**28510A** Optical Fiber Communication TechBook demonstrate simplex method of transmitting information from one place to another by sending pulses of light through an Optical fiber. The TechBook demonstrates the properties of Simplex Analog and Digital Transreceiver, characteristics of Fiber Optics cable, Modulation / Demodulation techniques, Bit Error Rate measurement and observation of Eye Pattern. A large number of experiments are included in the workbook and many more can be performed using 28510A.

## Features

01. Simplex Analog and Digital Transreceiver
02. 660 nm channel with Transmitter & Receiver
03. AM-FM-PWM modulation / demodulation
04. On board Function Generator
05. On board Clock & Data Generator
06. On board Bit Error Counter
07. Crystal controlled Clock
08. Functional blocks indicated on-board mimic
09. Input-output & test points provided on board
10. On board voice link
11. Built in DC Power Supply
12. Numerical Aperture measurement jig and mandrel for bending loss measurement
13. Switched faults on Transmitter & Receiver

## Object

01. Setting up Fiber Optic Analog & Digital Link
02. AM system using Analog & Digital Input Signals
03. Frequency Modulation System
04. Pulse Width Modulation System
05. Study of Propagation Loss in Optical Fiber
06. Study of Bending Loss
07. Measurement of Numerical Aperture
08. Characteristics of Fiber Optic Communication Link
09. Setting of Fiber Optic Voice Link using AM, FM & PWM
10. Study of switched faults in AM, FM & PWM System
11. Propagation loss using Optical Power Meter
12. V-I Characteristics of LED ( E - O converter)
13. Characteristics of Photo Detector
14. Effect of EMI on Optical Communication
15. Measurement of Bit Error Rate
16. Study of Eye Pattern

Note: Specifications are subject to change.

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## Technical Specifications

| | | |
|---|---|---|
| Transmitter | : | 1 no., Fiber Optic LED having peak wavelength of emission 660 nm |
| Receiver | : | 1 no., Fiber Optic Photodetector |
| Modulation Techniques | : | 1. AM 2. FM 3. PWM |
| Drivers | : | 1 no. with Analog & Digital modes |
| Clock | : | Crystal controlled Clock 4.096 MHz |
| PLL Detector | : | 1 no. |
| AC Amplifier | : | 1 no. |
| Comparator | : | 1 no. |
| Filters | : | 1 no. 4th order Butterworth, 3.4 KHz cut-off frequency |
| Analog Band Width | : | 350 KHz |
| Digital Band Width | : | 2.5 MHz |
| Function Generator | : | 1 KHz Sine wave (Amplitude adjustable) |
| **1 KHz Square wave (TTL)** | | |
| Clock Generator | : | 64 KHz/128 KHz/256 KHz (TTL) |
| Data Generator | : | 15 Bit |
| Noise Generator | : | Variable level |
| Bit Error Counter | : | 4 digits, 7 segment display |
| Voice Link | : | F. O. voice link using microphone & speaker (built in) |
| Switched Faults | : | 4 in Transmitter & 4 in Receiver |
| Fiber Optic Cable | : | Connector type Standard SMA |
| Cable Type | : | Step indexed multimode PMMA plastic cable |
| 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 | : | 0.5 m & 1 m |
| Test Points | : | 34 nos |
| Inter connections | : | 2 mm sockets |
| Dimensions (mm) | : | W 326 × D 252 × H 52 |
| Weight | : | 1 Kg approximately |
| 0 Operating conditions | : | 0-40 C, 80% RH |
| Power Supply | : | 110-220 V, ±10%, 50/60 Hz |
| Power Consumption | : | 3 VA approximately |
| Included Accessories | : | NA Measurement jig, Mandrel, Fiber cables, Microphone, Headphone, Set of Patch cords |
| Optional Accessories | : | Optical Power Meter, 5 meter fiber cable, 10 meter fiber cable. |

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