Keysight 11683AZ Option H01 Power Meter Range Calibrator

Operating and Service Manual

KEYSIGHT TECHNOLOGIES

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Table of Contents

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List of Tables

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1 Special Supplement

Description

The 11683AZ 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 not equivalent to the standard 11683A. When ordering this product, you will need to order 11683AZ Option H01 instead of 11683A.**

Specifications

External DC Reference is the same as the Internal Reference.

Operation

The 11683AZ 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 11683AZ 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 μW	45.837 mV
100 μW	14.494 mV
30 μW	4.5832 mV
10 μW	1.4501 mV
3 μW	458.69 μV

The above calculated voltages for range 100 mW to 300 μW 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.

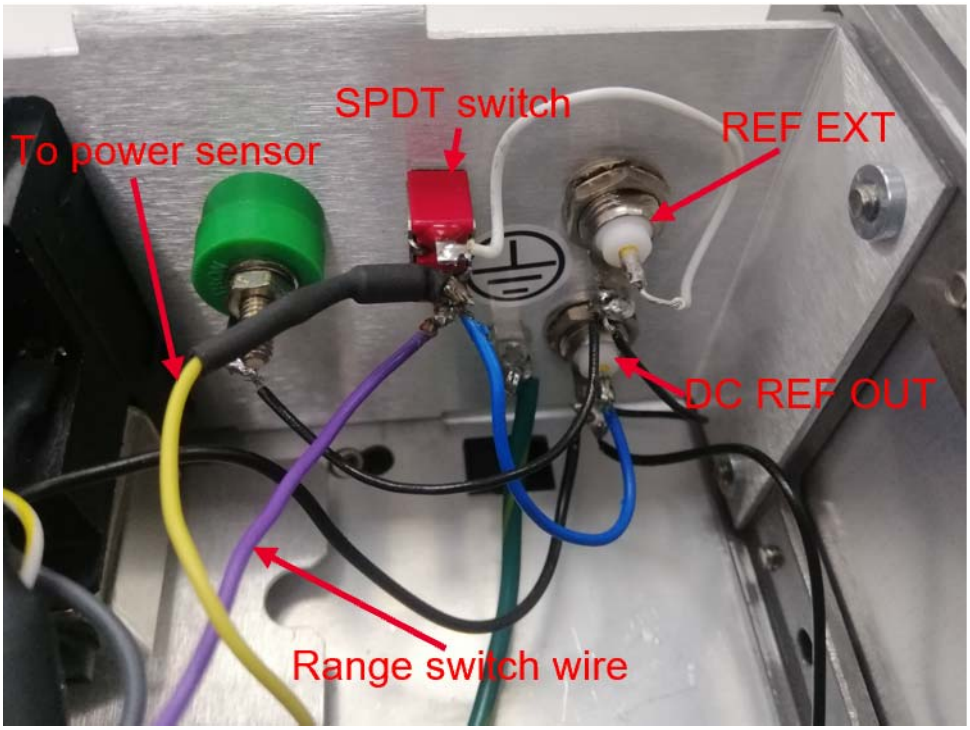
Procedure:

Set the range as follows:

RANGE	100 mW
FUNCTION	STANDBY
POLARITY	NORMAL

1. Set the digital voltmeter controls for automatic DC voltage measurements.
2. 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 11683AZ-H01, as shown in the 11683A Operating and Service Manual (11683-90014).
3. Disconnect the 11683AZ-H01 Range Calibrator from the power line and remove the top cover.

4 Connect the jumper between the DC REF OUT BNC wire and the RANGE switch wire using an alligator test clip.



5 Set the REF SELECT switch to EXT.

6 Connect the 11683AZ-H01 Range Calibrator to the power line and turn it ON.

7 Set the 11683AZ Option H01 FUNCTION control to CALIBRATE. On the table, record the dc voltage measured in each RANGE from 100 mW to 300 µW. If the voltage measured at the 1 mW range is beyond the limits shown on the table, when this procedure is completed, perform the Power Supply Adjustments. Calculate and record the ratio of the voltages using the formula shown in the table below.

Range	Digital voltmeter reading			Ratio ($V_{100\ mW} / V_{range}$)		
	Minimum	Actual	Maximum	Minimum	Actual	Maximum
100 mW		_____		----	1.0000	----
30 mW		_____		3.3447	_____	3.3615
10 mW		_____		10.765	_____	10.819
3 mW		_____		34.412	_____	34.584
1 mW	143.00 mVdc	_____	147.00 mVdc	108.70	_____	109.24
300 µW		_____		343.84	_____	345.56

CAUTION A good connection is important for low resistance measurements.

8 Set the 11683AZ-H01 FUNCTION switch to STANDBY. Set the digital voltmeter controls to measure resistance.

9 Measure the resistance at each setting from 300 mW to 3 mW 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 μW	3142.3	.....	3158.1
100 μW	995.55	.....	1000.6
30 μW	315.04	.....	316.62
10 μW	99.715	.....	100.21
3 μW	31.570	.....	31.728

10 Disconnect the 4-wire cable and jumper from the 11683AZ-H01. 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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