

**FLUKE**<sup>®</sup>

# The 5520A/5500A Multi-Product Calibrators

Extended Specifications  
December 1997



# General Specifications

## 5520A/5500A

<b>Warmup Time</b>	Twice the time since last warmed up, to a maximum of 30 minutes
<b>Settling Time</b>	Less than 5 seconds for all functions and ranges except as noted
<b>Standard Interfaces</b>	IEEE-488 (GPIB), RS-232, 5725A (5500A only)
<b>Temperature Performance</b>	Operating: 0°C to 50°C Calibration (tcal): 15°C to 35°C Storage: -20°C to 70°C
<b>Temperature Coefficient</b>	Temperature coefficient for temperatures outside tcal $\pm 5^\circ\text{C}$ is 10% of the 90-day specification (or 1-year, as applicable) per $^\circ\text{C}$
<b>Relative Humidity</b>	Operating: <80% to 30°C, <70% to 40°C, <40% to 50°C Storage: <95%, noncondensing
<b>Altitude</b>	Operating: 3,050m (10,000 ft) maximum Non-operating: 12,200m (40,000 ft) maximum
<b>Safety</b>	Designed to comply with IEC 1010-1 (1992-1); ANSI/ISA-S82.01-1994; CAN/CSA-C22.2 No. 1010.1-92
<b>Analog Low Isolation</b>	20V
<b>EMC</b>	5520A: Designed to comply with IEC 61326-1/1997 5500A: Designed to comply with FCC Rules Part 15
<b>Line Power</b>	Line Voltage (selectable): 100V, 120V, 220V, 240V Line Frequency: 47 to 63 Hz Line Voltage Variation: $\pm 10\%$ about line voltage setting
<b>Power Consumption</b>	5520A: 600 VA 5500A: 300 VA
<b>Dimensions</b>	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
<b>Weight (without options)</b>	5520A: 22 kg (49 lb) 5500A: 20 kg (44 lb)
<b>Absolute Uncertainty Definition</b>	5500A and 5520A uncertainty specifications include stability, temperature coefficient, linearity, line and load regulation and the traceability of the external standards used for calibration. <i>You do not need to add anything to determine the total uncertainty of your calibrator for the temperature range indicated.</i>
<b>Specification Confidence Interval</b>	>99%

# DC Voltage Specifications

## 5520A

Ranges	Absolute Uncertainty, $t_{cal} \pm 5^{\circ}C$ $\pm(\text{ppm of output} + \mu V)$		Stability	Resolution	Maximum Burden Current <sup>1</sup>
	90 Days	1 Year	24 Hours, $\pm 1^{\circ}C$ $\pm(\text{ppm of output} + \mu V)$		
0 to 329.9999 mV	20 + 1.5	25 + 1.5	3 + 1	0.1 $\mu V$	50 $\Omega$
0 to 3.299999V	9 + 2	11 + 2	2 + 1.5	1 $\mu V$	10 mA
0 to 32.99999V	10 + 15	12 + 15	2 + 10	10 $\mu V$	10 mA
30 to 329.9999V	15 + 150	18 + 150	2.5 + 100	100 $\mu V$	5 mA
100 to 1000V	15 + 1500	18 + 1500	3 + 300	1000 $\mu V$	5 mA
<b>Auxiliary Output (dual output mode only)<sup>2</sup></b>					
0 to 329.999 mV	300 + 350	400 + 350	30 + 100	1 $\mu V$	5 mA
0.33 to 3.29999V	300 + 350	400 + 350	30 + 100	10 $\mu V$	5 mA
3.3 to 7V	300 + 350	400 + 350	30 + 100	100 $\mu V$	5 mA
<b>TC Output and Measure in Linear 10 <math>\mu V/^{\circ}C</math> and 1 mV/<math>^{\circ}C</math> Modes</b>					
0 to 329.999 mV	40 + 3	50 + 3	5 + 2	0.1 $\mu V$	10 $\Omega$

## 5500A

Ranges	Absolute Uncertainty, $t_{cal} \pm 5^{\circ}C$ $\pm(\text{ppm of output} + \mu V)$		Stability	Resolution	Maximum Burden Current <sup>1</sup>
	90 Days	1 Year	24 Hours, $\pm 1^{\circ}C$ $\pm(\text{ppm of output} + \mu V)$		
0 to 329.9999 mV	50 + 3	60 + 3	5 + 1	0.1 $\mu V$	50 $\Omega$
0 to 3.299999V	40 + 5	50 + 5	4 + 3	1 $\mu V$	10 mA
0 to 32.99999V	40 + 50	50 + 50	4 + 30	10 $\mu V$	10 mA
30 to 329.9999V	45 + 500	55 + 500	4.5 + 300	100 $\mu V$	5 mA
100 to 1000V	45 + 1500	55 + 1500	4.5 + 900	1000 $\mu V$	5 mA
<b>Auxiliary Output (dual output mode only)<sup>2</sup></b>					
0 to 329.999 mV	300 + 350	400 + 350	30 + 100	1 $\mu V$	5 mA
0.33 to 3.29999V	300 + 350	400 + 350	30 + 100	10 $\mu V$	5 mA
<b>TC Output and Measure in Linear 10 <math>\mu V/^{\circ}C</math></b>					
0 to 329.999 mV	50 + 3	60 + 3	5 + 1	0.1 $\mu V$	10 $\Omega$

<sup>1</sup> Remote sensing is not provided. Output resistance is <5 m $\Omega$  for outputs  $\geq 0.33V$ . The AUX output has an output resistance of <1 $\Omega$ .

TC output has an output impedance of 10 $\Omega \pm 1\Omega$ .

<sup>2</sup> Two channels of dc voltage output are provided.

Note: Maximum voltage output is 1020V.

# DC Current Specifications

## 5520A

Ranges	Absolute Uncertainty, $t_{cal} \pm 5^{\circ}C$ $\pm(\text{ppm of output} + \mu A)$		Resolution	Compliance Voltage	Maximum Inductive Load
	90 Days	1 Year			
0 to 329.999 $\mu A$	120 + 0.02	150 + 0.02	1 nA	10V	400 $\mu H$
0 to 3.29999 mA	80 + 0.03	100 + 0.03	0.01 $\mu A$	10V	400 $\mu H$
0 to 32.9999 mA	80 + 0.2	100 + 0.2	0.1 $\mu A$	7V	400 $\mu H$
0 to 329.999 mA	80 + 2	100 + 2	1 $\mu A$	7V	400 $\mu H$
0 to 2.99999A	160 + 40	200 + 40	10 $\mu A$	6V	400 $\mu H$
0 to 10.9999A	380 + 330	500 + 330	100 $\mu A$	4V	400 $\mu H$
11 to 20.5A <sup>1</sup>	800 + 750	1000 + 750	100 $\mu A$	4V	400 $\mu H$

<sup>1</sup> At 20°C, full 20.5A output is available continuously for 20 minutes.

## 5500A

Ranges	Absolute Uncertainty, $t_{cal} \pm 5^{\circ}C$ $\pm(\% \text{ of output} + \mu A)$		Resolution	Compliance Voltage	Maximum Inductive Load
	90 Days	1 Year			
0 to 3.29999 mA	0.010 + 0.05	0.013 + 0.05	0.01 $\mu A$	4.5V	1 $\mu H$
0 to 32.9999 mA	0.008 + 0.25	0.01 + 0.25	0.1 $\mu A$	4.5V	200 $\mu H$
0 to 329.999 mA	0.008 + 3.3	0.01 + 3.3	1 $\mu A$	3.0V	200 $\mu H$
0 to 2.19999A	0.023 + 44	0.03 + 44	10 $\mu A$	3.4V	200 $\mu H$
0 to 10.9999A	0.038 + 330	0.06 + 330	100 $\mu A$	2.5V	200 $\mu H$
<b>5725A Amplifier</b>					
0 to 11A	0.03 + 330	0.04 + 330	100 $\mu A$	4V	400 $\mu H$

# Resistance Specifications

## 5520A

Ranges <sup>1</sup>	Absolute Uncertainty, tcal ±5°C ±(ppm of output + floor) <sup>2</sup>				Resolution	Allowable Current
	ppm of output		Floor Time, Temperature Since Ω Zero			
	90 Days	1 Year	12 Hours ±1°C	7 Days ±5°C		
0 to 10.9999Ω	35	40	0.001Ω	0.01Ω	0.0001Ω	1 to 125 mA
11 to 32.9999Ω	25	30	0.0015Ω	0.015Ω	0.0001Ω	1 to 125 mA
33 to 109.9999Ω	22	28	0.0015Ω	0.015Ω	0.0001Ω	1 to 70 mA
110 to 329.9999Ω	22	28	0.002Ω	0.02Ω	0.0001Ω	1 to 40 mA
330Ω to 1.099999 kΩ	22	28	0.002Ω	0.02Ω	0.001Ω	250 μA to 18 mA
1.1 to 3.299999 kΩ	22	28	0.02Ω	0.2Ω	0.001Ω	250 μA to 5 mA
3.3 to 10.99999 kΩ	22	28	0.02Ω	0.1Ω	0.01Ω	25 μA to 1.8 mA
11 to 32.99999 kΩ	22	28	0.2Ω	1Ω	0.01Ω	25 μA to 0.5 mA
33 to 109.9999 kΩ	22	28	0.2Ω	1Ω	0.1Ω	2.5 μA to 0.18 mA
110 to 329.9999 kΩ	25	32	2Ω	10Ω	0.1Ω	2.5 μA to 0.05 mA
330 kΩ to 1.099999 MΩ	25	32	2Ω	10Ω	1Ω	250 nA to 0.018 mA
1.1 to 3.299999 MΩ	40	60	30Ω	150Ω	1Ω	250 nA to 5 μA
3.3 to 10.99999 MΩ	110	130	50Ω	250Ω	10Ω	25 nA to 1.8 μA
11 to 32.99999 MΩ	200	250	2500Ω	2500Ω	10Ω	25 nA to 500 nA
33 to 109.9999 MΩ	400	500	3000Ω	3000Ω	100Ω	2.5 nA to 180 nA
110 to 329.999 MΩ	2500	3000	100000Ω	100000Ω	1000Ω	2.5 nA to 50 nA
330 to 1100 MΩ	12000	15000	500000Ω	500000Ω	10000Ω	1 nA to 13 nA

<sup>1</sup> Continuously variable from 0 to 1.1 GΩ.

<sup>2</sup> Applies for 4-WIRE compensation only. For COMP OFF and 2-WIRE COMP, add 5 μV per amp of stimulus current to the floor specification. For example, in 2-wire mode, at 1 kΩ, the floor specification within 12 hours of an ohms zero cal for a measurement current of 250 μA is 0.002Ω + 5 μV/250 μA = 0.022Ω.

## 5500A

Ranges <sup>1</sup>	Absolute Uncertainty, tcal ±5°C ±(% of output + Ω) <sup>2</sup>		Resolution	Allowable Current
	90 Days	1 Year		
0 to 10.999Ω	0.009 + 0.008 <sup>3</sup>	0.012 + 0.008 <sup>3</sup>	0.001Ω	1 to 125 mA
11 to 32.999Ω	0.009 + 0.015 <sup>3</sup>	0.012 + 0.015 <sup>3</sup>	0.001Ω	1 to 125 mA
33 to 109.999Ω	0.007 + 0.015 <sup>3</sup>	0.009 + 0.015 <sup>3</sup>	0.001Ω	1 to 70 mA
110 to 329.999Ω	0.007 + 0.015 <sup>3</sup>	0.009 + 0.015 <sup>3</sup>	0.001Ω	1 to 40 mA
330Ω to 1.09999 kΩ	0.007 + 0.06	0.009 + 0.06	0.01Ω	250 μA to 18 mA
1.1 to 3.29999 kΩ	0.007 + 0.06	0.009 + 0.06	0.01Ω	250 μA to 5 mA
3.3 to 10.9999 kΩ	0.007 + 0.6	0.009 + 0.6	0.1Ω	25 μA to 1.8 mA
11 to 32.9999 kΩ	0.007 + 0.6	0.009 + 0.6	0.1Ω	25 μA to 0.5 mA
33 to 109.999 kΩ	0.008 + 6	0.011 + 6	1Ω	2.5 μA to 0.18 mA
110 to 329.999 kΩ	0.009 + 6	0.012 + 6	1Ω	2.5 μA to 0.05 mA
330 kΩ to 1.09999 MΩ	0.011 + 55	0.015 + 55	10Ω	250 nA to 0.018 mA
1.1 to 3.29999 MΩ	0.011 + 55	0.015 + 55	10Ω	250 nA to 5 μA
3.3 to 10.9999 MΩ	0.045 + 550	0.06 + 550	100Ω	25 nA to 1.8 μA
11 to 32.9999 MΩ	0.075 + 550	0.1 + 550	100Ω	25 nA to 500 nA
33 to 109.999 MΩ	0.4 + 5500	0.5 + 5500	1000Ω	2.5 nA to 180 nA
110 to 329.999 MΩ	0.4 + 16500	0.5 + 16500	1000Ω	2.5 nA to 60 nA

<sup>1</sup> Continuously variable from 0 to 330 MΩ.

<sup>2</sup> Applies for COMP OFF (to the 5500A Calibrator front panel NORMAL terminals) and 2-wire and 4-wire compensation.

<sup>3</sup> The floor added is improved to 0.006Ω (0-10.99Ω range) and 0.010Ω (11-329.999Ω range) if the 5500A is zeroed within 8 hours and temperature is ±1°C of zeroing ambient temperature.

# AC Voltage (Sinewave) Specifications

## 5520A

Ranges	Frequency	Absolute Uncertainty, tcal $\pm 5^{\circ}\text{C}$ $\pm(\text{ppm of output} + \mu\text{V})$		Resolution	Maximum Burden <sup>1</sup>
		90 Days	1 Year		
1.0 to 32.999 mV	10 to 45 Hz	600 + 6	800 + 6	1 $\mu\text{V}$	50 $\Omega$
	45 Hz to 10 kHz	120 + 6	150 + 6		
	10 to 20 kHz	160 + 6	200 + 6		
	20 to 50 kHz	800 + 6	1000 + 6		
	50 to 100 kHz	3000 + 12	3500 + 12		
	100 to 500 kHz	6000 + 50	8000 + 50		
33 to 329.999 mV	10 to 45 Hz	400 + 8	500 + 8	1 $\mu\text{V}$	50 $\Omega$
	45 Hz to 10 kHz	110 + 8	130 + 8		
	10 to 20 kHz	120 + 8	150 + 8		
	20 to 50 kHz	300 + 8	350 + 8		
	50 to 100 kHz	600 + 32	800 + 32		
	100 to 500 kHz	1600 + 70	2000 + 70		
0.33 to 3.29999V	10 to 45 Hz	250 + 50	300 + 50	10 $\mu\text{V}$	10 mA
	45 Hz to 10 kHz	100 + 25	120 + 25		
	10 to 20 kHz	160 + 50	190 + 50		
	20 to 50 kHz	250 + 50	300 + 50		
	50 to 100 kHz	550 + 125	700 + 125		
	100 to 500 kHz	2000 + 600	2400 + 600		
3.3 to 32.9999V	10 to 45 Hz	250 + 650	300 + 650	100 $\mu\text{V}$	10 mA
	45 Hz to 10 kHz	125 + 200	150 + 200		
	10 to 20 kHz	220 + 600	240 + 600		
	20 to 50 kHz	300 + 600	350 + 600		
	50 to 100 kHz	750 + 1600	900 + 1600		
33 to 329.999V	45 Hz to 1 kHz	150 + 2000	190 + 2000	1 mV	5 mA, except 20 mA for 45 to 65 Hz
	1 to 10 kHz	160 + 6000	200 + 6000		
	10 to 20 kHz	220 + 6000	250 + 6000		
	20 to 50 kHz	600 + 20000	800 + 20000		
	50 to 100 kHz	1600 + 50000	2000 + 50000		
330 to 1000V	45 Hz to 1 kHz	250 + 10000	300 + 10000	10 mV	2 mA, except 6 mA for 45 to 65 Hz
	1 to 5 kHz	200 + 10000	250 + 10000		
	5 to 10 kHz	250 + 10000	300 + 10000		
<b>Auxiliary Output (dual output mode only)<sup>2</sup></b>					
10 to 329.999 mV	10 to 20 Hz	0.15% + 370	0.2% + 370	1 $\mu\text{V}$	5 mA
	20 to 45 Hz	0.08% + 370	0.1% + 370		
	45 Hz to 1 kHz	0.08% + 370	0.1% + 370		
	1 to 5 kHz	0.15% + 450	0.2% + 450		
	5 to 10 kHz	0.3% + 450	0.4% + 450		
	10 to 30 kHz	0.6% + 900	0.8% + 900		
0.33 to 3.29999V	10 to 20 Hz	0.15% + 450	0.2% + 450	10 $\mu\text{V}$	5 mA
	20 to 45 Hz	0.08% + 450	0.1% + 450		
	45 Hz to 1 kHz	0.07% + 450	0.09% + 450		
	1 to 5 kHz	0.15% + 1400	0.2% + 1400		
	5 to 10 kHz	0.3% + 1400	0.4% + 1400		
	10 to 30 kHz	0.6% + 2800	0.8% + 2800		
3.3 to 5V	10 to 20 Hz	0.15% + 450	0.2% + 450	100 $\mu\text{V}$	5 mA
	20 to 45 Hz	0.08% + 450	0.1% + 450		
	45 Hz to 1 kHz	0.07% + 450	0.09% + 450		
	1 to 5 kHz	0.15% + 1400	0.2% + 1400		
	5 to 10 kHz	0.3% + 1400	0.4% + 1400		

<sup>1</sup> Remote sensing is not provided. Output resistance is  $< 5 \text{ m}\Omega$  for outputs  $\geq 0.33\text{V}$ . The AUX output resistance is  $< 1\Omega$ . The maximum load capacitance is 500 pF, subject to the maximum burden current limits.

<sup>2</sup> There are two channels of voltage output. The maximum frequency of the dual output is 30 kHz for the 5520A.

Note: Maximum voltage output is 1020V.

**5500A**

Ranges	Frequency	Absolute Uncertainty, tcal ±5°C ±(% of output + μV)		Resolution	Maximum Burden <sup>1</sup>
		90 Days	1 Year		
1.0 to 32.999 mV	10 to 45 Hz	0.26 + 20	0.35 + 20	1 μV	50Ω
	45 Hz to 10 kHz	0.11 + 20	0.15 + 20		
	10 to 20 kHz	0.15 + 20	0.2 + 20		
	20 to 50 kHz	0.19 + 20	0.25 + 20		
	50 to 100 kHz	0.26 + 33	0.35 + 33		
33 to 329.999 mV	10 to 45 Hz	0.19 + 50	0.25 + 50	1 μV	50Ω
	45 Hz to 10 kHz	0.04 + 20	0.05 + 20		
	10 to 20 kHz	0.08 + 20	0.1 + 20		
	20 to 50 kHz	0.12 + 40	0.16 + 40		
	50 to 100 kHz	0.17 + 170	0.24 + 170		
0.33 to 3.29999V	10 to 45 Hz	0.11 + 250	0.15 + 250	10 μV	10 mA
	45 Hz to 10 kHz	0.02 + 60	0.03 + 60		
	10 to 20 kHz	0.06 + 60	0.08 + 60		
	20 to 50 kHz	0.1 + 300	0.14 + 300		
	50 to 100 kHz	0.17 + 1700	0.24 + 1700		
3.3 to 32.9999V	10 to 45 Hz	0.11 + 2500	0.15 + 2500	100 μV	10 mA
	45 Hz to 10 kHz	0.03 + 600	0.04 + 600		
	10 to 20 kHz	0.06 + 2600	0.08 + 2600		
	20 to 50 kHz	0.14 + 5000	0.19 + 5000		
	50 to 100 kHz	0.17 + 17000	0.24 + 17000		
33 to 329.999V	45 Hz to 1 kHz	0.04 + 6.6 mV	0.05 + 6.6 mV	1 mV	5 mA, except 20 mA for 45 to 65 Hz
	1 to 10 kHz	0.06 + 15 mV	0.08 + 15 mV		
	10 to 20 kHz	0.07 + 33 mV	0.09 + 33 mV		
330 to 1000V	45 Hz to 1 kHz	0.04 + 80 mV	0.05 + 80 mV	10 mV	2 mA, except 6 mA for 45 to 65 Hz
	1 to 5 kHz	0.15 + 100 mV	0.20 + 100 mV		
	5 to 10 kHz	0.15 + 500 mV	0.20 + 500 mV		
<b>5725 Amplifier</b>					
10 to 329.999 mV	45 Hz to 1 kHz	0.04 + 80 mV	0.05 + 80 mV	10 mV	50 mA 70 mA 70 mA
	1 to 20 kHz	0.06 + 100 mV	0.08 + 100 mV		
	20 to 30 kHz	0.08 + 100 mV	0.1 + 100 mV		
100 to 750V	30 to 100 kHz	0.38 + 500 mV	0.5 + 500 mV	10 μV	70 mA
<b>Auxiliary Output (dual output mode only)<sup>2</sup></b>					
10 to 329.999 mV	10 to 20 Hz	0.15 + 370	0.2 + 370	1 μV	5 mA
	20 to 45 Hz	0.08 + 370	0.1 + 370		
	45 Hz to 1 kHz	0.08 + 370	0.1 + 370		
	1 to 5 kHz	0.15 + 450	0.2 + 450		
	5 to 10 kHz	0.3 + 450	0.4 + 450		
0.33 to 3.29999V	10 to 20 Hz	0.15 + 450	0.2 + 450	10 μV	5 mA
	20 to 45 Hz	0.08 + 450	0.1 + 450		
	45 Hz to 1 kHz	0.07 + 450	0.09 + 450		
	1 to 5 kHz	0.15 + 1400	0.2 + 1400		
	5 to 10 kHz	0.3 + 1400	0.4 + 1400		

<sup>1</sup> Remote sensing is not provided. Output resistance is <5 mΩ for outputs ≥0.33V. The AUX output resistance is <1Ω. The maximum load capacitance is 500 pF, subject to the maximum burden current limits.

<sup>2</sup> There are two channels of voltage output. The maximum frequency of the dual output is 10 kHz for the 5500A. Note: Maximum voltage output is 1020V.

# AC Current (Sinewave) Specifications

## 5520A (LCOMP Off)

Ranges	Frequency	Absolute Uncertainty, $t_{cal} \pm 5^{\circ}\text{C} \pm (\% \text{ of output} + \mu\text{A})$				Maximum Inductive Load
		90 Days		1 Year		
29.00 to 329.99 $\mu\text{A}$	10 to 20 Hz	0.16%	0.1 $\mu\text{A}$	0.2%	0.1 $\mu\text{A}$	200 $\mu\text{H}$
	20 to 45 Hz	0.12%	0.1 $\mu\text{A}$	0.15%	0.1 $\mu\text{A}$	
	45 Hz to 1 kHz	0.1%	0.1 $\mu\text{A}$	0.125%	0.1 $\mu\text{A}$	
	1 to 5 kHz	0.25%	0.15 $\mu\text{A}$	0.3%	0.15 $\mu\text{A}$	
	5 to 10 kHz	0.6%	0.2 $\mu\text{A}$	0.8%	0.2 $\mu\text{A}$	
	10 to 30 kHz	1.2%	0.4 $\mu\text{A}$	1.6%	0.4 $\mu\text{A}$	
0.33 to 3.2999 mA	10 to 20 Hz	0.16%	0.15 $\mu\text{A}$	0.2%	0.15 $\mu\text{A}$	200 $\mu\text{H}$
	20 to 45 Hz	0.1%	0.15 $\mu\text{A}$	0.125%	0.15 $\mu\text{A}$	
	45 Hz to 1 kHz	0.08%	0.15 $\mu\text{A}$	0.1%	0.15 $\mu\text{A}$	
	1 to 5 kHz	0.16%	0.2 $\mu\text{A}$	0.2%	0.2 $\mu\text{A}$	
	5 to 10 kHz	0.4%	0.3 $\mu\text{A}$	0.5%	0.3 $\mu\text{A}$	
	10 to 30 kHz	0.8%	0.6 $\mu\text{A}$	1.0%	0.6 $\mu\text{A}$	
3.3 to 32.999 mA	10 to 20 Hz	0.15%	2 $\mu\text{A}$	0.18%	2 $\mu\text{A}$	50 $\mu\text{H}$
	20 to 45 Hz	0.075%	2 $\mu\text{A}$	0.09%	2 $\mu\text{A}$	
	45 Hz to 1 kHz	0.035%	2 $\mu\text{A}$	0.04%	2 $\mu\text{A}$	
	1 to 5 kHz	0.065%	2 $\mu\text{A}$	0.08%	2 $\mu\text{A}$	
	5 to 10 kHz	0.16%	3 $\mu\text{A}$	0.2%	3 $\mu\text{A}$	
	10 to 30 kHz	0.32%	4 $\mu\text{A}$	0.4%	4 $\mu\text{A}$	
33 to 329.99 mA	10 to 20 Hz	0.15%	20 $\mu\text{A}$	0.18%	20 $\mu\text{A}$	50 $\mu\text{H}$
	20 to 45 Hz	0.075%	20 $\mu\text{A}$	0.09%	20 $\mu\text{A}$	
	45 Hz to 1 kHz	0.035%	20 $\mu\text{A}$	0.04%	20 $\mu\text{A}$	
	1 to 5 kHz	0.08%	50 $\mu\text{A}$	0.10%	50 $\mu\text{A}$	
	5 to 10 kHz	0.16%	100 $\mu\text{A}$	0.2%	100 $\mu\text{A}$	
	10 to 30 kHz	0.32%	200 $\mu\text{A}$	0.4%	200 $\mu\text{A}$	
0.33 to 2.99999A	10 to 45 Hz	0.15%	100 $\mu\text{A}$	0.18%	100 $\mu\text{A}$	2.5 $\mu\text{H}$
	45 Hz to 1 kHz	0.05%	100 $\mu\text{A}$	0.06%	100 $\mu\text{A}$	
	1 to 5 kHz <sup>2</sup>	0.5%	1000 $\mu\text{A}$	0.6%	1000 $\mu\text{A}$	
	5 to 10 kHz <sup>3</sup>	2.0%	5000 $\mu\text{A}$	2.5%	5000 $\mu\text{A}$	
3 to 10.9999A	45 to 100 Hz	0.05%	2000 $\mu\text{A}$	0.06%	2000 $\mu\text{A}$	1 $\mu\text{H}$
	100 to 1 kHz	0.08%	2000 $\mu\text{A}$	0.10%	2000 $\mu\text{A}$	
	1 to 5 kHz	2.0%	2000 $\mu\text{A}$	2.5%	2000 $\mu\text{A}$	
11 to 20.5A <sup>1</sup>	45 to 100 Hz	0.1%	5000 $\mu\text{A}$	0.12%	5000 $\mu\text{A}$	1 $\mu\text{H}$
	100 Hz to 1 kHz	0.13%	5000 $\mu\text{A}$	0.15%	5000 $\mu\text{A}$	
	1 to 5 kHz	2.0%	5000 $\mu\text{A}$	2.5%	5000 $\mu\text{A}$	

<sup>1</sup> At 20°C, full 20.5A output is available continuously for 20 minutes.

<sup>2</sup> For compliance voltages greater than 1V, add 1 mA/V to the floor specification from 1 to 5 kHz.

<sup>3</sup> For compliance voltages greater than 1V, add 5 mA/V to the floor specification from 5 to 10 kHz.

**5520A (LCOMP On)**

Ranges	Frequency	Absolute Uncertainty, tcal ±5°C ±(% of output + μA)				Maximum Inductive Load
		90 Days		1 Year		
29.00 to 329.99 μA	10 to 100 Hz	0.2%	0.2 μA	0.25%	0.2 μA	400 μH
	100 Hz to 1 kHz	0.5%	0.5 μA	0.6%	0.5 μA	
0.33 to 3.2999 mA	10 to 100 Hz	0.2%	0.3 μA	0.25%	0.3 μA	400 μH
	100 Hz to 1 kHz	0.5%	0.8 μA	0.6%	0.8 μA	
3.3 to 32.999 mA	10 to 100 Hz	0.07%	4 μA	0.08%	4 μA	400 μH
	100 Hz to 1 kHz	0.18%	10 μA	0.2%	10 μA	
33 to 329.99 mA	10 to 100 Hz	0.07%	40 μA	0.08%	40 μA	400 μH
	100 Hz to 1 kHz	0.18%	100 μA	0.2%	100 μA	
0.33 to 2.99999A	10 to 100 Hz	0.1%	200 μA	0.12%	200 μA	400 μH
	100 to 440 Hz	0.25%	1000 μA	0.3%	1000 μA	
3 to 20.5A <sup>1</sup>	45 to 100 Hz	0.1%	2000 μA	0.12%	2000 μA	400 μH <sup>2</sup>
	100 to 440 Hz	0.8%	5000 μA	1.0%	5000 μA	

<sup>1</sup> At 20°C, full 20.5A output is available continuously for 20 minutes.

<sup>2</sup> Subject to compliance voltage limit.

**5520A Resolution and Compliance Voltage**

Ranges	Resolution	Maximum Compliance Voltage
0.029 to 0.32999 mA	0.01 μA	7V rms
0.33 to 3.29999 mA	0.01 μA	7V rms
3.3 to 32.9999 mA	0.1 μA	5V rms
33 to 329.999 mA	1 μA	5V rms
0.33 to 2.99999A	10 μA	4V rms <sup>1</sup>
3 to 20.5A	100 μA	3V rms

<sup>1</sup> Subject to specification adder for compliance voltages greater than 1V rms (previous page).

# AC Current (Sinewave) Specifications

## 5500A

Ranges	Frequency	Absolute Uncertainty, teal $\pm 5^{\circ}\text{C}$ $\pm(\% \text{ of output} + \mu\text{A})$		Resolution	Compliance Voltage	Maximum Inductive Load
		90 Days	1 Year			
29.00 to 329.99 $\mu\text{A}$	10 to 20 Hz	0.19 + 0.15	0.25 + 0.15	0.01 $\mu\text{A}$	3V rms	1 $\mu\text{H}$
	20 to 45 Hz	0.09 + 0.15	0.125 + 0.15			
	45 Hz to 1 kHz	0.09 + 0.25	0.125 + 0.25			
	1 to 5 kHz	0.30 + 0.15	0.4 + 0.15			
	5 to 10 kHz	0.94 + 0.15	1.25 + 0.15			
0.33 to 3.2999 mA	10 to 20 Hz	0.15 + 0.3	0.2 + 0.3	0.01 $\mu\text{A}$	3V rms	1 $\mu\text{H}$
	20 to 45 Hz	0.08 + 0.3	0.1 + 0.3			
	45 Hz to 1 kHz	0.08 + 0.3	0.1 + 0.3			
	1 to 5 kHz	0.15 + 0.3	0.2 + 0.3			
	5 to 10 kHz	0.45 + 0.3	0.6 + 0.3			
3.3 to 32.999 mA	10 to 20 Hz	0.15 + 3	0.2 + 3	0.1 $\mu\text{A}$	3V rms	200 $\mu\text{H}$ , 10 to 500 Hz  1 $\mu\text{H}$ , 500 Hz to 10 kHz
	20 to 45 Hz	0.08 + 3	0.1 + 3			
	45 Hz to 1 kHz	0.07 + 3	0.09 + 3			
	1 to 5 kHz	0.15 + 3	0.2 + 3			
	5 to 10 kHz	0.45 + 3	0.6 + 3			
33 to 329.99 mA	10 to 20 Hz	0.15 + 30	0.2 + 30	1 $\mu\text{A}$	3V rms	200 $\mu\text{H}$ , 10 to 500 Hz  5 $\mu\text{H}$ , 500 Hz to 10 kHz
	20 to 45 Hz	0.08 + 30	0.1 + 30			
	45 Hz to 1 kHz	0.07 + 30	0.09 + 30			
	1 to 5 kHz	0.15 + 30	0.2 + 30			
	5 to 10 kHz	0.45 + 30	0.6 + 30			
0.33 to 2.19999A	10 to 45 Hz	0.15 + 300	0.2 + 300	10 $\mu\text{A}$	3V rms	200 $\mu\text{H}$ , 45 to 500 Hz 5 $\mu\text{H}$ , 500 Hz to 5 kHz
	45 Hz to 1 kHz	0.08 + 300	0.1 + 300			
	1 to 5 kHz	0.07 + 300	0.75 + 300			
2.2 to 11A	45 to 65 Hz	0.05 + 2000	0.06 + 2000	100 $\mu\text{A}$	2.8V rms	200 $\mu\text{H}$ , 45 to 65 Hz 1 $\mu\text{H}$ , 65 Hz to 1 kHz
	65 to 500 Hz	0.08 + 2000	0.1 + 2000			
	500 Hz to 1 kHz	0.25 + 2000	0.33 + 2000			
<b>5725A Amplifier</b>						
1.5 to 11A	45 Hz to 1 kHz	0.08 + 100	0.01 + 100	100 $\mu\text{A}$	3V rms	400 $\mu\text{H}$
	1 to 5 kHz	0.19 + 5000	0.25 + 5000			
	5 to 10 kHz	0.75 + 10000	1 + 10000			

# Capacitance Specifications

## 5520A

Ranges	Absolute Uncertainty, tcal ±5°C ±(% of output + nF)		Resolution	Allowed Frequency or Charge-Discharge Rate	
	90 Days	1 Year		To Meet Specification	Typical for < 0.5% Error
0.19 to 0.3999 nF	0.38 + 0.01	0.5 + 0.01	0.1 pF	10 Hz to 10 kHz	20 kHz
0.4 to 1.0999 nF	0.38 + 0.01	0.5 + 0.01	0.1 pF	10 Hz to 10 kHz	30 kHz
1.1 to 3.2999 nF	0.38 + 0.01	0.5 + 0.01	0.1 pF	10 to 3000 Hz	30 kHz
3.3 to 10.9999 nF	0.19 + 0.01	0.25 + 0.01	0.1 pF	10 to 1000 Hz	20 kHz
11 to 32.9999 nF	0.19 + 0.1	0.25 + 0.1	0.1 pF	10 to 1000 Hz	8 kHz
33 to 109.999 nF	0.19 + 0.1	0.25 + 0.1	1 pF	10 to 1000 Hz	4 kHz
110 to 329.999 nF	0.19 + 0.3	0.25 + 0.3	1 pF	10 to 1000 Hz	2.5 kHz
0.33 to 1.09999 μF	0.19 + 1	0.25 + 1	10 pF	10 to 600 Hz	1.5 kHz
1.1 to 3.29999 μF	0.19 + 3	0.25 + 3	10 pF	10 to 300 Hz	800 Hz
3.3 to 10.9999 μF	0.19 + 10	0.25 + 10	100 pF	10 to 150 Hz	450 Hz
11 to 32.9999 μF	0.30 + 30	0.40 + 30	100 pF	10 to 120 Hz	250 Hz
33 to 109.999 μF	0.34 + 100	0.45 + 100	1 nF	10 to 80 Hz	150 Hz
110 to 329.999 μF	0.34 + 300	0.45 + 300	1 nF	To 50 Hz	80 Hz
0.33 to 1.09999 mF	0.34 + 1 μF	0.45 + 1 μF	10 nF	To 20 Hz	45 Hz
1.1 to 3.2999 mF	0.34 + 3 μF	0.45 + 3 μF	10 nF	To 6 Hz	30 Hz
3.3 to 10.9999 mF	0.34 + 10 μF	0.45 + 10 μF	100 nF	To 2 Hz	15 Hz
11 to 32.9999 mF	0.7 + 30 μF	0.75 + 30 μF	100 nF	To 0.6 Hz	7.5 Hz
33 to 110 mF	1.0 + 100 μF	1.1 + 100 μF	10 μF	To 0.2 Hz	3 Hz

### Notes

1. The output is continuously variable from 190 pF to 110 mF.
2. Specifications apply to both dc charge/discharge capacitance meters and ac RCL meters.
3. The maximum peak voltage allowable is 3V. The maximum allowable peak current is 150 mA.
4. The maximum lead resistance for no additional error in 2-wire COMP mode is 10 ohms.

# Capacitance Specifications

## 5500A

Ranges	Absolute Uncertainty, tcal $\pm 5^{\circ}\text{C}$ $\pm(\% \text{ of output} + \text{nF})$		Resolution	Allowed Frequency or Charge-Discharge Rate	
	90 Days	1 Year		To Meet Specification	Typical for $<5\%$ Error
0.33 to 0.4999 nF	0.38 + 0.01	0.5 + 0.01	0.1 pF	50 to 1000 Hz	10 kHz
0.5 to 1.0999 nF	0.38 + 0.01	0.5 + 0.01	0.1 pF	50 to 1000 Hz	10 kHz
1.1 to 3.2999 nF	0.38 + 0.01	0.5 + 0.01	0.1 pF	50 to 1000 Hz	10 kHz
3.3 to 10.9999 nF	0.38 + 0.01	0.5 + 0.01	1 pF	50 to 1000 Hz	10 kHz
11 to 32.9999 nF	0.19 + 0.1	0.25 + 0.1	1 pF	50 to 1000 Hz	10 kHz
33 to 109.999 nF	0.19 + 0.1	0.25 + 0.1	10 pF	50 to 1000 Hz	10 kHz
110 to 329.999 nF	0.19 + 0.3	0.25 + 0.3	10 pF	50 to 1000 Hz	10 kHz
0.33 to 1.09999 $\mu\text{F}$	0.19 + 1	0.25 + 1	100 pF	50 to 1000 Hz	5 kHz
1.1 to 3.29999 $\mu\text{F}$	0.26 + 3	0.35 + 3	100 pF	50 to 1000 Hz	2 kHz
3.3 to 10.9999 $\mu\text{F}$	0.26 + 10	0.35 + 10	1 nF	50 to 400 Hz	1.5 kHz
11 to 32.9999 $\mu\text{F}$	0.3 + 30	0.4 + 30	1 nF	50 to 400 Hz	800 Hz
33 to 109.999 $\mu\text{F}$	0.38 + 100	0.5 + 100	10 nF	50 to 200 Hz	400 Hz
110 to 329.999 $\mu\text{F}$	0.5 + 300	0.7 + 300	10 nF	50 to 100 Hz	200 Hz
0.33 to 1.1 mF	1 + 300	1 + 300	100 nF	50 to 100 Hz	150 Hz

### Notes

1. The output is continuously variable from 330 pF to 1.1 mF.
2. Specifications apply to both dc charge/discharge capacitance meters and ac RCL meters.
3. For all ranges, the maximum charge and discharge current is 150 mA peak.  
The peak voltage is 4V, except the 0.33 to 1.1 mF range is limited to 1V.
4. The maximum lead resistance for no additional error in 2-wire COMP mode is 10 $\Omega$ .

# Temperature Calibration Specifications

## 5520A/5500A Thermocouple

TC Type	Range		Absolute Uncertainty, tcal ±5°C ±(°C) <sup>1</sup> Source/Measure	
	Minimum	Maximum	90 Days	1 Year
<b>B</b>	600°C	800°C	0.42°C	0.44°C
	800°C	1000°C	0.34°C	0.34°C
	1000°C	1550°C	0.30°C	0.30°C
	1550°C	1820°C	0.26°C	0.33°C
<b>C</b>	0°C	150°C	0.23°C	0.30°C
	150°C	650°C	0.19°C	0.26°C
	650°C	1000°C	0.23°C	0.31°C
	1000°C	1800°C	0.38°C	0.50°C
	1800°C	2316°C	0.63°C	0.84°C
<b>E</b>	-250°C	-100°C	0.38°C	0.50°C
	-100°C	-25°C	0.12°C	0.16°C
	-25°C	350°C	0.10°C	0.14°C
	350°C	650°C	0.12°C	0.16°C
	650°C	1000°C	0.16°C	0.21°C
<b>J</b>	-210°C	-100°C	0.20°C	0.27°C
	-100°C	-30°C	0.12°C	0.16°C
	-30°C	150°C	0.10°C	0.14°C
	150°C	760°C	0.13°C	0.17°C
	760°C	1200°C	0.18°C	0.23°C
<b>K</b>	-200°C	-100°C	0.25°C	0.33°C
	-100°C	-25°C	0.14°C	0.18°C
	-25°C	120°C	0.12°C	0.16°C
	120°C	1000°C	0.19°C	0.26°C
	1000°C	1372°C	0.30°C	0.40°C
<b>L</b>	-200°C	-100°C	0.37°C	0.37°C
	-100°C	800°C	0.26°C	0.26°C
	800°C	900°C	0.17°C	0.17°C
<b>N</b>	-200°C	-100°C	0.30°C	0.40°C
	-100°C	-25°C	0.17°C	0.22°C
	-25°C	120°C	0.15°C	0.19°C
	120°C	410°C	0.14°C	0.18°C
	410°C	1300°C	0.21°C	0.27°C
<b>R</b>	0°C	250°C	0.48°C	0.57°C
	250°C	400°C	0.28°C	0.35°C
	400°C	1000°C	0.26°C	0.33°C
	1000°C	1767°C	0.30°C	0.40°C
<b>S</b>	0°C	250°C	0.47°C	0.47°C
	250°C	1000°C	0.30°C	0.36°C
	1000°C	1400°C	0.28°C	0.37°C
	1400°C	1767°C	0.34°C	0.46°C
<b>T</b>	-250°C	-150°C	0.48°C	0.63°C
	-150°C	0°C	0.18°C	0.24°C
	0°C	120°C	0.12°C	0.16°C
	120°C	400°C	0.10°C	0.14°C
<b>U</b>	-200°C	0°C	0.56°C	0.56°C
	0°C	600°C	0.27°C	0.27°C

<sup>1</sup> Does not include thermocouple error.

**Notes** 1. Resolution is 0.01°C.

2. Temperature standard ITS-90 or IPTS-68 is selectable.

# Temperature Calibration Specifications

## 5520A/5500A RTD

RTD Type	Range		Absolute Uncertainty, tcal $\pm 5^{\circ}\text{C} \pm (^{\circ}\text{C})^1$	
	Minimum	Maximum	90 Days	1 Year
Pt 385, 100 $\Omega$	-200 $^{\circ}\text{C}$	-80 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$
	-80 $^{\circ}\text{C}$	0 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$
	0 $^{\circ}\text{C}$	100 $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$
	100 $^{\circ}\text{C}$	300 $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$
	300 $^{\circ}\text{C}$	400 $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$	0.10 $^{\circ}\text{C}$
	400 $^{\circ}\text{C}$	630 $^{\circ}\text{C}$	0.10 $^{\circ}\text{C}$	0.12 $^{\circ}\text{C}$
	630 $^{\circ}\text{C}$	800 $^{\circ}\text{C}$	0.21 $^{\circ}\text{C}$	0.23 $^{\circ}\text{C}$
Pt 3926, 100 $\Omega$	-200 $^{\circ}\text{C}$	-80 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$
	-80 $^{\circ}\text{C}$	0 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$
	0 $^{\circ}\text{C}$	100 $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$
	100 $^{\circ}\text{C}$	300 $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$
	300 $^{\circ}\text{C}$	400 $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$	0.10 $^{\circ}\text{C}$
	400 $^{\circ}\text{C}$	630 $^{\circ}\text{C}$	0.10 $^{\circ}\text{C}$	0.12 $^{\circ}\text{C}$
Pt 3916, 100 $\Omega$	-200 $^{\circ}\text{C}$	-190 $^{\circ}\text{C}$	0.25 $^{\circ}\text{C}$	0.25 $^{\circ}\text{C}$
	-190 $^{\circ}\text{C}$	-80 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$
	-80 $^{\circ}\text{C}$	0 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$
	0 $^{\circ}\text{C}$	100 $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$
	100 $^{\circ}\text{C}$	260 $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$
	260 $^{\circ}\text{C}$	300 $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$
	300 $^{\circ}\text{C}$	400 $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$
	400 $^{\circ}\text{C}$	600 $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$	0.10 $^{\circ}\text{C}$
Pt 385, 200 $\Omega$	-200 $^{\circ}\text{C}$	-80 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$
	-80 $^{\circ}\text{C}$	0 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$
	0 $^{\circ}\text{C}$	100 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$
	100 $^{\circ}\text{C}$	260 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$
	260 $^{\circ}\text{C}$	300 $^{\circ}\text{C}$	0.11 $^{\circ}\text{C}$	0.12 $^{\circ}\text{C}$
	300 $^{\circ}\text{C}$	400 $^{\circ}\text{C}$	0.12 $^{\circ}\text{C}$	0.13 $^{\circ}\text{C}$
	400 $^{\circ}\text{C}$	600 $^{\circ}\text{C}$	0.12 $^{\circ}\text{C}$	0.14 $^{\circ}\text{C}$
Pt 385, 500 $\Omega$	-200 $^{\circ}\text{C}$	-80 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$
	-80 $^{\circ}\text{C}$	0 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$
	0 $^{\circ}\text{C}$	100 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$
	100 $^{\circ}\text{C}$	260 $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$
	260 $^{\circ}\text{C}$	300 $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$
	300 $^{\circ}\text{C}$	400 $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$
	400 $^{\circ}\text{C}$	600 $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$	0.09 $^{\circ}\text{C}$
Pt 385, 1000 $\Omega$	-200 $^{\circ}\text{C}$	-80 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$
	-80 $^{\circ}\text{C}$	0 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$
	0 $^{\circ}\text{C}$	100 $^{\circ}\text{C}$	0.03 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$
	100 $^{\circ}\text{C}$	260 $^{\circ}\text{C}$	0.04 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$
	260 $^{\circ}\text{C}$	300 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$
	300 $^{\circ}\text{C}$	400 $^{\circ}\text{C}$	0.05 $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$
	400 $^{\circ}\text{C}$	600 $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$
Ni120, 120 $\Omega$	-80 $^{\circ}\text{C}$	0 $^{\circ}\text{C}$	0.06 $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$
	0 $^{\circ}\text{C}$	100 $^{\circ}\text{C}$	0.07 $^{\circ}\text{C}$	0.08 $^{\circ}\text{C}$
	100 $^{\circ}\text{C}$	260 $^{\circ}\text{C}$	0.13 $^{\circ}\text{C}$	0.14 $^{\circ}\text{C}$
	260 $^{\circ}\text{C}$	630 $^{\circ}\text{C}$	0.22 $^{\circ}\text{C}$	0.23 $^{\circ}\text{C}$
Cu 427, 10 $\Omega^2$	-100 $^{\circ}\text{C}$	260 $^{\circ}\text{C}$	0.30 $^{\circ}\text{C}$	0.30 $^{\circ}\text{C}$

<sup>1</sup> Applies for COMP OFF (to the 5520A or 5500A front panel NORMAL terminals) and 2-wire and 4-wire compensation.

<sup>2</sup> Based on MINCO Application Aid No. 18.

**Notes** 1. Resolution is 0.003 $^{\circ}\text{C}$ .

2. Temperature standard ITS-90 or IPTS-68 is selectable.

# DC Power Summary Specifications

## 5520A

	Voltage Range	Absolute Uncertainty, tcal ±5°C ±(% of watts output)		
		Current Range		
		0.33 to 329.99 mA	0.33 to 10.9999A	11 to 20.5A
<b>90 days</b>	33 mV to 1000V	0.021%	0.055%	0.10%
<b>1 year</b>	33 mV to 1000V	0.023%	0.07%	0.12%

Note: Maximum voltage output is 1020V.

## 5500A

	Voltage Range	Absolute Uncertainty, tcal ±5°C ±(% of watts output)		
		Current Range		
		3.3 to 329.99 mA	0.33 to 4.4999A	4.5 to 11A
<b>90 days</b>	33 mV to 1000V	0.03%	0.08%	0.06%
<b>1 year</b>	33 mV to 1000V	0.04%	0.12%	0.09%
<b>5725A Amplifier Current Range</b>		<b>1.5 to 4.4999A</b>		<b>4.5 to 11A</b>
<b>90 days</b>	33 mV to 1000V	0.09%		0.07%
<b>1 year</b>	33 mV to 1000V	0.1%		0.08%

Note: Maximum voltage output is 1020V.

# AC Power Summary Specifications

## 5520A (45 Hz to 65 Hz) PF = 1

	Voltage Range	Absolute Uncertainty, tcal $\pm 5^{\circ}\text{C} \pm (\% \text{ of watts output})$			
		Current Range			
		3.3 to 8.999 mA	9 to 32.999 mA	33 to 89.99 mA	90 to 329.99 mA
90 days	33 to 329.999 mV	0.13%	0.09%	0.13%	0.09%
	330 mV to 1000V	0.11%	0.07%	0.11%	0.07%
1 year	33 to 329.999 mV	0.14%	0.10%	0.14%	0.10%
	330 mV to 1000V	0.12%	0.08%	0.12%	0.08%
		<b>0.33 to 0.8999A</b>	<b>0.9 to 2.9999A</b>	<b>3 to 10.9999A</b>	<b>11 to 20.5A</b>
90 days	33 to 329.999 mV	0.12%	0.10%	0.12%	0.10%
	330 mV to 1000V	0.10%	0.08%	0.11%	0.09%
1 year	33 to 329.999 mV	0.13%	0.11%	0.13%	0.16%
	330 mV to 1000V	0.11%	0.09%	0.12%	0.19%

Note: Maximum voltage output is 1020V.

## 5500A (45 Hz to 65 Hz) PF = 1

	Voltage Range	Absolute Uncertainty, tcal $\pm 5^{\circ}\text{C} \pm (\% \text{ of watts output})$			
		Current Range			
		3.3 to 8.999 mA	9 to 32.999 mA	33 to 89.99 mA	90 to 329.99 mA
90 days	33 to 329.999 mV	0.3%	0.2%	0.25%	0.2%
	330 mV to 1000V	0.2%	0.12%	0.2%	0.12%
1 year	33 to 329.999 mV	0.4%	0.25%	0.35%	0.25%
	330 mV to 1000V	0.25%	0.15%	0.25%	0.15%
<b>5725 Amplifier</b>					
90 days	100 to 1000V	0.2%	0.12%	0.2%	0.12%
1 year	100 to 1000V	0.25%	0.15%	0.25%	0.15%
<b>5500A</b>		<b>0.33 to 0.8999A</b>	<b>0.9 to 2.1999A</b>	<b>2.2 to 4.4999A</b>	<b>4.5 to 11A</b>
90 days	33 to 329.999 mV	0.25%	0.2%	0.25%	0.2%
	330 mV to 1000V	0.2%	0.12%	0.18%	0.12%
1 year	33 to 329.999 mV	0.35%	0.25%	0.35%	0.25%
	330 mV to 1000V	0.25%	0.15%	0.2%	0.15%
<b>5725 Amplifier</b>					
90 days	100 to 1000V	0.2%	0.12%	0.18%	0.12%
1 year	100 to 1000V	0.25%	0.15%	0.20%	0.15%

Note: Maximum voltage output is 1020V.

## 5520A/5500A Phase

1 Year Absolute Uncertainty, tcal $\pm 5^{\circ}\text{C}$ , ( $\Delta\Phi$ degrees)						
	10 to 65 Hz	65 to 500 Hz	500 to 1 kHz	1k to 5 kHz	5k to 10 kHz	10k to 30 kHz
5520A	0.07°	0.25°	0.5°	2.5°	5°	10°
5500A	0.15°	0.9°	2.0°	6°	10°	—

Notes 1. The phase adjustment range for dual ac outputs is 0 to  $\pm 179.99$  degrees.

2. The phase resolution for dual ac outputs is 0.01 degrees for the 5520A and 0.02 degrees for the 5500A.

# Frequency Specifications

## 5520A

Frequency Range	Resolution	1 Year Absolute Uncertainty, tcal ±5°C	Jitter
0.01 to 119.99 Hz	0.01 Hz	2.5 ppm, ±5 µHz	100 nS
120.0 to 1199.9 Hz	0.1 Hz		
1.200 to 11.999 kHz	1.0 Hz		
12.00 to 119.99 kHz	10 Hz		
120.0 to 1199.9 kHz	100 Hz		
1.200 to 2.000 MHz	1 kHz		

## 5500A

Frequency Range	Resolution	1 Year Absolute Uncertainty, tcal ±5°C ± (ppm of output + mHz)	Jitter
0.01 to 119.99 Hz	0.01 Hz	25 + 1	2 µs
120.0 to 1199.9 Hz	0.1 Hz	25 + 1	2 µs
1.200 to 11.999 kHz	1.0 Hz	25 + 1 <sup>1</sup>	2 µs <sup>2</sup>
12.00 to 119.99 kHz	10 Hz	25 + 15	140 ns
120.0 to 1199.9 kHz	100 Hz	25 + 15	140 ns
1.200 to 2.000 MHz	1 kHz	25 + 15	140 ns

<sup>1</sup> Uncertainty is ±25 ppm + 15 mHz above 10 kHz.

<sup>2</sup> Jitter above 10 kHz is <140 ns.

# Extended AC Voltage Specifications

## 5520A Sinewave Extended Bandwidth

Ranges	Frequency	1 Year Absolute Uncertainty, $t_{cal} \pm 5^{\circ}C$ $\pm(\% \text{ of output} + \% \text{ of range})$	Maximum Voltage Resolution
<b>Normal Channel (Single Output Mode)</b>			
1 to 33 mV	0.01 to 9.99 Hz	5.0% + 0.5%	Two digits, e.g., 25 mV
34 to 330 mV			Three digits
0.4 to 3.3V			Two digits
4 to 33V			10 Hz to 500 kHz
0.3 to 3.3V	500.1 kHz to 1 MHz	-8 dB at 1 MHz, typical	Two digits
	1.001 to 2 MHz	-26 dB at 2 MHz, typical	
<b>Auxiliary Output (Dual Output Mode)</b>			
10 to 330 mV	0.01 to 9.99 Hz	5.0% + 0.5%	Three digits
0.4 to 5.0V			Two digits
	10 Hz to 30 kHz	See "5520A AC Voltage (Sinewaves) Specifications"	

## 5500A Sinewave Extended Bandwidth

Ranges	Frequency	1 Year Absolute Uncertainty, $t_{cal} \pm 5^{\circ}C$ $\pm(\% \text{ of output} + \% \text{ of range})$	Maximum Voltage Resolution
<b>Normal Channel (Single Output Mode)</b>			
1 to 33 mV	0.01 to 9.99 Hz	5.0% + 0.5%	Two digits, e.g., 25 mV
34 to 330 mV			Three digits
0.4 to 3.3V			Two digits
4 to 33V			10 Hz to 500 kHz
0.3 to 3.3V	500.1 kHz to 1 MHz	-8 dB at 1 MHz, typical	Two digits
	1.001 to 2 MHz	-32 dB at 2 MHz, typical	
<b>Auxiliary Output (Dual Output Mode)</b>			
10 to 330 mV	0.01 to 9.99 Hz	5.0% + 0.5%	Three digits
0.4 to 3.3V			Two digits
	10 Hz to 10 kHz	See "5500A AC Voltage (Sinewaves) Specifications"	

# AC Voltage (Non-Sinewave) Specifications

## 5520A/5500A

Trianglewave and Truncated Sine Ranges Peak-to-Peak	Frequency	1 Year Absolute Uncertainty, tcal ±5°C ±(% of output + % of range)	Maximum Voltage Resolution
<b>Normal Channel (Single Output Mode)</b>			
2.9 mV to 93V	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 20 kHz	0.5% + 0.25%	
	20 to 100 kHz	5.0% + 0.5%	
<b>5520A Auxiliary Output (Dual Output Mode)</b>			
29 mV to 14V	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 10 kHz	5.0% + 0.5%	
<b>5500A Auxiliary Output (Dual Output Mode)</b>			
29 mV to 9.3V	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 10 kHz	5.0% + 0.5%	

Squarewave Ranges Peak-to-Peak	Frequency	1 Year Absolute Uncertainty, tcal ±5°C ±(% of output + % of range)	Maximum Voltage Resolution
<b>Normal Channel (Single Output Mode)</b>			
2.9 mV to 66V	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 20 kHz	0.5% + 0.25%	
	20 to 100 kHz	5.0% + 0.5%	
<b>5520A Auxiliary Output (Dual Output Mode)</b>			
29 mV to 14V	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 10 kHz	5.0% + 0.5%	
<b>5500A Auxiliary Output (Dual Output Mode)</b>			
29 mV to 6.6V	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 10 kHz	5.0% + 0.5%	

## 5520A/5500A Squarewave Characteristics

Risetime @ 1 kHz Typical	Settling Time @ 1 kHz Typical	Overshoot @ 1 kHz Typical	Duty Cycle Range	Duty Cycle Uncertainty <sup>1</sup>
<1 μs	<10 μs to 1% of final value	<2%	1% to 99%, <3.3V p-p, 0.01 Hz to 100 kHz	±(0.8% of period + 100 ns)

<sup>1</sup> For duty cycles of 10.00% to 90.00%.

## 5520A/5500A Trianglewave Characteristics (typical)

Linearity to 1 kHz	Aberrations
0.3% of p-p value, from 10% to 90% point	<1% of p-p value, with amplitude >50% of range

# AC Current (Non-Sinewave) Specifications

## 5520A (Trianglewave and Truncated Sinewave)

Ranges Peak-to-Peak	Frequency	1 Year Absolute Uncertainty, tcal $\pm 5^{\circ}\text{C}$ $\pm(\% \text{ of output} + \% \text{ of range})$	Maximum Current Resolution
0.047 to 0.92999 mA	0.01 to 10 Hz	5.0% + 0.5%	Two digits, e.g., 0.75 mA
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 10 kHz	10.0% + 2.0%	
0.93 to 9.29999 mA	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 10 kHz	10.0% + 2.0%	
9.3 to 92.9999 mA	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 10 kHz	10.0% + 2.0%	
93 to 929.999 mA	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.5%	
	1 to 10 kHz	10.0% + 2.0%	
0.93 to 8.49999A	10 to 45 Hz	0.5% + 1.0%	
0.93 to 8.49999A	45 Hz to 1 kHz	0.5% + 0.5%	Six digits on each range
	1 to 10 kHz	10.0% + 2.0%	
	8.5 to 57A	45 to 500 Hz	
8.5 to 57A	500 Hz to 1 kHz	1.0% + 1.0%	

**5520A (Squarewave)**

Ranges Peak-to-Peak	Frequency	1 Year Absolute Uncertainty, tcal ±5°C ±(% of output + % of range)	Maximum Current Resolution
0.047 to 0.65999 mA	0.01 to 10 Hz	5.0% + 0.5%	Two digits, e.g., 50 mA
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 10 kHz	10.0% + 2.0%	
0.66 to 6.59999 mA	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 10 kHz	10.0% + 2.0%	
6.6 to 65.9999 mA	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 10 kHz	10.0% + 2.0%	
66 to 659.999 mA	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.5%	
	1 to 10 kHz	10.0% + 2.0%	
0.66 to 5.99999 A	10 to 45 Hz	0.5% + 1.0%	
0.66 to 5.99999 A	45 Hz to 1 kHz	0.5% + 0.5%	
	1 to 10 kHz	10.0% + 2.0%	
6 to 41A	45 to 500 Hz	0.5% + 0.5%	
	500 Hz to 1 kHz	1.0% + 1.0%	

# AC Current (Non-Sinewave) Specifications

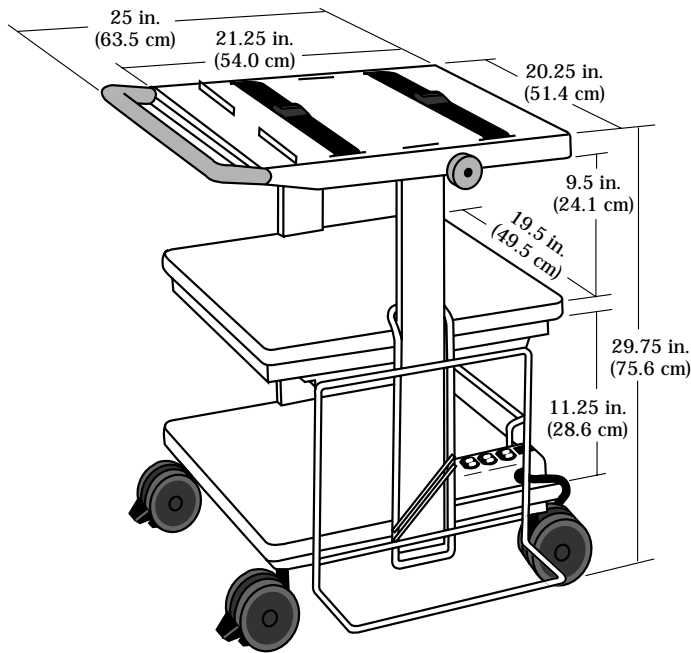
## 5500A (Trianglewave and Truncated Sinewave)

Ranges Peak-to-Peak	Frequency	1 Year Absolute Uncertainty, tcal $\pm 5^{\circ}\text{C}$ $\pm(\% \text{ of output} + \% \text{ of range})$	Maximum Current Resolution
0.047 to 92.999 mA	0.01 to 10 Hz	5.0% + 0.5%	Two digits, e.g., 0.50 mA
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 10 kHz	5.0% + 0.5%	
93 to 929.999 mA	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.5%	
	1 to 10 kHz	0.5% + 1.0%	
9.3 to 6.19999A	10 to 45 Hz	5.0% + 1.0%	Two digits on each range
	45 Hz to 1 kHz	0.5% + 0.5%	Six digits on each range
	1 to 10 kHz	5.0% + 1.0%	
6.2 to 31A	45 to 500 Hz	2.0% + 0.5%	Two digits on each range
	500 to 1 kHz	5.0% + 1.0%	Six digits on each range

## 5500A (Squarewave)

Ranges Peak-to-Peak	Frequency	1 Year Absolute Uncertainty, tcal $\pm 5^{\circ}\text{C}$ $\pm(\% \text{ of output} + \% \text{ of range})$	Maximum Current Resolution
0.047 to 65.999 mA	0.01 to 10 Hz	5.0% + 0.5%	Two digits, e.g., 50 mA
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.25%	
	1 to 10 kHz	5.0% + 0.5%	
66 to 659.999 mA	0.01 to 10 Hz	5.0% + 0.5%	Two digits on each range
	10 to 45 Hz	0.25% + 0.5%	Six digits on each range
	45 Hz to 1 kHz	0.25% + 0.5%	
	1 to 10 kHz	0.5% + 1.0%	
0.66 to 4.39999A	10 to 45 Hz	5.0% + 1.0%	Two digits on each range
	45 Hz to 1 kHz	0.5% + 0.5%	Six digits on each range
	1 to 10 kHz	5.0% + 1.0%	
4.4 to 22A	45 to 500 Hz	2.0% + 0.5%	Two digits on each range
	500 Hz to 1 kHz	5.0% + 1.0%	Six digits on each range

# Ordering Information



The TC100 Instrument Cart provides three levels of work surface, each of which accommodates instruments up to 48.26 cm (19 in) wide. The top shelf can be adjusted over an angle of 25° and it has a safety lock. The cart has a capacity of 136.08 kg (300 lb). Four casters, two of which can be locked, provide excellent mobility and maneuverability. Options include a line power strip, accessories drawer and a CPU bracket.

**Cart Size:** 51.435 cm (20.25 in) W x 53.6575 cm (21.25 in) D x 75.565 cm (29.75 in) H

**Drawer Size:** 45.085 cm (17.75 in) W x 49.53 cm (19.5 in) D x 7.62 cm (3 in) H

**CPU Bracket Size:** 38.1 cm (15 in) W x 13.97 cm (5.5 in) D x 43.18 cm (17 in) H

## Ordering Information

5500A Multi-Product Calibrator

5520A High Performance Multi-Product Calibrator

## Options

5500A-SC300 300 MHz/1 ns Oscilloscope Calibration Option

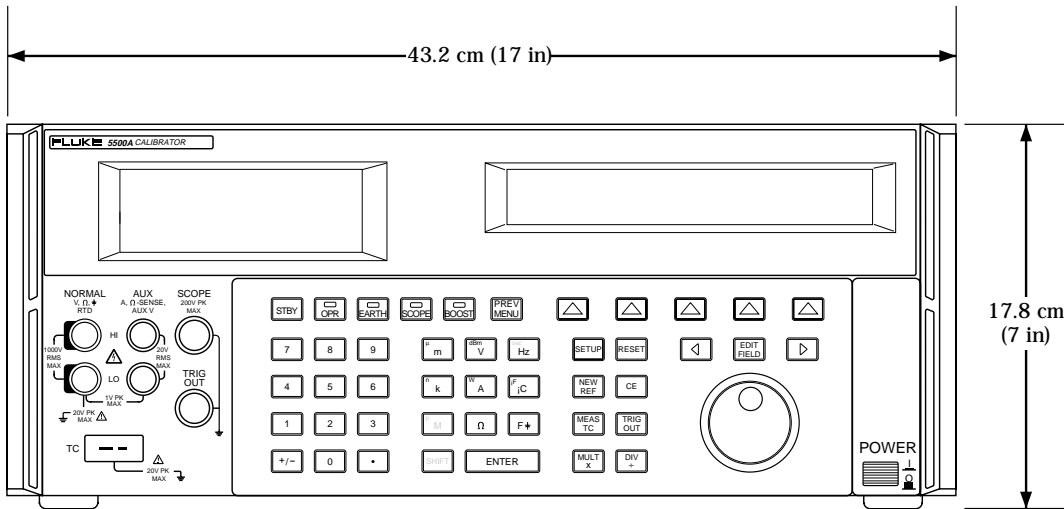
5500A-SC600 600 MHz/300 ps Oscilloscope Calibration Option

## Accessories

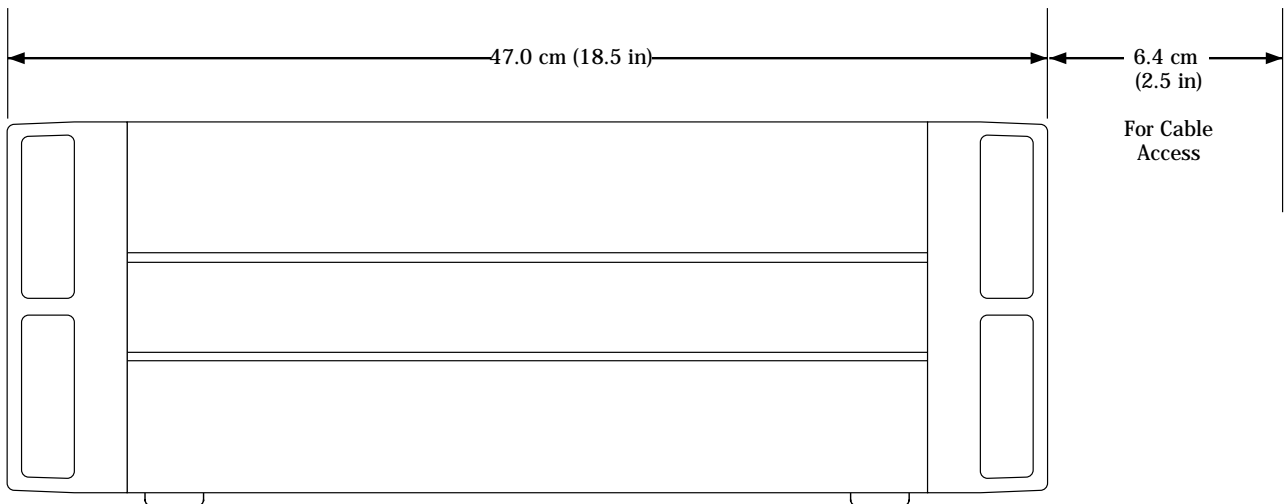
5500A/COIL	50-Turn Current Coil
5500A/CASE	Roll-Aboard Transit Case
5500A/LEADS	Comprehensive Test Lead Kit
5500A/HNDL	Side Carry Handle
Y5537	Rack Mount Kit
TC100	Test Cart
5725A	Amplifier (5500A Only)
MET/CAL®	Calibration Software (IEEE and RS232)
5500/CAL	Calibration Software (RS232)

## Pressure Modules (5520A only)

FLUKE-700PCK	Pressure Module Calibration Kit (Required)
FLUKE-700P01	Pressure Module 0-10 IN. H2O DIFF
FLUKE-700P02	Pressure Module 0-1 PSID
FLUKE-700P03	Pressure Module 0-5 PSID
FLUKE-700P04	Pressure Module 0-15 PSID
FLUKE-700P05	Pressure Module 0-30 PSIG
FLUKE-700P06	Pressure Module 0-100 PSIG
FLUKE-700P07	Pressure Module 0-500 PSIG
FLUKE-700P08	Pressure Module 0-1000 PSIG
FLUKE-700P09	Pressure Module 1500PSIG
FLUKE-700P22	Pressure Module 0-1 PSID WET
FLUKE-700P23	Pressure Module 0-5 PSID WET
FLUKE-700P24	Pressure Module 0-15 PSID WET
FLUKE-700P29	Pressure Module 3000 PSIG WET
FLUKE-700P30	Pressure Module 5000 PSIG WET
FLUKE-700P31	Pressure Module 10000 PSIG WET
FLUKE-700PA3	Pressure Module 0-5 PSIA
FLUKE-700PA4	Pressure Module 0-15 PSIA
FLUKE-700PA5	Pressure Module 0-30 PSIA
FLUKE-700PA6	Pressure Module 0-100 PSIA
FLUKE-700PD2	Pressure Module ±1 PSID
FLUKE-700PD3	Pressure Module ±5 PSID
FLUKE-700PD4	Pressure Module ±15 PSID
FLUKE-700PD5	Pressure Module -15+30 PSIG
FLUKE-700PD6	Pressure Module -15+100 PSIG
FLUKE-700PD7	Pressure Module -15+200 PSIG
FLUKE-700PV3	Pressure Module -5 PSID
FLUKE-700PV4	Pressure Module -15 PSID
FLUKE-700PMP	Pressure Pump



Front view and dimensions.



Side view and dimensions.

Note: 5500A and 5520A dimensions are the same.

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