COMARRA

TELECOM TRANSMISSION SOLUTIONS

STM-1 63 E1 (Optical / Electrical) Add-Drop SDH Multiplexer

Product Brochure & Data Sheet

COMARRA

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Product Overview

STM-1 63 E1 (Optical / Electrical) Add-Drop SDH Multiplexer unit is a modular platform unit with two 155.52Mbps optical / electrical interfaces, which may be used in a point-to-point, chain or ring application to provide an ultra-compact, cost effective and flexible service platform.

STM-1 63 E1 (Optical / Electrical) Add-Drop SDH Multiplexer

63xE1 interfaces (120 Ohms [RJ-45] and 75 Ohms [BNC]) options along with Engineering Order Wire is available. The user removable / replaceable STM-1 Optical / Electrical interface option makes it easy to meet various and changing user requirements. STM-1(SDH) Transmission Equipment provides full capability to cross-connect at E1 level between all tributaries.

The equipment can be used as Terminal Multiplexer (TM) or an Add-Drop-Multiplexer (ADM) to build a point-to-point, ring and chain (add-drop) transmission network.

Features

- Supports upto 63 E1s
- 1U height, 19-Inch standard rack-mountable chassis
- Service interfaces
  - 2 x STM-1 optical interfaces, MSA compliant SFP (pluggable) optical module (LC connector) based design, which supports onsite optical port replacement
  - 2 x STM-1 electrical interfaces, SFP electrical module (Mini BNC connector) Optional
  - Maximum 63 E1 interfaces compliant with ITU-T G.703
  - 120 Ohms E1 and 75 Ohms E1 interfaces options available
- Provides complete diagnostics facilities to the user for monitoring optical ports and provide reading of optical transmit power, optical receive power, laser temperature, bias current in voltage alarms etc.
- Performance Monitoring and Alarms - Error counts for B1, B2, B3
- Performance Analysis - Error Seconds (ES), Several Error Seconds (SES), Unavailable seconds (UAS), Higher Order Virtual Container - Remote Error Indication (HOVC-REI), Higher Order Virtual Container - Pointer Justification Event (HOVC-PJE)
  - Management and Maintenance interfaces
  - 10/100BaseT Ethernet management interface
  - RS232 serial management interface
  - Remote (Telnet) management interface
  - Windows XP based Graphical User Interface (GUI)
  - Windows 7 based Graphical User Interface (GUI)
  - SNMP V2 Monitoring
  - Engineering Order Wire (EOW) interface (RJ-11)
  - NMS (Network Management System) for monitoring multiple units from a single / central location.

Features

- Timing mode
  - Synchronization with STM-1 line timing
  - Synchronization with timing from any of the E1 interfaces
  - External timing source option - 120 Ohms 2MBps (External Bits Clock)
  - External timing source - 120 Ohms 2MHz (External TTL Clock) - Factory Configurable
  - Internal Clock - ITU-T G.813 internal oscillator (Stratum 3)
  - The timing source can be auto-switched according to default or operator programmed settings
- Supports 1+1 Line Protection and Automatic Protection Switching (APS) with less than 50ms recovery
  - All 63 VC12s can be mapped (east or west) in 1+1 protection mode
  - Out of 63 VC12s, 21 VC12s (43-63) can be mapped to either direction (east or west) without protection (1+0)
- Supports point-to-point, ring and chain topology
- Local management and network-based management via a unified platform
- Supports Remote Power Down Detection and Auto Laser Shutdown
- Supports STM-1 and E1 loop-back for troubleshooting
- 850nm multi-Mode, 1310nm Single Mode and 1550nm Single Mode optical interface options offered
- Easy to operate
- Redundant power supply card options AC+DC, DC+DC and AC+AC
  - 110V AC - 240V AC (50/60 Hz) power options available
  - -48VDC power option available
- Power consumption less than 20W.

Alarm and Indicator Monitoring

- Power Indicator
- Current Status (integrity and activity) Indicator
- Urgent Alarm Indicator
- Minor Alarm Indicator
- Optical Signal Loss Alarm Indicator
- Remote Device Power-down Indicator
- Auto Laser Shutdown (ALS) Indicator
- Engineering Order-Wire (EOW) Indicator
- Dry contact via 9-pin, D-type male connector
- Buzzer Alarm
- SNMP Diagnostic and Monitoring.

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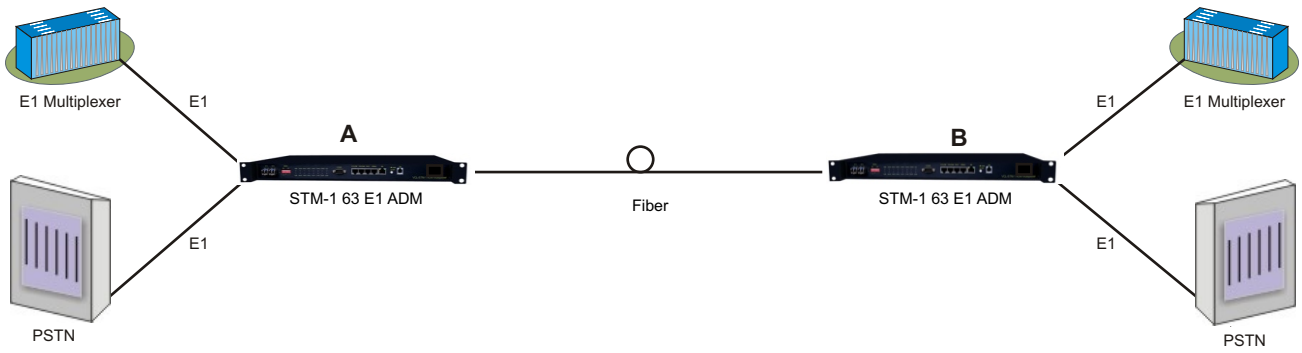
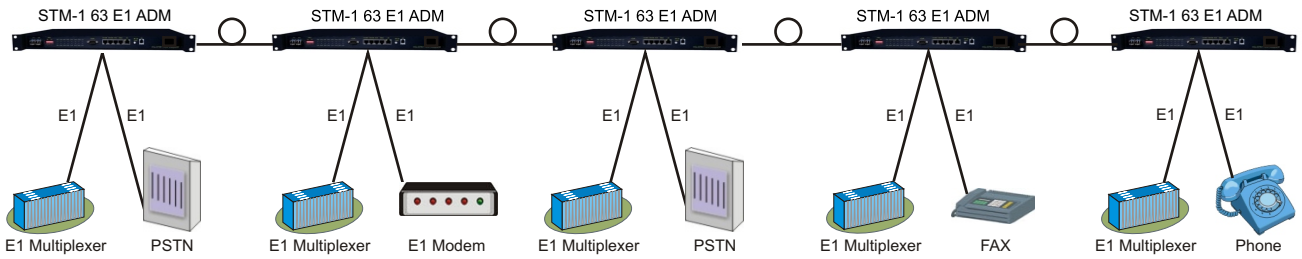
Network Application

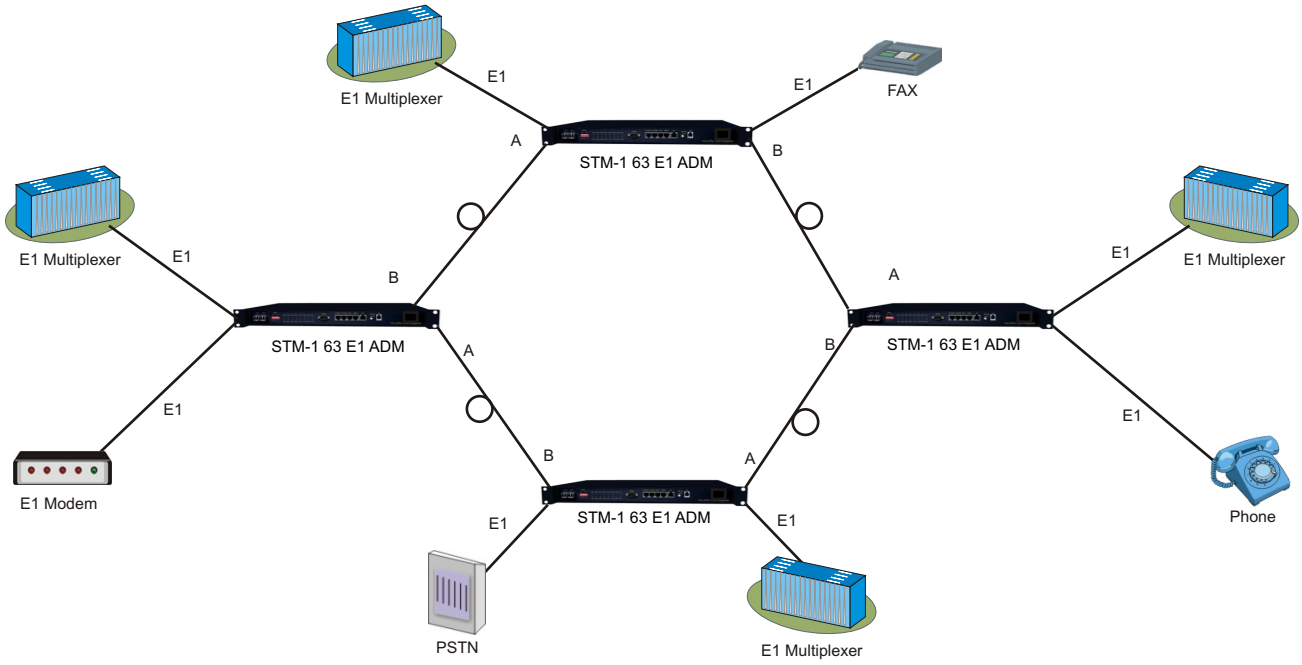
Point to point network application diagram



Chain network application diagram



Ring network application diagram



Technical Specifications

Network Topology and Interfaces

Network topology	Point to point network, Ring and Chain
Service interfaces	STM-1 SDH single optical or double optical ports (1+1 protection) supported or - STM-1 SDH single electrical or double electrical ports (1+1 protection) supported - 63 E1 - 120 Ohms or 75 Ohms

STM-1 Electrical Interface - Technical Specifications

Data Rate	155.52 Mbps
Standard	ITU-T G.703 Compliant
Line Code	CMI
Physical Connector	Mini BNC
Automatic 1+1 line protection	Less than 50 ms switching / recovery

STM-1 Optical Interface - Technical Specifications

Data Rate	155.52 Mbps
Standard	ITU-T G.957 compliant
Bit rate	155.520Mbps
Coding	NRZ
Connector	LC
Light source	Class 1 Laser
Wave length	850nm/1310nm/1550nm (optional) - 1310nm Std.
Transmit power	S 1.1, L 1.1, L 1.2 (- 11 dBm to - 2.5 dBm - as may be ordered)
Receive sensitivity	S 1.1, L 1.1, L 1.2 (- 28 dBm to - 34 dBm - as may be ordered)
Automatic 1+1 Line Protection	Less than 50 ms switching / recovery
Automatic Laser Shut Down Option	User selectable options

STM-1 Monitoring and Performance Analysis

Performance Monitoring and Alarms	Error counts for B1, B2, B3
Performance Analysis	Error Seconds (ES), Several Error Seconds (SES), Unavailable Seconds (UAS), Higher Order Virtual Container - Remote Error Indication (HOVC-REI), Higher Order Virtual Container - Pointer Justification Event (HOVC-PJE)

Optical Interfaces

Type	Wavelength (nm)	Mean launched power (dBm)	Receiver sensitivity (dBm)	Receiver overload (dBm)	Connector	Configuration
Double fibers, Two Direction	1310	-8 ~ -12	-36	-3	LC	Standard (S1.1)
	1310	0 ~ -5	-36	-3	LC	Optional (L1.1)
Single fiber, One Direction	1310/1550	-8 ~ -14	-30	-3	LC	Optional
	1310/1550	0 ~ -5	-30	-3	LC	Optional

E1 Interface Specification - 120 Ohms

Number of E1s (Max) per system	63 E1 Interfaces
Line Rate per E1	(2.048 Mbps ± 50 bps)
Line Code	HDB3
Framing Structure	As per ITU (CCITT) G.704
Framing Options	Un-Framed/PCM 30/PCM 31
Electrical	As per ITU-T G.703
Jitter	As per ITU-T G.823
Impedance	120 Ohms balanced
Nominal Pulse Width	244ns
Connector	RJ-45 (F)

E1 Interface Specification - 75 Ohms

Number of E1s (Max) per system	63 E1 Interfaces
Line Rate per E1	(2.048 Mbps ± 50 bps)
Line Code	HDB3
Framing Structure	As per ITU (CCITT) G.704
Framing Options	Un-Framed/PCM 30/PCM 31
Electrical	As per ITU-T G.703
Jitter	As per ITU-T G.823
Impedance	75 Ohms unbalanced
Nominal Pulse Width	244ns
Connector	BNC

E1 port (TU 12) Performance Analysis

- Error Bits (EB)
- Error Seconds (ES)
- Several Error Seconds (SES),
- Unavailable seconds (UAS)
- Remote Error Indication (REI)
- Code Violation (CV)

Clock Synchronization Options

Clock Synchronization options (63 E1 tributary interfaces)	Synchronization with STM-1 line timing
	Synchronization with timing from any of the E1 interfaces
	External timing source option - 120 Ohms 2MBps (External Bits Clock)
	External timing source - 120 Ohms 2MHz (External TTL Clock) - Factory Configurable
	Internal Clock - ITU-T G.813 internal oscillator (Stratum 3)
	The timing source can be auto-switched according to default or operator programmed settings

Engineering Order Wire (EOW)

Engineering Order Wire (EOW)	RJ-11 connector

NMS

- Graphical User Interface (GUI) Windows XP / Windows Vista compatible
- SNMP V2 based NMS

Power Supply Options

DC Mains Input	- 48VDC (range -36V DC to -75V DC)
AC Main Input	100V AC to 240V AC, 50 / 60 Hz
Power Protection	1+0 (AC, DC), 1+1 (AC+AC, AC+DC, DC+DC)
Power Consumption	< 20 Watts

Operating Conditions

Ambient temperature	-10^{0}C ~ $+60^{0}$C
Relative humidity	<90% (Non condensing)

Mechanical Specifications

Rack Mounting	Standard 19 Inch. DIN Rack
Height	44 mm.
Depth	256 mm.
Width	440 mm.
Weight	3.75 kg

Ordering Information

S. No.	Part	Description
1	STM-1-63E1-ADM-MUX	STM-1 63 E1 (Optical/Electrical) Add-Drop Multiplexer SDH transmission unit 19” Metal Box 1U High Rack Mount Version

Please specify options

STM-1 Port Options

S. No.	Part	Description
1	OPT-1+0-1310-20KM	1 x Optical SFP - 1310nm, 20KM S1.1 (LC)
2	OPT-1+1-1310-20KM	2 x Optical SFP - 1310nm, 20KM S1.1 (LC)
3	OPT-1+0-1310-40KM	1 x Optical SFP - 1310nm, 40KM L1.1 (LC)
4	OPT-1+1-1310-40KM	2 x Optical SFP - 1310nm, 40KM L1.1 (LC)
5	OPT-1+0-1550-80KM	1 x Optical SFP - 1550nm, 80KM L1.2 (LC)
6	OPT-1+1-1550-80KM	2 x Optical SFP - 1550nm, 80KM L1.2 (LC)
7	OPT-1+0-1550-120KM	1 x Optical SFP - 1550nm, 120KM L1.2 (LC)
8	OPT-1+1-1550-120KM	2 x Optical SFP - 1550nm, 120KM L1.2 (LC)
9	ELE-1+0	1 x Electrical SFP (mini BNC)
10	ELE-1+1	2 x Electrical SFP (mini BNC)

E1 Options

S. No.	Part	Description
1	63E1-120	63 E1 Card with 8 x DB-37 to 8 x RJ-45
2	63E1-75	63 E1 Card with 8 x DB-37 to 16 x BNC

Power Supply Options

S. No.	Part	Description
1	DC-1+0	1 x DC Mains Input - 48VDC (range 40V to 60V)
2	DC-1+1	2 x DC Mains Input - 48VDC (range 40V to 60V)
3	AC-1+0	1 x AC Mains Input 110Volts-240 Volts, 50Hz/60Hz
4	AC-1+1	2 x AC Mains Input 110Volts-240 Volts, 50Hz/60Hz

Note:

Technical specifications are subject to changes without notice.

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