Wavelength Tunable DWDM 10 Gb/s Optical Regenerator

ITU WaveShifter 600



Key Features

- **Reach extension for power and dispersion limited OC-192 (9.95 Gb/s), 10GE WANPHY (9.95 Gb/s) and 10GE LAN PHY (10.3 Gb/s)**
- **Tunable transmit wavelength–full C-band 100 GHz grid**
- **3R (reshape, regenerate, retime) operation compliant with GR-253**
- **High transmit power and excellent receiver sensitivity**
- **Extended dispersion tolerance to 80 km**
- **Convection cooled: no fans required**

Applications

- SONET and 10 GE reach extension of loss and dispersion limited links
- Dense wavelength division multiplexing (DWDM) of mixed 10 G and 2.5 G data on existing fiber

Compliance

- Telcordia NEBS level 3
- GR-253-CORE, Issue 3, sections 4.1 (Physical Layer Classifications), 5.6.1 (Jitter for Regenerators), and 7 (Other Generic Criteria)
- UL 60950 Third Edition
- FCC Class A

The ITU WaveShifter 600 is a rugged optical regenerator that extends the reach of SONET OC-192, 10 gigabit Ethernet LAN and WAN data by up to 80 km over Single-mode Fiber (SMF).

A versatile reach extender, the ITU WaveShifter 600 can be used as an in-line regenerator for power-, dispersion-, or jitter-limited transmission applications. Featuring a tunable transmitter, the ITU WaveShifter 600 can be tuned to any one of 40 ITU DWDM channels in seconds, allowing one plug to be used for any channel. With a high sensitivity receiver, incoming 10 Gb/s signals are reshaped, retimed, and regenerated (3R) and retransmitted with high output power.

ITU WaveShifter 600 converts any 1310 or 1550 nm optical input to a long reach ITU DWDM output compatible with DWDM multiplexer and demultiplexer products, allowing multiple 10 Gb/s signals to be multiplexed into a single fiber. It is also compatible with Erbium Doped Fiber Amplifiers (EDFA) such as the LightAmp and BrightAmp series of network ready optical amplifiers.

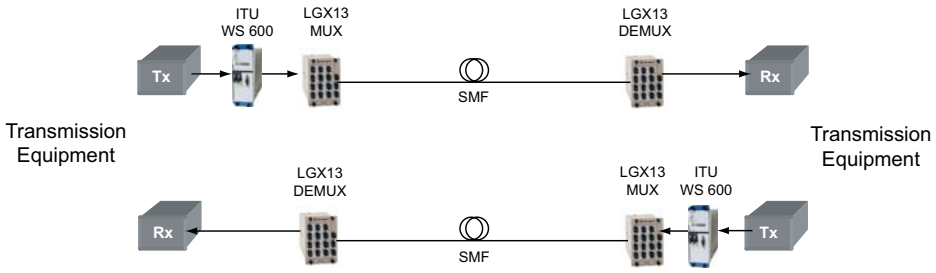
The ITU WaveShifter 600 is ready to deploy out of the box into any WaveReady 3500 shelf and can be provisioned in minutes for a wide range of network applications.

Specifications

Parameter[1]	Minimum	Typical	Maximum
Optical Characteristics			
Input and output data rate		9.95 Gb/s (OC-192, 10GE WAN), 10.3 Gb/s (10GE LAN)	
Input and output wavelength			
Input wavelength, port A	1280 nm	-	1600 nm
ITU DWDM output wavelength, port B	1529.55 nm	-	1560.61 nm
Output wavelength tuning range		All 100 GHz spaced channels from 1529.55 nm to 1560.61 nm[2]	
Input sensitivity at 9.95 and 10.3 Gb/s, BER = 10^{-12}, 1550 nm[3]	-24 dBm	-	-
Input sensitivity at 9.95 and 10.3 Gb/s, BER = 10^{-12}, 1310 nm[4]	-11 dBm	-	-
Input overload power at BER=10^{-12}	-	-	-8 dBm
Wavelength/temperature accuracy	-25 pm	-	+25 pm
Maximum dispersion @ 1550 nm 2 dB path penalty	-	-	1600 ps/nm
Dispersion penalty (80 km at BER=10^{-12})	-	-	2 dB
Differential group delay (DGDmax) @ 1 dB path penalty	-	-	30 ps
Extinction ratio	9.5 dB	-	-
Eye mask		Per GR-253-CORE	
Output power level	+3 dBm	-	+7 dBm
Blanking/off output power level	-	-	-40 dBm
Jitter (generation, tolerance, transfer)		Meets GR-253/ITU-T G.98, IEEE 802.3ae, and ANSI X3.230-1994	
Electrical Characteristics			
DC supply voltage[5]	-40 V DC	-48 V DC	-57 V DC
Power dissipation	-	12 W	15 W
Alarm relay signals		Dry contact major and minor alarms. Relay open under normal operation. Relay closed when power is off. Major (MAJ), Minor (MIN)	
Physical Dimensions			
Size (H x W x L)		6 x 2.2 x 8.5 inch (15.24 x 5.58 x 21.59 cm)	
Weight (approximate)		3.1 lbs (1.4 kg)	
Environmental Characteristics			
Normal operating temperature	0 °C	-	40 °C
Extended operating temperature	-5 °C	-	55 °C
Storage temperature	-40 °C	-	85 °C
Relative humidity (non-condensing)	5%	-	85%
Interface Characteristics			
Optical connectors		SC/PC on input port A and output port B	
DB-9/RS232 craft user port		3-wire serial TTL, 57600 Baud, no parity, no flow control, 8 data bits 1 stop bit.	
Front panel		Four LEDs: CARD (power), MAJ (major alarm), MIN (minor alarm), LOS A (loss of input signal), LED wavelength/rate display, DB9 craft port	

1. This product should be deployed in accordance with your company's deployment directives.
2. Per 100 GHz channel grid defined in ITU-T G.694.1
3. Based on SONET OC-192 LR-2 transmitter specifications; minimum 8.2 dB ER, 30 dB SMSR
4. Based on SONET OC-192 SR-1 or IEEE 802.3ae 10GBASE-L transmitter specifications.
5. The DC power supply must be -48 V SELV output and certified by a nationally recognized test laboratory (NRTL). UL tested at -48 V.

Typical Application



Ordering Information

For more information on this or other products and their availability, please contact your local JDSU account manager or JDSU directly at 1-800-498-JDSU (5378) in North America and +800-5378-JDSU worldwide or via e-mail at customer.service@jdsu.com.

Sample: WSH-600DX10SA

Product Code	Description
WSH-600DX10SA	ITU WaveShifter 600

Associated Parts

Product Code	Description
10129126	DenseMount Shelf
MDX-13DX2001A	13 Channel DWDM Mux PWS 01
MDX-13MX2001A	13 Channel DWDM Demux PWS 01

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