

# Using the Model 2450 to Measure Resistance Using SCPI Commands

The Model 2450 has three methods for measuring resistance:

1. Source Voltage and Measure Current, Set Measure Units to Ohms
2. Source Current and Measure Voltage, Set Measure Units to Ohms
3. Measure Resistance – Using Auto-Ohms (Ohmmeter) Mode

These three modes will be explained in more detail with SCPI examples for each. In each case, a 100k $\Omega$  resistor is used as the DUT.

## 1. Source Voltage and Measure Current, Read Ohms:

Here is an example if the user wants to take resistance readings by sourcing voltage and measuring current. Specifically, this program takes five readings by sourcing 5V, measuring current with autorange enabled, and setting the measure units to ohms. Offset compensation is turned on. The source and measure values are retrieved.

```
*RST
SENS:FUNC 'CURR'
SENS:CURR:RANG:AUTO ON
SENS:CURR:UNIT OHM
SENS:CURR:OCOM ON
SOUR:FUNC VOLT
SOUR:VOLT 5
SOUR:VOLT:ILIM 0.01
COUNT 5
OUTP ON
TRAC:TRIG "defbuffer1"
TRAC:DATA? 1, 5, "defbuffer1", SOUR, READ
OUTP OFF
```

The result of executing the code is shown in the screen capture shown below. Notice that even though the measurement units are in ohms, the measurement range is 10 $\mu$ A.



## 2. Source Current and Measure Voltage, Read Ohms:

Here is an example if the user wants to take resistance readings by sourcing current and measuring voltage. Specifically, this program takes five readings by sourcing 5e-6A, measuring voltage with autorange enabled, and setting the measure units to ohms. Offset compensation is enabled. The source and measure values are retrieved.

```
*RST
SENS:FUNC 'VOLT'
SENS:VOLT:RANG:AUTO ON
SENS:VOLT:UNIT OHM
SENS:VOLT:OCOM ON
SOUR:FUNC CURR
SOUR:CURR 5e-6
SOUR:CURR:VLIM 10
COUNT 5
OUTP ON
TRAC:TRIG "defbuffer1"
TRAC:DATA? 1, 5, "defbuffer1", SOUR, READ
OUTP OFF
```

The result of executing the code is shown in the screen capture shown below. Notice that even though the measurement units are in ohms, the measurement range is 2V.

## Using the Model 2450 to Measure Resistance Using SCPI Commands



```
*RST
SENS:FUNC 'RES'
SENS:RES:RANG:AUTO ON
SENS:RES:OCOM ON
COUNT 5
OUTP ON
TRAC:TRIG "defbuffer1"
TRAC:DATA? 1, 5, "defbuffer1", SOUR, READ
OUTP OFF
```

The result of executing the code is shown in the screen capture shown below. Notice that the measuring range is 200kΩ.

### 3. Auto-Ohms or Ohmmeter Mode

In this mode, the Model 2450 measures resistances by sourcing current. The unit automatically sets the magnitude of the current source, voltage compliance, and the measure range. This mode is the same as the Ohmmeter QuickSet function. Here is a program that uses the resistance function to take five readings.



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KEITHLEY INSTRUMENTS, INC. ■ 28775 AURORA RD. ■ CLEVELAND, OH 44139-1891 ■ 440-248-0400 ■ Fax: 440-248-6168 ■ 1-888-KEITHLEY ■ www.keithley.com

**BENELUX**  
+31-40-267-5506  
www.keithley.nl

**FRANCE**  
+33-01-69-86-83-60  
www.keithley.fr

**ITALY**  
+39-049-762-3950  
www.keithley.it

**MALAYSIA**  
60-4-643-9679  
www.keithley.com

**SINGAPORE**  
01-800-8255-2835  
www.keithley.com.sg

**BRAZIL**  
55-11-4058-0229  
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+49-89-84-93-07-40  
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**INDIA**  
080-30792600  
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**KOREA**  
82-2-6917-5000  
www.keithley.co.kr

**RUSSIA**  
+7-495-664-7564  
www.keithley.ru

**UNITED KINGDOM**  
+44-1344-39-2450  
www.keithley.com.uk

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