

OptiX BWS 1600A DWDM SYSTEM



Product overview

The OptiX BWS 1600A DWDM system is a one kind of large-capacity multi-service and multi-reach transmission DWDM equipment. It is mainly developed for the market of North America. Compliant With standard TL1 command interfaces, it has NEBS-compliant hardware architecture and is also compliant with the UL and the FCC. Thus it meets all of the requirements of the North American market. The OptiX BWS 1600A provides integrated solutions for long-haul backbone transmission networks, metropolitan backbone networks, and metropolitan aggregative networks. It is compatible with the SONET products of Huawei to provide overall solutions. It can also access standard-compliant services such as SONET, SDH, Ethernet, and SANs.



Product features:

Large capacity and modular design

The OptiX BWS 1600A multiplexes up to 160 wavelengths in a single fiber. The total unidirectional transmission capacity can reach 1600Gb/s. Employing the modular design, the OptiX BWS 1600A can easily be upgraded from 400G up to 1600G. The modular design is good for installment investment and construction in phases, and hence effectively reduces the initial investment.

Full-service, multi-rate, multi-protocol, and diversified service convergence modes

The OptiX BWS 1600A is accessible to SONET services at a rate of OC3/12/48/192, Fast Ethernet, Gigabit

Ethernet, 10GE LAN, ATM, ESCON, FICON, Fiber Channel and any services at the rate ranging from 34Mbit/s to 2.5Gbit/s. The OptiX BWS 1600A supports service convergence functions. It can multiplex OC48 services into OC192 wavelength, and multiplex 2/4/8 × GE services into a 1 × 2.5G/5G/10G bit/s. In addition, it supports multi-channel SAN and video service convergence to save wavelength resources.

Reconfigurable OADM (Optical Add/Drop Multiplexer)

OptiX BWS 1600A provides ROADM based on Wavelength Blocker Technology. It supports remote software configuration, Offers 100% wavelength add/drop and pass-through capability, In-service upgrade and expansion without interruption to other services, integrated optical wavelength equalization capability. ROADM enables customers to configure the service more flexibly, facilitates operation, and tremendously improves equipment maintainability.

Flexible and cost effective GE channel -- GE-ADM

Huawei's DWDM system supports proprietary GE ADM technology, the Unique GE ADM Technology based on DWDM platform combines the advantages of the DWDM network capacity and SDH-like network flexibility. Processing GE as a sub-wavelength, it offers GE aggregation and grooming with lower cost, gives more choice for GE protection, and can supply end to end GE service quickly. With GE-ADM, OptiX BWS 1600A supports:

- Reconfigurable networks, sub-lambda cross-connection and grooming
- Automatic end-to-end configuration and intelligent management
- Adding and removing services timely, without any impact on other services.

Optional Supervisory channel

Supervisory channel of the BWS 1600A can be an Optical Supervisory Channel (OSC) or an Electric Supervisory Channel (ESC). OSC/ESC and NM software allow remote system operation and service provisioning from any node on the network. Choosing ESC could save some optical supervisory channel units. In this mode, the optical transponder unit (OTU) multiplexes the supervisory information into the service channel for transmission. ESC mode can reduce complexity and improve system power budget, it is a cost-effective and reliable solution.



Ultra long-haul transmission technology

The ultra long-haul transmission technology includes the ULH and the LHP (long Hop) that can be applied to different networks. To enable ultra long-haul transmission, Huawei developed a world-leading SuperWDM technology which uses the patented coding and modulation mode to perform code conversion on the transponder boards and finally generates excellent return-to-zero(RZ) code for optical signal transmission. The SuperWDM technology not only enhances OSNR tolerance, but also reduces the inter-code interference and the impact of nonlinear effect, and improves system jitter suppression and PMD tolerance. It can fulfill a 5000km transmission for 10G services without regenerator by integrating with AFEC, Raman and equalization technologies, so as to meet the ULH transmission requirement more cost-effectively.

Comprehensive monitoring and preventive warning

The built-in optical spectrum analyzer (OSA) unit can measure the optical power of each wavelength, the central wavelength, and the OSNR accurately. It is able to conduct overall testing and monitoring for the running status of each wavelength on the network. OptiX BWS 1600A can realize overall monitoring of the network. It is also able to locate network faults effectively and gives an early warning in time so as to improve the maintenance quality.

Intelligent optical level adjustment

The OptiX BWS 1600A has the adaptive optical level adjustment function. When the line is aging or has abnormal attenuation that affects network performance, the OptiX BWS 1600A automatically detects and judges the fault, adjusts the VOA to make the network to have the best working performance all the time. This intelligent adaptive optical level adjustment technology changes the operation and maintenance way of the existing low-efficiency manual adjustment. It makes the DWDM system more efficient and intelligent in terms of operation, administration and maintenance.

Full-band tunable transponder for fewer inventories

The OptiX BWS 1600A provides OTUs with tunable wavelengths. The tunable wavelength range covers a full-band 80 wavelengths (50GHz spacing). Using this kind of OTU as the spare part instead of the ordinary OTU, less spare parts and types are needed and the network OPEX is greatly slashed.



Product specifications

Item	Description
Transmission specifications	5000 km transmission without electric relay 300 km transmission without optical relay
Key technologies	SuperCRZ, AFEC, Raman, and ROPA, ROADM
Wavelength range	The OptiX BWS 1600A uses 80 channels in C-band with a minimum of 50 GHz channel spacing. For convenience, the C-band is divided into C-ODD and C-EVEN as follows: C-EVEN: 192.10 THz–196.00 THz (1529.55nm–1560.61nm) C-ODD: 192.15 THz–196.05 THz (1529.16nm–1560.20nm)
Service types	Standard SDH service: STM-1/4/16/64/256 Standard SONET service: OC-3/12 /192/768 POS service: Packet Over SDH/SONET Ethernet service: FE, GE, and 10GE services 34 Mbps–2.7 Gbps ESCON/FC/FICON/FDDI/PDH OTN multiplexing and transparent transmission SAN
Supervisory channel	2 Mbps or 8 Mbps bit rate
Protection modes	Optical line protection Inter-Card 1+1 protection Intra-Card 1+1 protection Client-side 1+1 protection Inter-subrack protection Wavelength cross-connection protection Optical wavelength shared protection 1:N optical channel protection Network management channel protection
Amplifier attributes	Three types of amplifier: EDFA, RAMAN, and ROPA AGC, ALC, and gain tilt compensation
Maintenance attributes	Support APE, ALC, AGC, QEL, Optical Spectrum Analyzer (OSA), and Optical Time Domain Reflectometer (OTDR)
Subrack	575.0 mm (H) x 587.2 mm (W) x 392.0 mm (D)
Weight	30 kg (with the backplane but without units and fan tray assembly)
Voltage	–48 V DC
Power consumption	700 W
Environment	Long term working temperature: 5°C to 40°C Long term working humidity: 5%–85%
	Short term working temperature: –5°C to 50°C Short term working humidity: 5%–90%
	Storage temperature: –40°C to 70°C
	Altitude ≤ 4000 m

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