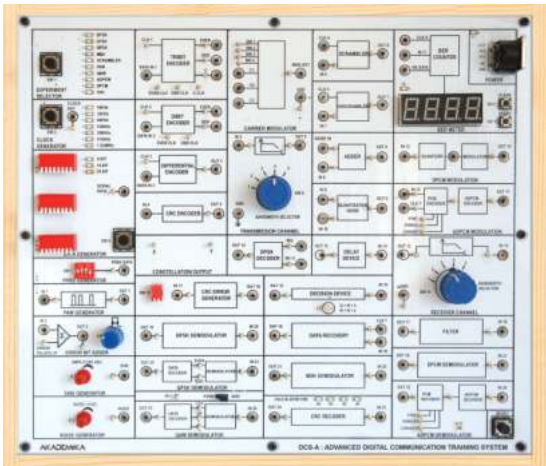


DCS-A
Basic Advanced Digital
Communication Training System



SPECIFICATIONS

- Designed using advanced DDS technology on silicon
- The necessary LED indications are provided to know the status of the experiments
- The system comes with descriptive experimental manual

Clock and signal generation

Sine wave

- Fixed frequency 1KHz with 0 ~ 2V

Carrier

- Synchronized carrier of 0°phase
- Synchronized carrier of 90°phase
- Synchronized carrier of 180°phase
- Synchronized carrier of 270°phase

Data pattern

- 8-bit, 16-bit and 24-bit

PRBS generator

- 16-bit with switch selectable

Noise

- White noise 0 ~ 2Vpp

Transmitter clocks

- 16 KHz, 32 KHz, 64 KHz, 128 KHz, 256 KHz , 512 KHz and 1.024 MHz

Output

- 4 digit, 7 segment, LED bank

Input

- Three 8-bit switch banks for data generation

Transmitter section

- Differential encoder
- Dibit encoder
- Tribit encoder
- Scrambler
- BPSK, DPSK modulation
- QPSK modulation
- QAM modulation
- MSK modulation
- DPCM and ADPCM modulation

Receiver section

- Differential decoder
- Dibit decoder
- Tribit decoder
- Unscrambler
- BPSK demodulation
- DPSK demodulation
- QPSK demodulation
- QAM demodulation
- MSK demodulation
- DPCM and ADPCM demodulation
- Digital PAM
- Error bit adder and inter symbol interference
- Low pass butterworth filters

EXPERIMENTS

- Study of BPSK modulation and demodulation
- Study of DPSK modulation and demodulation
- Study of dibit data encoder
- Study of QPSK modulation and demodulation
- Study of constellation diagram for QPSK
- Study of tribit data encoder
- Study of QAM modulation and demodulation
- Study of constellation diagram for QAM
- Study of MSK modulation and demodulation
- Study of pulse amplitude modulation of digital data for base band transmission
- Study of transmission and reception of band limited pulse train in base band transmission system
- Study of eye pattern
- Measurement of bit error rate using digital data
- Study of message scrambler and unscrambler
- Study of DPCM modulation and demodulation
- Study of ADPCM modulation and demodulation
- Quantization noise in DPCM
- Bit error rate (BER) measurement
- Study of eye pattern