

STARMUX User Guide



STARMUX CWDM Mux/ Demux and OADM

Introduction

STARMUX (Starview CWDM Multiplexer/ Demultiplexer), solution utilizes passive optical CWDM technology in conjunction with CWDM wavelength-specific optical ports on Starview complete line transceiver products. This allows user to maximize capacity and increase bandwidth on existing fiber route by multiplexing several distinct signals or protocols over a single or duplex-fiber connection.

The passive optical CWDM device utilizes a thin-film filter and circulator technology. They are available in various wavelength combinations based on the entire wavelength spectrum (1270nm–1610nm in 20nm increments) defined by the ITU G.694.2 CWDM standard. These CWDM devices are available in two main configurations: Multiplexer/Demultiplexer (Mux/Demux) modules and Optical Add/Drop Multiplexer (OADM) modules. Each module is a pluggable device that slides into a one rack unit (1RU) chassis that can hold 2 modules and mount into a 19" equipment rack.

Installation

The STARMUX modules can be installed into the optional SVR-STARMUX-19R STARMUX Rack Mount. To install STARMUX module into Rack Mount do the following:

1. Locate the STARMUX module. See Figure 1.

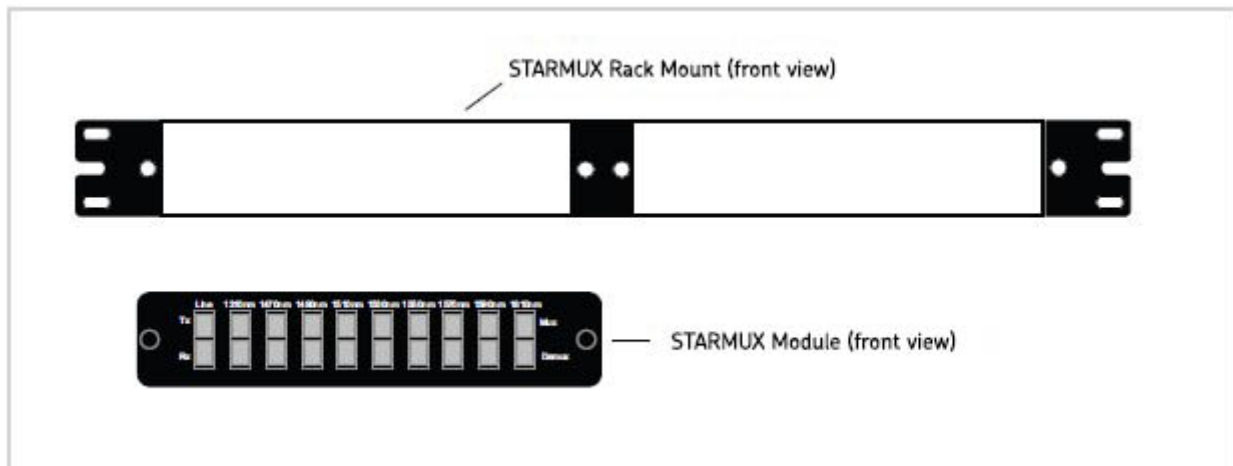


Figure 1: STARMUX Rack Mount and STARMUX Module

2. Install STARMUX Rack Mount to the equipment rack, using '4' screws as shown in Figure 2.

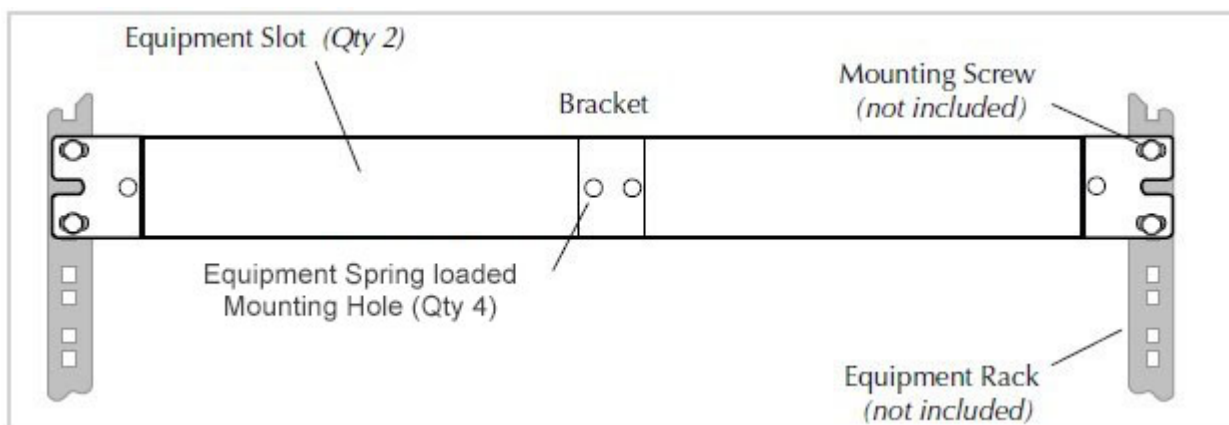


Figure 2: STARMUX Rack Mount Installation

3. Slide the STARMUX module into one of the slots, as shown in Figure 3.

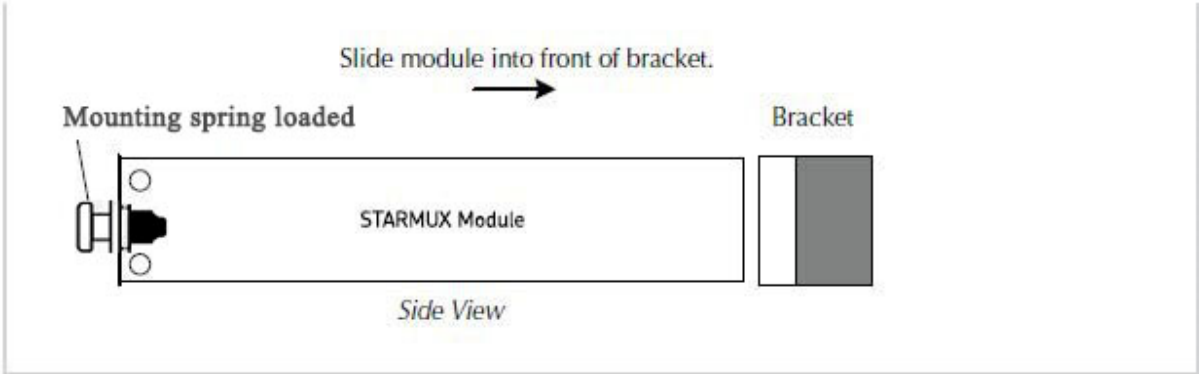


Figure 3: Slide STARMUX Module into Front of Rack Mount

4. Secure the STARMUX module to the Rack Mount, as shown in Figure 4.

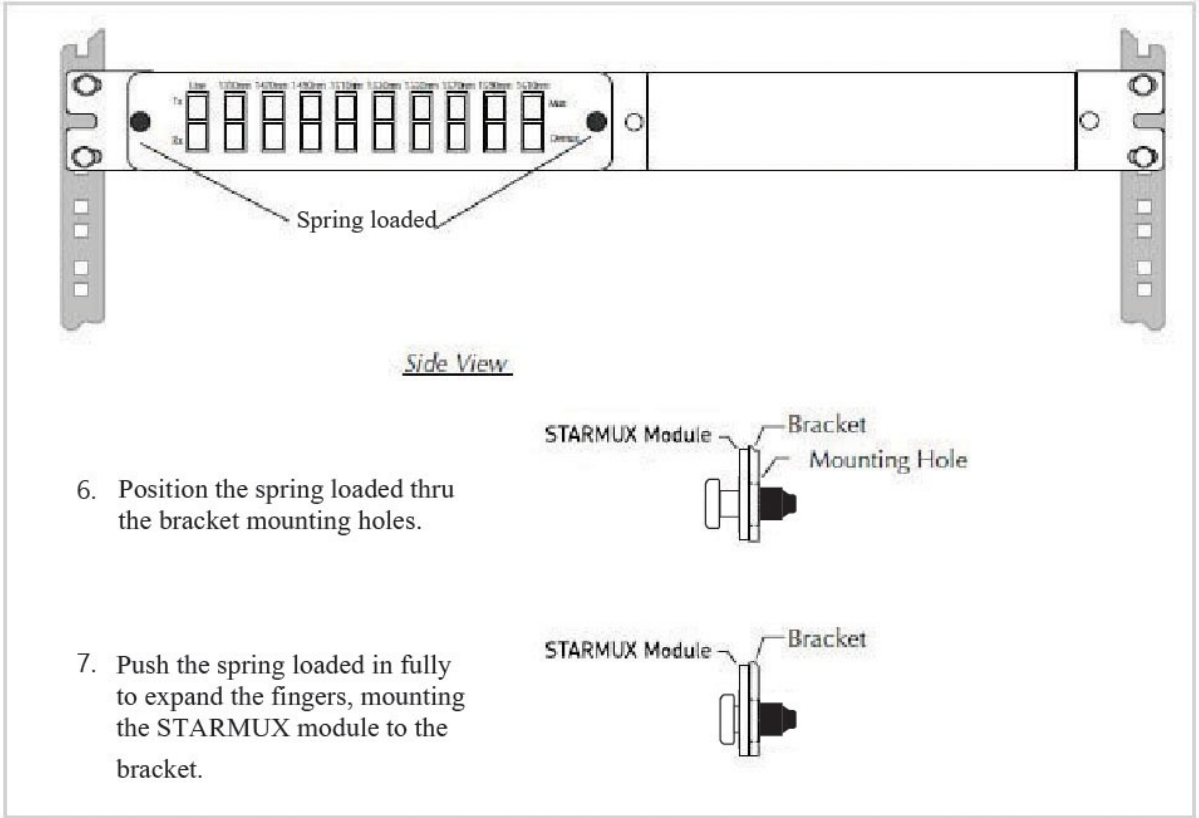


Figure 4: STARMUX Module Installation into Rack Mount

STARMUX Module Features

The CWDM module does not require power; therefore, it has no LEDs. The front panel contains fiber ports only. See Figure 5.

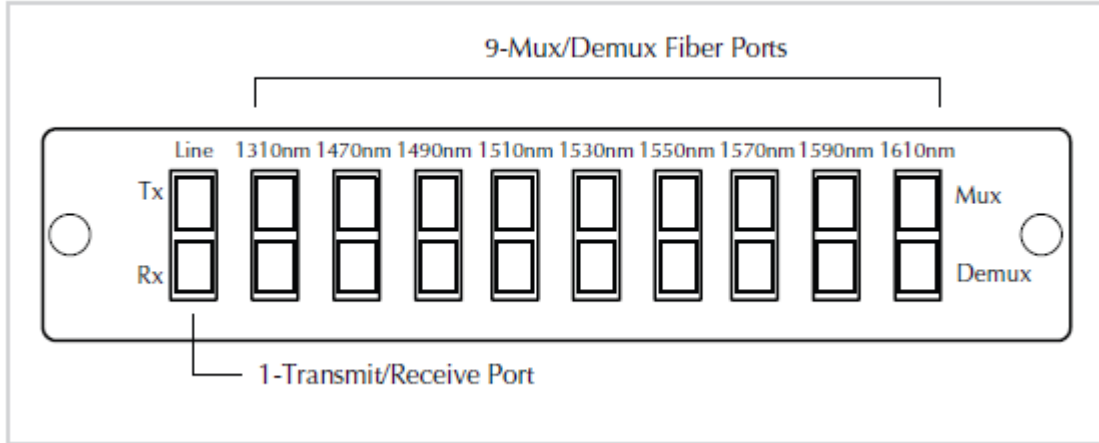


Figure 5: CWDM Front Panel Port Configuration

Fiber Cabling Handling & Installation

Handling fiber cables

Accurate and repeatable data transmissions require clean fiber-optic connections; therefore, inspect the ends of all connectors for dust or imperfections. To achieve the best possible performance, follow these guidelines:

- To prevent damage, keep the connectors' protective cover on when not in use.
- Use care in handling all fiber-optic connectors.
- Visually inspect fiber ends for signs of damage.
- Always clean and inspect fiber connectors prior to making a connection.

Installing fiber cables

To install the fiber cables, do the following:

1. Remove the protective cover from the port. See Figure 6.

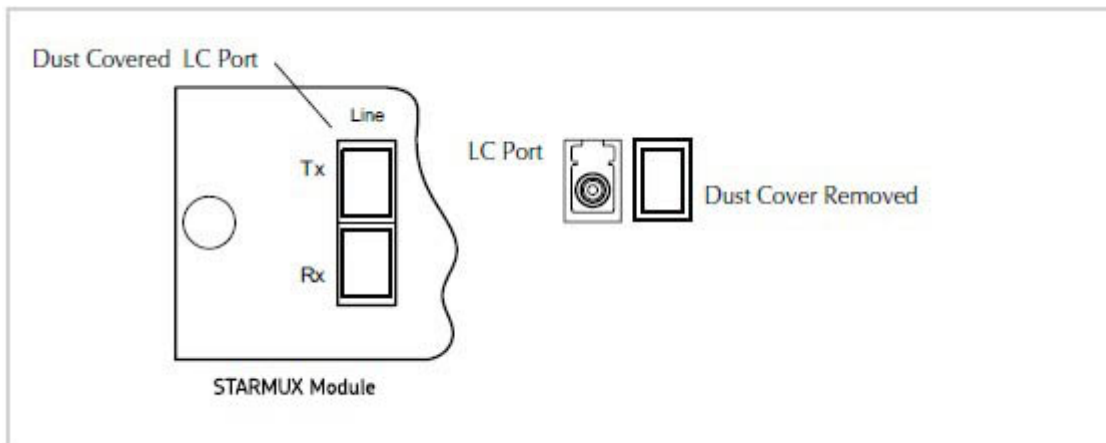


Figure 6: LC Port and Dust Cover

2. Locate a 2-strand fiber cable with the appropriate male connectors installed on both ends.
3. Carefully insert the fiber cable into the CWDM and the device, as shown in Figure 7.



Figure 7: Fiber Cable Connections

Theory of Operation

Starview Coarse Wavelength Division Multiplexing

STARMUX can be briefly described as a method of transmitting multiple signals over a fiber optic link through the use of separate, distinct wavelengths, based on the entire wavelength spectrum (1270nm – 1610nm in 20nm increments) defined by the ITU G.694.2 CWDM standard. In general, CWDM components multiplex the optical signal outputs from '4' or more electronic devices. These signals are sent over a single optical fiber. The signals are then demultiplex into separate, distinct signals for input into electronic devices at the other end of the fiber optic link. See Figure 8.

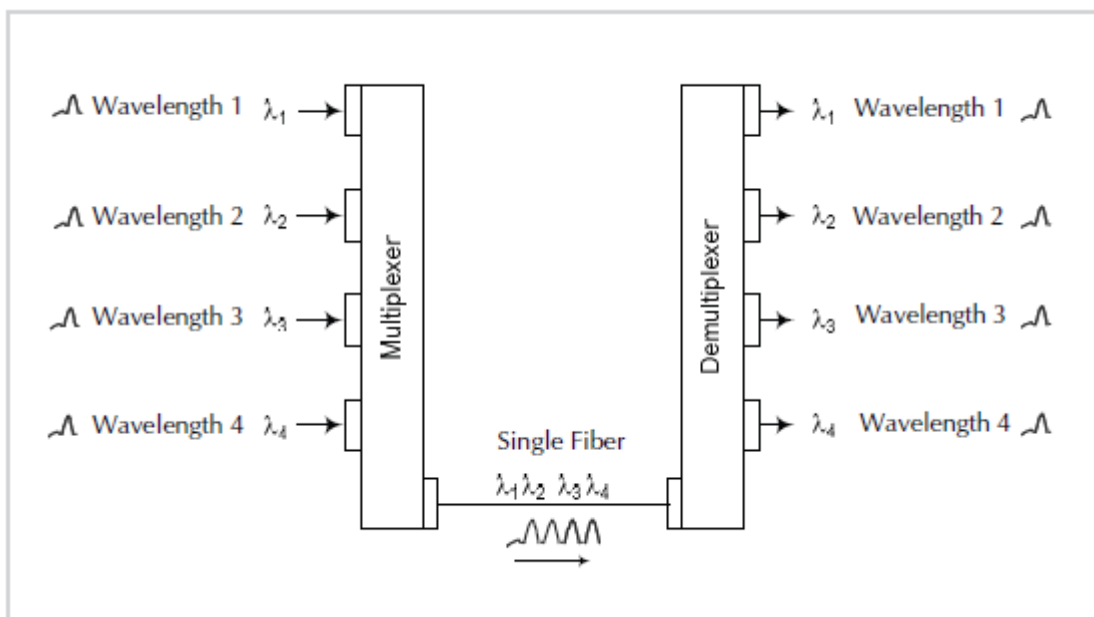


Figure 8: Coarse Wave Division Multiplexing

STARMUX devices utilize thin-film filter and circulator technology. Since the CWDM devices are entirely passive, they can be used in conjunction with Starview CWDM transceiver modules or any other 3rd party CWDM transceiver modules that has corresponding wavelengths to the CWDM filter wavelengths. These CWDM devices are available in two main configurations: Multiplexer/Demultiplexer (Mux/Demux) modules, and Optical Add/Drop Multiplexer (OADM) modules.

Optical add/drop multiplexer (OADM)

The optical add/drop multiplexer module provides the ability to add or drop a single wavelength or multi-wavelengths from a fully multiplexed optical signal. This allows intermediate locations between remote sites to access the common, point-to-point fiber segment linking them. Wavelengths that are not dropped pass through the OADM and continue on in the direction of the remote site. See Figure 9.

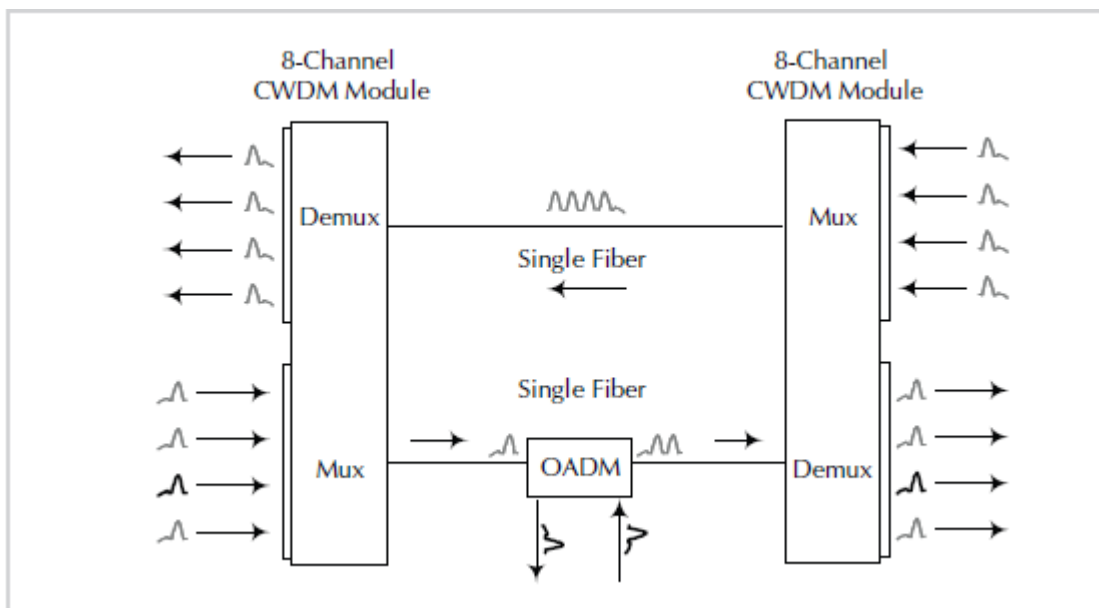


Figure 9: Add/Drop Module

CWDM wavelength-specific optical transceivers

STARVIEW offers CWDM wavelength-specific transceivers for interworking with any network equipment manufacturer. These CWDM transceiver modules comply with ITU G.694.2 standard and are available to support many various applications such as Ethernet, Fiber Channels, SDH, 4G LTE and etc.

Ordering Keys

| Model | Description |
|-------------------------|--|
| Duplex Mux/Demux | |
| SVR-STARMUX-1627-DLC | Starview CWDM 16 Channel MUX/DEMUX 19" Rack Mountable Module 1270/ 1290/ 1310/ 1330/ 1350/ 1370/ 1390/ 1410/ 1470/ 1490/1510/ 1530/ 1550/ 1570/ 1590/ 1610nm with 1 x Duplex LC COM port |
| SVR-STARMUX-1827-DLC | Starview CWDM 18 Channel MUX/DEMUX 19" Rack Mountable Module 1270/ 1290/ 1310/ 1330/ 1350/ 1370/ 1390/ 1410/ 1430/ 1450/ 1470/ 1490/1510/ 1530/ 1550/ 1570/ 1590/ 1610nm with 1 x Duplex LC COM port |
| SVR-STARMUX-827-DLC | Starview CWDM 8 Channel MUX/DEMUX Rack Mount Enclosure Module 1270/ 1290/ 1310/ 1330/ 1350/ 1370/ 1390/ 1410nm with 1 x Duplex LC COM port |
| SVR-STARMUX-847-DLC | Starview CWDM 8 Channel MUX/DEMUX Rack Mount Enclosure Module 1470/ 1490/1510/ 1530/ 1550/ 1570/ 1590/ 1610nm with 1 x Duplex LC COM port |
| SVR-STARMUX-931-DLC | Starview CWDM 9 Channel MUX/DEMUX Rack Mount Enclosure Module 1310/ 1470/ 1490/ 1510/ 1530/ 1550/ 1570/ 1590/ 1610 with 1 x Duplex LC COM port |
| Duplex OADM | |
| SVR-STARMUX-3AD3149-DLC | Starview CWDM 3 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1310/ 1470/ 1490nm with 2 x Duplex LC COM ports |
| SVR-STARMUX-3AD5155-DLC | Starview CWDM 3 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1510/ 1530/ 1550nm with 2 x Duplex LC COM ports |
| SVR-STARMUX-3AD5761-DLC | Starview CWDM 3 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1570/ 1590/ 1610nm with 2 x Duplex LC COM ports |
| SV-STARMUX-4AD2733-DLC | Starview CWDM 4 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1270/ 1290/1310/ 1330nm with 2 x Duplex LC COM ports |
| SV-STARMUX-4AD3541-DLC | Starview CWDM 4 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1350/ 1370/ 1390/ 1410nm with 2 x Duplex LC COM ports |
| SV-STARMUX-4AD4753-DLC | Starview CWDM 4 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1470/ 1490/1510/ 1530nm with 2 x Duplex LC COM ports |
| SV-STARMUX-4AD5561-DLC | Starview CWDM 4 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1550/ 1570/ 1590/ 1610nm with 2 x Duplex LC COM ports |

| Simplex Mux/Demux | |
|--------------------------|---|
| SVR-STARMUX-1627-SLC | Starview CWDM 16 Channel MUX/DEMUX 19" Rack Mountable Module 1270/ 1290/ 1310/ 1330/ 1350/ 1370/ 1390/ 1410/ 1470/ 1490/1510/ 1530/ 1550/ 1570/ 1590/ 1610nm with 1 x Simplex LC COM port |
| SVR-STARMUX-1827-SLC | Starview CWDM 18 Channel MUX/DEMUX 19" Rack Mountable Module 1270/ 1290/ 1310/ 1330/ 1350/ 1370/ 1390/ 1410/ 1430/ 1450/ 1470/ 1490/1510/ 1530/ 1550/ 1570/ 1590/ 1610nm with 1 x Simplex LC COM port |
| SVR-STARMUX-847-SLC | Starview CWDM 8 Channel MUX/DEMUX Rack Mount Enclosure Module 1470/ 1490/ 1510/ 1530/ 1550/ 1570/ 1590/ 1610 with 1 x Simplex LC COM port |
| SVR-STARMUX-931-SLC | Starview CWDM 9 Channel MUX/DEMUX Rack Mount Enclosure Module 1310/ 1470/ 1490/ 1510/ 1530/ 1550/ 1570/ 1590/ 1610 with 1 x Simplex LC COM port |
| SVR-STARMUX-947-SLC | Starview CWDM 9 Channel MUX/DEMUX Rack Mount Enclosure Module 1470/ 1490/1510/ 1530/ 1550/ 1570/ 1590/ 1610nm and 1310nm with 1 x Simplex LC COM port |
| Simplex OADM | |
| SVR-STARMUX-3AD3149-SLC | Starview CWDM 3 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1310/ 1470/ 1490nm with 2 x Simplex LC COM ports |
| SVR-STARMUX-3AD5155-SLC | Starview CWDM 3 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1510/ 1530/ 1550nm with 2 x Simplex LC COM ports |
| SVR-STARMUX-3AD5761-SLC | Starview CWDM 3 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1570/ 1590/ 1610nm with 2 x Simplex LC COM ports |
| SV-STARMUX-4AD2733-SLC | Starview CWDM 4 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1270/ 1290/1310/ 1330nm with 2 x Simplex LC COM ports |
| SV-STARMUX-4AD3541-SLC | Starview CWDM 4 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1350/ 1370/ 1390/ 1410nm with 2 x Simplex LC COM ports |
| SV-STARMUX-4AD4753-SLC | Starview CWDM 4 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1470/ 1490/1510/ 1530nm with 2 x Simplex LC COM ports |
| SV-STARMUX-4AD5561-SLC | Starview CWDM 4 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1550/ 1570/ 1590/ 1610nm with 2 x Simplex LC COM ports |
| SV-STARMUX-6AD2737-SLC | Starview CWDM 6 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1270/ 1290/1310/ 1330/ 1350/ 1370nm with 2 x Simplex LC COM ports |
| SV-STARMUX-6AD3949-SLC | Starview CWDM 4 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1390/ 1410/ 1430/ 1450/ 1470/ 1490nm with 2 x Simplex LC COM ports |

| Simplex OADM (cont'd) | |
|------------------------|---|
| SV-STARMUX-6AD5161-SLC | Starview CWDM 4 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1510/ 1530/ 1550/ 1570/ 1590/ 1610nm with 2 x Simplex LC COM ports |
| SVR-STARMUX-9A2743-SLC | Starview CWDM 9 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1270/ 1290/ 1310/ 1330/ 1350/ 1370/ 1390/ 1410/ 1430 with 2 x Simplex LC COM ports |
| SVR-STARMUX-9A4561-SLC | Starview CWDM 9 Channel Optical Add and Drop MUX/DEMUX Rack Mount Enclosure Module 1450/ 1470/ 1490/ 1510/ 1530/ 1550/ 1570/ 1590/ 1610 with 2 x Simplex LC COM ports |

Accessory

| Model | Description |
|-----------------|---|
| SVR-STARMUX-19R | Starview 19" 2-slot for STARMUX Rack Mount Enclosure Modules  |

Technical Specifications

| | | |
|---|---|-------------------------------|
| Standards: | ITU G.694.2 CWDM Telcordia GR-1221 and GR-1209 | |
| General Optical Specs (applies to all CWDM configurations) | | |
| | CWDM Channel Spacing: | 20nm |
| | CWDM Channel Passband: | -5.5nm < λ_c < +7.5nm |
| | Passband Ripple: | 0.5 dB max |
| | Adjacent Channel Isolation: | 30 dB min |
| | Non-adjacent Channel Isolation: | 40 dB min |
| | Directivity: | 50 dB min |
| | Return Loss: | 45 dB min |
| | Polarization Dependent Loss (PDL): | 0.2 dB max |
| | Optical Operating Power: | 300 mW max. |
| Course Wavelength Division Multiplexing (CWDM) Modules | | |
| 4 Channel Mux/Demux Specific Optical Specs | | |
| | Operating Wavelength: | 1500nm ~ 1620nm |
| | Center Wavelength (λ_c): | 1510nm ~ 1610nm |
| | Max Insertion Loss*: | 1.7 dB/channel |
| 5 Channel Mux/Demux Specific Optical Specs | | |
| | CWDM Operating Wavelength: | 1500nm ~ 1620nm |
| | CWDM Center Wavelength (λ_c): | 1510nm ~ 1610nm |
| | 1310nm Ch. Operating Wavelength: | 1260nm ~ 1360nm |
| | 1310nm Ch. Center Wavelength (λ_c): | 1310nm |
| | CWDM Max. Insertion Loss*: | 2.0 dB/channel |
| | 1310nm Ch. Max Insertion Loss*: | 1.0 dB/channel |
| | 1310nm Ch. Port Isolation: | 30 dB Min. (@CWDM bands) |
| 8 Channel Mux/Demux Specific Optical Specs | | |
| | Operating Wavelength: | 1460nm ~ 1620nm |
| | Center Wavelength (λ_c): | 1470nm ~ 1610nm |
| | Max Insertion Loss*: | 3.0 dB/channel |
| 9 Channel Mux/Demux Specific Optical Specs | | |
| | CWDM Operating Wavelength: | 1460nm ~ 1620nm |
| | CWDM Center Wavelength (λ_c): | 1470nm ~ 1610nm |
| | 1310nm Ch. Operating Wavelength: | 1260nm ~ 1360nm |
| | 1310nm Center Wavelength (λ_c): | 1310nm |
| | CWDM Max. Insertion Loss*: | 3.3 dB/channel |
| | 1310nm Ch. Max Insertion Loss*: | 1.0 dB/channel |
| | 1310nm Ch. Port Isolation: | 30 dB Min. (@CWDM bands) |
| 16 Channel Mux/Demux Specific Optical Specs | | |
| | Operating Wavelength: | 1300nm ~ 1620nm |
| | Center Wavelength: | 1310nm ~ 1610nm |
| | Add/Drop Ch. Max Insertion Loss*: | 3.7 dB |

| 18 Channel Mux/Demux Specific Optical Specs | | |
|---|------------------------------------|-----------------|
| | Operating Wavelength: | 1300nm ~ 1620nm |
| | Center Wavelength: | 1310nm ~ 1610nm |
| | Add/Drop Ch. Max Insertion Loss*: | 3.7 dB |
| Add/Drop Module | | |
| | Operating Wavelength: | 1300nm ~ 1620nm |
| | Center Wavelength: | 1310nm ~ 1610nm |
| | Add/Drop Ch. Max Insertion Loss*: | 1.1 dB |
| * All insertion loss values include one connector pair. | | |
| Fiber Type: | Corning SMF-28 | |
| Environment | | |
| Operating Temp: | 0°C to +70°C | |
| Storage Temp: | -40°C to +85°C storage temperature | |

Contact Us

Technical support

Ask a question anytime by sending an e-mail to our technical support staff.

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