

HIGH LEVEL DIGITAL COMMUNICATION TRAINER

Model No.: LT-17x

Curriculum Outlines:

1. Design and implementation of CVSD encoder and decoder
2. Design and implementation of QPSK and QAM modulator and demodulator
3. Design and implementation of DSSS, BCH, and Convolutional codes encoder and decoder
4. Design and implementation of GMSK modulator and demodulator

Features:

1. To understand the basic theory of high-level digital communication.
2. Design and implementation ability training of digital modulator and demodulator.
3. Ability to research And develop the digital modulator and demodulator.
4. Familiar with the application of high-efficiency communication modulator circuit.



Specifications:

Module One: LT-17800-01

Chapter 1: CVSD Modulator

Sampling Frequency: 32 kHz - 50 kHz; Sampling Frequency Mode: TTL Level;

Audio Signal: 500 Hz - 1 kHz; Modulator Output Mode: TTL Level.

Chapter 2: CVSD Demodulator

Sampling Frequency: 32 kHz - 50 kHz; Sampling Frequency Mode: TTL Level;

Audio Signal: 500 kHz - 1 kHz.

Module Two: LT-17800-02

Chapter 3: QPSK Modulator

CLK: 600 Hz - 1 kHz; CLK Mode: TTL Level; Data Rate: 300 Hz – 500 Hz;

Data Mod: TTL Level; Carrier Frequency: 20 kHz.

Chapter 4: QPSK Demodulator

CLK: 600 Hz - 1 kHz; CLK Mode: TTL Level; Data Rate: 300 Hz – 500 Hz;

Data Mod: TTL Level; Carrier Frequency: 20 kHz.

Module Three: LT-17800-03

Chapter 5: QAM Modulator

CLK: 20 Hz ~ 200 Hz; CLK Mode: TTL Level; Data Rate: 10 Hz ~ 100 Hz;

Data Mode: TTL Level; Carrier Frequency: 20 kHz; Data Generated Mode: Pseudo Random Generator.

Chapter 6: QAM Demodulator

CLK: 20 Hz ~ 200 Hz; CLK Mode: TTL Level; Data Rate: 10 Hz ~ 100 Hz;

Data Mode: TTL Level;

Carrier Frequency: 20 kHz; Data Generated Mode: Pseudo Random Generator.

Module Four: LT-17800-04

Chapter 7: CDMA DSSS Encoder

Basic Spread Spectrum Encoder

Original Data Length: 4 bits; Data Input Mode: Dip Switch;

Data Length of Spread Spectrum Code: 2 bits;

Spread Spectrum Code Input Mode: Dip Switch; Data Length after encoded: 8 bits.

64 bits Spread Spectrum Encoder

Original Data Length: 8 bits; Data Input Mode: LED Display; Data Length of Spread

Spectrum Code: 8 bits; Spread Spectrum Code Input Mode: Dip Switch; Data Length

after encoded: 64 bits.

Chapter 8: CDMA DSSS Decoder

64 bits Spread Spectrum Decoder

Data Length before Decoded: 64 bits; Data Length Before Encoded: 8 bits; Original

Data Display Mode: LED Display; Data Length of Spread Spectrum Code: 8 bits;

Spread Spectrum Code Input Mode: Dip Switch.

Module Five: LT-17800-05

Chapter 9: BCH Encoder

4 bits BCH Encoder

Original Data Length: 4 bits; Data Length after Encoded: 7 bits; Error Detection: 1 bit.

8 bits BCH Encoder

Original Data Length: 8 bits; Data Length after Encoded: 12

bits; Error control: 1 bit;

Error Detection: 1 bit.

Chapter 10: BCH Codes Decoder

4 bits BCH Decoder

Data Length after Encoded: 7 bits; Original Data Length: 4 bits;

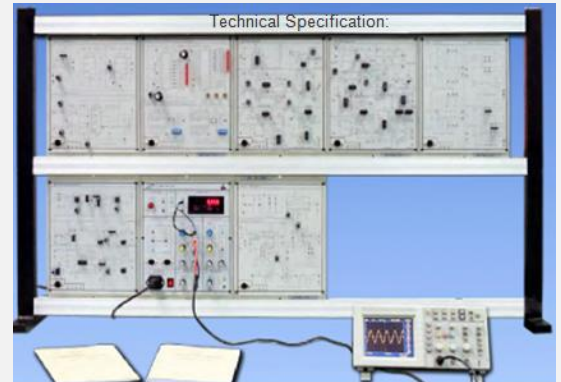
Error Detection: 1 bit.

8 bits BCH Decoder

Data Length after Encoded: 12 bits; Original Data Length: 8

bits; Error Control: 1 bit;

Error Detection: 1 bit.



Module Six: LT-17800-06

Chapter 11: Convolutional Codes Encoder

(2, 1, 2) Convolution Codes Encoder

Code Rate: 1/2; CLK: 1 Hz ~ 10 Hz; Data Input Mode: Series Input; Data Length after Encoded: 2 bits; Error Detection: 1 bit.

(2, 1, 3) Convolution Codes Encoder

Code Rate: 1/2; CLK : 1 Hz ~ 10 Hz; Data Input Mode: Series Input; Data Length after Encoded: 2 bits; Error Detection: 1 bit.

Chapter 12: Convolutional Codes Decoder

Viterbi Decoder

CLK: 1 Hz ~ 10 Hz; Data Input Mode: Series Input; Data Length After

Encoded: 2 bits; Error Detection: 1 bit.

Module Seven: LT-17800-07

Chapter 13: GMSK Modulator

CLK: 600 Hz ~ 2 kHz; CLK Mode: TTL Level; Data Rate: 300 Hz ~ 1 kHz;

Data Mode: TTL Level; Carrier Frequency: 20 kHz; Modulation Index: 0.5.

Chapter 14: GMSK Demodulator

CLK: 600 Hz ~ 2 kHz; CLK Mode: TTL Level; Data Rate: 300 Hz ~ 1 kHz;

Data Mode: TTL Level; Carrier Frequency: 20 kHz; Modulation Index: 0.5.

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