



**DEGEM®
SYSTEMS**

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EB-3000

EB-3164

Digital communication signal conversion

Base unit

AM modulation

FM modulation

Digital communications
modulation and detection

Digital communication
signal conversion

Optical communications

The EB-3164 Digital Communication Signal Conversion is a comprehensive instructional module designed to introduce the student to the basic concepts of converting analog and digital signals as well as some commonly used digital encoding techniques employed in digital communications systems. The course is suitable for students in high, schools, technical schools and colleges.

The module contains various practical circuits with which the student can perform a number of meaningful experiments, which help reinforce the student's comprehension of the related concepts. The individual circuits and the required test equipment can be quickly wired by using the provided patch cords to connect the relevant 2-mm jacks. Students perform a minimal amount of wiring, thereby reducing the setup time and the possibility of a wiring error while increasing the time available for training. Manually inserted faults modify the circuits under test to provide valuable true-to-life troubleshooting exercises, which develop diagnostic skills.

A comprehensive student experiment manual provides essential theory and clearly details the experiment procedure. Optional courseware enhances the learning procedure testing the student's level of competence after reviewing the theory and then evaluates all answers to questions to test the student's level of achievement at the end of each experiment. The student may learn in the standalone mode or under CML (Computer Managed Laboratory), which allows the instructor to monitor student and class progress and records pertinent records in a database for future retrieval.

Description

The EB-3164 printed circuit board is designed to minimize circuit wiring time when setting up experiments. The board dimensions are 220 x 180 mm is powered by the EB-3000 base unit. The board plugs into the EB-3000 base unit via a 48-pin industrial connector.

All components are mounted on the printed circuit board and the schematic diagrams of all circuits are silk-screened to help the student identify components and system operation. The printed circuit board is solder masked for long life. The components mounted on the board are protected with a plastic cover that is permanently mounted on the EB-3000 base unit.

All major signals can be accessed from the 2-mm jacks to simplify connections within the circuit and to test equipment. All integrated circuits and transistors are mounted on sockets. The printed circuit board can be stored in the supplied plastic binder for convenient storage.

Experiments covered

The course covers various techniques for converting analog and digital signals commonly employed in digital communication systems

- Audio amplifier and preamplifier
- Analog to digital conversion
- Digital to analog conversion
- Signal sampling and reconstruction
- Pulse amplitude modulation (PAM)
- Pulse code modulation (PCM)
- Delta modulation (DM)
- Effect of sampling frequency on reconstruction quality
- Digital voice recording
- Troubleshooting exercises

Required Accessories

- EB-3000 workstation with built-in digital multimeter, oscilloscope and patch cords

Optional

- Personal computer with MS-Windows

Instructional Materials

The experiment manual was written by pedagogical experts who train technicians in electronics technology. The student manual contains essential theory and a detailed procedure for each experiment and is available in hardcopy or electronic book formats.



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