Scientech

Optical Fiber Communication

Scientech 2502

TECHBOOK

Scientech TechBooks are compact and user friendly learning platforms to provide a modern, portable, comprehensive and practical way to learn Technology. Each TechBook is provided with detailed Multimedia learning material which covers basic theory, step by step procedure to conduct the experiment and other useful information.

Scientech 2502 Fiber Optic Communication TechBook demonstrates Full Duplex method of transmitting information from one place to another by sending pulses of light through an Optical fiber. The light forms electromagnetic wave that is modulated to carry information. Scientech 2502 is an Advanced Fiber Optic TechBook designed to learn the communication techniques in Fiber Optics. The TechBook 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 Optic link using RS232 interface. It can also be used to demonstrate various Digital communication Techniques via Fiber Optic link using Scientech Digital communication TechBooks.

Features

- 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
- Input-output & test points provided
- On board voice link
- Built in DC Power Supply
- Numerical Aperture measurement jig and mandrel for bending loss measurement
- Switched faults on Transmitter & Receiver

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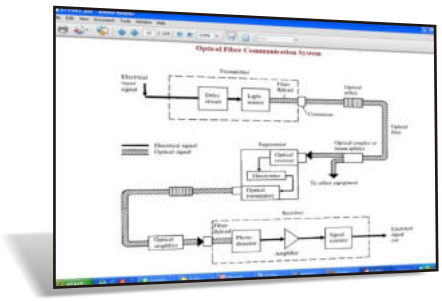
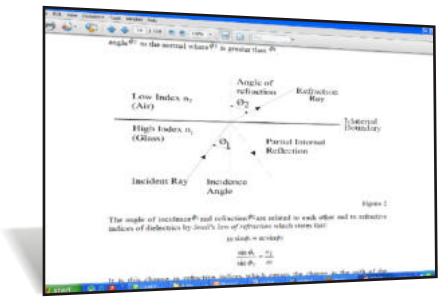
Scope of Learning

- 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 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
- V-I characteristics of LED (E - O converter)
- Characteristics of Photo Detector

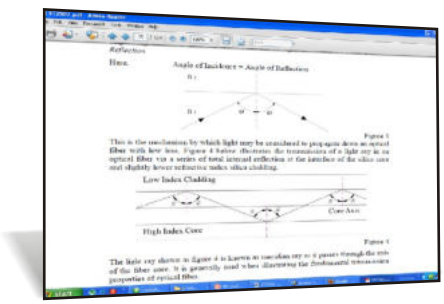
Software windows



Optical Fibre Communication System



Principle of operation of Optical Fibre



Total Internal Reflection

Technical Specifications

Transmitter	: 2 nos.,Fiber Optic LED having peak wavelength of emission 660 nm & 950 nm
Receiver	: 2 nos., Fiber Optic Photodetector
Modulation Techniques	: AM, FM, PWM.
Drivers	: 1 no. with Analog & Digital modes
AC Amplifier	: 2 nos.
Clock	: Crystal controlled Clock 4.096 MHz
PLL detector	: 1 no.
Comparator	: 2 nos.
Filters	: 2 nos. 4th order Butterworth, 3.4 KHz cut-off frequency
Analog Band Width	: 350 KHz
Digital Band Width	: 2.5 MHz
Function Generator	: 1.1 KHz Sine wave (Amplitude adjustable) 2.1 KHz square wave (TTL)
Voice Link	: F.O. voice link using microphone & speaker (built in)
PC-PC Communication	: Using 2 channel RS232
Port	: RS232 9 Pin
Baud Rate	: 19200 baud
Switched Faults	: 4 in Transmitter & 4 in Receiver
Fiber Optic Cable	: Connector type standard SMA
Cable Type	: Step indexed multimode PMMA plastic
Core Refractive Index	: 1.492
Clad Refractive Index	: 1.406
Numerical Aperture	: Better than 0.5
Acceptance Angle	: Better than 60 deg.
Fiber Diameter	: 1000 microns
Outer Diameter	: 2.2 mm
Fiber Length	: 0.5m & 1m
Test Points	: 50 nos.
Inter connections	: 2 mm sockets
Dimensions (mm)	: W 326 × D 252 × H 52
Weight	: 2.4 Kg approximately
Power Supply	: 110 -220 V, ± 10%, 50 / 60 Hz
Power Consumption	: 4.5 VA approximately
Operating Condition	: 0-40°C, 80% RH
Included Accessories	: NA measurement jig, Mandrel, Fiber Cables, Microphone, Headphone, Set of Patch Cords, PC-PC communication Software, USB to serial converter (2nos)
Optional Accessories	: Optical Power Meter, 5 meter fiber cable, 10 meter fiber cable.

Subject to Change.

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