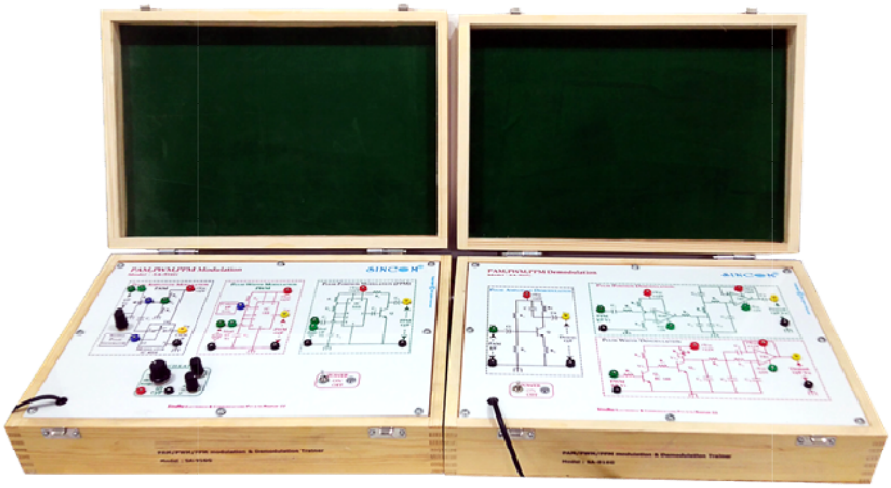
PAM,PWM,PPM Modulation& Demodulation With Signal Generator

Model:SA-916G



SINCOM SA-916GPAM,PWM,PPM Modulation & Demodulationwith signal generatoris a widespread all-in-one comprehensive trainerdesigned to study principles, operation, generation, and detection of Pulse Amplitude Modulated PAM,Pulse Width Modulated PWM and Pulse Position Modulated PPM signalswith the on-board AF signal generator. It has separate modules of PAM, PWM & PPM modulators & demodulators.

PAM Modulation and Demodulation: The PAM modulator employs a CMOS switching IC for the modulating input and sampling pulses, enabling it to generate both single and dual polarity PAM outputswith onboard DC level insertion and a sampling pulse generator with the facility to vary amplitude of modulating signal and corresponding changes in PAM output. The PAM demodulator circuitbased on a transistor and includes a noise filter, retrieve the information (modulating) signal at the receiver end from the applied PAM input signal, thus delivering the AF Demodulated output.

PWM Modulation and Demodulation: The PWM modulator employs a timer IC along with RC components and control voltage to deliver PWM output for the applied AF modulating input and internally generated sampling pulse carrier input and note changes in the PWM output for the changes in the AF modulating and sampling pulse signals. The PWM demodulator circuitis based on transistor, operational amplifier with a noise filter for recovering the information (modulating) signal at the receiver end for the applied PWM input signal, thereby providing the AF Demodulated output.

PPM Modulation and Demodulation: The PPM modulator uses a timer IC along with RC components. internally generated carrier signal to deliver PPM output for the applied AF modulating input and observe the variations in the PPM output for the changes in the AF modulating signals.The PPM demodulator circuit is based on two operational amplifiers with a noise filter for recovering the information (modulating) signal at the receiver end for the applied Pulse Position modulated input signal, thereby providing the AF Demodulated output.

Features

- Very Easy for Operation
- Sampling Pulses on board
- On Board AF Signal Generator
- CMOS based PAM modulator with Single and Dual Polarity PAM Output
- IC based PWM and PPM modulator
- Easy to control depth of Modulation
- Stable PAM, PWM, PPM Output
- Precise PAM, PWM, PPM Demodulator circuit
- Noise Filter
- Accurate AF Demodulated Output
- In-Built Fixed regulated DC Power Supply
- A multi-coloured circuit diagram is printed on the front panel of the whiteboard.
- Enclosed in an attractivePoly Coated Imported Pine Wooden cabinet
- Interconnections by 2mm high quality banana sockets and pins.
- Maximum Test points to explore all the corners of experiment

Technical Specifications

AC Mains Power Supply	: 230V ±10%, 50Hz
DC Power Supply	: Regulated ±12V/500Ma
Signal Generators	: Sine wave Modulating Signal with variable Frequency 100 KHz and variable Amplitude 7Vpp.
Modulation type	: PAM, PWM,PPM
PAM Modulator	: CMOS analog switching IC 4016 based
PWM& PPM Modulator	: Timer IC 555 based circuit
Output	: PAM Single and Dual Polarity, PWM and PPM
DC Insertion	: DC 6V for PAM
Sampling Pulses Generator	: IC 555 and Digital based
Modulation Index Control	: By Potentiometer Under and Over Modulation
Sampling Carrier Frequency	: 100KHZ approx. Internally Generated
Modulating Signal Frequency	: 60Hz -3KHz
Bandwidth	: 3KHz
PAM Demodulator	: BJT CE Amplifier with RC Filters based circuit
PWM Demodulator	: BJT CE Amplifier, OP-AMP IC 741 and RC Filters based circuit
PPM Demodulator	: Two OP-AMP IC 741 and RC Filters based circuit
Noise Filters	: One
Demodulator Output	: AF Demodulated O/P for PAM, PWM & PPM
Weight	: 4kg
Dimensions (mm)	: L 270 x W 390 x H 130 X 2
Interconnections	: 2mm Banana sockets
Operating Temperature	: 0-50^{0}C, 80% RH

Learning Scope

- To study the circuit of Pulse Amplitude Modulation (PAM). To observe & note Single and Dual Polarity PAM output. To observe change in PAM O/P w.r.t change in modulating I/P.
- To study the circuit of Pulse Amplitude Demodulation (PADM). To observe & note the change in demodulated O/P w.r.t change in analog I/P.

- To study the circuit of Pulse Width Modulation (PWM). To observe the change in PWM O/P w.r.t change in modulating signal voltage.
- To study the circuit of Pulse Width Demodulation (PWDM). To observe & note the change in demodulated O/P w.r.t change in modulating AF input.
- To study the circuit of Pulse Position Modulation (PPM). To observe the change in PPM O/P w.r.t change in modulating signal voltage.
- To study the circuit of Pulse Position Demodulation (PPDM). To observe & note the change in demodulated O/P w.r.t change in modulating AF input.
- To plot the PAM, PWM and PPM Waveforms.

Other Instruments Required: Oscilloscope.

Accessories Included: Patch Cords, Instruction Manual and Demo Video.

Subject to Change