

## Circuit Emulation Module

### INTRODUCTION

GDC's Xedge Circuit Emulation (CE) slot controller is an AAL1 (ATM Adaptation Layer 1) interface to the Xedge switch, providing a Constant Bit Rate service to interconnect legacy equipment over the broadband network. Up to four data paths are supported per controller, providing either DS1, E1, DS3, E3 or serial physical interfaces.

Circuit emulation service is necessary in a broadband network that requires maintained timing synchronization of circuits over the ATM network, controlled Cell Delay Variation at the end-point, and minimized latency or propagation delay of the circuit through each switching node. The ability to pass serial bitstreams unmodified end-to-end across the network (or Unstructured Data Transfer) is suitable for applications where simplicity of configuration is required, or the bitstream in question is proprietary and cannot be interpreted at a standard physical interface.

### System Compatibility

The Xedge CE plugs into a single slot of an Xedge AC- or DC-powered shelf: Xedge 6160 (4 slots), Xedge 6280 (7 slots) or the 16-slot Xedge 6640/6645 shelves.

The Xedge CE is intended for use with any one of the following Enhanced Clocking LIMs:

- Xedge DS1-2CS or DS1-4CS LIM for T1 circuits.
- Xedge E1-2CS or E1-4CS LIM for E1 circuits
- Xedge DS3 LIM for DS3 circuits
- Xedge E3 LIM for E3 circuits
- Xedge SI-2C, SI-4C or Xedge ASIO LIM for serial circuits (RS442, RS449, EIA/TIA-530, V.35, X.21)

### Diagnostics

Diagnostics are provided via status LEDs for all ports, diagnostic screens for all faults, and Local and Line Loopbacks. Management Interfaces include:

- Standard SNMP
- MIB management
- GDC's ProSphere Network Management System

### FEATURE HIGHLIGHTS

- Constant Bit Rate circuit emulation.
- Supports emulation of T1/E1, DS3/E3 or serial circuits.
- Input configurable as DTE or DCE
- Unstructured and Structured data transfer (UDT/SDT)
- Adaptive Clock Recovery, Loop Timing or Network-provided Timing.
- Fully compliant with the ATM adaptation Layer 1 (AAL1) specification.
- Supports transport over ATM connections or ATM Pseudowires over Ethernet.
- Secure configuration and management via SNMP or MIB editor over Telnet/craft connection, or via ProSphere Network Management System.

### Timing Options

A comprehensive series of clock recovery techniques is available on the Xedge CE controller to synchronize devices attached to the asynchronous ATM network:

- Adaptive Clock Recovery
- Network Provided Timing
- Loop Timing
- T1 and E1 LIMs can either provide timing from an internal oscillator, loop timing from the received connection, or provide and/or derive timing from a programmed system timing bus.
- Additional timing options are available via the Xedge Node Timing Module.

### Compliance

The Xedge CE controller is fully compliant with the ATM Adaptation Layer 1 (AAL1) specifications in ITU-T I.363.X and ANSI T1.630. Xedge CE also meets the specifications for jitter and wander in ITU-T G.823, ITU-T G.824, and in ANSI T1.403 for applications that require the recovery of timing information for T1, E1, T3, or E3 circuits.

