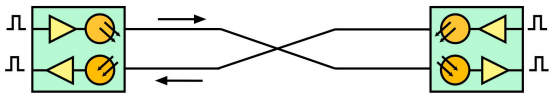
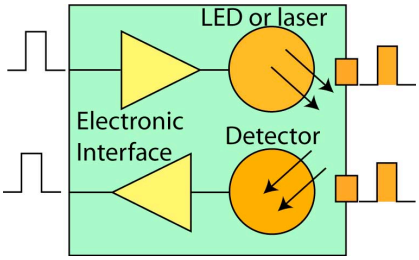
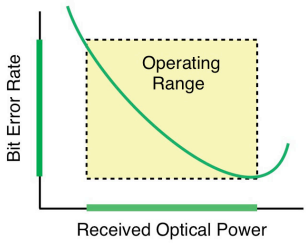
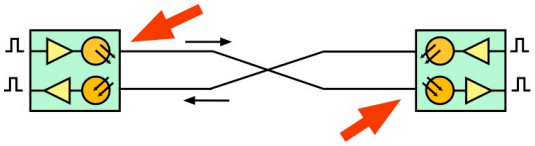
FOA Standard FOA-5

Fiber Optic Data Links

Definition A fiber optic datalink is a communications subsystem that connects inputs and outputs (I/O) from electronic subsystems and transmits those signals over optical fiber. Fiber optic datalinks may transmit signals that are either analog or digital and of many different, usually standardized, protocols, depending on the communications system(s) it supports.	
Components A fiber optic datalink consists of fiber optic transceivers or individual transmitters and receivers at either end that transmit over optical fibers. The typical datalink transmits over two fibers for full duplex links, one fiber in each direction. Wavelength division multiplexing may be used to transmit bi-directionally on one fiber. The fibers may be of any type, multimode (graded index or step index) or singlemode. Distance and bandwidth considerations may dictate the choice or grade of the optical fiber or require regeneration.	
Performance-Power Budget All datalinks are limited by the power budget of the link. The power budget is the difference between the output power of the transmitter and the input power requirements of the receiver. The receiver has an operating range determined by the signal-to-noise ratio (S/N) in the receiver. The S/N ratio is generally quoted for analog links while the bit-error-rate (BER) is used for digital links. BER is basically an inverse function of S/N.	
Testing Testing the operation of the transceivers with the cable plant includes optical power testing of the output of the transmitter and the receiver input power compared to specifications for the link. FOA Standards for testing cable plant loss and optical power can be used to properly specify test requirements. After the datalink or communications system is installed, testing the BER or SNR may also be done to confirm that the link is operating properly.	
Documentation Datalinks should be included in all systems documentation, including equipment specifications, transceiver power levels, lengths and routing, test results, etc.	