

# Passive CWDM MUX/DeMUX Modules 8 Channel with Expansion Channel

# MICROSENS

## General

MICROSENS is expanding its product portfolio of optical Metro solutions by introducing new passive multiplexers for multiplying transmission capacities of fiber optical connections.

By using passive multiplexers, several optical channels of different wavelengths can be combined, which will allow multiple services to be transmitted together via fiber without interference. What makes this possible is the fact that different light colours (wavelengths) do not affect each other. These components will make realizing CWDM and DWDM applications easy.

For transmission, light colours are multiplexed onto a fiber using a wavelength-specific filter (multiplexing). At the other (receiving) end of the line, the wavelengths are divided again, or rather, demultiplexed. Hence, any transmission line consists of a multiplexer and a demultiplexer.

For bi-directional transmission, both start and end points will then require the appropriate multiplexers and demultiplexers. Since we are dealing with true passive multiplexing, the individual optical signals must already be available in their respective wavelengths. The multiplexers are then selected according to the different wavelengths (window, number of channels, and wavelength difference).

The design of these components emphasizes ease of installation and start-up of operations, as well as consistent modularity for optimal adaptability to given communication requirements.

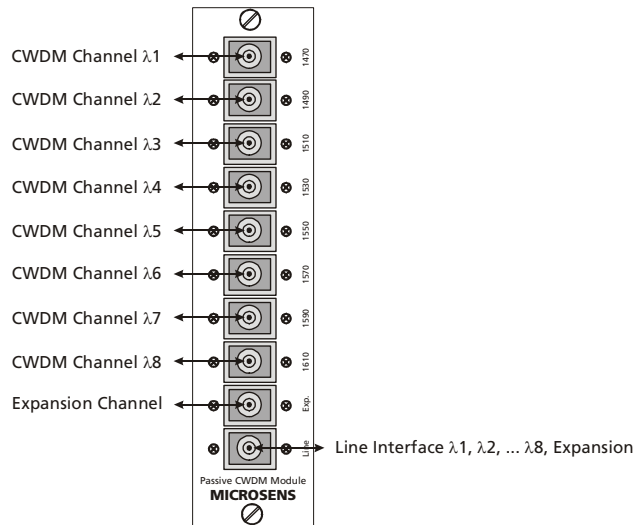
The multiplexer/demultiplexer rack modules are part of a wide product range of functional modules for installation in modular rack systems from MICROSENS. In addition to desktop housings, users can select a 19" chassis with up to 12 slots. When using multi-slot chassis, the converter may be combined with any other modules from the Enterprise Access family. In addition, the MICROSENS product portfolio offers active converters for optical or electrical/optical adaptation of data channels to the appropriate wavelengths and required ranges. These converters are also based on the modular system of the Enterprise Access family, allowing band-widths of up to 2.5 Gbit/s per channel. Depending on combination and wavelengths, ranges of up to 80 km can be realized.

Using WDM as transmission technology, network operators can build an infrastructure that may be expanded depending on need. In addition, the capacities in all sub-areas of the network are expandable. This represents an advantage no other technology can provide.

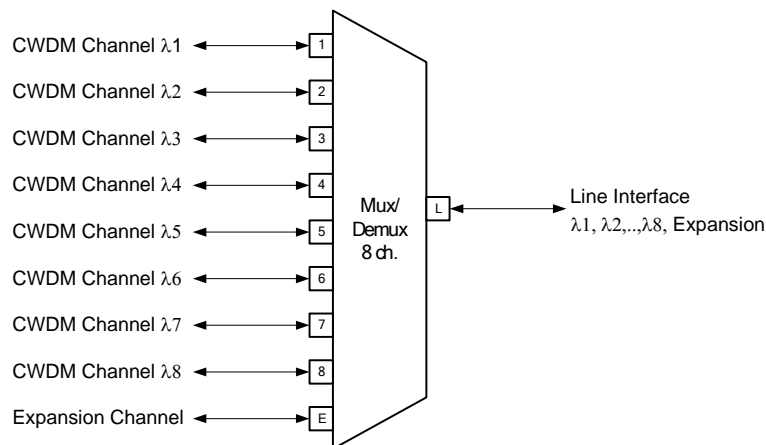
Using passive multiplexers is of interest for cable network operators, too. This technology will allow providing additional services such as combining bi-directional data services with uni-directional TV transmission without any problem, while using the existing infrastructure.

## Device

Drawing of an 8 channel with expansion:

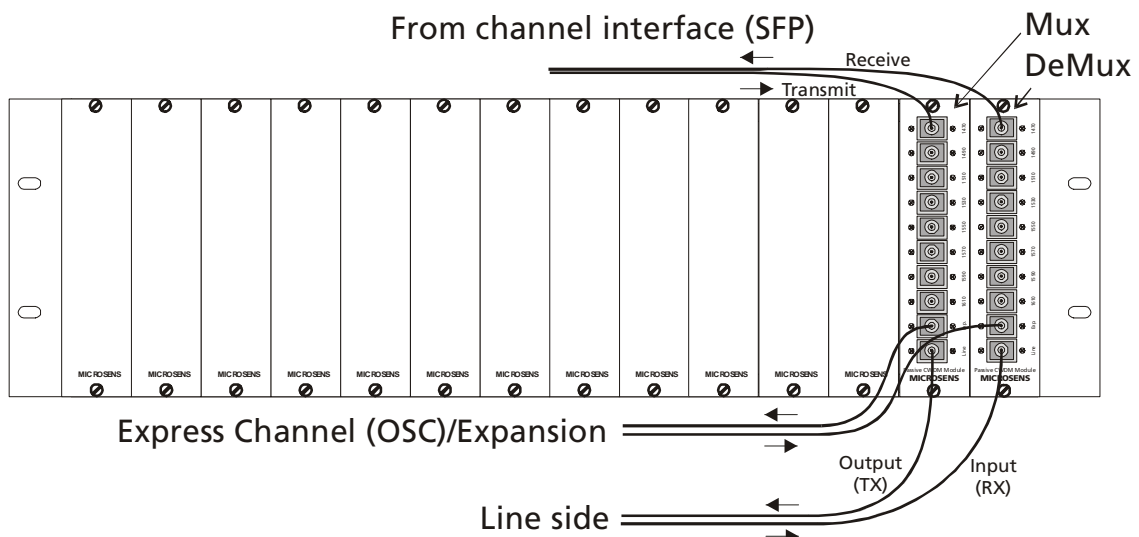


## Function



## Connection

The use of the multiplexer and demultiplexer is done in a pair. The Express Channel or Expansion Channel is also connected to local equipment.



## Technical Specifications

<b>Type</b>	Passive Multiplexer/Demultiplexer Module for multiplexing or demultiplexing of 8 CWDM channels. The modules offer an additional interface for expansion or Optical Service Channel (OSC). To be mounted in the MICROSENS modular converter chassis.
<b>Fiber type</b>	Single Mode 9/125 $\mu\text{m}$ SC/APC-connector (Line Interface) SC/PC-connector (Channel Interface, Expansion Interface)
<b>Channel Spacing</b>	According to ITU G.694.2, channel spacing is 20 nm
<b>Center Wavelength</b>	for each article and channel (in nm): MS416412M-22, MS416413M-22: $\lambda_1=1471, \lambda_2=1491, \lambda_3=1511, \lambda_4=1531,$ $\lambda_5=1551, \lambda_6=1571, \lambda_7=1591, \lambda_8=1611$ Expansion Channel (OSC, Express Channel): $\lambda=1311$ nm MS416414M-22, MS416415M-22: $\lambda_1=1471, \lambda_2=1491, \lambda_3=1511, \lambda_4=1531,$ $\lambda_5=1551, \lambda_6=1571, \lambda_7=1591, \lambda_8=1611$ Expansion Channel (band filter): $\lambda=1264,5 .. 1457,5$ nm
<b>Channel width</b>	min. +/- 6,5 nm
<b>Channel Isolation</b>	min. 30 dB (adjacent) min. 40 dB (non adjacent) min. 30 dB (Expansion channel)
<b>Insertion Loss</b>	max. 3,5 dB (CWDM channel) max. 1,2 dB (Expansion channel)
<b>Return Loss</b>	min. 45 dB
<b>Flatness</b>	max. 0,5 dB
<b>Power supply</b>	12 V DC / max. 100 mA via system backplane (for management only)
<b>Operating temperature</b>	0 °C to 55 °C
<b>Storage temperature</b>	-40 °C to +85 °C
<b>rel. Humidity</b>	5% to 80% non condensing
<b>Dimensions</b>	31 x 128 x 170 mm (w x h x d)

## Notes

The passive Mux/DeMUX modules are belonging to a big range of converter modules and can be combined with other modules of the same family. A power supply of the passive modules is not necessary.

## Ordering information

<b>Art.-No.</b>	<b>Description</b>	<b>Connectors</b>
MS416412M-22	8 channel CWDM MUX module, 1310 nm Express Channel, (1470 .. 1610 nm)	Local: 8x SC/PC simplex Express: 1x SC/PC simplex Line: 1x SC/APC simplex
MS416413M-22	8 channel CWDM DEMUX module, 1310 nm Express Channel, (1470 .. 1610 nm)	Local: 8x SC/PC simplex Express: 1x SC/PC simplex Line: 1x SC/APC simplex
MS416414M-22	8 channel CWDM MUX module, 1310 .. 1450 nm Band Filter low loss, (1470 .. 1610nm)	Local: 8x SC/PC simplex Express: 1x SC/PC simplex Line: 1x SC/APC simplex
MS416415M-22	8 channel CWDM DEMUX module, 1310 .. 1450 nm Band Filter low loss, (1470 .. 1610nm)	Local: 8x SC/PC simplex Express: 1x SC/PC simplex Line: 1x SC/APC simplex

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