

**OPERATING AND SERVICE MANUAL**  
**SPECIAL SUPPLEMENT**

**11683A OPTION H01**  
**POWER METER RANGE CALIBRATOR**

**11683-90010**

**Model Number: 11683A Option H01**  
**Part Number: 11683-90010**  
**Date Printed: May 2010**



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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.

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

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### **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:

<b>Range</b>	<b>Volts</b>
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 uW	45.837 mV
100 uW	14.494 mV
30 uW	4.5832 mV
10 uW	1.4501 mV
3 uW	458.69 uV

The above calculated voltages for range 100 mW to 300 uW are base on the table shown on page 7 of the 11683A Operating and Service Manual. The remaining voltages are base in the voltage divider circuit (A1), and the input resistance (A1R1, A3A1U1R1 and A3R1), of the sampling gate assembly shown on page 21 of the 11683A Operating and Service Manual.

All voltage calculations assume that the internal reference voltage has adjusted to 145.00 mVDC, with 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 paragraphs 38-41 of the 11683A Operating and Service Manual. Power supply and FET balance adjustments can also be performed as described in page 8 (paragraphs 42- 51) of the Operating and Service Manual.

### **External CD 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 range as follows:

RANGE..... 100mW  
FUNCTION..... STANDBY  
POLARITY..... NORMAL

- Set the DVM controls for automatic DC voltage measurements.
- Connect one end of the 4-wire cable to the DVM, and the other end to the **DC REFERENCE OUTPUT** on the rear panel of the 11683A, as shown in figure 8 (page 7) of the 11683A Operating and Service Manual.
- Connect jumper between the **DC REF INPUT** BNC and the terminal, with a green wire on the **REF SELECT** switch.

#### **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 uW. Voltage measured in each range should be within  $\pm 0.02\%$  of the voltage shown in page 4.
- Set the 11683A **FUNCTION** switch to **STANDBY**. Set the DVM controls to measure resistance.
- Measure the resistance at each setting from 300 uW to 3 uW to 5-digit resolution, and record the reading on the table below. Verify that each reading falls within the limits shown.

### DVM Reading (OHM)

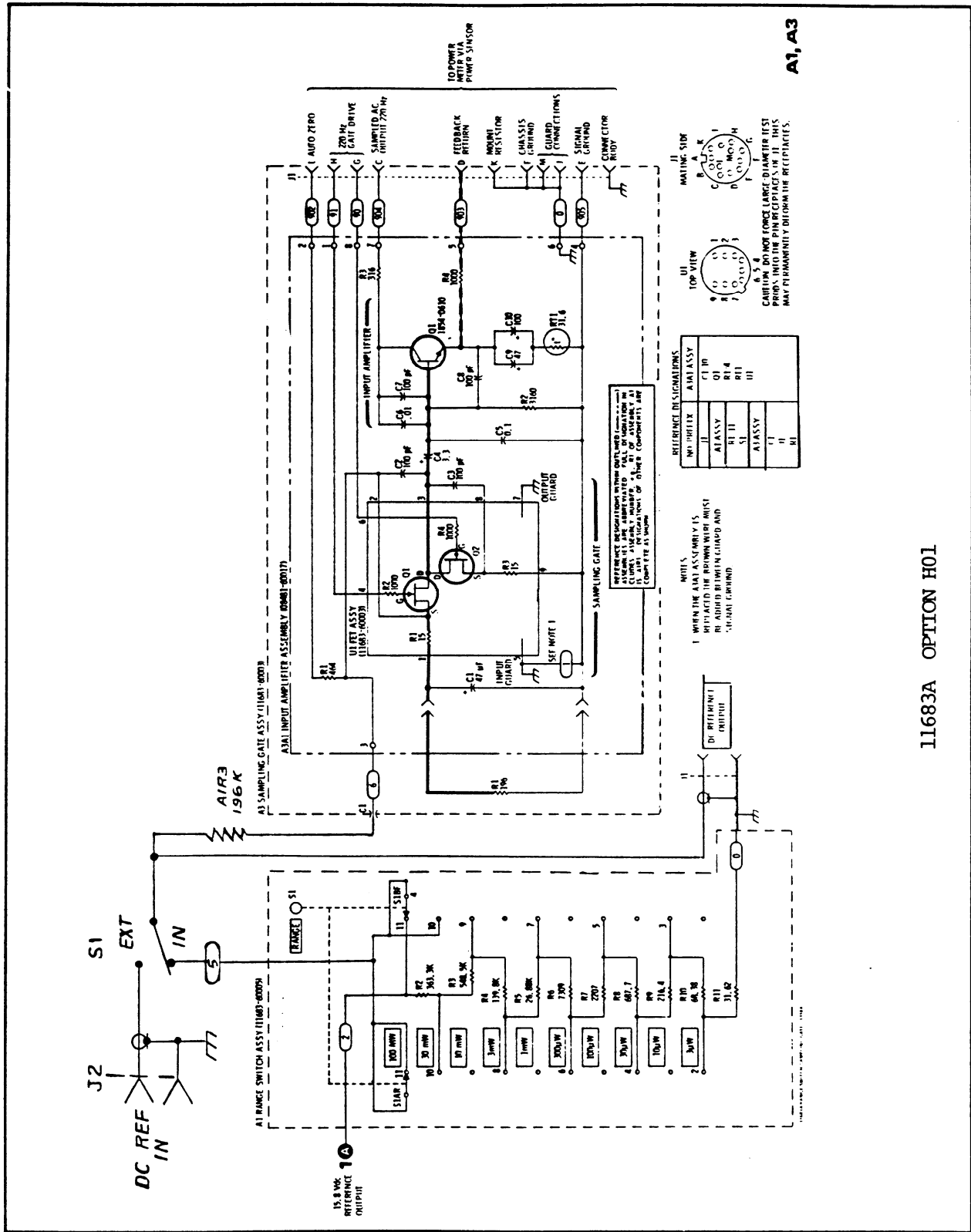
RANGE	MIN	ACTUAL	MAX.
300 uW	3134.3	.....	3157.1
100 uW	995.90	.....	1000.2
830 uW	315.14	.....	316.52
10 uW	99.749	.....	100.18
3 uW	31.580	.....	31.718

- 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 Operating and Service Manual.

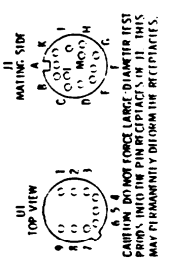
### **Replacement Parts**

Part Number	Qty	Description
1250-0083	1	BNC CONNECTOR
3101-0163	1	TERMINAL STRIP
0360-0010	1	SDPT SWITCH
0360-1190	1	TERMINAL LUG
2360-0120	1	SCREW
2420-0001	1	NUT
3050-0277	1	FLAT WASHER
11683-02001	1	REAR PANEL OPTION H01

In all other respects, the 11683A Option H01 is similar to the standard 11683A and the information in the Operating and Service Manual for the standard 11683A applies also to this instrument.



A1, A3



**REFERENCE DESIGNATIONS**

U1	REF ASSY
U2	INPUT AMPLIFIER
A1	RANGE SWITCH
A3	SAMPLING GATE
A3A1	INPUT AMPLIFIER ASSEMBLY

**NOTES**  
 1. WHEN THE A1 ASSEMBLY IS MOUNTED THE BRIDGE WIRE MUST BE ADDED BETWEEN GUARD AND SIGNAL GROUND.

**CAUTION** DO NOT FORCE LARGE DIAMETER TEST PINS INTO THE CONTACTS. THE PINS MAY PERMANENTLY DEFORM THE CONTACTS.

11683A OPTION H01

Figure 1 Range Switch/Sampling Gate Schematic Diagram

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