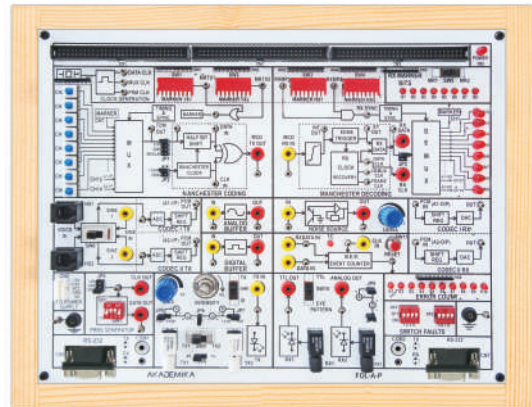


FOL-A-P

Advanced Fiber Optic Communication Trainer



SPECIFICATIONS

Transmitter	: 2 fiber optics LED
Transmitter 01	: Peak wavelength of emission 950nm Infrared (SFH 450V)
Transmitter 02	: Peak wavelength of emission 660nm (SFH756V)
Receiver	: 2 photo detector
Receiver 01	: Photo transistor with responsivity of $80\mu A/\mu W$ (SFH 350V)
Receiver 02	: Photo detector with TTL logic output (SFH 551V)

Modulation techniques

- Digital communication with pulse code modulation (PCM) using Motorola MC145502 CODEC chip

Coding/ decoding

- Manchester coding/decoding technique

Noise generator	: White noise source output
Amplitude	: 0~5Vpp
PRBS generator	: 16-bit switch selectable
Clock	: 32 KHz, 64 KHz, 128 KHz
Bit error rate measurement	: 10-bit counter with LED indication upto 255 count
Multiplexing	: Time division multiplexing, 16 channels (64 Kbits/Sec)
Frame marker	: Two 8-bit user selectable markers in alternate frames
Data rate	: 1.024 MBits / Sec
Voice PCM	: 2 channels voice PCM with telephone hand sets (A Law)
Analog input	: 1Vpp
Analog bandwidth	: 300 KHz
FWHM spectral width	: 100 nm

PC to PC communication

- PC to PC communication using 660 nm and 950 nm LED through RS-232 standard

RS-232 Port Type

- Two 9 Pin D type connector

Baud rate	: Maximum 115.2 Kbps Baud
Fiber optic cable	: Type: plastic optical cable, step index, multimode
Core refractive index-n1	: 1.492
Clad refractive index-n2	: 1.406
Numerical aperture	: 0.50
Acceptance angle	: 60°
Fiber diameter	: 1000 microns
Outer diameter	: 2.2 mm
Number of Fibers	: 4
Fiber length	: 1 Meter, 3 Meter
Switch Faults	: 8 switch faults
Test points	: 45 test points
Interconnections	: 2mm banana sockets

EXPERIMENTS

- Setting up a fiber optic analog link and digital link
- Measurement of losses in optical fiber :
 - Measurement of propagation loss and bending loss
- Measurement of numerical aperture
- Characteristics study of LED's and Photo detectors
- Study of time division multiplexing using 16 data channels
- Study of framing in synchronous time division multiplexing
- Study of marker in time division multiplexing
- Measurement of bit error rate
- Study of eye pattern
- Study of manchester coding and decoding
- Study of PCM Voice coding and frequency response of a CODEC chip
- Forming PC to PC Communication link using optical fiber and RS-232 interface
- Switch faults