

SECTION 1

DESCRIPTION

1.1 INTRODUCTION

The ESI Model 252 Digital Impedance Meter is a semi-automatic instrument which permits rapid measurement of inductance (L), capacitance (C), resistance (R), conductance (G) and dissipation factor (D) at a test frequency of 1kHz. Measurement accuracy and versatility satisfies most demanding engineering or scientific applications.

To operate, merely push the button for the desired function, manually turn the knob to the desired range, and connect the unknown. KELVIN KLIPS® test leads are included, thus ensuring true four-terminal connections. The position of the range switch, used in conjunction with the desired function button and front panel range scale, indicate the unit of measurement being displayed by the 3-1/2 digit LED readout.

Excellent reliability of the Model 252 is assured through use of solid state devices and etched circuit board construction. Its small size is ideal for use on benchtops where work space may be at a premium. The carrying handle tilts the unit to a convenient viewing angle. Rear panel brackets provide line cord storage and enable it to be operated in a vertical position.

1.2 SPECIFICATIONS

		Ranges						
		0	1	2	3	4	5	6
Full Scale Values	LS	200 μ H	2 mH	20 mH	200 mH	2 H	20 H	200 H
	CP	200 pF	2 nF	20 nF	200 nF	2 μ F	20 μ F	200 μ F
	RS	2 Ω	20 Ω	200 Ω	2 k Ω	20 k Ω	200 k Ω	2000 k Ω
	GP	2 μ S	20 μ S	200 μ S	2 mS	20 mS	200 mS	2000 mS
	D	1.999						
Accuracy (15°C to 35°C)	LS	$\pm(0.25\% + (1 + 0.002R_S^*) \text{ digits})^{**}$	$\pm[0.25\% + (1 + 0.001R_S^*) \text{ digits}]$					$\pm(0.25\% + (1 + 0.002R_S^*) \text{ digits})$
	CP	$\pm(0.25\% + (1 + 0.002G_P^*) \text{ digits})^{**}$	$\pm[0.25\% + (1 + 0.001G_P^*) \text{ digits}]$					$\pm(0.25\% + (1 + 0.002G_P^*) \text{ digits})$
	RS	$\pm(0.25\% + (1 + 0.002L_S^*) \text{ digits})$	$\pm[0.25\% + (1 + 0.001L_S^*) \text{ digits}]$					$\pm(0.25\% + (1 + 0.002L_S^*) \text{ digits})$
	GP	$\pm(0.25\% + (1 + 0.002C_P^*) \text{ digits})$	$\pm[0.25\% + (1 + 0.001C_P^*) \text{ digits}]$					$\pm(0.25\% + (1 + 0.002C_P^*) \text{ digits})$
	D	$\pm(1\% + 0.002)$ for L or C ≥ 200 counts $\pm(2\% + 0.010)$ for L or C 50 to 199 counts						
Test Signal	Voltage CP, GP	1.0 VRMS		0.1 VRMS				
	Current LS, RS	100 mA	10 mA	1 mA	100 μ A	10 μ A		1 μ A

*Digit count, same range.

**After correction for test lead zero reading.

0°C to 15°C and 35°C to 50°C: add 0.1 (rated accuracy)/°C.

Table 1-1. Model 252 Specifications

Test Frequency: 1kHz $\pm 1\%$.

Unknown Excitation: The 1kHz voltage (V_x) and current (I_x) levels listed in Table 1-1 are held constant by an internal amplitude control circuit.

Measurement Rate: Four per second; one second is required for first reading after connecting unknown to terminals.

Measurement Display: 3-1/2 digit LED with decimal point. Blanked for overload conditions.

Unit Display: Unit of measurement being displayed by the LED readout is indicated by position of the range switch, used in conjunction with the desired function button and the front panel range scale.

External Bias: Rear panel terminals are provided for connection of external supply. 0V to 50VDC, 0.1A maximum. (Read Section 2.2.6 before using external bias.)

Static Charge Protection: Diode and resistor discharge network.

Connection to Unknown: Four-terminal, shielded, connections are provided by the KELVIN KLIPS® cable assembly (ESI Part Number 43072) supplied with the Model 252.

Outputs: Analog signals of 1V per 1,000 counts, 1k Ω source resistance is available at rear panel. L, C, R, or G, with simultaneous output of D for L or C.

Power Consumption: 4 watts typical.

Power Requirements: 100 to 125V or 200 to 250V, 50/60Hz.

Fuse: 110V: 1/16A 250VAC Slow-Blow
220V: 1/20A 250VAC Slow-Blow

Size: Height (with feet) - 100mm (4 in.)
Width - 260mm (10 in.)
Depth (overall) - 370mm (14.6 in.)

Weight: 3.2kg (7 lb).

Accessories supplied with Model 252:

KELVIN KLIPS® Four-Terminal Clips
Instruction Manual

ESI Part No.

43072
43158

Options Available:

Model 1412B Universal Limits Comparator
Sorting Fixture Model 2001 (low frequency)
Cable Assembly (for Model 2001 connection)
Front Panel Dust Cover

ESI Part No.

31412B
32001
43586
43374