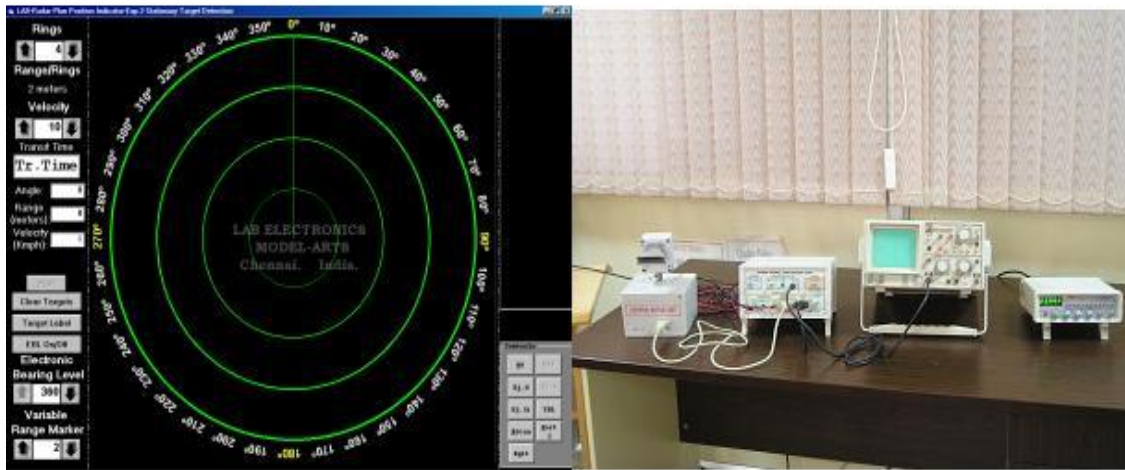


Advanced Radar Training System Model-ARTS

LAB-RADAR 3.0 Software

LAB-ARTS Experimental Setup



Introduction:

The LAB Advanced Radar Training System offers Model ARTS realistic classroom training, in radar techniques, enabling instructors and students to study the principles involved in pulse radar systems. The system is designed with low power for safe operation.

The system is provided with three targets, which are simultaneously tracked to an operating range of 2 to 10mtrs (approx.). The radar training system detects the targets when they approach or leave the scanned area at different speeds, from selected ranges (cms to kms), and at different azimuth settings (0° -360°).

This Advanced Radar Training system (ARTS) operates over a short range of 2-10 mtrs (approx.), providing instruction and observation of all phases of the radar system operation. This trainer is unlike commercial or military radar systems which do not make effective basic trainers, since they use higher radiated power AC voltages (which are dangerous) and targets that are not within visual range. The Trainer operates on 10.5GHz and uses a Horn antenna system. It consists of a microwave transceiver and a stepper motor. A slow-scan antenna scans the laboratory for targets, which move electronically at different speeds with the help of Stepper motor. The PC software controls the antenna rotation speed.

The targets are individually identified on the Plan Position Indicator using LAB-Radar 3.0 Software in PC, with quadrant arcs and range markers in meters or kilometers. The range display is switch-selectable for far-out or close-in viewing.

The comprehensive laboratory manual includes the study of radar-type electronic circuits.

ARTS consists of:

1. Radar signal processing unit – 1 no.
2. Stepper motor unit – 1no.
3. RF Transceiver – 1no.
4. Function Generator – 1no.
5. LAB-Radar 1.0 Software CD – 1no.
6. Shielded Cables – 1 set.
7. Instruction manual – 1set.
8. Artificial Targets – 1 set.

DELLSOFT Technologies P. Ltd.

WZ-29, 1st Floor, Uggarsain Market, Ashok Nagar, New Delhi – 110018

Ph: 011-55396299, 9350056264, Telefax: 011-51770484, Mobile : 9810305272 / 9810266404

Features:

- Incorporates Technologically Advanced Integrated Transmitter and Receiver
- Scans, Calculates, and Displays Range and Azimuth Measurements.
- Horn Antenna with rotating base. (Stepper motor)
- Demonstrates and Teaches Moving Target Concepts.
- LAB-Radar 3.0 Software is provided with the trainer for real time measurement in the PC.
- High speed Data Acquisition card is provided with the trainer (in-built).
- Hand Gloves and Shielded cables are provided to avoid ESD.

LIST OF EXPERIMENTS THAT CAN BE CONDUCTED ON THE TRAINER:

1. Introduction to the Experimental Radar System.
2. Study of FM Doppler radar System, outputs can be observed in the CRO.
3. Study of Radar Display Methods on computer (PPI Method).
4. Study of Transmitter and Receiver.
5. Study of reflections from artificial targets, outputs can be observed in the CRO.
6. Study of measurement of distance of a stationary target, outputs can be observed in the CRO.
7. Study of measurement of Azimuth angle, velocity of a moving target, outputs can be observed in the CRO.

SPECIFICATIONS OF ADVANCED RADAR TRAINING SYSTEMS

EQUIPMENT INCLUDED:

- RF Source : 10.5GHz.
- Type : Integrated Transmitter/ Receiver.
- Band : X – Band.
- Output Power : 10 milli watts.
- Tuning : Electronic Tuning 40MHz.
- Operating Voltage : +8 to +10VDC.
- Operating Current : 200mA.
- Normal Sensitivity : -110dBc.

HORN ANTENNA:

Type : Horn Antenna.
Band : X-Band.
Bandwidth : 10.5GHz.
E-Plane : 70° .
H-Plane : 30° .

ARTIFICIAL TARGETS:

3 Targets;

- Aluminium.
- Wooden.
- Plastic.

Tripod Stand : 1No.

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Range : 2meters to 10meters.

Function Generator (Included)

High quality Function generator with digital read out is provided along with the ARTS.

LAB-RADAR 3.0 SOFTWARE:

NOT PART OF THE SUPPLY



Lab-Radar 3.0 is a software application developed for Educational purpose to help the Students to learn about RADAR PROCESSING SYSTEM. Observing radar results in Oscilloscope (CRO) may not give you the results in realistic manner. But the PPI (LAB-Radar 3.0) gives you the radar results more realistically and in graphical manner. Our Lab-Radar 3.0 software provides you a real time output of Radars using High speed Data Acquisition.

SPECIAL FEATURES:

LAB-Radar 3.0 gives you,

1. Target Indication with multicolor effect
2. Realistic scanner with Rings, Grids.
3. PPI,A-Scope
4. Outputs in print-ready format.
5. Interfacing with Radar unit.
6. Self test, Help, Video demos
7. User administration
8. Radar Rotation speed controller
9. Observation saving facility.
10. Guided tour.

SYSTEM REQUIREMENTS:

11. Intel pentium III 1.8 GHz or higher
- 12.15" color monitor (1028x764 pixels)
- 13.2 GB Hard disk or higher
- 14.128 MB RAM or higher
- 15.Scroll PS/2 mouse
- 16.104 Keys Keyboard
- 17.CD-ROM Drive
- 18.9-pin COM port
- 19.Printer (optional)
- 20.Speaker (optional)

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INSTRUCTION MANUAL:

Detailed Step – By – Step instruction manual will be supplied.

EQUIPMENT REQUIRED (INCLUDE):

- Radar processing unit
- Stepper motor unit
- RF Transceiver
- Function Generator
- LAB-Radar 3.0 software
- Hand gloves & Shielded Cables
- Artificial Targets

Equipment Required (Not Included)

- Computer.
- Oscilloscope of 100MHz or Spectrum Analyzer.
- Digital Multi meter.

OPERATING VOLTAGE:

Power: 230V Ac mains operated.