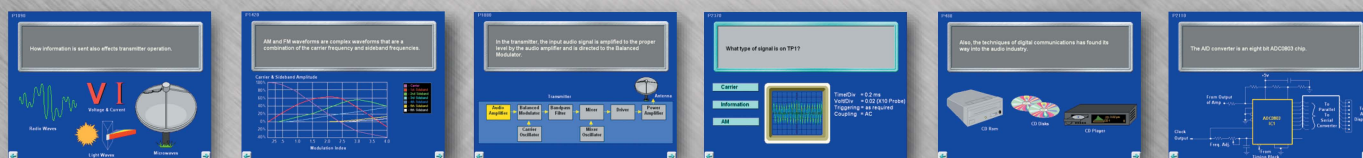# Signal Processing

Sending The Right Signals

The strength of today's telecommunications systems is largely dependent on the method of signal processing used. Vital communications links worldwide depend on a variety of signal processing techniques to transfer voice, data, and video from one location to another. The importance of this global connection has increased the need for technicians to have the skills and knowledge necessary to troubleshoot, maintain, and repair signal processing systems. The E & L-Nida Signal Processing courseware prepares technicians for system level maintenance by integrating theoretical concepts with hands-on real-world applications. Developed from industry input and standards, the courseware teaches multiplexing, de-multiplexing, modulation, and demodulation using today's processing techniques. Used as a stand-alone course or part of a complete E & L-Nida telecommunications programme, the E & L-Nida Signal Processing courseware will send students the right signal.

E & L-Nida Signal Processing

The E & L-Nida Signal Processing courseware utilises the Model 130E Test Console to demonstrate and investigate a number of different signal processing techniques. To reinforce theoretical principles, modulator and multiplexer experiments are designed to allow monitoring of each signal as it moves through the circuit. Modulation/demodulation and multiplexing/de-multiplexing can be accomplished on a single test console or on separate test consoles by transmitting the signal via optional E & L-Nida microwave, cable, or fibre optic systems. Automatic faulting of all signal processing circuitry provides system troubleshooting introduction and practice.

Topics

Communication Systems & Signal Processing
    Basic Elements, Limiting Factors, Safety

Basic Modulation
    AM, FM, Analog Pulse, & IC FM Modulation

Pulse Code Modulation (PCM)
    Theory, Operation, & Troubleshooting
    PCM Demodulation

Delta Modulation (DM)
    Theory, Operation, & Troubleshooting
    DM Demodulation

Frequency Shift Keying (FSK)
    Theory, Operation, & Troubleshooting
    FSK Demodulation

Phase Shift Keying (PSK)
    Theory, Operation, & Troubleshooting
    Quad Phase Shift Keying

Time Division Multiplexing (TDM)
    Characteristics, Operation, & Troubleshooting
    Time Division De-multiplexing

Frequency Division Multiplexing (FDM)
    Characteristics, Operation, & Troubleshooting
    Frequency Division De-multiplexing

Supporting Hardware

- Model 130E Test Console
- Model 4050 Test Instrument Module
- Model 1407 Signal Processing Experiment Boards Set