



WaveStation™ Function/Arbitrary Waveform Generators

Key Features

- High performance with 14-bit, 125 MS/s and 16 kpts
- 2 channels on all models
- Large 3.5" color display for easy waveform preview
- Over 40 built-in arbitrary waveforms
- Linear & Logarithmic sweeps and burst operation
- USB and GPIB connectivity
- Graphical waveform editing software for PC



With 5 basic signal types, and over 40 built-in arbitrary waveforms the WaveStation is a versatile waveform generator. A variety of modulation schemes, intuitive waveform editing software and remote control capabilities, enable versatile waveform generation of waveforms up to 50 MHz. The 3.5" display and simple user interface make it easy to generate a wide range of waveforms.

High Performance and Signal Fidelity

High performance hardware enables WaveStation to create accurate stable waveforms. High sample rate and resolution combined with low jitter and harmonic distortion means waveforms seen on the display are accurately created and outputted by the hardware.

Extensive Waveform Library

Easily create basic sine, square, ramp, pulse, and noise waveforms plus over 40 advanced arbitrary waveforms. Edit waveforms using the WaveStation PC software with point-by-point manual waveform design as well as waveform drawing tools.

Connectivity and Communication

With standard USB and GPIB connectivity it is easy to control WaveStation remotely or integrate it in to a test system. All necessary I/O for synchronization can be accessed on the rear panel. A front panel USB port provides an easy way to save waveforms.

Simple, Fast Waveform Creation

The intuitive front panel provides easy access to waveforms, modulation and operating modes. The large 3.5" display shows all relevant waveform parameters and preview. Included PC software provides a graphical interface for quickly modifying waveforms with point-by-point editing, digital filtering and waveform drawing tools

POWERFUL COMBINATION OF PERFORMANCE AND FLEXIBILITY

1. Dual Output

Two synchronous outputs for additional waveform flexibility and ability to create differential waveforms.

2. 3.5" Color Display

Large display provides a single view to see waveform preview, parameters and menus with a single glance.

3. Waveform Preview

Helpful display provides preview of the waveform to be generated.

4. USB Connectivity

Front panel USB port to quickly save and transfer waveforms.

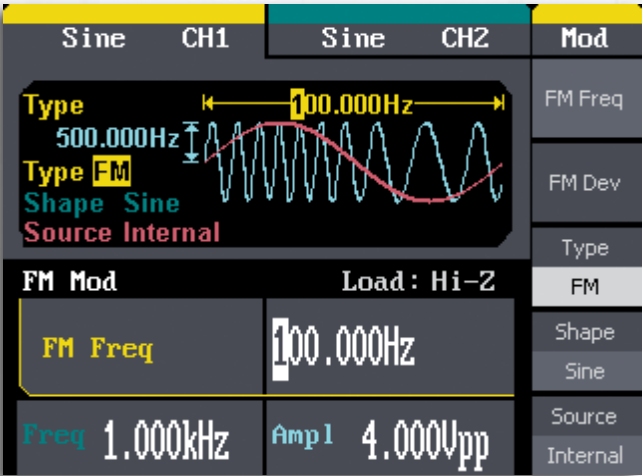
5. Display Menu

Quick access to various parameters with one touch to soft button on the front panel.



Variety of Modulation Schemes

Built-in modulation capabilities include AM, PM, FM, ASK, PSK and FSK. View the modulated waveform on the display and see how it changes when varying the output frequency and carrier waveform.





6. On-Screen Parameter Readout

View all relevant parameters at the same time on a single screen.

7. Quick Waveform Access

Dedicated, backlit buttons for quick access to the most common waveforms.

8. Easy to Use Front Panel

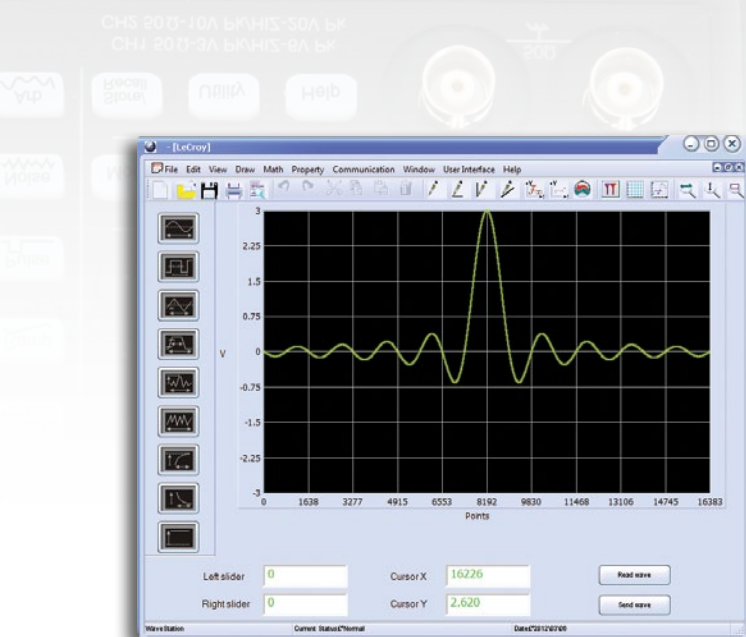
Intuitive front panel allows for quick waveform parameter entry and editing.

9. Adjustable Handle

Easily adjust handle for easy transport, optimal viewing and comfortable use.

10. Connectivity

All necessary I/O for synchronization can be accessed from rear panel.



WaveStation PC software

Easily create and edit waveforms on the PC with mathematical operations, filters, point-by-point editing or draw a waveform with a mouse. Transfer the waveforms to WaveStation over USB and view it on the 3.5" display. Additionally, connecting a LeCroy WaveAce oscilloscope to the same PC enables transferring real world signals from the oscilloscope to the PC and then to the WaveStation.

SPECIFICATIONS

	WaveStation 2012	WaveStation 2022	WaveStation 2052
Bandwidth	10 MHz	25 MHz	50 MHz
Channels	2		
Waveforms	Sine, Square, Ramp, Pulse, Noise, Arbitrary: Stairup, Stairdown, Positive Pulse, Negative Pulse, Up Ramp, Down Ramp, Sinc, Gaussian, LogFall, LogRise, Sqrt, TwoTone, etc		
Waveform Characteristics			
Sine			
Frequency Range	1 μ Hz - 10 MHz	1 μ Hz - 25 MHz	1 μ Hz - 50 MHz
Harmonic Distortion	CH1 / CH2		
DC - 1 MHz	-60 dBc		
1 MHz - 5 MHz	-53 dBc		
5 MHz - 25 MHz	-35 dBc		
25 MHz - 50 MHz	-32 dBc		
Total Harmonic Waveform Distortion	DC - 20 kHz, 1 Vpp < 0.2%		
Spurious Signal (Non-harmonic)	DC - 1 MHz < -70 dBc		
Spurious Signal (Non-harmonic)	1 MHz - 10 MHz < -70 dBc + 6 dB / spectrum phase		
Phase Noise	10 kHz Offset, -108 dBc / Hz (typical value)		
Square			
Frequency Range	1 μ Hz - 10 MHz	1 μ Hz - 25 MHz	
Duty Cycle Range	20% - 80%	50%	
Rise / Fall Time	<12 ns (10% - 90%)		
Overshoot	< 5% (typical, 1 kHz, 1 Vpp)		
Asymmetric (50% Duty Cycle)	1% of period + 20 ns (typical, 1 kHz, 1 Vpp)		
Jitter	0.1% of period (typical, 1 kHz, 1 Vpp)		
Pulse			
Frequency Range	500 μ Hz - 5 MHz		
Duty Cycle Range	0.1 % Resolution		
Rise / Fall Time	7 ns (10% - 90% typical 1 kHz, 1 Vpp)		
Pulse Width	1800 s max 16 ns min 8 ns resolution		
Overshoot	< 5%		
Jitter (pk - pk)	8 ns		
Triangle/Ramp			
Frequency Range	1 μ Hz - 300 kHz		
Ramp Symmetry	0% - 100%		
Linearity	< 0.1% of Peak value output (typical, 1 kHz, 1 Vpp, 100% symmetric)		
Arbitrary Waveforms			
Frequency Range	1 μ Hz - 5 MHz		
Waveform Length	16 kpts / Ch		
Vertical Resolution	14 bits		
Sample Rate	125 MS/s		
Min. Rise / Fall time	7 ns (typical)		
Jitter (pk - pk)	8 ns (typical)		
Storage in Non-volatile RAM memory	10 waveforms		

SPECIFICATIONS

WaveStation 2012

WaveStation 2022

WaveStation 2052

Modulation, Sweep, Burst Capabilities

Amplitude Modulation

Source	Internal / External
Carrier	Sine, Square, Ramp, Arbitrary (except DC)
Modulation Waveform	Sine, Square, Ramp, Arbitrary (2 mHz - 20 kHz)
Modulation Depth	0% - 120%
Modulation Resolution	0.1%
Modulating Waveform Sample Clock @ Max Sampling Rate	3.90625 MHz
Memory Size	4k x 12 bit

Frequency Modulation

Source	Internal / External
Carrier	Sine, Square, Ramp, Arbitrary (except DC)
Modulation Waveform	Sine, Square, Ramp, Arbitrary (2 mHz - 20 kHz)
Frequency Deviation	0 - .5 * BW, 10 uHz resolution
Phase Deviation	0 - 360 deg, .1 deg resolution
Frequency Resolution	1 mHz

FSK Modulation

Source	Internal / External
Carrier	Sine, Square, Ramp, Arbitrary (except DC)
Modulation Waveform	50% duty-cycle square waveform (2 mHz - 50 kHz)

ASK Modulation

Source	Internal / External
Carrier	Sine, Square, Ramp, Arbitrary (except DC)
Modulation Waveform	50% duty-cycle square waveform (2 mHz - 50 kHz)

PWM Modulation

Source	Internal / External
Frequency	500 μ Hz - 20 kHz
Modulation Waveform	Sine, Square, Ramp, Arbitrary (except DC)
External Modulation	-6V to +6V (max without deviation)
Duty Cycle Modulating Frequency	2 mHz - 20 kHz
Duty Cycle Deviation	0% to 100% of Pulse Width, 0.1% resolution

Sweep

Carrier	Sine, Square, Ramp, Arbitrary (except DC)
Type	Linear / Logarithmic
Direction	Up / Down
Sweep Time	1 ms - 500 s
Trigger Source	Manual, External, Internal
Sweep Range @ Max Sample Rate	1 uHz to Bandwidth frequency @ 125 MHz

Burst

Waveform	Sine, Square, Ramp, Arbitrary (except DC)
Type	Count (1 - 50,000 Periods, Infinite, Gated)
Start / Stop Phase	0° - 360°
Internal Period	1 μ s - 500 s
Gated Source	External Trigger
Trigger Source	Manual, External or Internal

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Channel Characteristics

Output Connector	BNC
Output Impedance	50 Ω , High Impedance

External Clock

Input Connector	BNC
Frequency Range	10 MHz $\pm$ 10 0Hz
Min Input Voltage Swing	Input voltage swing range: 3.3 Vpp - 5.5 Vpp

Sync Output

Voltage Level	TTL compatible
Pulse Width	> 50 ns, not adjustable
Output Impedance	50 Ω (typical)
Maximum Frequency	2 MHz

Trigger Output

Voltage Level	TTL compatible
Pulse Width	> 400 ns
Output Impedance	50 Ω (typical)
Maximum Frequency	1 MHz
Output Connector	Through Rear Panel Ext Trig / Gate / FSK / Burst

External Trigger

Trigger Input Level	TTL compatible
Trigger Slope	Up or down (optional)
Trigger Pulse Width	> 100 ns
Trigger Input Impedance	> 5 k Ω , DC coupling
External Modulation	± 6 V = 100% modulation > 5 k Ω input impedance
External Trigger	TTL compatible
Max. Voltage Input	Note: The external input voltage can't be over ± 6 V, otherwise instrument gets damaged
Assignable to Both Channels 1 or 2, 1 AND 2	Ext Trig in: Assignment Channel 1, Channel 2 or Both Ext Trig out: Assignment Channel 1 or Channel 2
Max Frequency	Ext Trig in: 1 MHz Ext Trig out: 1 MHz
Input Latency	< 300 ns
Polarity Selectable	No

General Characteristics

Standard Interface	USB Host, USB Device and GPIB (IEEE 488)
Front Panel Connectors	Output BNC and USB host
Rear Panel Connectors	BNC and USB device
State on Power On/Off	Selectable factory default / last state
Accuracy	Within 90 days $\pm$ 50 ppm within 1 year $\pm$ 100 ppm 18° C ~ 28° C
Temperature Coefficient	< 5 ppm / °C

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General Characteristics (cont'd)

Output	
Amplitude - CH1	2 mVpp - 3 Vpp (50 Ω) 4 mVpp - 6 Vpp (high impedance)
Amplitude - CH2	2 mVpp - 10 Vpp (50 Ω , $\leq$ 10 MHz) 2 mVpp - 5 Vpp (50 Ω , $>$ 10 MHz) 4 mVpp - 20 Vpp (high impedance, $\leq$ 10 MHz) 4 mVpp - 10 Vpp (high impedance, $>$ 10 MHz)
Amplitude Resolution	1 mV
Vertical Accuracy (Compared to 100 kHz sine)	$\pm(0.3 \text{ dB} + 1 \text{ mVpp of setting value})$
Amplitude Flatness (Compared to 100 kHz sine, 5 Vpp)	$\pm 0.3 \text{ dB}$
Cross Talk	$< -70 \text{ dBc}$
Output Current Max - Ch 1 only	$\pm 200 \text{ mA}$
Output Current Max - Ch 2 only	$\pm 60 \text{ mA}$
Output Connector	BNC

DC Offset

Range DC - CH1	$\pm 1.5 \text{ V}$ (50 Ω) $\pm 3 \text{ V}$ (high impedance)
Range (DC) - Ch2	$\pm 5 \text{ V}$ (50 Ω) $\pm 10 \text{ V}$ (high impedance)
Offset Accuracy	$\pm(\text{setting offset value} * 1\% + 3 \text{ mV})$
Resolution	1 mV

Waveform Output

Impedance	50 Ω (typical), short-circuit protection
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Display

Characteristics	3.5 inch TFT-LCD, 320 x 240, RGB
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Physical Characteristics

Dimensions (H x W x D)	105 mm x 229 mm x 281 mm (4.1" x 9.0" x 11.1")
Weight	2.6 kg (5.7 lbs)

Power

Voltage	100 – 240 VAC $\pm 10\%$ at 50 / 60 Hz or 100 – 120 VAC $\pm 10\%$ at 400 Hz
Consumption	50 W Max

Environment

Temperature - Operating	0° C to 40° C
Temperature - Storage	-40° C to +70° C
Humidity Range	5% to 80% relative humidity (non-condensing) up to +31° C Upper limit derates to 50% relative humidity (non-condensing) at +40° C
Altitude - Operation	Up to 10,000 ft. (3,048 m)

Compliance

CE Compliant, UL and cUL listed.

Conforms to EN 61326-1, EN 61010-1, UL 61010-1 2nd edition, and CSA C22.2 No. 61010-1-04.

ORDERING INFORMATION

Product Description

10 MHz, 2 Ch, 14 bit, 125 MS/s Function/Arbitrary Waveform Generator with 3.5" Display
25 MHz, 2 Ch, 14 bit, 125 MS/s Function/Arbitrary Waveform Generator with 3.5" Display
50 MHz, 2 Ch, 14 bit, 125 MS/s Function/Arbitrary Waveform Generator with 3.5" Display

Product Code

WaveStation 2012
WaveStation 2022
WaveStation 2052

Customer Service

LeCroy instruments are designed, built, and tested to ensure high reliability. In the unlikely event you experience difficulties, our waveform generators are fully warranted for three years.

This warranty includes:

- No charge for return shipping
- Long-term 7-year support
- Upgrade to latest software at no charge

For more information, please contact:



1-800-5-LeCroy
www.lecroy.com

Local sales offices are located throughout the world.
Visit our website to find the most convenient location.