

# M-500B Impedance Calibrator



- Resistance standards
- Capacitance standards
- Inductance standards
- Four pair terminal connection
- Calibration data up to 20 kHz
- Interface bus GPIB or RS-232



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**I**mpedance calibrator M 500B is a device aimed for RLC measuring instruments check-up. It contains 9 resistance standards in range of values 100 mOhm up to 10 MOhm in decade series, 7 partial capacity standards in range of values 10 pF to 10uF in decade series and 5 partial inductivity standards in range of values 1 mH to 10 H in decade series. Basic connection of the impedance calibrator to the checked-up meter is the coaxial four-pair terminal one, by BNC connectors mediation. Entry of new calibration data is done from keyboard of the device. Access to the calibration data and their change execution is protected by software. All functions of the calibrator may be controlled by means of GPIB bus.

#### Resistance Standards - 4 Wire

Value	Stability typ/year	Tolerance	Uncertainty *	Temperature coefficient	Time Constant	Current Max
$\Omega$	ppm	%	%	ppm/°C	ns	mA
SHORT	50 $\mu\Omega$	-	-	-	-	500
0.1	30	0.1	0.05	2	< 200	500
1.0	30	0.1	0.01	2	< 20	200
10	30	0.05	0.005	2	< 2	50
100	30	0.05	0.005	2	< 2	15
1k	30	0.05	0.005	2	< 1	5
10 k	30	0.05	0.005	2	< 10	1.5
100 k	30	0.05	0.005	2	< 100	0.5
1 M	30	0.1	0.05	2	< 1000	0.05
10 M	100	0.2	0.1	50	< 100	0.005

\* for Frequency 1 kHz

Reference Temperature :  $23 \pm 1^\circ\text{C}$

#### Capacitance Standards - 4 Wire

Value	Stability typ/year	Tolerance	Uncertainty *	Temperature coefficient	Dissipation Factor	Voltage max **
F	ppm	%	%	ppm/°C	$10^{-4}$	V
<b>OPEN</b>	<b>5 fF</b>	-	-	-	-	<b>50</b>
<b>10</b>	<b>100</b>	<b>0.2</b>	<b>0.1</b>	<b>20</b>	<b>&lt; 200</b>	<b>50</b>
<b>100</b>	<b>100</b>	<b>0.1</b>	<b>0.01</b>	<b>20</b>	<b>&lt; 20</b>	<b>50</b>
<b>1 n</b>	<b>100</b>	<b>0.05</b>	<b>0.01</b>	<b>20</b>	<b>&lt; 2</b>	<b>50</b>
<b>10 n</b>	<b>100</b>	<b>0.05</b>	<b>0.01</b>	<b>20</b>	<b>&lt; 2</b>	<b>50</b>
<b>100 n</b>	<b>100</b>	<b>0.05</b>	<b>0.01</b>	<b>20</b>	<b>&lt; 1</b>	<b>50</b>
<b>1 m</b>	<b>200</b>	<b>0.1</b>	<b>0.1</b>	<b>-150</b>	<b>&lt; 10</b>	<b>15</b>
<b>10 m</b>	<b>200</b>	<b>0.1</b>	<b>0.1</b>	<b>-150</b>	<b>&lt; 100</b>	<b>1.5</b>

\* for Frequency 1 kHz

Reference Temperature :  $23 \pm 1^\circ\text{C}$

\*\* for  $U < 0.1 \cdot X_c$  ;  $50 >$

#### Inductance Standards - 4 Wire

Value	Stability typ/year	Tolerance	Uncertainty *	Temperature coefficient	Dissipation Factor Typ	Current max **
H	ppm	%	%	ppm/°C	$10^{-3}$	mA
1 m	200	0.5	0.1	100	5	100
10 m	200	0.5	0.1	100	5	100
100 m	100	0.5	0.2	20	400	80
1	100	0.5	0.1	100	400	80
10	100	0.5	0.2	100	400	80

\* for Frequency 1 kHz ( 1, 10, 1000 H )

Reference Temperature :  $23 \pm 1^\circ\text{C}$

10 kHz ( 100 mH ), 100 Hz ( 10 H )

\*\* for  $I < 50/X_L$  ;  $0.1 >$

#### General Specification

Frequency Range : 100 Hz - 20 kHz ( step 1,2,4 )

Connection : 4 x BNC

Calibration Data : 4-Wire, 2-Wire

Interface : GPIB