Agilent 4284A Precision LCR Meter

Manual Change

Agilent Part No. 04284-90031

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Change 1

Change "|Z|, |Y|, L, C, R, X, G, and B Accuracy" on page 9- 8 as follows:

|Z|, |Y|, L, C, R, X, G, and B Accuracy

|Z|, |Y|, L, C, R, X, G, and B accuracy Ae is given as

$$Ae = \pm\left[A + \left(Ka + Kaa + Kb \times Kbb + Kc\right) \times 100 + Kd\right] \times Ke \qquad [\%]$$

A: Basic Accuracy (Refer to Figure 9-4 and 9-5.)
Ka: Impedance Proportional Factor (Refer to Table 9-1.)
Kaa: Cable Length Factor (Refer to Table 9-2.)
Kb: Impedance Proportional Factor (Refer to Table 9-1.)
Kbb: Cable Length Factor (Refer to Table 9-3.)
Kc: Calibration Interpolation Factor (Refer to Table 9-4.)
Kd: Cable Length Factor (Refer to Table 9-6.)
Ke: Temperature Factor (Refer to Figure 9-6.)

L, C, X, and B accuracy applies when Dx (measured D value) ≤ 0.1.
R and G accuracy applies when Qx (measured Q value) ≤ 0.1.

When Dx > 0.1, multiply Ae by $\sqrt{\left(1 + Dx^2\right)}$ for L, C, X, and B accuracy.

When Qx > 0.1, multiply Ae by $\sqrt{\left(1 + Qx^2\right)}$ for R and G accuracy.

When measured value < 10 mΩ, |Z|, R, and X accuracy Ae is given as

$$Ae = \pm\left[\left(Ka + Kaa + Kc\right) \times 100 + Kd\right] \times Ke \qquad [\%]$$

Ka: Impedance Proportional Factor (Refer to Table 9-1.)
Kaa: Cable Length Factor (Refer to Table 9-2.)
Kc: Calibration Interpolation Factor (Refer to Table 9-4.)
Kd: Cable Length Factor (Refer to Table 9-6.)
Ke: Temperature Factor (Refer to Figure 9-6.)

X accuracy applies when Dx (measured D value) ≤ 0.1.
R accuracy applies when Qx (measured Q value) ≤ 0.1.

When Dx > 0.1, multiply Ae by $\sqrt{\left(1 + Dx^2\right)}$ for X accuracy.

When Qx > 0.1, multiply Ae by $\sqrt{\left(1 + Qx^2\right)}$ for R accuracy.

Change 2

Add the following description to "4284A Calibration Accuracy" on page 9-16.

When measured value < 10 mΩ, calibration accuracy Acal is given as follows:

20 Hz ≤ *fm* ≤ 1 kHz: 0.03 [%] *

1 kHz < *fm* ≤ 100 kHz: 0.05 [%] *

100 kHz < *fm* ≤ 1 MHz: $0.05 + 5 \times fm \times 10^{-5}$ [%] *

fm : test frequency [kHz]

* Acal = 0.1% when Hi-PW mode is ON

Change 3

Add 42030A (1 Ω) to Recommended Model column for Standard Resister in Table 10-1 (page 10-3).

Change 4

Add the following steps to the impedance measurement accuracy test (between step 29 and 30, page 10-17).

a. Set the measurement function to R-X.

b. Connect the 1 Ω standard resistor to the 1 m Test Leads (16048A).

c. Perform Step d through e for all the test listed in Table 10-9-a.

d. Press the TRIGGER key.

e. Confirm the 4284A's reading is within the test limits in Table 10-9-a.

Table 10-9-a. Impedance Measurement Accuracy Test Limits for 1 m Cable Length Operation

Setting			Test Limits (R)
Signal Level	Test Frequency	Measurement Range	1Ω Standard
510 mV	1 kHz	10 Ω	C.V. ± 0.0026 Ω
5.1 V*	1 kHz	1 Ω	C.V. ± 0.0030 Ω

C.V. : Standard's calibration value at DC

* Option 4284A-001 only

Miscellaneous Changes

The option system of the 4284A has changed since February 2003. Apply the following changes.

Old Option Number	New Option Number	remarks
Standard	700 (Standard Power (2V, 20mA, 2V DC Bias) Add)	1
001 (Power Amplifier / DC Bias)	same as the left number	1,2
002 (Bias Current Interface)	same as the left number	2,3
201 (Handler Interface)	same as the left number	3
202 (Handler Interface)	same as the left number	
301 (Scanner Interface)	same as the left number	
－	710 (Blank Panel)	
004 (Memory Card)	same as the left number	
006 (2 m/4 m Cable Length Operation)	same as the left number	
907 (Front Handle Kit)	same as the left number	
908 (Rack Mount Kit)	same as the left number	
909 (Rack Flange and Handle Kit)	same as the left number	
008 (Add Operation Manual Japanese)	－	4
－	ABJ (Add Operation Manual (Japanese))	
009 (Delete Operation Manual)	－	
910 (Extra Operation Manual)	－	
－	ABA(Add Operation Manual (English))	
915 (Add Service Manual)	same as the left number	
109 (Delete GPIB Interface)	－	5

1. In the previous system, an option for the Power Amplifier/DC Bias was available only for the Power Amplifier/DC Bias option. In the new option system, it is available for the standard power and Power Amplifier/DC Bias , requiring the customer to select either of them
2. Although option 001 and 002 can be installed on the 4284A main unit, you cannot use their functions at the same time.
3. In the new option system, up to 2 types of interfaces can be installed allowing arbitrary combination. Note that options 201 and 202 cannot be installed at the same time. When installing 1 type of interface on the 4284A, choose 1 as the quantity of option 710. When installing 2 types of interfaces on the 4284A, choose 0 as the quantity of option 710. When installing no interface, choose 2 as the quantity of option 710.
4. No selection of addition/deletion is required for the operation manual set because it is only available as an optional accessory in the new option system.
5. In the new option system, the GP-IB interface is installed on the 4284A as standard equipment.