

# Manual Supplement

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This supplement contains information necessary to ensure the accuracy of the above manual. This manual is distributed as an electronic manual on the following CD-ROM:

CD Title:	5500A & 5520A
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## Change #1

Replace page 1-12, **1-15. DC Current Specifications**, with the following:

### 1-15. DC Current Specifications

Range	Absolute Uncertainty, tcal ± 5 °C ± (ppm of output + µA)		Resolution	Max Compliance Voltage V	Max Inductive Load mH
	90 days	1 year			
0 to 329.999 mA	120 + 0.02	150 + 0.02	1 nA	10	400
0 to 3.29999 mA	80 + 0.05	100 + 0.05	0.01 mA	10	
0 to 32.9999 mA	80 + 0.25	100 + 0.25	0.1 mA	7	
0 to 329.999 mA	80 + 2.5	100 + 2.5	1 mA	7	
0 to 1.09999 A	160 + 40	200 + 40	10 mA	6	
1.1 to 2.99999 A	300 + 40	380 + 40	10 mA	6	
0 to 10.9999 A (20 A Range)	380 + 500	500 + 500	100 mA	4	
11 to 20.5 A [1]	800 + 750 [2]	1000 + 750 [2]	100 mA	4	

[1] Duty Cycle: Currents < 11 A may be provided continuously. For currents > 11 A, see Figure 1-4. The current may be provided 60-T-I minutes any 60 minute period where T is the temperature in °C (room temperature is about 23°C) and I is the output current in Amps. For example, 17 A, at 23 °C could be provided for 60-17-23 = 20 minutes each hour. When the 5520A is outputting currents between 5 and 11 amps for long periods, the internal self-heating reduces the duty cycle. Under those conditions, the allowable "on" time indicated by the formula and Figure 1-4 is achieved only after the 5520A is outputting currents < 5A for the "off" period first.

[2] Specifications apply within two minutes of selecting operate.

Range	Noise	
	Bandwidth 0.1 Hz to 10 Hz p-p	Bandwidth 10 Hz to 10 kHz rms
0 to 329.999 µA	2 nA	20 nA
0 to 3.29999 mA	20 nA	200 nA
0 to 32.9999 mA	200 nA	2.0 µA
0 to 329.999 mA	2000 nA	20 µA
0 to 2.99999 A	20 µA	1 mA
0 to 20.5 A	200 µA	10 mA

Replace page 1-17, 1-18. **AC Current (Sine Wave) Specifications** with the following:

### 1-1. AC Current (Sine Wave) Specifications

LCOMP off						
Range	Frequency	Absolute Uncertainty, $t_{cal} \pm 5^\circ\text{C}$ $\pm$ (% of output + $\mu\text{A}$ )		Compliance adder $\pm$ ( $\mu\text{A/V}$ )	Max Distortion & Noise 10 Hz to 100 kHz BW $\pm$ (% output + floor)	Max Inductive Load  $\mu\text{H}$
		90 days	1 year			
29.00 $\mu\text{A}$ to 329.99 $\mu\text{A}$	10 Hz to 20 Hz	0.16 + 0.1	0.2 + 0.1	0.05	0.15 + 0.5 $\mu\text{A}$	200
	20 Hz to 45 Hz	0.12 + 0.1	0.15 + 0.1	0.05	0.1 + 0.5 $\mu\text{A}$	
	45 Hz to 1 kHz	0.1 + 0.1	0.125 + 0.1	0.05	0.05 + 0.5 $\mu\text{A}$	
	1 kHz to 5 kHz	0.25 + 0.15	0.3 + 0.15	1.5	0.5 + 0.5 $\mu\text{A}$	
	5 kHz to 10 kHz	0.6 + 0.2	0.8 + 0.2	1.5	1.0 + 0.5 $\mu\text{A}$	
	10 kHz to 30 kHz	1.2 + 0.4	1.6 + 0.4	10	1.2 + 0.5 $\mu\text{A}$	
0.33 mA to 3.2999 mA	10 Hz to 20 Hz	0.16 + 0.15	0.2 + 0.15	0.05	0.15 + 1.5 $\mu\text{A}$	200
	20 Hz to 45 Hz	0.1 + 0.15	0.125 + 0.15	0.05	0.06 + 1.5 $\mu\text{A}$	
	45 Hz to 1 kHz	0.08 + 0.15	0.1 + 0.15	0.05	0.02 + 1.5 $\mu\text{A}$	
	1 kHz to 5 kHz	0.16 + 0.2	0.2 + 0.2	1.5	0.5 + 1.5 $\mu\text{A}$	
	5 kHz to 10 kHz	0.4 + 0.3	0.5 + 0.3	1.5	1.0 + 1.5 $\mu\text{A}$	
	10 kHz to 30 kHz	0.8 + 0.6	1.0 + 0.6	10	1.2 + 0.5 $\mu\text{A}$	
3.3 mA to 32.999 mA	10 Hz to 20 Hz	0.15 + 2	0.18 + 2	0.05	0.15 + 5 $\mu\text{A}$	50
	20 Hz to 45 Hz	0.075 + 2	0.09 + 2	0.05	0.05 + 5 $\mu\text{A}$	
	45 Hz to 1 kHz	0.035 + 2	0.04 + 2	0.05	0.07 + 5 $\mu\text{A}$	
	1 kHz to 5 kHz	0.065 + 2	0.08 + 2	1.5	0.3 + 5 $\mu\text{A}$	
	5 kHz to 10 kHz	0.16 + 3	0.2 + 3	1.5	0.7 + 5 $\mu\text{A}$	
	10 kHz to 30 kHz	0.32 + 4	0.4 + 4	10	1.0 + 0.5 $\mu\text{A}$	
33 mA to 329.99 mA	10 Hz to 20 Hz	0.15 + 20	0.18 + 20	0.05	0.15 + 50 $\mu\text{A}$	50
	20 Hz to 45 Hz	0.075 + 20	0.09 + 20	0.05	0.05 + 50 $\mu\text{A}$	
	45 Hz to 1 kHz	0.035 + 20	0.04 + 20	0.05	0.02 + 50 $\mu\text{A}$	
	1 kHz to 5 kHz	0.08 + 50	0.10 + 50	1.5	0.03 + 50 $\mu\text{A}$	
	5 kHz to 10 kHz	0.16 + 100	0.2 + 100	1.5	0.1 + 50 $\mu\text{A}$	
	10 kHz to 30 kHz	0.32 + 200	0.4 + 200	10	0.6 + 50 $\mu\text{A}$	
0.33 A to 1.09999 A	10 Hz to 45 Hz	0.15 + 100	0.18 + 100		0.2 + 500 $\mu\text{A}$	2.5
	45 Hz to 1 kHz	0.036 + 100	0.05 + 100		0.07 + 500 $\mu\text{A}$	
	1 kHz to 5 kHz	0.5 + 1000	0.6 + 1000	[2]	1 + 500 $\mu\text{A}$	
	5 kHz to 10 kHz	2.0 + 5000	2.5 + 5000	[3]	2 + 500 $\mu\text{A}$	
1.1 A to 2.99999 A	10 Hz to 45 Hz	0.15 + 100	0.18 + 100		0.2 + 500 $\mu\text{A}$	2.5
	45 Hz to 1 kHz	0.05 + 100	0.06 + 100		0.07 + 500 $\mu\text{A}$	
	1 kHz to 5 kHz	0.5 + 1000	0.6 + 1000	[2]	1 + 500 $\mu\text{A}$	
	5 kHz to 10 kHz	2.0 + 5000	2.5 + 5000	[3]	2 + 500 $\mu\text{A}$	
3 A to 10.9999 A	45 Hz to 100 Hz	0.05 + 2000	0.06 + 2000		0.2 + 3 mA	1
	100 kHz to 1 kHz	0.08 + 2000	0.10 + 2000		0.1 + 3 mA	
	1 kHz to 5 kHz	2.5 + 2000	3.0 + 2000		0.8 + 3 mA	
11A to 20.5 A [1]	45 Hz to 100 Hz	0.1 + 5000	0.12 + 5000		0.2 + 3 mA	1
	100 Hz to 1 kHz	0.13 + 5000	0.15 + 5000		0.1 + 3 mA	
	1 kHz to 5 kHz	2.5 + 5000	3.0 + 5000		0.8 + 3 mA	

[1] Duty Cycle: Currents < 11 A may be provided continuously. For currents > 11 A, see Figure 1-4. The current may be provided 60-T-I minutes any 60 minute period where T is the temperature in  $^\circ\text{C}$  (room temperature is about  $23^\circ\text{C}$ ) and I is the output current in Amps. For example, 17 A, at  $23^\circ\text{C}$  could be provided for  $60-17-23 = 20$  minutes each hour. When the 5520A is outputting currents between 5 and 11 amps for long periods, the internal self-heating reduces the duty cycle. Under those conditions, the allowable "on" time indicated by the formula and Figure 1-4 is achieved only after the 5520A is outputting currents < 5A for the "off" period first.

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

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

Replace page 1-18, **AC Current (Sine Wave) Specifications (cont)**, with the following:  
**AC Current (Sine Wave) Specifications (cont)**

LCOMP on					
Range	Frequency	Absolute Uncertainty, tcal ± 5 °C ± (% of output + μA)		Max Distortion & Noise, 10 Hz to 100 kHz BW ± (% output + μA)	Max Inductive Load μH
		90 days	1 year		
29.00 μA to 329.99 μA	10 Hz to 100 Hz	0.2 + 0.2	0.25 + 0.2	0.1 + 1.0	400
	100 Hz to 1 kHz	0.5 + 0.5	0.6 + 0.5	0.05 + 1.0	
0.33 mA to 3.2999 mA	10 Hz to 100 Hz	0.2 + 0.3	0.25 + 0.3	0.15 + 1.5	
	100 Hz to 1 kHz	0.5 + 0.8	0.6 + 0.8	0.06 + 1.5	
3.3 mA to 32.999 mA	10 Hz to 100 Hz	0.07 + 4	0.08 + 4	0.15 + 5	
	100 Hz to 1 kHz	0.18 + 10	0.2 + 10	0.05 + 5	
33 mA to 329.99 mA	10 Hz to 100 Hz	0.07 + 40	0.08 + 40	0.15 + 50	
	100 Hz to 1 kHz	0.18 + 100	0.2 + 100	0.05 + 50	
0.33 A to 2.99999 A	10 Hz to 100 Hz	0.1 + 200	0.12 + 200	0.2 + 500	400 [4]
	100 to 440 Hz	0.25 + 1000	0.3 + 1000	0.25 + 500	
3 A to 20.5 A [1]	10 Hz to 100 Hz	0.1 + 2000 [2]	0.12 + 2000 [2]	0.1 + 0	400 [4]
	100 Hz to 1 kHz	0.8 + 5000 [3]	1.0 + 5000 [3]	0.5 + 0	

[1] Duty Cycle: Currents < 11 A may be provided continuously. For currents > 11 A, see Figure 1-4. The current may be provided 60-T-I minutes any 60 minute period where T is the temperature in °C (room temperature is about 23°C) and I is the output current in Amps. For example, 17 A, at 23°C could be provided for 60-17-23 = 20 minutes each hour. When the 5520A is outputting currents between 5 and 11 amps for long periods, the internal self-heating reduces the duty cycle. Under those conditions, the allowable "on" time indicated by the formula and Figure 1-4 is achieved only after the 5520A is outputting currents < 5A for the "off" period first.

[2] For currents >11 A, Floor specification is 4000 μA within 30 seconds of selecting operate. For operating times >30 seconds, the floor specification is 2000 μA.

[3] For currents >11 A, Floor specification is 1000 μA within 30 seconds of selecting operate. For operating times >30 seconds, the floor specification is 5000 μA.

[4] Subject to compliance voltages limits.

Range	Resolution μA	Max Compliance Voltage V rms [1]
0.029 mA to 0.32999 mA	0.01	7
0.33 mA to 3.29999 mA	0.01	7
3.3 mA to 32.9999 mA	0.1	5
33 mA to 329.999 mA	1	5
0.33 A to 2.99999 A	10	4
3 A to 20.5 A	100	3

[1] Subject to specification adder for compliance voltages greater than 1 V rms.

