



Coriant® hiT 7300 Flexi-rate Interface Modules

Powered by Coriant CloudWave™ Optics

Service providers require solutions with greater flexibility to address continuously shifting traffic patterns and increased capacity demands to support bandwidth-hungry applications. Coriant addresses these needs with flexi-rate interface modules for the Coriant® hiT 7300 Multi-Haul Transport Platform. Leveraging Coriant CloudWave™ Optics, the flexi-rate interface modules support software-switchable modulation, flexible channel spectral width, and flexible frequency tunability to provide the ideal balance between performance, capacity, and reliability across the most challenging networks.

IMPLEMENTING NEXT-GENERATION FLEXI-RATE CAPABILITIES

The advanced hiT 7300 flexi-rate interface modules are important components of the Coriant Dynamic Optical Cloud™ Solution and introduce a new level of flexibility, capacity, and cost efficiency to optical transmissions. The flexi-rate line side module provides two fully programmable physical DWDM line side interfaces that can be configured between 100G QPSK (Quadrature Phase Shift Keying), 150G 8QAM (Quadrature Amplitude Modulation), and 200G 16QAM modulation schemes. In addition, the line side interfaces support fixed grid and flexi-grid channel arrangements with various super-channels (200G, 300G, 400G, 1T) in meshed networks. This next-generation technology enables a smooth evolution of existing optical transport networks to 200G/400G/1T and beyond. Coriant CloudWave™ Optics is line side compatible with the Coriant® 7100 Packet Optical Transport Solutions, Coriant® mTera® Universal Transport Platform, and Coriant Groove™ G30 DCI Platform. The optical implementation of this innovative technology powers operations across multi-vendor network environments to protect existing infrastructure investment.

LEVERAGING CORIANT CLOUDWAVE™ OPTICS IN FLEXIBLE PIPES

With Coriant CloudWave™ Optics, the hiT 7300 flexi-rate interface modules offer a new level of flexibility in optical transmissions. Using this technology, the line rate can be dynamically adjusted between 100G, 150G, and 200G based on the required optical performance. To effectively accommodate a flexible line side transmission rate, a more flexible client side solution is required. The hiT 7300 shelf architecture provides a mix and match of the flexi-rate line interface with 100G and lower rate client interface modules for a cost-efficient solution ensuring maximum utilization and enabling numerous protection schemes.

BENEFITS OF CORIANT® FLEXI-RATE MODULES

- **Maximize fiber utilization** with high speed transmission and tunable spectral widths for high spectral density super-channels
- **Simplify network deployments** with single slot modules supported by all existing hiT 7300 and third-party fixed and flexi-grid networks
- **Maximize network resiliency** with highly resilient optical layer algorithms tolerant to high span losses, fiber aging effects, or lightning strikes in optical ground wire cables
- **Minimize sparing** with a single module for transmission rates between 100G and 400G
- **Minimize wavelength regeneration** with state-of-the-art signal processing
- **Save OpEx** with the lowest power consumption for ultra-long haul networks



OPTIMIZING YOUR NETWORK WITH THE CORIANT DYNAMIC OPTICAL CLOUD™

Delivering a whole new level of adaptability for optical transmissions, Coriant CloudWave™ Optics along with the comprehensive management of the Coriant® Transport Network Management System (TNMS) and the programmable, dynamic control of the Coriant Transcend™ SDN Solution represent important components of the Coriant Dynamic Optical Cloud™ Solution. By combining Coriant's fully adaptable optical transport platforms with optical transmissions provided by Coriant CloudWave™ Optics, CDC ROADM technology, and the Coriant Transcend™ SDN Solution, network operators have a powerful end-to-end networking solution that optimizes connectivity across network layers and can be programmed to efficiently and seamlessly adapt to any network requirements.

ENSURING HIGH-END OPTICAL PERFORMANCE

Equipped with two flexible, power-efficient physical interfaces, the line side module supports software switchable 100G QPSK, 150G 8QAM, and 200G 16QAM for up to 2x200G of line capacity. The gridless tunable technology of the interface, joined with the hiT 7300 flexi-grid infrastructure, supports channel grids that are optimized for either highest reach or highest fiber capacity. The flexi-rate interface modules can be deployed in any hiT 7300 network, ensuring access to this advanced technology in existing infrastructure.

The flexi-rate modules are designed with state-of-the-art coding that enables optimum optical reach in nationwide networks and also supports a metro line mode maximizing cascades through multiple ROADMs and providing interoperability with industry standard CFPs. For long haul applications, Coriant uses advanced algorithms to mitigate nonlinear impairments and also increases the margins on the optical and electrical analog components by employing pre-distortion and equalization algorithms. The result is a solution that supports an unregenerated optical reach for 100G of >5000 km in terrestrial networks and dynamic tunability for up to 200G per wavelength with an optical performance of >1000 km.

In combination with the resilient optical control layer, Coriant CloudWave™ Optics technology delivers a resilient solution against general network impairments, such as very high single span fiber margin or a tolerance to lightning strikes in optical aerial ground wire cables.

TECHNICAL SPECIFICATIONS

General

- I2L200G: 2x100G QPSK, 2x150G 8QAM, 2x200G 16QAM, software-switchable modulation
- Capacity per fiber in meshed networks (C-band)
 - QPSK: 9.6-12.8 Tb/s
 - 8QAM: 14.4-17.3 Tb/s
 - 16QAM: 19.2-25.6 Tb/s
- L-band ready
- Gridless tunability 191.35-196.1 THz
- -2dBm to 4 dBm output power per channel
- -20dBm to 0 dBm input power per channel
- Supports filter-less combining up to 128 channels
- Supports filter-less selection of a wavelength from up to 128 channels

- Forward error correction (FEC) operation:
 - High gain FEC for optimum reach
 - Metro FEC (commercial CFP line interoperability)
- Enables 50 ms system resynchronization functionality
- Supports all greenfield and legacy terminals and channel grids
- Power watts/Gbps: 1.1 W (QPSK), 0.95 W (8QAM), 0.71 W (16QAM)
- OTU2/3/4 monitoring and alarm features
- Mix and match of line and client cards
- Client interface types:
 - I04C100G: OTU4, 100GbE (4xCFP4 per slot)
 - I20C10G: OC-192/STM-64, OTU2/2e, 10GbE, 8/10/16G Fiber Channel (20xSFP+ per slot)
 - 400GbE and FlexEthernet ready

Optical Performance

- Terrestrial transmission of >5,000 km for 100G/wavelength and >1,000 km for 200G/wavelength
- Submarine reach more than 11,000 km on newly designed links
- Chromatic dispersion compensation: >300 ns/nm (>14,000 km)
- PMD tolerance: 50 ps mean DGD
- PDL tolerance: 10 dB
- Polarization tracking with more than 3Mrad/s
- Nyquist pulse shaping enabling scalable super-channel operation
- Nonlinearity tolerant pulse shaping
- Chromatic dispersion pre-emphasis for legacy submarine links
- Optical performance monitoring: CD, PMD, PDL, Q-factor, FEC statistics

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