

Laser Based Free Space Optical Communication System

FEATURES

- Free Space, Wireless Communication
- Wire Speed E1 (2 Mbps)
- Secure Data Transmission
- Transparent Operation
- Choice of standard optical interfaces
- ITU compliant copper interfaces
- Service Channels for remote management
- Quick Installation

APPLICATIONS

Typical applications for the E1 series devices include:

- Interconnection of telephone exchanges (PABX to PABX)
- Connection between Central Office Equipment and Remote Terminals of multi-line subscriber carrier systems
- Base Station connectivity in GSM networks
- Integration into the Internet or Intranets (connections between routers, remote bridges or other datacom devices)



OVERVIEW

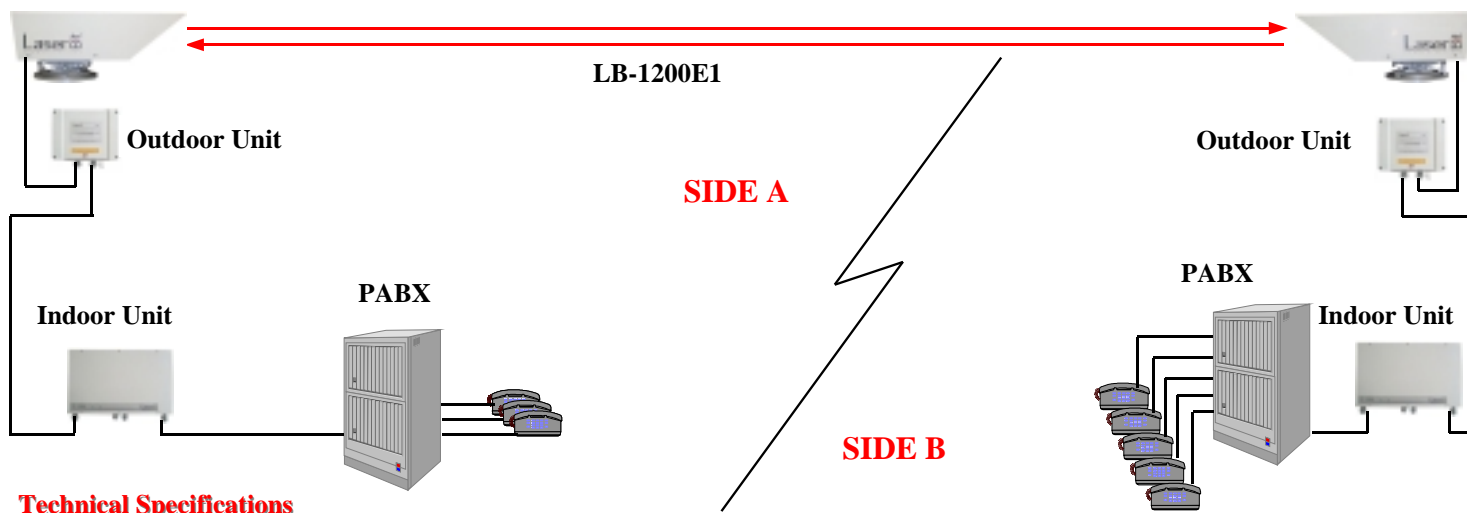
The E1 range of **LaserBit** offers cost effective, reliable and secure laser based optical transmission for voice and data through the air at E1 speed (2Mbps). The laser transmission carries the data using the concentrated laser beam and a unique modulation technique is employed to ensure error free 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 the 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.

PRODUCT DESCRIPTION

The **LaserBit** system comprises of two Laser Heads and the associated supporting hardware. The Laser Heads are usually installed outdoors, 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 and houses the Power Supply Unit (PSU) of the system. The laser head contains built-in signal monitoring unit, which features a visual signal strength indicator and LINK status information. 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. An optional media converter (LE-1300M/1E1) can be used to convert the optical signals into industry standard G.703 interface. The converter conforms to the ITU recommendations and equipped both with balanced and unbalanced interfaces. In this case it can be ordered with the LE-SCH-MOD service channel module, which offers one voice and one RS-232 channel and 24 alarm contact points on top of the E1 data stream.

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 ITU compliant E1 interface module provides seamless integration into telecom networks. 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	4000 / 6000
Interfaces: 1300nm MM optical with SC connectors (SM optional)				
Electrical Characteristics				
Light source	GaAlAs Laser Diode			
Laser diode power (mW)	70	2x70	4x70	4/8x70
Detector	Si PIN or APD			
Dynamic range	>40 dB			
Bandwidth	2.048 Mbps			
Data In/Out	62.5/125 multimode fiber 1300 nm with SC connectors			
BER	< 10 ⁻⁹			
System latency	< 50 ns			
Power				
Power required	230 VAC, 50 W max. (110 VAC and 48 VDC optional)			
Power to head	2x12 VAC, 2x2 A max.			
Optical Characteristics				
Wavelength	785 nm			
Beam divergence	0.5 - 5 mrad			
Receiver acceptance angle	8.5 mrad			
Physical Characteristics				
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
Environment				
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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LB-0150E1	LaserBit LINK for E1 (2 Mbps) transmission, fiber optic interface. Maximum 150 m distance between heads.
LB-0400E1	LaserBit LINK for E1 (2 Mbps) transmission, fiber optic interface. Maximum 400 m distance between heads.
LB-1200E1	LaserBit LINK for E1 (2 Mbps) transmission, fiber optic interface. Maximum 1200 m distance between heads.
LB-2500E1	LaserBit LINK for E1 (2 Mbps) transmission, fiber optic interface. Maximum 2500 m distance between heads.
LB-4000E1	LaserBit LINK for E1 (2 Mbps) transmission, fiber optic interface. Maximum 4000 m distance between heads.
LB-6000E1	LaserBit LINK for E1 (2 Mbps) transmission, fiber optic interface. Maximum 4000 m distance between heads.
Optional Modules	
LB-ALARM-MON	Alarm and Monitoring module, ten segment display, Minor and Major alarm indicators and relay contacts.
LB-MGM-AC*	IP based NM interface incl. Head Agent Module, Indoor Unit with indicators and alarm relay contacts.
LE-1300M/1E1	G.703 copper interface module, selectable UTP (120 Ohm) or coax (75 Ohm) interfaces, configurable AIS handling and loopback mode, detailed status indicators.
LE-SCH-MOD	Service Channel Module, 1 x analogue voice channel, 1 x RS232 port (300-38400 bps), 24 two way alarm contacts

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