



DEGEM  
SYSTEMS

Com & Telecom

Modern Communication

Fiber Optic Communication

Antennas

Radar

Cellular Communication

Global Position Systems

Satellite Communication

Microwaves

Telecommunication Networks

# MDC-3246

## Doppler Radar Training System

Degem's MDC-3246 Doppler Radar Trainer is a very useful training system for laboratory for learning Doppler radar concepts and applications.

The training system is a self contained training system that includes all the necessary instruments and accessories for studying the operating characteristics a Doppler radar.

The training system includes a virtual oscilloscope with FFT to monitor, store and analyze the radar signals. The trainer can measure the linear speed of an object, vibration frequency and rotational speed (RPM). The operation of the radar with metal, acrylic, Teflon and Bakelite targets can be observed.

The student manual explains essential theoretical concepts of Doppler radars and provides a detailed experiment procedure for each experiment.

- Complete hardware and software setup to demonstrate Doppler radar concepts
- Radar signals can be measured at test points on the trainer as well as on the student PC
- Object counter
- Real time measurements of rotating and vibrating objects, such as tuning forks
- Virtual oscilloscope measures Doppler frequency shift
- LED indicator for Doppler echo signal
- Alarm for detected signals
- Tripod stand for height and level matching



# Specifications

## DESCRIPTION

The MDC-3246 training system comprises:

- Signal processing power supply board
- Accessories
- Student manual

## TECHNICAL CHARACTERISTICS

### Hardware

- Transmitting frequency (10GHz)
- Power to antenna (10-15mW)
- Antenna type (Horn)
- Operating voltage (8.6V)
- IF output (Audio)
- Alarm (Onboard detection indicator)
- Interface to PC (Audio line input)
- Power supply (120/220V  $\pm$ 10%, 50/60Hz)

### Software

- Virtual oscilloscope (Real time, storage with FFT)
- Display ( Peak-to-peak voltage)
- Time domain window (Displays Doppler period)
- Frequency domain (Doppler frequency)

### Control panel

- Measure Doppler frequency and amplitude
- Measure target velocity and RPM
- Start/stop display
- Set time base and amplitude on display window
- Print Doppler frequency signal
- Time and voltage measurement cursors
- Save, load, refresh

## EXPERIMENTS

- Observe Doppler radar operation
- Determine velocity of moving object in radar range
- Observe Doppler principle with a moving pendulum
- Observe the alarm system
- Counting objects
- Detect frequency of vibration of different tuning forks
- Determine the rotation speed (RPM) of a fan
- Observe the effect of various materials on radar reception

## SUPPLIED ACCESSORIES

- Audio cable for PC line in input
- DIN connector (5 pin)
- Power cord
- Tripod stand
- Fan
- Fan stand
- Sliding platform
- Various objects made from different materials
- Horn antenna
- Transceiver Unit
- Pendulum
- Stand for moving the pendulum
- Tuning forks
- Software CD
- Experiment manual

## REQUIRED ACCESSORIES

Personal computer with MS-Windows

## INSTRUCTIONAL MATERIALS

The experiment manual was written by pedagogical experts in modern Doppler radar technology. The essential theory to understand and perform the experiments is provided. The procedure for each experiment is clearly written to allow the students to easily complete each experiment.