

# IPC EDUCATIONAL TRAINERS



## **ANALOG AND DIGITAL COMMUNICATION TRAINER**

### **Model: - IPC-AM-3000**

Communication Trainer IPC-AM-300 is low cost high performance communication teaching system. It is design to provide all the basic tools necessary to conduct experiments in the field of digital and analog communication engineering, it can also be used for R&D projects in communication.

The IPC-AM-3000 has been designed to act as basic tool for carrying out experiments in the field of communication for technical colleges & universities undergraduate and graduate courses. IPC-AM-3000 has built in RF crystal oscillator, AF oscillator and regulated  $\pm 12$ Volts and +5Volts power supplies. In addition there is a wide variety of plug in modules available for different types of experiments to be performed.

This trainer is intended as a supplement to the textbook for communication course at junior, senior and graduate level student for electrical, electronics, computer engineering and computer science, in addition, it can also be very useful for engineers from the industry who design and apply communication system in their products.

IPC-AM-3000 communication trainer comprises of a base unit, set of 19 modules and necessary interconnecting leads to carry out about twelve experiments in the field of analog & digital communication a comprehensive manual is also provided along with the trainer. On the request more experiments can be added in the trainer.

### **FEATURES:**

- Input voltage 220V 50 Hz AC
- 10.24 MHz crystal controlled RF signal source
- Low distortion 500Hz/1KHz AF signal source
- Clock with variable frequency 7Hz to 6 KHz.
- 2 Breadboards
- DC Supply voltage +12V, -12V and +5V at 100mA
- 7 sockets for modules.

**Note:** - we reserve the right to change the shape & design of the trainer without prior notice.

Ijaz Parvez &Co, 3 Hall Road Lahore Ph # 042-35424363, 37352790 Email: - babar\_imtiaz@yahoo.com

## **SPECIFICATION:**

### **Data Generator Module**

NRZ1 11010100

NRZ2 0111111111

NZR3 10101111

CLK 32KHz

### **4Phase Clock Module:**

this module outputs pulse trains of phases 0°, 90°, 180°, & 270°, at J2, J3, J4 & J5 respectively when clock signal is input at terminal J1.

### **FM Module:**

This module generates frequency modulated carrier of center frequency about 88KHz at terminal J2 when AF modulating signal is applied at terminal J1.

### **Clock to Sine Converter Module:**

This module generates synchronous sine and square wave output signal with controllable amplitude and frequency  $1/8^{\text{th}}$  of input clock.

### **Sample & Hold Module:**

This module samples AF signal applied with sampling signal and outputs sampled signal.

### **Balanced Modulator:**

The balanced modulator multiplies two input signals. It is used in synchronous demod of PSK & AMSC signals.

### **Low Pass Filter Module:**

This module two 2<sup>nd</sup> order active LPF with cutoff frequencies of 500HZ and 1KHz.

### **FM Carrier Synchronizer Module:**

This module generates AF signal phased locked with FM carrier signal input. The simultaneous display of AF and FM signals on scope results in stable waveforms on scope.

### **Pulse Time Modulation Module:**

This module generates PWM and PPM signal when sample-and-Hold AF signal and sampling signal reapplies.

**Note:** - we reserve the right to change the shape & design of the trainer without prior notice.

Ijaz Parvez &Co, 3 Hall Road Lahore Ph # 042-35424363, 37352790 Email: - babar\_imtiaz@yahoo.com

### **List of Experiment**

- Familiarization with IPC-AM-3000.
- To study the sampling theorem.
- To study line coding & decoding techniques.
- To demonstrate the clock Gen. from Manchester code data.
- To study pulse time Modulation.
- To study two channel TDM system.
- To study FSK modulation.
- To study the PSK & ASK Modulation.
- To study PCM.
- To study AM.
- To study of Envelope Detector.
- To study SSB Modulation.
- To study FM.

### **ADD ON MODULES (OPTIONAL)**

- AM/SSB Modulation/Demodulation.
- NZR Data Generator.
- Manchester & RZ Encoder/Decoder.
- Clock & Data recovery Modules.
- PCM.
- Quadrature amplitude Modulation/Demodulation.
- Delta Modulation.

**Note:** - we reserve the right to change the shape & design of the trainer without prior notice.  
Ijaz Parvez &Co, 3 Hall Road Lahore Ph # 042-35424363, 37352790 Email: - babar\_imtiaz@yahoo.com