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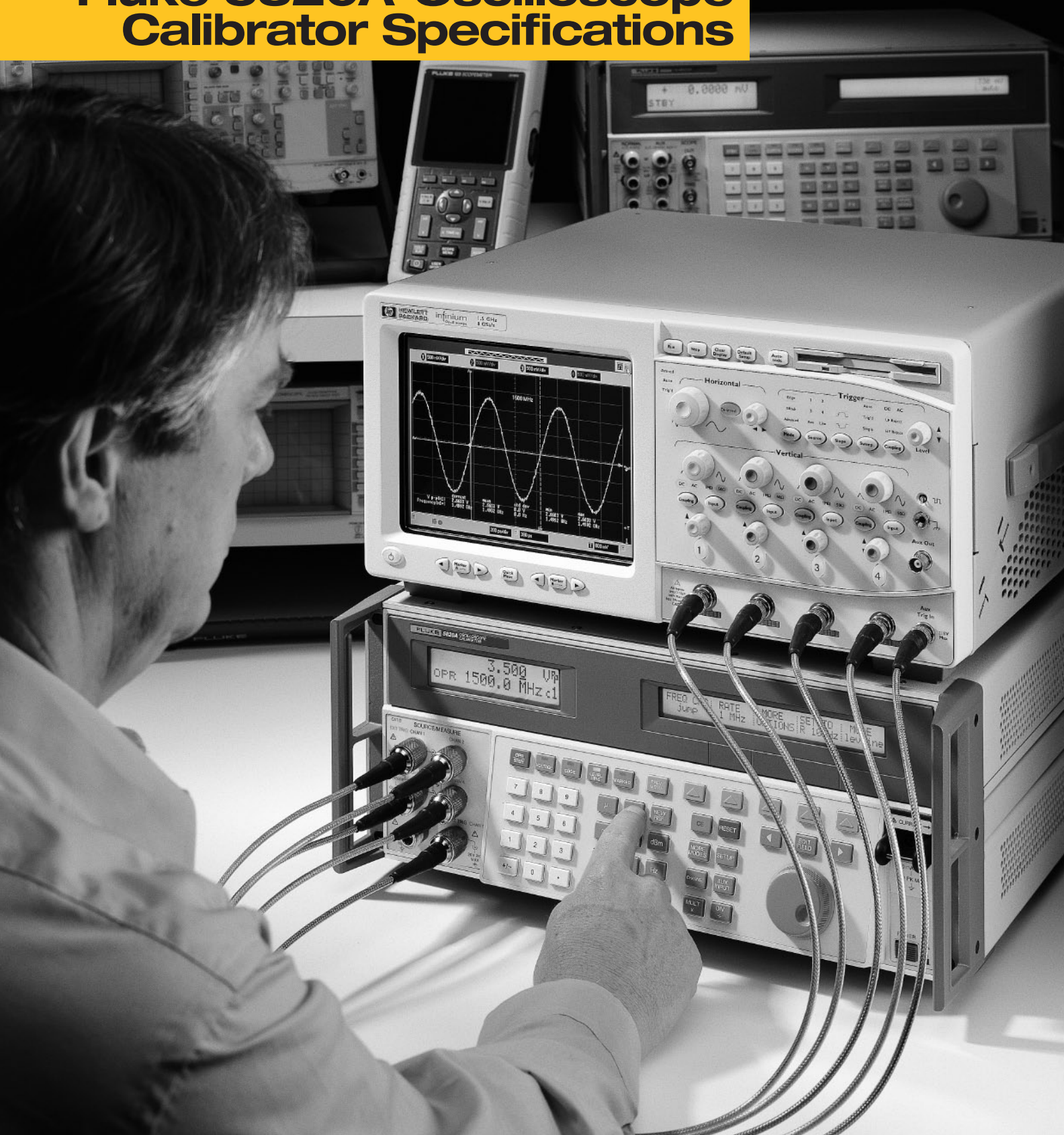
Fluke 5820A Oscilloscope Calibrator Specifications



Voltage function

Volt Function	DC Signal		Square Wave Signal[1]	
Load	**into 50 Ω**	**into 1 MΩ**	**into 50 Ω**	**into 1 MΩ**
Amplitude range	0 V to ± 6.6 V	0 V to ± 130 V	± 1 mV to ± 6.6 V p-p	± 1 mV to ± 130 V p-p
1-year absolute uncertainty, tcal ± 5 °C	± (0.25 % of output + 40 µV)	± (0.025 % of output + 25 µV)	± (0.25 % of output + 40 µV)	± (0.05 % of output + 5 µV)
Sequence	1-2-5 (e.g., 10 mV, 20 mV, 50 mV)			
Frequency range	10 Hz to 10 kHz			
1-year absolute uncertainty, tcal ± 5 °C	± (0.33 ppm of setting)			

[1] *Positive or negative, zero referenced square wave.*

Edge function

Edge Characteristics into 50 Ω		1-Year Absolute Uncertainty, tcal ± 5 °C
Amplitude range (p-p)	4.0 mV to 2.5 V	± (2 % of output + 200 µV)
Frequency range	1 kHz to 10 MHz	± (0.33 ppm of setting)
Rise time	≤ 300 ps	+ 0/-100 ps
Typical jitter, edge to trigger	< 3 ps (p-p)	•
Leading edge aberrations	within 2 ns from 50 % of rising edge	< (3 % of output + 2 mV)
	2 ns to 5 ns	< (2 % of output + 2 mV)
	5 ns to 15 ns	< (1 % of output + 2 mV)
	after 15 ns	< (0.5 % of output + 2 mV)

Fast edge function (2.1 GHz option)

Edge Characteristics into 50 Ω		1-Year Absolute Uncertainty, tcal ± 5 °C
Amplitude range (p-p)	250 mV	
Frequency range	1 kHz to 100 kHz	± (0.33 ppm of setting)
Rise time	≤ 150 ps	+ 0/-25 ps

Leveled sine wave function ≤ 600 MHz

Leveled Sine Wave Characteristics into 50 Ω	Frequency Range				
	50 kHz (reference)	**50 kHz to 100 MHz**	**100 MHz to 300 MHz**	**300 MHz to 500 MHz**	**500 MHz to 600 MHz**
Amplitude range (p-p)	5 mV to 5.5 V				
1-year absolute amplitude uncertainty, tcal ± 5 °C	± (2 % of output + 300 µV)	± (3.5 % of output + 300 µV)	± (4 % of output + 300 µV)	± (5.5 % of output + 300 µV)	± (6 % of output + 300 µV)
Flatness (relative to 50 kHz)	Not applicable	± (1.5 % of output + 100 µV)	± (2 % of output + 100 µV)	± (3.5 % of output + 100 µV)	± (4 % of output + 100 µV)
Short-term amplitude stability	≤ 1 %[1]				
Frequency resolution	10 kHz				
1-year absolute frequency uncertainty, tcal ± 5 °C	± 0.33 ppm				
2nd harmonic	≤ -33 dBc				
3rd and higher harmonics	≤ -38 dBc				

[1] *Within one hour after reference amplitude setting, provided temperature varies no more than ± 5 °C.*

Leveled sine wave function > 600 MHz (2.1 GHz option)

Leveled Sine Wave Characteristics into 50 Ω	Frequency Range			
	10 MHz (reference)	600 MHz to 1.1 GHz	1.1 GHz to 1.6 GHz	1.6 GHz to 2.1 GHz
Amplitude range (p-p)	5 mV to 3.5 V			
1-year absolute amplitude uncertainty, tcal ± 5 °C	± (2 % of output + 300 µV)	± (7 % of output + 300 µV)	± (7 % of output + 300 µV)	± (8 % of output + 300 µV)
Flatness (relative to 50 kHz)	Not applicable	± (5 % of output + 100 µV)	± (5 % of output + 100 µV)	± (6 % of output + 100 µV)
Short-term amplitude stability	≤ 1%[1]			
Frequency resolution	100 kHz			
1-year absolute frequency, uncertainty, tcal ± 5 °C	± 0.33 ppm			
2nd harmonic	≤ -33 dBc			
3rd and higher harmonics	≤ -38 dBc			

[1]*Within one hour after reference amplitude setting, provided temperature varies no more than ± 5 °C.*

Time marker function

Time Marker into 50 Ω	5 s to 50 ms	20 ms to 100 ns (max)	50 ns to 20 ns	10 ns	5 ns to 2 ns	2 ns to 500 ps (2.1 GHz Option)
Wave shape	spike or square	spike, square, or 20 %-pulse	spike or square	square or sine	sine	sine
Sequence	5-2-1 from 5 s to 2 ns (e.g., 500 ms, 200 ms, 100 ms)					
Period resolution	4 digits					
1-year absolute uncertainty, tcal ± 5 °C	± (2.5 ppm + 5 µHz)	± 0.33 ppm	± 0.33 ppm	± 0.33 ppm	± 0.33 ppm	± 0.33 ppm

Wave generator

Wave Generator Characteristics	Sine and Square Wave into 50 Ω or 1 MΩ	Triangle Wave into 50 Ω or 1 MΩ
Amplitude range	into 1 MΩ: 1.8 mV to 55 V p-p; into 50 Ω: 1.8 mV to 2.5 V p-p	
1-year absolute uncertainty tcal ± 5 °C, 10 Hz to 10 kHz	± (3 % of p-p output + 100 µV)	
Sequence	1-2-5 (e.g., 10 mV, 20 mV, 50 mV)	
Typical dc offset range	0 to ± (≥ 40 % of p-p amplitude)[1]	
Ramp linearity		better than 0.1 % 10 Hz to 10 kHz
Frequency range	0.01 Hz to 100 kHz[2]	
1-year absolute uncertainty, tcal ± 5 °C	± (2.5 ppm + 5 µHz)	

[1]*The dc offset plus the wave signal must not exceed 30 V rms.*
[2]*Sine wave to 500 kHz.*

1 ns pulse generation

Pulse Generator Characteristics	Positive Pulse into 50 Ω
Typical rise/fall times	≤ 500 ps
Typical available amplitudes	1.5 V, 600 mV, 150 mV, 60 mV, 15 mV
Pulse width range	1 ns to 500 ns
Pulse width uncertainty	5 % ± 200 ps
Pulse period	20 ms to 200 ns
1-year absolute uncertainty, tcal ± 5 °C	± 0.33 ppm
Pulse skew with trigger range	+30 ns to -10 ns with 250 ps resolution
Pulse skew with trigger uncertainty	± 500 ps

Trigger function

Available for pulse, time mark, edge and voltage functions. TV Trigger is provided at the output terminal.

Trigger Signal Type	Parameters
Frame formats	Selectable: NTSC, SECAM, PAL, PAL-M
Polarity	positive or negative
Line marker	Selectable Line Video Marker

Tunnel diode drive function

TD pulse drive	Square wave at 100 Hz to 100 kHz, with variable amplitude of 60 V to 100 V p-p

Current output function

	DC	Square Wave
Amplitude (compliance voltage 2 V max)	± 100 µA to ± 100 mA	100 µA p-p to 100 mA p-p
Accuracy	± (0.25 % + 0.5 µA)	± (0.25 % + 0.5 µA[1]
Frequency range	N/A	10 Hz to 100 kHz
Accuracy		2.5 ppm + 5 µHz
Steps		1, 2, 5 or continuous

[1]*Amplitude uncertainty for frequency range 45 Hz to 1 kHz at < 120 mV compliance voltage.*

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Measurement functions

Voltage Measurement		
DC voltage range[1]	± 10 V	
DC accuracy 0 to ± 5.99 V	0.05 % + 1 mV	
DC accuracy ± 6 to ± 10 V	0.25 % + 10 mV	
Resistance Measurement		
Measurement range	40 Ω to 60 Ω and 500 kΩ to 1.5 MΩ	0.1 %
Capacitance Measurement		
Measurement range	5 pF to 50 pF	± (5 % of input + 0.5 pF)[2]

[1] *Voltages exceeding 30 V dc may cause damage to the 5820A.*
[2] *Measurement made within 30 minutes of capacitance zero reference.*

Auxiliary input

Operates under the control of the 5820A. Frequency range up to 3 GHz. Voltage rating 0–40 V p-p. VSWR: < 1.2:1 at 600 MHz; < 1.5:1 at 2 GHz; < 2.0:1 at 3 GHz.

General specifications

Warm-up time	Twice the time since last warmed up, to a maximum of 30 minutes
Settling time	5 seconds or faster for all functions and ranges
Standard interfaces	IEE-488 (GPIB), RS-232
Temperature performance	Operating: 0 °C to 50 °C Calibration (tcal): 15 °C to 35 °C Storage: -20 °C to 70 °C
Electromagnetic compatibility	Designed to operate in Standard Laboratory environments where the Electromagnetic environment is highly controlled. If used in areas with Electromagnetic fields > 1 V/m, there could be errors in current output values.
Temperature coefficient	Temperature coefficient for temperatures outside tcal ± 5 °C: add 0.1 x 1-year specification/°C
Relative humidity	Operating: < 80 % to 30 °C, < 70 % to 40 °C, < 40 % to 50 °C Storage: < 95 %, non-condensing
Altitude	Operating: 3,050 m (10,000 ft) maximum Non-operating: 12,200 m (40,000 ft) maximum
Safety	Designed to comply with IEC 1010-1 (1992-1); ANSI/ISA-S82.01-1994; CAN/CSA-C22.2 No. 1010, 1-92
Analog low isolation	20 V
EMC	Complies with EN 61326-1
Line power	Line voltage (selectable): 100 V, 120 V, 220 V, 240 V
	Line frequency: 47 Hz to 63 Hz
	Line voltage variation: ± 10 % about line voltage setting
Power consumption	250 VA
Dimensions	Height: 17.8 cm (7 in), standard rack increment, plus 1.5 cm (0.6 in) for feet on bottom of unit Width: 43.2 cm (17 in), standard rack width Depth: 47.3 cm (18.6 in) overall
Weight	20 kg (44 lb)

Ordering information

Calibrators

5820A Oscilloscope Calibrator
5500A Multi-Product Calibrator
5520A High-Performance Multi-Product Calibrator

Options

2.1 GHz Bandwidth Extension for the 5820A
Five Channel Output for the 5820A
300 MHz Oscilloscope Calibration Option for the 5500A or 5520A
600 MHz/300 ps Oscilloscope Calibration Option for the 5500A or 5520A

Upgrades

5800A-GHZ UGK 2.1 GHz Bandwidth Extension Upgrade for Existing 5800As
5820A-GHZ UGK 2.1 GHz Bandwidth Extension Upgrade for Existing 5820As

Accessories

5500A/COIL 50-Turn Current Coil for the 5500A and 5520A
5500A/CASE Transit Case with wheels for the 5500A, 5520A, 5800A and 5820A
5500A/HNDL Side handle for the 5500A, 5520A, 5800A and 5820A
Y5537 Rack mount kit for the 5500A, 5520A, 5800A and 5820/a
5500A/LEADS Comprehensive test lead kit for the 5500A and 5520/a
5800A-7004K Oscilloscope Cal Cable and Accessory Kit
5800A-7002K Two Piece Replacement Output Cable Set
5800A-7003K Five Piece Replacement Output Cable Set
PM9581/011 Feed through Termination, 3 W, tp Ohm
PM9584/021 Feed through T-Piece (matched power splitter), 50 Ohm
PM 9061/001 Coupling, BNC (2x Female)
PM9067/001 T-Piece, BNC (1 x Mail 2 x Female)
TC100 Test Cart

Software

MET/CAL Automated Calibration and Asset Management
5500/CAL Automated Calibration and Asset Management for the 5500 and 5800 Series Calibrators

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Fluke Corporation
PO Box 9090, Everett, WA 98206 U.S.A.

Fluke Europe B.V.
PO Box 1186, 5602 BD
Eindhoven, The Netherlands

For more information call:
In the U.S.A. (800) 443-5853 or
Fax (425) 446-5116
In Europe/M-East/Africa +31 (0) 40 2675 200 or
Fax +31 (0) 40 2675 222
In Canada (800)-36-FLUKE or
Fax (905) 890-6866
From other countries +1 (425) 446-5500 or
Fax +1 (425) 446-5116
Web access: http://www.fluke.com

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