

## Model 2714A

ARBITRARY WAVEFORM GENERATORS

- **0.1S/s to 20MS/s Adjustable Sample Rate**
- **12-bit (0.025%) Resolution**
- **Sync Trigger Output for Multi-Phase Operation**
- **Waveform Creation Software Included**
- **10 Standard Waveforms**
- **128k Waveform Memory**
- **Stores 100 Custom Waveforms**
- **0.06% Waveform Distortion**
- **RS-232C and GPIB**
- **Options**
  - **100 Step Sequence Generator**
  - **Rack Mount Kit**

### Signal Integrity

Waveforms are always consistent and repeatable because the 2714A is a true arbitrary waveform generator. It uses the raster scan technique with sequential addressing of waveform memory and a variable sample clock rate to adjust the output frequency. Other generators use phase accumulator-based addressing, which can skip or repeat waveform data points. The typical THD (total harmonic distortion plus noise) of the 2714A is -65 dB. No other arbitrary waveform generator matches the 2714A's price and performance.



Prices and specifications subject to change without notice.

## Low Cost AWG with Extended Memory

### Comprehensive Features

High-quality signal production and true arbitrary waveform generation make the 2714A an unmatched combination of price and performance for high sample rate, extended memory applications. The 2714A offers 12-bit vertical resolution with over 128k of horizontal memory. It has a variable sample rate that ranges from 0.1S/s to 20MS/s. This product is ideal for testing I and Q modulation profiles, radar or sonar simulations, complex electromagnetic simulation, ultrasound detector emulation, and a host of other applications.

### Multiple Unit Operation

Each 2714A is equipped with a synchronous trigger output. The synchronous output allows external instruments, including two or more 2714A units, to be hardware triggered by a master 2714A unit. This produces multiple-phase signals with highly accurate phase offsets. Because the 2714A uses the raster scan technique and sequential addressing, there is no need to recalibrate phase offsets every time a frequency change is made. DDS-type generators require this recalibration.

### Systems Ready

The Model 2714A is a low cost version of the Model 2414B. It has the same basic performance capabilities but is designed specifically

for systems applications where low cost and performance are valued higher than extended front panel functions. 2714A includes standard RS-232C and GPIB interfaces. WaveWorks™ Jr., wave creation software is also provided at no additional charge. Three multi-phase modes are available to synchronize multiple units for phase-sensitive applications.

### Function Generator Operation

Direct front panel access to 10 standard waveforms with adjustable parameters provides function generator operation for basic lab use. For test applications where custom signals are required, up to 100 user-defined waveforms may be stored in waveform memory. The waveforms may be recalled via the 2714A's front panel or the included WaveWorks™ Jr. wave creation software.

### Effective User Tools

Leverage the 2714A's memory capabilities by adding an optional sequence generator. Each sequence program can have up to 100 steps, which can link to any of the 2714A's 100 user-defined waveforms. Each waveform may be looped over one million times per step. Ten unique programs may be stored in the sequencer's non-volatile memory to produce transient-free output waveforms.

WaveWorks™ Jr. is a complete software solution for importing, exporting, creating, and editing waveform data in the common ASCII formats .CSV, and .PRN. Windows™ compatible, it allows full programming access to both the instrument and the sequence generator. WaveWorks Pro+™, advanced wave creation software, is available as an upgrade. See the WaveWorks Pro+™ data sheet for more details.

### Warranty

The Model 2714A is backed by a full 3-year warranty and TEGAM's 30-day no risk trial.

**TEGAM**®

YOUR GLOBAL SOURCE FOR TEST  
AND MEASUREMENT SOLUTIONS

# Model 2714A

LOW COST AWG WITH EXTENDED MEMORY

## Specifications

### Output Waveforms

Up to 100 High-definition custom waveforms, Sine, Square, Triangle, Ramp, DC, Exponential, Haversine, Pulse, Gaussian, Sin x/x (Sinc).

### Waveform

Storage: 100 Waveforms  
Resolution: Horizontal Points: 131,036 max  
Vertical Points: 12 bits, 4,096  
(-2,048 to +2,047)  
Sample Rate: 0.1Hz to 20MHz (10s to 50ns)  
4-digit resolution  
 $\pm 50$ ppm accuracy  
Transition Time: < 20ns  
(Tested with square wave, filter off, 10Vp-p, 50 $\Omega$  termination.)  
Spectral Purity: (THD + Noise): -65 dB typical  
(Tested with 80kHz measurement bandwidth, 20MHz clock, 20 kHz sine wave, 1000 points, filter on, full amplitude, 50 $\Omega$  termination.)

### Amplitude and Offset

Range	Resolution	Accuracy
$\pm 1.00$ to 10V	10mV	1% of setting + 20mV
$\pm 100$ mV to 999mV	1mV	3% of setting + 5mV
$\pm 10$ mV to 99.9mV	100 $\mu$ V	5% of setting + 1mV

Note: 50 $\Omega$  source impedance, measured at open circuit tested with 1 kHz sine wave plus DC offset.

### Analog Filter

User-selectable 7MHz 7th order

### Sequence Generator (Optional)

Waveform: Transient-free Loop-and-Link  
Repetitions: Loop: 1,048,575 times  
Link: 100 waveforms  
Program: 100 Steps total  
File: 10 Sequences

### Operational Modes

Continuous: Output runs continuously between selected memory address locations.  
Triggered: Output at start point until triggered, then runs once.  
Gated: As triggered except output is continuous until gate signal ends.  
Burst: Each trigger outputs a preprogrammed number of waveforms from 1 to 1,048,575.  
Toggled: Alternate triggers gate the output waveform.  
Master-Slave: For multi-unit operation.  
Cont-Sync: Multiple units run continuously in sync with the master unit.  
Trig-Sync: Multiple units run in sync with the master unit for one cycle when the master unit is triggered.  
Trig-Seq: A tail-chasing mode between the master and the slave unit initiated by triggering the master unit.

### Outputs

Main Output: Front-panel/50 $\Omega$  impedance.  
Sync Output: Front-panel TTL sync output, 50 $\Omega$  impedance.  
Clock Out: Rear panel AWG waveform sample clock output (TTL). X2 sample clock.  
Reference Out: Rear panel internal 10MHz reference output (TTL).  
Sync Trigger Out: Rear-panel BNC (TTL) for multiple unit operation.

### Inputs

TRIG IN: Rear-panel TTL trigger input for triggered, gated, toggled, burst, and master slave modes.  
CLOCK IN: Rear-panel sample clock input (TTL,  $\leq$  20MHz).  
REF IN: Rear-panel 10 MHz reference input. The internal crystal-controlled oscillator will phase-lock to the input.

### Trigger Sources

Manual Trigger: Front-panel button  
Ext. Trigger Input: Rear-panel BNC connector

### Creation Tools

WaveWorks™Jr. for Windows™

Operating System: Windows 95, 98, XP, & 2000.  
PC Requirements: 486DX or better with 4MB RAM.  
Interfaces: COM port or National Instruments AT-GPIB card or equivalent.

Standard Functions: 21  
Math Operation: 6 Operators, 12 Transfer Functions  
Sequence Creation: Optional hardware required  
Waveform Analysis:  
Frequency Domain: FFT and IFFT; up to 500th harmonic, graphic display, and tabulation.  
Time Domain: Waveform and digital pattern.  
Edit: Point, Vertex, and Harmonics (FFT and IFFT).

### Computer Interface

RS-232C: 19.2k Baud, max.  
GPIB: IEEE Std. 488.2-1987

### General

Temperature Range: 73.4°F  $\pm$  5.4°F (23°C  $\pm$  3°C) for specified accuracy  
Operates: 32°F to 122°F (0°C to +50°C)  
Storage: -4°F to 140°F (-20°C to +60°C)  
Dimensions: 10.14" X 4.53" X 11.81"  
(25.8 X 11.5 X 30 cm) W x H x D  
Weight: 11 lbs (5.0kg)  
Power: 55VA; 45W (max)  
100/120/220/240VAC, +5%, -10%; 48 to 63Hz.

This data sheet was current when it was produced. However, products are constantly being updated and improved. Because of this some differences may occur between the descriptions herein and the current product. Prices and specifications may be changed without notice.



YOUR GLOBAL SOURCE FOR TEST  
AND MEASUREMENT SOLUTIONS

TEN TEGAM WAY • GENEVA, OHIO 44041  
440-466-6100 • FAX 440-466-6110  
www.tegam.com • e-mail: sales@tegam.com