

Manual Supplement

Manual Title:	5700A/5720A Operator	Supplement Issue:	7
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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:	5700A/5720A
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Change #1, 40695

On page 1-42, replace the entire page with the following:

Wideband AC Voltage (Option 5700-03) Specifications

Specifications apply to the end of the cable and 50 Ω termination used for calibration.

Range		Resolution	Absolute Uncertainty ±5 °C from calibration temperature 30 Hz - 500 kHz			
			24 Hours	90 Days	180 Days	1 Year
Volts	dBm		± (% output + μV)			
1.1 mV	-46	10 nV	0.4 + 0.4	0.5 + 0.4	0.6 + 0.4	0.8 + 2
3 mV	-37	10 nV	0.4 + 1	0.45 + 1	0.5 + 1	0.7 + 3
11 mV	-26	100 nV	0.2 + 4	0.35 + 4	0.5 + 4	0.7 + 8
33 mV	-17	100 nV	0.2 + 10	0.3 + 10	0.45 + 10	0.6 + 16
110 mV	-6.2	1 μV	0.2 + 40	0.3 + 40	0.45 + 40	0.6 + 40
330 mV	+3.4	1 μV	0.2 + 100	0.25 + 100	0.35 + 100	0.5 + 100
1.1 V	+14	10 μV	0.2 + 400	0.25 + 400	0.35 + 400	0.5 + 400
3.5 V	+24	10 μV	0.15 + 500	0.2 + 500	0.3 + 500	0.4 + 500

Frequency (Hz)	Frequency Resolution (Hz)	Amplitude Flatness, 1 kHz Reference Voltage Range			Temperature Coefficient ±ppm/°C	Settling Time To Full Accuracy (Seconds)	Harmonic Distortion (dB)
		1.1 mV	3 mV	>3 mV			
		± (% output + floor indicated)					
10 - 30	0.01	0.3	0.3	0.3	100	7	-40
30 - 120	0.01	0.1	0.1	0.1	100	7	-40
120 - 1.2 k	0.1	0.1	0.1	0.1	100	5	-40
1.2 k - 12 k	1	0.1	0.1	0.1	100	5	-40
12 k - 120 k	10	0.1	0.1	0.1	100	5	-40
120 k - 1.2 M	100	0.2 + 3 μV	0.1 + 3 μV	0.1 + 3 μV	100	5	-40
1.2 M - 2 M ^[1]	100 k	0.2 + 3 μV	0.1 + 3 μV	0.1 + 3 μV	100	0.5	-40
2 M - 10 M	100 k	0.4 + 3 μV	0.3 + 3 μV	0.2 + 3 μV	100	0.5	-40
10 M - 20 M	1 M	0.6 + 3 μV	0.5 + 3 μV	0.4 + 3 μV	150	0.5	-34
20 M - 30 M	1 M	1.5 + 15 μV	1.5 + 3 μV	1 + 3 μV	300	0.5	-34

[1] For output voltages < 50 % of full range in the 33 mV, 110 mV, 330 mV, 1.1 V, and 3.5 V ranges, add 0.1 % to the amplitude flatness specification.

Additional Operating Information:

dBm reference = 50 Ω

Range boundaries are at voltage points, dBm levels are approximate.

$$\text{dBm} = 10 \log \left(\frac{\text{Power}}{1\text{mW}} \right); 0.22361 \text{ V across } 50 \Omega = 1 \text{ mW or } 0 \text{ dBm}$$

Minimum Output 300 μV (-57 dBm)

Frequency Uncertainty ±0.01 %

Frequency Resolution 11,999 counts to 1.1999 MHz, 119 counts to 30 MHz

Overload Protection A short circuit on the wideband output will not result in damage. After settling time, normal operation is restored upon removal.

Change #2, 43432,45150

On page 1-27, replace **External Sense** with the following:

External Sense.....Applicable for 2.2 V, 22 V, 220 V, and 1100 V ranges; 5700A/5720A <100 kHz, 5725A <30 kHz. Specifications are the same as internal sense.

On page 1-29, change the following:

From:

Nominal Value (Ω)	24 Hours
1.9 M	1

To:

Nominal Value (Ω)	24 Hours
1.9 M	17

Change #3

On page 4-14, under **When to Use External Sensing**, add the following between the first and second paragraphs:

For ACV, when calibrating digital multimeters with input impedance of 1 MΩ or greater, internal sense is more effective for all frequencies. See Figures 4-1 and 4-2 for recommended connections for both internal and external sense applications.

Change #4, 45727

On page 1-13, add the following to the bottom of the page:

Artifact Calibration Standards Requirements

Calibrating the 5700A Series II and 5720A to full specified absolute uncertainty requires using the following external standards, each with an uncertainty that is within the stated uncertainty limit.

Fluke Standard	Traceable Quantity	Nominal Value	Uncertainty Limit	5700A/5720A Series II Specifications Susceptible to Uncertainty Limit
732B	Voltage	10 V	±1.5 ppm	dc volts, ac volts, dc current, ac current
742A-1	Resistance	1 Ω	±10 ppm	1 Ω, 1.9 Ω
742A-10k	Resistance	10 kΩ	±4 ppm	ac current, dc current 10 Ω to 100 MΩ

On page 1-14, delete the drawings.

Change #5, 48458

On page 1-13, under **General Specifications**, following **Safety**, add:

Operating Altitude 2000 m
Pollution Degree 2

Change #6, 49361

On page 1-13, under **General Specifications**,

Change: **Safety** Designed to comply with UL3111; EN61010; CSA C22.2 No. 1010; ANSI/ISA S82.01-1994

To: **Safety** Complies with IEC61010-1, (2nd Edition), CAN/CSA-C22.2 No. 61010-1-04, and UL Std. No. 61010-1 (2nd Edition)

Change #7, 50929

Replace page 1-36 with the following:

AC Current Specifications

5720A Series II AC Current Specifications: 99 % Confidence Level

Range	Resolution	Frequency (Hz)	Absolute Uncertainty ± 5 °C from calibration temperature ^[1]				Relative Uncertainty ± 1 °C	
			24 Hours	90 Days	180 Days	1 Year	24 Hours	90 Days
			± (ppm output + nA)					
220 µA	1 nA	10 - 20	260 + 20	280 + 20	290 + 20	300 + 20	260 + 20	280 + 20
		20 - 40	170 + 12	180 + 12	190 + 12	200 + 12	130 + 12	150 + 12
		40 - 1 k	120 + 10	130 + 10	135 + 10	140 + 10	100 + 10	110 + 10
		1k - 5 k	300 + 15	320 + 15	340 + 15	350 + 15	250 + 15	280 + 15
		5k - 10 k	1000 + 80	1100 + 80	1200 + 80	1300 + 80	900 + 80	1000 + 80
2.2 mA	10 nA	10 - 20	260 + 50	280 + 50	290 + 50	300 + 50	260 + 50	280 + 50
		20 - 40	170 + 40	180 + 40	190 + 40	200 + 40	130 + 40	150 + 40
		40 - 1 k	120 + 40	130 + 40	135 + 40	140 + 40	100 + 40	110 + 40
		1k - 5 k	210 + 130	220 + 130	230 + 130	240 + 130	190 + 130	220 + 130
		5k - 10 k	1000 + 800	1100 + 800	1200 + 800	1300 + 800	900 + 800	1000 + 800
22 mA	100 nA	10 - 20	260 + 500	280 + 500	290 + 500	300 + 500	260 + 500	280 + 500
		20 - 40	170 + 400	180 + 400	190 + 400	200 + 400	130 + 400	150 + 400
		40 - 1 k	120 + 400	130 + 400	135 + 400	140 + 400	100 + 400	110 + 400
		1k - 5 k	210 + 700	220 + 700	230 + 700	240 + 700	190 + 700	220 + 700
		5k - 10 k	1000 + 6000	1100 + 6000	1200 + 6000	1300 + 6000	900 + 6000	1000 + 6000
± (ppm output + µA)								
220 mA	1 µA	10 - 20	260 + 5	280 + 5	290 + 5	300 + 5	260 + 5	280 + 5
		20 - 40	170 + 4	180 + 4	190 + 4	200 + 4	130 + 4	150 + 4
		40 - 1 k	120 + 3	130 + 3	135 + 3	140 + 3	100 + 3	110 + 3
		1k - 5 k	210 + 4	220 + 4	230 + 4	240 + 4	190 + 4	220 + 4
		5k - 10 k	1000 + 12	1100 + 12	1200 + 12	1300 + 12	900 + 12	1000 + 12
2.2 A	10 µA	20 - 1 k	290 + 40	300 + 40	310 + 40	320 + 40	260 + 40	280 + 40
		1 k - 5 k	440 + 100	460 + 100	480 + 100	500 + 100	420 + 100	440 + 100
		5 k - 10 k	6000 + 200	7000 + 200	7500 + 200	8000 + 200	6000 + 200	7000 + 200
5725A Amplifier:								
11 A	100 µA	40 - 1 k	370 + 170	400 + 170	440 + 170	460 + 170	300 + 170	330 + 170
		1 k - 5 k	800 + 380	850 + 380	900 + 380	950 + 380	700 + 380	800 + 380
		5 k - 10 k	3000 + 750	3300 + 750	3500 + 750	3600 + 750	2800 + 750	3200 + 750
<p>Note:</p> <p>Maximum output from the calibrator's terminals is 2.2 A. Uncertainty specifications for 220 µA and 2.2 mA ranges are increased by a factor of 1.3 plus 2 µA when supplied through 5725A terminals. For the 5720A 220 µA range, 1 kHz through 5 kHz and 5 kHz through 10 kHz, when the output is coming from the AUX current terminal, use the 5700A Absolute Uncertainty Specifications. Specifications are otherwise identical for all output locations.</p> <p>1. For fields strengths >0.4 V/m but ≤3 V/m, add 1 % of range.</p>								

Replace page 1-37 with the following:

5720A Series II AC Current Specifications: 95% Confidence Level

Range	Resolution	Frequency (Hz)	Absolute Uncertainty ± 5 °C from calibration temperature ^[1]				Relative Uncertainty ± 1 °C	
			24 Hours	90 Days	180 Days	1 Year	24 Hours	90 Days
			± (ppm output + nA)					
220 µA	1 nA	10 - 20	210 + 16	230 + 16	240 + 16	250 + 16	210 + 16	230 + 16
		20 - 40	130 + 10	140 + 10	150 + 10	160 + 10	110 + 10	130 + 10
		40 - 1 k	100 + 8	110 + 8	115 + 8	120 + 8	80 + 8	90 + 8
		1k - 5 k	240 + 12	250 + 12	270 + 12	280 + 12	200 + 12	230 + 12
		5k - 10 k	800 + 65	900 + 65	1000 + 65	1100 + 65	700 + 65	800 + 65
2.2 mA	10 nA	10 - 20	210 + 40	230 + 40	240 + 40	250 + 40	210 + 40	230 + 40
		20 - 40	130 + 35	140 + 35	150 + 35	160 + 35	110 + 35	130 + 35
		40 - 1 k	100 + 35	110 + 35	115 + 35	120 + 35	80 + 35	90 + 35
		1k - 5 k	170 + 110	180 + 110	190 + 110	200 + 110	160 + 110	170 + 110
		5k - 10 k	800 + 650	900 + 650	1000 + 650	1100 + 650	700 + 650	800 + 650
22 mA	100 nA	10 - 20	210 + 400	230 + 400	240 + 400	250 + 400	210 + 400	230 + 400
		20 - 40	130 + 350	140 + 350	150 + 350	160 + 350	110 + 350	130 + 350
		40 - 1 k	100 + 350	110 + 350	115 + 350	120 + 350	80 + 350	90 + 350
		1k - 5 k	170 + 550	180 + 550	190 + 550	200 + 550	160 + 550	170 + 550
		5k - 10 k	800 + 5000	900 + 5000	1000 + 5000	1100 + 5000	700 + 5000	800 + 5000
			± (ppm output + µA)					
220 mA	1 µA	10 - 20	210 + 4	230 + 4	240 + 4	250 + 4	210 + 4	230 + 4
		20 - 40	130 + 3.5	140 + 3.5	150 + 3.5	160 + 3.5	110 + 3.5	130 + 3.5
		40 - 1 k	100 + 2.5	110 + 2.5	115 + 2.5	120 + 2.5	80 + 2.5	90 + 2.5
		1k - 5 k	170 + 3.5	180 + 3.5	190 + 3.5	200 + 3.5	160 + 3.5	170 + 3.5
		5k - 10 k	800 + 10	900 + 10	1000 + 10	1100 + 10	700 + 10	800 + 10
2.2 A	10 µA	20 - 1 k	230 + 35	240 + 35	250 + 35	260 + 35	200 + 35	230 + 35
		1 k - 5 k	350 + 80	390 + 80	420 + 80	450 + 80	300 + 80	350 + 80
		5 k - 10 k	5000 + 160	6000 + 160	6500 + 160	7000 + 160	5000 + 160	6000 + 160
5725A Amplifier:								
11 A	100 µA	40 - 1 k	370 + 170	400 + 170	440 + 170	460 + 170	300 + 170	330 + 170
		1 k - 5 k	800 + 380	850 + 380	900 + 380	950 + 380	700 + 380	800 + 380
		5 k - 10 k	3000 + 750	3300 + 750	3500 + 750	3600 + 750	2800 + 750	3200 + 750
<p>Note:</p> <p>Maximum output from the calibrator's terminals is 2.2 A. Uncertainty specifications for 220 µA and 2.2 mA ranges are increased by 1.3 plus 2 µA when supplied through 5725A terminals. For the 5720A 220 µA range, 1 kHz through 5 kHz and 5 kHz through 10 kHz, when the output is coming from the AUX current terminal, use the 5700A Absolute Uncertainty Specifications. Specifications are otherwise identical for all output locations.</p> <p>1. For fields strengths >0.4 V/m but ≤3 V/m, add 1 % of range.</p>								

Change #8, 40695

On page 1-16, replace the **Resolution** under **95 % Confidence Level** with the following:

220 mV	10 nV
2.2 mV	100 nV
11 V	1 µV
22 V	1 µV
220 V	10 µV
1100 V	100 µV