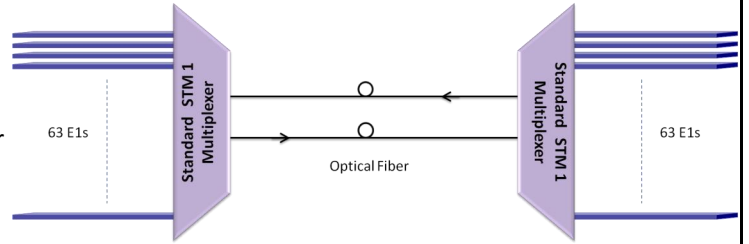


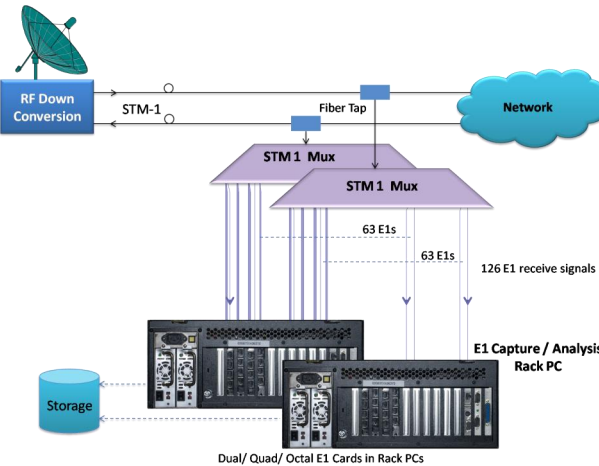
# STM-1 Mux and Traffic Capture / Analysis (63 E1 over STM-1 Multiplexer)

## Overview

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



The STM-1 MUX multiplexes 63 E1 signals into a STM-1 stream, with TU-12 cross-connect capability. As a standard and compact SDH TDM device, the STM-1 multiplexer is best suited to applications where high-density E1 ports are required 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 to form a single managed object. There are also alarm indication lights and a LCD screen on the panel for operation monitoring.



## Typical Application with GL's Dual, Quad, and Octal E1 Cards -

Shown below is a typical application with GL's Dual, Quad, and Octal E1 Cards. Both directions of an STM-1 signal are received non-intrusively from a satellite link and then these signals are demultiplexed by the STM-1 Mux. The E1s are then fed to GL's E1 Cards for framing and access to voice timeslots. All 126 E1s can be analyzed, recorded, or listened (126 x 30 = 3780 timeslots). For more information on STM-1 Multiplexer, refer to [www.gl.com/stm-1-mux-demux.html](http://www.gl.com/stm-1-mux-demux.html)

## Main Features

- Cost effective access to all 63 E1's in an STM – 1 optical signal; two are required to non-intrusively access both directions of the optical signal
- Standard 63 E1 Mux Configuration for point to point applications
- 1U height, 19" rack mount size, high integration, compact design
- Topologies supported include point to point, chain, ring, hub, and mesh
- ADM (Add Drop Mux) function is NOT included
- Optional 2 STM -1 optical interfaces for protection switching - one redundant, one online
- Optical interface supports ALS (Auto Laser Shutdown) function
- Inter-works with popular SDH products of various vendors – Motorola, Lucent, and Huawei
- Support TUG3-TUG2-TU12 tributary channel numbering and time slot numbering
- Supports internal, STM-1 line clock, external and tributary clocking modes
- LCD display for system configuration and alarm
- Supports remote power-off alarming function
- Easy commissioning and maintenance, high reliability

Point-to-Point Application of 63 E1s over STM-1 Multiplexer

Supports Alcatel Lucent, Huawei, Motorola Mappings

Standard SDH Signal Mapping

Operation Safety ALS Function

Support for Revertive and Non-Revertive Unidirectional 1+1 APS

Live Software Update Supported

Remote AC Power Loss Monitoring

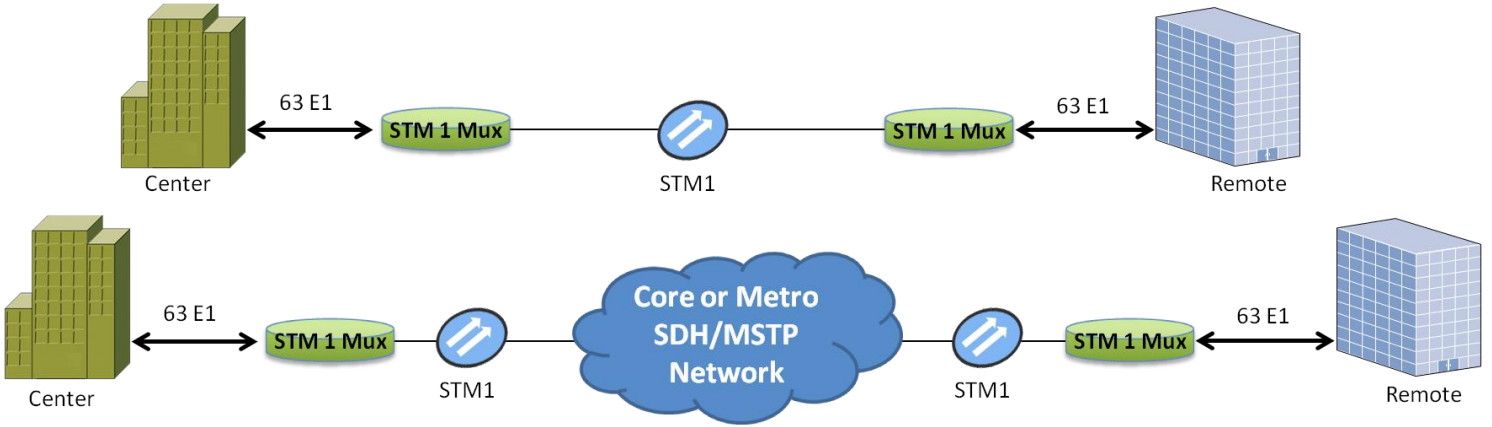


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**Typical Applications**



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

Figure: Point-to-point Topology

**SDH Signal Mappings**

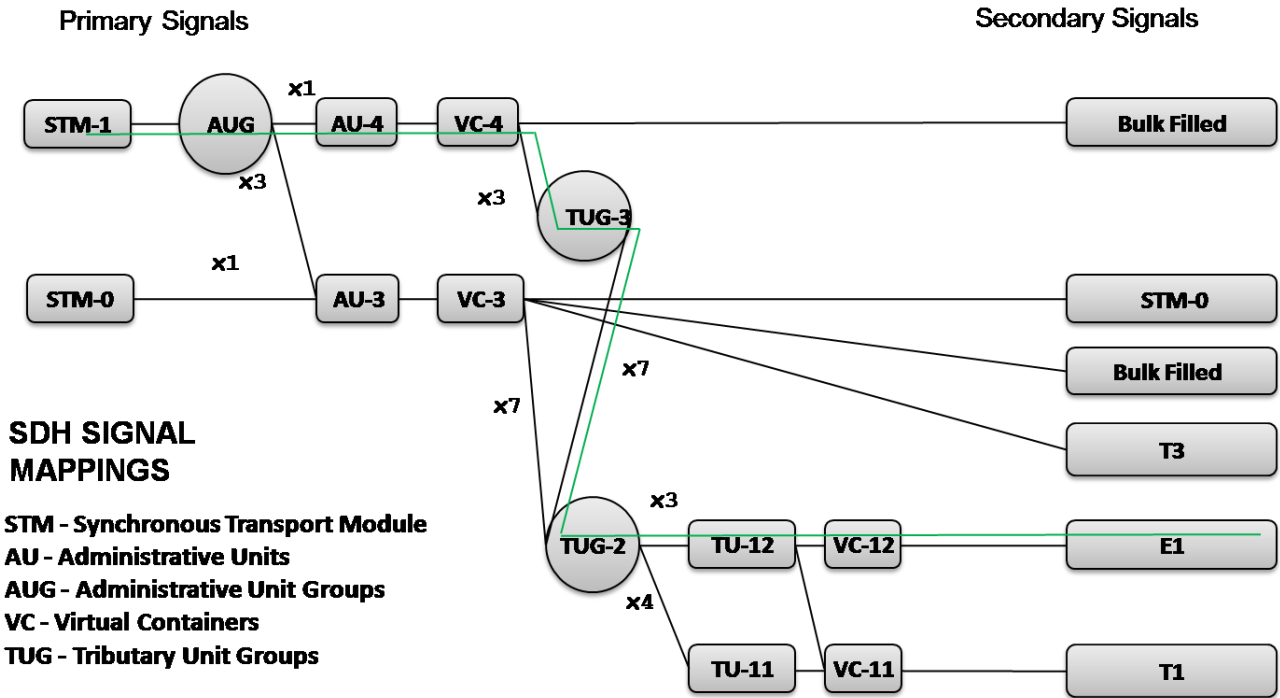


Figure: TUG3-TUG2-TU12 Tributary Channel Numbering

TUG3-TUG2-TU12 Tributary Channel Numbering -

There are several 63 E1 mappings into and from the STM 1 signal. The STM 1 Mux supports all possibilities, including Motorola, Huawei, and Lucent.



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## Technical Specifications



Each RJ-45 provides 2 full duplex E1 interfaces

### 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, STM1-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:	$\leq$ 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

[SME063](#) - STM 1 Multiplexer / Demultiplexer

[SME063D](#) - w/ 1:1 Fiber Protection

### Related Software

[UT4010](#) - OC-3 Analysis Software (OC-3, STS-1, T3, E1 and T1)

[UT4020](#) - STM-1 Analysis Software (STM-1, STM-0, T3, E1 and T1)

### Related Hardware

[LTS100](#) - Dual OC-3/ STM-1 OC-12 / STM-4 PCI Express Card

[UT401](#) - Ultra OC-3 Card hardware (Option UT4010 and/or UT4020 required)

[UTE001](#) - Portable USB based Dual T1 or E1 Laptop Analyzer

[HTE001](#) - Universal Dual T1/E1 Card



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