DESIGN AND DEVELOPMENT OF OPTICAL FIBER TRAINER

Design Project

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Undergraduate Design Project
Submitted to the Faculty of the
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Design and development of optical fiber trainer
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In Partial fulfillment
of the requirements for the degree of
Bachelor of Science in Electronics and
Communications Engineering

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ABSTRACT

DIESTA, Lorena P., LACATAN, Cherry Ann C., and MANIAGO, Jilo B. Design and Development of Optical Fiber Trainer. Undergraduate Design Project. Bachelor of Science in Electronics and Communications Engineering. Cavite State University, Indang, Cavite. March 2010. Adviser: Engr. Michael T. Costa.

Optical Fiber Trainer is an introduction to Fiber Optic Communications. No prior experience is required to operate it. It contains all the components for transmitting and receiving signals including a LED, Detector, Interfacing Electronics and Plastic Fiber Optic Cable.

The trainer will demonstrate analog and digital communication techniques using the analog inputs and digital oscillator with the fiber optic transmitter, receiver and the fiber cable interfaces. Knowledge about the basics of digital communications technology will be gained with the digital oscillator and receiver portions of the trainer.

The trainer is stand-alone, powered by either DC variable power supply or +9V battery. It consists of an optical transmitter and receiver, 1m and 3m length of plastic optic cable and 1m length of nylon string. This fiber optic link can be extended up to 9 meters, making it useful for short-distance optical isolation applications and laboratory experiments.

This is a trainer for students and instructors of fiber optics. A Laboratory Manual is included which covers most of the possible experiments that the trainer and students can perform. Oscilloscope, function generator, speaker, lenses and tweezers are utilized for demonstrations and for measurements in experiments.

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DESIGN AND DEVELOPMENT OF OPTICAL FIBER TRAINER[1]

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[1]An Undergraduate Design Project submitted to the faculty of Department of Computer and Electronics Engineering, College of Engineering and Information Technology, Cavite State University, Indang, Cavite in partial fulfillment of the requirements for graduation with the degree of Bachelor of Science in Electronics and Communications Engineering (BSECE). Contribution No. BSECE-2009-10-002. Prepared under the supervision of Engr. Michael Costa.

INTRODUCTION

During the past years, the electronic communications industry has experienced many remarkable and dramatic changes. A phenomenal increase in voice, data, and video communications has caused a corresponding increase in the demand for more economical and larger capacity communications systems. This has caused a technical revolution in the electronic communications industry. Terrestrial microwave systems have long since reach their capacity and satellite systems can provide, at best, only a temporary relief to the ever-increasing demand. It is obvious that economical communications systems that can handle large capacities and provide high-quality service are needed.

Consequently, systems that use glass or plastic fiber cables to contain a light wave and guide it from a source to a destination have received a great deal of attention. With the cost of optical fiber technology continuing to decrease, many of today's businesses are utilizing this technology in building distribution and/or workstation applications.