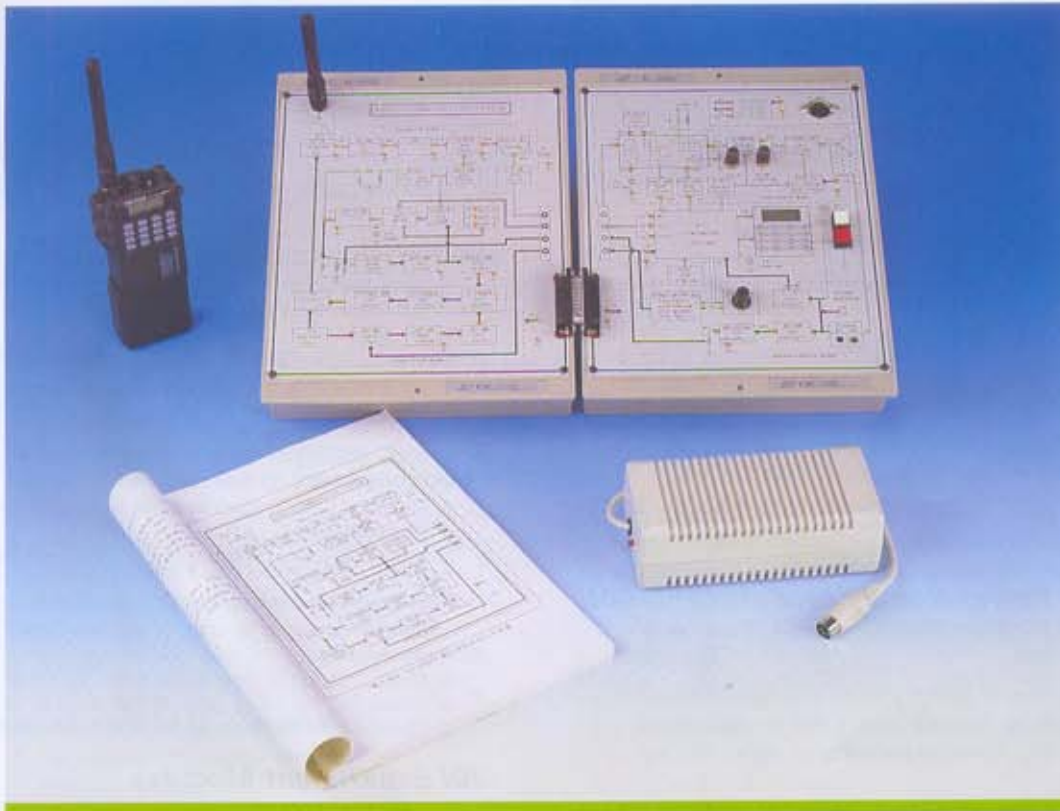


**ANALOG COMMUNICATION SYSTEM (1)/ KL-900B**

144MHz VHF FM TRANSCEIVER TRAINER



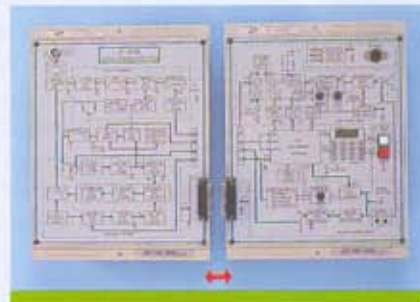
The KL-900B Analog Communication System (1) is a comprehensive and self-contained system based on the 144 MHz VHF Transceiver suitable for anyone engaged in Analog Communication experiments. The purpose of the modules is to enable the student to acquire a clear experimental view of the concepts and a familiarization with the operative aspects of the work in the Telecommunication Laboratory.

***This KL-900B consists of 2 parts, total 3 modules:***

***(A) Analog Communication System Module***

***(KL-93051/KL-93052)***

***(B) Power Supply Module (SPS-001)***





KL-900B

## ANALOG COMMUNICATION SYSTEM (1)/ KL-900B

### SPECIFICATION

#### (A) Analog Communication System Module (KL-93051/KL-93052)

##### General Characteristics

- (1) Frequency Range : 144-146 or 144-148 MHz
- (2) PLL Range : 130-170 MHz
- (3) Modulation Type : F3
- (4) Channel Setting Step: 5, 10, 12.5, 20, 25, 50KHz
- (5) Antenna Impedance : 50 ohm
- (6) Squelch Sensitivity : 0.16  $\mu$ Vmax
- (7) Audio Output : 250mW
- (8) Maximum OFFSET : +/- 5KHz
- (9) 1st IF Signal : 21.8MHz
- (10) 2nd IF Signal : 455KHz

##### Key-Pad Function

- (1) SQL : To eliminate the "ZA" noise on FM
- (2) VOLUME : Power switch / Volume control
- (3) TX/RX LED : Signal transmitter/Receiver Indicator;  
RED transmitter; GREEN receiver
- (4) Channel : Channel selector
- (5) M.S. socket : External MIC or Speaker
- (6) Function Key
- (7) PTT : Exchange transmitting and receiving function

#### (B) Power Supply Module (SPS-001)

##### Fixed DC Power Supply

- (1) Output Voltage : +5V, -5V, +12V, -12V
- (2) Output Current : +5V/3A, -5V/0.3A, +12V/0.3A,  
-12V/0.3A
- (3) Output Connector : 5 PIN DIN Connector
- (4) Output Overload protect

#### (C) List of Experiments

- (1) Analog Communication System Introduction
  - a. Hardset Reset
  - b. Knowing SET Frequency
  - c. Knowing 2 Function Operation
  - d. Knowing SET Key Function
- (2) Microphone Amplifier
  - a. Active Filter Circuit on the Microphone Amplifier
  - b. Low Pass Filter Circuit on the Microphone Amplifier
  - c. Measuring the frequency response of the passive high-pass filter
  - d. Measuring the Frequency response of the active low-pass filter
- (3) Phase-Lock Loop (PLL) Circuits
  - a. Observe the MB1504 Phase-Lock Detector Characteristics.
  - b. Measuring the Lock timing
  - c. Measuring the LM565 Phase-Lock Circuit Characteristics
  - d. Measuring the LM565 Phase-Lock Circuit Gain Factor

#### (4) Voltage Control Oscillator (VCO) Circuit

- a. Measuring the VCO gain of the transceiver
- b. Measuring the VCO Noise
- c. Measuring the VCO gain of the receiver
- d. VCO Circuit Simulation

#### (5) Power Amplifier

- a. Gain frequency response of the transceiver system
- b. Measuring the Automatic Gain Control Loop (APC) of the power Amplifier

#### (6) RF Amplifier

- a. Measuring the linear frequency response of the RF Amplifier
- b. Measuring the non-linear frequency response of the RF Amplifier
- c. Band-pass filter circuit simulation
- d. Low noise amplifier circuit simulation
- e. RF amplifier circuit simulation

#### (7) Mixer and IF Circuit

- a. Measuring the Mixer exchange gain
- b. Measuring the gain of the crystal filter and the IF amplifier

#### (8) FM Demodulation Circuit

- a. Measuring the IF gain and interrupt loss of the FM Demodulation IC
- b. Measuring the Noise Strength of the FM Demodulation IC
- c. Measuring the Phase detector demodulation of the FM demodulation IC

#### (9) Audio Amplifier

- a. Measuring the power of the audio amplifier
- b. Measuring the noise ratio of the receiver circuit
- c. Measuring the frequency response of the audio amplifier

#### (D) Experiment Modules

1. 2mm plugs and sockets used throughout, connected by 2mm test leads.
2. Circuits symbols, blocks and components printed on the surface of each module.
3. Modules secured in plastic housings, the dimension: 297 x 226 x 60 mm
4. With storage cabinet for all modules to be easy stored.

#### (E) Accessories (KL-98002)

1. AC Cord: 1 pce.
2. Instructor's Manual: 1 pce.
3. Experiment Manual: 1 pce.
4. VHF, FM Transceiver: 1 set