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SCHOOL OF ENGINEERING AND TECHNOLOGY

DEPARTMENT OF ELECTRONICS AND COMMUNICATION ENGINEERING

**OPTICAL COMMUNICATIONS LABORATORY**

**DETAILS OF EQUIPMENTS USED IN OPTICAL COMMUNICATIONS LAB**

S.No	Equipment Name	Technical specifications	Experiment Name	Photograph
1	Advanced Fiber Optics Communication Kit	<p><b>Specifications:</b></p> <p><b>ADVANCED FIBER OPTIC COMMUNICATION LAB</b></p> <p>Should be a Set of 4 Kits consisting of</p> <p>1. Fiber optic analog transmitter kit</p>	1.OPTICAL PULSE WIDTH MODULATION AND DEMODULATION	

2.Fiber optic analog receiver kit

3.Fiber optic analog and digital Modulation/demodulation kit

4.Fiber optic advance Digital communication kit

Two Function generators should be provided with On-board signals sine, square and triangular waves.

**Technical Specification:**

Transmitter should consist of two Siemens fiber optics LED each with wave-length of emission red visible (SFH756V) range from 600nm- 660nm and infrared (SFH450V) 900nm-950nm

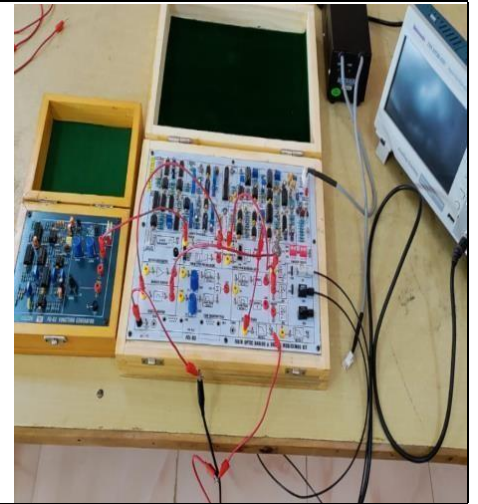
Receiver consist of 5 photo detector- SFH250V, SFH350V, SFH551V

Reference pulse generator with Frequency 660 KHz and Amplitude 2 Volt Noise generator with white noise source and amplitude range from 0 to 5Vpp

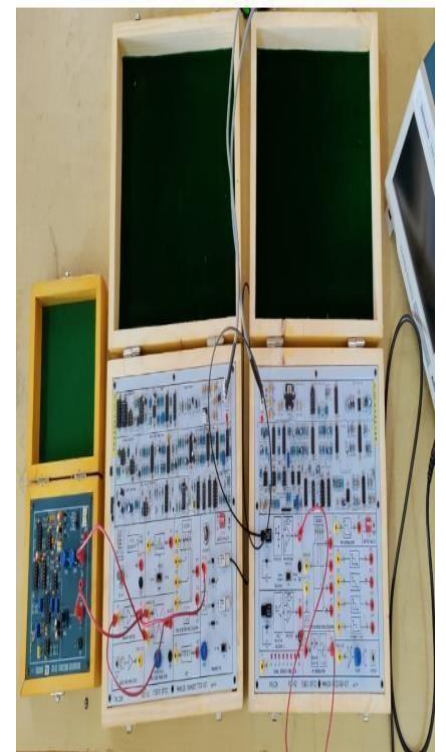
PRBS generator with 16 bit switch selectable Analog bandwidth - 2 MHz

Modulation techniques

**2.OPTICAL PULSE POSITION MODULATION AND DEMODULATION**



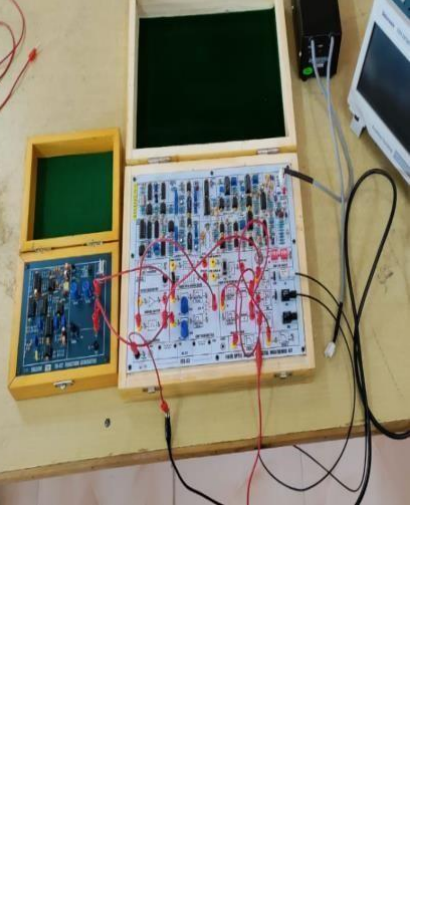



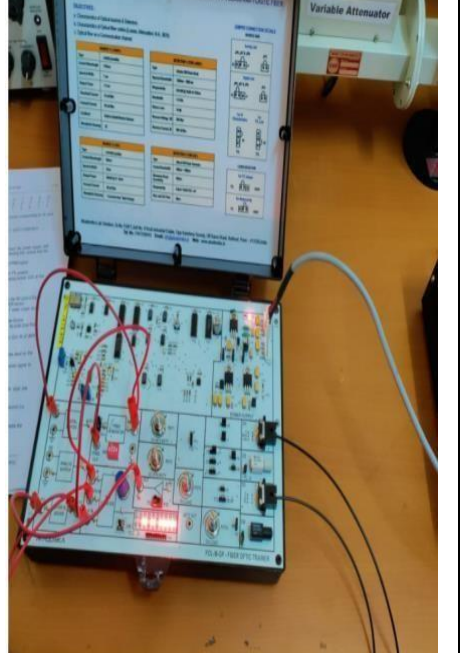
**3.ANALOG MODULATION AND DEMODULATION USING FIBER OPTIC LINK**



**4.OPTICAL TIME DIVISION MULTIPLEXING**



		<ol style="list-style-type: none"> <li>1. Pulse amplitude modulation (Variable clock of 16 KHz and 32 KHz)</li> <li>2. Amplitude modulation</li> <li>3. Intensity modulation</li> <li>4. Pulse width and pulse position modulation (variable clock)</li> <li>5. Pulse code modulation (PCM) using Motorola MC 145502CODEC</li> </ol>	<p><b>5.PULSE AMPLITUDE MODULATION</b></p>	
		<ol style="list-style-type: none"> <li>4 channel analog time division multiplexing and De-multiplexing</li> <li>2 channel FDM with Frequency 1 KHz, 2 KHz and Amplitude 0 Vpp ~ 4Vpp</li> </ol>	<p><b>6.EMI</b></p>	
		<ol style="list-style-type: none"> <li>8 channel digital time division multiplexing and De-multiplexing</li> <li>Data Rate of 512Kbps</li> <li>Manchester coding / decoding technique</li> <li>Two 8-bit user selectable markers in alternate frames</li> <li>8 LED's to measure optical power strength</li> <li>Fiber Optic voice link using dynamic microphone and speaker</li> <li>Two channels with telephone handsets (A law)</li> <li>8-bit event counter with LED Indication up to 255 counts</li> <li>Fiber optic cable</li> <li>Type : 1000 micron step index, multimode plastic fiber</li> <li>Length :</li> </ol>	<p><b>7.OPTICAL FREQUENCY DIVISION MULTIPLEXING</b></p>	

		<p>15cm (1), 0.5meter (2), 1meter (3), 3meter (2), and 20 meter (1)</p> <p><b>NOTE: This Trainer setup 3 batches one time</b></p>		
02.	<p><b><u>Fiber Optic Trainer Kit For Glass and Plastic Fiber</u></b></p>	<p><b>Specifications:</b> Single Board Syst having LASER Diode LED with Detector</p> <p><b>RESPONDING SPECIFICATIONS</b></p> <p><b>Source 1</b></p> <p>Type</p> <p>: Laser</p> <p>Central wavelength</p> <p>: 1310nm</p> <p>Output power</p> <p>: 1.5mW</p> <p>Receptacle housing</p> <p>: SC</p> <p><b>Source 2</b></p> <p>Type</p> <p>: Visible LED</p> <p>Central wavelength</p> <p>: 660nm</p>	<p><b>8.OPTICAL CHARACTERISTICS OF LED</b></p>	
			<p><b>9.MEASUREMENT OF BIT ERROR RATE</b></p>	



Receptacle housing  
: “Connector-less” style  
package **Detector 1**

Type  
: InGaAs PIN photo diode  
Spectral Bandwidth

: 1250nm ~ 1600nm  
Bandwidth

: 1.5 GHz  
**Detector 2**

Type  
: Silicon PIN photo transistor  
Spectral Bandwidth

: 400 nm ~ 1100nm  
**Fiber cable cable**

Type  
: Glass fiber single &  
multimode plastic Fiber

**On Board Noise  
Generator Required**

**On Board PRBS  
Generator Required**

**LED Indicator for Bit Error  
Rate**

**10. NUMERICAL  
APERTURE OF  
OPTICAL FIBER**

