# 416EL 32 Mbps Inverse Multiplexer



## Description

The inverse aggregation bandwidth is scalable as Nx1.984 Mbps [N=1～16] with maximum payload bandwidth at 31.744Mbps. 416EL can be managed locally by connecting a VT-100 emulated PC to the CID port or remotely through Telnet/SNMP access all on front panel of the unit. Administration, Maintenance, and Provisioning (OAM&P) are provisioned with the use of 16Kbps embedded operation channel (EOC) that runs through the inverse link. Configured with individual IP address for local and remote unit, 416EL is accessible to the Internet users who are managing the units from a far end place.

To ensure operation continuity and accommodate field requirement, 416EL offers choices of AC or DC or AC+ DC power.

## Features

◆ Connect one high speed broadband over 1～16 E1 links

◆ Available in Desktop or 19 inch rack

◆ Automatically scale up and down E1 links according to link availability.

◆ Support data rates 1.984 x N [1～16] Mbps.

◆ Use 16Kbps EOC channel for remote configuration and OAM&P.

◆ Support 10/100/1000M Base-T or 100FX interfaces

◆ Comply with ITU-T G.703

◆ Support VLAN ID Q in Q

◆ Support dying gasp for remote power failure detection

◆ Allow a maximum delay of 64 ms among E1 links.

◆ Support management via VT-100, Telnet & SNMP

## Specification

**Inverse multiplexing**

| | |
|---|---|
| Maximal delay: | 64 ms[512 frame buffer] |
| Data rate: | Nx1.984Mbps, N=1-16, 16Kbps EOC channel is embedded in SA4-SA6 spare bits. |

## E1 Interface

| | |
|---|---|
| Standard: | ITU-T G.703, G.704, |
| No. of E1 output: | 1-16,scaled down automatically per E1 alarms |
| Line rate: | 2048 Kbps +/- 50 PPM |
| Line Code: | HDB3 |
| Framing: | PCM31, PCM31C, PCM30, PCM30C |
| Pulse shape: | Meet ITU-T G.703 |
| Impedance: | Balanced 120Ω+/-5% resistive or unbalanced 75Ω+/-5% resistive, software programmable |
| Connection Type: | RJ-45 or BNC |

## LAN Interface

| | |
|---|---|
| Standard: | IEEE 802.3 / IEEE 802.3u |
| Interface: | IEEE 802.3/802.3u 10/100/1000M Base-T |
| Data Rate: | N x1.984Mbps[N=1～8] |
| Bridging Capability: | Complied with IEEE 802.1d transparent bridge |
| | Supports VLAN ID, Q in Q and up to 2048 MAC addresses learning |
| Connection Type: | RJ45, 4 ports |
| Ethernet packet size: | Maximum packet size up to 9K jumbo frame |

## SFP interface

| | |
|---|---|
| Type | One 100Base-FX 802.3u interface or 10/100/1000Base-FX 802.3u interface ,SFP or SC type |

## Alarm and Performance

| | |
|---|---|
| CID interface: | VT-100/RS-232C/Telnet/SNMP/Web server |
| EOC channel: | 16Kbps |
| SNMP: | meet IETF RFC1157,1212 and 2495@10/100Based Tx with RJ-45 connector |

Meet G.821 and G.826 for E1 interface

Fiber interface; LOS,

## Maintenance

Loopback: LL, RL and NL(local payload loopback)

## Power

AC or DC or AC+ DC is optional
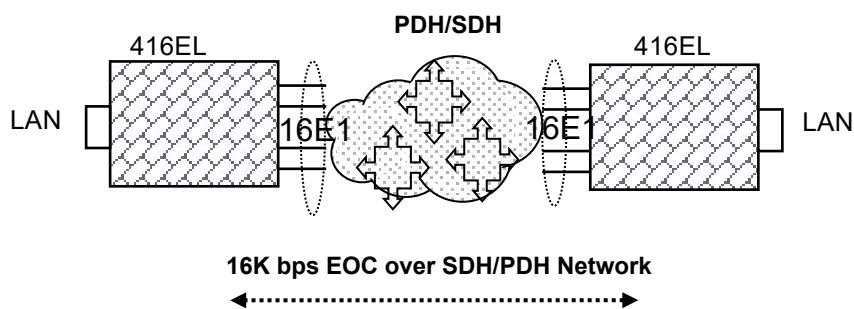
AC: 90 - 260 V @ 50-60 Hz, 0.2A

DC: -36~ -72 V

## Mechanic

Desktop (WxHxD)          250mmx40mmx168mm

## Application

### Point to Point

Two units of 416EL connected in a pair for transporting user LAN traffic over the PDH network. The 16K EOC channel for management traffic of 416EL is also shown.



**PDH/SDH**

416EL          416EL

LAN          16E1          16E1          LAN

**16K bps EOC over SDH/PDH Network**

### Transporting Broadband Services over TDM Network

416EL enables the transport of Broadband Services over the legacy TDM network.
In the typical application diagram illustrating below, Broadband ADSL traffic from 2 user Sites are connected to Local Offices 1 & 2 respectively, where IP DSLAM and 416EL are deployed for transporting over the PDH network.

In the Central Office of Service Providers, user traffic relayed by two 416EL peers is sent to a Layer 3 switch where Internet connection is made.

User Site 2