

# Manual Supplement

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This supplement contains information necessary to ensure the accuracy of the above manual. Enter the corrections in the manual if either one of the following conditions exist:

1. The revision letter stamped on the indicated PCA is equal to or higher than that given with each change.
2. No revision letter is indicated at the beginning of the change.

## Change #1

On page 3-28, section 3-18, make the following changes:

Delete: To access the factory calibration steps, send the command:

**CAL\_START FACTORY**

Replace: To jump to specific calibration steps, these two commands ....

With: To jump to specific calibration steps, this command above ....

In Table 3-18, delete the last three rows.

On page 3-29, make the following changes:

Delete: To go directly to Phase calibration, send the command:

**CAL\_START FACTORY, PHASE**

Under step #3,

Change: **CAL\_START FACTORY**

To: **CAL\_START MAIN**

On page 3-31, under CAL\_START,

Delete: FACTORY is the procedure run in the factory

## Change #2

On page 6-9, replace Table 6-4 with the following:

**Table 6-4. Time Marker Specifications**

Time Marker into 50Ω	5s 50 ms	20 ms to 100 ns	50 ns to 20 ns	10 ns	5 ns to 2 ns
1-Year Absolute Uncertainty at Cardinal Points, tcal ±5 ° C	±(25 + t *1000) ppm [1]	± 2.5 ppm	± 2.5 ppm	± 2.5 ppm	± 2.5 ppm
Wave Shape	spike or square	spike, square, or 20%-pulse	spike or square	square or sine	sine
Typical Output Level	> 1 V p-p [2]	> 1 V p-p [2]	> 1 V p-p [2]	> 1 V p-p [2]	> 1 V p-p
Typical Jitter (rms)	<10 ppm	< 1 ppm	< 1 ppm	< 1 ppm	< 1 ppm
Sequence	5-2-1 from 5 s to 2 ns (e.g., 500 ms, 200 ms, 100 ms)				
Adjustment Range [3]	At least ± 10% around each sequence value indicated above.				
Amplitude Resolution	4 digits				
[1] t is the time in seconds.					
[2] Typical rise time of square wave and 20%-pulse (20% duty cycle pulse) is < 1.5 ns.					
[3] Time marker uncertainty is ±50 ppm away from the cardinal points.					

On page 6-48, replace Table 6-34 with the following:

**Table 6-34. Marker Generator Verification**

Period (s)	Measured Value (s)	Deviation (s)	1-Year Spec. (s)
5			0.0251 s
2			0.00405 s
0.05			3.75E-06s
0.02			5E-8
0.01			2.5E-8
1e-7			2.5E-13
5e-8			1.25E-13
2e-8			5E-14
1e-8			2.5E-14
5e-9			1.25E-14
2e-9			5E-15

On page 6-69, replace the table in section 6-89 with the following:

Time Marker into 50Ω	5s to 100 μs	50 μs to 2 μs	1 μs to 20 ns	10 ns to 2 ns
1-Year Absolute Uncertainty, tcal ± 5° C	±(25 + t*1000) ppm [1]	±(25 + t*15,000) ppm [1]	± 25 ppm	± 25 ppm
Wave Shape	pulsed sawtooth	pulsed sawtooth	pulsed sawtooth	sine
Typical Output level	> 1 V pk	> 1 V pk	> 1 V pk	> 2V p-p [2]
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.			
Resolution	4 digits			
[1] t is the time in seconds.				
[2] The 2 ns time marker is typically > 0.5 V p-p.				

## Change #3

On page 6-21, step 4, replace the last sentence with:

If not, adjust R121 on A41. R121 is a square single turn pot and is marked on the board located near Q29.

## Change #4

On page 1-7, General Specifications, add the following to the EMC paragraph:

This instrument may be susceptible to electro-static discharge (ESD) from direct contact to the binding posts. Good static aware practices should be followed when handling this and other pieces of electronic equipment.

## Change #5

On page 1-7, General Specifications, Temperature Performance, add [1] to the Storage specifications and add the following footnote to the end of the table:

- [1] The DC Current ranges 0 to 1.09999 A and 1.1 A to 2.99999 A are sensitive to storage temperatures above 50°C. If the 5520A is stored above 50°C for greater than 30 minutes, these ranges must be re-calibrated. Otherwise, the 90 day and 1 year uncertainties of these ranges double.

## Change #6

On page 1-8, under DC Voltage Specifications, make the following change:

From: 0 to 32.99999 V 10 +15 12 + 15 2 + 10 10 10 mA

To: 0 to 32.99999 V 10 + 20 12 + 20 2 + 15 10 10 mA

On page 3-36, Table 3-19, replace the following entries:

Range	Output	Lower Limit	Upper Limit
32.99999 V	10.00000 V	9.99988 V	10.00012 V
32.99999 V	32.90000 V	32.89965 V	-32.90035 V
32.99999 V	-32.90000 V	32.90035 V	-32.89965 V

## Change #7 - W1013947

On page 5-8, Table 5-2, change the following part number,

From: S7      KEYPAD, ELASTOMERIC      626967      1

To:    S7      KEYPAD, ELASTOMERIC      1586668      1

## Change #8

On page 1-11, replace footnotes 2 and 3 with the following:

- [2] Applies for a 4-WIRE compensation only. For 2-WIRE and 2-WIRE COMP, add 5  $\mu\text{V}$  per Amp of stimulus current to the floor specification. For example, in 2-WIRE mode, at 1  $\text{k}\Omega$ , the floor specification within 12 hours of an ohms zero cal for a measurement current of 1 mA is:  
 $0.002 \Omega + 5 \mu\text{V}/1 \text{ ma} = (0.002 + 0.005) \Omega = 0.007 \Omega$
- [3] For currents lower than shown, the floor adder increases by:  
 Floor (new) = Floor (old)  $\times$  I<sub>min</sub>/I<sub>actual</sub>.  
 For example, a 50  $\mu\text{A}$  stimulus measuring 100  $\Omega$ , has a floor specification of:  $0.0014 \Omega \times 1 \text{ mA}/50 \mu\text{A} = 0.028 \Omega$ , assuming an ohms zero cal within 12 hours.

## Change #9, W1018122

On page 6-67, under **6-87. Other Edge Characteristics**, change the Rise Time specification,

From:  $\leq 1 \text{ ns}$   
 To:  $< 400 \text{ ps}$

Change the Leading Edge Aberrations specification,

From:  $< (2\% \text{ of output} + 2 \text{ mV})$   
 To:  $< (3\% \text{ of output} + 2 \text{ mV})$

On page 6-94, Table 6-50, change the entire column of **Tolerance**,

From:  $< 1000 \text{ ps}$   
 To:  $< 400 \text{ ps}$

## Change #10

On page 3-26, delete sections **3-15** and **3-16**.

On page 3-27, delete section **3-17**, and change the Figure title,

From: **Figure 3-15. Normal Volts and AUX Volts Phase Calibration**  
 To: **Figure 3-15. Normal Volts and AUX Volts Phase Verification**

On page 3-28, change the Figure title,

From: **Figure 3-16. Volts and Current Phase Calibration**  
 To: **Figure 3-16. Volts and Current Phase Verification**

On page 3-54, section **3-35**, add the following to the end of the sentence:

See Figure 3-15.

On page 3-55, section **3-36**, replace the first sentence with the following:

Verify that the 5520A performance is within the limits in Table 3-33, using a precision phase meter with a shunt. See Figure 3-16.