

## CALIBRATION

An **annual calibration** by IET LABS, Inc. is highly recommended in order to maintain results consistent with product specifications. Only perform a field calibration when inaccurate values are suspected. Please visit [www.ietlabs.com](http://www.ietlabs.com) for details.

### Field Calibration Overview

The total number of device resistance values to be entered during calibration are: OS-250 = **26**, OS-260 = **30**, OS-270 = **30**

To abort calibration, press "menu" at any time prior to entering the final residual resistance value. None of the previously entered resistance values will be saved.

### Required Tools

Calibrated, high precision ohmmeter having an accuracy greater than or equal to the device being calibrated. The ohmmeter must have 4-wire ohms measurement capability and a minimum 6.5 digit resolution.

### Instructions

1. Connect the ohmSOURCE device to the ohmmeter using the 4-wire ohms measurement setup.
2. Press "menu", then select "3: Calibrate".
3. Using the number keys, enter the resistance value requested by the screen prompt. Press "enter" to continue.
4. Follow the screen prompts for the remaining resistance values.
5. Enter the final residual resistance value and press "enter".
6. When the message "Calibration Saved" is displayed, calibration is complete.

## ACCESSORIES

- Translation Table Add-on ..... Part No. 91.0001  
-Download Translation Data Tables to Simulate Transducers  
Test Leads ..... Part No. 91.0002  
-Dual Banana Plug to Mini-Alligator Clips

## WARRANTY

We warrant that this product is free from defects in material and workmanship and, when properly used, will perform in accordance with applicable IET specifications. If within one year after original shipment, it is found not to meet this standard, it will be repaired or, at the option of IET, replaced at no charge when returned to IET. Changes in this product not approved by IET or application of voltages or currents greater than those allowed by the specifications shall void this warranty. IET shall not be liable for any indirect, special, or consequential damages, even if notice has been given to the possibility of such damages.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO, ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR ANY PARTICULAR PURPOSE.

## CUSTOMER SERVICE

The IET warranty attests to the quality of materials and workmanship in our products. For application assistance or if difficulties occur, our engineers will assist in any way possible. If you cannot eliminate the difficulty, please e-mail, FAX, or phone our Service Department, giving full information of the trouble and of steps taken to remedy it. Be sure to include the type and serial number of the instrument.

In the U. S. call  
800-475-1220 or 617-969-0804 for technical support  
800-899-8438 or 516-334-5959 for customer service  
516-334-5988 for FAX  
[www.ietlabs.com](http://www.ietlabs.com)

◆ PRECISION INSTRUMENTS FOR TEST AND MEASUREMENT ◆

**ohmSOURCE®**  
**Electronically Controlled Resistance Box**

**Models OS-250, OS-260, OS-270**

**User and Service Manual**



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OS im/February, 2003

## INTRODUCTION

The ohmSOURCE Electronically Controlled Resistance Boxes are variable resistance output devices having several advanced features. Resistance values are entered via a calculator-style keypad or incrementally using a rotary switch. Values are prominently displayed, in ohms, on a large LCD and two banana jacks at the base of the device provide easily accessible outputs. Each device comes with stacking dual banana plug to mini-alligator clip test leads for simple connection to any application. Other features include:

**Quick Value keys** - store/recall up to four frequently used resistance values with one touch. User-definable.

**Memory keys** - 10 additional resistance memory locations (0 - 9).

**Current Limiter** - limits the amount of current passing through the device to prevent possible damage.

**Increment Value setting** - for use with rotary switch, user-definable or select standard resistance values (1%, 5%, 10%).

**Open key** - isolates the device from the application with the touch of a key.

**Easy-to-Read Display** - the output resistance value, in ohms, is easily read from the large graphical LCD display.

**Automatic Residual Resistance** - the residual resistance of the device is automatically included in the output resistance value.

**100% mechanical isolation** - device circuit is completely mechanically isolated from the output resistance.

**Auto-Off Power** - the device automatically shuts off after four minutes of inactivity to conserve power.

**Translation Table Add-On** - download and store up to three different tables for translating a known physical characteristic (i.e. temperature) to a resistance value. This feature is useful in simulating transducers such as thermistors and conductivity sensors.

**Field Calibratable** - easily calibrate the device with a high precision ohmmeter. (*Refer to Calibration section of this manual*)

**Flash Software Updates** - download and install the latest firmware updates from [www.ietlabs.com](http://www.ietlabs.com).

## SPECIFICATIONS

**Model OS-250**      **Model OS-260**      **Model OS-270**

Range ..... R\* to 24,000,000 Ω ..... R\* to 24,000,000.0 Ω ..... R\* to 1,500,000.00 Ω

Resolution ..... 1 Ω ..... 0.1 Ω ..... .01 Ω

Accuracy ..... ± 1 Ω (up to 1,000 Ω) ..... ± 0.5 Ω (up to 1,000.0 Ω) ..... ± 0.1 Ω (up to 5,000.0 Ω)  
 ± 0.1% (above 1,000 Ω) ..... ± 0.1% (above 1,000.0 Ω) ..... ± 0.01% (above 5,000.0 Ω)

\*Residual \*\* ..... 1 Ω ± 0.5 Ω ..... 1 Ω ± 0.5 Ω ..... 1 Ω ± 0.5 Ω

Power Rating .... 1.0W ..... 1.0W ..... 1.0W

Power Supply .... 4 AA alkaline batteries ..... 4 AA alkaline batteries ..... 4 AA alkaline batteries

\*\* Exact value determined at calibration

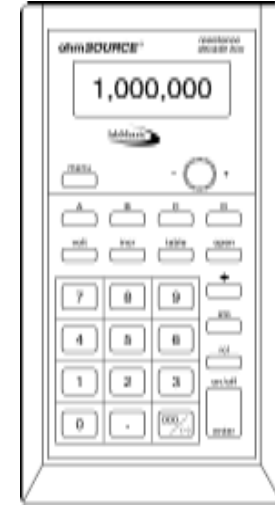
### Physical Specifications

Dimensions ..... 7.68" x 3.98" x 1.73"

Weight ..... 18.5 oz (526 g)

## FEATURES & KEY FUNCTIONS

KEY	DESCRIPTION	FUNCTION
<b>menu</b>	Displays the following submenu: 1: Standard Values 1: 1% Std Values 2: 5% Std Values 3: 10% Std Values 4: Ratiometric 2: Contrast 3: Calibrate 4: Version	Press "menu" and select one of the following: 1: Standard Values – each click of the rotary switch increases/decreases the displayed resistance value to the nearest industry standard resistance value. Select one of the following: 1: 1% Std Values 2: 5% Std Values 3: 10% Std Values 4: Ratiometric (increases/decreases displayed value by 0.8%) 2: Contrast – adjusts display contrast 3: Calibrate – device field calibration ( <i>Refer to Calibration section of this manual</i> ) 4: Version – displays current firmware version and release date
<b>Quick Value A, B, C, D</b>	Recalls a resistance value with one touch. Default values: A: 10 kΩ, B: 100 kΩ, C: 1 MΩ, D: 10 MΩ	To change Quick Values, enter a resistance value using the number keys. Press "sto", then "A", "B", "C", or "D".
<b>volt</b>	Limits the amount of current passing through the device to protect it from possible damage. Default value: 0.5 V	Press "volt". Using the number keys, press the estimated value of the voltage being applied across the device's outputs. Press "enter" to save.
<b>incr</b>	Defines the amount each click of the rotary switch increases/decreases the displayed resistance value. Default value: Ratiometric (0.8% of displayed value)	Press "incr". Using the number keys, press the desired increment value. Press "enter" to save.
<b>table</b>	Loads up to 3 stored data tables for the translation of a known physical characteristic (i.e. temperature) to a resistance value.	<b>Translation Table Add-On required.</b> Visit <a href="http://www.decadebox.com">www.decadebox.com</a> for more information.
<b>open</b>	Isolates the device by establishing an open circuit across the device outputs.	Press "open" to open the circuit. Press "open" again to close the circuit.
<b>←</b>	Deletes from the display the last character entered.	Press "←".
<b>sto</b>	Stores a resistance value in a Quick Value (A – D) or memory location (0 – 9).	Using the number keys, press the desired resistance value. Press "sto", then the desired Quick Value or memory location: A – D, 0 – 9.
<b>rcf</b>	Recalls a previously stored resistance value from a memory location (0 – 9).	Press "rcf", then a number key (0 – 9).
<b>enter on / off</b>	Turns the device on or off, and is used to select a resistance value.	To turn device on, press "enter" and release. To turn device off, press "enter" and hold for 3 seconds. Auto-Off after 4 minutes of inactivity.
<b>0 - 9, 000</b>	Used to enter a numerical value.	Key "000(-)" multiplies the displayed value by 1000. (-) used with Translation Table Add-On only.



## OPERATING INSTRUCTIONS

- Turn on the device by pressing and releasing "enter".
- Select a desired resistance value in one of the following ways:
  - Rotate switch;
  - Enter a value using the number keys, then press "enter";
  - Press a Quick Value key (A – D) to display a user-defined value or a factory default value.  
Default values are: A: 10 kΩ; B: 100 kΩ; C: 1 MΩ; D: 10 MΩ
  - Press "rcf" then a number key (0 – 9) to display a user-defined value or a factory default value.  
Default values are: 0: 100 Ω; 1: 1 kΩ; 2: 2 kΩ; 3: 3 kΩ; 4: 4 kΩ; and so on.
- Press "volt" and select the application voltage using the number keys, then press "enter". (Default: 0.5 V)

**This feature restricts the use of resistance values that would cause the device to exceed its 1 W rating. It is important to check this setting prior to using the device.**

- With the test leads provided, insert the dual banana plug into the output jacks on the device, then connect the mini-alligator clips to the application.
- To isolate the device from the application, press "open" to open the circuit. Press "open" again to close the circuit.
- To turn off the device, press and hold "enter" for 3 seconds. Auto-Off after 4 minutes of inactivity.



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