



D500 ADSL Line Card

Line Speeds: Up to 8 Mbps downstream and 1 Mbps upstream

Key Applications: High-speed, high-value services such as Fast Internet access, IP-VPN, remote working, Video on Demand, Pay Per View, and streaming media services.

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 the ability to evolve their networks from ATM to IP in a seamless manner, as IP becomes the prevalent protocol in the access network.

ADSL

As part of the family of D500 line cards, the 48-port ADSL DMT line card provides high-speed service solutions for business and residential customers, meeting their bandwidth-intensive requirements. ADSL allows operators to support a diverse range of services from fast Internet to video streaming.

The ADSL line card is standards compliant for the ANSI and ETSI markets and provides forty-eight lines using Rate Adaptive Asymmetric DSL

(RADSL) or fixed rate training on a port-by-port basis. Each port can be provisioned to support either g.lite or g.dmt service.

The ADSL 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. The ADSL

line card can be ordered in an Annex A (ADSL over POTS) or Annex B (ADSL over ISDN) variant to satisfy the needs of individual operators.

Standards Compliant

The ADSL48 line cards are compliant with the following standards:

- ITU-T G.992.1 (Annex A)
- ETR 328
- ITU-T G.994.1 (G.hs)
- ITU-T G.996.1 (loop testing)
- EN55022 (EMC)

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Performance Parameters

48-port ADSL line card performance parameters are as follows (all parameters are for 24 AWG cable):

- Downstream (CO to end-user): 32 Kbps to 8.0 Mbps in 32 Kbps increments.
- Upstream (end-user to network): 16 Kbps to 1.1 Mbps in 32 Kbps increments.

Provisioning Parameters

The following provisioning parameters are supported for the 48-port ADSL line card:

Data Transport

For both the ATUC and ATUR:

- Minimum and maximum fast path rate
- Minimum and maximum interleaved path rate
- Target noise margin
- Interleave delay
- Rate degraded threshold

Provisioning Modes

- G.lite
- G.dmt
- Rate Adaptive DSL training
- Fixed Rate training
- ANSI
- Auto ANSI

Performance Monitoring

The 48-port ADSL line card supports the following performance monitoring test parameters:

- Loss of Frame (LOF) seconds
- Loss of Signal (LOS) seconds
- Loss of Power (LPR) seconds
- Loss of Cell Delineation (LCD) seconds
- LOF retrains
- Error rate retrains
- Errored Seconds (ES)
- Coding Violations (CV)
- FE errored seconds
- FE coding violations
- FE error rate retrains

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

For the ATUC and ATUR:

- Noise margin
- Target noise margin
- Loop attenuation
- Transmit power
- Transmit rate
- Previous transmit rate
- Best transmit rate
- Payload transmit rate
- Received blocks
- Transmitted blocks
- ATM Cells received
- ATM Cells transmitted
- Actual operation mode
- Vendor ID
- Vendor version

Error Data

- LOF failures
- LOS failures
- LPR failures
- LCD failures
- LOF seconds
- LOS seconds
- LPR seconds
- LCD seconds
- Errored seconds
- Coding violations
- Far End (FE) errored seconds

- FE coding violations
- Header Error Control (HEC) errors
- FE HEC errors
- Error retrains
- FE error retrains
- LOF retrains
- Training starts
- Corrected errors
- FE corrected errors
- Bad provisioning status

Physical Specifications

Interfaces per card

48 ports per card for a total of 912 ports per ANSI system and 720 ports per ETSI system

Variants

ADSL48ar – 48-port ADSL line card with Annex A, rear access

ADSL48af – 48-port ADSL line card with Annex A, front access

ADSL48bf – 48-port ADSL line card with 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

~ 1.3 watts per line

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