LXT776 Multi-Standard DSL Modem

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Product Overview

The LXT776 is a highly integrated modem that supports G.SHDSL, ETSI SDSL, and HDSL2 digital subscriber line applications, and data rates from 192Kbps to 2.320Mbps. This multi-chip module (MCM) greatly simplifies system implementation by combining a:

- TC-PAM transceiver
- Forward Error Correction (FEC) feature
- Flexible frame mapper
- Analog front-end with integrated line driver.

OEMs can program the Time Slot Assignment (TSA) function to select and map individual DS0 channels of the TDM bus to/from the DSL payload. A general purpose TDM bus interface allows operation up to 8,192Kbps and enables the transceiver to be used with common T1 and E1 framers.

The frame mapping function inserts and recovers the DSL overhead. Interrupt alarms are provided for loss-of-sync and CRC errors. The system also has read/write register access to the Embedded Operations Channel (EOC) bits within the DSL frame. The LXT776 also includes an integrated line driver that supports G.SHDSL, ETSI SDSL, and HDSL2 standards, and is capable of delivering over 17 dBm of power to a 135 Ω line. An internal hybrid network provides over 6 dB of first-order echo cancellation.

Key Applications

- DSL Access Multiplexers (DSLAMs)
- WAN access for LAN routers and switches
- T1/E1 transport systems
- Multi-channel digital pair gain systems

Glossary

ANSI:	American National Standards Institute
CPE:	Customer Premises Equipment
DSL:	Digital Subscriber Line
DSLAM:	Digital Subscriber Line Access Multiplexer
DSP:	Digital Signal Processing
E1:	32 64Kbps channels
ITU:	International Telecommunications Union
FEC:	Forward Error Correction
G.SHDSL:	International Symmetric High-speed DSL standard (developed by ITU)
HDSL2:	High-speed Digital Subscriber Line, generation 2, 1 pair (developed by ANSI)
ETSI:	European Telecommunications Standards Institute
PAM:	Pulse Amplitude Modulation
SDSL:	Symmetrical Digital Subscriber Line, 1 pair
T1:	24 64-Kbps channels
TC-PAM:	Trellis Coded Pulse Amplitude Modulation
TDM:	Time Division Multiplexing

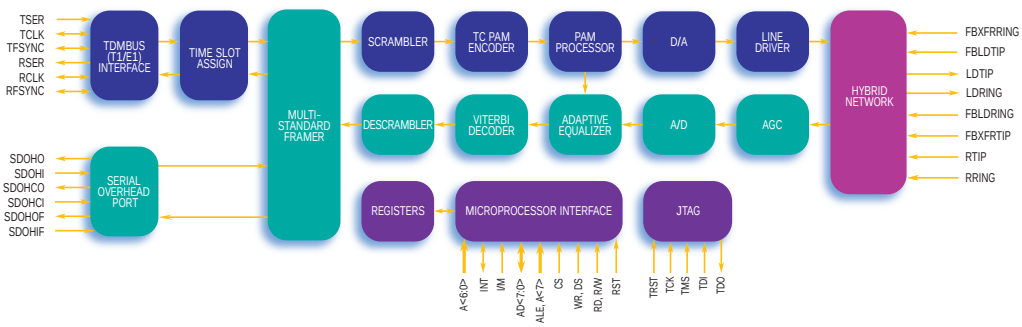
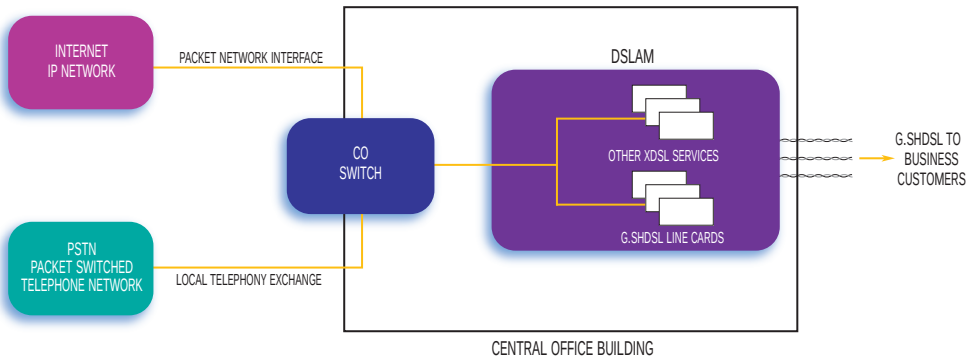


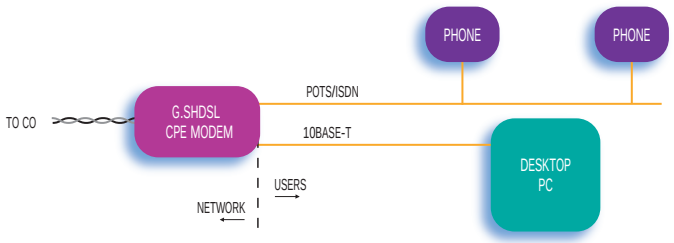
Figure 1:



G.SHDSL Line Cards in a DSLAM Application

Deploying G.SHDSL in a central-office-based DSLAM environment allows local exchange carriers the option to deploy symmetric guaranteed services for businesses. G.SHDSL was designed to be spectrally compatible with other services such as HDSL, ADSL, and T1. As such, G.SHDSL can be deployed without disrupting other DSL services in the local loop.

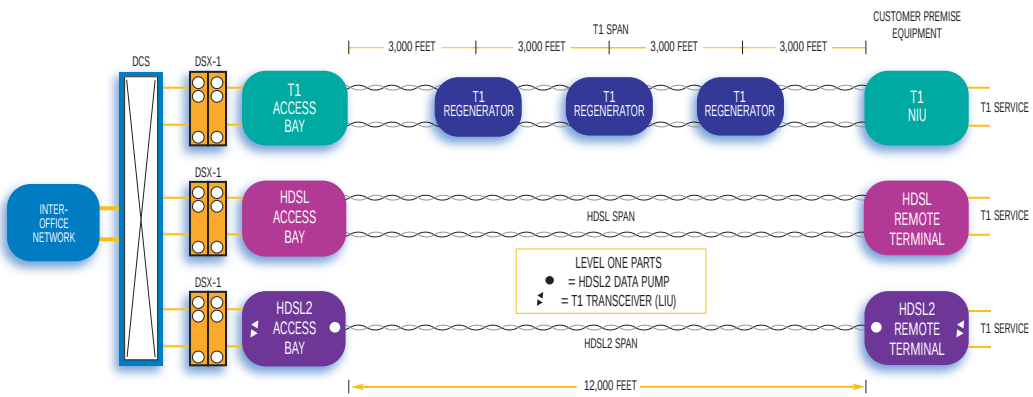
Figure 2:



G.SHDSL CPE Modem in an Office Application

A G.SHDSL CPE modem will allow symmetric data rates to an office setting of 1.544 Mbps. This can serve as a complete voice/data pipeline to a small office. With a single G.SHDSL CPE modem, users can get multiple phone lines and PC Ethernet connections.

Figure 3:



HDSL2 Based T1 Delivery

The original T1 carrier required two twisted pairs, plus repeaters spaced at 3,000-foot intervals. First-generation HDSL eliminated the need for repeaters in spans up to 12,000 feet. Now, HDSL2 delivers T1 payloads on a single twisted pair.

Features	Benefits
■ G.SHDSL, ETSI SDSL, and HDSL2 compliant	■ Allows interoperability with standard-based DSL compliant equipment
■ Integrated line driver and hybrid network	■ Reduces board space and component count ■ Increases port density
■ Automatic activation	■ Helps minimize the load on the system processor
■ Programmable	■ Supports both remote and central office applications
■ Adaptive equalization and echo canceller	■ Maintains excellent transmission performance with changing noise and line characteristics
■ Generic µP port	■ Interfaces with either Intel or Motorola 8-bit microcontrollers
■ Multi-standard framer	■ Supports various symmetric DSL standards
■ Protocol independent	■ Supports both ATM cell and IP packet data
■ Available in two BGA packages: – 17mm x 17mm – 23mm x 23mm	■ Board space efficient

Support Products

- LXD776 Evaluation System and User Guide
- LXT776 Datasheet
- DSL Application Programming Interface Software and Programming Guide
- Product Presentation
- Symmetric DSL White Paper
- HDSL2 and G.SHDSL Frequently Asked Questions (FAQs)

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