# Know Your Arbitrary Waveform Generator

**TESCA™**
**Tesca Technologies Pvt. Ltd.**

Analog Output
↑

**Reconstruction Lowpass Filter**
↑
**Digital-to-Analog Converter (DAC)**
↑
**Numerically-Controlled Oscillator (NCO)**
↑
**Frequency Control Register**

**Reference Oscillator**

**Direct Digital Synthesis** is a powerful technique used for creating Signal and Arbitrary Waveforms.

**Direct Digital Synthersizer (DDS)** is a type of frequency synthesizer used for creating waveforms from a single, fixed-frequency reference clock.

DDS consists of a frequency reference (normally a crystal or SAW oscillator), a numerically-controlled oscillator, a digital-to-analog converter (DAC) and reconstruction filter (as shown in the block diagram).

**Applications of DDS:** Signal Generation Local Oscillators in Communication systems, Function Generators, Mixers, Modulators, Sound Synthesizers and as part of a Digital Phase-Locked Loop.

**Advantage of DDS:** Its output frequency, phase and amplitude can be precisely and rapidly manipulated under digital processing section. It's ability to tune with extremely fine frequency and phase resolution, and rapidly "hop" between frequencies.
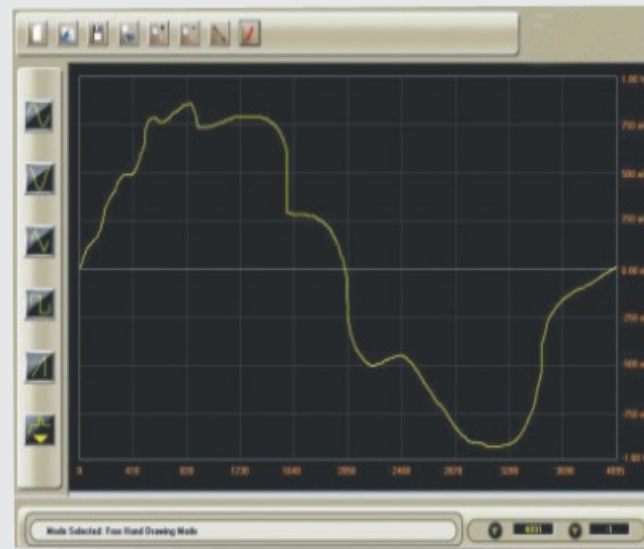
**Arbitrary Waveform Generator (AWG):** is a highly flexible signal source that generates any arbitrary waveform that has been constructed in digital memory point-by-point by using customized software. The constructed waveform is than converted to an analog signal using DAC.

Based on Direct Digital Synthesis (DDS) technique
Low distortion Sine wave & Quare wave with fast rise & fall time
10MHz Sine & 4MHz Square waveforms
Pulse, Ramp, Triangle, Noise and DC waveforms
More that 25 built-in Arbitrary Waveforms
10 Bits 100M Sa/s, 5K points Arbitrary waves
Internal Modulation AM, FM, and FSK
Sweep and Burst operation
10m Vpp to 20Vpp output (Open Circuit)
Memory Creator Software
Rs22 Interface
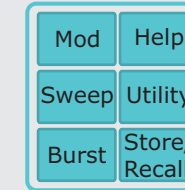
## Waveforms Creator Software

Is a customized software which can be sued to create any customized periodic waveform by using Pen or line or by combining standard shapes available in the software. Once stored this software. Once stored this waveform can be recalled at any repetition rate.
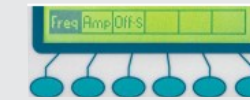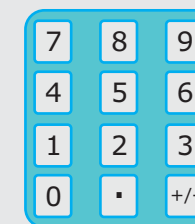
## Front Panel Controls

**Power :** Mains switch on the rear side when pressed energizes the instrument. When front panel Power is pressed the stand by mode gets released and instrument becomes active.

| Mod | Help |
| Sweep | Utility |
| Burst | Store/Recall |

Menu function Key
Mod: To select modulation mode.
Utility : To select software mode
Store/Recall: For control panel settings.

Help: For help menu
Sweep : To select sweep mode.
Burst: To select burst mode.

**Menu Selection Switches**
Select menu for each function.

**Keypad block**
For entering decimal values of Frequency, Amplitude, Offset etc.

**LCD Display**
Graphical backlit liquid crystal display for displaying the selected values and wave shapes.

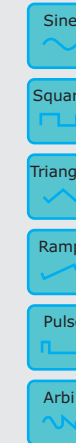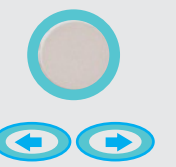**Output**

**BNC Connector**
For taking Output from the generator

**ON/Off**
Switch to On/Off output waveform from BNC

**Function selection Keys**

**Sine:** To select sine wave output
**Square:** To select Square wave output
**Triangle:** To select triangle wave output
**Ramp:** To select ramp wave output
**Pulse:** To select pulse waveform output
**Arbi:** To select Arbitrary waveform output

**Encoder:**
To increase / decrease select variables using encoder & cursor keys (Left or Right)

## Waveforms

| Sine | Square | Triangular | Alternate Attenuation | ECG | Exponential Fall | AM | FM | Burst |

| 10404 | 17023 | 17028 | 17031 | 17035 | 17090 | 17501 | 17716C |
| Klystron Microwave Test Bench | Function generator | Function generator 0.1Hz-2MHz with AM/FM | Function generator 0.3Hz-3MHz | DDS Function Generator 40MHz | Digital Storage Oscilloscope | Pocket Analyzer Student version | Power and Harmonics Analyzer |