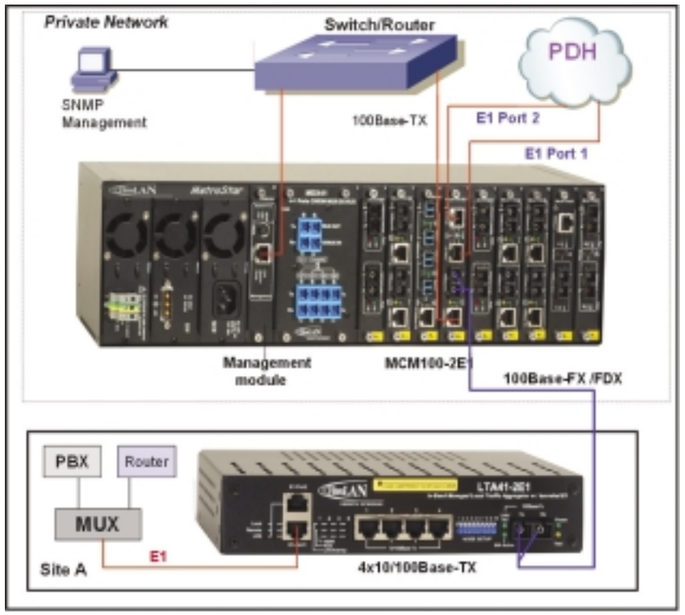
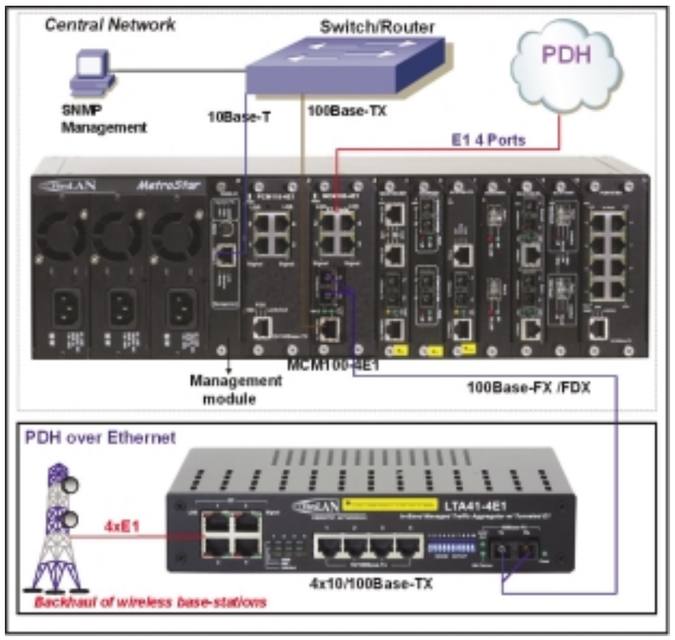
FibroLAN Access

LTA41-xE1/T1

Basic Topology



PDH over FO Backhaul Solution



The MMM-01 Management module installed in the ***MetroStar*** System will monitor, control and manage the modules in the ***MetroStar*** chassis and the remote LTA41-XE1 or T1 devices.
It will report alerts and traps to the SNMP Manager station located at the Central Node.
MetroStar™ equipped with a management module can be monitored and managed from any SNMP management station running popular management platforms (e.g. FibroLAN's *MetroView*, HP OpenView, SNMPc, etc)

Specifications are subject to change w/without prior notice

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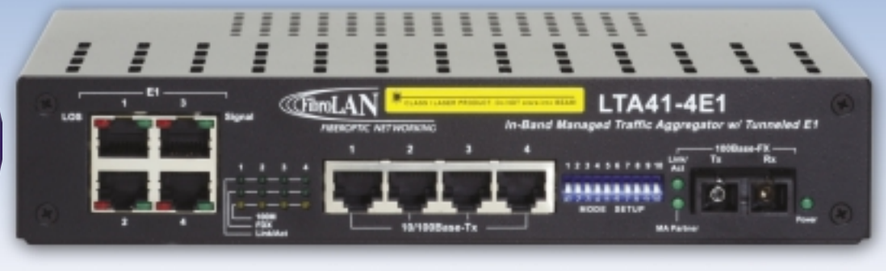
Fast Ethernet/WAN

FibroLAN Access

LTA41-xE1/T1



Managed 4:1 Fiber Local Traffic Aggregator with tunneled E1/T1

The LTA41-E1/T1 is an In-Band managed traffic aggregation device allowing four TP local users to share a single fiber link along with one, two or four E1/T1 channels tunneled over the fiber link.
It allows carriers with a WAN installed base to upgrade (without changing the fiber infrastructure) for delivery of broadband services while maintaining the original E1/T1 connectivity, opening an excellent business opportunity at a minor capital investment. The LTA41-E1/T1, located at customer premises, needs to be connected to a ***MetroStar*** system (equipped with appropriate modules) located at the access node, where the two services – broadband (Fast Ethernet) and WAN (E1/T1) are separated and connected to their respective networks. The device encapsulates E1/T1 data into Fast Ethernet frames. The E1/T1 frames are given highest priority. Each E1/T1 channel reduces the effective Fast Ethernet bandwidth by up to 3Mbps, however when E1/T1 ports are not connected, full 100Mbps is automatically regained.
The BMD (Buffered Media Domain) along with VLANs implemented in the device provide a physical level of security and separation between the users as only traffic between each user and the F/O link is allowed.
The fiber link implements **FEF** (Far End Fault signaling) to provide a true two-way link integrity indication and together with the SLE (Subscriber Link Emulation), Statistics, Loop-Back and Last Gasp form a set of powerful diagnostic tools.
The LTA41-E1/T1 is available with a variety of multi-mode and single mode fiber interfaces (distances ranging up to 150km) as well as single-fiber-strand (full bi-directional traffic) models.
The LTA41-E1/T1 is standard "half-rack" size for economical installation in both rack-mount and desktop modes. It is equipped with a reliable internal switching power supply for extended MTBF. The optional DC power supply facilitates deployment in Telco environments.
The LTA41-E1/T1 is an MA™ enabled device: when connected over fiber to another MA™ enabled device (***MetroStar*** module) it is remotely in-band managed without the need of an expensive SNMP agent and IP address. In addition, this management architecture ensures full security as the management signals are physically confined into the fiber-link, not allowing the subscriber access of any kind. Rate Limiting, QOS,VLAN tagging, extensive diagnostic and statistics, Loop-Back and Last Gasp, are unique features making the LTA41-E1/T1 the ultimate choice for high quality FTTB networks and cost effective solutions for WAN installations.
The PDH (E1/T1) over Ethernet offers also a unique and cost effective solution for backhauling wireless base stations.
The device is managed either by the FibroLAN's *MetroView* Device Manager, ***MetroStar*** Management module or via front panel DIP switches.

Key Features

- Various LTA41-xE1/T1 to cover distances up to 150Km (MM, SM and SFS)
- E1/T1 ports tunneled over FE – extends life of traditional WANs
- 1, 2 or 4 RJ48 copper E1/T1 ports
- VLANs (per port and tagging) for users separation
- FDX Flow Control (IEEE 802.3x) and HDX back pressure Flow Control
- FEF (Far End Fault) to verify F/O Link integrity
- SLE (Subscriber Link Emulation) for enhanced resiliency
- Auto-Cross 10/100TX ports
- Frame length range: 64 ÷ 1916 bytes max.
- Single - Fiber – Strand option: Bi-Di traffic
- Extensive remote Monitoring and Control via MA™
- Rate Limiting for comprehensive SLA implementation
- Broadcast storm protection
- Loop-back on E1/T1 ports to test the E1/T1 line integrity
- Extensive MIB statistics support -34 MIB counters per port
- IK MAC addresses
- Extensive LED indicators for enhanced diagnostics
- ETR (Extended Temperature Range) for indoors industrial environment
- Desktop, shelf, or wall mount installation

DS3301R1107

FibroLAN Access

LTA41-xE1/T1

Remote Management Functions

Managing an LTA41-xE1/T1 CPE device, connected to a *MetroStar* module, is performed through either a serial connection or a Telnet connection.

Ethernet section: very similar in terms of management to the LTA41/MA device

Main menu:
Overall status, Port configuration, Global configuration, VLAN operation, Priority settings, Mac address tables, Statistics, Diagnostics, Restart device, Restore factory defaults, E1 or T1 Management menu

E1/T1 management menu:
Port status & config: Signal, LOS (On/Off), AIS (No/Yes), Output (En/Disable), TAOS (On/Off) User –LB (Loop-Back, On/Off), Remote –LB (On/Off)
E1/T1 port management: View status & configuration, Set port description, Set Remote loop-back mode, Set User loop-back mode, Set TAOS mode, Enable/Disable output, Selectable Length (T1)
Reset E1/T1 ports
Restore E1/T1 default configuration

General Specifications

Standard Compliance
IEEE802.3u, 100Base-TX, 10Base-T, 100Base-FX
VLAN per port, VLAN Tagging/Routing, IEEE802.1p&q,
Frame Size: 1916 bytes max.

E1 section – Standards Compliance
Supports AMI/HDB3 Coding Types
Waveforms meet G.703
Transmit return loss specifications –ETSI ETS-300166
Jitter as per ETSI CTR12/13, ITU G.736, G.742, and G.823.
LOS per ITU G.775

E1 –delay
Total link latency (2x E1 devices, excluding signal over fiber propagation)= < 800 µsec.
2x 4E1 devices=< 960 µsec.

10/100Base-TX port
Shielded RJ-45, Auto-Cross
100m over STP cat.5 or higher cabling
HDX/FDX via auto-negotiation or forced (DIP switch)
10/100Base-Tx auto-negotiation or forced (DIP switch)

E1/T1 ports
RJ-48, 120Ω/100Ω, respectively

Diagnostics per 10/100TX port
FX port: Link/Activity
TX ports (each): Link/Activity, FDX, 100

Diagnostics per E1/T1
Local Signal, Remote Signal, LOS (Loss of signal)
Note: Remote Signal is not available in LTA41-4E1/T1 models

Diagnostics per System
Power, MA Active

Conversion Method
BMD (Buffered Media Domain), Full wire speed, 1K MAC addresses, FDX flow control, HDX back-pressure flow control, SLE per user port

T1 section - Standards Compliance
Supports AMI/B8ZS Coding Types
Output Power Waveforms meet ANSI T1.102
Jitter attenuation per AT&T Pub 62411
LOS per ANSI T1.231

T1 –delay
Total link latency (2x T1 devices, excluding signal over fiber propagation)= <1050 µsec.
2x 4T1 devices= <1200 µsec.

100Base-FX port
Duplex SC connector (ST optional)
For F/O specifications, refer to next page

E1 (DIP switches)	T1
TP 1,2,3,A/N, Force 10	T1 Local Loop-Back
TP4: A/N, 10/100,Duplex	Encode B8ZS/AMI
VLAN ports default setup	Cable length selector
Far- End–Fault en/disable	TP1 A/N, 10/100, Duplex
Reset Device	LAN/Aggregator Select
E1 Loop-Back en/disable	

The LTA41-4E1/T1 models have a different DIP switches setting
Management commands override DIP switches setting

Environmental & Physical

Power-Supply
Internal, 100÷240VAC, 50÷60Hz
-36÷ -72VDC optional DC P.S.

Power Consumption
6W max.

Operating Temperature
0˚÷45˚C; ETR (Ext Temp) = -10˚÷+70˚C optional

Storage Temperature
-20˚ ÷ +80˚C

Humidity
10%÷90% non-condensing

Weight
640gram

Safety
EN 60950-1

Dimensions
223x44x150mm (WxHxD)

EMC
FCC Part 15, Subpart B, Class A
EMC Directive 89/336/EEC
EN 300 386 V1.3.3
ITU-T K.20/21:2003

Installation modes
Desk-top, wall-mount, half rack, 19” shelf

Ordering Information

Part #	Model	Description
3301	LTA41-1E1	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with one E1 tunneled channel, duplex SC, multi mode 2km
3302 3352	LTA41-1E1/SMR7 LTA41-1T1/SMR7	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with one E1/T1 tunneled channel, duplex SC, single mode 1310nm, 7km
3303 3354	LTA41-1E1/SMR LTA41-1T1/SMR	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with one E1/T1 tunneled channel, duplex SC, single mode 1310nm, 15km
3304	LTA41-1E1/SM	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with one E1 tunneled channel, duplex SC, single mode 1310nm, 25km
3305	LTA41-1E1/SM/L	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with one E1 tunneled channel, duplex SC, single mode 1310nm, 40km
3306	LTA41-1E1/SM/L2	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with one E1 tunneled channel, duplex SC, single mode 1310nm, 70km
3307	LTA41-1E1/SMRF13	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with one E1 tunneled channel, simplex SC, single mode SFS 1310nmTx/1550nmRx , 20km
3311 3350	LTA41-2E1 LTA41-2T1	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with two E1/T1 tunneled channels, duplex SC, multi mode 2km
3312 3351	LTA41-2E1/SMR7 LTA41-2T1/SMR7	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with two E1/T1 tunneled channels duplex SC, single mode 1310nm, 7km
3313 3353	LTA41-2E1/SMR LTA41-2T1/SMR	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with two E1/T1 tunneled channels, duplex SC, single mode 1310nm, 15km
3314	LTA41-2E1/SM	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with two E1 tunneled channels, duplex SC, single mode 1310nm, 25km
3315	LTA41-2E1/SM/L	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with two E1 tunneled channels, duplex SC, single mode 1310nm, 40km
3316	LTA41-2E1/SM/L2	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with two E1 tunneled channels, duplex SC, single mode 1310nm, 70km
3318	LTA41-2E1/SM/L3	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with two E1 tunneled channels, duplex SC, single mode 1550nm DFB, 100km
3317 3355	LTA41-2E1/SMRF13 LTA41-2T1/SMRF13	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with two E1/T1 tunneled channels, simplex SC, single mode, SFS, 1310nmTx/1550nmRx , 20km
3320 3360	LTA41-4E1 LTA41-4T1	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with four E1/T1 tunneled channels (4x RJ-48 ports), duplex SC, multi mode 2km
3321 3361	LTA41-4E1/SMR7 LTA41-4T1/SMR7	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with four E1/T1 tunneled channels (4x RJ-48 ports), duplex SC, single mode 1310nm, 7km
3322 3362	LTA41-4E1/SMR LTA41-4T1/SMR	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with four E1/T1 tunneled channels (4x RJ-48 ports), duplex SC, single mode 1310nm, 15km
3323 3363	LTA41-4E1/SM LTA41-4T1/SM	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with four E1/T1 tunneled channels (4x RJ-48 ports), duplex SC, single mode 1310nm, 25km
3324 3364	LTA41-4E1/SM/L LTA41-4T1/SM/L	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with four E1/T1 tunneled channels (4x RJ-48 ports), duplex SC, single mode 1310nm, 40km
3325 3365	LTA41-4E1/SM/L2 LTA41-4T1/SM/L2	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with four E1/T1 tunneled channels (4x RJ-48 ports), duplex SC, single mode 1310nm, 70km
3326 3366	LTA41-4E1/SM/L3 LTA41-4T1/SM/L3	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with four E1/T1 tunneled channels (4x RJ-48 ports), duplex SC, single mode 1550nm DFB, 100km
3327 3367	LTA41-4E1/SMRF13 LTA41-4T1/SMRF13	MA managed four 10/100Base-TX to one 100Base-FX Local Traffic Aggregator with four E1/T1 tunneled channels (4x RJ-48 ports), simplex SC, single mode, SFS, 1310nmTx/1550nmRx, 20km

F/O port specifications (applicable to all LTA41-E1/T1 models)

Option	F/O Port	Transmit WL	Minimal Output Power	Maximal Output Power	Receive WL	Typical Receive Sensitivity	Maximal Input Power	Suggested Distance Km
MM	Duplex SC, MM	1310nm	- 20dBm	- 14dBm	1310nm	- 30dBm	- 14dBm	0-2
SMR7	Duplex SC, SM	1310nm	- 20dBm	- 8dBm	1310nm	- 30dBm	- 3dBm	0-7
SMR	Duplex SC, SM	1310nm	- 16dBm	- 8dBm	1310nm	- 30dBm	- 3dBm	0-15
SM	Duplex SC, SM	1310nm	- 15dBm	- 8dBm	1310nm	- 33dBm	- 3dBm	0-25
SM/L	Duplex SC, SM	1310nm	- 11dBm	0dBm	1310nm	- 33dBm	- 3dBm	15-40
SM/L2	Duplex SC, SM	1310nm	- 3dBm	2dBm	1310nm	- 35dBm	- 3dBm	25-70
SML/3	Duplex SC, SM	1550nmDFB	- 5dBm	0dBm	1550nm	- 36dBm	- 3dBm	40-100
SMRF13	Simplex SC, SM, SFS	1310nm	- 15dBm	- 7dBm	1550nm	- 34dBm	- 3dBm	0-20