off alarming function
- Allows for online upgrading
- Designed for easy commissioning and maintenance, ensuring high reliability
- Easy commissioning and maintenance, high reliability

## Typical Applications



Point to point application of 63 E1 over STM-1 multiplexer

Figure: Point-to-point Topology

## SDH Signal Mappings

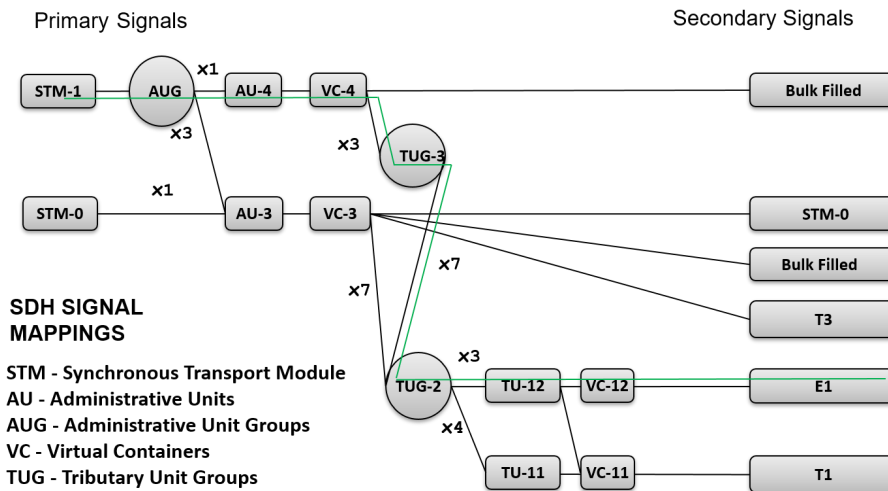
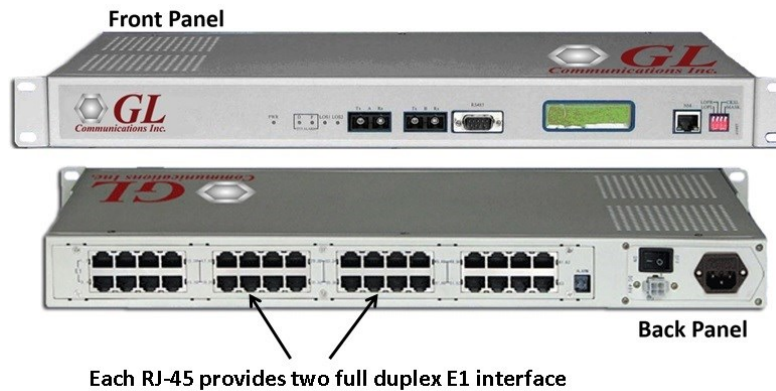


Figure: TUG3-TUG2-TU12 Tributary Channel Numbering

### TUG3-TUG2-TU12 Tributary Channel Numbering

The STM-1 Mux supports various mappings of 63 E1 signals into and from the STM-1 signal, including those conforming to Motorola, Huawei, and Lucent standards.

## Technical Specifications



### STM-1 Fiber Optic Port

Max:	1 or 2 STM-1 optical interfaces (1+1 protection supported)			
Bit Rate:	155.520 Mbit/s $\pm$ 4.6ppm			
Line Code:	Scrambled NRZ			
Protection:	Unidirectional 1+1 APS, revertive / non-revertive selectable			
Wavelength:	Default:	1310nm nominal	Option /5:	1550nm nominal
Output Power:	Default:	Min. -12 dBm	Option /L	Min. -5dBm
	Option /S	Min. -14 dBm	Option /SL	Min. -5dBm
Sensitivity:	Default:	-36dBm	Option /S	-30dBm
Max Input Power:	-3dBm			
Connector:	Default:	SC	Option /F	FC
	Option /S	SC		
Spec:	S-1.1, L-1.1, L-1.2 Single fiber bi-directional interface can be optionally supported			
Clock Source:	Internal, STM-1 Line, External, Tributaries			

### PDH Interface E1 Port

Bit Rate:	2.048 Mbps $\pm$ 50 ppm
Line Code:	HDB3
Impedance:	75W coax/120W twisted pair
Framing:	Unframed
Connector:	RJ-48 (special wiring for two E1s)
Total Channels:	63 E1s

### Standards Compliance

G.703, G.707, G.781, G.783, G.784, G.798, G.803, G.811, G.813, G.823, G.825, G.826, G.841, G.957.

**Management Port**

Interfaces:	10Base-T and RS-485
Ethernet:	RJ-45, 10Base-T adopts MDI port
RS-485:	Four-line RS-485, default baud rate 2400 (1200, 2400, 4800, 9600, 19200, 38400 selectable), data bit: 8; stop bit: 1; parity: odd. TABS protocol Asynchronous RS-485 data
Protocol:	SNMP or Q3

**Physical/Electrical**

Dimensions:	44mm x 230mm x 440mm (H/D/W)
Net weight:	3kg
Power (AC) (63 E1 over STM-1 multiplexer only):	100 to 240 V, 50/60Hz
Power (DC):	-48 V (-58V ~ -38V) or 220V (110V) AC or dual power supply +24VDC
Power consumption:	≤ 15 watts
Redundancy (63 E1 over STM-1 multiplexerRP only):	Dual -48V DC inputs, dual internal power conversion modules
Temperature:	0 to 50°C
Humidity:	0-95% RH (non-condensing)
LAN port:	RJ-45
RS-485 port:	DB-9
E1 interface connector:	RJ-45
Optical Interface connector:	FC or SC
Number of Optical STM-1 Ports:	1 or 2 (second for protection)
Number of E1 channels:	63
LCD Display:	Supported

## Buyer's Guide

Item No	Product Description
<a href="#">SME063</a>	STM-1 Multiplexer / Demultiplexer
<a href="#">SME063D</a>	w/ 1:1 Fiber Protection

Item No	Related Software
<a href="#">UT4010</a>	OC-3 Analysis Software (OC-3, STS-1, T3, E1 and T1)
<a href="#">UT4020</a>	STM-1 Analysis Software (STM-1, STM-0, T3, E1 and T1)

Item No	Related Hardware
<a href="#">LTS100</a>	Dual OC-3/ STM-1 OC-12 / STM-4 PCI Express Card
<a href="#">UT401</a>	Ultra OC-3 Card hardware (Option UT4010 and/or UT4020 required)
<a href="#">FTE001</a>	QuadXpress T1 E1 Main Board (Quad Port– requires additional licenses)
<a href="#">ETE001</a>	OctalXpress T1 E1 Main Board plus Daughter Board (Octal Port– requires additional licenses)
<a href="#">PTE001</a>	tProbe™ T1 E1 Base Unit
<a href="#">XTE001</a>	Dual Express (PCIe) T1 E1 Boards

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