



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	<ul style="list-style-type: none"> • Digital communication with pulse code modulation (PCM) using Motorola MC145502 CODEC chip
Coding/ decoding	<ul style="list-style-type: none"> • Manchester coding/decoding technique
Noise generator	: White noise source output
Amplitude	: 0 ~ 5Vpp
PRBS generator	: 16-bit switch selectable
Clock	: 32 K z, 64 K z, 128 K z
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	<ul style="list-style-type: none"> • PC to PC communication using 660 nm and 950 nm LED through RS-232 standard
RS-232 Port Type	<ul style="list-style-type: none"> • Two 9 Pin D type connector
Baud rate	<ul style="list-style-type: none"> • Maximum 115.2 KBps Baud
Fiber optic cable	<ul style="list-style-type: none"> • Type: plastic optical cable, stepindex, multimod • 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 : 2.2mm • Number of Fibers : 4

Note: Specifications are subject to change.

- Fiber length : 1Meter,3Meter
- SwitchFaults : 8switch faults
- Test points : 45 test points
- Interconnections : 2mmbanana sockets
- Power supply : GND,+5V,+12V, -12V

Experiments

- Setting up a fiber optic analog link and digital link
- Study 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

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