Nokia 1830 Optical Network Extender micro-ROADM

Release 25.6

The Nokia 1830 Optical Network Extender micro-ROADM is a compact reconfigurable optical add drop multiplexer designed for access and metro networks. Its flexible, disaggregated open-line system (OLS) architecture supports multiple applications, enabling pay-as-you-grow scalability and simplified operations.

As part of the Nokia 1830 ONE portfolio of OTN/WDM metro access products, the Nokia 1830 ONE micro-ROADM equips your 5G-era network with more capacity through support for more connections and capabilities. It also complements the Nokia 1830 Photonic Service Switch (1830 PSS) portfolio in an open, seamlessly managed edge-to-core architecture.

Features

- Modular architecture for independent technology life-cycle evolution
- Disaggregated OLS architecture supports multiple applications
- Compact platform with small footprint and low power consumption, with two versions, the 1830 ONE micro- ROADM (ONE-m) and the 1830 ONE micro-ROADM 2RU (ONE-2m)
- Dual Fiber Working (DFW) and Single Fiber Working (SFW) operations
- Timing signals transport capability
- 2-degree ROADM WSS-free design enables optimized configuration and cost per node
- Multi-degree ROADM supports seamless traffic handover to higher level of the network

1RU platform, 1830 ONE micro-ROADM (ONE-m)

1830 ONE-m Optical Line Terminal

1830 ONE-m ROADM/ILA

2RU platform, 1830 ONE micro-ROADM 2RU (ONE-2m)

1830 ONE-2m ROADM

- Stackable, 1RU and 2 RU platform supports simplified, multi-shelf, single network element management
- Supporting 10G/100G/200G OTN transponders
- Supporting Clock Reference Unit
- SDN-native control with RESTCONF management interface and a network element YANG model
- DC and AC power

Benefits

- Reduces OPEX through flexible, compact design
- Optimizes CAPEX by supporting pay-as-you-grow strategy through modular design
- Simplifies operations with single network element management

Product description

The 1830 ONE micro-ROADM is designed to offer the highest level of flexibility in the smallest footprint possible. Offered in a 1RU shelf (ONE-m) and a 2RU shelf (ONE-2m), it supports ROADM (with or without WSS), ILA, HUB and Terminal node applications

The 1830 ONE-m Optical Line Terminal shelf enables a 40 channels active terminal (including accessories like DCM or OTDR) in a 2 RU platform.

The 1830 ONE-m four slots shelf enables the ROADM/ILA capabilities and the 1830 ONE-2m eight slots shelf extends the scalability of one single shelf.

The 1830 ONE-m and 1830-2m can be powered with DC and with AC, when the AC/DC converter card is hosted in the shelf.

Based on a highly modular Wavelength Selective Switch (WSS)-free architecture, the 1830 ONE micro-ROADM enables optimized 2 Degrees ROADM configuration and cost per node.

Where the number of directions exceeds two, the WSS cards enable the multi-degree ROADM implementation.

With a stackable design, the 1830 ONE micro-ROADM can easily and cost effectively scale to satisfy optical network growth, supporting additional lambda capacity using channel duplicators.

The 1830 ONE micro-ROADM can host “in-house” 10G OTN transponders and muxponders, but it can also support wavelengths from external systems up to 400G @62Gbaud or can be coupled with the Nokia 1830 Optical Network Extender – Hub (1830 ONE-h) to offer OTN multiplexing and integrated optical ports of 10G and 100G/200G capacity.

A 4 channel 10G transponder card (single slot) is available, with up to four 10G lines and up to four 10G clients, supporting the in-band management of SyncE and PTP.

Multiplexing of sub-10G client is supported by a compact muxponder card, featuring 2 lines at 10G and 6 clients.

A Transponder/Muxponder card can be hosted in the shelf, with up to two 100G/200G colored lines, up to two 100G client interfaces supporting in-band SyncE-PTP, up to sixteen 10G with in-band SyncE/PTP or up to four 25GE client interfaces.

When operating together with other 1830 ONE platform all can be stacked and addressed as a single Network Element.

The ROADM motherboard card, utilizing two vertical slots, hosts all the ROADM building blocks in pluggable form factor: amplifiers (Preamp and Booster), Add/Drop blocks (4 and 8 colorless channels), OSC and OTDR Add/Drop filter.

When using the companion WSS switching card, instead of the Add/drop blocks, it realizes 1-degree of a multi-degree ROADM.

A Pluggable Modules Main Board is also available with optional 10G filters and channel duplicators to increase the number of add/drop channels.

In a Single Fiber Working (SFW) scenario, Point-to-Point links at 4, 8, 16 channels are supported, with or without optical amplification.

A complete 16 channels SFW terminal, including 10G transponders, can be hosted in a single ONE-m or ONE-2m shelf.

The availability of SFW-specific OSC modules allows increased distances between terminal sites, including support of In Line Amplifier sites for multi span applications.

Sync transport and OTDR interfaces are offered to further enhance the solution. In addition, cost-effective pluggable amplifiers are supported for the SFW applications, which can also be used in Dual Fiber Working (DFW) applications.

Technical specifications

- Number of wavelengths: 40/80

Node configurations

- Dual Fiber Terminal
- Single Fiber Terminal
- 2D WSS-less ROADM
- Multi-degree ROADM
- ILA

Network topology

- Linear ADM
- Hub-and-spoke ring
- Mesh
- Point-to-point

Redundancy (1+1)

- Power
- Control

1830 ONE micro-ROADM (ONE-m) dimensions and weight

- Height: 44.0 mm (1.72 in)
- Width: 482.6 mm (19.00 in)
- Depth: 246.0 mm (9.68 in)
- Weight: 2.05 kg (8.13 lb)

Power

- DC Supply: -48 V DC (-40.5V DC to -57 V DC)
- AC Supply: nominal input voltages 230V (±10%), 240V (±10%), 208V (±10%)
- Consumption: 100 W max. per subrack

1830 ONE micro-ROADM 2RU (ONE-2m) Dimensions and weight

- Height: 87.5 mm (3.44 in)
- Width: 482.6 mm (19.00 in)
- Depth: 246.0 mm (9.68 in)
- Weight: 3.69 kg (8.13 lb)

Power

- DC Supply: -48 V DC (-40.5V DC to -57 V DC)
- AC Supply: nominal input voltages 230V (±10%), 240V (±10%), 208V (±10%)
- Consumption: 800 W max. per subrack

Operating environment

- Temperature: -20°C to +55°C (-4°F to 131°F)
- Relative humidity: 5% to 95%

Management

- Stackable; managed as one network element with RESTCONF/YANG interface

Regulations and standards

- Operating conditions: ETSI EN 300 019-1-3, Class 3.2
- Storage conditions: ETSI EN 300 019-1-1, Class 1.2
- Transportation conditions: ETSI EN 300 019-1-2, Class 2.2
- Electrostatic discharge (ESD)/electromagnetic compatibility (EMC): ETSI EN 300 386 “Telecommunications Center”
- EN 300 132-2 “Power supply interface at 48V-DC”
- EN 300 753 “Acoustic”
- EN 60825-1/2 “Optical safety”
- EN 60950-1 “Safety

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Service providers, enterprises and partners worldwide trust Nokia to deliver secure, reliable and sustainable networks today – and work with us to create the digital services and applications of the future.

Nokia OYJ
Karakaari 7
02610 Espoo
Finland
Tel. +358 (0) 10 44 88 000

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