

User's Guide



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Hewlett-Packard Company certifies that this product met its published specifications at the time of shipment from the factory. Hewlett-Packard further certifies that its calibration measurements are traceable to the National Institute of Standards and Technology (NIST), to the extent allowed by the Institute's calibration facility, and to the calibration facilities of other International Standards Organization members.

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General Information

Introduction

This guide provides the information necessary to use the HP 16353A Standard Resistor Set. Included is a description, and calibration and repair information of the HP 16353A. To order additional copies of this guide, contact the nearest Hewlett-Packard Sales and Service Office and request the part number that is on the back cover of this guide.

Description

The HP 16353A consists of the following six standard resistors and other accessories:

HP 16353B: Standard Resistor (100 k Ω)
HP 16353C: Standard Resistor (1 M Ω)
HP 16353D: Standard Resistor (10 M Ω)
HP 16353E: Standard Resistor (100 M Ω)
HP 16353F: Standard Resistor (1 G Ω)
HP 16353G: Standard Resistor (10 G Ω)

Carrying Case (HP Part number 16353-60101)

Calibration Report

User's Guide (This manual)

These standard resistors are used for the instrument calibration, and each consists of an accurate resistor, a BNC connector, and a triax-connector. Figure 1-1 shows the internal circuitry.

When the HP 16353A is shipped from the Hewlett-Packard, it is calibrated with standards traceable to NIST or to the calibration facilities of other International Standards Organization members, and in compliance with MIL-Std-45662A.

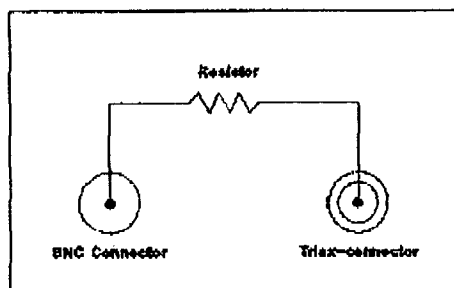


Figure 1-1.
Internal Circuitry of the Standard
Resistors

Specifications

Electrical Characteristics

Table 1-1 gives the specifications of the HP 16353A. Note that these specifications are valid under the following conditions:

Operating Temperature: $23^{\circ}\text{C} \pm 5^{\circ}\text{C}$

Operating Relative Humidity: less than 70 %

Storage Temperature: $0^{\circ}\text{C} \pm 40^{\circ}\text{C}$

Table 1-1. HP 16353A Specifications

Resistor	Nominal Value		Max. Temperature Coefficient (ppm/ $^{\circ}\text{C}$)	Long Term Stability (/1 year)	Max. Allowable Voltage
	(Ω)	range			
HP 16353B	100 k	$\pm 0.1\%$	0.6	25 ppm	100
HP 16353C	1 M	$\pm 1.0\%$	3	45 ppm	200
HP 16353D	10 M	$\pm 1.0\%$	3	50 ppm	200
HP 16353E	100 M	$\pm 1.0\%$	25	400 ppm	200
HP 16353F	1 G	$\pm 1.0\%$	50	170 ppm	200
HP 16353G	10 G	$\pm 1.0\%$	200	0.1 %	200

Dimensions

Approximately 98 mm (W) by 77 mm (H) by 34 mm (D)

Weight

Approximately 250 g (each standard resistor)

Calibration Uncertainty

For calibration uncertainty, refer to the *CALIBRATION REPORT* provided with the HP 16353A.

The total uncertainty is calculated from the calibration uncertainty, long term stability, and temperature coefficient.

There are many methods to calculate the total uncertainty. The following shows two methods:

■ Method 1:

$$\text{Total uncertainty} = C + S + TC \times (|T - 23| - 1)$$

■ Method 2:

$$\text{Total uncertainty} = \sqrt{C^2 + S^2 + \{TC \times (|T - 23| - 1)\}^2}$$

<i>C</i>	Calibration Uncertainty
<i>S</i>	Long Term Stability. Refer to Table 1-1.
<i>TC</i>	Temperature Coefficient. Refer to Table 1-1.
<i>T</i>	Operating temperature in °C.

Maintenance

Calibration

Calibrated value of each standard resistor is contained in *CALIBRATION REPORT* provided with the HP 16353A.

To maintain calibration accuracy, have the HP 16353A calibrated at least once a year. When calibration is required, return the HP 16353A to Hewlett-Packard for service. For complete calibration information, contact the nearest Hewlett-Packard Sales and Service office.

Repair

For repair of the HP 16353A, return the unit to Hewlett-Packard for service. For complete information on service, contact the nearest Hewlett-Packard Sales and Service Office.