

Keysight 11683A Option H01 Power Meter Range Calibrator

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Manual Part Number

11683-90010

Edition

Edition 4, September 8, 2017

Printed in:

Printed in Malaysia

Published by:

Keysight Technologies
Bayan Lepas Free Industrial Zone,
11900 Penang, Malaysia

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1 Special Supplement

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Description

The 11683A Option H01 is a standard 11683A range calibrator that has been modified so that it will operate with either the Internal DC-Reference source, or an external programmable DC-Reference source.

NOTE

Note that the 11683AZ Option H01 is equivalent to the 11683A Option H01. When ordering this product, you will need to order 11683AZ Option H01 instead of 11683A Option H01.

Specifications

External DC Reference is the same as the Internal Reference.

Operation

The 11683A Option H01 range calibrator allows a user to select either an internal or an external DC-Reference source. With the **REF SELECT** switch in the **INT** position, the range calibrator is operating manually with the Internal DC-Reference source. With the **REF SELECT** switch in the **EXT** position, the range calibrator can be programmed remotely with a programmable DC source. In this mode of operation, the **REF SELECT** switch disconnects the internal DC source, and connects the external DC source to the sampling gate assembly (A3).

In all other respects, the 11683A Option H01 operates the same as the standard 11683A.

The typical input voltages corresponding to the different range settings are:

Range	Volts
100 mW	15.800 V
30 mW	4.7121 V
10 mW	1.4641V
1 mW	145.00 mV
3 mW	458.00 mV
300 μ W	45.837 mV
100 μ W	14.494 mV
30 μ W	4.5832 mV
10 μ W	1.4501 mV
3 μ W	458.69 μ V

The above calculated voltages for range 100 mW to 300 μ W are based on the table shown in the 11683A Operating and Service Manual (11683-90014). The remaining voltages are based in the voltage divider circuit (A1), and the input resistance (A1R1, A3A1U1R1 and A3R1), of the sampling gate assembly shown in the 11683A Operating and Service Manual (11683-90014).

All voltage calculations assume that the internal reference voltage has adjusted to 145.00 mVDC, with the range switch set at 1 mW position.

Performance Test

Internal DC reference

With REF SELECT switch in INT position, range switch performance can be tested as described in the 11683A Operating and Service Manual (11683-90014). Power supply and FET balance adjustments can also be performed as described in the 11683A Operating and Service Manual (11683-90014).

External DC reference

Description:

Use the internal DC reference source to test the EXT. DC reference.

Equipment:

Recommended equipment for performing these tests are a digital voltmeter with 5 digits resolution, a jumper (#18 awg or heavier wire), and a banana connector to the BNC 4-wire cable.

Procedure:

Set the range as follows:

RANGE	100 mW
FUNCTION	STANDBY
POLARITY	NORMAL

- Set the digital voltmeter controls for automatic DC voltage measurements.
- Connect one end of the 4-wire cable to the digital voltmeter, and the other end to the DC **REFERENCE OUTPUT** on the rear panel of the 11683A, as shown in the 11683A Operating and Service Manual (11683-90014).
- Disconnect the 11683A-H01 Range Calibration from the power line and remove the top cover.
- Connect the jumper between the **DC REF INPUT** BNC white wire and the **RANGE** switch green wire using an alligator test clip.
- Set the **REF SELECT** switch to **EXT**.
- Connect the 11683A-H01 Range Calibration to the power line and turn it **ON**.

CAUTION

A good connection is important for low resistance measurements.

- Set the 11683A **FUNCTION CONTROL** to **CALIBRATE**. Record the DC voltage measured in each range from 100 mW to 300 μ W. Voltage measured in each range should be within $\pm 0.02\%$ of the voltage shown in the table of the “**Operation**” on page 8.
- Set the 11683A **FUNCTION switch** to **STANDBY**. Set the digital voltmeter controls to measure resistance.
- Measure the resistance at each setting from 300 μ W to 3 μ W to 5-digit resolution, and record the reading on the table below. Verify that each reading falls within the limits shown.

Table 1-1 Digital voltmeter reading (OHM)

RANGE	MINIMUM	ACTUAL	MAXIMUM
300 μ W	3134.3	.....	3157.1
100 μ W	995.90	.....	1000.2
830 μ W	315.14	.....	316.52
10 μ W	99.749	.....	100.18
3 μ W	31.580	.....	31.718

- Disconnect the 4-wire cable and jumper from the 11683A. This concludes the external DC-reference circuit performance test. If any of the voltage or resistance readings are incorrect, refer to the troubleshooting information in the 11683A Operating and Service Manual (11683-90014).



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Edition 4, September 8, 2017

Printed in Malaysia



11683-90010

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