

2MHz Arbitrary Waveform Generator

2201A

Output

Channels: Three

Waveform: High Definition ARB, Standard, Composite.

Waveform Resolution

Horizontal Resolution: Up to 65,536 points/channel; 196,608 points max.

Vertical Resolution: 16 bits; 65,536 points ($\pm 32,767$).

Waveform Sampling Rate

Range: 0.1 Hz to 2MHz (10s to 500ns).

Resolution: 4 digits.

Accuracy: ± 50 ppm.

Waveform Rise/Fall Time

Less than 150ns, tested with square wave, filter off, 10Vp-p. 50 Ω termination.

Spectral Purity

THD + Noise: Typically below 86dB in 80kHz measurement bandwidth. Tested at 2MHz clock, sine wave, 2000 points (1kHz), filter on, full amplitude, 50 Ω termination.

Amplitude and Offset

Range	Resolution	Accuracy
± 1.00 -10.20V	10mV	2% of setting +30mV
± 100 mV-999mV	1 mV	5% of setting +50 μ V
± 10 mV-99.9mV	100 μ V	10% of setting +1 mV

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

Analog Filter

User selectable, 700kHz, 9th-order Butterworth low-pass filter.

Operational Modes

Continuous: Output runs continuously between selected memory address locations.

Triggered: Output at start point until triggered by front panel pushbutton, external signal or inter channel trigger signal; then runs once between programmed start and stop points.

Gated: As triggered, except output is continuous until gate signal ends. (Entire addressed waveform is always completed.)

Toggled: Alternate triggers (internal or external) gate the output waveform.

Burst: Each trigger outputs a pre-programmed number of waveforms from 1 to 1,048,575.

Hold: Front panel button or external signal stops waveform at present memory location while applying.

Step: Output signal stops at pre-programmed break points (up to 20). Trigger advances signal to next break point.

RTS: Front panel button or external signal interrupts the output waveform and ramps the output level back to the beginning level.

Noise Generator

Type: Pseudo-random sequence analog and digital noise.

Clock Frequency: Internal; 500kHz, 1MHz, 2MHz, 5MHz or ARB clock. External ≤ 5 MHz.

Noise Sequence Length: $2^N - 1$ where N=10, 15, 20, 25 or 30.

Amplitude Range: 2.58V rms maximum with 1 to 10V range of channel 1 output. Dynamic range ≥ 80 dB with ≥ 2 digits resolution.

Noise Bandwidth: Maximum noise BW=150kHz.

Noise Outputs (Analog): Front panel connector (600 Ω impedance) or added to channel 1 output.

Noise Outputs (Digital): Rear panel serial and parallel connectors.

Noise Modes: Continuous or gated. Gate signal can be from front panel trigger button, external trigger input or internally from any channel.

Outputs

ARB Outputs: Front panel main waveform outputs. 50 Ω impedance.

Sync Outputs: Front panel TTL sync output for each channel. The address and width of each sync pulse is programmable.

Noise Out: Front panel analog noise output. 600 Ω impedance.

Noise Clock Out: Rear panel TTL output

Noise Out: Rear panel serial TTL noise output.

Noise Word Out: Rear panel parallel TTL noise output.

Waveform Word Out: Rear panel parallel TTL 18-bit waveform data plus sync output for each channel

Clock Out: Rear panel ARB waveform sample clock output (TTL).

10MHz Clock Out: Rear panel internal 10MHz reference output (TTL)

Monitor Scope Outputs: X, Y and Z rear panel outputs. 8 bit resolution each. 250 Ω impedance.

Inputs

Sync In: Front panel input allows external signal to be added to channel 1 output. Gain = open circuit and $\times 1/2$ into 50 Ω .

Trigger Input: Rear panel TTL trigger input for triggered, gated, toggle, burst and step modes

Hold In: Rear panel TTL input to stop waveform.

RTS Input: Rear panel TTL input to initiate RTS mode.

Clock In: Rear panel ARB waveform sample clock input (TTL ≤ 2 MHz).

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

Noise Clock Input: Rear panel TTL clock input (≤ 5 MHz) for noise generator.

Trigger Sources

External Trigger Input: Shared between three channels.

Manual Trigger

Internal Trigger: Configurable.

Remote interfaces

GPIB: IEEE STD. 488.2-1987; SH1, AH1, T6, L4, SR1, RL1, PP0, DC1, DT1, C0, E1.

RS-232C: 19.2kBaud, max.

Accessories

32k RAM Memory Card and Editing Mouse.

General

Temperature Range: $+23^{\circ}\text{C} \pm 3^{\circ}\text{C}$ for specified operation. Operates 0°C to $+50^{\circ}\text{C}$. Storage -20°C to $+60^{\circ}\text{C}$.

Dimensions: 13.3cm (5.25in.) H. 43.2cm (17in.) W: 45.7cm (18in.) D.

Weight: 14.5kg (32lbs)

Power: 100VA; 80W (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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