transmode

Data sheet

TM-Series

1x2 ROADM - 50/100GHz

Cost-efficient ROADM for flexible optical networks

Key benefits:

- Creates the ability to add/drop any wavelength at a node giving maximum flexibility in wavelength allocation
- Dynamic selection of add/drop wavelengths enables hitless capacity changes
- Built-in Variable Optical Attenuator (VOA) for easier channel power balancing
- Compact design giving small footprint
- Fully integrated in TM-Series and Transmode Network Management (TNM)
- Can be installed in existing TM-Series chassis
- Low Power Design ensures low total cost of ownership

The 1x2 ROADM is a powerful part of Transmode's TM-Series platform enabling optimized and cost efficient high capacity transport networks based on DWDM technology.

Optimized for dynamic network applications

The 1x2 ROADM is a compact solution for all network topologies aiming for a future proof dynamic traffic design, with hitless changes in wavelength routing. The 1x2 ROADM unit - fully supported as a plug-in unit in the TM-3000 chassis - works as a building block for reconfigurable linear add-drop nodes.

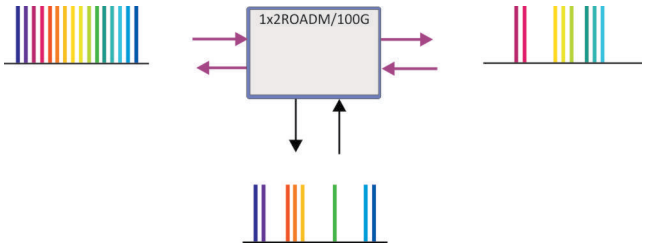

Fig. 1 Schematic principal of ROADM functionality

The 1x2 ROADM comes in two different versions, one supporting 40 DWDM channels using 100 GHz channel spacing (1x2ROADM/100G) and one supporting 80 DWDM channels using 50 GHz channel spacing (1x2ROADM/50G) on the ITU-T C-band grid. This allows the operator to tailor its network to a cost-efficient solution depending on the amount of channels required.

Dynamic selection of add/drop wavelengths

The 1x2 ROADM has 2 individual add-drop ports. The add ports use a Wavelength Selective Switch (WSS) to dynamically select which of the DWDM channels that can be added to the line signal for each add port. An Optical Coupler is used to distribute the incoming line signal to the drop ports. One of the drop ports is generally used as a local drop port while the remaining port is used for express traffic. A DWDM add-drop filter or Mux/Demux unit is always used for locally terminating traffic, but can in the future be replaced with a color-less solution.

Built-in VOA functionality

The 1x2 ROADM includes Variable Optical Attenuator (VOA) functionality on all wavelengths added to the line signal. This facilitates channel power balancing in amplified networks.

Node management for simplified commissioning

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

Linear add-drop application

For ring and bus network structures the 1x2 ROADM is the perfect choice, enabling 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.

The traffic terminating locally is allocated to the remaining add-drop port, where a Mux/Demux unit or a filter is used to separate the add/drop wavelengths.

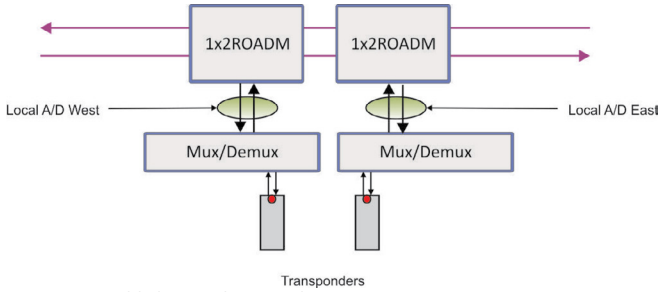

Fig. 2 Linear add/drop node example

Low Power Design

A 1x2 ROADM consumes less than 15W. 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 1x2 ROADM can be mounted in a TM-3000 chassis where it occupies 1 full-size slot.

Technical specifications for 50GHz 1x2ROADM:

Insertion loss 1x2ROADM/50GHz	Local add loss: 7.2dB Local drop loss: 2.2dB Express loss between two units: 13.2dB
Range	80 channels on ITU-T 50GHz C-band grid
Add ports	WSS (Wavelength Selective Switch)
Drop ports	Passive Optical coupler
Line side features	Variable Optical Attenuator (VOA) on all individual wavelengths
No of add/drop ports	2
Switching time	Max 500 ms
VOA	Range: 0-15dB Step size: 0.1dB
Dimensions	One full sized slot in TM-3000 chassis
Power consumption	15W max
Monitor port	2% coupler

Technical specifications for 100GHz 1x2ROADM:

Insertion loss 1x2ROADM/100GHz	Local add loss: 7.2dB Local drop loss: 2.2dB Express loss between two units: 13.2dB
Range	40 channels on ITU-T 100GHz C-band grid
Add ports	WSS (Wavelength Selective Switch)
Drop ports	Passive Optical coupler
Line side features	Variable Optical Attenuator (VOA) on all individual wavelengths
No of add/drop ports	2
Switching time	Max 500 ms
VOA	Range: 0-15dB Step size: 0.1dB
Dimensions	One full sized slot in TM-3000 chassis
Power consumption	15W max
Monitor port	2% coupler