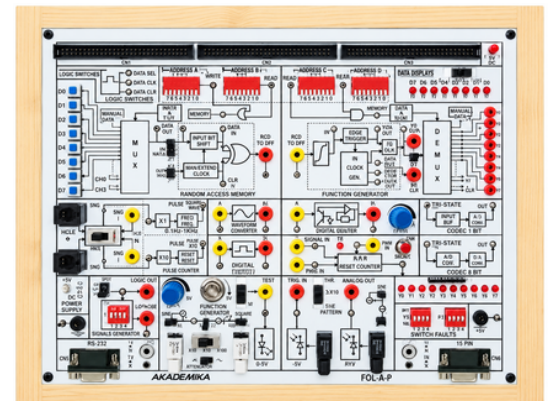


FOL-A-P

Advanced Fiber Optic Communication Trainer Kit



FEATURES

- Complete training board with built-in signal generation, coding and decoding sections
- Includes clock generator, Manchester encoder and decoder
- Built-in noise source, analog filter and digital buffer
- Includes line coding and data interface sections
- Suitable for hands-on laboratory study and demonstrations

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 $80\mu\text{A}/\mu\text{W}$ (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 square output
- **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, Amplitude : 0~5Vpp
- **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** : 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
- **Fiber length** : 1 Meter, 3 Meter
- **Switch Faults** : 8 switch faults
- **Interconnections** : 2mm banana sockets
- **Power Supply** : GND, +5V, +12V, -12V

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