

1x4 ROADM/100GHz

Multi-degree ROADM for flexible optical networks

Key benefits:

- Creates the ability to add/drop any wavelength from/to any port giving maximum flexibility in wavelength allocation
- Dynamic selection of add-drop wavelengths per port enables hitless topology changes
- Built-in Variable Optical Attenuator (VOA) for easier channel power balancing
- 4 individual add-drop ports enables multidimensional nodes
- Compact design, giving small footprint
- Fully integrated with TM-Series and Transmode Network Manager
- Can be installed in existing TM-chassis and networks
- Low Power Design ensures low total cost of ownership

The 1x4 ROADM is a powerful part of Transmode’s TM-Series platform enabling optimized and cost efficient capacity networks based on DWDM technology.



Optimized for dynamic network applications

The 1x4 ROADM is a compact solution for all network topologies aiming for a future proof dynamic traffic design, with hitless changes in wavelength allocation. The 1x4 ROADM unit - fully supported as a plug-in unit in the TM-3000 chassis - works as a building block for reconfigurable add-drop nodes in up to 4 dimensions.

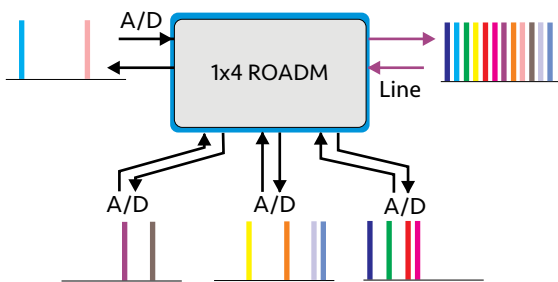


Fig. 1 Schematic principle of 1x4 ROADM add-drop function

The 1x4 ROADM has 4 individual add-drop ports. The add ports use a Wavelength Selective Switch (WSS) to dynamically select which of the 40 DWDM channels on the ITU-T 100GHz C-band grid can be added to the line signal for each add port. An Optical Coupler is used distribute the incoming line signal to the drop ports. A DWDM add-drop filter or Mux/Demux unit is always used for locally terminating traffic.

The 1x4 ROADM includes Variable Optical Attenuator (VOA) functionality on all wavelengths added to the line signal. This facilitates channel power balancing in amplified networks.

Grouping of ports on different units can be made in the node management software to enable the setting of identical channel selection. Also restrictions on channels selection can be made on individual or grouped ports to simplify commissioning and minimize risk for faulty handling

Linear add-drop applications

For ring and bus network structures the 1x4 ROADM enables dynamic add-drop nodes with 2-dimensional east- and westbound traffic by pairing two units and connecting them via one of the add-drop ports for the express traffic.

Initially, locally terminating traffic could be allocated to one of the add-drop ports, keeping the remaining ports for traffic upgrades or for scaling into multidimensional nodes.

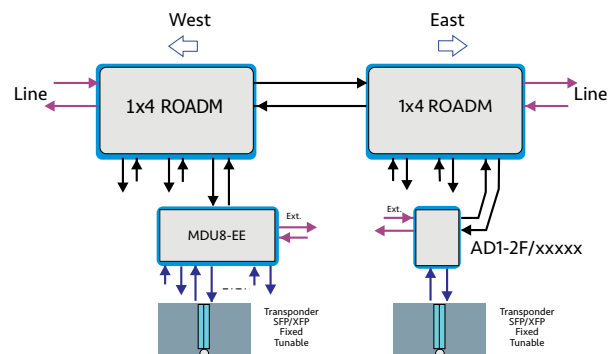


Fig. 2 Linear 2-dimensional ROADM node

A DWDM add-drop filter or a Mux/Demux unit is used to separate the terminated channels. The 1x4 ROADM operates at 100GHz spacing, making it possible to use fixed or tunable as well as pluggable SFP/XFP transponders for all DWDM channels

Multidimensional node applications

The 4 individual add-drop ports of the 1x4 ROADM enable hitless redirection of traffic in multidimensional nodes. By grouping four units and interconnecting the add-drop ports, a 4-dimensional node is created, where traffic from any line can be directed to any other line or be locally dropped.

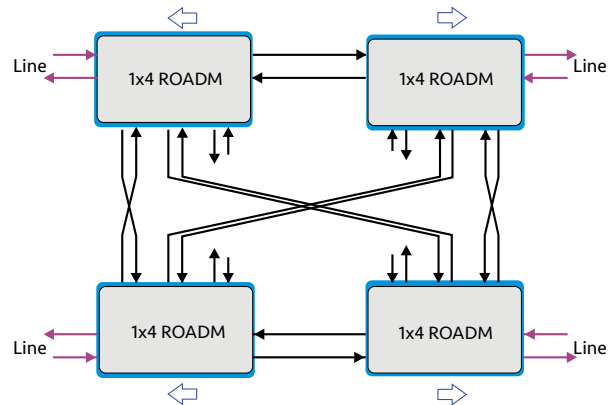


Fig. 3 4-dimensional add-drop node

Low Power Design

A 1x4 ROADM consumes less than 6W. Low power consumption in combination with a small footprint reduces site costs and enables more capacity to be handled at sites with restrictions on power consumption, cooling and space.

The 1x4 ROADM can be mounted in a TM-3000 chassis where it occupies 2 full-size slots.

Technical specifications:

Software release 12.0 or later

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|------------------------------------|--|--|
| Insertion loss (see figure) | Add [A/D Rx] - [Line Tx] : 7.5dB Drop [Line Rx] - [A/D Tx] : 7.1dB | |
| Range | 40 channels on 100GHz ITU-T C-band grid | |
| Add ports | Wavelength Selective Switch (WSS) | |
| Drop ports | Passive Optical Coupler | |
| Line side features | Variable Optical Attenuator (VOA) functionality on all individual wavelengths Monitor port (2% coupler) | |
| No of add/drop ports | 4 | |
| Switching time | Max 250ms | |
| VOA | Range: 0 – 15dB Step size: 0.1dB | |
| Dimensions | Occupies two full-size slots in a TM-3000 chassis | |
| Power consumption | 6W | |

The specifications and information within this document are subject to change without further notice. All statements, information and recommendations are believed to be accurate but are presented without warranty of any kind. Contact Transmode for more details.
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