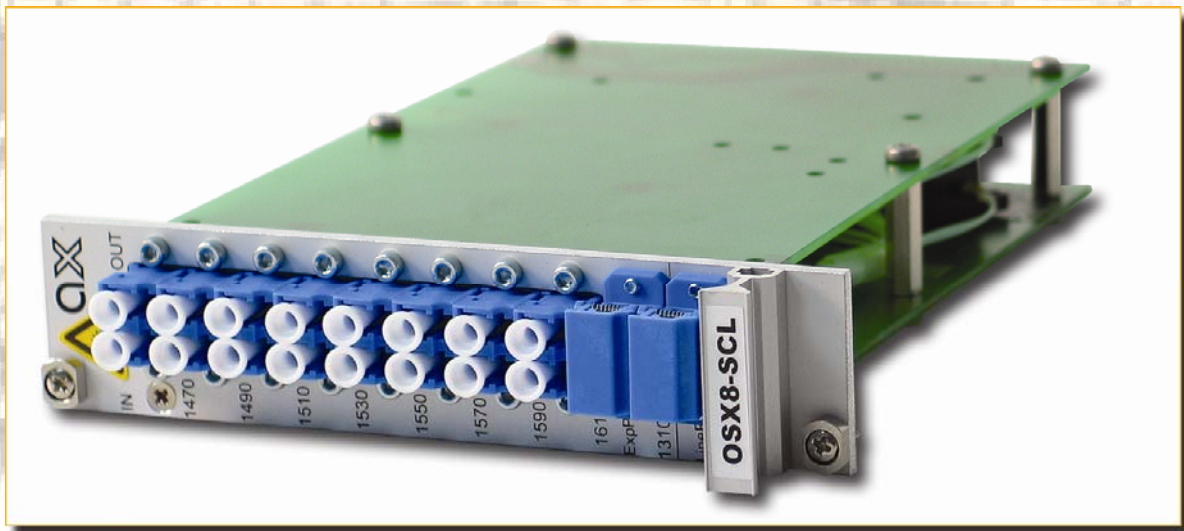


## OSX8+1 Extended 8-ch. CWDM Splitter



### Short Description

The OSX8+1 is a compact 8-channel passive optical CWDM splitter plus(!) 1310nm express port. The OSX8+1 is the perfect extension of your existing fiber network. The standard wavelength of 1310nm can be used without any change and the OSX8+1 gives the possibility to transport eight additional services along the installed network including Ethernet, ATM, SDH/Sonet and FiberChannel. Low insertion loss and the highly integrated design make the OSX8+1 to an unique member of arcutronix Transmission family.

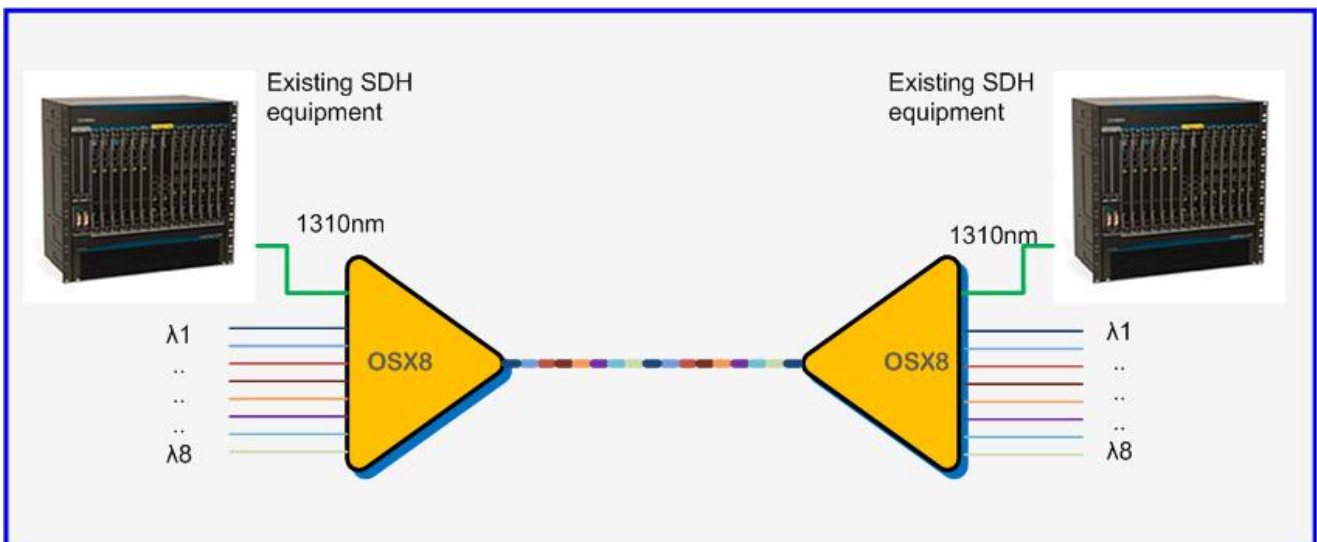
The OSX8+1 passive splitter is easy to install in the arcutronix Multi service Platform and is suitable for a secure and unattended operation. It can be housed in the desktop/wall-mounted or 19" racks for high density. A mixture with other components of arcutronix Multi Service Platform makes it easy to upgrade your network.

## Application Examples

### Extending existing infra-structure

The OSX8+1 builds an overlay fiber optic infra-structure over an existing network, which is operated with 1310nm standard wavelength. The existing MAN / WAN can be further used without any need of change. This makes the upgrade of the existing network easy and safe. More bandwidth, more services, and more protection can be offered on the existing infra-structure.

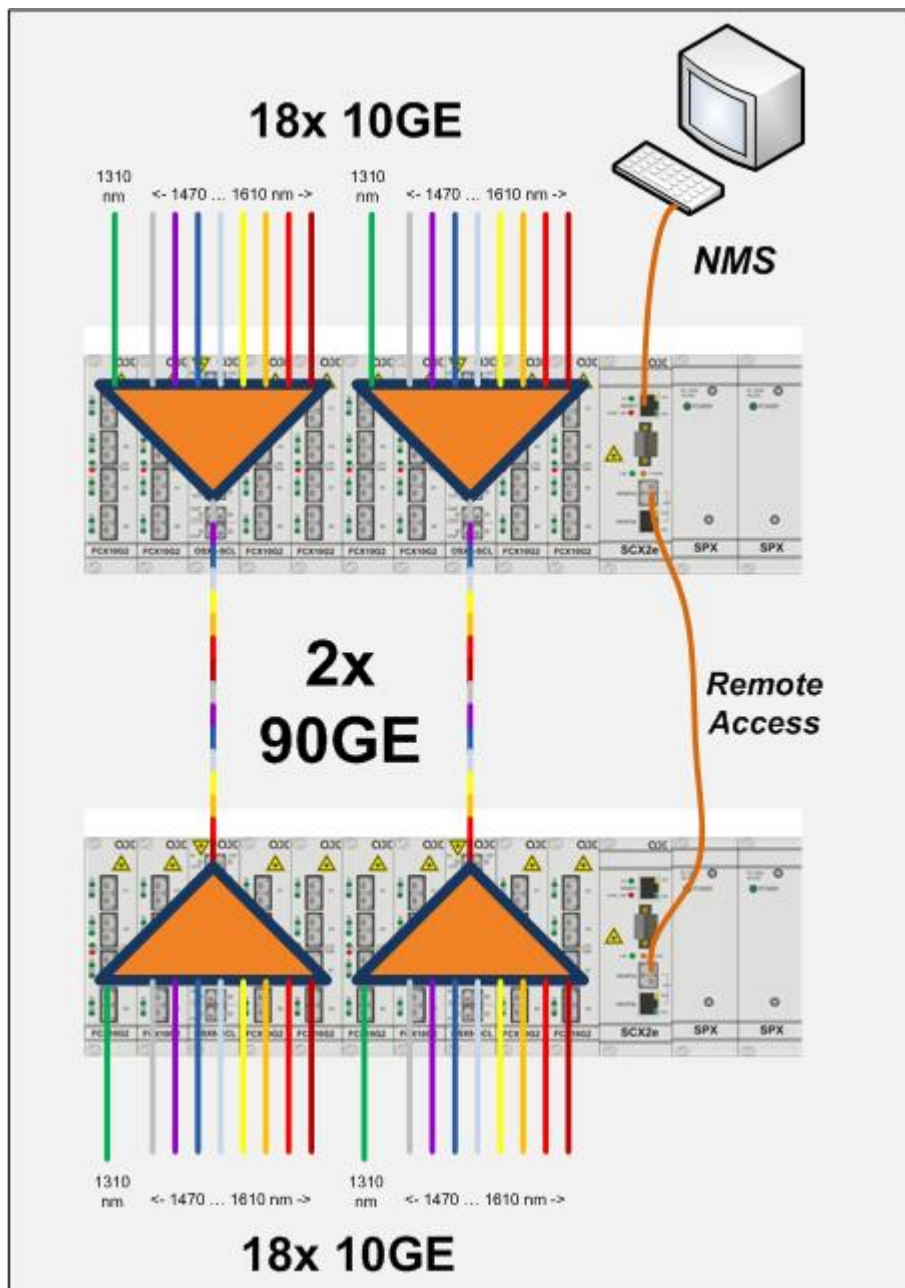
Saving costs, invest and rack space with ax Multi service Platform.



Picture 1: Application 1

## 180G-Ethernet System

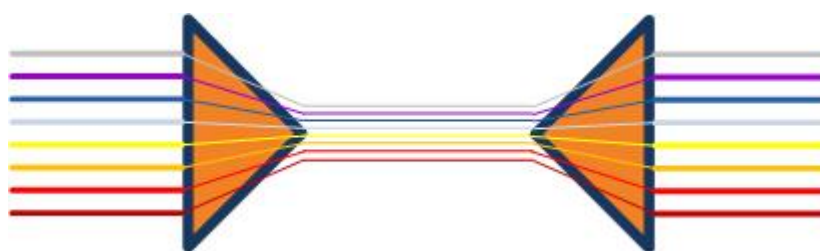
In combination with transponder family FCX, users may easily realize flexible CWDM solutions. An 180Gbps-system in one 19" 3U sub-rack can be build increasing solution efficiency to new heights. Based on arcutronix' system concept, customer networks can easily expand with growing demands. High initial investments in oversized infrastructures belong to the past now. Moreover, existing network applications can be easily integrated without major interruptions and permit monitoring via Management card.



Picture 2: Application 2

## Understanding WDM

The concept of WDM technology is very simple. A key property of light is wavelength (“color”). Historically, optical communications operated on a single wavelength (i.e. “one color”) and the amount of bandwidth that could be transmitted down a single fiber was equal to the bandwidth of that data-stream. However, by combining multiple wavelengths (“colors”) and transmitting these wavelengths down a single fiber, we have the ability to drive multiple traffic streams simultaneously, each one carrying its own independent data-traffic.



Picture 3: Basic WDM Technology Diagram

If each color of light carries a data rate of 10 Gbit/s, then, combining 8 colors of light into the same fiber increases the total data rate fourfold to 80 Gbit/s.

The key components in a WDM system is the optical wavelength multiplexer (MUX) and de-multiplexer (DEMUX). An optical prism represents a convenient way to understand a MUX/DEMUX function. When a multi-color light beam goes through an optical prism, due to its unique material property and geometry, light of different colors will exit at different angles and become, in WDM terminology, de-multiplexed. Conversely, if light of multi-colors are sent through the prism at different predestinated angles, they will exit the prism at the same angle as a single light beam becoming, in WDM terminology, multiplexed.

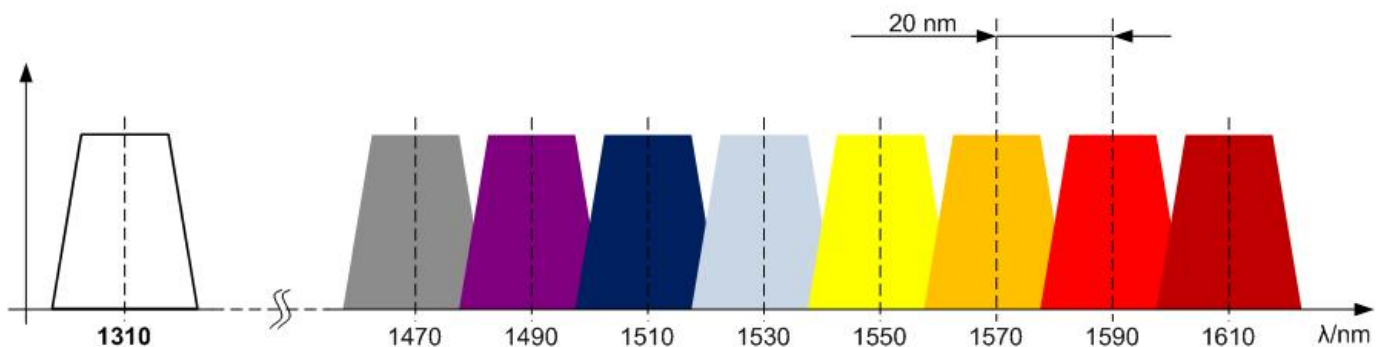
The OSX8+1 is such an prism or MUX/DEMUX device for 8 plus 1 wavelengths (“colors”).

In general, a CWDM (coarse WDM) MUX/DEMUX deals with small numbers of wavelengths, typically eight, but with large spans between wavelengths (spaced typically at around 20nm). A DWDM (dense WDM) MUX/DEMUX deals with narrower wavelength spans (as small as 0.8nm, 0.4nm or even 0.2nm), and can accommodate 40, 80, or even 160 wavelengths. See Figure 3.

## Illustration OSX

Arcutronix' OSX8+1 CWDM splitter is designed to significantly reduce costs, while improving optical performance. With a channel spacing of 20 nm and wide band-pass characteristics it is ideal for use with non-temperature controlled lasers. Other features include high center wavelength accuracy and stability, low insertion loss high directivity, an epoxy-free optical path, and low polarization dependent loss. The CCWDM Mux/Demux is available in eight channels and includes an expansion port for 1310nm wavelength.

The 9 wavelength ("colors") are shown in the picture below:



Picture 4: CWDM wavelength acc. ITU-T G.694.2

The most right 8 colors are the CWDM wavelength, each separated by 20nm bandwidth. Most to the left, the express wavelength is shown, which has more than 150nm distance to the CWDM part.

The eight CWDM-wavelengths are grouped by ITU-T in the S-, C- and L-Band:

- S-Band: 1470nm – 1510nm
- C-Band: 1530nm – 1550nm
- L-Band: 1570nm – 1610nm

The Express-Port is the 1<sup>st</sup> optical window, which can be multiplexed / demultiplexed onto the common Line-Port. The center wavelength of the Express-Port is 1310nm, which gives enough space to the 8 other wavelength.

## Connectors, Indicators and Controls

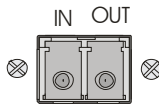
### Front Panel

The front panel of the OSX8+1 does have 10 optical connectors:

- 8x CWDM ports
- 1x Express port
- 1x Line port

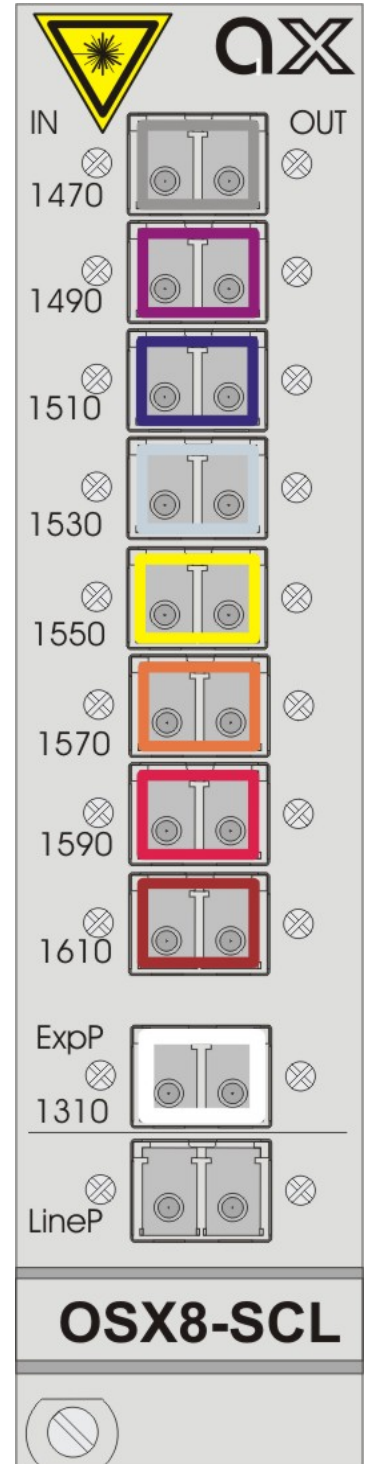
All optical ports consist of RX and TX and have with LC connectors.

The RX is always on the left side (IN), while TX is on the right side (OUT):



The wavelength for the 8 CDWM-ports and the Express port is written on the front plate to make installation very easy. To show the relationship to the CWDM wavelengths, the same colors as in picture 4 are used (these colors are not visible on the front-plate!)

The Line-port (multiplexed signal) and the express port do have extra dusk-caps.



## Installation

### Frame installation

The unit is to be pushed along the guide rails into the installation frame (e.g. SRX10 or SRX3 series) and secured with the two locking screws. The unit can be freely positioned in any line-card (LC-) slot in the frame. The empty positions in the frame should be blanked off with cover plates.

### Stand-alone installation

The unit can be installed for stand-alone use by using a SHX3 series module. The unit is to be pushed along the guide rails into the SHX3 and secured with the two locking screws. The stand-alone unit can be mounted to a vertical surface or at a wall.

## Configuration

No configuration is needed to operate the OSX. The OSX is a purely passive device, which even do not need power supply available.

### Fiber Optic Precautions



**Caution:** An optical fiber may carry (invisible) light from the remote system.

**This device may contain Laser Class 1 components, like laser transmitters or light emitting diodes LED (refer to technical data). Operating components emits (invisible) laser radiation. Be careful when you are working with these components.**

The following safety precautions must be followed when working with fiber optics and Laser Class 1 components:

**WARNING:** Do not look into the fiber optic output. Looking into the fiber optic output can cause injury to the eye. When observation is necessary eye protection must be worn and precautions must be taken to avoid exceeding the limits recommended in ANSI Z136.1-1981.

**WARNING:** Use caution when working with the laser components of the device. The device is designed to protect the user against optical powers beyond laser class 1.

**WARNING:** Ensure that the incoming signal from the remote device does not exceed the power defined for laser class 1 when the cabling is disconnected. The device will also become unsafe, if any unsafe equipment is connected to the system.

**WARNING:** Do not disconnect the fiber optic cables while power is applied. Disconnecting the

fiber optic cables could expose the user to optical powers beyond laser class 1.



**CAUTION Laser Class 1.** Complies with FDA radiation standards, 21CFR subcategory J. DANGER (Invisible) laser radiation when open and / or interlock defeated. Avoid direct exposure to beam!



## Technical Data

### Interfaces

- OSX8-SCL
  - 1x Line Port, LC-connector
  - 1x Exp-Port, LC-connector
  - 8x CWDM-Ports, LC-connector

### CDWM wavelengths

- OSX8-SCL
  - S-Band: 1471nm, 1491nm, 1511nm
  - C-Band: 1531nm, 1551nm
  - L-Band: 1571nm, 1591nm, 1611nm
  - Exp-Port: 1310nm (1260-1458nm)

### Optical parameters

- Insertion Loss
  - SCL-Band: < 1.5dB
  - Exp-Port: < 1.0dB
- Isolation
  - SCL-Band: > 30/45dB (adjacent/non adj.)
  - Exp-Port: > 15dB
- Return Loss
  - Min. 45dB
- Optical Power
  - Max. 300mW

### Management

- No management required.

### Environmental

- Operating: 0 to +65°C
- Storage: -25 to +70°C
- Humidity: 5 to 95%, non-condensing

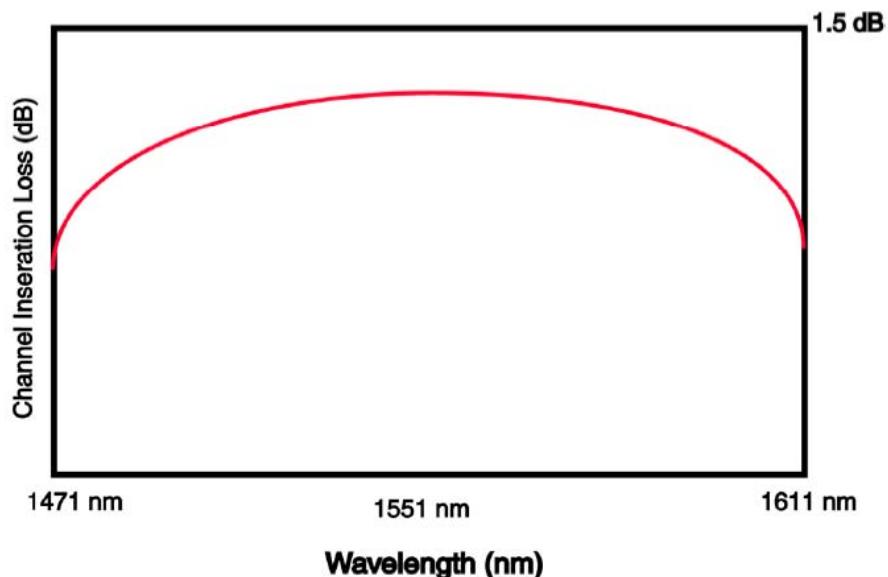
### Power

- No power needed.

### Physical

- Weight: < 250g
- Dimensions:
  - 130mm H x 30mm W x 190mm D
  - 45mm H x 145mm W x 260mm D (in SHX3)
- 19" rack: 10 slots available in 6RU (3RU) rack

### CHANNEL UNIFORMITY PROFILE



## General Safety Precautions

### Transport, Installation and Operation

- Avoid excessive vibration and shocks.
- Avoid contact with water, dust, and dirt.
- Avoid excessive direct sunlight.
- Ensure sufficient cooling.
- Prevent loose items from falling into the device.

### Fiber Optics

- Looking into the fiber optic output can cause injury to the eye. When observation is necessary, precaution must be taken to avoid exceeding the limits recommended in ANSI Z136.1-1981.
- Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous laser light exposure.

Version 10/09 © 2009 arcutronix GmbH

### Impressum

arcutronix GmbH  
Garbsener Landstr. 10  
30419 Hannover  
Germany

Phone: +49 (511) 277 2700  
Fax: +49 (511) 277 2709  
Web: [www.arcutronix.com](http://www.arcutronix.com)

Sales-Contact: [sales@arcutronix.com](mailto:sales@arcutronix.com)  
Technical-Support: [service@arcutronix.com](mailto:service@arcutronix.com)