

MTE Resistance/Capacitance/Inductance Standards



High voltage
Housing A

Traceability of electric quantities
Calibration of meters

Calibration uncertainty 0.005 %
Low time constant
Three/four terminal or four pair
terminal connection

Resistance/Capacitance standards of series MTE1 are designed for of ohmmeters, RCL meters, insulation testers calibration. They can be applied as a mean of traceability of electric resistance between primary and secondary laboratories.

DC modification of the standards is equipped with 4 mm terminal socket. Resistance standards up to 1 M Ω are in four-terminal connection while standards over 10 M Ω have two terminal connection with additional insulation washer and with grounding terminal connected to the housing.

AC resistance modifications and capacitance/inductance standards are delivered with four BNC connectors enabling application in three-terminal, four-terminal, four-pair terminal configuration. As a part of MTE1 set for AC applications the reference positions OPEN and SHORT terminals can be delivered. Both components serves typically for zero calibration in tested LCR meters.

Other type of connectors can be installed on request. Other nominal values can be delivered on request.

Housing B for AC application



Housing C for AC application



Inductance standards

Connection Four pair terminal
Type of terminals BNC coaxial connectors
Frequency range 100 Hz - 20 kHz

Model	Nominal value	Accuracy	1 kHz calibration uncertainty	Temperature coefficient *	Min. quality factor at f=1 kHz	Note	Housing
		[%]	[%]	[\pm ppm / $^{\circ}$ C]	[-]	Type	Type
LP – 100m *	100 mH	0.5	0.05	50	≥ 3 ***	T-network	B
LP – 1**	1 H	0.5	0.05	50	≥ 3	T-network	B
LP – 10 **	10 H	0.5	0.05	50	≥ 10	T-network	B
LP – 100 **	100 H	0.5	0.05	50	≥ 10	T-network	B
LP – 1000 **	1000 H	0.5	0.05	50	≥ 10	T-network	B

T network is composed from two resistors and one capacitor. The network can simulate inductance parameter L_{21} with Q factor over 3 in recommended frequency area. The standard can be applied for calibration of those RCL meters which measure test current in Low input terminal. The standard cannot be applied for calibration of classic transformer bridges.

* Applicable frequency range from 10kHz to 20 kHz

*** Q factor for frequency 10 kHz

** Applicable frequency range from 1 kHz to 20 kHz



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Capacitance standards

Connection Four pair terminal

Type of terminals BNC coaxial connectors for AC applications

Housing: B or C

Frequency range 20 Hz - 20 kHz to 1 nF, 20 Hz – 10 kHz to 100 uF

Model	Nominal Value	Accuracy	1 kHz calibration uncertainty	Temperature coefficient *	Dissipation factor	Max working voltage	Note	Housing
		[%]	[%]	[± ppm / °C]	[-]	[V]	Type	
CP – 10p	10 pF	2	0.1	15	≤0.001	30	Ceramic multilayer Silver mica	B, C
CP – 100p	1 00 pF	0.5	0.05	15	≤0.001	30	Ceramic multilayer Silver mica	B, C
CP – 1n	1 000 pF	0.1	0.02	15	≤0.0005	30	Ceramic multilayer Silver mica	B, C
CP – 10n	10 000 pF	0.1	0.02	15	≤0.0005	30	Ceramic multilayer Silver mica	B, C
CP – 100n	100 000 pF	0.1	0.02	15	≤0.0005	30	Ceramic multilayer Silver mica	B
CP – 1u	1 uF	0.5	0.02	50	≤0.005	30	Polypropylen	B
CP – 10u	10 uF	0.5	0.1	50	≤0.005	30	Polypropylen	B
CP – 100u	100 uF	0.5	0.1	50	≤0.005	30	Polypropylen	B

Resistance standards

Connection 3-terminals (above 10 MΩ), 4-terminals or 4 pair-terminals (bellow 10 MΩ)

Housing type A

High voltage version with additional isolation

Dimensions 125 x 60 x 105 mm

Type B

General application with BNC terminals or gold plated terminals

Dimensions 125 x 60 x 105 mm

Type C

For RCL meter calibration designed for direct connection to the front panel connectors with two fixing female BNC screws or gold plated terminals
Dimensions 105 x 33 x 33 mm

Type of terminals BNC coaxial connectors for AC applications (0.1 Ω to 10 MΩ), housing B or C

Gold plated terminals for DC applications (0.1 Ω to 10 MΩ), housing B or C

Standard terminals with additional ertallyte isolation (above 10 MΩ), housing A

Frequency range DC, DC to 20 kHz for nominal value 0.1 Ω to 10 MΩ (with BNC connectors)

Model	Nominal Value	Accuracy	DC calibration uncertainty	Temperature coefficient *	Power rating **	Note	Housing
		[%]	[%]	[± ppm / °C]	[W]	Resistance segment	
RP - 0.1	100 mΩ	0.1	0.05	10	3	Foil resistor	B
RP - 1.0	1 Ω	0.05	0.01	10	3	Foil resistor	B
RP - 1.0	1 Ω	0.05	0.01	1	3	Foil resistor	B, C
RP - 10	10 Ω	0.01	0.005	1	0.3	Foil resistor	B, C
RP - 100	100 Ω	0.01	0.005	1	0.3	Foil resistor	B, C
RP - 1k	1 kΩ	0.01	0.005	1	0.3	Foil resistor	B, C
RP - 10k	10 kΩ	0.01	0.005	1	50 V ***	Foil resistor	B, C
RP - 100k	100 kΩ	0.01	0.005	1	150 V ***	Foil resistor	B, C
RP - 1M	1 MΩ	0.01	0.005	1	500 V ***	Foil resistor	B
RP - 10M	10MΩ	0.05	0.01	100	2 500 V***	Ceramic resistor	A
RP - 100M	100 MΩ	0.5	0.1	100	2 500 V***	Ceramic resistor	A
RP - 1G	1 GΩ	1	0.3	100	5 000 V***	Ceramic resistor	A
RP - 10G	10 GΩ	3	0.5	100	5 000 V***	Ceramic resistor	A

* in temperature range 0 - 50 °C, ** at ambient temperature 23 °C, *** maximal voltage

