

## Laser Based Free Space Optical Communication System

### FEATURES

- Free Space, Wireless Communication
- Wire Speed Fast Ethernet (100 Mbps)
- Secure Data Transmission
- Transparent Operation
- Choice of Standard Optical Interfaces
- IEEE 802.3u compliant
- Quick Installation and Re-deployment



### OVERVIEW

The E100 range of **LaserBit** offers cost effective, reliable and secure laser based optical transmission for local area networks (LAN) through the air at 100 Mbps Fast Ethernet speed. The laser transmission carries the data using the concentrated laser beam and a unique modulation technique is employed to ensure error free data transfer over distances up to 5000 meter. The patented Aperture Control Mechanism delivers outstanding system availability figures. The transparent and wire speed data transfer together with virtually zero latency assures the easy integration of the system in all environment. Because they use infrared light as transmission medium, **LaserBit** systems do not require frequency licenses and the transmission is not affected by electro-magnetic interference. The laser beam is extremely hard to tap, even to discover since it cannot be detected by spectrum analyzers. In order to capture the transmitted information, the tapping device must be in the beam, precisely aligned, which in most of cases is impossible and any tryout can be easily detected. Basically, the **LaserBit** link can be considered as a “virtual” fiber in the air, which ends in a “real” fiber optic cable at both ends.

### APPLICATIONS

Typical applications for the E100 series devices include:

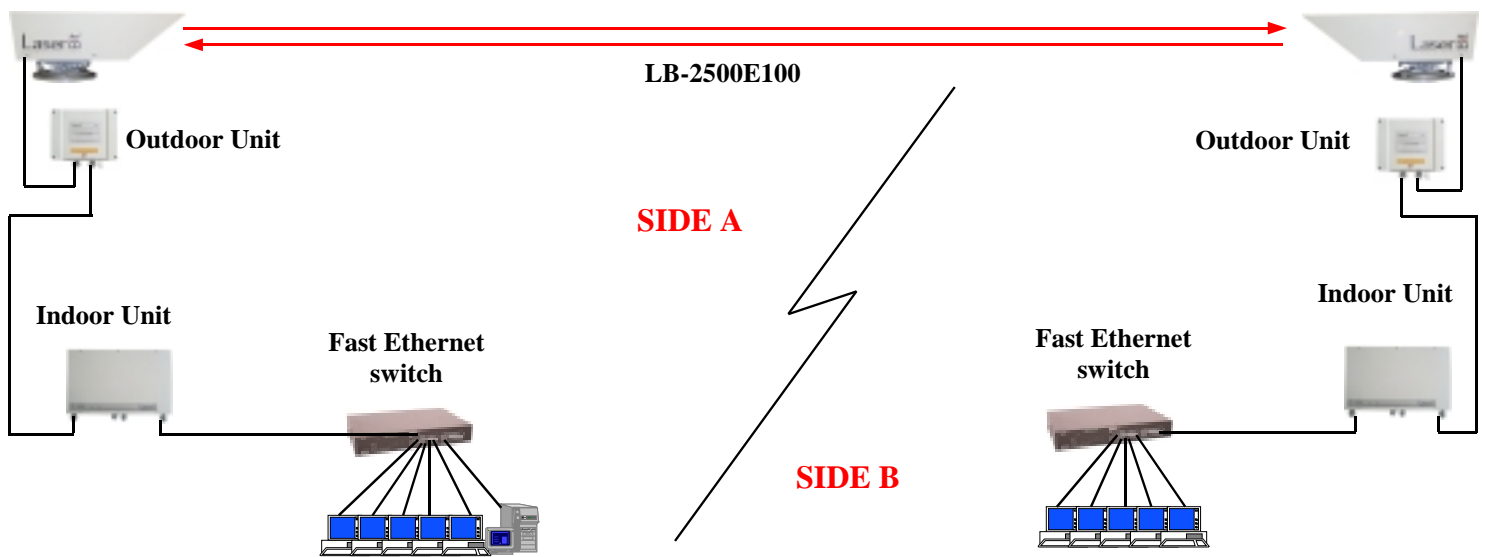
- Replace lower speed leased lines between computer networks
- High speed interconnection of LAN's in campus or industrial environment
- High bandwidth connection to the Internet
- Temporary installations
- Emergency backup to cable connections

### PRODUCT DESCRIPTION

The **LaserBit** system comprises of two Laser Heads – one at each end – and the associated supporting hardware. The Laser Heads are installed outdoors, usually on the rooftops or sidewalls of the buildings where a clear optical path exists between the two sites. Next to the head the Outdoor Interconnection Units (OIU) provides fast and easy interconnection between the laser head and the cables coming from the network equipment. Moreover the OIU houses the Power Supply Unit (PSU) of the system, which provides the low voltage power required to operate the laser head. The system contains built-in signal monitoring unit, which features a visual signal strength indicator and LINK status information accessible on the rear cover of the head assembly. The optional Indoor Interconnection Unit contains the Alarm and Monitoring Unit (LB-ALARM-MON) or the IP Based Management Hardware (LB-MGM). The bar graph of the LB-ALARM-MON displays the actual signal strength level while the LED indicators show the presence of Minor or Major alarm condition. With the help of the relay contacts an external alarm monitoring equipment may be connected to the system to further process the alarm signals. In addition to the above the LB-MGM allows the monitoring of the link's operation through a PC-based software (LaserBit View) via Ethernet or RS-232 ports.

### INVESTMENT PROTECTION

By utilizing future proof fiber optic interfaces, the **LaserBit** system protects the customers' investments in long-term projects. Where the fiber technology is not available today, the use of IEEE 802.3u compliant Fast Ethernet switch module or external interface converters provides seamless integration into any LAN environment. Due to their modular design, the **LaserBit** equipments can be easily and cost effectively upgraded for higher bandwidth or grater distance. All these features guarantee that the **LaserBit** devices perfectly fit in today's and tomorrow's network topologies.



### Technical Specifications

Rated distance (m)	150 / 400	1200	2500	5000
Interfaces: 1300nm MM optical with SC connectors (SM optional)				
<b>Electrical Characteristics</b>				
Light source	GaAlAs Laser Diode			
Laser diode power (mW)	70	2x70	4x70	8x70
Detector	Si PIN or APD			
Dynamic range	>40 dB			
Bandwidth	100 Mbps			
Data In/Out	62.5/125 multimode fiber at 1300 nm with SC connectors			
BER	< 10 <sup>-9</sup>			
System latency	< 50 ns			
<b>Power</b>				
Power required	230 VAC, 50 W max. (110 VAC and 48 VDC optional)			
Power to head	2x12 VAC, 2x2 A max.			
<b>Optical Characteristics</b>				
Wavelength	785 nm			
Beam divergence	0.5 - 5 mrad			
Receiver acceptance angle	8.5 mrad			
<b>Physical Characteristics</b>				
Alignment Unit	Cadmium coated metal (opt.)	Aluminum alloy		
Head Housing	Hardened aluminum			
Weight (w. Alignment Unit)	11 kg	12 kg	26.5 kg	32 kg
Dimensions (with cover and Alignment Unit, mm)	500x280x200		820x445x305	750x587x360
<b>Environment</b>				
Operating temperature	- 25 to + 60 Centigrade (normal version) - 40 to + 85 Centigrade (extended version)			
Storage temperature	- 40 to + 80 Centigrade (normal version) - 55 to + 105 Centigrade (extended version)			
Humidity	95% non condensed			
Protection rating	IP65 for Head Assembly and Outdoor Unit, IP20 for Indoor Unit			

### Ordering Information

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<b>LB-0150E100</b>	LaserBit LINK with Fast Ethernet (100 Mbps), fiber optic interface. Maximum 150 m distance between heads.
<b>LB-0400E100</b>	LaserBit LINK with Fast Ethernet (100 Mbps), fiber optic interface. Maximum 400 m distance between heads.
<b>LB-1200E100</b>	LaserBit LINK with Fast Ethernet (100 Mbps), fiber optic interface. Maximum 1200 m distance between heads.
<b>LB-2500E100</b>	LaserBit LINK with Fast Ethernet (100 Mbps), fiber optic interface. Maximum 2500 m distance between heads.
<b>LB-5000E100</b>	LaserBit LINK with Fast Ethernet (100 Mbps), fiber optic interface. Maximum 5000 m distance between heads.
<b>Optional Modules</b>	
<b>LB-ALARM-MON</b>	Alarm and Monitoring module, ten segment display, Minor and Major alarm indicators and relay contacts.
<b>LB-MGM-AC*</b>	IP based NM interface incl. Head Agent Module, Indoor Unit with indicators and alarm relay contacts.
<b>LB-SW-100</b>	Fast Ethernet switch module, 1 x 100BaseFX ST and 1 x 10/100 STP port, switch selectable FDX operation

\*Also available with DC PSU. BitView software is required for PC based monitoring (not included)

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