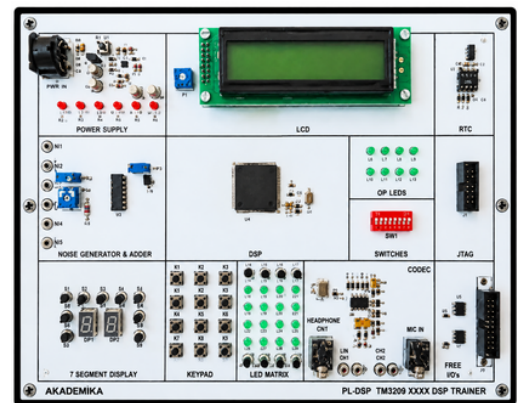


PL-DSP

TMS320C6745-Based DSP Trainer Kit



FEATURES

- This DSP trainer kit uses Texas Instruments
- TMS320C6745 DSP chip a 375 MHz device delivering up to 3648 million instructions per second (MIPs) and 2736 MFLOPS
- This DSP Trainer is specifically designed in a modular and user friendly format with many on board interfaces.
- On board clock generator
- White noise generator
- signal and noise adder
- Power : Regulated supply
- Test points : For important signals and power rails

SPECIFICATIONS

HARDWARE

- JTAG supported via USB
- TLV320AIC23B programmable stereo codec
- Two 3.5mm audio jacks for microphone and speaker
- Expansion port for plug-in modules
- Power supply : +5V, $\pm 12V$, GND
- 8 DIP switches for inputs and 8 LED indication for output
- Provision for manual Reset
- On board 4*4 LED matrix
- On board White noise source of amplitude 0 – 5Vpp
- On board 20*2 character LCD display
- On board 7 segment displays
- On board RTC interface : I2C based RTC section
- On board Phone keypad : 0 to 9 digits and *, # characters
- Code composer studio for the TMS320C6745 is included

SOFTWARE

- **Code Composer Studio (CCS)** : Code Composer Studio (CCS) is an integrated development environment (IDE) created by Texas Instruments (TI) to help write, build, and debug programs for their digital signal processors (DSPs), microcontrollers, and embedded processors

EXPERIMENTS

- To study the architecture of DSP chips – TMS 320c6X instructions
- To verify linear and circular convolution
- To design FIR(LP/HP/BP) filters using windowing technique
 - a) using rectangular window
 - b) using triangular window
 - c) using kaiser window
- To implement IIR(HP/LP/BP) using following window
 - a) Chebyshev filter
 - b) Butterworth filter
- N-point FFT algorithm
- N-point DFT and IDFT of given sequence
- Frequency response of system which is given in transfer function and differential form
- Power spectrum density
- Generation of sine wave
- DFT and IFFT using DIT and DIF methods
- Auto-correlation, cross-correlation and it's property
- Sampling of sine signal
- Amplitude modulation, frequency modulation and FSK modulation
- FIR filter using Blackman and hamming window
- Generation of square wave
- Implementation of decimation, interpolation and I/D sampling rate converter
- Impulse response of 1st and 2nd order system
- Addition and removal of noise
- Spectrogram of audio or sine signal
- Generation of DTMF signals and spectrogram of DTMF signal
- RTC displayed on LCD
- Signal companding using μ -law
- Generation of sinusoidal wave based on recursive differential equation
- Generation of sinusoidal through filtering
- To find the FFT of given signal
- FIR filter using Fourier series expansion method