

## Nokia ISAM NELT-B

### Point-to-point line card

The Nokia Intelligent Services Access Manager (ISAM) NELT-B Line Termination Card is a 36-port point-to-point and active Ethernet line card, delivering Fast Ethernet (FE) and Gigabit Ethernet (GE) services over point-to-point fiber. It is used to deliver residential and business service, and it supports aggregation and transport application such as mobile backhaul transport, business services backhaul, DSLAM aggregation (subtending) and Ethernet/IP aggregation.

The Nokia ISAM NELT-B line card offers advanced video and forwarding capabilities for residential IPTV deployments. Synchronous Ethernet clock-synchronization and carrier-grade Ethernet support enable business services and mobile backhaul applications. Advanced troubleshooting, connectivity fault management and link aggregation provide the high reliability required for these services. The NELT-B line card can be deployed indoors or outdoors — from Nokia ISAM shelves ranging from 2 to 16 slots, giving operators a wide range of density options.

### Features

- 36-ports FE/GE (through dual-compact cSFP)
- Feature parity with DSL for residential services
- SyncE and carrier-grade Ethernet support for business and mobile backhaul.
- Flexible provisioning of FE/GE interfaces
- Support for LAG/LACP and MSTP on the same line card
- Transparent and participating Ethernet service recovery for protection and restoration of services



- End-to-end connectivity fault management
- Industrial hardened

### Benefits

- Scalable Ethernet point-to-point deployment with up to 1 Gb/s bandwidth per port
- High density with dual-compact SFPs
- Residential and business services
- Cost-effective mobile backhaul and access node subtending
- Carrier-grade reliability, clock synchronization and troubleshooting
- Indoor/outdoor deployments with the ISAM family: Nokia 7302 ISAM FD, Nokia 7330 ISAM FD Fiber-to-the-Node (FTTN), ETSI Nokia 7356 ISAM Fiber-to-the-building Remote Expansion Module (FTTB REM) and Nokia 7360 ISAM FX

## Technical specifications

### Product specification

#### External Interfaces

- 36 x 100/1000 Mb/s ports (SFP and/or dual-channel compact SFP)

#### Forwarding

- Bridged Encapsulation Ethernet Packet formats (IEEE 802.1d/p/q): Reception of any combination of untagged/priority/single-tagged packets; dual- (and more) tagged packets can be received for 1:1 VLAN models
- Packet processing: Port-based default VLAN for untagged/ priority-tagged (if applicable) packets, port- and protocol-based default VLAN for untagged/ priority-tagged packets of the IPoE protocols, port- and protocol-based default VLAN for untagged/priority-tagged packets of the PPPoE protocols, priority bit re-marking and mapping table for tagged/priority-tagged packets
- Multi-VLAN support at UNI
- L2 Forwarding – CC mode: Transparently pass all encapsulations (for example, PPPoE and IPoE), protocol filter
- L2 Forwarding – RB mode: Protocol filter (set of Ethertypes) for upstream traffic in VLANs (PPPoE and IPoE), Ethernet packet types: Ethernet II Encapsulation on Ethernet and LLC/SNAP on Ethernet
- L2 Forwarding: VLAN stacking (S-VLAN CC and S-VLAN/C-VLAN CC), protocol-aware VLAN CC
- L2 Forwarding user access protocols: ARP (RFC 826, enabling/ disabling broadcast), IEEE 802.1X authentication, DHCP option 82 insertion, PPPoE relay tag, multicast services
- 32,000 MAC addresses with MSTP, RSTP and STP support and 802.3ad trunking (Link Aggregation Control Protocol [LACP]) and Ethernet ring connectivity
- Malicious MAC-move protection

- Aggregate throughput per NELT-B is up to 20G bidirectional
- L3 Forwarding: IPoE, VLAN termination (at network side) with forwarding at Layer 3
- L3 Forwarding user access protocols: IEEE 802.1X authentication, DHCP relay, QoS, CAC profile, association of QoS profiles to VLAN ports
- Multicast, high-performance IGMP processing, IGMP proxy, immediate leave
- IP address anti-spoofing for user data packets/ ARP/IGMP/DHCP
- Network processor-based line cards, vMAC, enhanced I-Bridge, PPPoE with MAC address concentration, IP + PPP autodetect

#### Eco-sustainability

- Compliance to the COC
- ROHS compliance: FELT-B and SFP/cSFP are ROHS compliant
- SFP auto shutdown: Operator can control the power up/power down SFP to reduce the power
- Thermal control measures: Board-level and SFP-level auto-shutdowns
- Doubling port density with the same footprint (with dual-channel compact SFP)

### Standard compliance

#### Enviromantal

- ETS 300 019-1-1 storage – Class 1.1 (weather-protected, partly temperature-controlled locations)
- ETS 300 019-1-2 transport – Class 2.3 (packed, public transportation)
- ETS 300 019-1-3 stationary use – Class 3.1E (temperature-controlled locations), when used in configuration with up to 2FX or 2FD shelves
- ETS 300 019-1-3 stationary use – Class 3.3 (not temperature-controlled locations), when used in stand-alone ISAM FX or ISAM FD shelves
- ETS 300 019-1-3 stationary use – Class 3.4 (sites with heat trap), when LT is used in 7356 ISAM FTTB REM units

## Protection

- ITU-T K.20/K.45

## Safety

- IEC 60950-1/EN60950-1
- EMC and ESD: ETS 300 386 V1.3.3 (2005-04) for telecommunications network equipment
- European directive 2002/95/EC on the restriction of the use of certain hazardous substances (RoHS)

## Operation conditions

- -5°C to +45°C (23°F to 113°F) inlet/ambient temperature range, when used in fully populated 7302 ISAM racks (with more than one shelf)
- -40°C to +65°C (-40°F to +149°F) inlet/ambient temperature range, when used in stand-alone 7302 ISAM or 7330 ISAM FTTN, ETSI shelves

- -40°C to +70°C (-40°F to +158°F) inlet/ambient temperature range, when used in 7356 ISAM FTTB REM
- Over-temperature sensors and shutdown
- Humidity: 10% to 95% (non-condensing)

## Dimensions

- Height: 405 mm (15.94 in)
- Width:
  - Top: 225 mm (8.85 in)
  - Bottom: 205 mm (8.07 in)
- Board-to-board pitch: 25 mm (0.98 in)

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Nokia Oyj  
Karaportti 3  
FI-02610 Espoo  
Finland  
Tel. +358 (0) 10 44 88 000

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