



SHDSL24 Line Card

Line Speeds: Up to 2.3 Mbps

Key Applications: Remote LAN access, video conferencing, inter-company work collaboration, multimedia, web hosting, data warehousing.

The Nokia D500 Multiservice Access Platform provides the industry's most powerful balance of performance, scalability, and solutions for evolving networks. The high-density, high-capacity D500 supports a wide range of services from Fast Internet access to emerging higher bandwidth multimedia/entertainment services such as video on demand, digital broadcast TV, and interactive TV. The D500 is designed to provide operators with the ability to evolve their networks from ATM to IP in a seamless manner, as IP becomes the prevalent protocol in the access network.

SHDSL

As part of the family of D500 line cards, the 24-port SHDSL line card is best suited for data-only applications that require high upstream and downstream bit-rates. SHDSL is well suited for many business services and applications including remote LAN access, video conferencing, inter-company work collaboration, multimedia, web hosting, and data warehousing.

The SHDSL line card is standards compliant for the ANSI and ETSI markets, providing twenty-four lines offering symmetric services based on Multi level Trellis Coded Pulse Amplitude Modulation (TC PAM), and can be provisioned in 64 Kbps increments to a maximum rate of 2.3M. The SHDSL line card also supports pair bonding, which allows for increased bandwidth (4.6M) using two pairs, or two pair operation

supporting symmetric high data rate services (2.3M) on longer loops than single pair operation can achieve.

The SHDSL line card is offered with rear connectors for rear cabling access designed specifically for use in the 21-inch (ANSI) mechanics version of the D500 subrack or with front connectors for front cabling access designed specifically for use in the 19-inch (ETSI) mechanics version of the D500 subrack, or the D500 RAM.

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Standards Compliant

The SHDSL24 line cards are compliant with the following standards:

- ITU-T G.991.2 (G.SHDSL), Annex A and Annex B

Electromagnetic standards:

- GR-1089-CORE
- EN 300 386
- EN 55022

Environmental standards

- NEBS GR-63-CORE
- ETS 300 019-1-1: Class 1.2
- ETS 300 019-1-2: Class 2.3
- ETS 300 019-1-3: Class 3.1E

Provisioning Parameters

The following provisioning parameters are supported for the 24-port SHDSL line card:

Data Transport

For the STUC:

- Maximum and minimum data rates
- Fixed rate or rate adaptive modes
- Port bonding

Provisioning Modes

- Annex A or B
- Power backoff

Performance Monitoring

The 24-port SHDSL line card supports the following performance monitoring test parameters:

- Loss of Frame (LOF) failures and seconds
- Loss of Signal (LOS) failures and seconds
- Loss of Cell Delineation (LCD) failures and seconds
- LOF retrains

- Error rate retrains
- Far End (FE) error rate retrains
- Errored Seconds (ES)
- FE errored seconds
- Coding Violations (CV)
- FE errored seconds
- FE coding violations
- HEC Errors
- FE HEC Errors
- Training starts

The counts are available for 15-minute and daily intervals, near-end and far-end, and may be displayed as numeric values or in graphical format.

ATM Performance Management Counters

- HEC errors
- Cells received
- Cells transmitted

Signal Quality Measurements

Each SHDSL port reports the following operation actuals to D500 Element Manager and WebCraft:

- Noise margin
- Target noise margin
- Loop attenuation
- Transmit power
- Receiver gain
- Transmit rate
- Previous transmit rate
- Best transmit rate
- Payload transmit rate
- Maximum achievable rate
- Received blocks
- Transmitted blocks
- Cells received
- Cells transmitted
- Operation mode

Physical Specifications

Interfaces per card

24 ports per card for a total of 456 ports per ANSI system and 360 ports per ETSI system

Variants

SHDSL24r – 24-port SHDSL line card with Annex A, rear access

SHDSL24f – 24-port SHDSL line card with Annex A or Annex B, front access

Card dimensions

1.0 in. wide x 15.75 in. high x 8.27 in deep (25 mm x 400 mm x 210 mm)

Card weight

~ 4 lbs

Operating humidity

0 to 95% (non-condensing)

Operating temperature

-40° F to 149° F Hardened for central office installation, outdoor cabinet, and other harsh environments (-40° C to 65° C)

Power consumption

~ 1.9 watts per line

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