

# E1 LIMs for ATM, Frame Relay & Circuit Emulation Applications

## Introduction to E1 LIMs

The operational capabilities of an Xedge switch is determined in part by the slot controller in use and the number and type of associated line interface modules (LIMs). The Xedge E1 LIM is used for ATM cell switching, frame relay, channelized frame relay, and N x 64 Kbps Circuit Emulation over two or four physical ports.

Two models of E1 LIMs are available for use with their corresponding Xedge slot controller(s) in the Xedge switch:

- The Xedge E1-2CS dual port LIM is used with the Xedge PCX, PCE, CE, CHFRC, FRC, VSM, or ACP.
- The Xedge E1-4CS quad port LIM is used with the Xedge PCX, PCE, CE, CHFRC, or VSM.

Application	Controller	LIM	Ports
ATM Cell Switching	ACP or PCX	E1-2SC/4CS	Up to 8
Frame Relay	FRC (Frame to ATM)	E1-2SC	Up to 2
Channelized Frame Relay	CHFRC (Ch Frame to ATM)	E1-2SC/4CS	Up to 4
T1 Circuit Emulation	CE or PCE	E1-2SC/4CS	Up to 4
Nx64 Kbps CE Emulation	VSM	E1-2SC/4CS	Up to 4
Voice over ATM	VSM	E1-2SC/4CS	Up to 4

## Specifications

All physical and operational specifications apply to both the E1-2CS LIMs.

- Standards: ITU-T G.703, G.804, I.432, ATM Forum UNI 3.0/3.1
- Interface: E1
- Connector Type: BNC 75 ohms, DB15 120 ohms
- Line Encoding: HDB3
- Framing: G.704 Multiframe or unframed
- Transmit Line: Automatic, 0 dB to 13.2 dB in 4 increments
- Transmit Timing: From received clock; internal oscillator; primary or secondary system reference (line of Node Timing Module)

## LIM Features

- Dual or Quad port E1 2.048 Mbps interface or ATM, frame relay and circuit emulation applications.
- Comprehensive alarm reporting and performance monitoring
- Meets international ITU-T transmission standards

## Diagnostics & Alarms

### Loopbacks

The E1 LIMs support Transmit, Receive, and Payload Loopbacks

### Status Indications

- IS (In Service)
- LS (Loss of Signal)
- AL (Alarm Loopback or Loss of Frame)

### Alarms & Performance

The E1 LIMs support the physical layer alarms and performance monitoring statistics listed below:

- Loss Of Signal
- Loss Of Frame
- Alarm Indication Signal
- Far End Receiver Failure
- Line Coding Violations
- Line Errored Seconds
- Line Severely Errored Second
- Errored Seconds
- Severely Errored Seconds
- Alarm Indication Signal Seconds
- Unavailable Seconds
- Far End Errored Seconds

