



**FLUKE®**

**Calibration**

**5080A Multi-Product Calibrator  
Oscilloscope Calibration Option**

**Extended Specifications**

## General Specifications

All specifications are valid after a warm-up period of 30 minutes, or twice the time since last warmed up, to a maximum of 30 minutes. For example, if the 5080A has been turned off for 5 minutes, the warm-up period is 10 minutes.

Specifications include stability, temperature coefficient, linearity, line and local regulation, and the traceability of the external standards used for calibration. It is not necessary to add anything to determine the total specification for the temperature range indicated.

**Specification Confidence Level**..... 99 %

**Warmup Time**..... Twice the time since last warmed up, to a maximum of 30 minutes.

### Temperature

Operating..... 0 °C to 50 °C

Calibration (tcal) ..... 15 °C to 35 °C

Storage ..... -20 °C to +70 °C

**Temperature Coefficient**..... Temperature coefficient for temperatures outside tcal  $\pm 5$  °C is 10 % of the stated specification per °C for temperatures in the range of 0 °C to 35 °C. Above 35 °C, the temperature coefficient is 20 % of the stated specification per °C.

### Relative Humidity

Operating..... <80 % to 30 °C, <70 % to 40 °C, <40 % to 50 °C.

Storage..... <95 %, non-condensing

### Altitude

Operating..... 2,000 m (6,500 ft) maximum

Non-operating..... 12,200 m (40,000 ft) maximum

## Detailed Specifications

### Voltage Function

Voltage Function	DC Signal		Square Wave Signal	
	Into 50 $\Omega$	Into 1 M $\Omega$	Into 50 $\Omega$	Into 1 M $\Omega$
<b>Amplitude Characteristics</b>				
Range	0 V to $\pm 2.2$ V	0 V to $\pm 33$ V	1.8 mV to 2.2 V p-p	1.8 mV to 105 V p-p <sup>[1]</sup>
Resolution	<100 V: 4 digits or 10 $\mu$ V, whichever is greater $\geq 100$ V: 5 digits			
Adjustment Range	Continuous <sup>[1]</sup>			
Specification, 1-Year, tcal $\pm 5$ °C	$\pm(0.35$ % of output +200 $\mu$ V) <sup>[2][3]</sup>			
Sequence	1-2-5 (e.g., 10 mV, 20 mV, 50 mV)			
<b>Square Wave Frequency Characteristics</b>				
Range	45 Hz to 1 kHz			
Specification, 1-Year, tcal $\pm 5$ °C	$\pm(50$ ppm of setting +25 mHz)			
Typical Aberration within 30 $\mu$ s from leading edge	<3 % of output +200 $\mu$ V)			
[1]	The square wave into 1 M $\Omega$ is a positive square wave from 1.8 mV to 55 V p-p. From 95 V to 105 V. Its output is a square wave-like signal that alternates between the negative peak and the positive peak, with the centerline at -10 V. Signals between 55 V and 95 V p-p are not available.			
[2]	The uncertainty of 50 $\Omega$ loads does not include the input impedance error of the oscilloscope. Square wave signals below 4.5 mV p-p have a specification of $\pm(0.35$ % of output +300 $\mu$ V).			
[3]	Signals from 95 to 105 V p-p have a specification of 1 % of output in the frequency range 100 Hz to 1 kHz. Typical specification is 3 % of output for 95 V to 105 V p-p signals in the frequency range 45 Hz to 100 Hz.			

## Edge Function

Edge Characteristics into 50 Ω		Specification, 1-Year, tcal ±5 °C
<b>Amplitude</b>		
Range	4.5 mV to 2.75 V	±(2 % of output +300 μV)
Resolution	4 digits	
Adjustment Range	±10 % around each sequence value (indicated below)	
Sequence	5 mV, 10 mV, 25 mV, 50 mV, 100 mV, 250 mV, 500 mV, 1 V, 2.5 V	
<b>Other Edge Characteristics</b>		
Frequency Range	900 Hz to 1.1 MHz	±(5 ppm of setting +15 mHz)
Rise Time	<1 ns	
Leading Edge Aberrations	Within 10 ns	<(3 % of output +3 mV)
	10 to 30 ns	<(1 % of output +3 mV)
	After 30 ns	<(0.5 % of output +3 mV)
Typical Duty Cycle	45 % to 55 %	

## Leveled Sine Wave Function

Leveled Sine Wave Characteristics into 50 Ω	Frequency Range		
	50 kHz Reference	50 kHz to 100 MHz	100 to 200 MHz <sup>[1]</sup>
<b>Amplitude Characteristics</b>			
Range (p-p)	5 mV to 5.5 V		
Resolution	<100 mV: 3 digits ≥100 mV: 4 digits		
Adjustment Range	Continuously adjustable		
Specification, 1-Year, tcal ±5 °C	±(2 % of output +300 μV)	±(3.5 % of output +400 μV)	±(4 % of output +400 μV)
Flatness (relative to 50 kHz)	Not applicable	±(1.5 % of output +200 μV)	±(2.0 % of output +200 μV)
Short-term Stability	≤1 % <sup>[1]</sup>		
<b>Frequency Characteristics</b>			
Resolution	10 Hz	10 kHz <sup>[2]</sup>	10 kHz
Specification, 1-Year, tcal ±5 °C	±5 ppm	±5 ppm	±5 ppm
<b>Distortion Characteristics</b>			
2 <sup>nd</sup> Harmonic	≤-33 dBc		
3 <sup>rd</sup> and higher Harmonics	≤-38 dBc		

[1] Within one hour after reference amplitude setting, provided temperature varies no more than ±5 °C.  
 [2] At frequencies below 120 kHz, the resolution is 10 Hz. For frequencies between 120 kHz and 999.9 kHz, the resolution is 100 Hz.

## Time Marker Function

Time Marker into 50 Ω	5 s to 50 ms	20 ms to 100 ns	50 ns to 20 ns	10 ns	5 ns to 2 ns
Specification at cardinal points, 1-Year, tcal ±5 °C <sup>[2]</sup>	±(50 + t*1500) ppm <sup>[1]</sup>	±5 ppm	±5 ppm	±5 ppm	±5 ppm
Wave Shape	spike or square	spike, square, or sq 20 %	spike or square	square or sine	sine
Typical Output Level	>1 V p-p	>1 V p-p	>1 V p-p	>1 V p-p	>1 V p-p
Sequence	5-2-1 from 5 s to 2 ns (e.g., 500 ms, 200 ms, 100 ms)				
Adjustment Range	At least ±10 % around each sequence value indicated above.				
Amplitude Resolution	4 digits				

[1] t is the time in seconds.  
 [2] Away from the cardinal points, add ±50 ppm.

## Trigger Signal for the Time Marker Function

Time Marker Period	Division Ratio	Amplitude into 50 Ω (p-p)	Typical Rise Time
5 to 35 ms	off, /1	≥1 V p-p	≤2 ns
34.99 ms to 750 ns	off, /1, /10, /100	≥1 V p-p	≤2 ns
749.9 to 10 ns	off, /10, /100	≥1 V p-p	≤2 ns
9.99 to 2 ns	off, /100	≥1 V p-p	≤2 ns

## Trigger Signal for the Edge Function

Edge Signal Frequency	Division Ratio	Amplitude into 50 Ω (p-p)	Typical Rise Time
900 Hz to 1.1 MHz	off, /1	≥1 V p-p	≤2 ns

## Ordering information

### Models

<b>5080A</b>	Multi-product calibrator
<b>5080A/MEG</b>	Calibrator with megohm meter calibration option
<b>5080A/SC</b>	Calibrator with oscilloscope calibration option
<b>5080A/SC/MEG</b>	Calibrator with megohm meter and oscilloscope calibration option

### Accessories

<b>9100-200</b>	10/50 turn coils
<b>5500A/COIL</b>	50 turn coil
<b>5080A/CASE</b>	Transit case with wheels

### Software

<b>5080/CAL</b>	5080/CAL calibration software
<b>5080A/WS1<sup>(1)</sup></b>	Calibrator with MET/CAL® Lite software

### Value-added services

<b>Gold CarePlan<sup>(2)</sup></b>	Priority extended warranties and annual calibration services
<b>Silver CarePlan<sup>(2)</sup></b>	Extended warranties with calibration on repair

### Upgrades<sup>(3)</sup>

<b>5080A-&gt;5080A/MEG</b>	Upgrade 5080A to 5080A/MEG
<b>5080A-&gt;5080A/SC</b>	Upgrade 5080A to 5080A/SC
<b>5080A-&gt;5080A/SC/MEG</b>	Upgrade 5080A to 5080A/SC/MEG

<sup>(1)</sup> MET/CAL Lite is also available for 5080A/MEG, 5080A/SC, and 5080A/SC/MEG.

<sup>(2)</sup> Select from plans up to five years, with standard or accredited calibration.

<sup>(3)</sup> Installable only at Fluke service centers for extra calibration and installation cost.

## Total solutions in calibration

[www.Fluke.com/FlukeCal](http://www.Fluke.com/FlukeCal)

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