

## KL-900B

### ANALOG COMMUNICATION SYSTEM



#### 144MHz VHF FM TRANSCEIVER TRAINER

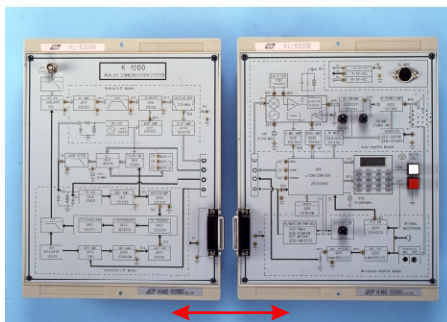
KL-900B Analog Communication System discloses the secret of the walky-talky based on the 144MHz VHF band. It breaks the circuit of walky-talky into 4 blocks : Receiver block, Transmitter block, Audio Amplifier block and Microphone Amplifier block. Block diagrams are printed clearly on the panel of the module, giving students a comprehensive view of how walky-talky works.

#### Experiment Modules

1. 2mm connection leads are used throughout the system
2. The building block diagrams are printed on the surface of each module.
3. Modules are secured in plastic housings (297 x 226 x 60mm)

#### List Of Modules

1. Analog Communication System Module (KL-93051/KL-93052)
2. Power Supply Module (SPS-001)



#### Specification

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

###### (1) General Characteristics

- a. Frequency Range : 144-146 or 144-148 MHz
- b. PLL Range : 130-170 MHz
- c. Modulation Type : F3
- d. Channel Setting Step: 5, 10, 12.5, 20, 25, 50KHz
- e. Antenna Impedance : 50 Ω
- f. Squelch Sensitivity : 0.16 μVmax
- g. Audio Output : 250mW
- h. Maximum OFFSET : ±5KHz
- i. 1st IF Signal : 21.8MHz
- j. 2nd IF Signal : 455KHz

###### (2) Key-Pad Function

- a. SQL : To eliminate the "ZA" noise on FM
- b. Volume : Power switch/volume control
- c. TX/RX LED : Signal Transmitter/Receiver indicator;  
red (transmitting) green (receiving)
- d. Channel : Channel selector
- e. M.S. socket : External MIC or speaker
- f. Function Key
- g. PTT : Exchange transmitting and receiving function

## 2. Power Supply Module (SPS-001)

- (1) Fixed DC Power Supply
  - a. Output Voltage : +5V, -5V, +12V, -12V
  - b. Output Current : +5V/3A, -5V/0.3A, +12V/0.3A, -12V/0.3A
  - c. Output Connector : 5 PIN DIN connector
  - d. With Output Overload protection

## List Of Experiments

- (1) Analog Communication System Introduction
  - a. Hardset reset
  - b. Transmission/Receiving SET frequency
  - c. Transmission/Receiving 2 function operation
  - d. Transmission/Receiving 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 (AGC) loop 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
  - c. Mixer circuit simulation
- (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

## 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