

Gigabit Ethernet Fiberoptic Extender

GbX™ Model 1280



Key Features

- Compliant with IEEE 802.3z/D5 Gigabit Ethernet standards
- Full duplex bandwidth operation with 2 Gb/s throughput (802.3z/D5)
- Custom OEM packages available
- Single- or dual-fiber WDM options available for new or existing fiber plants

Applications

- Enables long distance data communications via private or leased single-mode fiberoptic lines
- Gigabit Ethernet full duplex communications to distances up to 100 km

Compliance

- FCC Class A digital device
- CE 73/23/EEC and 89/336/EEC
- UL 60950 Third Edition

The WaveReady™ 2000 series GbX™ Gigabit Ethernet Fiberoptic Extender increases the maximum interconnect distance of a Gigabit Ethernet switch from the standard IEEE 802.3z distance (220 or 5000 m) to distances of up to 100 km (67 miles). The GbX allows LAN technology to be extended to the MAN. Two standard product ranges of long distance links are offered: up to 25 km and up to 100 km.

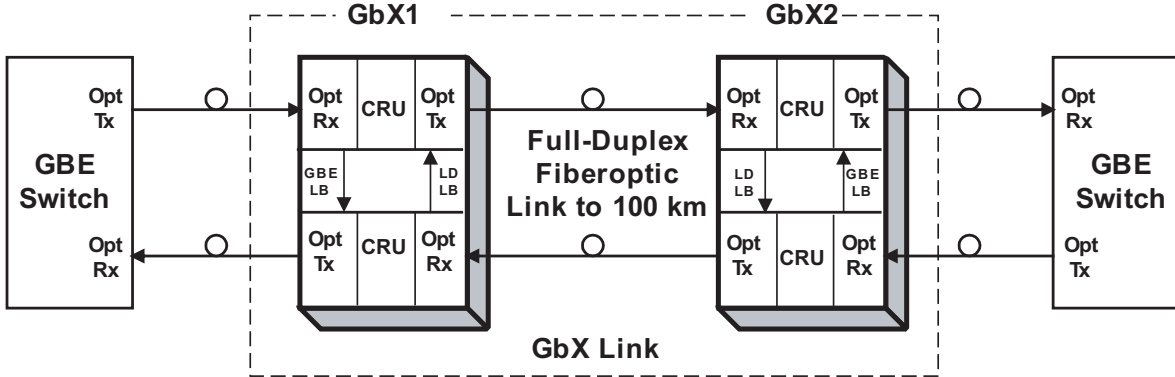
The GbX is fully compatible with the Gigabit Ethernet IEEE 802.3z/D5 standards for fiberoptic interfaces. Network management and loopback control functions are provided via an RS-232C port.

The GbX link allows Gigabit Ethernet users to take full advantage of the available 2 Gb/s full duplex bandwidth, as specified in IEEE 802.3z/D5. The link provides low latency by allowing simultaneous transmit and receive functions.

By providing users with interconnect distances of up to 100 km, the GbX offers network planners an important and fundamentally different way to approach their Gigabit Ethernet system architecture. With the unit, distance limitations cease to be a factor in most cases, allowing new degrees of freedom in the use of a wide variety of Gigabit Ethernet products.

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GbX Extender Block Diagram



Specifications

Parameter	Minimum	Typical	Maximum
Standard Gigabit Ethernet Optical Interface			
Link (multimode)	-	-	7.5 dB
Distance (62.5 μm multimode)	2 m	-	220 m
Distance (50 μm multimode)	2 m	-	500 m
Optical connector loss	-	-	1 dB
Gigabit Ethernet Optical Transmitter Interface			
Output optical power ¹ (multimode)	-9.5 dBm	-	-4 dBm
Optical extinction ratio	9 dB	-	-
Center wavelength	830 nm	850 nm	860 nm
Optical rise/fall time	-	-	0.26 ns
Relative intensity noise (RIN)	-	-	-117 dB/Hz
Total added jitter	-	-	227 ps (pp)
Gigabit Ethernet Optical Receiver Interface			
Optical input power (BER ≤1E-9)	-17 dBm	-	0 dBm
Stressed Rx sensitivity			
62.5 μm	-	-	-12.5 dBm
50 μm	-	-	-13.5 dBm
Operating wavelength	770 nm	-	860 nm
Optical wavelength	770 nm	-	860 nm
Optical return loss	12 dB	-	-
Stressed Rx eye opening	201 ps (p-p)	-	-
Optical connector	Standard duplex SC/PC optical connector interface to Gigabit Ethernet switch equipment		
Interface standards compatibility	Compliant with all Gigabit Ethernet (IEEE 802.3z/D5) standards		

Note: This product should be deployed in accordance with your company's deployment directives.

1. Class 1 eye safe.

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Specifications

Parameter	Minimum	Typical	Maximum
Long Distance Optical Interface (Option 1: 25 km)			
Link			
Optical loss	15.25 dB	19.25 dB	-
Distance on SM fiber	-	25 km	-
Long Distance Interface (LDI) Optical Tx			
Optical output power	0 dBm	2 dBm average	-
Optical extinction ratio	9 dB	-	-
Center wavelength	1300 nm	1310 nm	1330 nm
Optical rise/fall time	-	-	0.26 ns
LDI Optical Rx			
Optical input power minimum (BER $\leq 1E-9$)	-15.25 dBm	-17 dBm	-
Optical input power maximum (BER $\leq 1E-9$)	0 dBm	-	-
Operating wavelength	1200 nm	1310 nm	1500 nm
Return loss	27 dB	-	-
Long Distance Optical Interface (Option 2: 100 km)			
Link			
Optical loss	32 dB	35 dB	-
Distance on SM fiber ¹	-	100 km	-
LDI Optical Tx			
Optical output power ¹	0 dBm	1 dBm	-
Optical extinction ratio	7 dB	-	-
Center wavelength	1530 nm	1550 nm	1565 nm
Optical rise/fall time	-	-	0.26 ns
LDI Optical Rx			
Optical input power (BER $\leq 1E-9$)	-	-34 dBm	-32 dBm
Optical input power maximum (BER $\leq 1E-9$)	-8 dBm	-	-
Operating wavelength	1200 nm	1550 nm	1600 nm
Return loss	27 dB	-	-
System Rates and Lengths			
Bit rate (fiber line rate)	1.25 Gbaud ± 100 ppm		
Distance over SM fiber ²	5 m to 100 km, >100 km special order		
Data format (encoded)	8B10B		
General			
Operating temperature	0 °C	-	50 °C
Dimensions (W x H x D)	48.3 x 4.4 x 40.6 cm (19 x 1.75 x 16 inches)		
Input voltage	100 to 240 V AC, 50 to 60 Hz (autoswitching, 50 W)		
Weight	2.3 kg (7 lbs)		

1. Operating beyond 100 km can be loss limited. Unless a very low loss fiber plant exists, operation is limited to 100 km. An erbium doped fiber amplifier (EDFA) can be used to overcome excessive loss and extend the link distance to over 100 km.
2. Additional optical attenuation is required if the fiber loss is less than 10 dB.

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: 1280-25121

Product Code	Description
1280-45121	25 km/1310 nm version
1280-25121	100 km/1550 nm version

Note: Two Model 1280 units are required per link. A rack-mount kit, power cords, and RS232 cable are included with every unit. Consult factory for special requirements and custom OEM packaging.

Safety Information

The unit is an FDA Class 1 Laser Product and requires no special eye safety precautions.



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