

# OPERATION MANUAL

## STUDY OF OPTO COUPLER TRAINER, MODEL – OPTO – 10.



ISO-9001 CERTIFIED COMPANY



**VIJAYANTA**

**VIJAYANTA TECHNOLOGIES PVT. LTD.**

*(Formerly Vijai Electronics)*

Dr. BALDEV SINGH MARG  
28/147, CIVIL LINES,  
ROORKEE – 247667

PHONE : 01332 – 272509  
          : 01332 – 276608  
E-mail : vijaielectronics@ymail.com, info@vijayantatechnologies.com

**STUDY OF OPTO COUPLER TRAINER,**  
MODEL – OPTO – 10.

**DESCRIPTION :**

This trainer kit is designed for the students of Instrumentation course. It allows the students to understand the concept of OPTO – COUPLER, and its applications.

**This trainer kit consists of :**

- (i) Opto – Coupler mounted on front panel.
- (ii) Electronic Circuit alongwith 3 digit counter display.
- (iii) All the block diagrams are shown on the front panel.

A LED is provided is to show the function of light interruption

**THEORY :**

OPTO – Coupler is comprises on light source (Infrared source) and sensor (Photo transistor) housed in a slotted molding which is corporate on infrared filter to minimize ambient light effects and give dust protection. The 3 x 8 mm slot permits the infrared beam to be broken. Its applications are limit switching, event counting, level detection end of tape detection etc.

**SPECIFICATIONS :**

**SOURCE :**

- $V_F \text{ max at } I_F = 20, \text{ mAmp. } 1.7 \text{ Volt.}$
- $V_R \text{ max} = 3, \text{ Volts.}$
- $I_F \text{ max at } I_F = 50, \text{ mAmp. at } 25^0 \text{ C.}$

### **PHOTO TRANSISTORS :**

$V_{CEO \text{ max}}$  = 30 Volt.

$V_{CEO}$  = 5, Volts.

Fall time = 5, Micro Second.

The Photo Transistor is a normal transistor in which the envelope the junction is transparent to allow light to fall on the base emitter junction. At any P.N. junction hole-electron pairs are generated when light falls on the Junction, so that any light falling on the base – emitter junction produces a current which is amplified by transistor action making the device very sensitive.

The advantage of the photo transistor are :

Low Power conception, ✓

Small Size. ✓

Immediate operation on switching on, Low voltage operation and long life.

A photo transistor gives a high gain. This transistor is very good for digital applications because of the small rise and fall times.

### **OBJECT :**

To study the performance of Opto – Coupler.

### **OPERATION :**

1. Connect the 3, pin mains plug of the kit to the mains socket.

(230 Volt, ±10%, 50 Hz Power Supply)

2. Switch ON the trainer kit.
3. Display may show some reading, press reset switch to make display zero.
4. Now put any non-transparent metallic/Plastic/Case board strip between slotted portion of the opto-coupler. Now, lead will glow and display will show one count.
5. Remove strip and insert again in the opto-coupler count will increase one by one.
6. Change the converter toggle switch and repeat step-3 to 5.

#### NOTE :

The converter toggle switch is provided to change the counting either in rising or falling of strip.