

Optical and Fiber Optic Communication Training System

Cristiani srl

Viale Altea 39 - 27049 STRADELLA (PV)

Tel 0385 42975 - Fax 0385 240077

E-mail cristiani@cristianisrl.it

Web <http://www.cristianisrl.it>



Technical Characteristics

The trainer is enclosed in a metal case, which has a wide experiment printed circuit board (22 cm x 34 cm). This ensures easy handling and good visibility of the components.

The components are located on the board, which has a silk screen print of the analytical circuits and component drawings. The central part of the experiment board includes all the circuit block drawings and the all the hands-on components, and test points.

The fixed components are located on the circuit board under a sturdy transparent cover.

The system includes a built-in power supply with +12V, +5V, and variable DC voltage outlets. An included external low AC voltage power adapter feeds the system.

The system includes:

- Power supply
- RC oscillator
- Preamplifier and microphone
- RZ/NRZ data transmitter
- Optical transmitter and fiber optic transmitter
- Infrared light transmitter
- Light sensor
- IR detector
- Schmitt trigger amplifier
- RZ/NRZ data receiver
- Counter and 7-Seg display
- Audio amplifier with volume potentiometer and speaker
- SES Lab unit with two-channel scope and function generator, which communicates with a PC to control the function generator and display the scope's signals including spectrum analysis
- PC software for SES lab unit

Objectives

This trainer is designed for experiments in optical, infrared, fiber optic, analog, and digital communication. The course provides comprehensive hands-on experiments and covers light modulation, transmission and detection, fiber optic transmission, infrared light modulation, transmission, and detection, analog signals, light modulation and detection, fiber optic attenuation, and RZ/NRZ data transmitter/receiver

Description

The system is stand-alone, containing all the necessary electronics components needed for performing the experiments.

The system includes the SES Lab unit with two-channel oscilloscope and a function generator, which communicates with a PC to control the function generator and display the scope's signals, including spectrum analysis.

The built-in function generator also can be operated manually, controlled by the embedded micro-controller for sine/triangle, sweep/constant signals.

Experiments

This system enables the student to perform several experiments and covers the following topics:

- RC oscillator
- Preamplifier
- Audio amplifier
- Optical transmission
- Light detection
- Light transmission in a fiber optic
- Signal transmission in a fiber optic
- Signal transmission and detecting
- Voice transmission and detection
- Infrared communication
- Signal modulation and demodulation
- Digital optical communication
- Data encoding/decoding



A teacher guide, a student experiment manual accompany the system