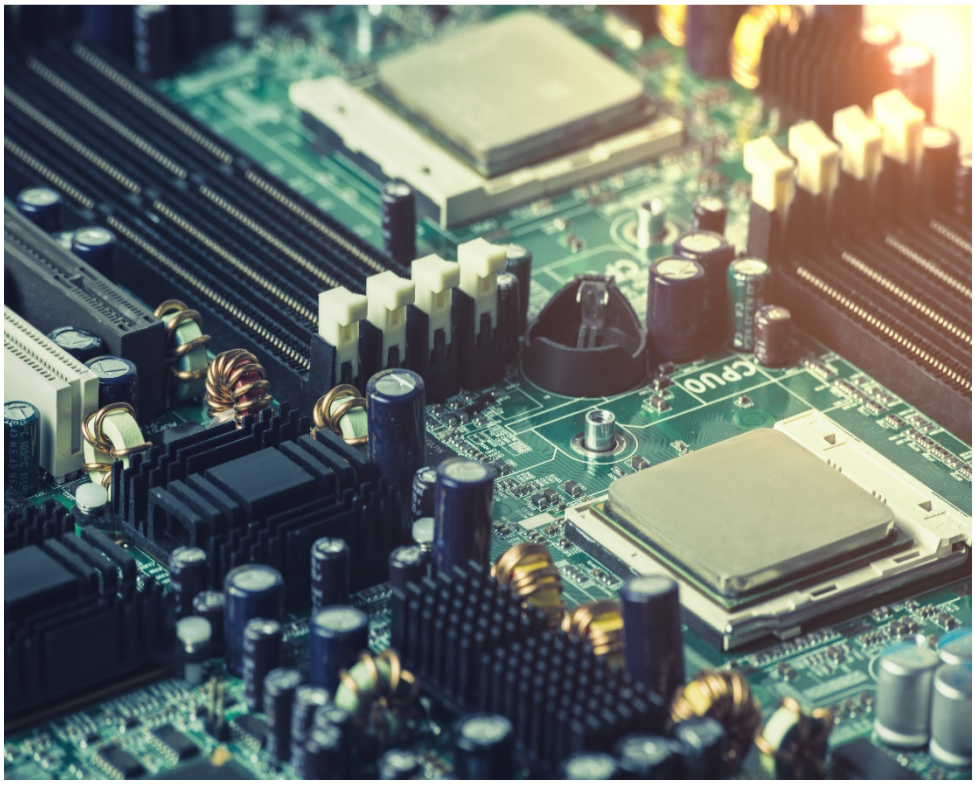
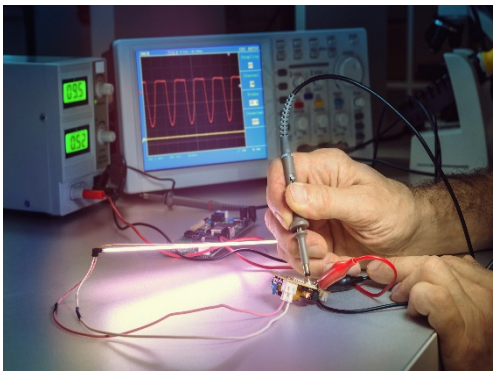
Model 675 | 300 MHz 1.2 GS/s

High Performance Arbitrary Waveform Generator and Data Pattern Generator





Features

- 2, 4 or 8 Analog Channels
- 1.2 GS/s, 14-bit Vertical Resolution
- 300 MHz Bandwidth
- Up to 24 Vp-p Output Voltage and ± 12 V Baseline Offset
- Up to 128 Mpts Waveform Memory per Channel
- Up to 32 Digital Channels in Synchronous with Analog Generation

Applications

- Aerospace and Defense
- Institute and University Research
- Semiconductor Tests
- Automotive
- IoT

Model 675 | 300 MHz 1.2 GS/s
Arbitrary Waveform Generator

Model 675 Arbitrary Waveform Generator

Model 675

Description

The Model 675 is a simple-to-use arbitrary waveform generator that operates on Windows 10 via the TrueArb interface, an intuitive proprietary GUI. TrueArb can easily be navigated via the touch screen or via remote communication supported through a standard Ethernet interface.

The Model 675 comes with a 300MHz arbitrary frequency generator and up to 8 analog channels operating up to 12 Vpp into 50 Ω load impedance. An 32 digital output option is also available with each digital output providing up to a 1.2 Gb/s data rate in LVDS output format. The Model 675 also boasts a 1 S/s (Sample/second) to 1.2 GS/s with 14-bit vertical resolution, providing outstanding signal integrity with a rise time/fall time of less than 2 ns.

Digital output, combined and synchronized with analog output signals, is an ideal diagnostic tool for digital designs. The Model 675 can produce waveforms with a memory length of up to 128 Mpoints on each channel, combined with up to 16,384 sequences and 4,294,967,294 repetitions, making it the ideal generator for the most demanding technical applications.

Model 675 Front

Model 675 Back

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2955 Kerner Blvd, San Rafael, CA 94901 | 800-234-7858

Model 675

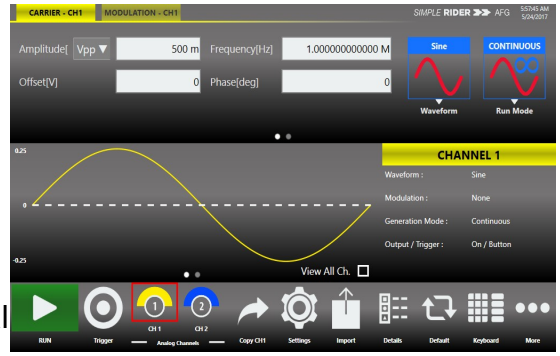
Model 675 User Interface

Simple Rider AFG: Function Generator Mode Interface

Simple Rider AFG UI is designed for touch and it has been developed to put all the capabilities of modern Waveform Generators right at your fingertips. All instrument controls and parameters are accessed through an intuitive UI that recalls the simplicity of Tablets and modern smart phones: touch features and gestures are available to engineers and scientists to create advanced waveforms or digital patterns in few touches.

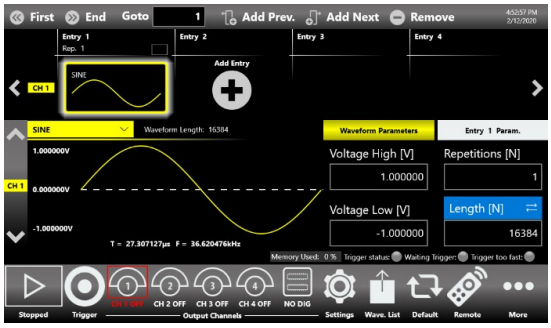
- The swipe gesture gives easy access to the output waveform parameters
- A touch-friendly virtual numeric keypad has been designed to improve the user experience on entering the data.
- Time saving shortcuts and intuitive icons simplify the instrument setup.

Simple Rider TrueArb: AWG and DPG Mode Interface



In **Simple Rider TrueArb** interface, the users can define complex waveforms with up to 16,384 sequence entries of analog waveforms and digital patterns, define their execution flow by means of loops, jumps and conditional branches.

Digital output combined and synchronized with analog output signals represent an ideal tool to troubleshoot and validate digital design. The waveform memory length of up to 4 GSamples on each channel combined with up to 16,384 and up to 4,294,967,294 repetitions, make the Model 675 the ideal generator for the most demanding technical applications.



Thanks to the intuitive and easy waveform sequencer user interface, the most complex waveform scenarios can be created with just few screen touches.

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Model 675

Simple Rider SPG: Serial Pattern Generator (SPG) Mode Interface

The easiest touch screen display interface allows to create patterns scenarios, only in a few screen touches. In summary the Data Pattern Generator provides the capability to generate PRBS patterns and up to 2MSymbols custom patterns where bit transitions can have arbitrarily user defined shapes. The Model 675 Serial Pattern Generator can generate patterns up to 300Mbaud.

The software architecture provides the possibility to easily generate the patterns in different generation modality and also gives the opportunity to modulate the patterns with internal or external signals with the purpose to generate also different effects of noise (jitter, ripple, …).

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Model 675

Model 675 Applications

Automotive

Today's cars are including a lot of highly sophisticated electronic control unit with very sensitive electronic components. The Model 675 combining 1.2 GSa/s with 14-bit vertical resolution, represents an ideal tool for successfully addressing the new testing challenges in automotive.

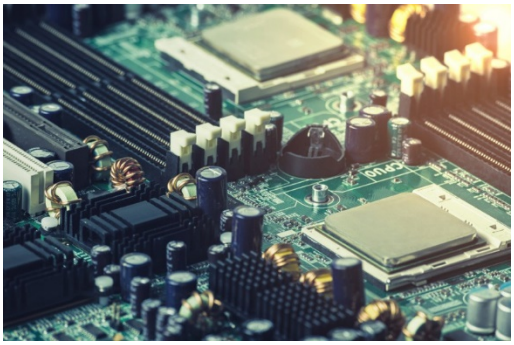
- CAN, CAN-FD,LIN, Flexray,SENT emulation
- EMI debugging, troubleshooting, and testing
- Electrical standards emulation up to 24V
- Power MOSFET circuitry in automotive electronics optimization

IoT and Ind 4.0 Perfect RF Modulator

The Model 675 will be the iconic instrument for this application. The possibility to emulate complex RF I/Q modulation for simulation and Test vs wireless devices or working on Internet of things of industry 4.0 applications. Each engineer may use the possibility to import waveform to emulate devices under test, impose distortion on waveform (such noise) to test the ability of devices to be compliant to the standards.

Semiconductor Testing

Emulation of complex signals generated with inclusion of noise or distortions may became an excellent way to provide Compliance Components Test to help semiconductors engineers. The fast edges and pulse generation can be used to provide characterization in fast power devices.

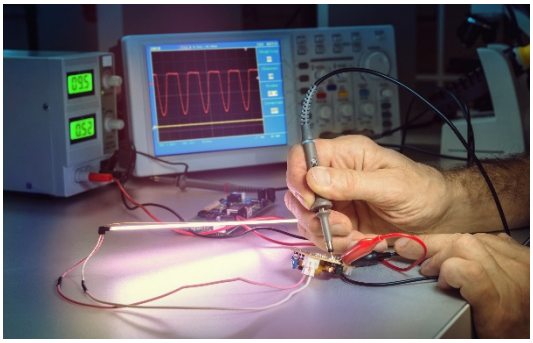


Model 675

Research Applications

Research centers and universities are key users of the Model 675, which can produce complex waveforms, multilevel signals, and pulse emulation based on variable edges. The Model 675's combination of fast edge generation, excellent dynamic range and simple user interface meets the demands of scientists and engineers working on intensive experiments such as accelerators, tokamak, or synchrotrons, to emulate signals without creating specifics test boards.

- Emulation of detectors
- Emulation of signal sources adding noise
- Generation/playback of real-world signals
- Emulation of long PRBS sequences
- Modulating and driving laser diode



Aerospace and Defense applications

The Model 675 works perfectly with electronic warfare signals, such as those produced by Radar or Sonar systems. This generator can also be fitted into a modular system for radio or I/Q signal modulation, as well as create pulses useful in applications such as pulse electron beams, X-ray sources, flash X-ray radiography, lightning pulse simulators, and high power microwave modulators.

- Frequency response, intermodulation distortion and noise-figure measurements
- Phase Locked Loop (PLL) pull-in and hold range characterization
- Radar base-band signals emulation

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Model 675

Model 675 Specifications

All specifications are typical unless noted otherwise. The guaranteed performances are referred to a calibrated instrument that has been stored for a minimum of 2 hours within the operating temperature range of 5°C to 40°C and after a 45-minute warm up period. Within ±10°C after auto-calibration

General Specifications			
Number of Channels	**Model 675-2C**	**Model 675-4C**	**Model 675-8C**
Analog	2	4	8
Digital Out	0/8 optional	0/8/16 optional	0/8/16/32 optional
Marker Out	1	2	4
Operating Mode	AFG Mode True Arb Mode Data Pattern Generator		
Amplitude			
Range (50 Ω into 50 Ω)[1]	0 to 6V_{p-p} (12 V_{p-p} optional)		
Accuracy (1kHz sine wave, 0V offset, > 5mV_{p-p} amplitude, 50Ω load) (guaranteed)	±(1% of setting [V_{p-p}] + 5 mV)		
Resolution	<0.5 mV_{p-p} or 5 digits		
Output impedance	Single-ended: 50 Ω, Low Impedance: 5 Ω		
Baseline Offset			
Range (50 Ω into 50 Ω)	-3 V to +3 V (-6V to +6V opt.)		
Range (50 Ω into High Z load)	-6 V to +6 V (-12V to +12V opt.)		
Accuracy (50 Ω into 50 Ω) (guaranteed)	±(1% of |setting| ±5 mV)		
Resolution	<4 mV or 4 digits		
DC			
Amplitude range (50 Ω, single-ended)	-3V to 3V (-6V to 6V opt.)		
Amplitude accuracy (guaranteed)	±(1% of |setting| + 10 mV)		
AFG Mode Specifications			
Output Channels			
Connectors	BNC on front panel		
Output type	Single-ended		
Output Impedance	50 Ω or 5 Ω (low impedance)		
General Specifications			
Operating mode	DDS mode		
Standard Waveforms	Sine, Square, Pulse, Ramp, more (Noise, DC, Sin(x)/x, Gaussian, Lorentz, Exponential Rise, Exponential Decay, Haversine)		
Run Modes	Continuous, modulation, sweep, burst		
Arbitrary Waveforms	Vertical resolution: 14-bit Waveform length: 16,384 points		
Internal Trigger Timer Range Resolution Accuracy	 13.3 ns to 100 s 104 ps ±(0.1% setting + 5 ps)		

[1] Amplitude doubles on HiZ load

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Sine Waves	
Frequency Range Sine (50 Ω into 50 Ω)[2]	1 µHz to ≤ 70 MHz: 12V >70 MHz to ≤120 MHz: 9V >120 MHz to ≤180 MHz: 6V >180 MHz to ≤300 MHz: 3V (without **HV opt.** the maximum amplitude is limited to 6 V)
Flatness (1 Vp-p, relative to 1 kHz)	DC to 300 MHz: ±0.5 dB
Harmonic Distortion (1 V_{p-p})	1 µHz to ≤ 10 MHz: < -65 dBc > 10 MHz to ≤ 50 MHz: < -55 dBc > 50 MHz to ≤ 100 MHz: < -45 dBc > 100 MHz to ≤ 300 MHz: < -30 dBc
Total Harmonic Distortion (1 V_{p-p})	10 Hz to 20 kHz: < 0.1%
Spurious (1 V_{p-p}) (excluding $f_{Sa} - f_{out}$, $f_{Sa} - 2*f_{out}$)	1 µHz to ≤ 10 MHz: < -60 dBc >10 MHz to ≤ 300 MHz: < -55 dBc
Phase Noise (1 V_{p-p}, 10 kHz offset)	10 MHz: < -120 dBc/Hz typ. 100 MHz: < -115 dBc/Hz typ.
Square Waves	
Frequency Range	1 µHz to ≤ 40 MHz: 12V >40 MHz to ≤80 MHz: 10V >80 MHz to ≤150 MHz: 7V (without **HV opt.** the maximum amplitude is limited to 6 V)
Rise/fall time	2 ns
Overshoot (1 V_{p-p})	< 2%
Jitter (rms)	< 20 ps
Pulse Waves	
Frequency Range	1µHz to ≤ 5 MHz: 12V >5 MHz to ≤60 MHz: 10V >60 MHz to ≤150 MHz: 7V (without **HV opt.** the maximum amplitude is limited to 6 V)
Pulse Width	2.5 ns to (Period – 2.5 ns)
Pulse Width Resolution	20 ps or 15 digits
Pulse Duty Cycle	0% to 100%, 14 digits (limitations of pulse width apply)
Leading/trailing edge transition time	2 ns to 1000 s
Transition time Resolution	2 ps or 15 digits
Overshoot (1 V_{p-p})	< 2%
Jitter (rms, with rise and fall time ≥ 2 ns)	< 20 ps
Double Pulse Waves	
Frequency Range	**Without HV option :** 1µHz to ≤ 5 MHz: 12 V_{p-p} >5 MHz to ≤150 MHz: 6 V_{p-p} where $V_{p-p} =\| V_{p-p}1 \|+\| V_{p-p}2 \|$ **With HV option :** 1 µHz to ≤ 5 MHz: 24 V_{p-p} >5 MHz to ≤60 MHz: 10 V_{p-p} >60 MHz to ≤150 MHz: 7 V_{p-p} where $V_{p-p} =\| V_{p-p}1 \|+\| V_{p-p}2 \|$
Other Pulse Parameters	Same as Pulse Waves
Ramp Waves	
Frequency Range	1 µHz to 15 MHz

[2] Amplitude doubles on HiZ load

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Linearity (< 10 kHz, 1 V_{p-p}, 100%)	≤ 0.1%
Symmetry	0% to 100%
Other Waves	
Frequency Range Exponential Rise, Exponential Decay Sin(x)/x, Gaussian, Lorentz, Haversine	 1 µHz to 15 MHz 1 µHz to 30 MHz
Additive Noise Bandwidth (-3 dB) Level Resolution	 > 200 MHz 0 V to 6 V – | carrier max value [V_{pk}] | 1 mV
Arbitrary	
Number of Samples	2 to 16,384
Frequency range	1 µHz to ≤ 150 MHz
Analog Bandwidth (-3 dB)	175 MHz
Rise/Fall Time	2 ns
Jitter (rms)	< 20 ps
Frequency Resolution	
Sine, square, pulse, arbitrary, Sin(x)/x	1 µHz or 15 digits
Gaussian, Lorentz, Exponential Rise, Exponential Decay, Haversine	1 µHz or 14 digits
Frequency Accuracy	
Non-ARB	±2.0 x 10^{-6} of setting
ARB	±2.0 x 10^{-6} of setting ±1 µHz
Modulations	
Amplitude Modulation (AM)	
Carrier Waveforms	Standard waveforms (except Pulse, DC and Noise), ARB
Modulation Source	Internal or external
Internal Modulating Waveforms	Sine, Square, Ramp, Noise, ARB
Modulating Frequency	Internal: 500 µHz to 48 MHz External: 8 MHz maximum
Depth	0.00% to 120.00%
Frequency Modulation (FM)	
Carrier Waveforms	Standard waveforms (except Pulse, DC and Noise), ARB
Modulation Source	Internal or external
Internal Modulating Waveforms	Sine, Square, Ramp, Noise, ARB
Modulating Frequency	Internal: 500 µHz to 48 MHz External: 8 MHz maximum
Peak Deviation	DC to 300 MHz
Phase Modulation (PM)	
Carrier Waveforms	Standard waveforms (except Pulse, DC and Noise), ARB
Modulation Source	Internal or external
Internal Modulating Waveforms	Sine, Square, Ramp, Noise, ARB
Modulating Frequency	Internal: 500 µHz to 48 MHz External: 8 MHz maximum
Phase Deviation Range	0° to 360°
Frequency Shift Keying (FSK)	
Carrier Waveforms	Standard waveforms (except Pulse, DC and Noise), ARB
Modulation Source	Internal or external

Internal Modulating Waveforms	Square
Key Rate	Internal: 500 µHz to 48 MHz External: 8 MHz maximum
Hop Frequency	1 µHz to 300 MHz
Number of Keys	2
Phase Shift Keying (PSK)	
Carrier Waveforms	Standard waveforms (except Pulse, DC and Noise), ARB
Modulation source	Internal or external
Internal Modulating Waveforms	Square
Key Rate	Internal: 500 µHz to 48 MHz External: 8 MHz maximum
Hop Frequency	0° to +360°
Number of Keys	2
Pulse Width Modulation (PWM)	
Carrier Waveforms	Pulse
Modulation Source	Internal or external
Internal Modulating Waveforms	Sine, Square, Ramp, Noise, ARB
Modulating Frequency	Internal: 500 µHz to 48 MHz External: 8 MHz maximum
Deviation Range	0% to 50% of pulse period
Sweep	
Type	Linear, Logarithmic, staircase, and user defined
Waveforms	Standard waveforms (except Pulse, DC and Noise), ARB
Sweep Time	40 ns to 2000 s
Hold/return Times	0 to (2000 s - 40 ns)
Sweep/Hold/Return Time Resolution	20 ns or 12 digits
Total Sweep Time Accuracy	≤ 0.4%
Start/Stop Frequency Range	Sine: 1 µHz to 300 MHz, Square: 1 µHz to 150 MHz
Trigger Source	Internal (Timer) / External / Manual
Burst	
Waveforms	Standard waveforms (except DC and Noise), ARB
Type	Trigger or gated
Burst Count	1 to 4,294,967,295 cycles or Infinite
True Arb Mode Specifications	
Output Channels	
Connectors	BNC on front panel
Output Type	Single-ended
Output Impedance	50 Ω or 5 Ω (low impedance)
General specifications	
Operating Mode	Variable clock (True Arbitrary)
Run Modes	Continuous, Triggered Continuous, Single/Burst, Stepped, Advanced
Vertical Resolution	14 bit
Waveform Length	16 to 2M samples per channel (675-XC-2M) 16 to 64M samples per channel (675-XC-64M) 16 to 128M samples per channel (675-XC-128M) where X = 2,4 or 8

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Model 675 Arbitrary Waveform Generator

Waveform Granularity	1 if the entry length is >384 samples 16 if entry length is ≥32 and ≤384 samples
Sequence Length	1 to 16,384
Sequence Repeat Counter	1 to 4,294,967,295 or infinite
Timer Range Resolution	 23.52 ns to 7 s ±1 sampling clock period
Analog Channel to Channels skew	
Range	0 to 3.4 us
Resolution	≤ 5 ps
Accuracy	±(1% of setting + 20 ps)
Initial skew	< 200 ps
Calculated bandwidth (0.35 / rise or fall time)	≥ 318 MHz
Harmonic distortion (Sine wave 32 pts, 1 V_{p-p})	< -60 dBc (@ 1.2 GS/s, 37.5 MHz)
Spurious (Sine wave 32 pts, 1 V_{p-p}	< -60 dBc (@ 1.2 GS/s, 37.5 MHz)
SFDR (Sine wave 32 pts, 1 V_{p-p})	< -60 dBc (@ 1.2 GS/s, 37.5 MHz)
Rise/fall time (1 V_{p-p} single-ended 10% to 90%)	≤ 1.1 ns
Overshoot (1 V_{p-p} single-ended)	< 2%
Timing and Clock	
Sampling Rate	
Range	1 Sample/s to 1.2 GSample/s
Resolution	16 Hz
Accuracy	± 2.0 x 10^{-6}
Random jitter on clock pattern (rms)	< 10 ps
Digital outputs (Optional)	
Output Channels	
Connectors	Mini-SAS HD connector on rear panel (Non-standard pinout)
Number of connectors	1
Number of outputs	8-bits
Output impedance	100 Ω differential
Output type	LVDS
Rise/fall time (10% to 90%)	< 1 ns
Jitter (rms)	20 ps
Maximum update rate	1.2 Gbps
Memory depth	2M samples per channel (675-XC-2M) 64M samples per channel (675-XC-64M) 128M samples per channel (675-XC-128M) where X = 2,4 or 8
8 bit LVDS to LVTTL Converter Probe (Optional AT-DLL8)	
Output Connector	20 position 2.54 mm 2 Row IDC Header
Output Type	LVTTL
Output Impedance	50 Ω nominal

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Model 675 Arbitrary Waveform Generator

Model 675

Output Voltage	0.8 V to 3.8 V programmable in group of 8 bits
Maximum Update Rate	125 Mbps@0.8V and 400 Mbps@3.6V
Dimensions	W 2in x H 0.9in x D 3in [52mm x 22mm x 76mm]
Input Connector	Proprietary standard
Cable Length	1 meter
Cable Type	Proprietary standard
Proprietary Mini SAS HD to SMA cable (Optional)	
Output Connector	SMA
Output Type	LVDS
Number of SMA	16 (8 bits)
Cable Type	Proprietary standard
Cable Length	1 meter
Data Pattern Generator (DPG) Specifications	
Output Channels	
Connectors	BNC on front panel
Output type	Single-ended
Output Impedance	50 Ω or 5 Ω (low impedance)
General Specifications	
Operating mode	NRZ bitstream Pattern generator
Pattern types	Clock Pattern, Custom Pattern, PRBS pattern
Run Modes	Continuous, modulation, burst (Triggered, Gated, Continuous triggered)
Internal Trigger Timer Range Resolution Accuracy	 13.3 ns to 100 s 104 ps ±(0.1% setting + 5 ps)
Transition Specifications	
Transition peculiarity	Arbitrarily user defined transition shapes Programmable duration for any transition
Transitions types	Arbitrary, predefined
Transitions memory length	64 points
Predefined transition Shapes	Sine, Square, Pulse, Ramp_up, Ramp_down, DC, Sin(x)/x, Gaussian, Lorentz, Exponential Rise, Exponential Decay, Haversine
Transition duration[0-100%]	1.5ns to Symbol duration for Custom and PRBS pattern 1.5ns to Period/2 for Clock Pattern
Clock Pattern	
Max clock pattern frequency	150 MHz
Pattern levels	2 levels
Overshoot (1 V_{p-p})	< 2%
Jitter (rms)	< 20 ps
Custom Pattern	
Max custom pattern rate	Up to 300 Mbaud
Pattern levels	2, 3 or 4 levels

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Predefined custom patterns	Zero, one, clock, counter
Pattern memory	Up to 2 MBit (2 levels) Up to 1 MSymbols (3 or 4 levels)
Pattern length resolution	1 bit
Min pattern length	4 bits
Overshoot (1 V_{p-p})	< 2%
PRBS Pattern	
Max PRBS pattern rate	Up to 300 Mbaud
Pattern levels	2 levels
PRBS types	PRBS -7,9,11,15,23,31
Overshoot (1 V_{p-p})	< 2%
Pattern Modulation	
Amplitude Modulation (AM)	
Carrier patterns	All types
Modulation source	Internal or external
Internal modulating waveforms	Sine, Square, Triangular, Ramp_up, Ramp_down, DC, Sin(x)/x, Gaussian, Lorentz, Exponential Rise, Exponential Decay, Haversine, Noise, ARB
Modulating frequency	Internal: 500 µHz to 48 MHz External: 8 MHz maximum
Depth	0.00% to 120.00%
Frequency Modulation (FM)	
Carrier patterns	All types
Modulation source	Internal or external
Internal modulating waveforms	Sine, Square, Triangular, Ramp_up, Ramp_down, DC, Sin(x)/x, Gaussian, Lorentz, Exponential Rise, Exponential Decay, Haversine, Noise, ARB
Modulating frequency	Internal: 500 µHz to 48 MHz External: 8 MHz maximum
Peak deviation	DC to 300 MSymbols/s
Phase Modulation (PM)	
Carrier patterns	All types
Modulation source	Internal or external
Internal modulating waveforms	Sine, Square, Triangular, Ramp_up, Ramp_down, DC, Sin(x)/x, Gaussian, Lorentz, Exponential Rise, Exponential Decay, Haversine, Noise, ARB
Modulating frequency	Internal: 500 µHz to 48 MHz External: 8 MHz maximum
Peak deviation range	0° to 360°
Frequency Shift Keying (FSK)	
Carrier patterns	All types
Modulation source	Internal or external
Internal modulating waveforms	Square
Key rate	Internal: 500 µHz to 48 MHz External: 8 MHz maximum
Hope Symbol Rate	1uSymbols/s to 300 MSymbols/s for Custom and PRBS pattern 1uHz to 150 MHz for Clock pattern
Number of keys	2
Phase Shift Keying (PSK)	
Carrier patterns	All types
Modulation source	Internal or external

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Internal modulating waveforms	Square
Key rate	Internal: 500 µHz to 48 MHz External: 8 MHz maximum
Hope phase	0° to +360°
Number of keys	2
Burst	
Patterns	All types
Type	Block mode or Bit mode
Burst count	1 to 4,294,967,295 cycles or Infinite
Auxiliary Input and Output Characteristics	
Marker Output	
Connectors	BNC on front panel
Number of Connectors	1, 2 or 4
Output Impedance	50 Ω
Output level (into 50 Ω)	
Amplitude	1 V to 2.5 V
Resolution	10 mV
Accuracy	±(2% setting + 10 mV)
Rise/fall time (10% to 90%, 2.5 V_{p-p})	<700 ps
Jitter (rms)	20 ps
Marker out to analog channel skew	
Range	AFG and DPG Mode: 0 to 14s in Continuous Mode 0 to 3 us in Triggered Mode True Arb Mode: 0 to 3µs
Resolution	AFG and DPG Mode: 39 ps True Arb Mode: 78 ps,
Accuracy	±(1% of setting + 140 ps)
Initial skew	< 1 ns
Trigger/Gate Inputs	
Connector	BNC on the Front Panel
Input Impedance	50Ω/1 kΩ
Slope/Polarity	Positive or negative or both
Input Damage Level	< -15 V or > +15 V
Threshold Control Level	-10 V to 10 V
Resolution	50 mv
Threshold Control Accuracy	±(10% of |setting| + 0.2 V)
Input Voltage Swing	0.5 V_{p-p} minimum
Minimum Pulse Width (1 V_{p-p})	3 ns
Initial trigger delay to Analog Output	AFG: < 360 ns (< 420 ns in triggered sweep mode,AFG only) True Arb mode: < 240 * DAC clock period + 32 ns DPG mode: < 370 ns
Trigger In to output jitter	AFG and DPG mode: < 40 ps True Arb mode: 0.29*DAC clock period
Maximum Frequency	AFG and DPG mode: 65 MTps on Rising/Falling Edge 80 MTps on Both Edges True Arb mode: 42.5 MTps where MTps = Mega Transitions per second

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Model 675 Arbitrary Waveform Generator

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Reference clock input	
Connector type	SMA on rear panel
Input impedance	50 Ω, AC coupled
Input voltage range	-4 dBm to 11 dBm sine or square wave (Rise time T10-90 <1 ns and Duty Cycle from 40% to 60%)
Damage level	+14 dBm
Frequency range	5 MHz to 100 MHz
Reference clock output	
Connector type	SMA on rear panel
Output impedance	50 Ω, AC coupled
Frequency	10 MHz
Accuracy	± 2.0 ppm
Aging	± 1.0 ppm/year
Amplitude	1.65 V
Jitter (rms)	< 20 ps
External Modulation input	
Connector type	SMA on rear panel
Input impedance	>2 MΩ
Number of inputs	1
Bandwidth	8 MHz with 40 MS/s sampling rate
Input voltage range	-0.5V to +0.5V
Vertical resolution	8-bit
Power	
Source Voltage and Frequency	100 to 240 VAC ±10% @ 45-66 Hz
Maximum power consumption	150W
Environmental Characteristics	
Temperature (operating)	+41 ºF to 104 ºF [+5 ºC to +40 ºC]
Temperature (non-operating)	-4 ºF to 140 ºF [-20 ºC to +60 ºC]
Humidity (operating)	5% to 80% relative humidity with a maximum wet bulb temperature of 84°F at or below +104°F, (upper limit de–rates to 20.6% relative humidity at +104°F). Non-condensing.
Humidity (non-operating)	5% to 95% relative humidity with a maximum wet bulb temperature of 104°F at or below +140°F, upper limit de–rates to 29.8% relative humidity at +140°F. Non-condensing.
Altitude (operating)	9,842 feet (3,000 meters) maximum at or below 77°F
Altitude (non-operating)	39,370 feet (12,000 meters) maximum
EMC and Safety	
Compliance	CE compliant
Safety	EN61010-1
Main Standards	EN 61326-1:2013 – Electrical equipment for measurement, control and laboratory use – EMC requirements – Part 1: General requirements
Immunity	EN 61326-1:2013

Berkeley Nucleonics Corporation
info@berkeleynucleonics.com | www.berkeleynucleonics.com
2955 Kerner Blvd, San Rafael, CA 94901 | 800-234-7858

Model 675 Arbitrary Waveform Generator

Model 675

System Specifications	
Display	7”, 1024x600, capacitive touch LCD
Operative System	Windows 10
External Dimensions	W 17.6 in – H 5.4 in – D 12.6 in (3U 19” rackmount) (445 mm – 135 mm – 320 mm)
Weight	21 lbs (675-2C) – 23 lbs (675-4C) – 26.5 lbs (675-8C)
Front panel connectors	CH1 to CH8 OUTPUT (BNC) MARKER OUT 1 to 4 (BNC) TRIGGER IN (BNC)
Rear panel connectors	Ref Clk In (SMA) Ref Clk Out (SMA) Ext Mod In (SMA) External Monitor ports (one or more) DIGITAL POD A[7..0] (675-2C/4C/8C) DIGITAL POD B[7..0] (675-4C/8C) DIGITAL POD C[7..0] (675-8C) DIGITAL POD D[7..0] (675-8C) 1 USB 2.0 ports or more Ethernet port (10/100/1000BaseT Ethernet, RJ45 port) 2 PS/2 keyboard and mouse ports
Hard Disk	32 GB SSD or better
Processor	Intel® Celeron J1900, 2 GHz (or better)
Processor Memory	4 GB or better

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