

ST-M1

SDH STM-1 Multiplexer

Description

The ST-M1 series are compact SDH multiplexers with STM-1 optical interfaces. The 1U box ST-M1-B1 provides up to 8/16/21 E1. The 1.5U box ST-M1-B1 Plus provides versatile tributary interfaces: up to 63 E1/T1 and up to 3 E3/T3. All interfaces are fully compliant with the relevant ETSI standards and ITU-T Recommendations. ST-M1-B1 series are stand-alone entities and provides front/rear-access operation interfaces. Status and alarm indicators are displayed on the faceplates and Fuse Alarm Panel. Both products can be mounted on a standard 19-inch rack.

Both products perform all the OAM&P functionalities compliant with TMN standards. A complete set of operation interfaces are also provided as per ITU Recommendation G.784 that supports Network Element/Operations System (NE/OS), NE/Element Manager (EM), NE/NE, and NE/Craft interfaces.

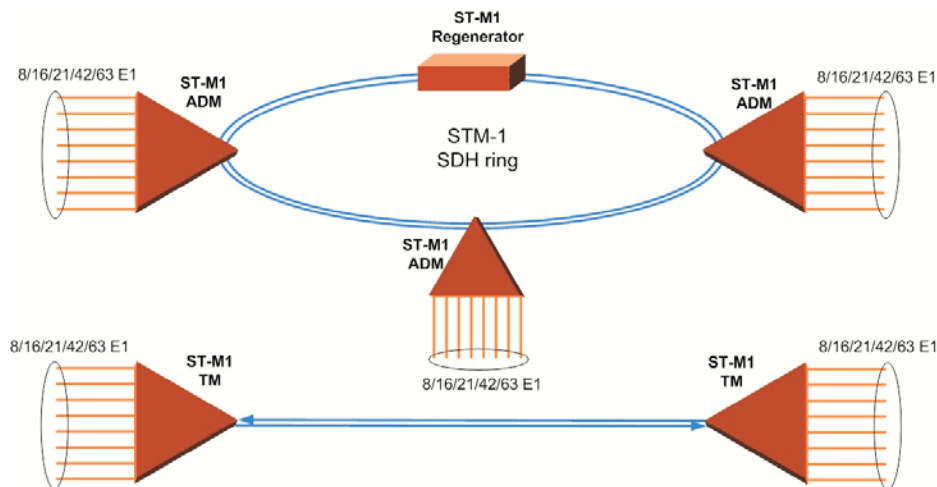
Application

ST-M1 series can work as a Terminal Multiplexer (TM), a Linear Add/Drop Multiplexer (ADM), or an Optical Regenerator (OR) using the same enclosure.



Features

- ✓ STM-1 short haul/long haul optical interface compliant with Rec. G.957 and G.958
- ✓ Self-Healing Ring (UPSR) architecture
- ✓ Fully VC12 Time Slot Assignment
- ✓ Friendly GUI Craft Interface & TMN Q- interface
- ✓ 1+1 protection for STM-1 optical/electrical tributary
- ✓ 1:n protection for E1/T1/E3/T3 tributary
- ✓ Alarm indicators for easy maintenance and fault isolation
- ✓ Engineering order wire, F1 data interface and auxiliary embedded data channels
- ✓ Extensive alarms surveillance capability
- ✓ Quarterly and daily Performance Monitoring (PM) reports compliant with Rec. G.784 and G.821
- ✓ User controlled PM threshold crossing values
- ✓ Software controlled signal loopbacks
- ✓ Testing and diagnostics functions
- ✓ At least 16 nodes on a ring
- ✓ System performance <10-12 for E1 /DS3





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Specification

Optical Aggregate Interface

The two optical interfaces are of the STM-1 data rate and compliant with Rec. G.957 and G.958.

Data Rate	155.520 Mbit/s + 20ppm
Source	MLM LD
Minimum Output	12 ~ -8 dBm
(Other power budget are available depending upon request.)	
Wavelength	1310 + 30nm (1550nm optional)
Line Code	Scrambled NRZ
Fiber Type	single mode
Detector Type	PIN-FET
Minimum Sensitivity	34 ~ -30 dBm
Min. Extinction Ratio	10 dB
System Gain	21/28 dB (short haul/long haul)

Tributary Interface

The tributary interface complies with the ITU-T Rec. 703.

ST-M1-B1

E1 tributaries	8/16/21 channels/ per unit
Data Rate	2.048 Mbit/s + 50ppm
Line Code	HDB3 (G.703)
Line Impedance	75/120 ohms (G.703)
Jitter performance	ITU-T G.823

ST-M1-B1 Plus mode

E1 tributaries	
Data Rate	2.048 Mbit/s + 50ppm
Line Code	HDB3 (G.703)
Line Impedance	75/120 ohms (G.703)
Jitter performance	ITU-T G.823
E3 tributaries	
Data Rate	34,368Kbit/s±20ppm (G.703)
Line Code	HDB3 (G.703)
Line Impedance	75ohms(G.703)
T1 tributaries	
Data Rate	1.544 Mbit/s + 50ppm
Line Code	B8ZS/AMI field selectable
Line Impedance	100 ohms
T3 tributaries	
Data Rate	44,736Kbit/s±20ppm (G.703)
Line Code	B3ZS (G.703)
Line Impedance	75ohms (G.703)

Capacity

Models provided are as follows:

- 63/42/21/16/8 E1 channels per unit
- 4/8/16/21E1 and 1/2/3 E3/T3 channels per unit
- 22 E1 and 20 T1 channels per unit
- 6 E1 and 2 T1 channels per unit

Operations Interfaces

The operation interfaces mostly follows the requirements in ITU-T Rec. G.773. However, the application layer message is proprietary. The management operation complies with the requirements in ITU-T G.784.

OSS interface	LAN
Local craft interface	V.28, 38400 bit/s
NE/NE interface	DCC, G.773, QB1

Discrete Control & Alarm

Environmental monitor/external control/office alarms interface:
 (1) 8 environmental monitor I/P, Ri=2K, Vff=2V optical coupling
 (2) 4 external control O/P, 300Vac, 0.5A solid-state relay
 (3) 4 office alarms (audible MJ/MN, visual MJ/MN) control O/P, 300Vac, 0.5A solid-state relay

Note: The user have the alternative of item (2) or (3) above.

Timing Source Input & Output

Input	2.048 MHz
Square Wave	2.048 MHz data (75/120 Ohms)
Output	2.048 Mb/s, framed all one

Mechanical

Box Size	
1U (ST-M1)	
Height	43mm (1.69 inches)
Width	438mm (17.24 inches)
Depth	244mm (9.6 inches)
1.5U (ST-M1 Plus)	
Height	64.5mm (2.54 inches)
Width	438mm (17.24 inches)
Depth	244mm (9.6 inches)

Interfaces (connector)

STM-1	FC/PC
E1/T1	DB-37
E3/T3	BNC
CIT	DB-9
LAN	RJ-45
Order wire Interface	RJ-11
Timing I/O & User Byte I/O	DB-9
Environment Alarm	DB-9
Office Alarm / External Control	DB-9
Power	Screw lug

Operating Environment

Temperature Range	10oC ~ 65oC
Humidity	up to 95% without condensation

Power Requirement

Input Voltage	AC:110V~220V ; DC:-42V~-56V
Power Consumption	35 watt

