

Fourier synthesis is a method of electronically constructing a signal with a specific, desired periodic waveform. It works by combining a sine wave signal and sine wave or cosine-wave harmonics (signals at multiples of the lowest, or fundamental, frequency) in certain proportions. The scheme gets its name from a French mathematician and physicist named Jean Baptiste Joseph Baron de Fourier, who lived during the 18th and 19th centuries.

ST2603, a unique VLSI based Fourier Synthesis trainer used to generate the waveform using harmonics. It is very useful in communication and DSP lab. Generation of standard time domain wave forms like Square, Sawtooth, Triangle, Half sine wave, Absolute value sine wave, Modulated waveform etc are possible with the help of this training system.



**Technical Specifications**

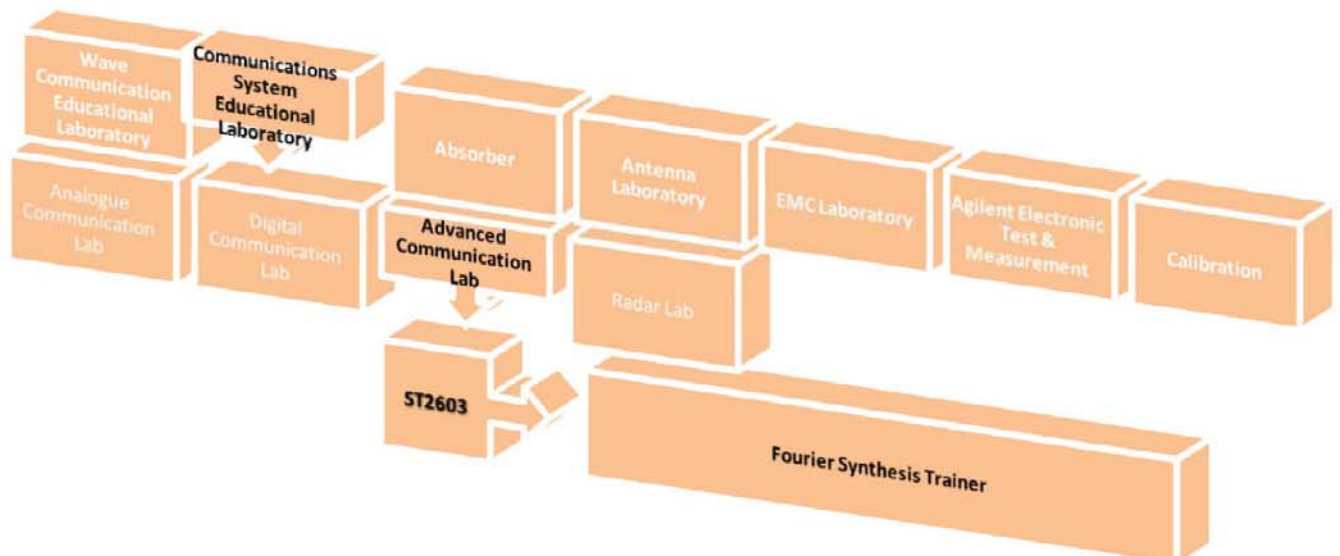
- Harmonic Generation Technique :** Direct Digital Synthesis.
- Eleven Input Summing Amplifier**
- Fundamental Frequency :** 1 KHz.
- Harmonics Generation :** 9 Harmonics, ranges from 2 KHz to 10 KHz.
- Controllable gain for individual frequency component domain.
- Digital Phase control of relative phases between fundamental and harmonics.
- On Board Wave forms :** 0°(sine), 90°(cosine), 180°(-sine), 270°(-cosine).
- Waveform level (max) :** 5V<sub>pp</sub> (Approximately)
- Weight :** 2 Kg (Approximately)
- Dimension (mm) :** W365 × D 260 × H 75
- Mains Supply :** 230V ±10%, 50Hz . 60 Hz on request
- DC constant generation :** -5 V to +5 V (Approximately)

**Hardware**

- ▣ VLSI Based Training System
- ▣ On board digitally synthesized fundamental frequency & harmonics
- ▣ On board DC Generators
- ▣ Digitally controlled select switch for Harmonic
- ▣ LED Indication for selected Harmonic
- ▣ LCD Display for Harmonic measurement
- ▣ Separate BNC for output and selected Harmonic
- ▣ On board Summing Amplifier
- ▣ On board external reset
- ▣ Individual Gain Control for harmonics
- ▣ On board sine, Cosine selection
- ▣ On board Phase reversal provision
- ▣ Built in Power Supply
- ▣ Operating manual for theory & procedure

**Simulation Software (Optional)**

- ▣ It is a revolutionary graphical user interface designed specially to help students understand theoretical and practical aspects of Fourier Synthesis
- ▣ Time domain and Frequency Domain Analysis of complex waveforms
- ▣ Individual Harmonic analysis of a complex waveform (in terms of voltage and frequency)
- ▣ Mathematical representation of Complex Waveforms
- ▣ Integration of Standard Waveforms (Sine, Cosine, Sawtooth, Square, Triangular, Absolute sine, Half sine, Amplitude Modulation)
- ▣ Utilities (New, Save, Load, Print, Color Selection tool, Manual, Zoom)
- ▣ Effect of phase shift of frequency domain components on time domain synthesis of standard waveforms (slope inversion in ramp waveform)

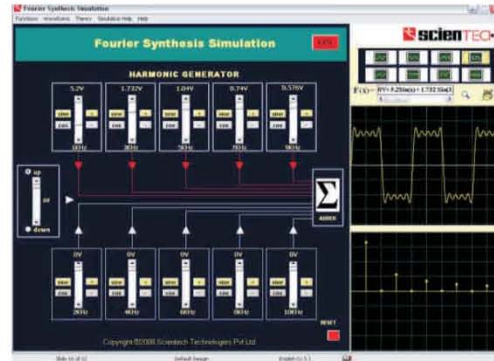


### Scope of Learning

- To construct Triangular wave with the help of fundamental frequency and its harmonic component
- To construct Saw-tooth wave with the help of fundamental frequency and its harmonic component
- To construct Square wave with the help of fundamental frequency and its harmonic component
- To construct Half sine wave with the help of fundamental frequency and its harmonic component
- To construct Absolute value sine wave with the help of fundamental frequency and its harmonic component
- To construct Amplitude Modulated wave with the help of fundamental frequency and its harmonic component

and many more.....

### Software Results



### Included Accessories

Mains Cord	1 No.
BNC to BNC Cable (Male-Male)	1 No.
Simulation Software (Optional)	1 No.
e- Manual CD	1 No.

### Analog Results

