



Ethernet Gateways EXN401 and EXN410

The EXN400-series are small, easily installable Ethernet to ATM STM-1/OC-3 gateways developed to facilitate re-use of existing legacy ATM networks. Ethernet traffic is encapsulated using RFC2684 bridged mode onto ATM AAL5 PVCs according to traditional ATM DSLAM installations.

Telecom grade

The EXN400-series uniquely supports the migration of broadband access networks from ATM to cost-efficient Ethernet, while preserving



the quality of service and service availability expected in telecom networks.

- EXN401 offers one STM-1/OC-3 155 Mbps port as ATM WAN interface and two electrical Fast Ethernet ports as Ethernet LAN interface
- EXN410 offers four STM-1/OC-3 155 Mbps ports as ATM WAN interface and one electrical Gigabit Ethernet port as Ethernet LAN interface
- New features can be added as a software upgrade on already installed systems with an upgrade script to preserve previous configuration

Automatic protection switching on STM-1/OC-3 and link aggregation on Fast Ethernet enable traffic preservation at single point of failure. A very robust mechanical design and -48 V DC power supply ensures operation also under harsh conditions. The possibility to connect two EXN401/410 in parallel towards a VRRP enabled BRAS ensures 100% uptime.

Quality of Service

Ethernet and ATM priority queues are used to guarantee the Quality of Service (QoS) needed for delay-sensitive applications like voice and television broadcast. Automatic mapping between ATM service class and VLAN/Ethernet priority preserves the prioritization for frames unpacked from ATM cells.

VLAN and PVCs can be used to separate traffic types, differentiate services, and to preserve security. Complete flexibility is provided for VLAN handling by configuration of multiple PVC to one VLAN, multiple VLAN over one PVC, VLAN transparency, or one-to-one mapping.

Combined with bandwidth shaping, wire-speed traffic classification, unicast, and multicast make the EXN400-series ideal for simultaneous multi-service real-time traffic such as voice, video and data.

Management

The EXN400-series is easily integrated with network surveillance via a standard SNMP interface with ATM and Ethernet performance counters. It can be managed from the Public Ethernet Manager (PEM) and provisioned from an in-band command line interface.

Technical data

THIS DOCUMENT IS VALID FOR RELEASES

- EDA 2.0, EDA 2.1, and EDA 2.2

TRANSMISSION INTERFACES

- 2 Fast Ethernet or 1 Gigabit and 1 Fast Ethernet RJ-45
- 1 or 4 STM-1/OC-3 with SC connectors

MANAGEMENT AND ALARM INTERFACES

- SNMP v2c traps and in-band management
- RFC2558 SDH/SONET alarm, event, and performance
- RFC1757 RMON Ethernet counters
- RFC2515 ATM counters
- Command line interface through telnet and RS232
- LED for power, error, and link status

POWER SUPPLY

- Supply Voltage: -48 V DC (-40 to -56)
- Power consumption: <50/<54 W*
- Current rating: 1.25/1.35 A*
- Connector: PLB06M

PHYSICAL APPEARANCE

- Enclosure: 1HU in a 19" rack
- Dimensions: (HxWxD) 44 x 442 x 238.5 mm
- Weight: 4.5 kg

ATM CHARACTERISTICS

- 4000/12000 VCC*, full VPI/VCI range, per VC queuing
- Shaping from 334 cells/second to full bandwidth
- UBR, UBR+MDCR, GFR, CBR, VBR-rt and VBR-nrt
- Flexible overbooking of ATM resources
- ATM loop-back and continuity check
- Pair-wise Automatic Protection Switching on EXN410 STM-1/OC-3 ports (1+2/3+4) according to GR-253

ETHERNET CHARACTERISTICS

- VLAN to PVC mapping with and without VLAN tag
- Ethernet to Ethernet-over-ATM
- 4096 VLAN or VLAN transparent mode
- ATM QOS to VLAN priority mapping
- 8/32K MAC*
- Wire-speed switching performance for classification, unicast and multicast with 4 priority queues
- Link aggregation and Weighted Fair Queuing on EXN401 Fast Ethernet interfaces

OPERATING ENVIRONMENT

- Temperature: 0 to 55°C
- Relative hum: 5% to 95% non-condensing
- Altitude: 0 to 4500 m (0 to 15,000 ft)

IEEE AND IETF STANDARDS COMPATIBILITY

The main functionality of EXN401/EXN410 is defined in software. This allows the switch to be upgraded in order to meet the demand of future network and application protocols. In its basic configuration EXN401/410 is compatible with the following standards:

- IEEE 802.1D-1998 Bridged Ethernet
- IEEE 802.1Q VLAN, IEEE 802.3ac
- IEEE 802.3 LAN
- IEEE 802.3u Fast Ethernet
- IEEE 802.3ab 1000BASE-T
- IEEE 802.3ad Link aggregation
- IETF RFC2684/RFC1483 Bridged mode

ITU STANDARDS COMPATIBILITY

- ITU-T I.361 B-ISDN ATM layer specification
- ITU-T I.363.5 Type 5 AAL
- ITU-T I.432.1, I.432.2
- ITU-T I.371
- ITU-T I.610 F4/F5 OAM
- ITU-T G.957 S-1.1 STM-1/OC-3 short haul

ELECTROMAGNETIC COMPATIBILITY

- EN 300 386 class A
- EN 55022 class A
- FCC part 15 class A
- EN 55024
- NEBS Level 3 design
- GR-63
- GR-1089
- CE class A

ENVIRONMENT

- ETS 300 019-2-1 class 1.2 Storage
- ETS 300 019-2-2 class 2.3 Transportation
- ETS 300 019-2-3 class 3.2 Operation

SAFETY

- UL 1950, IEC 60950, and EN 60950

POWER, GROUNDING AND BONDING

- ETS 300 132-2, ETS 300 253, and ETR 283