



OptiBridge™ 2500



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Optical Crossing

overview

Fiber connections to commercial buildings can be prohibitively expensive. Old technologies, such as DSL and cable, do not provide the required bandwidth nor are they available everywhere. RF wireless can offer higher data rates than DSL or cable, but the difficulty of deploying RF wireless because of FCC regulations and licensing makes it even less attractive.

Optical wireless has emerged as an attractive and cost-effective solution to linking the nation's network backbone and premises networks (known as the "first and last mile"). Unlike fiber installation, optical wireless can be installed and running in hours at a fraction of the cost. Furthermore, free-space optical links provide high data rate without the need for spectrum licensing.

product description

Optical Crossing enters the optical wireless market with the introduction of OptiBridge™ 2500 - the first commercially available, single channel, free-space optical transceiver that delivers 2.5 Gbps over 2 km.

The excellent performance of OptiBridge™ 2500 transceivers is in large part due to the proprietary auto-alignment subsystem that allows the diameter of the transmitted laser beam at the receiver to be just a few times the aperture of the receiver. The auto-alignment sensor can detect very weak signals even in the presence of substantial background noise. Because of the large tracking bandwidth, the auto-alignment subsystem not only corrects for slow building sway as well as wind and temperature loading effects, but also for faster atmospheric induced beam tilt. Such high-performance and robust tracking is essential to effectively couple light into small-area high-speed detectors or optical fibers. Finally, the tracking system has a sufficiently large field-of-view that makes periodic manual alignment unnecessary.

A pair of OptiBridge™ 2500 transceivers can tolerate an atmospheric attenuation of >20 dB (or <1% transmission) over 1 km and still operate at the full speed of 2.5 Gbps. Based on National Climatic Data Center (NCDC) database, for example, this translates to >99% availability in downtown Los Angeles. With a low-data rate RF fall-back system, for use in extreme weather, the link availability can be nearly uninterrupted (99.999% availability).





features and benefits

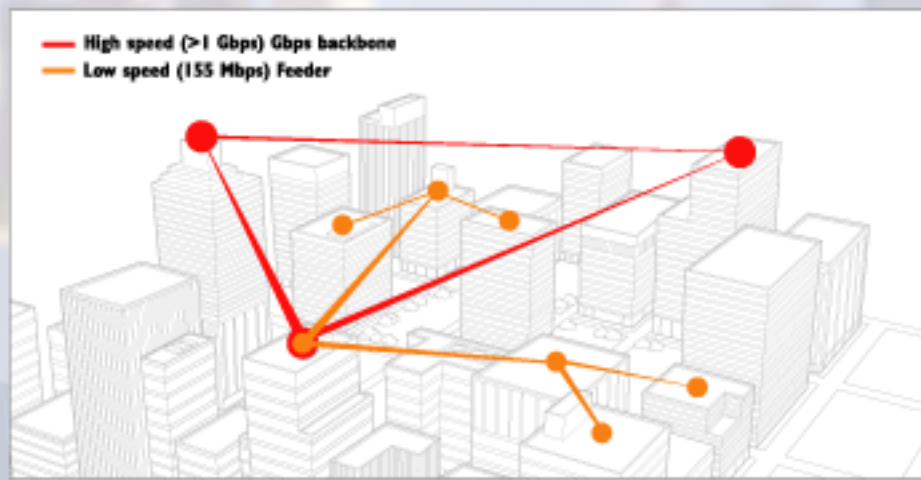
In addition to the tracking and large link margin, OptiBridge™ 2500 features:

- a proprietary high numerical aperture (NA) receiver design;
- adaptive transmit power control to compensate for atmospheric losses;
- a mechanical design that reduces affects of thermal expansion and stress;
- a powerful micro-controller to monitor and optimize functions as needed; and
- a touch-screen LCD display for status indication, diagnostics, and control.

The OptiBridge™ 2500 interface can be customized to meet customer needs. For example, the OptiBridge™ 2500 can be provided with interface for operation at 1300 or 1550 nm bands (even with specific wavelengths on the ITU grid); and/or with single-mode or multi-mode fibers. Additional options, such as uninterruptible power supply (UPS) and 16:1 or 8:1 mux/demux modules, can also be provided.



The OptiBridge™ 2500 is the first in a series of state-of-the art optical wireless products from Optical Crossing. Transceivers capable of 10 Gbps over 1 km are under development. Optical Crossing intends to set the standard for gigabit wireless Ethernet and next generation 10 Gbps wireless Ethernet whether it be for the "first and last mile" or inter-building link for large campuses.



"OptiBridge™ 2500 is the first commercially available, single channel, free-space optical transceiver that delivers 2.5 Gbps over 2 km."

specifications

Tranceiver Characteristics

Data rate	2.5 Gbps full-duplex (100 kHz to 1.8 GHz 3-dB bandwidth)	
Bit-error-rate (BER)	< 10 ⁻⁹	
Protocol	independent / transparent	
Line-of-sight range	1 km	2 km
Allowable atmospheric attenuation	20 dB	13 dB
Typical availability ¹	99%	98%

Data Interface

Input	fiber type	SMF with FC or ST connector
	wavelength	1100 to 1600 nm
Output	optical power	-20 dBm minimum (-3 dBm max)
	fiber	SMF with FC or ST connector
	wavelength	1310 or 1550 nm band ²
	optical power	-3 dBm for 1310 nm, -1 dBm for 1550 nm

Safety

Laser radiation is eye and skin safe at entrance/exit window

User Interface / Diagnostics

64 x 256 pixel back-lit LCD with touch screen overlay provides interactive user-interface during installation & setup, and displays status information during normal operation.

Power

Input	88-132 / 176-264 VAC (switch selectable) 47-440 Hz
Power consumption	40 Watts typical, 75 Watts maximum ³
Uninterruptible power supply (UPS)	optional

Mechanical

Gimbal range	360 degrees	Azimuth	Length Width Height
	± 30 degrees	Elevation	
Weight (excluding gimbal)	18 kgs	40 lbs	
Dimensions (excluding gimbal)	71 cm	28 in	
	25 cm	10 in	
	30 cm	12 in	
Ambient operating temperature	-20 to 40°C	standard	
Transceiver enclosure is weather-proof with no connectors/switches open to environment			

Notes

- 1 Availability based on NCDC Database for Los Angeles averaged over six years.
- 2 Specific wavelegth on ITU grid and higher power levels available as option.
- 3 Power consumption will be substantially more in cold weather due to additional heaters.