

20MS/s Arbitrary Waveform Generator

2414B

■ High-Fidelity Waveform Generator

- 128k Waveform Memory
- 1000 Waveforms, 12-bit Resolution
- 4 Programmable Sync Outputs

■ Systems-Ready

- RS-232 and GPIB (optional)
- Cursor-controlled Front Panel

■ Complete Set of Tools

- Front-panel Waveform-editing Tools
- Waveform Creation Software (optional)
- Expanded, 4096-Step Sequence Generator (optional)

■ Value and Outstanding Support

- Best Value and Superb Technical Assistance



Comprehensive Features

For outstanding memory capability, up to 20MS/s and 128k point active memory, the 2414B is the clear choice. Up to 1000 waveforms with 12-bit vertical resolution offers excellent waveform definition. Use the optional WaveWorks Pro Plus software to create, modify or import your application waveform files. For instant recall, store all your waveforms in nonvolatile memory. Front panel editing, flexible waveform manipulation, store and recall settings make the 2414B easy to use. Whatever the application, be it microminiature machine stimulation, complex sonar signals, laser beam control, automotive power simulation, or conventional signal generation, the 2414B will serve your needs.

Extensive User Tools

Ready for instant use are 20 standard waveforms which provide function generator simplicity. All 1000 user-defined waveforms are available for direct playback and editing from the front panel. Complete memory partitioning freedom assures optimal

use of the memory and provides excellent time resolution. The sequence generator will store up to 100 predefined sequence programs making use of the 4096 program steps and the loop-and-link routines. WaveWorks Pro Plus provides 31 standard waveforms and a full complement of waveform computational features. The software offers sequence programming, FFT and IFFT capability allowing for both time- and frequency-domain synthesis.

Signal Integrity

The raster scan technique using sequential addressing of waveform memory in the 2414B guarantees consistent and repeatable output waveforms. Other generators using phase accumulator based addressing produce precession and inaccurate successive scans and result in signal jitter. Phase-shifted and amplitude-varied waveforms used in complicated sequences are easily generated with the 2414B.

System Compatibility

The RS-232C serial port offers a direct,

easy programming capability. GPIB, IEEE-488.2 remote control interface is optional and is a higher speed, more sophisticated interface. For convenience, WaveWorks Pro Plus is functional in both interfaces. Multiple units may be synchronized to obtain coherent signals using the available trigger and timing inputs.

Performance and value

Large memory, versatile waveform partitioning, extensive waveform creation system and a reasonable price make the 2414B an industry leader. Beyond the value of our products, Pragmatic offers its customers readily available, high-quality technical support, before and after the sale. We pride ourselves on responding personally to all questions when you call. Our phone, fax and e-mail are available 24 hours or just visit our website for both company and product information.

To provide an effective solution for your application is our highest priority.

PRAGMATIC[®]
INSTRUMENTS, INC.



Tel: (858) 271-6770 Web: <http://www.pragmatic.com>
Fax: (858) 271-9567 E-mail: awgsales@pragmatic.com

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Output Waveforms

Up to 1000 custom waveforms, Sine, Square, Triangle, ±Sawtooth, DC, ±Pulse, ±Exponential, AM, SCM, FM, Lin/Log Sweep, Sin x/x (Sinc), Gaussian, Haversine, Circle, Noise. 4 programmable sync signals per waveform.

Sequence Generator (Optional)

Waveform: Transient-free Loop-and-Link
Repetitions: Loop: 1,048,575 times Link: 1000 waveforms
Program: 4096 Steps total
File: 100 Sequences

Waveform Memory

Storage: 1000 waveforms
Horizontal Resolution: 128k (131,040 points) max.
Vertical Resolution: 12 bits; 4096 points (+ 2047, -2048).

Waveform Sampling Rate

Range: 0.1 Hz to 20MHz (10s to 50ns).
Resolution: 4 1/2 digits
Accuracy: ±10ppm

Waveform Transition Time

Less than 20ns
(Tested with squarewave, filter off, 10Vp-p, 50Ω termination.)

Spectral Purity

THD + Noise: typically below 65dB (20kHz sinewave).
(Tested with 80kHz measurement bandwidth, 20MHz clock, sinewave, 1000 points, filter on, full amplitude, 50Ω termination.)

Amplitude and Offset

Range	Resolution	Accuracy
±1.00 to 10V	10mV	1% of setting + 20mV
±100mV to 999mV	1mV	3% of setting + 5mV
±10mV to 99.9mV	100μV	5% of setting + 1mV

Note: 50Ω source impedance, measured at open circuit tested with 1 kHz sinewave plus DC offset.

Analog Filter

User-selectable 7MHz, 7th order low-pass filter.

Operational Modes

Continuous, Triggered, Gated, Burst (1 to 1,048,575), Toggled, Hold, RTS (Return to start).

Outputs

OUTPUT: Front-panel main waveform outputs. 50Ω impedance.

Sync Outputs: All fully programmable.

SYNC OUT: Front-panel (TTL). Also, one address and width programmable. (50Ω)

SYNC 2 OUT: Rear-panel BNC (TTL).

SYNC 3 OUT: Rear-panel BNC (TTL). Also, RUN OUT.

SYNC 4 OUT: Rear-panel BNC (TTL). Also, END BLOCK OUT.

CLOCKIN/OUT: Rear-panel waveform sample clock input or output (TTL).

REFIN/OUT: Rear-panel internal 10MHz reference output or external 10MHz input (TTL).

Sync Trigger Out: Rear-panel BNC (TTL) for multiple unit operation.

Inputs

SUMIN: Front-panel input allows external signal to be added to output. Gain = -2 open circuit and -1 with 50Ω output termination and 50Ω input impedance.

TRIGIN: Rear-panel TTL trigger input for triggered, gated, toggled, and burst modes.

CLOCKIN: Rear-panel sample clock input (TTL, ≤20MHz).

REFIN: Rear-panel 10 MHz reference input. The internal crystal-controlled oscillator will phase-lock to the input.

HOLDIN: Rear-panel TTL input to stop waveform.

RTSIN: Rear-panel TTL input to initiate RTS mode.

Trigger Sources

Internal Trigger Generator: 0.02 to 10 seconds.
Manual Trigger: Front-panel button.
External Trigger Input: Rear-panel BNC connector.

Creation Tools

Waveform Editing: Point Mode, Line Mode, Vertex Mode; Insert Function, Sum Function, Dump Function, Digital Amplitude/Offset, Smooth, Copy/Paste, Waveform Math (A+B, A-B, AxB).

Pointing Device: Front-panel keys and knob.
Waveform Software: WaveWorks Pro+ (optional)

Stored Settings

Setups: 20 settings

Computer Interface

RS-232C: 19.2 kBaud, max.
GPIO: IEEE Std. 488.2-1987 (Optional)

General

Temperature Range: +23°C +/-3°C for specified operation. Operates 0°C to +50°C.
Storage: -20°C to +60°C
Dimensions: 11.5cm (4.53 in.) H; 25.8cm (10.14 in.) W; 30cm (11.81 in.) D.
Weight: 5.0kg (11 lbs)
Power: 55VA; 45W (max) 100/120/220/240 VAC, +5%, -10%; 48 to 63Hz.

Weight and dimensions are approximate. Errors and omissions excepted. Prices and specifications subject to change without notice.

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INSTRUMENTS, INC.

7313 Carroll Road, San Diego, CA 92121-2319 USA Tel: (858) 271-6770, Fax: (858) 271-9567
Toll Free (800) PRAGMATIC or (800) 772-4628
E-mail: awgsales@pragmatic.com, Web: http://www.pragmatic.com