NOKIA 1646 SYNCHRONOUS MULTIPLEXER AND NOKIA 1646 SYNCHRONOUS MULTIPLEXER COMPACT

RELEASE 2.3

The NOKIA 1646 Synchronous Multiplexer (SM) and NOKIA 1646 Synchronous Multiplexer Compact (SMC), part of the NOKIA Optical Multi-Service Node (OMSN) family, are ideal Synchronous Digital Hierarchy (SDH) customer premises equipment (CPE) for the delivery of TDM and Ethernet services. They provide high capacity, high port density and very low power consumption while supporting high-speed Synchronous Transport Mode 16 (STM-16) rings, Fast Ethernet/Gigabit Ethernet (FE/GigE) and Plesiochronous Digital Hierarchy (PDH) interfaces. The NOKIA 1646 SM and NOKIA 1646 SMC provide a rapid return on investment for fixed or wireless service providers and enterprises in any network application.

Nokia 1646SM

Nokia 1646SMC

Nokia 1646SMC (AC Temp Hardened)

FEATURES

- High capacity, high availability, compact CPE
- Common interface cards help reduce spares
- ETSI-compliant E1, E3/T3, STM-1/4/16 interfaces
- FE/GigE interfaces
- SDH protection with Sub-Network Connection Protection (inherent) (SNCP/I) and SNCP (non-intrusive) (SNCP/N), linear Multiplex Section Protection (MSP 1+1), and Multiplex Section - Shared Protection Ring (MS-SPRing)
- Ethernet switching and Quality of Service (QoS)
- Ethernet Line (E-Line) and Ethernet LAN (E-LAN) services
- Ethernet Linear Protection (ELP) and Ethernet Ring Protection (ERP) applications
- Temperature-hardened for outside plant deployment

BENEFITS

- Extends the value and longevity of SDH networks with higher-speed access rings and Ethernet services
- Cost-effective CPE for high-margin services (Ethernet and leased-line)
- Ethernet, SDH and equipment protection support always-on, mission-critical applications
- Significantly reduces capital expenditures (CAPEX) with the latest integrated Application Specific Integrated Circuits (ASICs)
- Reduces operating expenditures (OPEX) with low power consumption and small footprint
- Managed by the NOKIA 1350 Optical Management System (OMS) for end-to-end management across multiservice provisioning platform (MSPP), Packet Transport Network (PTN) and Wave Division Multiplexing (WDM) networks.

NOKIA

TECHNICAL SPECIFICATIONS

Cross-connect matrix

- 136 x 136 STM-1 equivalent fully non-blocking SDH matrix (HO)
- 32 x 32 STM-1 equivalent fully non-blocking SDH matrix (LO)

Main board interfaces

- 1646 SM:
  - ¬ 1 x STM-1/4/16
- 1646 SMC:
  - ¬ 2 x STM-1/4/16
  - ¬ 21 x E1
  - ¬ 8 x FE (transparent)

Optional line cards

- Line card slots
  - ¬ 1646 SM: six
  - ¬ 1646 SMC: two
- 2 x STM-1 card
- 4 x STM-1 card
- 2 x STM-4 card
- 42 x E1 card
- 3 x E3/T3 card
- 1 x GigE (transparent) card
- 8 x FE (L2 switching) card

Ethernet

- E-Line, E-LAN and transparent Ethernet services
- VLAN tagging (IEEE 802.1Q)
- QinQ (IEEE 802.1ad)
- ELP (ITU-T G.8031)
- ERP (ITU-T G.8032)
- Spanning tree (STP, RSTP)
- Link aggregation (IEEE 802.3ad)
- LCAS (ITU-T G.7042)
- Fault and performance monitoring (ITU-T Y.1731, IEEE 802.1ag)
- Link layer monitoring (IEEE 802.3ah)
- Traffic shaping (three classes, eight queues)
- Traffic policing and metering (two-rate, three-color)
- Ethernet performance monitoring

SDH protection

- SNCP/I, SNCP/N
- Linear MSP 1+1
- MS-SPRing

Equipment redundancy (1646 SM only)

- Power supply
- Main board

Synchronization

- STM-n, E1 ports
- External 2 Mb/s and 2 MHz inputs/outputs
- Priority and quality (SSM) synchronization algorithms

Network management

- NOKIA 1350 OMS
- TL1

Power

- -48 to -60 V DC
- 100 V AC to 220 V AC (1646 SMC only)
- Typical power consumption
  - ¬ 1646 SM: 60 W
  - ¬ 1646 SMC: 20 W
  - ¬ 1646 SMC (AC Temp Hardened): 54.7 W
- Maximum power consumption
  - ¬ 1646 SM: 120 W
  - ¬ 1646 SMC: 40 W

¬ 1646 SMC (AC Temp Hardened): 57 W

Chassis

- 1646 SM
  - ¬ Height: 88.9 mm (3.50 in)
  - ¬ Width: 442 mm (17.40 in)
  - ¬ Depth: 220 mm (8.66 in)
- 1646 SMC
  - ¬ Height: 44.5 mm (1.75 in)
  - ¬ Width: 442 mm (17.40 in)
  - ¬ Depth: 220 mm (8.66 in)
- 1646 SMC (AC Temp Hardened)
  - ¬ Height: 44.5 mm (1.75 in)
  - ¬ Width: 442 mm (17.40 in)
  - ¬ Depth: 220 mm (8.66 in)

Environment

- Operating environment:
  - ¬ 1646 SM: -5°C to +45°C (23°F to 113°F), ETS 300 019, Class 3.2
  - ¬ 1646 SMC: -5°C to +45°C (23°F to 113°F), ETS 300 019, Class 3.2
  - ¬ 1646 SMC (AC Temp Hardened): -10°C to +65°C (14°F to 149°F), ETS 300 019, Class 3.2
- Storage environment: ETS 300 019, Class 1.2
- Transportation environment: ETS 300 019, Class 2.2
- ESD/EMC: ETS 300 386, Class A “Telecommunications center”
- EN 50121 “Railway applications”

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