

The Alcatel 7390 LMDS Network Termination (NT) is the digital part of the customer premises equipment also called the Alcatel 7390 LMDS terminal station. It comprises the modem and user interfaces, giving the end user access to a full variety of services:

- ▼ 10/100BT interface: LAN interconnection, virtual private networks (VPNs), high speed Internet/intranet, voice over IP
- ▼ STM-1/OC-3 interface
- ▼ E1/T1 or fractional E1/T1 interface: leased lines, VPNs, voice over PBX, data over leased lines
- ▼ Available in both G.703 and X.21 physical interfaces
- ▼ ISDN BRI interface: voice and data
- ▼ POTS

Highly scalable and fully managed as part of a multiservice solution, Alcatel 7390 LMDS products can be rapidly deployed to provide a powerful, cost-effective access solution for the first mile delivery of a wide range of data, Internet, voice and video services.



A whole bundle  
of services, true  
broadband  
capabilities



## Wide variety of applications

Leased line services provide E1/T1 or fractional E1/T1 transparent connection between the terminal stations and the base station. In the case of fractional E1 or T1 interface, cross-connect capabilities are provided at this level and a grooming function is provided at the base station. Network interfaces are based on n x E1 or T1 connections directly available at the base station. Typical applications are: PBX interconnections and VPNs, data services on leased lines for WANs through concentrators, FRAD (frame relay), bridges or routers, and cellular/PCS/WLL backhaul.

## Switched voice services

Switched services provide support to the voice traffic including voice over IP and ISDN communications. These services are provided on the 7390 NT with interfaces such as ISDN PRI and ISDN BRI, POTS or IOBT for VoIP. The Alcatel LMDS network interface is a concentrated interface towards the local exchange directly through multiple E1/T1 connections or indirectly through an ATM interface to the voice over IP gateway. Typical applications are IP telephony, voice over PBX lines and multiple ISDN lines (2B+D).

## Bursty data services

The Alcatel 7390 LMDS solution has been designed especially to provide bursty data services with the ability to handle high capacity packet transmission. TDMA and ATM embedded technologies combined with dynamic radio resources allocation make it possible to pack more traffic through available radio spectrum. Each customer uses only the bandwidth required, when needed, with instantaneous bursty rate capabilities up to several Mb/s. Typical applications are Internet, intranet, and LAN-to-LAN interconnections which are especially attractive to customers such as teleworkers, SOHOs and SMEs.

## High performance Air interface

The Alcatel 7390 LMDS solution features an outstanding series of technical advantages:

- ▼ Based on TDMA and ATM technologies
- ▼ Patented radio frame optimized for both circuit-oriented and data-oriented applications
- ▼ Data encryption capability to allow confidential communications
- ▼ Reduced round trip delay (less than 8 ms for a single 64 kb/s circuit, less than 4 ms for an E1/T1 circuit)
- ▼ Powerful dynamic bandwidth allocation mechanism, based on a combination of polling, contention and piggy-backing techniques
- ▼ Burst capability of up to 10 Mb/s
- ▼ Efficient Reed-Solomon and convolutional channel FEC (Forward Error Correcting) for quasi error-free transmission: BER 10<sup>-14</sup>

## High reliability

The Alcatel 7390 LMDS NT benefits from automated manufacturing processes, highly qualified components and severe test procedures, providing the highest level of quality and thus limiting maintenance to routine visits, while also reducing the sets of spare parts to a minimum.

## Full software control

- ▼ Automatic power control, automatic frequency control, handled by the base station
- ▼ Alarms monitoring, configuration management, performance monitoring
- ▼ Software download from the base station for fast and easy system upgrade
- ▼ SNMP-based management system

## Easy installation

In some cases, Alcatel 7390 NTs can be located in common parts of a building where they can be shared between several customers. An NT can be installed in a standard 48 cm (19 in.) or ETSI rack, as a single desktop unit, or on a wall. The Alcatel LMDS terminal station has been designed for rapid installation and switch-on (plug-and-play commissioning through automatic network entry method). A single coaxial cable (up to 200 meters /218 yards between the RT and NT) interconnects the NT to the outdoor unit, transporting all signals: downstream IF (transmitted to the NT), upstream IF (received from the NT) and DC power supply (no need for any external PSU). For cable length compensation, 20dB extra gain in reception and 10dB in transmission are added.

## Technical Summary

DBS - Digital Base Station  
 RBS - Radio Base Station  
 RT - Radio Termination

### IF Interface

- ▼ Tx (DBS to RBS): 400-700 MHz
- ▼ Rx (RBS to DBS): 950-2050 MHz
- ▼ Connector: N female 75Ω
- ▼ Max. NT-RT cable length: 3 x 70 m (9.8 x 230 ft.)
- ▼ Upstream channeling: 3.5 to 9 MHz
- ▼ Upstream roll-off factor: 25%
- ▼ Upstream modulation: QPSK
- ▼ Upstream FEC: Reed-Solomon RS (63,53,5)
- ▼ Downstream channeling: 14 to 36 MHz
- ▼ Downstream roll-off factor: 35%
- ▼ Downstream modulation: D-QPSK
- ▼ Downstream FEC
  - inner code: convolutional, 7/8, k=7
  - interleaver: depth=12
  - outer code: Reed-Solomon RS(204,188,8)

## Applications/Interfaces

### Leased line applications

- ▼ E1: G.703 or X.21
- ▼ T1: G.703
- ▼ N x 64 kb/s (n\*32): G.703/G.704 or X.21

### Data applications

- ▼ Ethernet: Ethernet 10Base-T, Ethernet 100Base-T
- ▼ Frame relay STM-1/OC-3: G.703 or X.21

### Voice applications

- ▼ ISDN PRI: G.703
- ▼ ISDN BRI: 2B+D, U interface
- ▼ VoIP: Ethernet 10Base-T or POTS

## Power/Environment/ Mechanical Data

- ▼ Power: 80 to 264 V AC, 47 to 63 Hz, 65 W (RT included)
- ▼ Environment: -5° to 55° C (29° to 63° F) (in operation), ETS 300 019-1-4 class 3.1 E
- ▼ EMC standards: ETS 300 385 class B
- ▼ Height: 4.5 cm (1.8 in.)
- ▼ Width: 44.5 cm (18 in.)
- ▼ Depth: 24.0 cm (9.6 in.)
- ▼ Weight: 3 kg (6.6 lb.)
- ▼ Installation: 48 cm (19 in.) cabinet, desk, wall fixation

For more information [www.cid.alcatel.com](http://www.cid.alcatel.com)

Alcatel and the Alcatel logo are registered trademarks of Alcatel. All other trademarks are the property of their respective owners. Alcatel assumes no responsibility for the accuracy of the information presented, which is subject to change without notice.

© 2000 Alcatel. All rights reserved. 10308  
3CL 00428 0008 TQZZA Ed.03



ARCHITECTS OF AN INTERNET WORLD