

Fiber Optics as a new transmission medium has revolutionized the telecom industry. It has numerous advantages over traditional wired or wireless transmission systems. Thus study of Fiber Optic communication systems has become more important. Advanced Fiber Optics Trainer is designed to learn the communication techniques in Fiber Optics. The trainer demonstrates properties of Fiber Optics Transmitter & Receiver, characteristics of Fiber Optics Cable, different types of Modulation / Demodulation techniques and PC to PC communication via fiber link using RS232 interface. It can also be used to demonstrate various Digital Communication Techniques via Fiber Optic link using Digital Communication Trainers.



#### Technical Specifications

<b>Transmitter</b>	: 2 No., Fiber Optic LED having peak wavelength of emission 660 nm & 950 nm
<b>Receiver</b>	: 2 Nos., Fiber Optic Photodetector
<b>Modulation Techniques</b>	: 1. AM 2. FM 3. PWM
<b>Drivers</b>	: 1 No. with Analog & Digital modes
<b>AC Amplifier</b>	: 2 Nos.
<b>Clock</b>	: Crystal Controlled Clock 4.096 MHz
<b>PLL detector</b>	: 1 No.
<b>Comparator</b>	: 2 Nos.
<b>Filters</b>	: 2 Nos. 4 order Butterworth, 3.4 KHz cut-off frequency
<b>Analog Band Width</b>	: 350 KHz
<b>Digital Band Width</b>	: 2.5 MHz
<b>Function Generator :</b>	
	1. 1 KHz Sine wave (Amplitude adjustable)
	2. 1 KHz square wave (TTL)
<b>Voice Link</b>	: F.O. voice link using microphone & speaker (built in)
<b>PC-PC Communication</b>	: Using 2 channel RS232
<b>Port</b>	: RS232 9 Pin
<b>Baud Rate</b>	: 19200 baud
<b>Switched Faults</b>	: 4 in transmitter & 4 in Receiver
<b>Fiber Optic Cable</b>	: Connector Type Standard SMA
<b>Cable Type</b>	: Step indexed multimode PMMA plastic
<b>Core Refractive Index</b>	: 1.492
<b>Clad Refractive Index</b>	: 1.406
<b>Numerical Aperture</b>	: Better than 0.5
<b>Acceptance Angle</b>	: Better than 60 deg.
<b>Fiber Diameter</b>	: 1000 microns
<b>Outer Diameter</b>	: 2.2 mm
<b>Fiber Length</b>	: 0.5m & 1m
<b>Test Points</b>	: 50
<b>Inter connections</b>	: 4 mm sockets
<b>Power Supply</b>	: 220 V $\pm$ 10 %, 50 Hz / 60 Hz on request
<b>Power Consumption</b>	: 4.5 VA (approx.)

**Accessories Included** : Line cord, Manuals, NA Measurement Jig, Mandrel, Fiber Cables, Microphone, Headphone, Set of Patch Cords, PC-PC Communication Software

**Optional Accessories** : Optical Power Meter, 5 meter fiber cable, 10 meter fiber cable

- ◆ Full Duplex Analog & Digital Trans-receiver
- ◆ Single Module covering large number of experiments including experiments with Optical Power Meter
- ◆ 660 nm & 950 nm channel with Transmitter & Receiver
- ◆ AM-FM-PWM modulation / demodulation
- ◆ PC-PC comm. with RS232 ports & software
- ◆ On board Function Generator
- ◆ Crystal Controlled Clock
- ◆ Functional Blocks indicated on-board mimic
- ◆ Input-output & test points provided on board
- ◆ On board voice link
- ◆ Built in DC power supply
- ◆ Numerical Aperture measurement jig and mandrel for bending loss included
- ◆ Switched faults on Transmitter & Receiver

#### Experiments that can be performed

- ◆ Setting up Fiber Optic Analog & Digital Link
- ◆ AM system using Analog & Digital Input Signals
- ◆ Frequency Modulation System and Pulse Width Modulation System
- ◆ Study of Propagation Loss, Bending Loss & Measurement of Numerical Aperture
- ◆ Characteristics of E-0 Converter (LED)
- ◆ Characteristics of Fiber Optic Communication Link
- ◆ Setting of Fiber Optic Voice Link using Amplitude, Frequency & PWM
- ◆ Modulation
- ◆ Study of Switched Faults in AM, FM & PWM system
- ◆ Full Duplex Computer Communication using RS232 ports and software

Note: Specifications are subject to change.

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