



MODEL 6500A

PROGRAMMABLE DIGITAL TERAOHMMETER

ULTRA-HIGH RESISTANCE HIGH ACCURACY MEASUREMENT



6500A FEATURES

- > Range 1 megohms to 100,000 teraohms
- > Automatic sensing of resistance range integration time threshold voltage
- > Fully programmable
- > Current Mode – range 10^3 amps to 10^{-14} amps
- > Test voltage 1 to 1000 volts
- > Softcal \hat{O} for on-board intelligence and front panel calibration
- > IEEE-488 and RS232C built-in as standard
- > Rear input option

Guildline 6500A Digital Teraohmmeter is the latest instrument of its type from Guildline Instruments. It expands the range of the earlier models to a level never available before in a high resistance measuring instrument. The 6500A teraohmmeter offers true state-of-the-art ultra-high resistance measurement superior to bridge techniques. Through its inherently linear design of the measurement section, the 6500A achieves the highest accuracy and range commercially available today. Accuracies better than 0.002% can be achieved when used as a transfer standard.

The 6500A teraohmmeter is fully automatic, functioning under microprocessor control and Guildline's unique Softcal on-board calibration firmware. The instrument measures extremely high resistances, up to 10^{17} ohms, or very small currents down to 10^{-14} amps. Measurement time for the instrument is 5ms to 1000 seconds and sensing of instrument resistance range, integration time and threshold voltage is fully automatic.

The 6500A utilizes Softcal to provide access to GPIB status and the RS232C configuration. In addition, Softcal provides supply and reference voltage diagnostics, auto reverse tolerance window, protection resistor recompensation, integrator linearity check and standard calibration from the front panel.

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The calibration is simply achieved by connecting a known reference resistor to the input connectors (accessory 9336-100M) and starting the self calibration procedure. The on-board firmware also provides self test and diagnostic help features.

Production line testing, calibration of electrometers, semiconductor testing, capacitance leakage measurement, film surface resistivity measurement, and other applications (performed in the past by previous teraohmmeters) can all be applied to automatic testing by the 6500A. In the current mode, the instrument can be used to measure chemical reaction rates, photo-electric effects and ionization effects.

IEEE-488 and RS 232C interfaces are built-in as standard as is an external trigger input to command a measurement from an external device, process or timing mechanism.

A range of calibrating resistors are available (9336) as well as other accessories for use with the 6500A.

6500A Programmable Digital Teraohmmeter

6500A SPECIFICATIONS

Accuracy (90 days) @ 23 °C ± 5 °C

Range in Ohms	Limit of error (±% of reading)	Resolution (digits)
10 ⁶ - 10 ⁷	0.025	6
10 ⁷ - 10 ⁸	0.035	6
10 ⁸ - 10 ⁹	0.05	5
10 ⁹ - 10 ¹⁰	0.07	5
10 ¹⁰ - 10 ¹¹	0.1	5
10 ¹¹ - 10 ¹²	0.2	5
10 ¹² - 10 ¹³	0.3	4
10 ¹³ - 10 ¹⁴	0.5	4
10 ¹⁴ - 10 ^{15*}	1.0	3
10 ¹⁵ - 10 ^{16*}	10.0	3
10 ¹⁶ - 10 ^{17*†}	50.0	3

Range in Current	Limit of error (±% of reading)	Maximum Resolution (digits)
10 ⁻⁴ - 10 ⁻³	0.25	6
10 ⁻⁵ - 10 ⁻⁴	0.35	6
10 ⁻⁶ - 10 ⁻⁵	0.5	6
10 ⁻⁷ - 10 ⁻⁶	0.7	5
10 ⁻⁸ - 10 ⁻⁷	1.0	5
10 ⁻⁹ - 10 ⁻⁸	1.0	5
10 ⁻¹⁰ - 10 ⁻⁹	1.0	5
10 ⁻¹¹ - 10 ⁻¹⁰	1.0	4
10 ⁻¹² - 10 ⁻¹¹	1.0	4
10 ⁻¹³ - 10 ⁻¹²	10.0	3
10 ⁻¹⁴ - 10 ⁻¹³	50.0	3

*These accuracies are inferred from the basic linearity of the instrument.

† Limited to ±3 °C from calibration temperature

Range:	10 ⁶ to 10 ¹⁷ ohms or 10 ⁻³ to 10 ⁻¹⁴ amps
Input Impedance:	100 k ohms (current mode)
Measurement time:	5 ms to > 1000 seconds
Test Voltage:	1, 2, 5, 10, 20, 50, 100, 200, 500 & 1000 Volts (Programmable)
Interfaces:	IEEE-488 and RS 232C
Source and Input connectors:	'N' Type
Power Supply	95 to 130V ±10% 190 to 260V ±10% 50/60 Hz ±10%, 50 VA

Environment:	Operating	18 °C to 28 °C 20% to 50% RH
	Storage	-30 °C to 70 °C 15% to 80% RH, non-condensing

Exterior Dimensions	H 89 mm (3.5 in), add 11 mm (0.4 in) to height for bench top feet W 444 mm (17.5 in) D 500 mm (19.7 in)
Weight	11.4 kg (25 lbs)

6500A ORDERING INFORMATION

6500A	Programmable Digital Teraohmmeter
TM6500A	Technical Manual (included) Certificate of Calibration (included) Report of Calibration (extra charge)

ACCESSORIES:

65201	Adapter for Penn Airborne Resistor
65205	Shielded Sample Enclosure
65206	Zero link
65210	Lead Set
65213	Calibration Kit
65214	Type N to Hi Voltage BNC Adapter
9336-100M	Standard Resistor
9336-x	Standard Resistor (range 1M to 100G Ω)
9337-x	Standard Resistor (range 1T to 10P Ω)

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