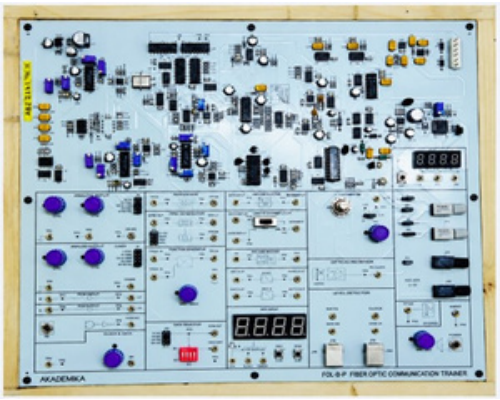
FOL-B-P

Fiber Optic Communication Trainer Kit



FEATURES

- Fiber Optic Transmitter & Receiver: 660/950nm LED transmitter with PIN photodiode and phototransistor receivers.
- Analog and digital fiber optic communication
- LED/detector characteristics study, Digital Panel Meter, Switch Faults
- BER measurement and PC communication via USB interface

SPECIFICATIONS

- **Transmitter :** Two fiber optics LED
- **Transmitter 01 :** Peak wavelength of emission 660nm red visible (SFH756V)
- **Transmitter 02 :** Peak wavelength of emission 950nm (SFH450V)
- **Receiver :** Two fiber optic photo detector
- **Receiver 01 :** PIN photo diode with responsivity of 0.3 µA (SFH250V) **Receiver 02 :** Photo Detector with TTL Logic output (SFH551V)

On-Board Signals

- Sine Wave - Frequency : 1Hz ~ 100KHz with selectable frequency range -Amplitude : 0 ~ 4 Vpp
- TTL-Square Wave - Frequency : 1Hz ~ 100KHz

Carrier Generator

- Sine Wave - Frequency : 1Hz ~ 100KHz with selectable frequency range - Amplitude : 0 ~ 4 Vpp

Modulation techniques

- Direct intensity modulation, Frequency modulation, Amplitude Modulation, Pulse width modulation (PWM) (with variable clock 4 KHz, 8 KHz, 16 KHz, and 32 KHz), PPM

Driver Circuit

- Analog / digital configuration for 660 nm and 950 nm LED

Analog/digital bandwidth

- 2 MHz / 5MHz

Filter circuit - 2 Nos.

- 4^{th} order Butterworth filters with 3.4 KHz cut-off frequency

Port type - USB interface

Voice Communication

- Fiber optic link using Mic with headphones

PRBS Generator

BER Measurement

PC To PC Communication

- PC to PC communication using 660 nm and 950 nm LED through USB

Baud rate - Maximum 115.2 kbps baud

Fiber optic cable

- Type : Plastic optical cable, step index, multimode

Core Refractive

- Index-n1 : 1.492, Numerical aperture : 0.5, Acceptance angle : 60°, Fiber diameter : 1000 microns, Outer diameter : 2.2 mm, Fiber lengths : 1 and 3 Mtr

Power supply

- GND, +5V, –5V, +12V, -12V

EXPRIMENTS

- Setting up a fiber optic analog link
- Study of losses in optical fiber:
  - Measurement of propagation loss and bending loss
- Study of characteristics of fiber optic LED and detector
- Measurement of numerical aperture
- Study of frequency modulation and demodulation using fiber optic link
- Setting up a fiber optic digital link
- Study of Amplitude Modulation and Demodulation usind fiber optic link
- BER Measurement using PRBS data and Error Generator
- Detector Characteristics
- Study of modulation and demodulation of light source by pulse width modulation (PWM) and pulse position modulation (PPM) techniques
- Forming PC to PC communication via USB Interface
- Setting up a fiber optic voice link
- Study of Digital Panel Meter
- Switch faults