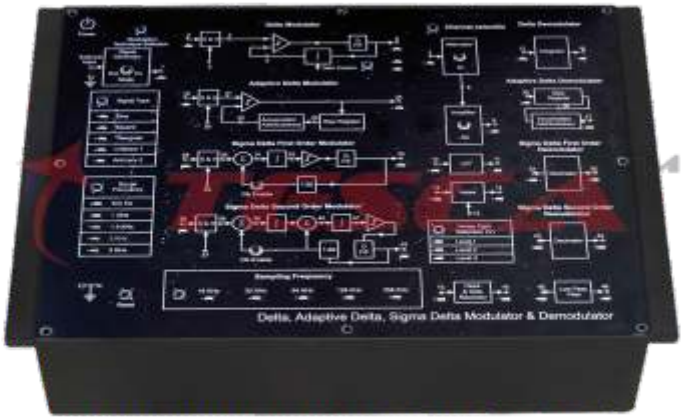

40695 provides an extensive hands on learning on Delta, Adaptive Delta, Sigma Delta Modulator & Delta, Adaptive Delta, Sigma Delta Modulator & Demodulator

Features

1. Modulator and Demodulator on same board
2. On-board DDS Signal Generator for standard and Arbitrary signals
3. Selectable Sampling Frequencies
4. On board Transmission effect
5. Selectable step size for Integrator
6. Detailed study of granular noise and slope overloading
7. On board 2nd order Butterworth Low Pass filter
8. SMD LED Indicators
9. Can be issued just like a book for hands-on learning

Object

Delta Modulator & Demodulator Study and analysis of:

1. Delta Modulation and Demodulation.
2. Sample & Hold output by varying the Sampling as well as Signal frequency.
3. Integrator output at the Modulator by varying the Sampling frequency.
4. Improved Integrator output by varying the gain control frequency.
5. Slope Overload distortion problem.
6. Granular Noise problem.
7. Single bit Delta modulated PCM output.
8. Integrator output at the Demodulator.
9. Analyze the final Delta demodulated output with Second order Low Pass Butterworth filter .

Adaptive Delta Modulator & Demodulator

1. Adaptive Delta Modulation.
2. Single bit PCM output by varying the Sampling frequency.
3. Variable step register at the Modulator side.
4. Accumulator and Add/Subtract at the Modulator side.
5. Accumulator and Add/Subtract at the Demodulator side.
6. Overcoming of Slope Overload distortion occurred in
7. Delta Modulation by the generation of variable step size.
8. Analyze the final Adaptive Delta demodulated output with Second order Low Pass Butterworth filter.

Sigma Delta First Order

1. Sigma Delta Modulation of the First order.
2. Sigma output after the summation of two signals.
3. Integrator output by varying the Sampling frequency.
4. Single bit PCM output at the Sigma Delta Modulator.
5. Sigma Delta Demodulation of First order.
6. Decimator filter output at the Demodulator by varying the position of the clock enable switch.
7. Analyze the final Sigma Delta Demodulation output with Second order Low Pass Butterworth filter at the given test point.

Sigma Delta Second Order

1. Sigma Delta Modulation of Second order.
2. First order Sigma output .
3. Second order Sigma output.
4. Integrator output by varying the Sampling frequency.
5. Single bit PCM output at the Sigma Delta Modulator.
6. Sigma Delta Demodulation of Second order.
7. Decimator filter output at the Demodulator by varying the position of the clock enable switch.
8. Analyze the final Sigma Delta Demodulation of Second order output with Second order Low Pass Butterworth filter.

Transmission effects

1. Attenuator effect.
2. Filter effect.
3. Noise effect by varying the noise level.

Note: Specifications are subject to change.

12.02.2024
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Technical Specifications

Modulation & Demodulation

Techniques	:	Delta
	:	Adaptive Delta
	:	Sigma Delta First order
	:	Sigma Delta Second order
Internal Signal Generator	:	Direct Digital Synthesizer
Types of Signal	:	Sine, Square, Triangle, Arbitrary signals
Frequency	:	500Hz, 1KHz, 2KHz, 3KHz

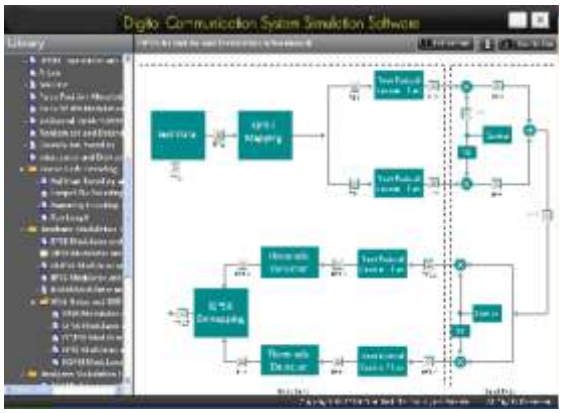
External Signal :

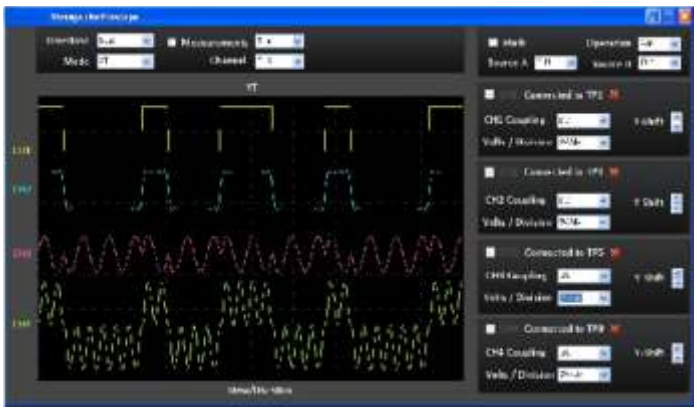
Types of Signal	:	Sine, Square, Triangle, Arbitrary signals
Maximum Input Voltage	:	3Vpp (Max.) +1.5V DC offset
Frequency	:	500Hz to 3.5KHz
SMD LED Indicators	:	48 nos for DDS signal selection DDS signal frequency selection Sampling selection Technique selection Interconnect path
Transmission Effect	:	Attenuation (7dB & 10dB) Noise Filter
Crystal Frequency	:	8MHz
Sampling Frequencies	:	16KHz, 32KHz, 64KHz, 128KHz, 256KHz
Integrator step	:	Normal & 3 times
Selection Mode	:	Push switches
Number of Test Points	:	46 nos
Low Pass Filter	:	Cut-off frequency-5KHz
Digital Filter	:	Decimation filter (16:1)
Dimensions (mm)	:	W 326 x D 252 x H 52
Power Supply	:	110V - 260V AC, 50/60Hz
Weight	:	1.5Kg (Approximately)
Operating Conditions	:	0-40oC, 85% RH
Included accessories	:	2mm Patch cord - 2nos

Simtel 11 - Digital Communication Interactive Software (optional)

Topics

- Source: Signal Source, Pulse Generator, Data Generator, Delay
- Math Operations: Adder, Subtractor, Multiplier
- Natural and Flattop Sampling
- Line Encoding and Decoding
- Adaptive Modulator and Demodulator





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