

FLUKE®

Fluke 5800A Oscilloscope Calibrator Specifications



Volt Function

Volt Function	DC Signal		Square Wave Signal ¹		
	Load	into 50Ω	into 1 MΩ	into 50Ω	into 1 MΩ
Amplitude Range		0V to ±6.6V	0V to ±130V	±1 mV to ±6.6V p-p	±1 mV to ±130V 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 Positive or negative, zero referenced square wave.

Edge Function

Edge Characteristics into 50Ω	1-Year Absolute Uncertainty, tcal ±5°C	
Amplitude Range (p-p)	4.0 mV to 2.5V	±(2% of output + 200 μV)
Frequency Range	1 kHz to 10 MHz	±(2.5 ppm of setting)
Rise Time	≤300 ps	(+0 ps / -100 ps)
Typical Jitter, Edge to Trigger	<5 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)
Tunnel Diode Pulse Drive	Square wave at 100 Hz to 100 kHz, with variable amplitude of 60V to 100V p-p	

Leveled Sine Wave Function

Leveled Sine Wave Characteristics into 50Ω	Frequency Range			
	50 kHz (reference)	50 kHz to 100 MHz	100 MHz to 300 MHz	300 MHz to 600 MHz
Amplitude				
Range (p-p)	5 mV to 5.5V			
1-Year Absolute Uncertainty, tcal ±5°C	±(2% of output + 300 μV)	±(3.5% of output + 300 μV)	±(4% 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)	±(4% of output + 100 μV)
Short-term Amplitude Stability	≤1% ¹			
Frequency				
Resolution	10 kHz			
1-Year Absolute Uncertainty, tcal ±5°C	±1 ppm			
Distortion				
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 50Ω	5s to 50 ms	20 ms to 100 ns	50 ns to 20 ns	10 ns	5 ns to 2 ns
1-Year Absolute Uncertainty, tcal ±5°C	± (2.5 ppm + 5 μHz)	±1 ppm	±1 ppm	±1 ppm	±1 ppm
Wave Shape	Pulsed, sawtooth or square	Pulsed, sawtooth, square, 1/5 pulse	Pulsed, sawtooth or square	Square or sine	Sine
Typical Jitter (p-p)	<10 ppm	<1 ppm	<1 ppm	<1 ppm	<1 ppm
Sequence	5-2-1 from 5s to 2 ns (e.g., 500 ms, 200 ms, 100 ms)				

Wave Generator

Characteristics	Square Wave, Sine Wave, and Triangle Wave into 50Ω or 1 MΩ
Amplitude	
Range	into 1 MΩ: 1.8 mV to 55V p-p; into 50Ω: 1.8 mV to 2.5V p-p
1-Year Absolute Uncertainty, tcal ±5°C, 10 Hz to 10 kHz	± (3% of p-p output + 100 μV)
Typical DC Offset Range	0 to ± (≥40% of p-p amplitude) ¹
Frequency	
Range	0.01 Hz to 100 kHz

¹ The dc offset plus the wave signal must not exceed 30V rms.

Pulse Generator

Characteristics	Positive Pulse into 50Ω
Typical rise/fall times	≤1.5 ns
Amplitude Available	Discrete steps: 1V, 250 mV, 100 mV, 25 mV, 10 mV
Pulse Width	
Range	4 ns to 500 ns ¹
Uncertainty (typical)	5% + 2 ns
Pulse Period	
Range	20 ms to 200 ns (50 Hz to 5.0 MHz)
1-Year Absolute Uncertainty, tcal ±5°C	±1 ppm

¹ Pulse width not to exceed 40% of period.

Trigger Functions

External Trigger Functions

Available for pulse, time mark, edge and voltage generator functions.

TV Trigger Signal Specifications

TV Trigger is provided at the Scope Output Terminal.

Trigger Signal Type	Parameters
Frame Formats	Selectable NTSC, SECAM, PAL, PAL-M
Polarity	Selectable inverted or uninverted video
Line Marker	Selectable Line Video Marker

Measurement Functions

Oscilloscope Input Impedance Measurement Function

	Range	Uncertainty
Resistance	40Ω to 60Ω 500 kΩ to 1.5 MΩ	0.1% 0.1%
Capacitance	5 pF to 50 pF	5% ± 0.5 pF

Overload Measurement Function

The overload test function applies dc or ac (1 kHz square wave) power into the 50Ω oscilloscope input and monitors the current. In order to prevent oscilloscope front end damage, a limited amount of energy is applied by a user-settable time limit.

Source Voltage	Typical Maximum Time Limit dc or ac 1 kHz ac
5V to 9V	Settable from 5 to 60 sec

Auxiliary Input

Operates under the control of the 5800A.
Frequency range: Up to 2 GHz
Voltage range: 0-40V p-p
VSWR: <1.7 @ 2 GHz

External Frequency Reference Input

10 MHz

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 output values.
Temperature Coefficient	Temperature Coefficient for temperatures outside tcal + 5 °C is 0.1X/°C of 1-year specification.
Relative Humidity	Operating: <80% to 30 °C, <70% to 40 °C, <40% to 50 °C Storage: <95%, non-condensing
Altitude	Operating: 3,050m (10,000 ft) maximum Non-operating: 12,200m (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	20V
EMC	Complies with EN 61326-1
Line Power	Line Voltage (selectable): 100V, 120V, 220V, 240V Line Frequency: 47 to 63 Hz Line Voltage Variation: ± 10% about line voltage setting
Power Consumption	250VA
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

Oscilloscope Calibrators

5800A 600 MHz Oscilloscope Calibrator
5800A-5 Five Channel Output Option
5800A-GHz Extended Frequency Bandwidth Option

Multi-Product Calibrators

5500A Multi-Product Calibrator
5520A High Performance Multi-Product Calibrator
5500A-SC300 300 MHz Oscilloscope Calibration Option
5500A-SC600 600 MHz Oscilloscope Calibration Option

Management Software

MET/CAL-5 Version 5.0 (Plus), single user floating license, includes MET/TRACK, requires MET/BASE-5 for operation
5500/CAL-5 Version 5.0 (Plus), single user floating license, includes MET/TRACK, requires MET/BASE-5 for operation
MET/TRACK-5 Single user floating license, requires MET/BASE-5 for operation
MET/BASE-5 System engine, requires licenses (upgrade or new) for one or more client applications (MET/CAL-5, 5500/CAL-5 and/or MET/TRACK-5)
MET/CAL-IEEE NT IEEE-488 interface board kit, includes two boards and cables

Accessories

5800A/TDP Tunnel Diode Pulser
5800A-7004K Cable and Accessory Kit
5800A-7002K Two Replacement Output Cables
5800A-7003K Five Replacement Output Cables
PM 9581/011 Feed Through 50Ω Termination
5500A/CASE Transit Case with wheels
5500A/HNDL Side handle
TC100 Test Cart
Y5537 Rack Mount Kit

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